The foregoing description covers the most essential details of care and maintenance connected with the Intertype hard metal machine. If the operator and the machinist devote a reasonable amount of time to the factors outlined, the operation of the machine will be proportionately more efficient and the slugs of suitable quality for direct printing.

Mohr Intertype Saw

The purpose of the Mohr Intertype Saw is to cut the slug automatically to the length measure for which the vise jaws are set. The saw cuts the slug as it is ejected from the mold, deflects the waste end to a chute and guides the line of type to its correct place in the slug galley. The saw facilitates the setting of all types of composition in which slugs of variable lengths are required, such as in catalog, job and ad work.

The Mohr Intertype Saw is attached to the vise of the Intertype machine and becomes an integral part of the machine both in mounting and in operation. The saw blade is driven by a motor fastened under the slug galley and is operative whenever the main machine motor is running. As each slug is ejected from the mold, it is trimmed first to body size in the conventional way by the left and right-hand knives. As the slug continues forward, it contacts the rotating saw and is cut to the length for which the vise jaws are set. The waste end of the slug is deflected to a chute and the type end is delivered automatically to the slug galley at the front of the machine, where it is stacked in its correct sequence with respect to slugs previously cast and delivered.

Since the saw cuts the slug to the measure for which the vise jaws are set, liner and ejector blade changes are greatly minimized. From the standpoint of slug length, all of the molds can be set for full-length measure as well as the ejector blade. This advantage applies to the 42-em machine as well as to the 30-em machine. The only liner or mold changes that may be required are those related to the body size of the slug. In this connection, it should be noted that the saw will handle the full range of line composing machine point sizes from 5 to 48 points.

The control dial of the Mohr Intertype Saw makes three related settings simultaneously. The dial sets the assembler slide for the desired length of line, moves the left-hand vise jaw to the corresponding measure and locates the saw in its correct cutting position. To cite a specific example, let us assume that the mold is set for a 30-em slug and that 12-em lines are to be produced with the blank portion of the slug cut off. In this case, the assembler slide would be set at 12 ems and the left-hand vise jaw at the same measure. The matrix lines will justify to 12 ems and the remaining portion of the 30-em slug will be blanked out by the face of the left-hand vise jaw. When the assembler slide and the jaw were set at 12 ems, the saw was located automatically in position to cut off the blank portion of the slug. At the time of ejection, therefore, the excess 18 ems of the slug will be cut off and the 12-em line of type will be delivered to the slug galley.

The control dial is graduated by points and enables the operator to secure an unlimited range of slug lengths from 4 ems up to the maximum size of the slug

