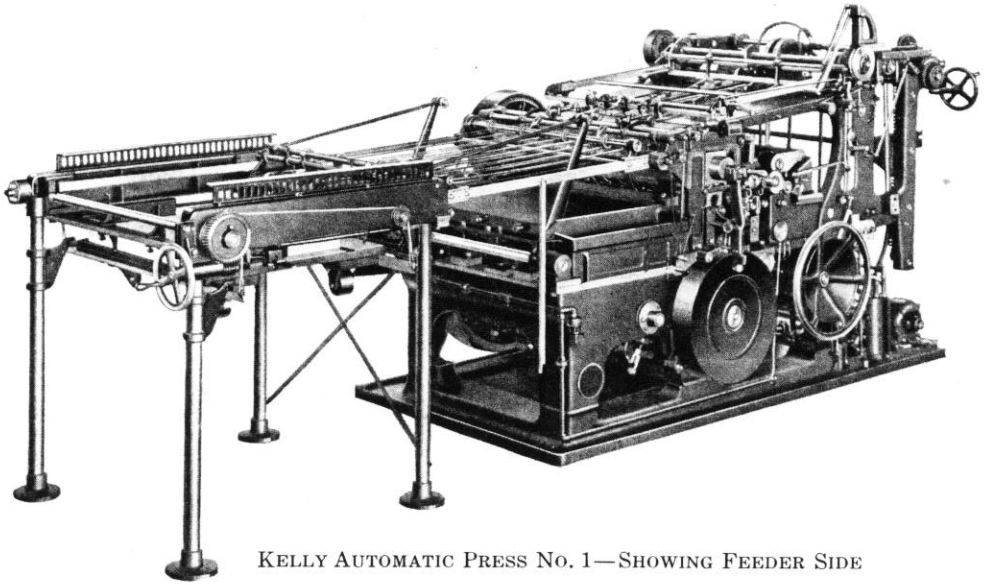
BOOK OF INSTRUCTIONS FOR THE KELLY AUTOMATIC PRESS No. 1

AMERICAN TYPE FOUNDERS COMPANY
Kelly Press Division
Manufacturer of KELLY AUTOMATIC PRESSES

BOOK OF INSTRUCTIONS

Kelly Automatic Press No. 1



KELLY AUTOMATIC PRESS NO. 1—SHOWING FEEDER SIDE

AMERICAN TYPE FOUNDERS COMPANY

Kelly Press Division

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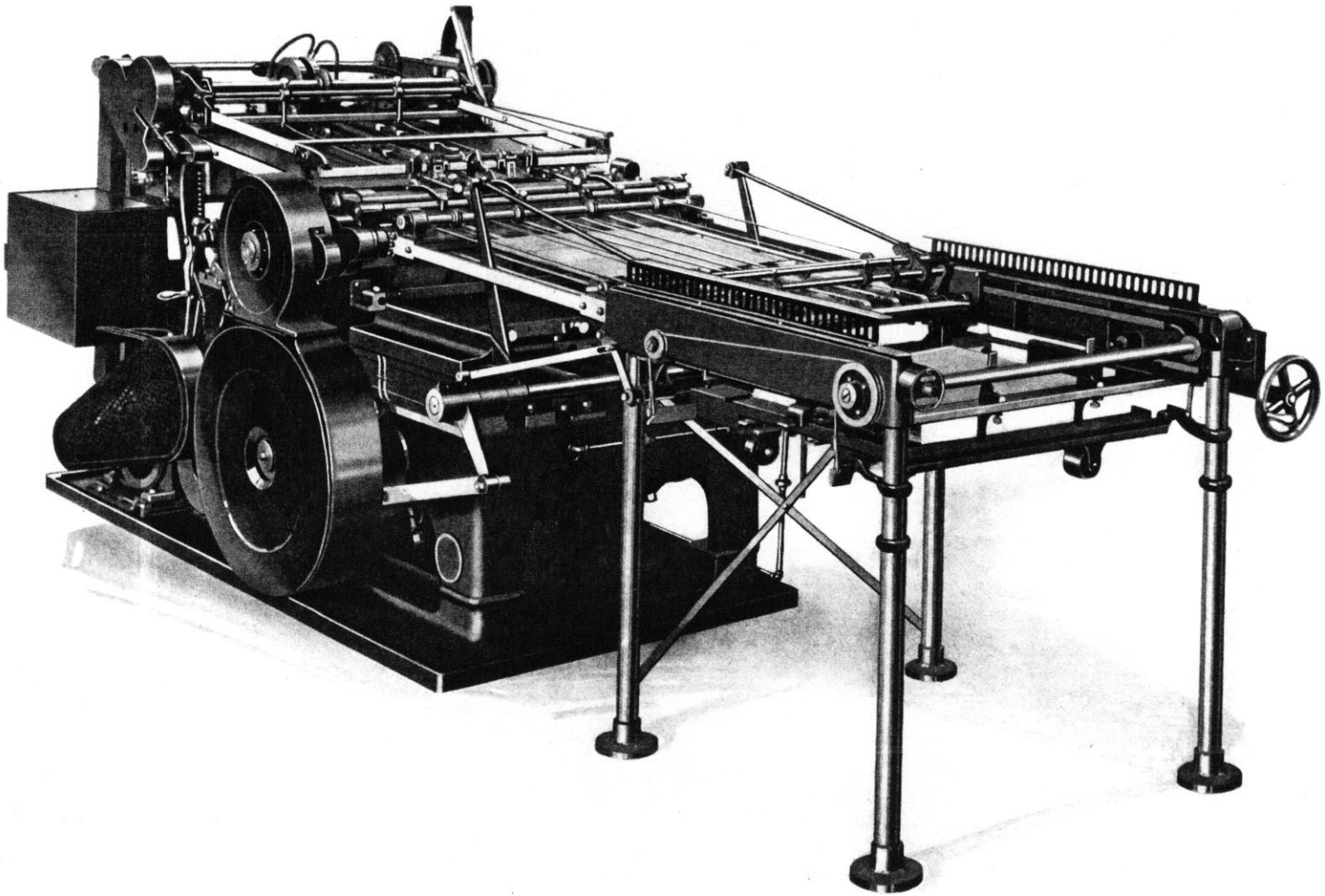


KELLY AUTOMATIC PRESS NO. 1—SHOWING GEAR SIDE

INSTRUCTIONS ON THE ADJUSTMENT, OPERATION AND CARE OF

The Kelly Automatic Press No. 1

IN PREPARING these instructions it is assumed that the reader for whom they have been compiled is an experienced pressman. The mechanical operating details of the press and automatic feeder can be learned by following these instructions, but the results obtained are dependent on the pressman himself. The various adjustments to be made by the pressman are described as clearly as possible, and should soon become familiar to him.

No attempt has been made to teach pressmanship. The sole object of the book is to place in the mind of the pressman the mechanical information necessary in adjusting the mechanism of the press and feeder. Reference to this book will help the pressman attain satisfactory results.

This book should not be mislaid, but kept at hand at all times for reference.

AMERICAN TYPE FOUNDERS COMPANY

Kelly Press Division

April 1, 1931

STANDARD SPECIFICATIONS

Speed range, 2200 to 3600 impressions per hour.
Bed measurement, 25¼x28¾ inches.
Size of standard sheet, 20x26 inches.
Largest sheet delivered, 22x28 inches.
Smallest sheet, 8x12 inches.

The roller equipment consists of two form rollers, covering 19¾x28 inches, two steel vibrators, two top riders, a large steel ink drum, ductor roller and ink plate, and in addition—an exclusive Kelly feature—an extra composition distributor, operating against the small vibrator, so located and arranged that on forms requiring extra heavy distribution, and not exceeding 17x28 inches in size, it can be instantly dropped into position as a *third form roller*. For the convenience of the operator, this extra composition distributor is positioned in regular adjustable form roller sockets and when in use as a form roller, the *three* rollers will bleed 17x22 inch to 17x28 inch sheets. All composition rollers cast 2⁵⁄₁₆ inches in diameter to allow for shrinkage to 2¼ inch standard.

Poster chase, 22x26⅜ inches inside.

Feeder Pile Table takes 21 inches of stock. Extension Delivery Truck, 25 inches of stock.

Floor space over all with extension delivery and electric equipment, 70x163 inches.

Solid column measures 43x74½ inches and is 20 inches high above floor plate.

Net weight of unit complete, 9100 pounds.

Horsepower: press motor 3; blower motor ¾.

The Kelly Automatic Press No. 1 is furnished as a complete unit with press, automatic feeder, blower, extension delivery including two trucks and one truck handle, variable speed electric equipment, electrically operated brake, push button station on feeder side, stop station at delivery end, one set of cast rollers, one set extra roller cores, steel poster chase, counter, belts for press and blower, oil can, wrenches.

Kelly Gas Heater, an extra attachment, furnished to order.

REFERENCE

The "feeder side" of the press is the platform side from which the pressman works in "making ready." The "gear side" is opposite. "Delivery end" and "feeder end" are self-explanatory.

The serial number of each press is stamped on the top ledge of column under tool box at delivery end, feeder side, and on end of cylinder shaft on gear side. This same serial number is stamped on feeder side of feeder frame and on tie bar at feeder side feeder end of extension delivery frame. In writing to the manufacturer always give the serial number of the press.

OILING PRESS

For the convenience of pressmen and to assure attention to oiling, as many as possible of the oil holes inside of column are reached by tubes leading from the outside of the machine. These tubes are grouped and the location of each is shown on the oiling chart. (See page 9.)

The oiling of press and feeder should be done by the pressman or under his personal supervision at least twice a day.

A new press requires more frequent oiling than one which has been "run in," and a good grade of light mineral oil should always be used. *Acquire the habit of starting to oil the press at a given point and work around.* Examine the oil tubes frequently and see that they are free from accumulations that obstruct the flow of oil to the bearings.

Dress plunger leathers *with Neat's-foot Oil* at least once a week.

Keep the bed rollers and tracks well oiled. Drain the tracks of excess oil occasionally, clean, and refill with fresh oil.

OILING THE BLOWER

The blower bearings should be oiled every day.

To oil the blower vanes remove the square head plug and put in a teaspoonful of oil twice a week. If too much oil is used it will pass through the blower and settle in the bottom of the air receiver tank.

To remove the air receiver tank cap, swing the bottom of the tank upward. Remove the screws in tank cap and the tank can be taken out. Clean thoroughly, put in about one inch of new waste, and be sure to replace the star weight on top of waste to prevent it being sucked into the piping. There must be no leakage of air between tank and cap. If necessary, make a new gasket when replacing tank.

MOTORS

Keep the bearings on both the press and blower motors filled with oil or grease, as called for. Keep the commutator free from dirt and oil and replace brushes when necessary. A fine piece of sandpaper applied to the commutator once a week will remove any accumulation of dirt and prevent sparking of the brushes. Clean with waste afterwards.

When necessary to replace the brushes, duplicates should be obtained from the nearest Selling House of the American Type Founders Company.

Endless V-type belts are furnished for both motors.

SETTING IMPRESSION CYLINDER ON BEARERS

To do good printing it is necessary that contact be maintained at all times between the cylinder and bed bearers while the cylinder is on the impression. This applies to all forms, whether they require a light or heavy impression. The cylinder must be set so that the heaviest form which can be printed will not lift the cylinder off the bearers while on the impression.

Wear in the form is usually the result of overpacking the cylinder to obtain a heavier impression. This is an improper practice. The correct procedure is to reset the cylinder.

After a new press has been run for a few months the settling down of bearings to their normal working condition is likely to affect the impression, in which case the cylinder requires resetting. Readjustments should seldom be required thereafter.

It is recommended that a service man be obtained to make this adjustment whenever possible. Where no service man is available the work can be done by the operator if the instructions below are carefully followed.

