

out dropping into the intermediate depression in the lifting cams. When it is necessary to use the middle pair of main magazines, however, the lifting cam bridges are swung back as illustrated in Fig. 194 and the magazine frame is permitted to assume its center operating position. The precise operating location of the magazine frame, no matter what pair of main magazines is being used, is controlled by lugs on the frame and by seats *a* cut in the supporting blocks 4. A screw 5 opposite each of the supporting blocks guides the magazine frame to its correct side-wise position.

Adjustment: Magazine Frame Stop Screws. Two stop screws 46, Fig 193, are provided to stop the magazine frame when it is in its furthest position to the rear. The screws will rarely require adjustment unless they work loose. If it is necessary to set the screws, shift the magazine frame back until the upper magazine is in operating position, as illustrated. Make sure that the lugs of the frame are down in the seats opposite the side guides 47, turn in the stop screws until they bank lightly against the rolls 5, then tighten the lock nuts.

It should be noted that the pinions 9 on the magazine frame lower shaft 8, Fig. 193, are timed in relation to the racks 10. If the lower shaft is removed, it should be replaced so that the timing pin in the right-hand rack 10 matches with the correct tooth of pinion 9. The timing tooth of the pinion is notched to clear the pin.

Maintenance. Several parts of the magazine frame mechanism should be lubricated at regular intervals to insure free operation of the shifting mechanism. Most of the bearings subject to heavy duty are packed in grease and will operate for long periods without attention. The most important points to be lubricated are the upper shaft rolls 5, Fig. 193, the bearings at the lower ends of the pinion links 7, the lower shaft rolls 12, the sprocket 13 and chain 14. The rolls 12 and the links of chain 14 should be greased lightly and the other points should be oiled from time to time.

Magazine Frame Operating Mechanism

The magazine frame operating mechanism is shown in Fig. 195. The operating handle 15 is pivoted on a stud at the front of the lower chain guard 17. It should be noted that the handle has been turned out of position in order to show the clutch lever 19. When the clutch mechanism is in normal position, handle 15 should be held by the detent mounted in lug 18 on the chain guard.

The operating handle 15, Fig. 195, is engaged with a sprocket 20 on stud 16. Sprocket 20 is connected with intermediate sprocket 22 by chain 21. The intermediate sprocket 22 is pinned on the end of sleeve 23. Whenever operating handle 15 is turned, therefore, sleeve 23 is rotated by the chain and sprockets indicated. On sleeve 23 is mounted a clutch collar 24, which is keyed to the sleeve but which is also free to be moved sidewise in relation to sprocket 25 and driver 26. Sprocket 25 imparts movement to the main magazine frame through chain 14; driver 26 turns sprocket 31 through universal joint 27, shaft 28, sleeve 29 and joint 30 and imparts movement to the side magazine frame through chain 32. The clutch collar 24 is operated by lever 19. When the projecting lug on the clutch collar is engaged with sprocket 25, as illustrated, rotation of the operating handle 15 causes the main magazine frame to shift. When the clutch collar is

engaged with driver 26, rotation of the operating handle shifts the side magazine frame. At the lower end of clutch lever 19 is mounted an indicator plate which shows whether the clutch collar is engaged with the main magazine shifting mechanism or the side magazine mechanism.

Adjustments: Magazine Frame Operating Chain Adjusting Collar Screws. Provision is made in the magazine frame operating mechanism for adjusting the tension of all the chains with respect to their sprockets. Two of the adjusting screws are shown at 48 and 49, Fig. 195. Screw 48 governs the tension of chain 14 with respect to sprocket 25, and screw 49 serves the same function with respect to chain 32 and sprocket 31. Another adjusting screw (not shown) is provided at the left of sprocket 22 for the purpose of tensioning chain 21 with respect to the sprocket. All three of the chain adjusting collar screws should be set so that the chains will have a slight amount of play in relation to the sprockets. If the chains are too tight, it will be difficult to move the operating handle. On the other hand, the chains should not be set too loosely because the magazine frames will have a tendency to run ahead of the chains in the course of a magazine shift. It is necessary to loosen the binding screws or nuts before the adjusting screws can be turned. In the case of the adjusting collar for sprocket 22, loosen nut 50 and the nut on the adjusting screw; to set screw 48, loosen lock nut 51 and the three screws 52 passing through cover 53; to set the side magazine chain adjusting collar screw 49, loosen nut 55 and bearing nut 56. After each adjusting screw has been set, the binding screws or nuts should be tightened before testing the movement of the magazine frame operating mechanism. When the magazine frames move with maximum freedom and follow the rotation of the operating handle positively, the tension of the chains may be regarded as correct.

Magazine Frame Operating Telescopic Shaft Nut. When the main and side magazine frames are seated in operating position, the slots in sprocket 25 and driver 26, Fig. 195, must be aligned with the projections on clutch collar 24. This will permit clutch lever 19 to move the collar freely into engagement with either the sprocket or the driver. The sprocket 25 is held in its correct position by operating chain 14. The driver 26 is set in its correct position when the machine is assembled and is then locked with nut 57. If the slot in the driver does not align centrally with respect to the projecting lug on collar 24 when handle 15 is in normal position and when the side magazine frame is in operating position, it will be necessary to loosen nut 57 and to turn the driver until it assumes its correct position. Tighten the lock nut securely when the setting is correct.

Timing Operating Chains. If the magazine frame operating chains 14 and 32, Fig. 195, are removed from their sprockets, it will be necessary to time them correctly when the parts are replaced. To time the main magazine operating chain, the magazine frame should first be moved back until the upper magazine is in operating position. Next, make sure that the operating handle 15, Fig. 196, is in its upright position and held by detent 34, as illustrated. The operating chain 14, Fig. 195, should now be connected with sprocket 25 so that when guard 17 is down and sprocket 25 is resting on the chain, the notch in sprocket 25 will be aligned with the projection on clutch collar 24. It may be necessary to turn sprocket 25 a few times in relation to chain 14 until the parts are correctly aligned according to the conditions outlined.