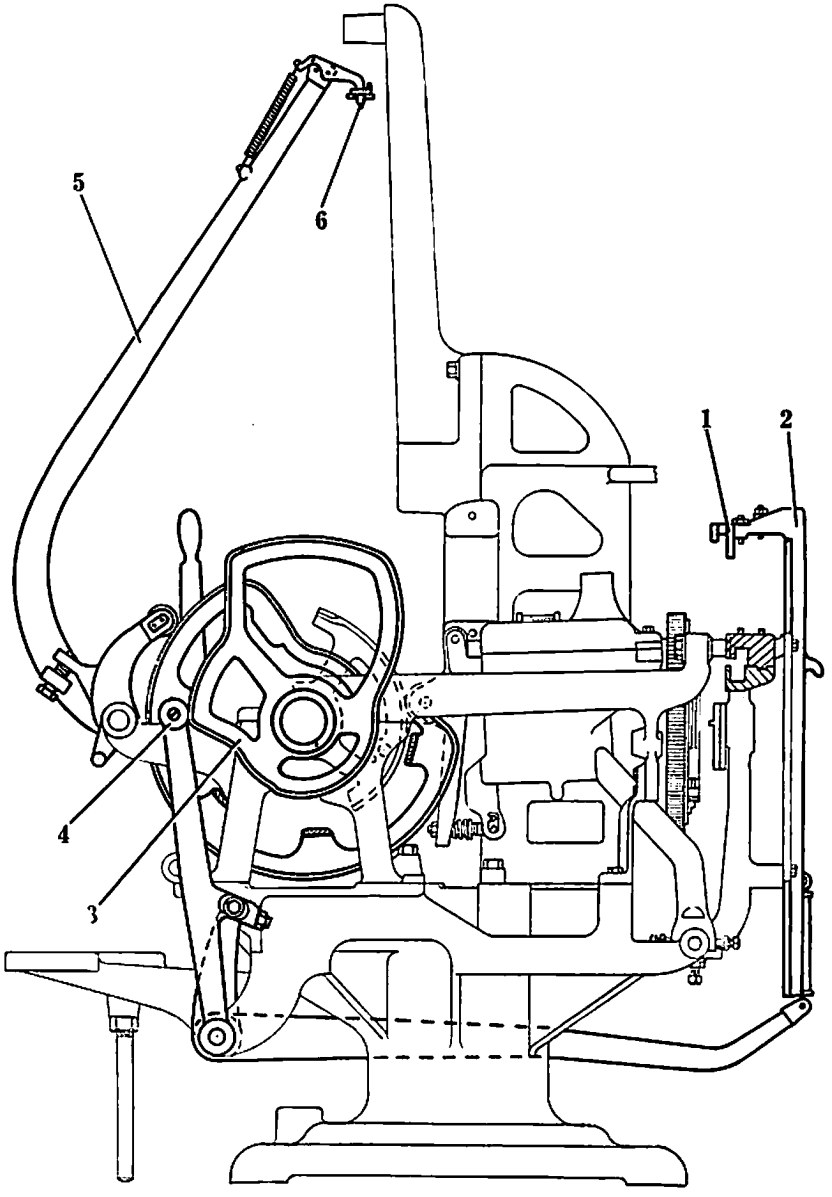

Fig. 219. Normal Position of the Machine. The first-elevator slide *2* is in a position where the rails of the first-elevator jaw *1* will align with those of the delivery channel. Note the position of the cam roll *4* in relation to the contour of the cam *3*. The second-elevator lever *5* is in normal position with the bar *6* opposite the distributor.

(30 or 42 ems). This feature facilitates the setting of all types of intricate composition involving run-arounds and special layouts such as are employed in department store advertising, etc.

Positions of the Machine

The four main positions of the machine, referred to in the description of the casting, transfer and distributing mechanisms, are illustrated in Figs. 219-222. It is essential that these positions be understood in order that details of operation, adjustment and maintenance may be carried out correctly. A knowledge of the positions will also aid the operator and the machinist in locating causes of machine stoppages quickly and correcting them properly.

Normal Position. This position is illustrated in Fig. 219. Note that the first-elevator slide *2* is in its intermediate position between the transfer channel and the vise cap. The first-elevator jaw *1* is directly in line with the delivery channel ready to receive a line of matrices and spacebands. The position of the first-elevator slide and jaw is determined by the first-elevator cam *3*. Note the position of the first-elevator cam roll *4* with respect to the contour of the cam. Another distinguishing feature of normal position is the location of the second-elevator lever *5*. Note that the lever is fully back and that the second-elevator bar *6* is aligned with the distributor box. The location of the parts just described is determined automatically by the starting and stopping pawl in the delivery and elevator transfer cam. The pawl comes to rest on the upper stopping lever in the vertical starting lever and stops the cams in the position indicated.

If the machine fails to start automatically when the delivery slide carries the line of matrices over to the first-elevator jaw, check the following factors:

1. See whether the matrix line is fully inside the first-elevator jaw detents. Sometimes the left-hand vise jaw is not set when a change is made to a wider measure, in which case the delivery slide long finger banks against the jaw and prevents entry of the line into the first-elevator jaw.

2. Check the alignment of the first-elevator jaw with the delivery channel. If the parts are not correctly aligned or if a matrix is badly burred, the line will not enter the jaw.

3. Verify the relationship between the starting pawl in the delivery-elevator transfer cam and the upper stopping lever in the vertical starting lever. When the delivery slide has made its full stroke to the left and has carried the line inside the first-elevator jaw, the pawl should be moved 1/64″ clear of the upper stopping lever. The adjustable plate on the pawl may be out of adjustment or the pawl may bind tightly against the lever due to lack of lubrication.

Casting Position. Fig. 220 shows the machine at a point commonly referred to as casting position, although the position shown is really preparatory to the actual casting operation. Note that the first-elevator slide *2* has carried the matrix line to position in front of the mold and is resting on the vise cap *7*. The first-elevator cam *3* has turned clockwise and cam roll *4* is opposite a depression in the cam.

It should be noted, however, that the mold disk *8*, Fig. 220, and the metal pot *9* have not moved forward yet. When the mold disk advances to the vise