Before attempting this adjustment, secure a .908 cylinder setting gauge. *Never attempt to set the cylinder by guesswork.*

1. **Remove the bed bearers. Wipe the bed of press and cylinder bearers clean.**
2. **Pack the cylinder with hard packing even with the cylinder bearers.**
3. **Place a bed bearer crosswise of the bed, parallel with and about ten inches back from dead line.**
4. **With impression on, run the cylinder onto the center of the bed bearer. This will force the cylinder up and ensure the proper balance and an even pressure on the bed.**
5. **Place the .908 setting gauge on bed between bed and cylinder bearers.**
6. **Loosen lock nuts on both impression connections.**
7. **To lower the cylinder, release lower and tighten top setting nuts. To raise cylinder, release top and tighten lower setting nuts.**
8. **Try the setting gauge frequently between cylinder bearers and bed of press.**
9. **When the cylinder is properly set, a definite contact will be felt between the gauge, cylinder and bed on both feeder and gear sides.**
10. **Before removing the bearer tighten all the lock nuts.**
11. **Clean the bed bearers thoroughly and replace them, tightening the screws carefully.**
12. **The height of bed bearers is .916.**

ADJUSTING REGISTER RACK

The register rack is located on the gear side of the bed and secured by two cap screws. The register segment is located at the gripper edge of the impression cylinder, and is secured in position by one cap screw and two dowels.

The cylinder segment should *never be moved under any condition.*

The register rack is always accurately adjusted when the press is installed. If the impression cylinder is not riding properly on bed bearers it will also throw the register rack out of adjustment and the combined result will be a slur, which generally shows about two inches back from the gripper edge.

To Adjust Register Rack. When it becomes necessary to make an adjustment to bring the register rack on the bed into accurate mesh with the fixed register rack segment on the cylinder, proceed as follows: *This is an operation that should not be attempted by the pressman unless he has had some previous experience.*

1. **Loosen the two screws which hold register rack to the bed of the press.**
2. ***Turn the cap screws by hand* until they are tight enough to hold the rack in position.**
3. **With the cylinder coming down on the bearers, move the press forward until the segment on the cylinder is in the center of the register rack.**
4. **Tighten the screws slightly, or just enough to prevent the rack from moving out of position.**
5. **Next run the press by power for ten or twelve revolutions with the cylinder coming down on the bearers. If the screws in the register rack have not been set up too hard, the register rack on the bed will find its natural position with the register segment on the cylinder. This operation is called "running in the register rack."**
6. **Finally, tighten the screws in the register rack firmly.**

If there is a slight variation in register after running in the rack by the above method, the rack may be moved slightly.

The best adjustment of the register rack is made with all rollers in the press, a form on bed, with heavy impression and running the press at the average speed at which it is operated.

AIR PLUNGERS AND RELIEF VALVES

The bed movement of the Kelly Automatic Press No. 1 requires no adjusting on the part of the pressman other than the care and adjustment of the air plungers and relief valves.

To stop and reverse the bed of a press in operation requires air cushioning. This is accomplished by means of the four air cylinders and plunger heads.

The two relief valves are conveniently located on the feeder side of press.

If the press is running at high speed, more air pressure is needed to check the momentum of the bed and this can usually be secured by increasing the resistance in the air relief valves. If sufficient cushion cannot be secured by adjusting the valves, then move the plunger heads out toward end of stem.

A noticeable effect of poor air adjustment is a knocking sound when the bed reverses. This should be corrected at once by adjusting the valves or the plunger heads.

After setting plunger heads to a medium (2800) speed, regulate the amount of air required to properly cushion the bed at other speeds by increasing or decreasing the tension on air relief springs.

1. **By turning the adjusting screw up, the tension on valve spring is increased and amount of cushioning is reduced.**
2. **Unscrewing the adjusting screw weakens the valve spring and allows the valve to close quickly. The air pressure in cylinder is thus increased.**
3. **Adjust the valves to allow as much air release as possible without causing undue vibration.**
4. **The stop cock is left open when starting the press and closed when running.**

INK FOUNTAIN

The fountain has abutment pieces over the points of the adjusting screws to prevent the screws from wearing the blade. The adjusting screws are not tightly fitted in the threads. The friction felt in turning these adjusting screws is due to the resistance of the blade. The screws should not be crowded.

When adjusting the fountain screws, always work out from the center and towards both ends, thus avoiding "buckles" in the blade.

The best position of the press while setting the fountain is with bed on rear center. This brings the ductor roller into contact with fountain.

In replacing blade after cleaning fountain, make sure the blade is all the way in, with lugs on blade snug against casting.

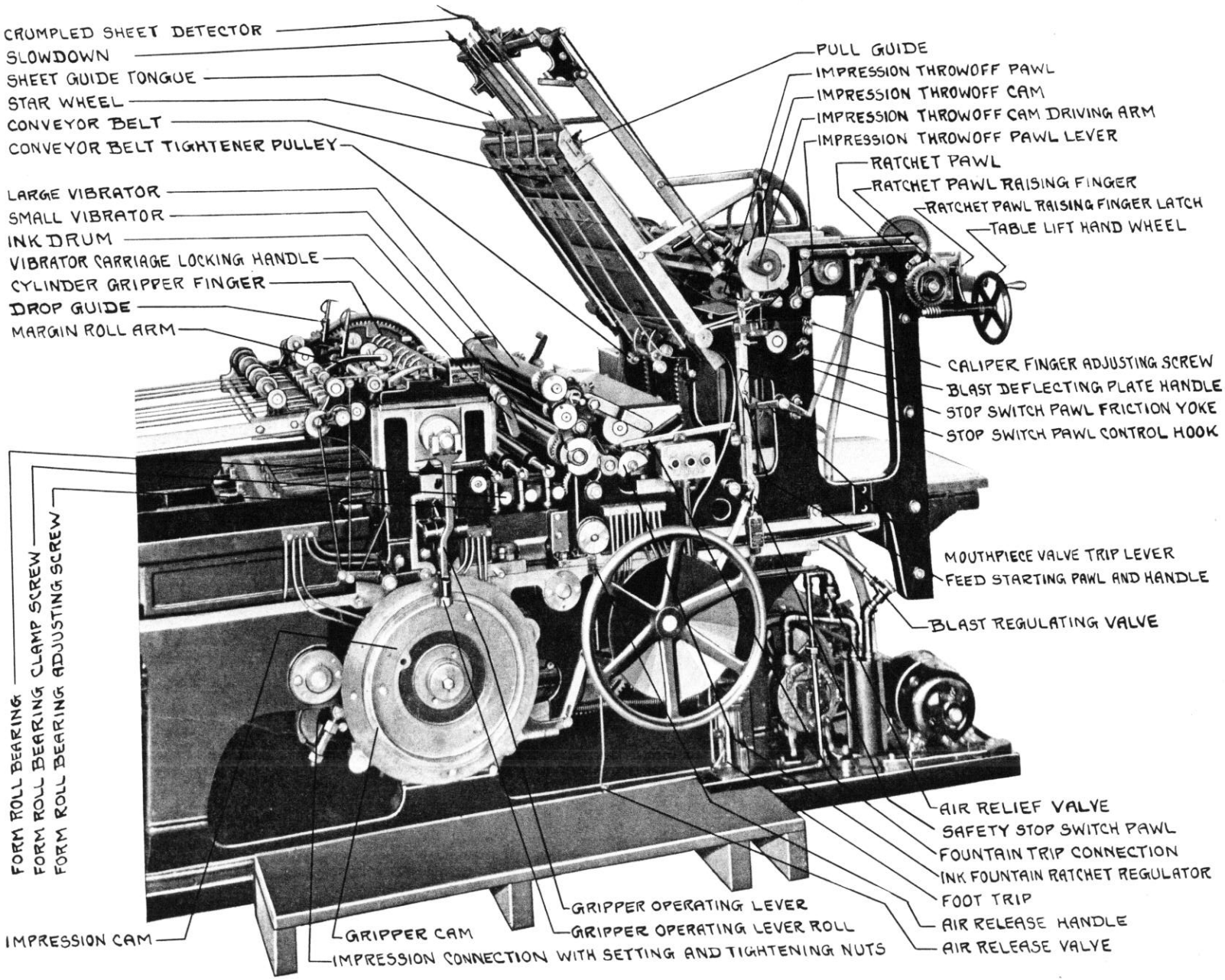
To replace abutment plates, cover fountain back and adjusting screws with a strip of tympan paper. Slide abutment plates over ends of screws and pull paper out.

1. **Don't open a few keys to obtain a large flow of ink and close the keys next to them tightly. This tends to spring the blade on the edge touching the roller.**
2. **Don't fill the fountain to full length with ink when only a small sheet is to be printed, and then proceed to shut off the flow on both ends by tightening the keys. Use instead two fountain dividers, spaced the width of the form, and put the ink between them.**
3. **Don't pound the corners of fountain blade with mallet handles or furniture in making paper balls for dividers.**
4. **Don't expect the fountain to function indefinitely and be easily adjusted without an occasional cleaning. Ink accumulates underneath the blade and dries quickly.**
5. **Don't tighten the adjusting screws with a wrench or pliers. Always remove the blade, which is easily and quickly done, in changing from one color ink to another, and clean all parts thoroughly. This applies particularly when changing from black to colored ink.**

INK FOUNTAIN ROLL RATCHET REGULATOR

On the feeder side of press is the ink fountain roll ratchet regulator. This regulator governs the number of teeth that the pawl will take. When the regulator is moved all the way back, no teeth will be engaged; if moved over one notch, one tooth will be engaged.

On most forms it is desirable to have the regulator set on the third or fourth notch. This allows adjustment of the regulator for two or three notches, more or less, and obviates manipulation of the blade adjusting screws.


CRUMPLED SHEET DETECTOR
SLOWDOWN
SHEET GUIDE TONGUE
STAR WHEEL
CONVEYOR BELT
CONVEYOR BELT TIGHTENER PULLEY
LARGE VIBRATOR
SMALL VIBRATOR
INK DRUM
VIBRATOR CARRIAGE LOCKING HANDLE
CYLINDER GRIPPER FINGER
DROP GUIDE
MARGIN ROLL ARM
FORM ROLL BEARING
FORM ROLL BEARING CLAMP SCREW
FORM ROLL BEARING ADJUSTING SCREW
IMPRESSION CAM
GRIPPER CAM
IMPRESSION CONNECTION WITH SETTING AND TIGHTENING NUTS
GRIPPER OPERATING LEVER
GRIPPER OPERATING LEVER ROLL
PULL GUIDE
IMPRESSION THROWOFF PAWL
IMPRESSION THROWOFF CAM
IMPRESSION THROWOFF CAM DRIVING ARM
IMPRESSION THROWOFF PAWL LEVER
RATCHET PAWL
RATCHET PAWL RAISING FINGER
RATCHET PAWL RAISING FINGER LATCH
TABLE LIFT HAND WHEEL
CALIPER FINGER ADJUSTING SCREW
BLAST DEFLECTING PLATE HANDLE
STOP SWITCH PAWL FRICTION YOKE
STOP SWITCH PAWL CONTROL HOOK
MOUTHPIECE VALVE TRIP LEVER
FEED STARTING PAWL AND HANDLE
BLAST REGULATING VALVE
AIR RELIEF VALVE
SAFETY STOP SWITCH PAWL
FOUNTAIN TRIP CONNECTION
INK FOUNTAIN RATCHET REGULATOR
FOOT TRIP
AIR RELEASE HANDLE
AIR RELEASE VALVE

TO ADJUST FORM ROLLERS

The form rollers are adjusted for height to the form and ink plate by knurled-head screws below the form roller bearings. The ratchets maintain the adjustment.

Place the rollers in the roller bearings, marking them by a notch in the ends of the composition—one notch for No. 1 roller, next to the cylinder; two notches for No. 2 roller, in the center; and three notches for No. 3 distributor-form roller. By following these marks, the rollers can be replaced in the bearings to which they were originally adjusted. This is always desirable, as rollers do not shrink alike.