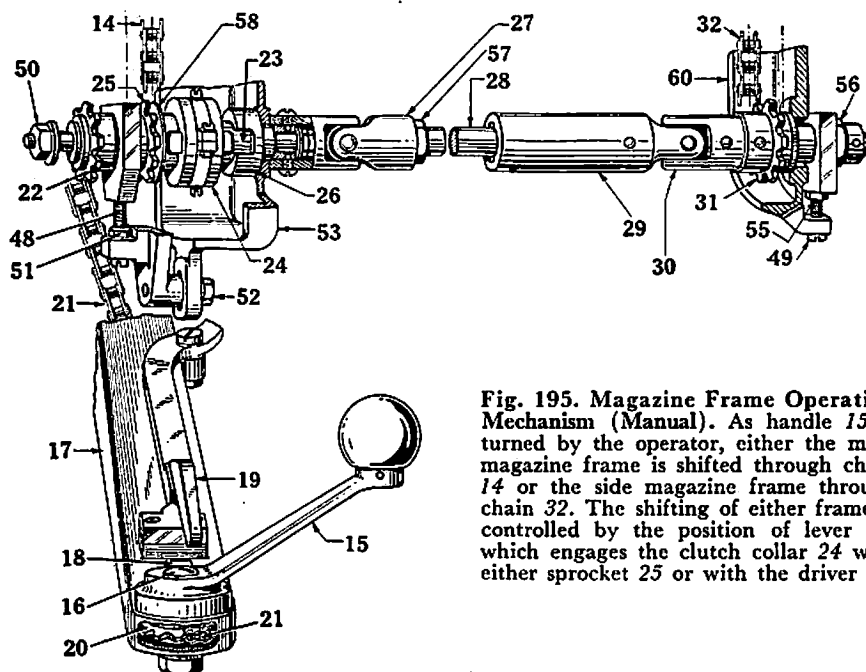


Fig. 195. Magazine Frame Operating Mechanism (Manual). As handle 15 is turned by the operator, either the main magazine frame is shifted through chain 14 or the side magazine frame through chain 32. The shifting of either frame is controlled by the position of lever 19, which engages the clutch collar 24 with either sprocket 25 or with the driver 26.

It should be noted that in the case of a machine without a side magazine unit, the operating chain clutch collar 24, Fig. 195, and all parts to the right are not required. To replace the operating chain properly, the magazine frame should be seated, channel entrance should be closed, and operating handle 15, Fig. 196, should be upright and held by detent 34, as illustrated. The operating chain 14, Fig. 193, should now be placed on the sprockets so that when the chain guard 59 is replaced, the operating handle will still be upright and held by its detent.

To time the side magazine operating chain 32, Fig. 195, the magazine frame must be seated in operating position and the operating handle must be in its normal upright position. Universal joint 27 should now be connected with driver 26 and the rest of the assembly—shaft 28, sleeve 29 and joint 30—should be applied. Note that timing marks are punched in shaft 28 and sleeve 29 to indicate the position in which these keyed parts are to be connected. Now the operating chain 32 should be placed on the sprockets so that when the chain guard 60 and its link are reconnected, the slot in driver 26 will be in alignment with the projection on clutch collar 24. The relationship between the driver and the clutch collar can be seen through the opening in the guard cover 53 from the front of the machine. The main magazine frame should be all the way back in order to bring the opening in the guard cover to position. If the slot in driver 26 does not align with the projection on clutch collar 24, it will be necessary to remove the guard and link and to turn sprocket 31 in relation to the chain. The parts will be

in time when the clutch collar 24 enters the slots in driver 26 and sprocket 25 *while the magazine frames are in operating position and while the operating handle is in its normal upright position with respect to the detent.*

It should be noted that when the machine is assembled, driver 26, Fig. 195, is located by loosening nut 57 and setting the driver in relation to clutch collar 24. This adjustment was described previously under the heading, "Magazine Frame Operating Telescopic Shaft Nut." When the chain shift mechanism is simply disconnected and replaced, however, there should not be any need for changing this adjustment.

Maintenance. Oil holes are provided in cover 53, Fig. 195, for the driver 26 and in the adjusting collar which supports sprocket 31. These points should be oiled weekly. The universal joints 27 and 30 should be lubricated and a light film of oil should be applied occasionally to the telescopic shaft 28 to promote free side movement in the keyed sleeve 29. Grease is required on the projecting lugs of clutch collar 24 and on the intermediate sprocket sleeve 23. A small amount of grease should also be applied to the operating chains 14, 21 and 32 when required. The stud on which clutch lever 19 is pivoted should be oiled occasionally as well as the detent at the lower end of the lever and the stud 16 on which the operating handle turns.

Magazine Frame Operating Handle Lock. Before the main or side magazine frame of double distributor machines is shifted, the channel entrance is opened and the lower magazine in operating position is raised to "shifting" position.

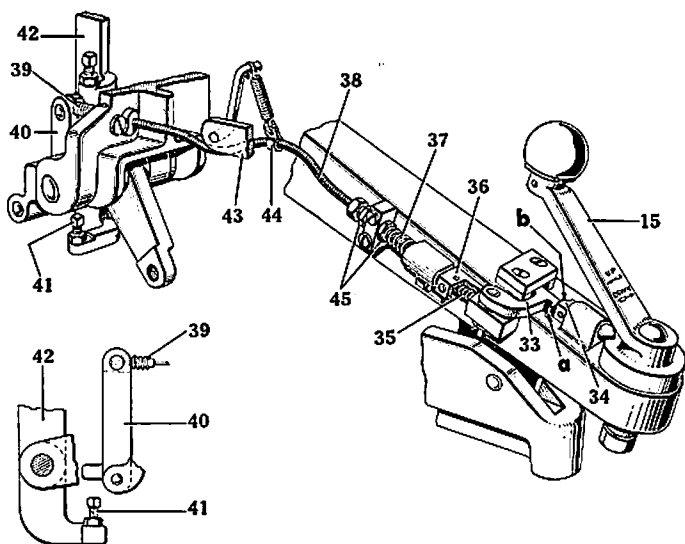


Fig. 196. Magazine Frame Operating Handle Lock. Lock 33 pivoted above detent collar 34 prevents strain on the magazine frame or channel entrance mechanism whenever the operator inadvertently tries to shift handle 15 while the channel entrance is closed. When the channel entrance is opened, lock 33 moves away from collar 34 and permits rotation of handle 15.

