IX. Adjustments

MAIN DRIVING CLUTCH

THE main driving clutch is where the power to drive the machine is applied, and should always be kept clean. If the leathers on each end of the friction shoes become dirty, or oil is allowed to accumulate, they will slip, and the machine will not eject the slug.

1. *Main Driving Clutch.*—The clutch should be adjusted so as to allow fifteen thirty-seconds of an inch between the collar on the driving shaft and the driving shaft bearings. Should the clutch for any reason bear against the rim of the pulley unevenly either sandpaper off the thicker leather or pack under the thinner one with hard paper as may be necessary to secure the fifteen thirty-seconds of an inch distance referred to above.

The spring that expands the clutch should be adjusted to a tension of sixteen pounds. This gives about the right friction to carry the machine through all its operations with a steady motion when everything is working properly, but if anything sticks or makes the machine run hard, the clutch will slip. This avoids damaging the machine. To find tension: shut off the power, and open the starting rod in front, then turn the cams back a little, so the stopping pawl is clear of the stopping lever. Take an ordinary spring balance and catch the hook in the toggle joint of the clutch and pull out. The tension should be taken just when the clutch rod begins to move.

If the clutch fails to let go properly, it is generally because the leathers are sticky with a mixture of oil and dirt. Rub them off with a piece of sandpaper, or wash in benzine.

Do not use rosin, belt grease, printers' ink, or any other preparation to give the clutch greater driving power when it slips, but follow the suggestions given above, and *keep inside of pulley and faces of clutch leathers perfectly clean.*

Before applying new leathers to a friction clutch, the starting lever should be opened, the machine backed free from the stopping pawl. If there is clearance between the lower vertical lever and the forked lever, adjust as above by packing underneath the leathers; see that the pulleys are clean and the leathers clean, and the brass screws holding the leathers not bearing on inside of driving wheel.

2. *Automatic Stopping Pawls.* Set pawl fifteen sixteenths of an inch from the edges of the cam (Fig. 88), when the cam shaft is in normal

position. Use adjusting screw in automatic pawls; that is, the screw that goes through the pawl and strikes the lug of the cam.

The stop pawl brings the machine to rest after the main cam shaft has made one revolution.

The automatic safety pawl is to stop the machine if, for any reason, the line has not transferred.

3. *Automatic Stop Lever.* Set so that the lever bears one quarter of an inch on upper stopping lever (Figs. 88 and 90). Use set screw in top of vertical lever for this adjustment. This lever is for stopping machine in normal position. The action is to push down on the upper stopping lever, forcing the lower stopping lever against the forked lever, which in turn pushes on the collar that is fastened to the clutch rod, the other end of which is connected to the clutch rod. In doing this the clutch is thrown out of action and the machine is stopped.

4. *Automatic Stopping Lever Lower* (Fig. 89). Allow one thirty-second of an inch between the lower stopping lever and forked lever. Use adjusting screw in the upper stopping lever. This lever forms the connection between the upper stopping lever and the forked lever to get a horizontal motion from a vertical action.

5. *Vertical Lever* (Fig. 90). This lever is only in action when starting lever is pulled by hand. Eccentric screw on starting lever rod is pulled against the lower lug of vertical lever and draws the upper lug *248* around one sixteenth of an inch. Use adjusting screw in the upper vertical bearing. Lug *248* forces automatic pawl *231* off stopping lever *159*, which releases clutch, causing the cam shaft to revolve. The vertical lever is returned by a spring located in the upper vertical lever bearing and stops against an adjusting screw inside of column. This screw should be adjusted to allow the upper lug *248* to clear automatic safety pawl *231* one sixty-fourth of an inch when back in normal position.

6. *Vertical Lever.* Allow one sixty-fourth of an inch between upper lug and automatic stop pawl. Use adjusting screw inside of column. This lever is returned by a spring and stops against the adjusting screw, and should move freely.

7. *Starting Lever* (Fig. 91). Allow one thirty-second of an inch between eccentric screw and vertical-lever lower lug. This lever controls machine. When part way out and standing free, the machine is in operative position. When pulled all the way out it will start the machine. When pushed in it acts on the clutch and stops the machine.

8. *First Elevator Connecting Link* (Fig. 40). Adjust eyebolt so that it is three quarters of an inch at the top and thirteen sixteenths of an inch at the bottom from holes to shoulders. This link has a spring inside of it that compresses when the alignment is made. It is also used to align the first elevator with the delivery channels and the intermediate channels, which is manifestly important.