To set the form rollers, move the press ahead until the ink plate is under the rollers and proceed as follows:

1. **Lower all the bearings on both feeder and gear sides until the rollers rest on the ink plate. Then raise the bearings until the roller core bearings touch the bottom of the bearings. Do not raise the rollers off the ink plate. The ink plate is .010 higher than type high.**
2. **Move the press ahead until the bed is on the delivery end and the ink plate is clear of all the rollers.**
3. **Loosen the bearing clamp screws with pin wrench.**
4. **Lower the vibrator carriage and lock it.**
5. **Start on the feeder side, and set No. 1 and No. 2 rollers lightly against the large vibrator. Set No. 3 roller against the small vibrator. Tighten the feeder side clamp screws by hand. Follow the same procedure on the gear side but tighten gear side clamp screws with the pin wrench. Then loosen and reset the feeder side of rollers, using the pin wrench to tighten the clamp screws. Avoid setting any roller on either side too hard against the vibrators and "forcing" it on the opposite side. When rollers are set too hard against the vibrators, damage will result through friction and overheating and the undue strain will be placed on the gears and driving parts.**
6. **When rollers are removed and replaced, always be sure that bearings are turned in the right direction (toward the vibrator with which they make contact).**

By a simple adjustment of the roller bearings, the third form roller and, when necessary, the second form roller may be raised and used as distributing rollers.

RIDER ROLLERS

Rider rollers are the composition ink distributing rollers which operate in contact with the two steel vibrator rollers, and must be of tougher composition than form rollers. The rider roller bearings can be raised or lowered to obtain proper contact with the vibrators.

VIBRATOR ROLLERS

The steel vibrator rollers are rotated from their bushings on gear side of press. The roller carriage can be raised or lowered while the press is in any position. The vibrators may be raised while the feedboard is down, and the rollers removed. For convenience in washing up, the carriage may be raised its full limit and locked. The press may also be run while the carriage is raised, *provided there are no form rollers in the press, and there is no form on the bed.*

To Regulate or Stop Stroke of Vibrator Rollers: **With composition rollers in position, loosen binder screw at top of vibrator nut locking plate located on gear side vibrator roll arm between the two rolls. Back out adjusting screw (in center of plate) until the desired stroke of vibrators is attained. Then tighten binder screw to prevent adjusting screw from working out of position.**

DUCTOR ROLLER

The normal contact of ductor roller with ink fountain roll and ink drum is maintained by opposing springs on the ductor roll arms.

When impression is missed, either during double rolling or when press is tripped, contact of ductor roll with fountain roll is stopped and the taking of ink from the fountain roll is suspended, through the locking of the ductor roll arm by the ink fountain trip finger.

The ductor roll trip finger is controlled by the impression lever trip through a connection rod on feeder side of fountain.

To allow ductor roll to take ink at each complete turn of press, lift connection rod off pin in trip lever and rest it on lever.

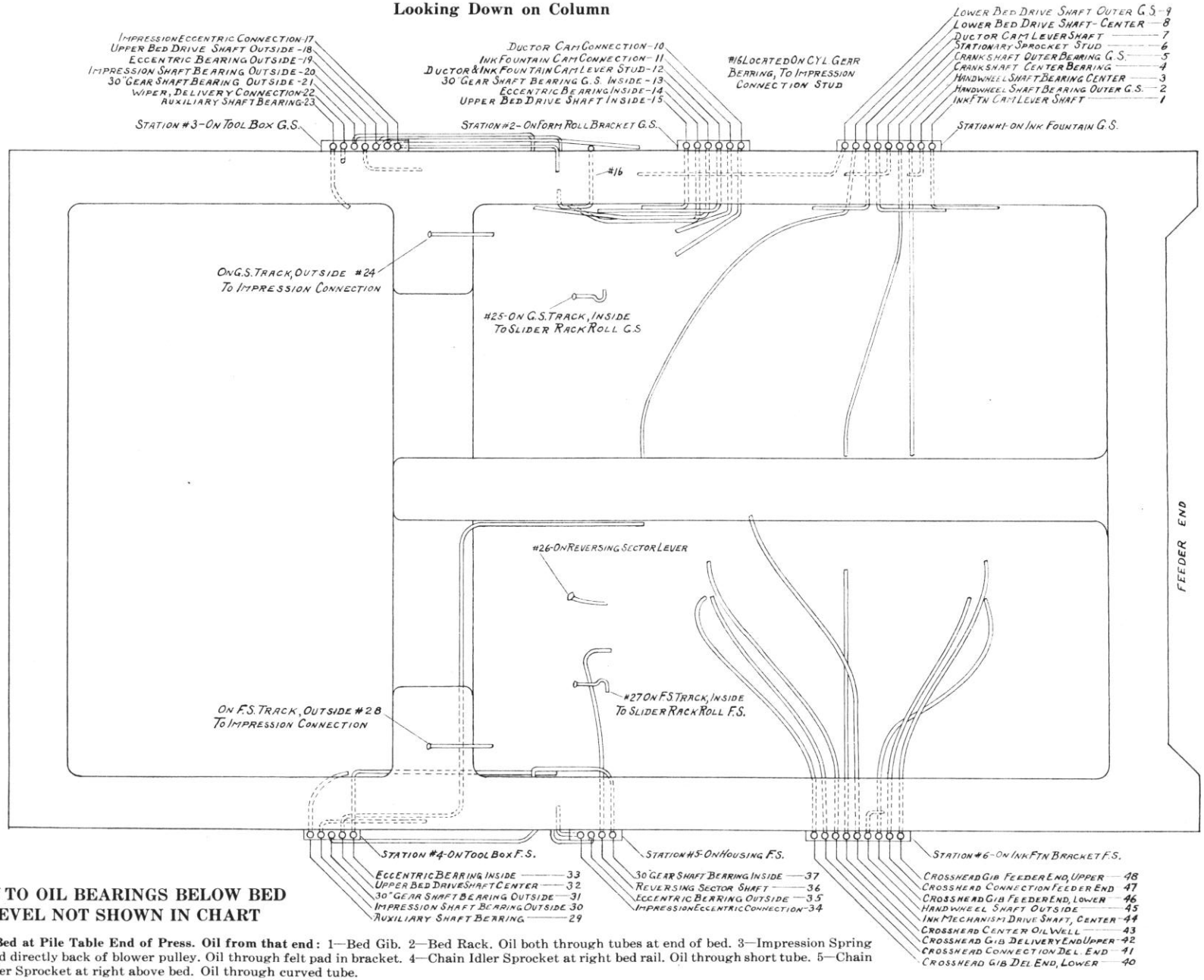
ADJUSTMENT AND CARE OF COMPOSITION ROLLERS

The adjustment of rollers is one of the details in the production of good presswork. Many troubles are due to the improper adjustment of form, rider or ductor rollers. *The rollers should be set to touch the form and vibrators with as little contact as possible.* The setting of the rollers should be examined every morning.

New rollers should be set to make the lightest possible contact with form and vibrators and should be watched carefully and examined frequently, as they are more likely to heat up while running than older, longer seasoned ones.

OILING CHART FOR BEARINGS INSIDE No. 1 KELLY PRESS COLUMN

Looking Down on Column



HOW TO OIL BEARINGS BELOW BED LEVEL NOT SHOWN IN CHART

With Bed at Pile Table End of Press. Oil from that end: 1—Bed Gib. 2—Bed Rack. Oil both through tubes at end of bed. 3—Impression Spring Rod directly back of blower pulley. Oil through felt pad in bracket. 4—Chain Idler Sprocket at right bed rail. Oil through short tube. 5—Chain Idler Sprocket at right above bed. Oil through curved tube.

Oil the following from Delivery End without turning press: 6—Bed Rack. Oil through tube at end of bed. 7—Bed Gib. Oil through felt pad in large hole on ledge at right of center chase clamp. 8—Impression Turnbuckle Studs on gear side and feeder side inside column. Oil hole in each turnbuckle located at each end of lower shaft. 9—Impression Spring Rod at lower right side. Oil through hole in spring rod head. 10—Oil Ink Distributing Drum through spring cap oil hole at both gear and feeder sides of drum. Turn press to expose at top feeder side hole on hub of ink drum. 11—Oil Delivery Driving Gear at gear side of press driving from cylinder gear. Oil hole in hub of gear below delivery gear guard. Turn press until spring cap oil hole is exposed at top.

The diameter of all Kelly Automatic Press No. 1 composition rollers is 2¼ inches (cast in 2⁵⁄₁₆ inch moulds). Rider and ductor rollers are interchangeable. Due to high speed of press, the rider rollers should be cast of tough composition. Patent non-melting rollers are recommended.

Order rollers about two weeks before they are to be used. This will allow time for their proper seasoning in your pressroom. About ten days is sufficient time for seasoning. When seasoning a roller, expose the composition to the air only when the room is dry and at a temperature of from 70° to 80°. Smear machine oil on the face and the ends in damp weather and at night. Properly seasoned rollers when stored should always be coated with machine oil. This will keep out dampness, so fatal to the "life" and "suction" of composition. Rollers should not be kept in an air-tight cabinet. A little ventilation is better.

The best way to wash up at night is to distribute a little machine oil on the rollers, running the press slowly. In the morning the rollers may be easily cleaned by rubbing lightly with a dry rag. Next to machine oil, kerosene oil is best. If rollers are washed up at night, take them out of press and wash them with kerosene, then cover with machine oil. Gasoline should never be used, as it dries and hardens the composition.

The use of water, ether, alum or other substances on poor rollers may afford temporary relief but at best are only makeshifts and time consumers. Good new rollers are cheapest in the long run.

Ink should never be allowed to dry on the rollers, as it cannot be removed without harming the face of the rollers. Some inks contain acids, astringents, etc., which are detrimental to rollers. Such inks should never be left on the rollers longer than is absolutely necessary.

No. 1 roller (next to the cylinder) is the last to ink the form, so it is good practice to put the best roller in this position. When running a small form, occasionally put a few drops of machine oil on the ends of rider roller outside the form line. This prevents the ink from accumulating and drying on the ends of the rollers, and helps to prevent breaking.

Rollers set too low or not in contact with the vibrators may jump or slide on the form and cause streaks, besides wearing the rollers. Sockets turned wrong may also cause this.

Any change in temperature will necessitate resetting the rollers.

Do not allow the press to stand more than a few minutes without releasing the rollers by raising the vibrators and stopping bed of press on front center.

In warm weather, a roller fan will aid materially to keep rollers cool. Use the fan as soon as the press is started. Do not wait until the rollers become soft.

If you experience roller trouble not covered in the foregoing, consult your roller maker. Give him all details possible; tell him whether your press is located in a basement, near heating apparatus, the variation in temperature of your pressroom, etc.

PUTTING FORM ON PRESS

The bed of press must be kept clean and free from dirt and rust at all times. The form is placed on the bed of the No. 1 Kelly Press when bed is on delivery end.