Both of these actions occur simultaneously as the channel entrance operating mechanism is manipulated to open the entrance. In case the operator tries to shift magazines before opening the channel entrance, a lock is provided to prevent strain on the entrance or parts of the magazine frame.

The locking device is shown in Fig. 196. The lock 33 is pivoted above the operating handle detent collar 34. The detent registers with a notch at the lower end of operating handle 15 and is moved upward whenever the handle is turned. In order to shift the magazine frame, therefore, lock 33 must first be moved clear of collar 34. This is accomplished by a cable assembly operated by the magazine lifting lever connecting link 42. The link is raised whenever the channel entrance is opened, causing screw 41 to bank against the pivoted actuating lever 40 (detail view). The actuating lever is thereby moved forward against action of spring 39 and tension is released from the cable inside casing 38. This permits compression spring 37 to move connector 36 forward, and the pivoted lock 33 is then moved clear of the detent collar 34. Operating handle 15 may be turned under these conditions to shift either the main or the side magazine frame.

When the channel entrance is closed, screw 41 in link 42, Fig. 196, moves downward away from lever 40. This permits compression spring 39 to move lever 40 backward and to draw the cable inside casing 38 in the same direction. Connector 36 is attached to the cable and is therefore caused to move lock 33 to position above collar 34, as illustrated. Handle 15 is locked in this instance and cannot be turned inadvertently by the operator. Full protection of the channel entrance and magazine shifting mechanism is therefore afforded by the locking device.

Adjustment of Operating Handle Lock. To adjust the operating handle lock, open the channel entrance by means of the operating lever and shift the upper pair of main magazines into operating position. Adjust screw 41, Fig. 196, until the edge *a* of lock 33 just clears the edge *b* of collar 34 when operating handle 15 is turned. The cable adjusting screw nuts 45 supplement adjusting screw 41 and may be used to obtain a close setting between lock 33 and collar 34. Next, shift the lower pair of main magazines into operating position and observe the relationship between the lock and the collar. If the same amount of clearance is not present between lock 33 and collar 34, loosen the bolt for bracket 43 and swing the bracket until the correct clearance is obtained. It will be noted that as casing 38 is put under tension, the cable inside the casing causes lock 33 to move in relation to collar 34. Tighten nuts 45 and the nut on screw 41, then close hook 44 so that it will not slide. Proper setting of the operating handle lock permits operation of the handle only when the channel entrance has been opened fully and when the magazine in the lower operating position has been raised and locked in shifting position by the magazine carriage catch.

Magazine Frame Counterbalance Mechanism

The third assembly related to the magazine frame shifting mechanism is the counterbalance mechanism. The counterbalance assembly applied to the latest four magazine machines (C4, F4, G4 and H4) is shown in Fig. 197. A somewhat different type of counterbalance mechanism is applied to the main magazine

frame of Star Base models and to the stack construction side magazine unit. All of the main types of counterbalance devices are described below under their respective headings.

C4, F4, G4 and H4 Counterbalance Mechanism. Machines equipped with four magazines are provided with torsion springs 61 and 62, Fig. 197, to balance the front end of the magazine frame and with a tension spring 69 to balance it when moving forward and backward. Springs 61 and 62 are mounted on the magazine frame upper shaft 6. The extended ends of the springs bear against the

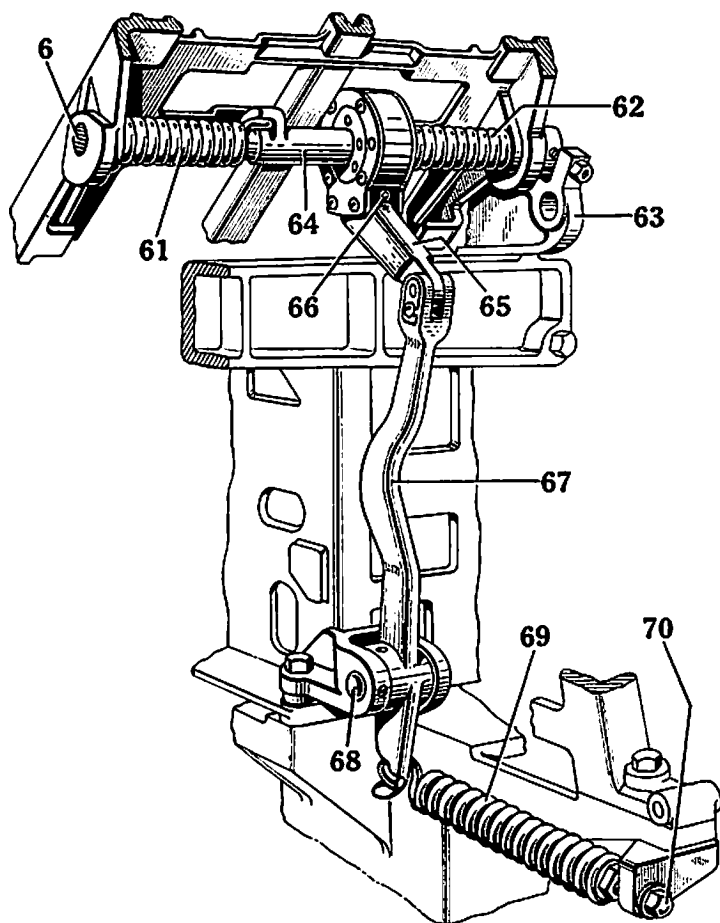


Fig. 197. Magazine Frame Counterbalance Mechanism (C4, F4, G4, H4). Springs 61 and 62 counterbalance the front end of the magazine frame and assist in raising and lowering the frame with respect to the escapement rods or keyrods. Spring 69 counterbalances the frame while it is moving forward or backward on the two supporting brackets 63.

lower magazine frame, as illustrated. The short ends of the springs engage lugs on sleeve 64, which is connected with part of a worm gear device inside yoke 65. The worm gear can be turned by means of adjuster worm shaft 66 and the special wrench provided. As the shaft is turned, the tension of springs 61 and 62 is increased or decreased. The shaft remains stationary after it is set. The ease with which the front end of the frame is raised while being shifted is therefore determined by the amount of tension applied through adjuster shaft 66.