9. *First Elevator Slide.* To clear the transfer and delivery channels in its vertical movement, adjust gibs on vise frame.

10. *Delivery Channel.* To align the first elevator jaw with the delivery channel use the first elevator connecting link. When in position the rails of the first elevator should be very little below the rails of the delivery channel, about the thickness of a sheet of paper.

11. *Intermediate Channel.* The first elevator jaw should align with the intermediate channel so that the matrices will pass freely on to the second elevator. Adjust with screw on the bottom of the first-elevator slide on the right side.

12. *First Elevator Slide* (Fig. 42). When the first elevator slide is raised, bringing the ears of the matrices against the mold for alignment, there should be one sixty-fourth of an inch space between the adjusting screw and the top of the vise cap. Adjust with center screw in top of first elevator slide.

13. *First Elevator Slide Guide* (Fig. 100). Releasing lever should clear transfer slide one thirty-second of an inch when matrices are transferring. Adjust by screw in second elevator. This lever is to keep the matrices from transferring in case the second elevator does not come down into position.

14. *First-Elevator Intermediate Bar.* When the intermediate bar pawl is raised it should be flush with the lower tooth of second-elevator bar. Adjust with two screws in top of cap. This pawl is to push down the spacebands when transferring.

15. *First Elevator Line Stop* (Fig. 41). Should set one eighth of an inch from line, after line is justified. Clamp by screw in first-elevator jaw. This jaw is to keep the matrices from falling out of the elevator and to prevent them from twisting when elevator is carrying them up or down.

16. *Assembling Elevator.* There is a small wire on the assembling elevator. This wire should be set to release the transfer carriage just as the latch of the assembling elevator catches. Adjust by screws under the starting wire. This wire starts the cam shaft by releasing the transfer carriage which is carried to the first elevator. The lever that makes the transfer carries a roller at its lower end which comes in contact with the automatic stop pawl, forcing the pawl off the upper stopping lever, allowing the main driving clutch to come into action and start the cam shaft.

17. *Assembling Elevator.* To be returned by its own weight. Adjust with counter-balance-spring screw hook in keyboard frame. This is to make the elevator fall easily by balancing it so that it will just fall into position. Always see that front and back buffers are in good condition, to insure proper assembling of matrices.

18. *Assembler.* The assembler chute spring of old style should be set to throw the bottom of the matrices toward the assembler star, allowing sufficient space for the cap "W" to go between it and the rails. Adjust

by bending the spring. The present style of assembler chute finger is of the proper shape, and only requires adjusting for the cap "W" of the different fonts of matrices. This adjustment is made with the knurled assembler chute finger adjuster. The assembler star should stop on tight lines. Adjust the assembler star pinion friction spring. The assembler matrix catch spring is to prevent the top of the matrix from falling backward. Adjust by bending the spring so it will be flush with the casting when pushed forward by the matrices.

19. *Elevator Transfer Lever* (Fig. 102). The elevator transfer slide finger should be five and nine-sixteenths of an inch from the intermediate channel. Adjust by moving elevator transfer cam roll lever on shaft, to proper dimension and then clamp lever to shaft with clamping screws in hub of lever. The elevator transfer lever transfers the line of matrices from the first elevator jaw to the second elevator. It also operates the spaceband lever through a link.

20. *Spaceband Lever.* The spaceband pawl should pass by the point of the spaceband-box rails. Adjust with the turnbuckle which connects with the transfer lever. This lever returns the spacebands to the box.

21. *Elevator Transfer Slide* (Figs. 28 and 103). Allow one eighth of an inch between slide finger and the bottom of slot in spaceband pawl. Adjust the screw in transfer slide. This slide and finger push the spacebands under the pawl so that the pawl can return them to the box.

22. *Automatic Safety Pawl* (Fig. 76). When line transfers to second elevator the cut in slide finger should come flush with second-elevator bar plate, adjusted by screw in safety pawl *231*, which regulates the automatic safety pawl buffer *237*, on which the cam roller *236* works, forcing safety pawl *231* clear of stopping lever *159* when there is no cause for stopping.

23. *Spaceband Box* (Fig. 29). The spaceband box pawls should stand one thirty-second of an inch below the upper edge of the box rails. Adjust with screw in the spaceband box pawl lever. These pawls lift the spacebands over the rails, allowing them to fall into the assembler. See that the pawls are equal in height.