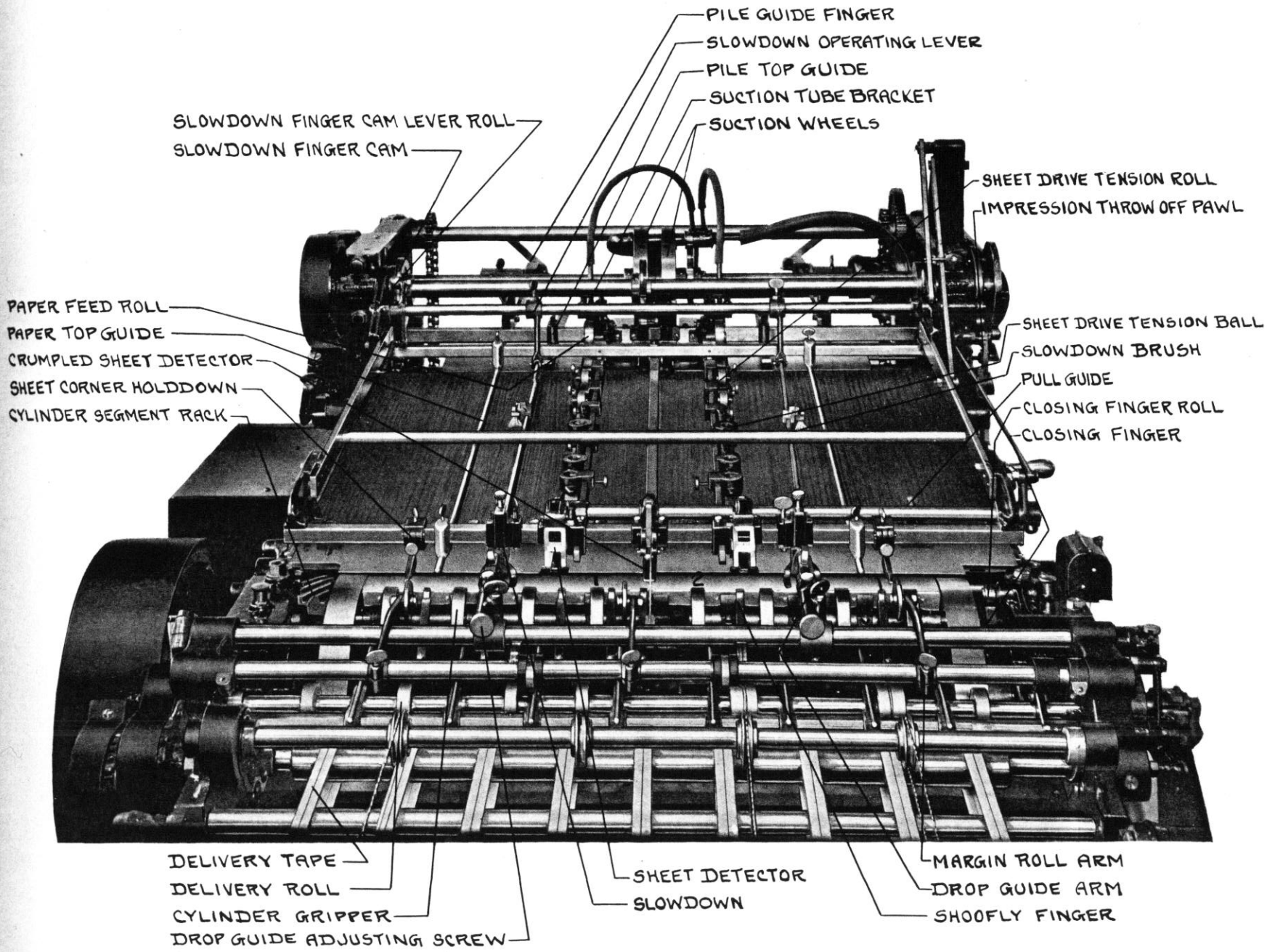
The dead line, scribed across the head of bed 2⅛ inches from ink plate, guides the operator in gauging forms on the bed. Type and plates must never be brought closer to the ink plate than this line. A dead line gauge for positioning forms is furnished for the convenience of the pressman.

Before placing form on the bed, wipe off the back of it carefully. Avoid dropping the edge or corners of chase on the bed, as this damages the surface.

The form should be gauged accurately for margin and position on the sheet, allowing at least one pica for gripper bite. More or less gripper bite can be obtained by adjustment of the drop guides. Wood furniture, leads, or strips of card should always be placed between the chase and ink plate.

A duplicate dead line gauge should be placed in the hands of the stoneman for positioning form in chase when locking up.

1. **After placing form on the bed, first loosen all the quoins. Make sure that the chase lies flat on the bed, to prevent springing of the form.**
2. **Use wood furniture between the chase and clamps, allowing this filler to overhang the edge of bed not more than two picas. A greater overhang of furniture will tend to spring the clamp screws when tightened.**
3. **Tighten the chase clamps. Lock all the quoins in form with a slight pressure and plane the form evenly.**


PILE GUIDE FINGER
SLOWDOWN OPERATING LEVER
PILE TOP GUIDE
SUCTION TUBE BRACKET
SUCTION WHEELS
SLOWDOWN FINGER CAM LEVER ROLL
SLOWDOWN FINGER CAM
SHEET DRIVE TENSION ROLL
IMPRESSION THROW OFF PAWL
PAPER FEED ROLL
PAPER TOP GUIDE
CRUMPLED SHEET DETECTOR
SHEET CORNER HOLDDOWN
CYLINDER SEGMENT RACK
SHEET DRIVE TENSION BALL
SLOWDOWN BRUSH
PULL GUIDE
CLOSING FINGER ROLL
CLOSING FINGER
DELIVERY TAPE
DELIVERY ROLL
CYLINDER GRIPPER
DROP GUIDE ADJUSTING SCREW
SHEET DETECTOR
SLOWDOWN
MARGIN ROLL ARM
DROP GUIDE ARM
SHOOFLY FINGER

4. **Tighten all quoins in the form securely and tighten chase clamps. It is not usually necessary to side-lock the chase between bearers except on close register forms.**
5. **To side-lock the chase: After the form has been placed on the bed and quoins loosened, fill in space between chase and bearers with leads or reglets. When quoins have been tightened this filler will bind and side-lock the chase.**

All forms, large or small, should be so locked in the chase that the sheet to be printed may be centered on the feedboard.

THE CYLINDER BRUSH

The cylinder brush can be removed by unscrewing knurled clamp screws. When replacing be sure that brush is all the way in and that these screws are set up tightly. The brush is subject to adjustment to compensate for wear. This adjustment is made by screws at ends of brush bar. *Do not adjust brush any closer than is required to hold sheet to packing.* Brush may be cleaned with gasoline or benzine.

FOUNDATION PACKING FOR IMPRESSION CYLINDER

The depth of the impression surface of the cylinder below the bearers is .057. The width of the cylinder between bearers is 28¾ in. We recommend the use of an all-manila packing with the exception of two or three sheets of super for make-ready purposes.

The first dressing of the cylinder, or foundation packing, should consist of four manila hangers and one drawsheet of about .006 in thickness. This foundation packing should remain permanently on the cylinder and need only be changed occasionally.

The top packing should consist of three manila hangers with a top draw or tympan sheet. Before reeling the tympan sheet on the packing winding shaft, place two sheets of super beneath the tympan sheet. If the manila hangers and drawsheets are of the proper thickness (.006), and with the addition of two sheets of super (.003), the cylinder will be packed slightly above the surface of the cylinder bearers.

It is not good practice at any time to overpack the cylinder; that is, to have the packing above the bearers more than .004 at the outside. In order to secure the best results, it is absolutely necessary that the cylinder be packed properly. An overpacked or underpacked cylinder will cause wear on the form, and this must be avoided in order to secure the proper results in presswork.

Forms made up entirely of new type are type-high (.918). In mixed forms (forms which are composed of both type and plates) the plates will often be found under or over type-high. When this condition exists it is absolutely necessary that the pressman bring the plates to their proper height.

In preparing the manila hangers and drawsheets for the packing, care must be taken to have the fold or "hem" as nearly straight as possible. If the folds are not straight the packing will bulge and buckle on the gripper edge of the cylinder and will often cause slurs and loss of register.

The manila hangers and drawsheets should be slightly less than 28¾ inches in width and must not overlap the cylinder bearers at any point. In placing the hangers over the edge of the impression cylinder, put them on one at a time and at the edge of the cylinder paste each one securely to the one below it. The first drawsheet should be reeled on the packing winding shaft next to the back edge of cylinder. The top, or tympan sheet, should always be reeled on the second packing winding shaft.

THE GRIPPER MOVEMENT

The operator should study carefully the following description and master the principle of the movement.

The No. 1 Kelly Press gripper movement differs materially from the common form of T-head or "tumbler" movement. The latter movement depends upon springs to hold the bite, while the No. 1 Kelly Press method employs a closing finger, cam and lever to positively close and retain the bite of the grippers.

The final closing movement of the grippers is transferred momentarily to the finger attached to end of gripper shaft. Before this finger has left the roll the cam regains control and maintains it during the entire printing cycle.

During the interval between the transfer of control of grippers from gripper cam to final closing finger, the gripper movement is controlled by a coil spring inside the gap at the gear side of cylinder. This spring is attached to a lever oper-

ating against another lever on the gripper shaft. It is important that this spring always be in place and if broken or if it loses tension it should be replaced at once. *Examine frequently.*

SETTING THE GRIPPERS

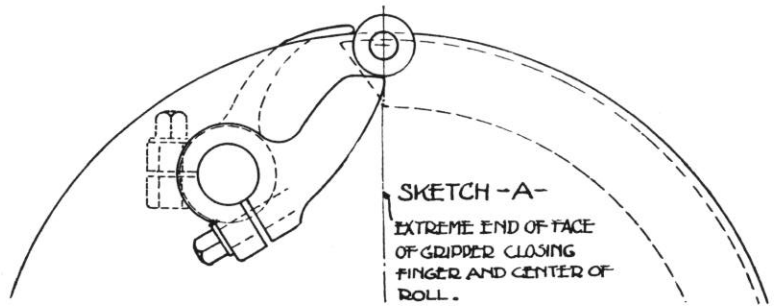
1. Repack cylinder. Make-ready sheets should come well up to the edge of cylinder so that grippers may grip the sheet with their full biting surface.
2. Remove shooflies.
3. Bring cylinder to point where sheet is taken.
4. Move cylinder ahead *until gripper closing finger is free of closing finger roll.*
5. Loosen all the grippers. This releases the tension and allows the gripper shaft to find its neutral position.
6. Raise No. 1 gripper off packing and tighten; grasp this gripper with the fingers of left hand and draw it away from packing. (See page 11.) Hold in this position while pressing firmly with the thumb of left hand on gripper No. 2. Tighten gripper No. 2, then loosen gripper No. 1 and tighten it on packing. This should take up the backlash of gripper operating gears.
7. Back press until grippers open slightly. Insert 2-point lead under grippers No. 1 and No. 2 and close down on same, moving press forward to where *finger is clear of closing finger roll.* In this position set other grippers down firmly on packing in numerical order.
8. Loosen grippers No. 1 and No. 2, take out lead and tighten these grippers on packing. When finally setting gripper No. 1 do not bring it too close to shaft center bearing.
9. Test each gripper by closing all the grippers, each on a short piece of the stock to be run. The pull should be uniform. If more tension is required on all grippers add another manila bite to all.

When moving grippers care must be taken that they do not strike the guides, guide tongues, stripper fingers, sheet detectors, or parts of the form that project over the dead line. Do not position grippers too close to guide tongues.

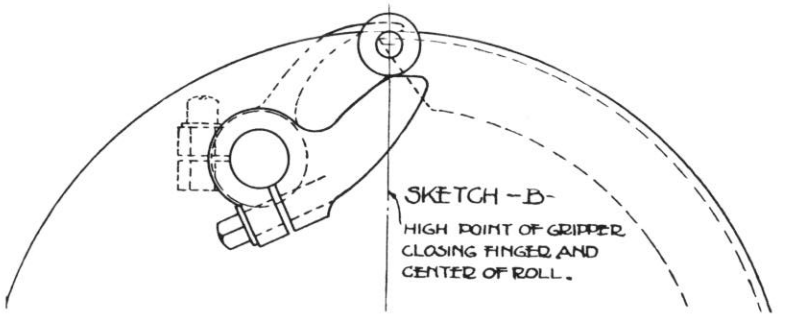
ADJUSTING THE GRIPPER CLOSING FINGER

The function of the gripper closing finger is to do the final closing of grippers and to hold them momentarily until the control is transferred to the gripper cam. The finger should take and hold the sheet during this interval with the same "bite" exerted by the grippers when controlled by cam.

1. Trip off impression.
2. Move press ahead until grippers are entirely open on the delivery cycle. In this position the finger binder screw can be reached.
3. Loosen finger binder screw with T-wrench so that it can be moved by exerting a little force.
4. Back press until the extreme end of bearing surface of gripper closing finger touches exactly the center of gripper closing finger roll. Push finger firmly up to roll with screw driver. Turn press forward until grippers are open and tighten finger binder screw. Care should be taken not to move the finger out of position while tightening. (See Sketch A.)