Once the front end of the magazine frame has been lifted, the frame moves forward or backward on the two inclined brackets 63, Fig. 197. The counterbalancing of the magazine frame while moving forward or backward is promoted by spring 69 and lever 67. Lever 67 is pivoted on shaft 68 and is connected with yoke 65 by a wing pin. As the magazine frame is moved forward by the operating mechanism, the tension of spring 69 causes lever 67 to urge the frame forward. When the magazine frame is moved backward, spring 69 is put under increasing tension and exerts the greatest counterbalancing action when the frame is fully back. Spring 69 is adjusted by a long screw 70, which threads into the plug in the spring.

Adjustment. To set the previously described counterbalance device properly, the magazine frame should be moved forward until the lower magazine is in operating position. *All of the magazines and matrices to be used on the machine should be in the frame.* The adjuster worm shaft 66, Fig. 197, may be set now to counterbalance the front end of the magazine frame. Turning the shaft counterclockwise will increase the tension of the springs. These springs should be put under as much tension as required in order to get full counterbalancing action, but the front end of the magazine frame should not be prevented from seating in the supporting blocks. After making this adjustment, therefore, make sure that the frame seats firmly but without a jarring action in operating position.

The lower counterbalance spring adjusting screw 70, Fig. 197, should be set to secure maximum ease of movement when the magazine frame is shifted forward and backward on the supporting brackets 63. Turn the adjusting screw until the magazine frame can be moved forward with the least effort and also without too much resistance when the frame is moved all the way back. The four-magazine counterbalance mechanism is very efficient, and if the two spring systems are properly adjusted, shifting of magazines will be accomplished with ease and speed.

The counterbalance lever shaft 68, Fig. 197, and the wing pin at the upper end of the counterbalance lever 67 should be oiled occasionally. It should be noted that when the counterbalance lever is to be disconnected or when any part of the counterbalance mechanism is to be removed, all tension must first be released from the upper springs 61 and 62 as well as from the lower spring 69. Tension is released from the upper springs simply by turning adjuster shaft 66 clockwise. The lower spring 69 is released by turning screw 70 counterclockwise.

Counterbalance Mechanism for Star Base Machines. The main magazine frames of Star Base machines are counterbalanced by the device as shown in Fig. 198. Extended ends of the counterbalance springs 1 and 2 fit under the lower magazine frame 3. The short ends of the springs engage sleeve 4 on the magazine frame upper shaft. The sleeve is turned by yoke 5 and rod 6 as the magazine

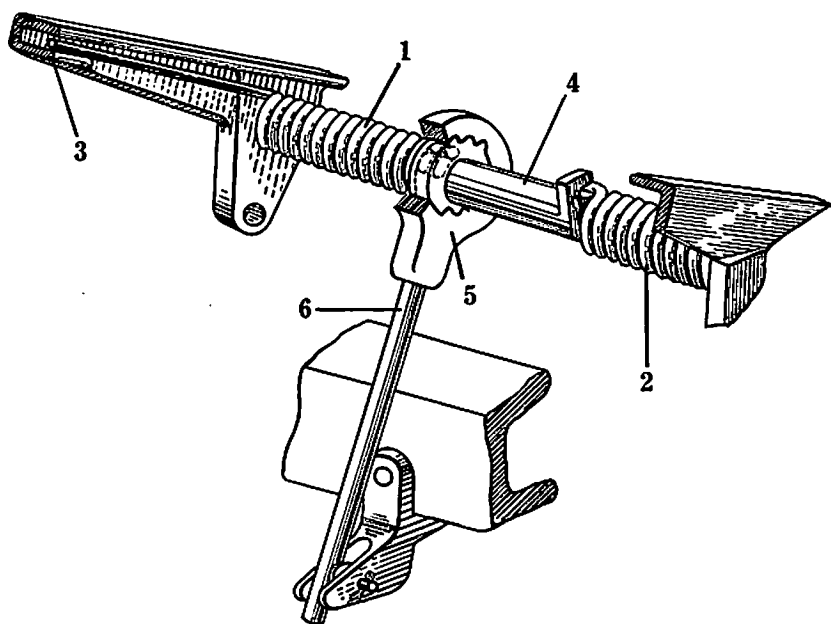


Fig. 198. Counterbalance Mechanism for Star Base Machines. Springs 1 and 2 are held under tension by sleeve 4, yoke 5 and rod 6. The front ends of the springs bear against the lower magazine frame 3 and counterbalance the frame while it is being shifted forward or backward. The springs are under maximum tension when the upper magazine is in operating position.

frame is moved forward and backward by the chain shift mechanism. When the upper magazine is in operating position, the counterbalance springs are under their maximum tension.

The counterbalance device should be set to lighten the weight of the magazine frame as much as possible without preventing the frame from seating in its various operating positions. All of the magazines and matrices should be in the magazine frame when setting the counterbalance device. Shift the upper magazine into operating position, then tilt the frame back. Loosen the set screw in yoke 5 and move the yoke away from sleeve 4. Place a wrench on the sleeve and turn the sleeve so that the springs will be under slight tension. Engage yoke 5 with the sleeve while holding spring rod 6 as near as possible to the roll at its lower end. Lower the magazine frame to operating position and test the movement of the frame forward and backward. Make sure that the frame seats positively in each position, especially when the upper magazine is in its operating position. Tighten the set screw in yoke 5 when the counterbalance is correct.

Counterbalance for Stack Construction Side Magazine Frame. The side magazine frame of four-magazine machines is counterbalanced by a sleeve, spring and yoke assembly similar to that shown previously for the main magazine unit of Universal machines. The springs are tensioned by an adjuster worm shaft similar to the one shown at 66, Fig. 197. Turning the shaft counterclock-

wise increases the tension of the springs. Make sure that the magazine frame seats in its supporting blocks after the counterbalance mechanism has been set.