24. *Line Delivery Slide.* The delivery carriage in returning after a line is delivered should go far enough to the right so that the short finger will catch in the second tooth of the pawl (Figs. 35 and 36). Adjust by moving the delivery lever *156*, Fig. 78, cam roll arm on shaft and then clamping the arm to the shaft with the clamping screws in hub of the arm. This should bring the transfer carriage back so that when the line is raised in the assembling elevator it will not strike the short finger.

25. *Line Delivery Slide* (Fig. 38). The inside of short finger, next to the matrices, should stop thirteen thirty-seconds of an inch inside of first elevator. On all machines over 6282, by stop screw on face plate. This adjustment is to carry the matrices inside the first-elevator jaw retaining springs, which keeps them from falling out.

26. *Mold-turning Cam* (Figs. 55 and 93). The steel shoes are to hold shaft in position when the pinion is not in mesh. Adjust by screw bushings in cam. This is to position the mold disk in casting and ejecting points so locking pins will enter bushings.

27. *Vise Jaw* (Fig. 50). To bring face of type .01 of an inch from each end of the slug. Adjust screw in top of knife block for short jaw, locking screw in vise-closing arm for long jaw. This is to position the type on slug so there will be no shoulder sticking over either end of the slug.

28. *Mold Slide* (Fig. 68). The mold slide should be adjusted to bring the face of the mold ten thousandths of an inch from the face of the line of matrices or the back of the vise jaw. The mold should be in this position at the time of alignment. Adjust with eccentric pin in the mold cam lever before the pot comes against the mold. To test this adjustment; turn the casting mechanism until the first elevator jaws are resting on the vise cap; place a pig of metal under the head of the slide and on top of the vise automatic stop rod; fold three thicknesses of newspaper, which measure about ten thousandths of an inch; close the vise jaws; place the paper between the mold and the vise jaws; turn the machine forward by hand until the metal pot is just ready to move forward; pull up on the paper, which should bind a trifle as it is being withdrawn. If the paper does not bind or binds too tight it would show that the slide is out of adjustment. The mold disk locking pins should enter the bushings smoothly as the mold slide comes forward. Adjust with screw under the mold disk guide.

29. *First Elevator Slide, Vise Stopping Rod, and Mold Disk Dog* (Figs. 42 and 43). This adjustment should be made when the first elevator slide is down and resting on the vise cap, the first elevator auxiliary lever cam-roller at the lower part of the first elevator cam. Bring the mold disk forward by hand, so that the ears of the matrices will be in the mold alignment groove. Adjust with center screw *79* in the top of first-elevator slide, bringing the ears of the matrices one sixty-fourth of an inch from the alignment point, or in other words, the top of the alignment groove in the mold should clear the ears of the matrices when the mold advances one sixty-fourth of an inch. With the elevator slide in this position adjust the vise automatic stopping rod and mold disk dog (Fig. 43). This should be adjusted so that when the first elevator slide descends to the vise cap and the mold advances to the line of matrices the vise automatic stop rod pawl should just clear the mold disk dog. Adjust with screw *77* at the top of the first-elevator slide, right-hand side. This adjustment is very important. It will stop the machine if the first elevator slide does not come down to its proper position to align the matrix ears with the alignment groove in the mold, to prevent danger to matrix ears and possible squirts.

30. *Mold-disk Brake* (Fig. 54). To take up lost motion in the mold disk. Adjust screw in brake. This is to keep the disk from running past the locking pins on account of momentum of disk.

31. *Distributor-box Lift* (Fig. 111). Should lift matrices one thirty-second of an inch above the shoulders of the rails in the distributor box. Adjust screw in cam lever. This lift raises the matrices into the screws, one at a time. The screws carry them along the rails until the bar is reached, when they transfer to the bar.

The distributor-box bar point is located at the inner end of the distributor-box bar. Its purpose is to hold the second matrix down while the first one is being lifted. This condition should be constantly maintained.

32. *Distributor Clutch and Stop* (Fig. 116). The bar having a notch in it should be adjusted so that the channel entrance will rest upon the bar one thirty-second of an inch. Adjust the plate by loosening the screws and moving it to proper position.