5. To test, turn the press until center of finger is under the roll. Here the roll should be tight. If too low, the roll can be turned.
6. Feed a sheet to the guides and turn press until high part of finger is under the center of the closing finger roll. (See Sketch B.) At this point the sheet should be firmly held by grippers, and the gripper cam roll free of cam. Roll should not engage cam until the center of the finger has reached center of the closing finger roll.



SHOOFLY FINGERS

The shoofly fingers are operated from the gear side of cylinder. The fingers rest on the cylinder packing and lift to raise the sheet from the cylinder to the stripper fingers just as cylinder leaves impression. In setting the fingers locate each one near a gripper but not too close. If the fingers are set too close to the grippers they cannot be easily removed from the press, and will also cause "buckles" in the sheet. *The shoofly fingers open only when cylinder is leaving bearers after making impression.* They will not lift when cylinder is off impression.

STRIPPER FINGERS

Set the stripper fingers close to each gripper and shoofly finger so that when sheet is raised by the shoofly fingers at the point of delivery it will be carried forward on the stripper fingers to the tapes. Do not move the fingers unless to clear the side edge of sheet, and move only when the cylinder is about to deliver the sheet. Then grippers and shoofly fingers are visible, and can be placed without interfering with each other. These fingers are adjusted to clear the packing about 1/32 of an inch and no lower adjustment is necessary.

THE TONGUES

The drop guide tongues which support the sheet should be located not nearer together than one-fourth of the total width of sheet from each end (although they are frequently left in the same position for job after job). They should clear grippers and shoofly fingers. If too close to either, a wrinkle may result. Tongues should be about two manilas above the full packing. If they are too low, they will scratch printed sheet and retard its delivery; if too high, they may cause a buckle and slur.

The feedboard extension plate should line with top of cylinder bearers when cylinder is up. To adjust for height, raise or lower feedboard by adjusting the feedboard rest screws. Tighten the set-screws firmly after adjustment.

SETTING THE DROP GUIDES

1. **Move the cylinder until the tongues are over the open space in cylinder.**
2. **Loosen the clamp screws on both drop guides and bring to position over tongues.**
3. **Now lower drop guides so that each will just touch the tongues *lightly*. The tongues are made of thin metal, and if the drop guides rest too heavily on them, the tongues will be depressed when the guides are down, and will spring up when the guides are raised, materially affecting the register.**

TIMING THE RISE OF DROP GUIDES

The guides must be adjusted to rise and clear the sheet just as the grippers have taken it and without tearing or nicking the edge. If the rise is too fast, the sheet will have a tendency to drive forward before the grippers have closed securely on it.

1. **An adjusting screw is located on the feeder side of press, and is held in its fixed position by a binding nut. Turn the press forward until the grippers are about 1/16 of an inch from closing on the packing.**
2. **Loosen the binding nut on the adjusting screw, and turn the screw until the guides are about to rise from the tongues.**
3. **Hold the screw firmly, and tighten the binding nut.**
4. **Next place a sheet down to the drop guides, and turn the press ahead until the grippers have taken it. If the drop guides are timed too closely, the edge of the sheet will be nicked or torn, and the guides must be adjusted to rise slightly faster.**

Caution—*Sheets can also be nicked by too much gripper bite, too heavy a drive, and curled stock.*

EXTENSION DELIVERY

The Extension Delivery is designed to hold a pile of paper 25 inches high. Two trucks and one handle are included as part of the equipment. The trucks are equipped with casters.

If, through accident, the delivery carriage is thrown out of time, loosen cap screws and bring delivery carriage operating lever to where lines scribed on hub of lever and end of shaft align. Should re-timing be necessary proceed as follows:

1. **Move press until bed is on delivery end.**
2. **Loosen cap screws on delivery carriage operating lever.**
3. **Move delivery carriage forward until the ends of carriage brackets align with ends of carriage tracks or gibs. In this position the delivery carriage operating lever should be at extreme forward throw. Tighten cap screws securely.**

THE KELLY AUTOMATIC FEEDER

The feeder is an integral part of the Kelly Automatic Press No. 1 unit and is designed to feed all grades of stock, from onionskin and folio to 3- and 4-ply cardboard.

The feeder mechanism comprises the blast and suction parts, paper lift table, height gauge, suction wheels and connections.

The conveyor mechanism comprises the feedboard, conveyor belts, tension rollers, sheet detectors and swinging frames.

When the conveyor is raised the feedboard can be lifted and latched, giving easy access to the cylinder for make-ready purposes and also to the ink fountain and rollers.

MAKE-READY BOARD

The make-ready board covers rollers and ink fountain when changing packing and hanging overlays. This board is hooked on cylinder rear sheet band shaft and rests on ink fountain cheek pieces.

PAPER LIFT TABLE

The raising of the paper lift table when press is in operation is automatic regardless of the thickness or weight of the stock, and the rise is controlled by the pile height gauge.

To lower the table raise the two ratchet feed pawls together by lifting the feed pawl raising finger. Release ratchet feed pawls to raise finger by turning crank wheel clockwise (left to right). Turning the crank wheel anti-clockwise moves the table down. The paper lift table can be lowered almost to the top of the press motor, and when fully loaded holds a pile of stock approximately 21 inches high.

To raise table, release the feed pawl raising finger and ratchet feed pawls and turn crank wheel clockwise.

PILE HEIGHT GAUGE

The height gauge is the regulator for the automatic raising of the paper lift table and keeps the pile of stock to the level at which it is set. As the top sheet leaves the pile of stock the height gauge drops a distance equal to the thickness of the sheet. It is, therefore, self-compensating for different thicknesses of paper. As the sheets are fed continuously from the pile the height gauge drops lower and lower, slightly turning the height gauge shaft. When it has dropped to the set point, the feed trip lever is swung off the lever latch point. This allows the feed ratchet pawls to operate and lifts the pile high enough to raise the pile height gauge and again latch to the feed trip lever.

THE BLOWER

The blower is of the rotary type and creates both suction and blast. It is rated to run at a speed of about 400 r.p.m. and must run at approximately this speed to give the proper amount of blast and suction. *Do not run the blower motor with belt too tight.*

AIR RECEIVER TANK

The air receiver tank is attached to the blower and serves to prevent oil from entering the air blast. A *small quantity* of cotton waste is placed in the bottom of the receiver tank and is held in position by a star. Occasionally this waste becomes saturated with oil and should be removed and replaced with clean. About one inch of waste should be sufficient.

SUCTION REGULATING VALVE

This valve is on the end of suction pipe back of the suction wheels. Regulate the suction required for different stocks by turning knurled top.

The full amount of suction is required only in feeding heavy stock or full-sized sheets. Except in feeding such stock the suction valve should be left slightly open to relieve the strain on the blower motor.

BLAST REGULATING VALVE

The amount of blast is regulated by turning the knurled top. The valve should be closed to give the maximum amount of air blast for heavy stock and opened for air release in feeding lightweight paper.

The blast pipe is connected to a rubber hose and held in position by a clamp and thumbscrew. The blast pipe may be raised or lowered. In raising the blast pipe be sure that the deflecting plate does not interfere with the caliper.

BLAST PIPE MOUTHPIECE DEFLECTING PLATE

The blast pipe mouthpiece deflecting plate is adjustable to deflect the blast to the various angles required for feeding different grades of stock. The pile must be at its proper height, level with tops of the inner pile front guide bars before the mouthpiece is adjusted. The correct setting for blast is to have the top three or four sheets floating on a film of air. When the correct position is found, secure the blast deflecting plate handle in position by the clamp screw.

1. **Open suction pipe mouthpiece valve slightly.**
2. **Start blower.**
3. **Move rod handle up as far as slot will permit. In this position the blast is *low*. If stock is flat, a low blast will lift too many sheets and give poor separation.**
4. **Gradually lower handle until top sheets curve away or blow down. The blast is now *too high*.**
5. **Raise handle gradually until only a few top sheets are lifted. *The ideal separation occurs when the top sheet has a film of air on which to float.***
6. **Tighten thumbscrew.**
7. **If too many sheets are lifted when the handle is at the extreme lower position, lower the pile and height gauge about ¼ inch.**
8. **If top sheets blow down when handle is set at its highest point, raise height gauge and pile about ¼ inch.**

With flat-lying papers very little change of adjustment of the blast will be required even for a considerable variation in weight. It is well to remember, therefore, that before attempting to run curled stock every effort should be made to favor this condition. Straighten the curls when putting on lifts. Block up the low places with wedges. A low setting of the height gauge, an improper blast, too tight caliper, or too little suction, may occasion a late start of the sheet. Look to adjustments of these parts should suction wheels not start the sheet in time to reach the detectors before they lock.

Keep the top of the pile as nearly flat as possible so that the blast will go straight through to the back of the sheet.

SUCTION WHEELS

The purpose of the suction wheels is to lift the top sheet of the pile and carry it forward to the paper feed rolls. If the air blast and suction tubes are properly regulated the top sheet on the pile will be lifted against the suction wheels and is started forward by the first holes of the wheels. The wheels and the stripper plate should be cleaned regularly to prevent marking the stock.

SUCTION TUBES

The two suction tubes are auxiliaries to the suction wheels and assist greatly in the successful feeding of heavy cardboards and wavy and curly stock. They need no adjustment and can be made inoperative by inserting the small pin in hole in tube brackets.

CALIPER

The caliper is located in front of the suction wheel and above the blast pipe mouthpiece. Its function is to prevent more than one sheet at a time from feeding in. The adjusting screw is located above the blast deflecting plate handle. To adjust:

1. **Loosen small knurled head screw that binds adjusting screw, and open caliper with adjusting screw.**
2. **Place two thicknesses of the stock to be fed under caliper and close caliper on the sheets. Allow just enough pressure to make sure that one sheet has ample freedom, and that two sheets will choke. When running very light, flimsy paper, if caliper retards or crumples the sheet, open it slightly.**

If the caliper occasionally makes a V-shaped tear in the sheets, it is because there is grit or dirt in the stock or the caliper is set too close. Open the caliper slightly. The paper and dirt remaining in the caliper after such a tear should be cleaned out with a piece of firm stock.

PAPER FEED ROLLS

These rolls control and forward the sheet to the sheet drive rolls after it has been separated and advanced by the suction wheels. Keep the spring tension as light as possible.

SHEET DRIVE ROLLS

Sheet drive rolls should not be set too far forward on sheet or they will retard the sheet when being drawn to side register plate.

Do not position rolls at tail of sheet unless necessary to prevent heavy stock from rebounding.

SHEET DRIVE BALLS

Steel balls of different sizes are provided to control the sheet after it has passed beyond the tension rolls and onto the conveyor belts. The balls may rest on any part of the sheet. For heavy stock a combination of different sizes of balls and rolls may be used. For light stock the small balls are preferable.

If the sheet buckles at the drop guides, it indicates that the drive is excessive. To correct this, move the drive back to extreme tail end of sheet or use the smallest balls. When the sheet rebounds from the drop guides, more tension at tail of sheet must be used. Keep the sheet drive ball holders free from paper dust and dirt and note that they are not resting on the conveyor belts.

SLOW-DOWN BRUSHES

Position slow-down brushes on tail of sheet to assist in bringing the sheet to guides and prevent rebounding.

1. **The slow-downs have two movements.**
2. **The slow-down brushes must be set to rest against tail of sheet *after the second or last movement,* which is just before grippers close.**

SHEET SLOW-DOWNS

The sheet slow-down fingers slow down the sheet and on their forward movement move it gently to the drop guides. Must always be positioned over feedboard tongues.

For sheets of minimum size, slow-downs are moved away from the sheet entirely, and the sheet corner hold-downs attached to the front of conveyor, the fingers extending through the drop guide plates.