Side Magazine Frame Safety Latch. A safety latch 2, Fig. 199, is applied to double distributor machines with the four side magazine stack unit. The purpose of the latch is to prevent the side magazine frame from moving backward in case the operator inadvertently shifts the clutch lever from side magazine operation to main magazine operation while the side magazine is raised for removal of the lower magazines.

When one of the lower side magazines is to be removed, the side magazine frame is moved forward until the lower pair of magazines is in operating position. This causes chain guard 3, Fig. 199, to move forward until a slot at its upper end comes to position in front of latch 2. When the side magazine frame is raised, lifting lever 1 is moved forward until screw 7 drops into the front part of the slot in catch 6. This carries pin 4 away from the lug on latch 2 and permits the latch to drop into the slot in chain guard 3. If the magazine frame operating chain

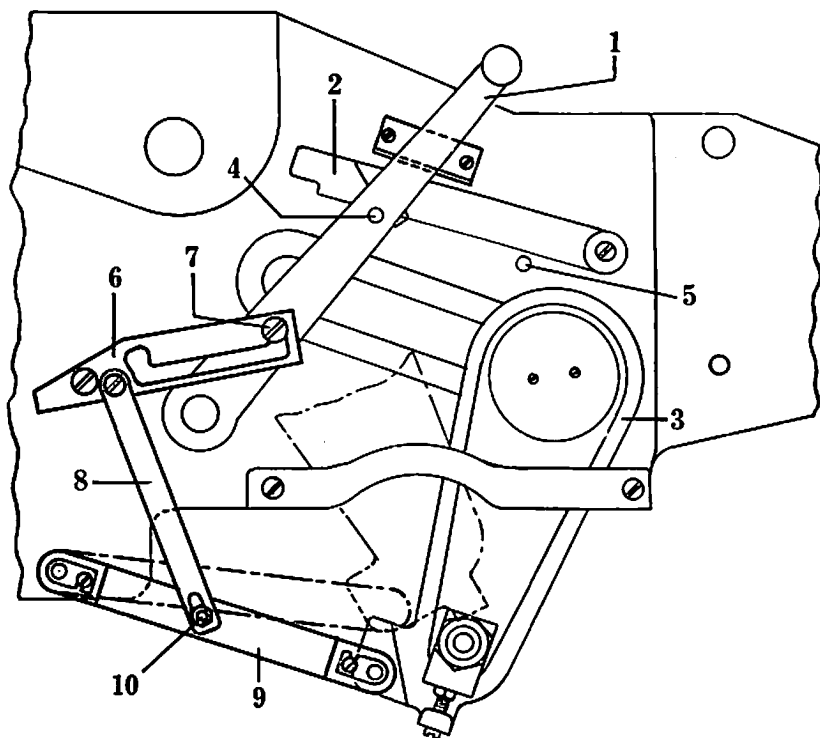


Fig. 199. Side Magazine Frame Safety Latch and Link. Latch 2 drops in front of chain guard 3 when the side magazine frame is raised for removal of the lower magazines. If the magazine frame operating chain clutch lever is shifted to main magazine operation under these conditions, the side magazine frame will be held forward by the latch.

Link 8 permits operation of the lifting lever 1 only when the side magazine frame is forward in position to be raised. This safety prevents inadvertent operation of the lifting lever when the upper pair of magazines is in operating position and makes it impossible to dislodge the third magazine from its frame.

clutch lever is shifted to main magazine operation, therefore, the side magazine frame will be held forward in its raised position by latch 2 and guard 3. Stop pin 5 is provided to limit the downward motion of the latch and to prevent it from swinging out of operating range. When the side magazine frame is lowered to operating position, pin 4 bears against the lug on latch 2 and disengages the latch from guard 3. This permits the magazine frame to move backward when shifted by the operating handle at the front of the machine.

A safety link 8, Fig. 199, is also applied to the four side magazine stack unit of double distributor machines to prevent inadvertent operation of the lifting lever 1 when the upper pair of magazines is in operating position. In order to lift the side magazine frame for removal of the lower magazines, the magazine frame should first be moved forward until the lower magazines are in operating position. When the frame is moved forward, stud 10 in link 9 is raised in the slot in safety link 8. This frees catch 6 and permits the operator to raise the catch and to move lifting lever 1 forward, thereby raising the magazine frame. When the magazine frame is fully back with the upper pair of magazines in operation, stud 10 is lowered in the slot in safety link 8, as illustrated. This prevents raising of the safety link and therefore causes catch 6 to lock the lifting lever 1. The operation of the safety link under these conditions makes it impossible to dislodge the third magazine from its frame.

Magazine Carriages (Front Removal)

In the preceding description of Universal Intertype models, it was pointed out that most of the new machines are equipped with movable magazine carriages to permit removal of main magazines from the front of the machine. The equipment for front removal is described first in the succeeding outline. The essential features of rear removal of main magazines and front removal of side magazines are presented later under their respective headings.

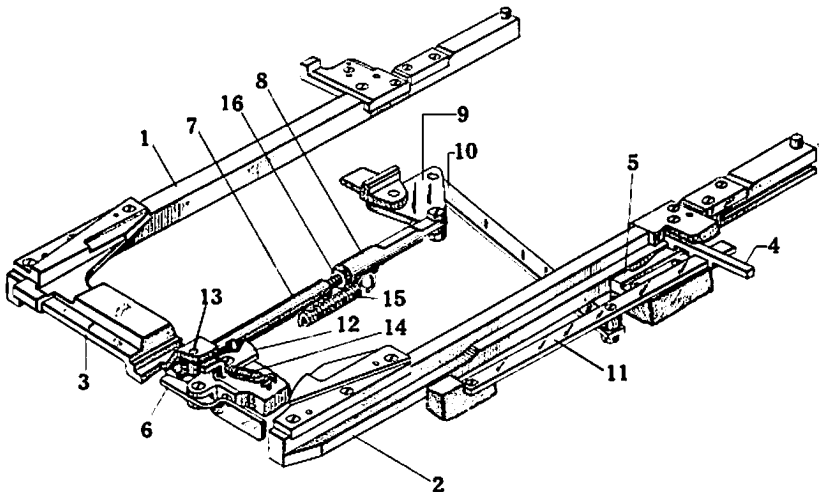


Fig. 200. Front Removal Magazine Carriage for Double Distributor Machines. The carriage is released by lever 6 and links shown. The magazine is supported by the carriage until fully forward, at which point the magazine can be removed with ease and speed.