33. *Ejector Blade.* When the ejector blade advances to its farthest point forward, the end of the blade should be one thirty-second of an inch in front of the incline on the lower knife block liner of the inclined galley, and one thirty-second of an inch forward of the front face of the chase bracket of the vertical chase. Adjust with the screw in the ejector lever adjustable pawl (Fig. 67).

34. *Metal Pot* (Fig. 64). The metal pot should be adjusted vertically so that the lower edge of the holes in the mouthpiece is just above the mold body. Adjust with the upper screws *144* in the pot legs. The pot mouth must be square with the mold in order to get a perfect lock-up. Adjust with the front and back screws in the pot legs *143.*

35. *Pump Stop* (Figs. 72 and 73). When the line is fully justified there should be one thirty-second of an inch between the stop lever and stop. Adjust by the screw in the pump stop operating lever, Fig. 172, *133.*

36. *Second Elevator.* When the second elevator rests on the intermediate channel in position for the line of matrices to transfer, the second elevator cam roll should be clear of the cam. Adjust by the connecting bolt which connects the second elevator cam with the second elevator cam lever.

37. *Matrix Delivery Belt.* The belt should be kept fairly tight. Adjust by loosening nut, pulling idler pulley back and tightening nut. This belt carries the matrices when dropping over the assembler front from the magazine into the assembler elevator.

38. *Pot Lever Eyebolt* (Fig. 62). The pot lever eyebolt should be adjusted so that the front nut is five thirty-seconds of an inch from the sleeve, and the back nut so that there will be a space of one sixteenth to one eighth of an inch between it and the lever, when the pot is forward in the locked-up position. This is to insure the spring being under compression when the pot is locked up.

39. *Back Knife* (Fig. 59). Should be set square and press lightly against mold. Adjust by two square-head screws back of knife. The slug passes by this knife, which trims it to type height.

40. *Stay Bolt* (Fig. 77). Should have head bear lightly against bracket. Held by screw. This bolt takes the strain when pot locks up.

41. *Assembler-slide Brake* (Fig. 164). Should release just before the line-delivery carriage starts. Adjust by screw in operating lever. This brake holds slide when it is being assembled and releases to bring slide back into position. The outer end of operating lever is forced up by the assembler elevator when it is raised and releases the brake, allowing the slide to go back to the starwheel. When the elevator descends the lever is forced down, setting the brake for another line.

42. *Spaceband Box Center Bar* (Fig. 31). The spaceband box center bar should be set so as to allow only one spaceband to be raised at a time. Adjust by the screws in the spaceband bar bracket, which has an elongated hole to permit such adjustment.

JUSTIFICATION SPRINGS

It is important that care should be taken of the justification springs. It does not require the same tension to justify a 10- or 13-em line as it does a 30-em line. The amount of tension on the springs that would justify a line with only two or three spacebands in it would not justify a line with eighteen or twenty in it, and if the same tension is left on the spring which justifies a long line when the machine is running on a short line, with from five to eight spacebands in it, there is an unnecessary strain on the spacebands, matrices, vise jaws, and other parts connected with the justifying mechanism. When changing from a short to a long line, increase the tension, and diminish when changing from a long to a short line. When constant changes are to be made use full tension.

If for any reason justification springs are removed, care should be taken that they are *not transposed* when being replaced. One spring is slightly larger in thickness of wire, as it is intended to exert a greater pressure than the other. The pump stop should be properly set so that the pump will not operate unless the line is fully justified.

LOWERING THE VISE

To lower the vise (Fig. 96) first shut the power off by pushing back the starting and stopping lever. See that the first elevator jaw registers with the delivery channel and that the mold disk is not forward upon the locking pins. Turn the vise locking screws and lower the vise. To lower the vise to the second, or lower, position, which is necessary only when the mold slide is to be removed, turn the machine by hand until the first-elevator jaw rests on the vise cap and stop the machine before the mold slide has come forward, or the vise closing lever has started to raise. Remove the inclined galley, lower the vise, pulling out the vise frame rest to permit the vise to go to the lower position, and pulling upward on the first-elevator slide as the vise is lowered, to avoid breaking or bending the first-elevator lever link.

VISE AUTOMATIC

Care should be taken that the vise automatic is always in working order. It is intended to stop the machine when the operator sends in a tight line. If it is not adjusted properly the machine will not stop if the first elevator does not descend to its proper position, and the matrix ears, or lugs, will be damaged by mold, causing bad alignment, and sometimes causing a bad squirt of metal.