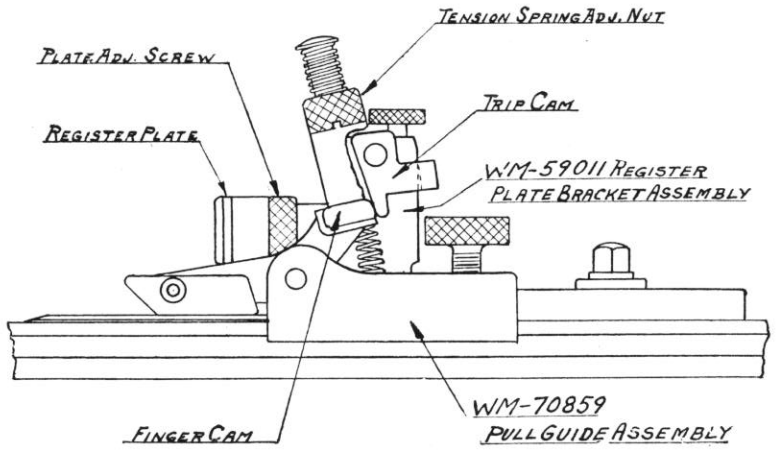
TO ADJUST SLOW-DOWNS

1. **Turn press ahead until slow-down cam lever roll is on high part of slow-down cam and slow-down fingers are at their full reverse movement.**
2. **Lower slow-down fingers by means of adjusting screws until they just touch drop guide tongues. A small strip of paper used as a gauge between finger and tongue will give a finer adjustment.**
3. **After setting be sure that end of finger does not interfere with drop guide plate.**

THE PULL GUIDE AND SIDE REGISTER PLATE

The pull guide is in two parts—the pull guide finger assembly and the register plate bracket—and can be used on either gear or feeder sides of presses.

The pull guide register plate bracket is attached to the stationary register plate bar on feedboard by square head screw. The sheet is drawn by the pull guide finger against the register plate, which is the side guide.



TO SET SIDE REGISTER PLATE:

1. **After sheet has been positioned, move side register plate bracket to edge of sheet and set the screw up firmly.**
2. **By turning knurled adjusting screw the register plate is subject to very fine adjustment.**
3. **When changing guide from one side to the other, turn the register plate.**
4. **Bring the sheet down the feedboard about ½ inch from the side register plate, the distance depending on weight and character of stock. Onionskin or other thin papers work best at the full ½ inch distance.**

TO SET PULL GUIDE FINGER:

5. **After bringing the side register plate to position and *with mounting bar at full inward stroke* set the pull guide finger.**

6. **Push the pull guide finger cam ahead of the trip cam. Hold the trip cam against the register plate bracket. Bring the pull guide finger back until the finger cam is flush against the trip cam. (See Diagram.)**
7. **Secure pull guide finger bracket to mounting bar with knurled head screw.**

TENSION ON PULL GUIDE FINGER

8. **Regulate tension on pull guide finger to weights and character of stock. This adjustment is made through the tension spring adjusting nut. Tension should insure stock being drawn to the register plate. If tension is too great the sheet will buckle against the register plate.**
9. **Position wing guard on side register bracket.**

BUNTER BLOCK

The use of the bunter block is recommended when work is of such a character that the edges of stock cannot be jogged evenly.

Set bunter block to bring sheet to within ½ inch of register plate.

SHEET DETECTORS

The sheet detectors serve to detect a sheet out of square or out of time. When tripped by a sheet the detectors swing free of the sheet detector latch bar and rise to allow the sheet to pass. When the detectors are not tripped they hook under the bar and block the sheet detector cam roll from following the cam. The suction is then interrupted. Failure of the detectors to rise also stops the movement of the impression trip connection. The impression throw-off pawl then becomes operative and the press is tripped. The contact surfaces of the detectors and latch bar should be kept clean.

FEED-STARTING HANDLE

Lifting this handle from the mouthpiece trip lever releases the stop devices, permits the suction to operate, and starts the paper feeding. To avoid starting the first sheet out of time, *do not lift the handle* until holes in suction wheels are visible at top. Then lift handle quickly and hold it off until first sheet has reached the drop guides. Release handle and the feeding will continue automatically.

DOUBLE-ROLLING MECHANISM

This feature will be found useful on solid forms requiring extra heavy ink covering and for slip-sheeting or interleaving. No adjustment is necessary to double roll.

1. **With press in operation hold feed starting handle off lever until the first sheet is nearly through the feed rolls, then release handle quickly. If handle is held off until second sheet starts through the rolls, the press will single roll.**
2. **Swing stop switch control hook up and over impression throw-off rod bracket when double rolling.**

AUTOMATIC SAFETY STOP SWITCH

The function of this switch is to shut off the electric current to the motor when the impression throw-off pawl operates. The switch pawl must be released before starting the motor and should be *returned to its operating position as soon as the first sheet reaches the drop guides. The safety stop switch also operates automatically when the press is double rolling.*

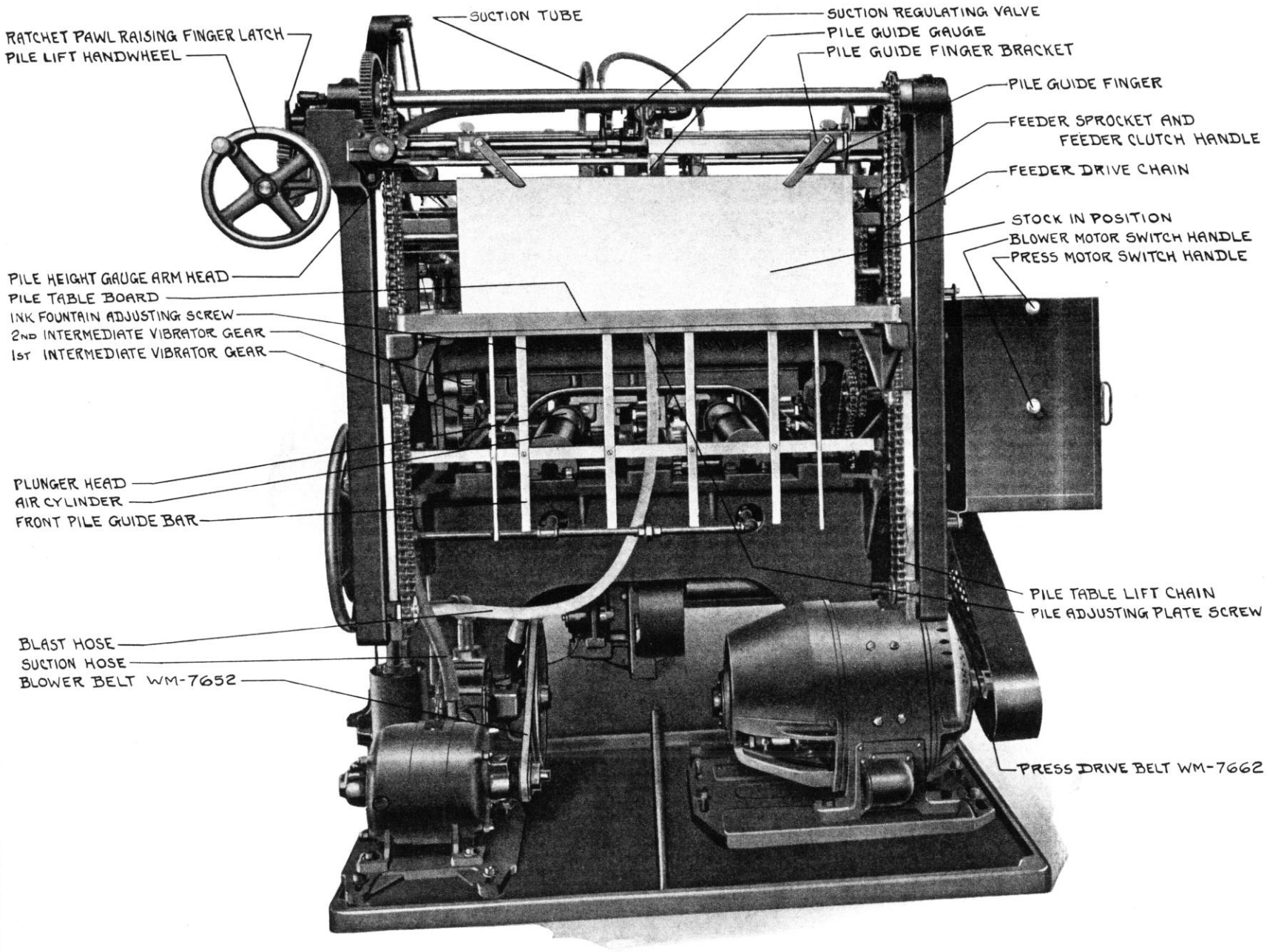
CRUMPLED SHEET DETECTOR

The crumpled sheet detector is mounted on sheet detector latch bar. If a sheet does not deliver properly it will catch and crumple and raise the detector. As the detector lifts, the latch hook engages the detector lever, locking the impression trip connection and stopping the press. *This may require a full revolution of the cylinder or even more if sheet is caught on one end.* The detector should be set to just clear the sheets as they pass under it.

The crumpled sheet detector lever is secured by a clamp screw to the detector lever shaft. No adjustment is required. Should it become displaced, set tooth of lever 1/16 inch below the latch.

TIMING FEEDER WITH PRESS

1. **To disconnect feeder, bring press to position where grippers just close and impression throw-off cam driving arm on feeder is horizontal and pointing toward delivery end. Then pull clutch pin handle. (This position of cam driving arm is shown in illustration on page 7.) *Never disconnect or reconnect feeder with press unless they are in above position.***


RATCHET PAWL RAISING FINGER LATCH
PILE LIFT HANDWHEEL
SUCTION TUBE
SUCTION REGULATING VALVE
PILE GUIDE GAUGE
PILE GUIDE FINGER BRACKET
PILE GUIDE FINGER
FEEDER SPROCKET AND FEEDER CLUTCH HANDLE
FEEDER DRIVE CHAIN
STOCK IN POSITION
BLOWER MOTOR SWITCH HANDLE
PRESS MOTOR SWITCH HANDLE
PILE HEIGHT GAUGE ARM HEAD
PILE TABLE BOARD
INK FOUNTAIN ADJUSTING SCREW
2ND INTERMEDIATE VIBRATOR GEAR
1ST INTERMEDIATE VIBRATOR GEAR
PLUNGER HEAD
AIR CYLINDER
FRONT PILE GUIDE BAR
PILE TABLE LIFT CHAIN
PILE ADJUSTING PLATE SCREW
BLAST HOSE
SUCTION HOSE
BLOWER BELT WM-7652
PRESS DRIVE BELT WM-7662

2. After pulling pin, turn impression throw-off cam by hand to left as far as it will go, when control of impression will be transferred to foot trip.
3. To connect feeder with press, turn press to same position as when disconnecting, with grippers just closed and impression throw-off cam driving arm horizontal and pointing toward delivery. Insert clutch pin and release foot trip.

SETTING THE PILE FOR HEIGHT

1. The height of pile is gauged from under side of suction wheels and varies with the condition of stock.
2. The top of pile should be from 3/8 inch to 5/8 inch below the under side of suction wheels.
3. The average working level of pile may be determined by means of the two center pile guide bars, which are slightly higher than the two outside bars. Bring pile to level with top of these bars. The sheet, as it leaves pile, must be carried over the top to these bars.
4. It must be remembered that it is the front of the pile that is to be regulated for height.
5. The pile adjusting plate in front of pile table board can be raised or lowered by the adjusting screw under board. The wooden wedges serve to level back and sides of pile.
6. Raising the gauge brings the level of the pile nearer to the suction wheels, and lowering the gauge increases the distance of the pile from the suction wheels.
7. Endeavor to work the pile at a medium setting to allow for irregularities in the stock.
8. A separation of sheets is necessary to permit of continuous feeding. The top sheets on the pile should be fluttering.
9. Set the height gauge about 1/4 inch from the back edge of pile. When setting the height gauge allow it to come in contact with the top of pile and tighten the clamp screw.
10. In moving the height gauge arm do not cramp it by pressing on the outer end. *Always position inside pile guide fingers.*

Also see instructions under "Blast Pipe Mouthpiece Deflecting Plate."

TO SET STOCK IN POSITION ON PAPER LIFT TABLE

Crease a sheet of job at center. On the lower guide rod support bar are scribed three lines. If side guide has been set on gear side, place sheet with center crease on line to left of zero, or vice versa. If sheet is located centrally on the feedboard as grippers take it, this setting will bring sheets down about 1/2 inch away from side guide.