Front Removal Carriage for Double Distributor Machines. The movable magazine carriage applied to four magazine Universal machines of the double distributor type is shown in Fig. 200. The carriage consists principally of a left and right-hand bar 1 and 2 and a tie 3 fastened to the lower ends of the bars. This assembly is supported in ways in the magazine frame and is capable of being moved forward and backward in relation to the frame. The magazine carriage is held normally in operating position by a catch 4, which locks in front of the lower lug on the magazine carriage catch block 5. In the illustration, however, the magazine carriage is shown locked in its raised or "shifting" position, with catch 4 in front of the upper lug on block 5. The magazine and its carriage are raised to this position when the channel entrance is opened in preparation for shifting or removal of magazines.

The hand release mechanism applied to the magazine carriage makes front removal of magazines simple and convenient. The hand release lever 6, Fig. 200, is pivoted at the front of the magazine frame. When the magazine is to be removed, the operator moves the right end of the lever forward. The left end of the lever pushes rod 7 and link 8 upward, causing the pivoted bellcrank 9 to draw link 10 to the left. The movement of the link is transmitted to the pivoted release bar 11, the upper end of which engages the magazine carriage catch 4. From the connections just outlined, therefore, it is apparent that when release lever 6 is operated, the magazine carriage catch 4 is moved to the left clear of the upper lug of block 5. This action releases the magazine carriage from the magazine frame and permits the carriage to move forward with the magazine to a position where the magazine can be removed with ease and speed.

Magazine Carriage Hand Release Rod Pawl. It should be noted that a locking device is applied to the magazine releasing mechanism to hold the magazine carriage catch 4, Fig. 200, in its released position once it has been moved clear of block 5. The lock consists of a pawl 12 pivoted at the right of the release rod 7. When the rod is moved upward by release lever 6, the magazine carriage is released and starts moving forward, carrying pin 13 away from pawl 12. This permits spring 14 to move pawl 12 into the notch in rod 7, locking bar 11 and catch 4 in their released position to the left. As catch 4 moves forward with the magazine carriage, therefore, it is held clear of the lower lug on block 5 and permits the carriage to move fully forward without interference. The magazine can be lifted off the carriage in this position.

In replacing the magazine, the center bar is placed in the corresponding guide on the carriage, the magazine is pushed upward until it locates on the carriage, then both are moved back to position as a unit. When the carriage reaches its locking position in the magazine frame, pin 13, Fig. 200, contacts pawl 12 and withdraws the pawl from the notch in rod 7. This permits spring 15 to pull link 8 forward and bellcrank 9 moves catch 4 in front of block 5 through the linkage illustrated. This action locks the magazine carriage to the frame and the frame may then be shifted to bring any desired pair of magazines into operating position.

Adjustment: Magazine Carriage Hand Release Rod. It was pointed out previously that when the magazine carriage catch 4, Fig. 200, is released, rod 7 is locked in its upward position by pawl 12. This action holds catch 4 clear of block

5 so that the magazine carriage may be drawn forward without interference. In order to obtain a positive latching action, rod 7 is made adjustable in relation to pawl 12. As shown in the illustration, rod 7 is threaded in link 8. The rod may be turned into or withdrawn from the link after nut 16 is loosened. The rod should be set so that when it is pushed upward as far as it will go, the top of the notch will be about $1/32''$ above pawl 12. This overmotion will insure a positive latching operation when the hand release lever is moved forward. Tighten nut 16 securely when the adjustment is correct.

Magazine Frame Lifting Mechanism. This mechanism, shown in Fig. 201, elevates the main magazine frame of double distributor machines so that either of the two lower magazines can be removed. Before operating the lifting lever, the magazine frame should be shifted first to its full forward position. This brings

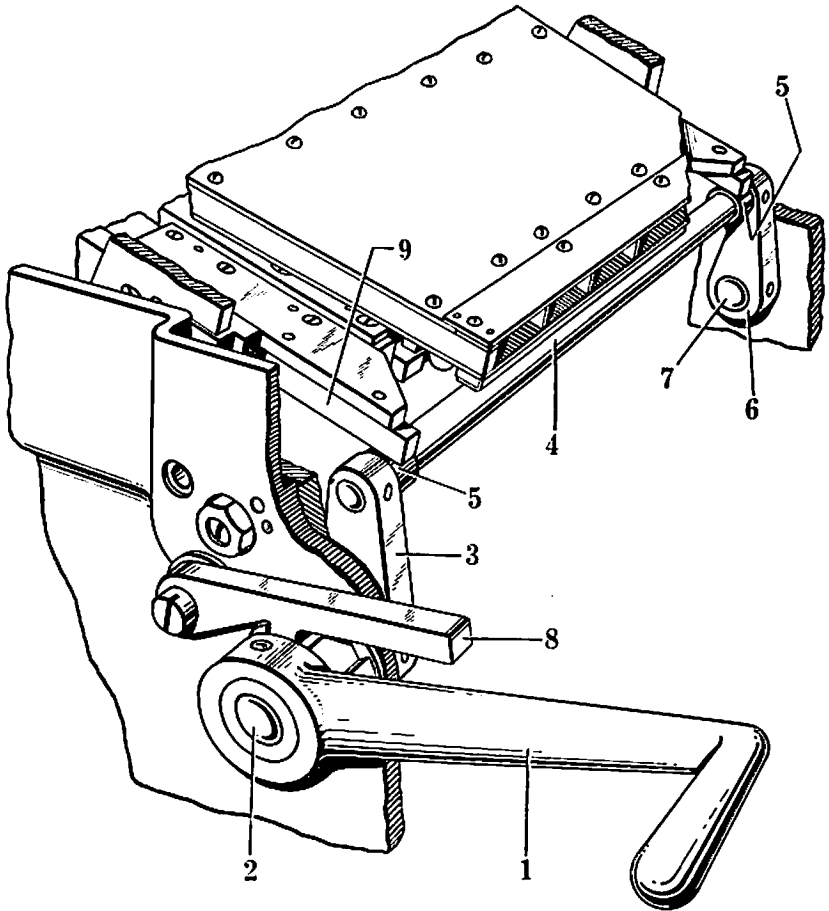


Fig. 201. Magazine Frame Lifting Mechanism for Double Distributor Machines. Only the lower magazine frame is shown: the upper three magazine frames have been omitted in order to show the lifting device more clearly. When the magazine frame is fully forward, lever 1 may be drawn forward to elevate the assembled frame. This will permit full access to the two lower magazines for removal.