To adjust the vise automatic, turn the machine ahead until the elevator slide descends and rests on the top of the vise. Select two perfect matrices, and with the vise open in the first position, place one matrix in the elevator jaws just inside the pawls, and another at the other end, or about thirty picas away; then close the vise, and lock securely. Disconnect the mold-slide lever, and pull the mold disk ahead on locking pins by hand. With the left hand raise the elevator until the ears of the matrices bank firmly in the aligning groove in the mold.

Holding the slide in this position turn the screw *79* in Fig. 42 down until it banks on the top of the vise cap. The other screw *77* should now be turned down to force the automatic stop rod down just far enough to allow the blade on the rod to pass under the plunger. The ears of the matrices at this time should be about one sixty-fourth of an inch below the aligning point of the mold. Lock the screw with the nut. The screw *79* should now be back one quarter of a turn and locked with the nut which completes the adjustment.

VISE JAW LEFT-HAND ADJUSTING BAR

The vise jaw left-hand adjusting bar registers with a scale on the vise cap by which the left-hand vise jaw can be set for any length of line. This can also be used for casting blank ends on slugs, to allow for the insertion of cuts or initials, the blank end casting against the vise jaw and afterwards cut off by a lead cutter or saw.

SECOND ELEVATOR

If the second elevator fails to descend at the proper time usually because the line of matrices has not distributed, the second elevator is caught by a safety pawl *202*, Fig. 81. In this case the spaceband lever pawl should be locked and then the matrices may be distributed. At this time it is sometimes necessary to pull back the second-elevator lever by hand so that the shifter lever may push the matrices into the distributor box. Then the second elevator may be lowered by hand after releasing the safety pawl *202*, Fig. 81. Never attempt to lower the second elevator by hand without first locking the spaceband lever pawl. On the later models of machines which are equipped with the spaceband lever operating lever it is not necessary to lock the spaceband lever pawl as the second-elevator lever can be held with the right hand and the spaceband lever operating lever with the left hand, controlling the spaceband lever and allowing the

line to come over smoothly after the second elevator is lowered to position. On machines other than recent models the locking of the spaceband lever is necessary.

MAGAZINE—MODELS 1 AND 3

Stroke of Verges.—For Models 1 and 3 machines, throw off keyboard belts, touch lower case "e" and em-dash keys. Turn the rolls until the keyrods reach highest point. The keyrod should be raised off verge at least one thirty-second of an inch. Adjust by the large screws beneath magazine.

MOLD DISK—WATER-COOLED

The mold disk (Fig. 57) revolves on a large stud which is hollow, and so constructed that a continuous stream of water may be circulated through it, keeping the mold disk and molds cool, with the result that solid and accurate slugs are assured. In making the water connections be sure to connect the inlet and outlet as shown in Fig. 57. The water must enter at the bottom and go out at the top. Do not circulate the water through the stud under pressure. Open the valve only enough to keep up a moderate circulation.

MOLD-BANKING BLOCKS

Attached to the back of the vise frame, one above and the other below the side knives, are the mold banking blocks upper and lower. These blocks are to prevent the mold from coming in contact with the knives, and hold the mold disk rigid when ejecting the slug, so that the knives will trim the slug parallel, and support the mold cap and liners against the thrust of the ejector blade.

EJECTOR SLIDE

The improved ejector slide does away with the necessity of turning backward the cam shaft to release the slide. This device is illustrated in Fig. 69. To change the ejector blade, reach back in by the ejector slide, as in making the change with the old-style slide. The lever will be found projecting forward alongside of the slide. Press down on this lever and draw the slide forward. The change of blade can then be made in the usual manner. Push the slide back into position and the operation is completed. When the slide is pushed into position again the link is connected to the slide automatically.

UNIVERSAL EJECTOR

The Universal ejector consists of a series of blades, the lower section of which is for four ems, and the others two ems wide. These sections are arranged edge to edge and are connected to the ejector slide by links. On the front of the machine, just under the starting and stopping lever and within easy reach of the operator, is a controlling lever and a notched segment, by means of which any desired number of blades may be brought

into operation, thus varying the width of the blade to correspond with the length of the slug cast. At the same time that the controlling lever is moved it automatically shows a figure in the back plate of the delivery channel, which represents the number of ems for which the blade is set. Universal ejector blades are only made on one thickness which is thin enough for a 5-point slug, and is supported so rigidly, that it will eject slugs of any thickness within the range of the machine.