1. Set pile guide bars to sides of sheet, allowing about 1/8 inch freedom.
2. Set caliper.
3. Load table, loosening up and "winding" each lift. Smooth out each lift and get stock to lie as flat as possible.
4. Turn handle and raise front of pile to top of inner pile front guide bars.
5. Do not force stock against front pile bars.
6. Slide pile guide fingers against corners of pile.
7. Move height gauge to position about 1/4 inch from tail of sheet, noting that arm does not rub against guide fingers. Firmly tighten arm screw.
8. Height gauge arm should always be positioned inside pile guide fingers.
9. Loosen height gauge binding screw, let height gauge down to contact with top of pile, and tighten binding screw.
10. Raise the drop guides. Lower conveyor carefully to rest on feedboard.
11. If feeder has been disconnected, first bring press to position where grippers just close and put in clutch. (See Timing Feeder with Press.) If feeder has been moved, pull suction wheels around while pushing steadily on clutch pin handle with press in above position.
12. Start blower and adjust air blast and suction.
13. Start the press and bring one sheet down slowly; meanwhile adjust tension rolls and balls and top paper guides to control the sheet.
14. Bring sheet to drop guides and adjust slow-downs.
15. Position slow-down brushes when slow-downs are at forward full stroke.
16. Position sheet corner hold-downs near edge of sheet, making sure they clear grippers.
17. Start the press again and stop as sheet reaches first delivery rolls. Move margin rolls and delivery tension rolls to position and arrange delivery tapes to support the sheet.
18. Set crumpled sheet detector.
19. Set jogger and fountain ratchet regulator.
20. Throw in automatic safety stop switch pawl before taking your hand away from the starting and stopping station.

SHEETS SWINGING ON FEEDBOARD

Usually caused by sheets entering the feed rolls out of time. When this occurs the pile of paper should receive first attention, since it represents the source.

If the paper pile is not level, correct by building up low spots and be particular with the front edge of pile, as a low point may cause that corner of the sheet to lag behind. The stripper plate should be left clean and free from ink.

There should be sufficient tension on conveyor belt idler pulleys, otherwise belts may slip and buckle under the pressure and friction of the paper feed rollers, tension rollers, tension balls, etc.

ATTACHING NEW CONVEYOR BELTS

Conveyor belts should always be in condition to properly convey the sheets to the drop guides. Lightly rubbing the surface of the belt with fine sandpaper will remove an accumulation of dried ink and dirt, but when the belts crack or stretch so that the adjusting pulleys cannot take up the slack, they should be replaced with new.

The belts should be put on rough side up, with the top lap toward the automatic feeder to prevent the end of lap from striking the edge of the sheet.

Use hot glue or belt cement when possible. Apply a thin coat of glue or cement to each surface of lap. Let stand a few minutes until glue is slightly set. Then apply another coat, bringing both ends together evenly, and sides parallel, to ensure belt running true.

Place the glued laps between belt clamps and, leaving clamps on, replace belts on driving pulleys and let feedboard down. This will stretch the belts and not pull out the splice. Let them dry thoroughly before removing clamps. New belts are always shorter than the old stretched belts.

Trim any overlap from edge of belt and remove surplus cement, making sure belt is smooth at splice.

The best plan is to attach belts late in the afternoon and let the glue dry over night, when they will be ready to use the following morning.

Duxbak Glue is used in the factory. We find it superior to any other and it can be secured through any American Type Founders Company Selling House.

A FEW HINTS ON PRESSWORK

Metal Blocks. The standard metal blocks used by printers in the United States and Canada average .759 inch thick. For use with standard blocks, printers usually specify 11-point plates, or plates that are .152 inch thick. Plates of this thickness require, theoretically, an underlay of .007 inch. It is general practice to place a sheet of that thickness under each plate when first laid on the block. Use enough hooks to properly secure plates.

Inks. The printing ink which can be used successfully under all conditions is not made. It is necessary to suit the ink to the paper. Consult the ink maker on these problems, and on out-of-the-ordinary work submit samples of the stock to him. Buy ink suitable for the work to be done.

Trying to improve on ink by the addition of various substances such as kerosene, vasoline, glycerine, etc., should never be resorted to except in cases of emergency.

Much presswork, otherwise commendable, has been spoiled by a poor selection of ink.

Tints. If a tint is to be printed on white paper, try a transparent tint base mixed with the color that the tint is derived from. The stock itself will usually furnish the necessary white.

This rule does not apply to color stock, however, as the tint must be opaque to prevent the color of the stock from showing through. Use mixing white or cover white, according to the nature of the stock. On long runs it is best to send a proof and some of the stock to the ink maker and have him make the ink. Then use it as it comes from the can.

Picking. Picking is often caused by too much ink, stiff ink, cold pressroom, and poor make-ready. When the ink lifts the surface of the paper, try:

1. Raising the temperature of the room.
2. Reducing the speed of the press.
3. Reducing the ink, preferably with a softer ink of the same color.
4. Running as little ink as is consistent.
5. If hairline register is not required, pile the sheets in a warm part of the room. If hairline register is necessary, the paper should be kept at about the same temperature as when the first color is run, to prevent shrinkage or stretching.

Process Inks. Best results in process work will be obtained in a dry atmosphere at about 70° to 80° Fahrenheit, 21° to 27° Centigrade, or 17° or 21° Reaumur. It is also good practice to have a set of conditioned rollers for each color to be printed. If the sheets are allowed to stand too long between printings, the ink may crystallize and present a glassy surface on which to print the next color, preventing the ink from adhering or "taking" readily. Consult your ink maker before you start. Tell him the nature of the paper, where your press is located, the number of impressions on each color, and the speed at which you intend to run the job.

A yellow form can be made ready more easily by using black ink. Make ready each form as you would a black halftone.

Doubletone Inks. There are no special manipulations necessary in working doubletone inks. They may be used about the same as a good grade of halftone black of equal adhesiveness. The doubletone effect develops as the ink dries, so no attempt should be made to hasten the drying, as by so doing the development of the doubletone is stopped prematurely. It is not good practice to run a caption in small type under a very solid cut, as the doubletone effect will be noticeable and usually undesirable on the caption.

Metallic Inks. Metallic inks should be mixed according to the formulas provided by the ink maker. Do not try to improve them by putting in more of any ingredient than the formula calls for. If the ink is mixed too thickly it will fill up the form and cake on the rollers and plate. If signs of caking occur, wash up immediately. Do not mix more than you can use within a few hours and do not allow it to stand on the press, as the varnish usually dries rapidly. Do not mix the ink until ready to run.

Cover Inks. If a stiff cover ink is being run, watch the rollers carefully, as this ink tends to heat up the composition rollers quickly. White inks or light tints may require more than one impression.

Black Inks. Pressrooms should carry in stock several kinds of black: a heavy, tacky ink for bond and other tough paper, heavy and soft halftone inks, quick-drying ink for rush jobs, and a good job ink for the ordinary run of commercial work.

Copying Ink. Copying ink, if too stiff, may be reduced with a few drops of glycerine; if too thin, add a few drops of "liquid glass" (sodium silicate) or gum arabic. Wash the rollers and ink plate quickly after the job is run.

Ink Solvents. To remove hard, dry ink, a rag dampened in benzine or kerosene, then dipped in coarse salt, will be found effective. A few solvents are lye, wood alcohol, grain alcohol, creosote, dead oil, ammonia, turpentine, crude carbolic acid, oil of lavender, oil of wintergreen, carbon tetrachloride, chloroform, ether, etc. Do not, however, use any of these solvents on composition rollers. They may be used on metal. Never use emery or sandpaper. The aforementioned solvents may also be used to clean forms. Ink solvents may be obtained at any Selling House of the American Type Founders Company, or from most ink manufacturers.

Numbering Jobs. Numbering machines may be worked in any position except with the "No." or plunger nearest the gripper edge and at right angles with the cylinder. In this position the cylinder depresses the plunger, then passes over the figures. The wheels turn when plunger rises, so that if run in the above position they are trying to turn while under impression, resulting in slurred figures, broken pawls and springs, and torn packing. This is true of any cylinder press.

If hard rollers are used, do not set them too low, as they may depress the plunger. If the figures or letters near the plunger are not inked, it is because the plunger is holding the rollers off. Cut a slot around one roller in line with the plunger, just wide enough to let the plunger through. This roller will ink all the form except the plunger, which will be inked by the other rollers. Often the use of one soft form roller will remove all trouble of this nature because, being soft, it touches all parts of the numbering machine.

Avoid soft packing on long runs, as the plunger will work into this and then fail to turn the wheels because of lack of impression. A piece of thin pressboard will resist plunger pressure for a long run. Numbering machines, especially those with open sides, will not operate if locked up too tightly. Test the plunger with the fingers and make sure that it rises freely.

"Plungerless" models must be run parallel with the cylinder, all figures depressing in unison. Clean the machines thoroughly after using. Place them in kerosene until ready to use again, when they should again be cleaned and bearings oiled.

Perforating Jobs. When perforating deeply, parallel with the cylinder, it is good practice to attach a strip of adhesive tape to the outside of the top-sheet over the perforation and extending about ¼ inch on each side, if the printing will allow it. The threads between the incisions will prevent the top-sheet from stripping. If the stripper fingers are too low they may be raised to the desired height by shimming up the stop rest on the cylinder box. *Do not bend the stop.*

If it is desired to run a perforating rule at right angles to the cylinder without printing the rule, it may be accomplished by cutting the form rollers so that they will not ink the rule. Another method is to grind off the bottom of the rule until it is sufficiently below type-high to prevent the rollers from inking, then build up the make-ready over the perforating rule to the required height.

A strip of 1-point brass rule glued to the make-ready, just below the top-sheet, insures a clean, sharp perforation. The rule must be thoroughly glued for security.

In perforating or cutting heavy stock it is advisable to lock the rule between two 5-line-pica pieces of furniture, placed on their sides, to support the rule firmly.

PAPERS

Thin Paper. Onionskin, French folio and lightweight bonds, etc., should be run with light air blast, light suction, and light tension on the paper feed rollers, tension rollers and balls. Be careful not to buckle the sheets at the drop guides. If the sheets crumple in the caliper, the caliper may be opened slightly. If the stock is porous, the top-sheet may require frequent washing and oiling on account of the ink squeezing through the stock. Usually it is good practice to set the brush to the lightest possible contact with thin stock.

If two or more sheets of thin stock are lifted by the wheels, cover the suction holes in wheel with gum paper. Then vent paper at holes with point of pin, making just enough vents to ensure the wheel picking up the stock.

Heavy Paper and Card Stock. Light and medium weight box and litho boards, tag board, postcard stock, will work successfully. As a rule the full blast and suction will be required. Endeavor to get the top of the pile as level as possible, building the low places up by wedging under or through the pile when necessary.

A small sheet of heavy, stiff stock will not feed as well as a larger sheet. If necessary, place the tension rollers at the tail of the sheet when sheet is against the drop guides to prevent the sheet from rebounding. It is good practice to have not more than 1-pica gripper bite, for if the stock overhangs the cylinder or is too close to the edge, the grippers will push the sheets back before closing on them. Make sure that the sheets are not retarded in the conveyor mechanism because of wavy or curled stock conditions.

Stiff stock printed with a narrow margin has a tendency to bulge and "wipe" as it leaves the form. A 5-line piece of furniture, stood on side, and locked just back of the form will usually eliminate a "wipe." Or, if stock will permit a slight trim at the tail, lock a light-face rule across the form, to print on the tail of the sheet about a nonpareil from the edge. If the above cannot be done, place a strong twine or narrow linen tape around the cylinder to work in the margin. Take a sufficient length of the tape, run press ahead to point where grippers are closing, place one end of the tape under the gripper nearest the central margin, and turn press ahead, biting the tape with grippers, until grippers open. Attach this end of tape to cylinder rear sheet band rod and the other end to a strong rubber band looped over stripper finger shaft. Have no more tension on the tape than is necessary to hold sheet to cylinder while cylinder is on impression. To have more tension than this merely wears out the tape. Make sure that tape runs in margin. Examine tape and rubber band frequently and change them if they show signs of breaking.