two shoes 9 fastened on the lower magazine frame to position above rollers 5 on the lifting shaft 4. When lifting lever 1 is drawn forward, therefore, the magazine frame is raised to a position where the lower magazine can be removed. The lifting action of lever 1 is transmitted through stud 2, to which both the lever and yoke 3 are pinned. A similar yoke 6 and stud 7 are provided on the right as a support for shaft 4. It will be noted that two notches are provided in the hub of lifting lever 1. If the lever is moved forward until latch 8 drops into the first notch, the magazine next to the bottom can be removed. The second notch is provided for the removal of the bottom magazine. Either of the upper magazines can be removed without operating this mechanism when the magazine frame is all the way forward, with the two lower magazines in operating position.

Magazine Carriage for Single Distributor Machines. The front removal magazine carriage applied to Universal machines of the single distributor type is similar to that already described for double distributor machines. The main magazines on single distributor machines are supported by the carriages until they are fully forward, at which point the magazines can be lifted off the machine with ease and speed.

The most important difference in the construction of the carriage for single distributor machines is that no hand release mechanism is required. All of the carriages are held in the magazine frames by locating blocks fastened at the front ends of the frames. When a carriage is pushed back to operating position, two lugs on the underside of the carriage drop in back of the locating blocks on the magazine frame. This arrangement holds the magazine in its correct operating location with respect to the magazine frame, assembler entrance, etc.

With this locating arrangement in mind, it should be apparent that the magazine carriage can be released from the frame simply by raising the front end of the carriage above the locating blocks. The carriage and the magazine will then slide forward as a unit to a point where the magazine can be removed most easily. The procedure for inserting a new magazine is the same as that outlined previously for double distributor machines. The center bar of the magazine is placed in the corresponding guide on the carriage, the magazine is pushed upward until it locates on the carriage, then both are moved back into the magazine frame until the carriage latches to the frame.

To remove any of the main magazines, the magazine frame is shifted first until the magazine to be removed is clear of the assembler entrance. The magazine carriage can then be raised and withdrawn as described above. With regard to the bottom magazine, it should be noted that the eccentric magazine frame lower shaft raises the assembled frame high enough to permit an easy withdrawal of the magazine and its carriage. Sufficient overmotion is provided in the forward travel of the lower shaft to raise the bottom magazine and its carriage clear of the assembler entrance. This is accomplished by turning the magazine frame operating handle counterclockwise until it is stopped.

Magazine Frames (Rear Removal)

Two main types of magazine frames are provided for rear removal of main magazines. One type, shown in Fig. 202, is applied to two-magazine double distributor machines and includes a device for withdrawing the lower magazine

from its normal operating position. The other type of magazine frame is applied to single distributor machines and is pivotally mounted so that it can be tilted back for rear removal of magazines. This latter type of frame has been applied to many Intertype single distributor models and is so well known that only its most outstanding features are described in succeeding paragraphs.

Frame for Double Distributor Machines. The rear removal magazine frame for two-magazine double distributor machines is shown in Fig. 202. Note first that the lower magazine 1 is located under the front set of escapement rods 2 when in normal operating position. Before tilting back the magazine frame, therefore, it is necessary to withdraw the lower magazine so that it will clear the rods. It will be noted also that a safety lever 14 is pivoted above the back set of escapement rods 3. If any of the rods fails to drop back to position by gravity, the safety lever 14 will depress it before the lower magazine 1 is withdrawn. When the safety lever is operated by raising rod 15 and moving it forward, lock 16 is permitted to drop away from the magazine cross bar 17. This frees the lower magazine for withdrawal by the operating mechanism.

The mechanism for withdrawing the lower magazine consists principally of operating handle 4, Fig. 202, slide 10 and withdrawal bar 11. The lower end of the withdrawal bar engages the center bar of the magazine. Slide 10 is fastened to the upper end of the withdrawal bar 11 and is connected with operating handle 4 through link 8. When the operating handle is pushed forward to the

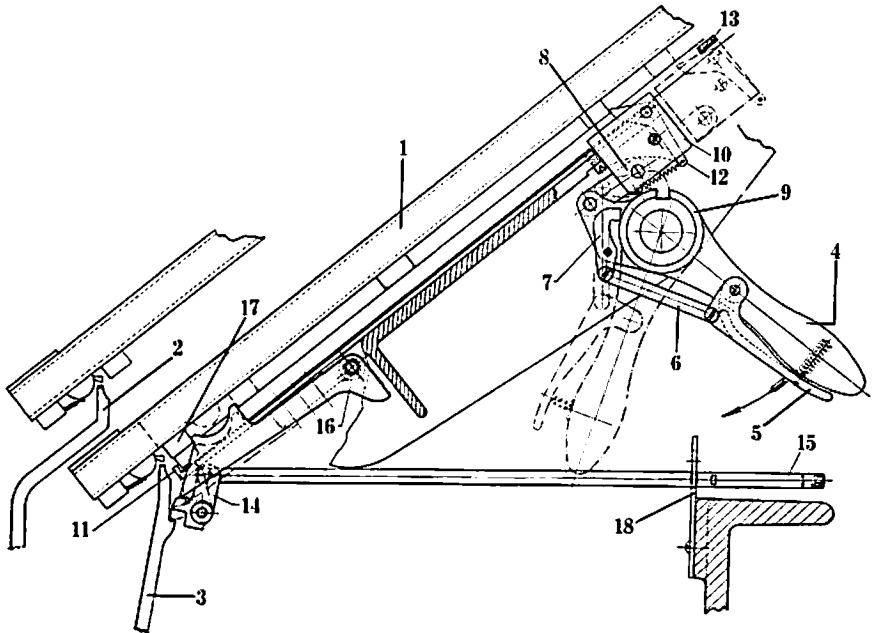


Fig. 202. Rear Removal Magazine Frame for Star Base Double Distributor Machines. Two magazine Star Base F and G machines are equipped for rear removal of main magazines, as shown. The withdrawal of the lower magazine is accomplished by opening the channel entrance, moving rod 15 forward and moving operating lever 4 forward. This withdraws the lower magazine 1 to a point where it will clear the upper escapement rods 2 as the magazine frame is tilted back for magazine removal.