Dull Coated Papers. Halftones to print well on this stock should be deeply etched, of not finer than 150 screen, and the cut overlay should be slightly thicker than for enameled paper. The impression should be only as heavy as will give unbroken contact of dots with paper. Use a good grade of fairly heavy, tacky ink. Watch the halftones closely for filling up. Consult your ink maker or paper maker if you experience any serious ink troubles.

Gummed Paper. For the printer who formerly looked upon gummed paper jobs as a necessary evil, but accepted them in

order to obtain other work, this class of printing has now lost its terrors due to the high-grade, flat, non-curling stock now available.

In cutting gummed paper for press, a sharp knife should be used, as under the most favorable conditions the paper cutter knife will stick the edges of the stock together. To overcome this, loosen and "wind" the sheets thoroughly while loading the feeder.

Keep the stock in a cool, dry place, as dampness or moisture will make the edges stick together.

Do not pile stock near steam pipes or heat of any kind, or use a heater on the delivery, as this will "dry out" the sheets and make them curl.

Keep the top-sheet on impression cylinder well oiled so that printed sheets may be easily delivered from cylinder.

Antique and Rough Cover Paper. Rough surfaced paper usually feeds best when the top of the pile is not nearer than ⅝ inch to the suction wheels and the full blast is used.

Deckle Edge Paper. Jog the stock well toward the gripper edge and side guide edge when loading the feeder.

SLURS AND STREAKS

When a slur appears it is always best to inspect carefully your own work first. Then see that the form is tight and properly justified. There are various kinds of slurs and several causes, some of which are described below and remedies suggested.

1. Slur at Gripper Edge Only. This may be caused by: (*a*) Feedboard and tongues too high. Correct by resetting as directed. (*b*) Stock so curled that the grippers buckle it. Correct by reverse curling the stock to straighten it. It may be necessary to move a gripper to hold the curl down. (*c*) Grippers set unevenly. Correct by resetting grippers properly. (*d*) Accumulation of dry paste, paper, etc., under the grippers where overlays for previous jobs have been pasted, causing lumps. Correct by changing as much of the packing as necessary. The idea is to have the sheet lie flat on the packing and to have a firm, uniform gripper bite on the sheet. (*e*) Grippers set too near guide tongues or shooflies. This will sometimes cause a little fold or buckle in the sheet. It is especially desirable to avoid this condition in printing rule and panel forms. The remedy is obvious—move them away.

If the slur appears at the guides, and the feedboard and guide tongues are set properly, raise the outside grippers slightly—just enough to allow the sheet to flatten out. The brush plays an important part in avoiding slurs. Keep it snug, but not too tight.

2. Slur at Margins. This may be caused as follows: (*a*) Form over or under type-high and the cylinder overpacked or underpacked to compensate for it. The remedy is to have cylinder reset to bring it down on the bearers during impression, make the form type-high (.918) and bring the packing to the proper thickness. This kind of slur is noticeable near the margins at a point where the impression leaves one page and starts on the next, because the surface of the sheet, if the cylinder is overpacked, is actually running faster than the form, and vice versa. This slur not only looks bad but quickly wears the form. (*b*) Soft packing or a loose top-sheet. This is also generally noticeable in the margins. Change to a hard packing with a smooth oiled manila tight top-sheet. Keep the bed and cylinder bearers clean. Never put rosin, magnesia, plaster of paris, or any other substance on the bearers.

3. Some Other Causes of Slur. If the form contains warped electrotype blocks or furniture, or is clamped too tight, slurs may result, due to the form not being down firmly on the bed during impression. See that plates are securely fastened to their bases and that the bases rest squarely on the bed of the press.

Hard rollers may cause thin ink to squash out on the sides of the type, etc., and slur parts or all of the form. The remedy is to change to stiffer ink or softer rollers.

If rollers are set too low, they may jump when they strike the form and, as they come down on the form, leave a streak. This will also wear the rollers rapidly.

If rollers are not in proper contact with the vibrators, they will spin and slide when they strike the edge of the form.

If the register rack is out of position the result will be a slur which generally shows about two inches back from gripper edge of sheet. The correction is to reset rack.

If the impression cylinder is not riding properly on the bearers it will also throw the register rack out of position and the combined result will be the slur mentioned above. Reset both cylinder and register rack.

OTHER TROUBLES

Work-Ups. Work-ups are caused by the form not being down firmly on the bed of the press during the impression, and are due to: (*a*) Improper locking of the form on the press; (*b*) Rocking cuts; (*c*) Imperfect justification (this including spongy, or warped furniture or cuts that are smaller or larger at the foot than at the shoulder).

(*a*) Unlock all the quoins and the chase clamps. See that the chase is not bent or sprung and that all the furniture used is square. Sometimes turning the furniture over will help. Then lock evenly and squarely. The form should not be locked too tightly, as this may cause it to spring up. (*b*) Measure the cuts to see that they are type-high at every point. Heavy solid cuts or blocks should be a trifle higher than type-high, vignettes a trifle lower. (*c*) For imperfect justification, call the stoneman.

Wrinkles. Wrinkles, or buckles, are due to several causes. If the sheet is wavy, or does not lie flat on the feedboard when taken by the grippers, the wrinkle works itself out on the back edge of sheet. The sheet must not be buckled when taken by the grippers, and if buckling is due to the stock, turn a few lifts over on the pile. Most of this trouble is found in forms with panel borders, rules, or open spaces between pages.

The pressman should keep in mind the proper adjustment of brush, drop guides, feedboard, and setting of grippers. If these conditions are corrected and the wrinkle still persists, see that too much impression is not being carried on the form.

If the wrinkle is in a panel or open spaces between the border or pages, raise the drawsheet and cut out two or three sheets in the open spaces in the panels between borders or rules, and close to them. This usually eliminates the wrinkle.

If paper stock is so piled as to expose it to dampness the outside of the pile will absorb the moisture before the center. The effect of this is to lengthen the stock at the outside edges, and when this stock passes between the form and cylinder the longer outside edges will be drawn in at ends and cause a wrinkle. This can be overcome by the use of "breakers" pasted to the top sheet, a "breaker" being a small strip of 3- or 4-ply cardboard. The breakers should be as wide as the side margin will permit and extend about an inch back from the end of gripper. Use on both sides of stock. If necessary bevel both ends of cards, the front end to prevent gripper cutting into stock. The idea is to draw the outside edges of the stock over the cards, thus taking up the stretch and equalizing the length of the stock at ends. The pressman will have to use his own judgment on how thick and how long to make breakers but the end grippers must be worked where they will draw the stock over the breakers. Breakers can also be worked between the form and the end of outside grippers if margin permits.

REGISTER

Accurate register on all classes of work is obtained on Kelly Presses. Certain precautions must be observed by the pressman before starting the run on work requiring very close register. Due to the vagaries of paper stock, static, and press-room conditions, constant vigilance is necessary.

It is absolutely necessary that all grippers are set properly and holding the sheet firmly. To determine this, place a sheet down to the drop guides, with conveyor raised. Turn the press ahead until the grippers have taken the sheet and the closing finger has passed beyond the control of the roll. If the sheet can be removed from grippers by pulling on the back edge, the grippers must be reset.

It is also necessary that the drop guides be timed to lift correctly when grippers close on the sheet. If drop guides rise too fast, the sheet will be driven forward beyond the guide line before being taken by the grippers. If the guides lift too slowly, there will be an interference between the guides and grippers and the edge of sheet will be nicked or torn. The ideal condition is to time the lift of guides by means of the drop guide adjusting screw, so that they rise as late as possible without nicking gripper edge of sheet.

Enough tension must be used on the sheet to drive it positively to the drop guides without buckling. Always place tension balls or rolls at back edge of sheet when it is down to the drop guides. Never place tension rolls directly on the sheet when it is against drop guides as they will retard the action of the pull guide, and loss of side register will result.

Remember that the larger sheet and heavier stock requires more tension to carry and hold it to the drop guides than lightweight stock.

Make sure that all clamp screws are tight and all adjustments are properly made, as given in the instructions for the various parts.

It is an accepted practice, when a job is ready to run, to print a number of sheets and run them through the press again to test the register, and on long runs lasting several days this should be done at frequent intervals during the run.

Do not expect to obtain perfect register on paper which is curled, wavy, has rough edges, or has been packed in bundles instead of flat. Stock, especially coated paper, will absorb moisture readily and therefore should be kept in a dry place until ready for the press. Dampness causes the edges of paper to curl and stick together.

Static electricity, generally found in pressrooms where an uneven temperature is maintained, will cause sheets to adhere, making it difficult to feed them accurately. The remedy for this is a Kelly Gas Heater and an even temperature in the pressroom.

If register trouble is experienced, examine your own work first, then local conditions, and if unsuccessful in overcoming the trouble, ask for assistance from the Service Department.

Oil the packing thoroughly before starting. If the top-sheet or impression is changed it may change the register.

If the gripper bite is too hard, making the grippers indent the packing, the sheet is likely to be scuffed back and affect the register.

Sheet should not buckle against the drop guides. Make sure that sheet is drawn all the way against the side register plate. See that the brush holds the sheet against cylinder. Run the whole job at a uniform speed.

The rolling impression of any cylinder press is more likely to cause plates to "creep" than the flat impression of a platen press. So, when running forms containing plates of any description ascertain that they are securely fastened to their bases. This is most important when running heavy cuts or blocks requiring heavy impression.

If there is too much air plunger cushion, the bed will be thrust back after passing the center at a greater speed than the driving mechanism would normally carry it. If there is not enough cushion, the mechanism is overworked, as it receives no assistance from the air in starting the bed off the center. Improperly set air regulating parts not only affect register but are positively harmful to the press.

STATIC ELECTRICITY IN PAPER

The calendering of paper on the paper-making machine has a great deal to do with the presence of static electricity in the paper while undergoing the process of being printed.

The friction encountered while the paper is passing through the press accentuates the electric conditions and causes considerable trouble.

The amount of moisture in the air has a marked effect on the behavior of paper in relation to frictional or static electricity. In warm, moist weather, the presence of the electricity is not noticeable, not necessarily because it does not exist, but because it is conducted away through the moisture in the air.

Dry air acts like an insulator for electricity, as it holds but little moisture. The colder the air, the less moisture. Consequently the frictional electricity stored in the paper has no means of escape. The sheets of paper, being magnetized, stick together or adhere to the stripper fingers and metal parts on the press. In other instances the sheets are repelled from each other and fly in all directions.

The cause of this freakishness is due to the alternating presence in the paper of positive and negative current. Sheets charged with positive electricity will repel each other, while those charged with negative electricity will adhere. But confusion prevails when the two kinds of current are unstable.

The temperature of the pressroom should be warm and kept moist by humidifiers or the presence of boiling water, or

the paper warmed by means of gas-burning or electrical devices as it passes through press. Sometimes Christmas tree tinsel, strung along a rod, so that the printed sheet comes in contact with it, and the tinsel grounded to a gas or water pipe, will conduct away considerable of the troublesome current.

The Kelly Gas Heater, unique and positive in its control feature, certain in the results accomplished, and entirely mechanical in operation, is now offered to the users of Kelly Automatic Presses as a sure means of neutralizing the effect of static electricity.

The mechanically controlled gas flame on the Kelly Heater is in direct contact with the sheet as it is delivered to the jogger of the extension delivery. Every part of the sheet is affected and much of this heat is retained in the pile. The ink begins setting immediately, making it possible to quickly handle lifts or back up forms, an impossibility under old conditions.

The gas valve on the Kelly Control is spring-seated and does not open until press speeds up. This is an exclusive and important feature. It permits presses to be inched without gas igniting. It also insures cutting off gas before press comes to full stop, and against waste of fuel or escape of gas in room. As it is driven direct from press, there is no expense for electricity.

MEMORANDUM