dotted position indicated, withdrawal bar 11 raises the lower magazine 1 to a point where it will clear the upper escapement rods 2 as the magazine frame is tilted back. Note that when the lower magazine is fully withdrawn, detent 7 drops into the notch in collar 9 and locks the magazine in its raised position. Note also that the magazine frame slide pawls 12 are lowered at this time by depressors 13 on the magazine frame in order to free the lower magazine for removal. The magazine frame can be tilted back now and either or both of the magazines can be removed.

When the magazines have been replaced and the magazine frame is tilted forward again, the lower magazine 1, Fig. 202, is returned to operating position by squeezing detent handle 5 and pulling operating handle 4 back all the way. Note that when detent handle 5 is drawn backward, link 6 raises detent 7 out of the slot in collar 9, thereby freeing the operating mechanism. As handle 4 is pulled back and slide 10 begins to move forward, the two pawls 12 move away from the depressors 13. This permits the pawls to rise and to engage the magazine cross bar, and as operating handle 4 is pulled back, the magazine is pushed forward positively to operating position. The magazine is located in its correct operating position by two stops fastened to the lower magazine frame. As soon as the magazine is in operating position, rod 15 should be raised and drawn back to the point where the front notch in the rod will lock in bracket 18. This will raise safety lever 14 away from the back set of escapement rods 3 and will permit assembling of matrices from the lower magazine.

Frame for Single Distributor Machines. The rear removal type of magazine frame has been applied to many Intertype single distributor machines and is so well known that only its most outstanding features require description at this point. It should be noted first that the rear removal magazine frame is mounted on the machine and is shifted into its various operating positions in basically the same way as that provided for the latest type of front removal single distributor machines. From this standpoint, the essential mounting and shifting features of the rear removal frame can be understood in terms of references to the front removal frame shown in Fig. 193.

The rear removal magazine frame is mounted pivotally on an upper shaft 6, Fig. 193, on the ends of which are provided two rolls 5. The rolls support the assembled frame on a left and right-hand bracket 3 and 4 fastened to the distributor bracket of the machine. The upper shaft 6 is connected by links 7 with the lower shaft 8, which promotes the forward and backward movements of the frame and also lifts the front end of the magazines clear of the keyboard keyrods. As the lower shaft pinions 9 move forward on the racks 10, links 7 move the magazine frame forward through their connection with the upper shaft 6. Backward movement of the magazine frame is effected through the same mechanism. The control for shifting the frame is provided by the magazine frame operating handle, which was described previously under the heading, "Magazine Frame Operating Mechanism."

The eccentric magazine frame lower shaft shown at 8, Fig. 193, is essentially the same for the rear removal magazine frame. The shaft is pinned to yokes 11 and is lifted and lowered as the yokes move forward or backward. The lifting and lowering actions of the shaft are imparted to the magazine frame through

rolls 12, on which the front end of the lower magazine frame rests. Each magazine is lifted clear of the keyboard keyrods automatically as the frame is moved to its various operating positions.

From the standpoint of removing any of the main magazines, it is necessary first to move the magazine frame all the way back until the top magazine is in operating position. After the channel entrance is opened, the magazine frame may be tilted back and any of the magazines can be removed. A latch is provided on the magazine frame to hold the frame down while the magazines are being withdrawn or inserted. After changing magazines, the latch should be released from the lug it engages, then the magazine frame may be returned to its normal operating position. The channel entrance should be closed as soon as the magazine frame is returned to operating position.

Side Magazine Frames

The two main types of Intertype side magazine frames—stack construction and tripod construction—were described previously in connection with side magazine equipment. The number of side magazines carried by the various models was indicated and the methods of shifting side magazines into position were outlined. It remains now to indicate how the side magazines are removed from the various models.

Stack Construction Side Magazine Frame. The side magazines of all Universal machines are carried in the stack construction frame shown in Fig. 191. All of the magazines are removed from the front of the machine in this instance. If the machine is of the single distributor type, it is necessary simply to shift the magazine frame until the magazine to be removed is clear of the assembler entrance. In the case of the bottom magazine, the magazine frame operating handle should be turned counterclockwise until it is stopped. This raises the magazine frame to a point where the lower magazine is accessible for removal.

In the case of a Universal machine of the double distributor type, the two upper side magazines can be removed when the two lower magazines are in operating position. This is indicated clearly in Fig. 191. To remove the two lower side magazines, the magazine frame should be moved forward first until the lower magazines are in operating position. The magazine frame lifting lever at the right of the frame can then be moved forward to elevate the frame. Either or both of the two lower side magazines can now be removed.

Tripod Side Magazine Frame. Single distributor machines equipped with the tripod side magazine frame shown in Fig. 192 permit removal of side magazines from the front of the machine. Any of the magazines can be removed simply by lifting it clear of the lugs on the frame. Shifting of magazines is accomplished by raising the tripod clear of its supporting mechanism and rotating the unit until the desired magazine is in position for operation.

The features outlined above for single distributor tripod frames hold true for double distributor machines with the same type of side unit. The distinguishing feature of double distributor machines with tripod side units, however, is that a fourth magazine is carried on rails under the tripod. The lower magazine is provided with a stub similar to that for the three upper magazines. The lower magazine is removed from the right-hand side of the machine.