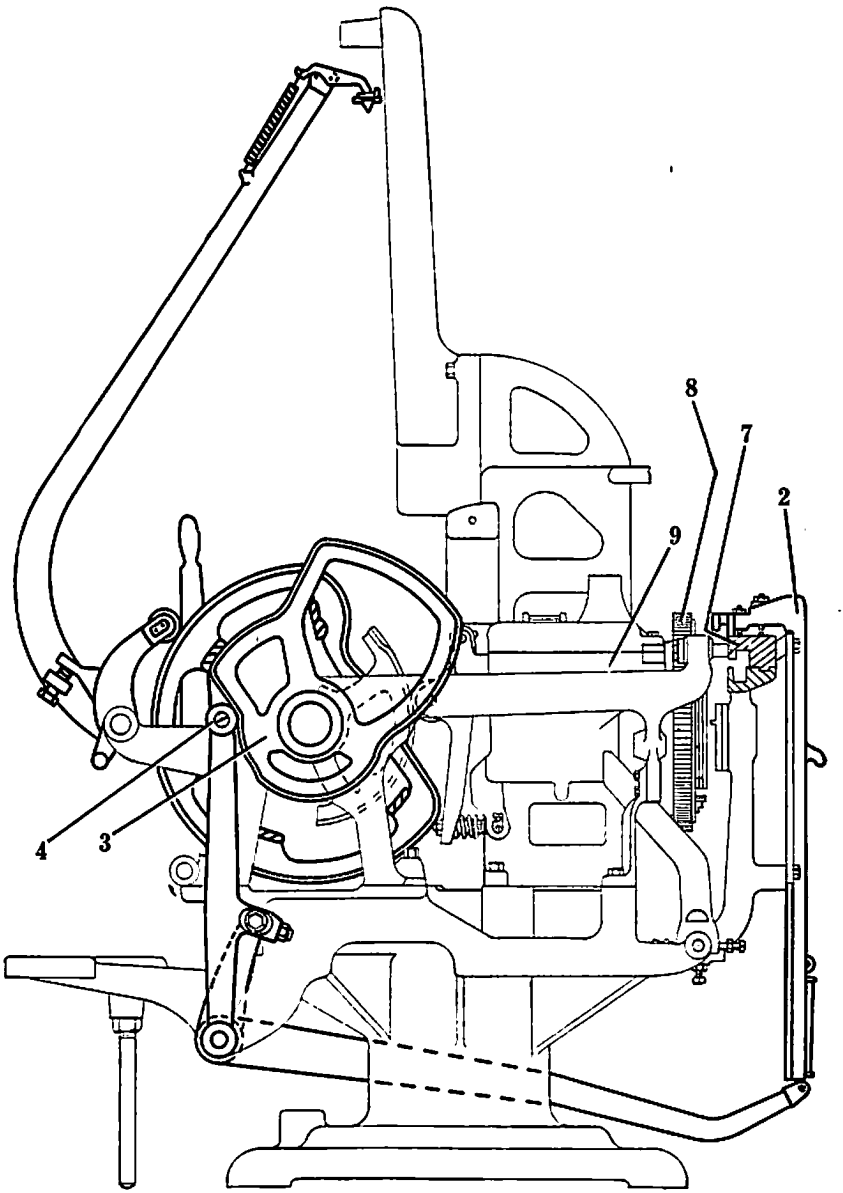

Fig. 220. Casting Position of the Machine. The first-elevator slide *2* is seated on the vise cap *7*. The matrix line in the first-elevator jaw is thereby lowered to position in front of the mold. Note the location of the cam roll *4* in relation to the cam *3*. Continued rotation of the cams will cause the mold disk *8* to move forward against the line and the metal pot to lock against the mold in preparation for the cast.

frame and the pot crucible mouthpiece locks against the mold, the machine may be regarded as being at the point where the actual casting operation occurs. From the standpoint of opening the vise frame, however, it is important to remember that the machine should be stopped at the position shown in Fig. 220 before releasing the vise locking handles. No attempt should be made to open the frame when the metal pot and the mold disk are exerting pressure against it.

If the machine stops at casting position or at a point preceding the cast, the following details should be considered:

1. If an overset matrix line has been sent in to the casting mechanism, the first-elevator slide will not be able to descend all the way because the line will not fit between the vise jaws. The vise automatic throws out the clutch in this case. The stoppage can be remedied by raising the first elevator and removing enough matrices to permit the slide to seat on the cap.

2. Similarly, any obstruction to the full downstroke of the first-elevator slide will cause the vise automatic to function and will stop the machine. Such obstructions may be caused by a defective knife wiper, a protruding first elevator jaw duplex rail or cap screw and accumulations of gummy substances on the vise jaws or on the first-elevator jaw. A loose matrix or spaceband between the first-elevator jaw and the vise cap or a line stop inserted improperly in the first-elevator jaw will also prevent the slide from seating.

3. If the mold disk has been disengaged from its pinion and has not been timed correctly when remeshed, the mold disk locking studs will not register with the locking studs on the vise frame. The mold slide safety device will throw out the clutch automatically in this case.

Similarly, if the first-elevator alignment stop bar is not set correctly with respect to the mold being used, the toes of the matrices will bank against the face of the mold and will cause the mold slide safety to stop the machine.

4. If the machine stops at the actual casting point, that is, when the metal pot is about to lock or is locked against the mold, observe the action of the driving shaft friction clutch. The clutch is under great stress at this point and will show a tendency to slip if out of adjustment or if the clutch leathers are oily.

5. With regard to the pot pump plunger, any obstruction to its upstroke will force the pot pump lever against the cam and may cause the clutch to slip. Undue dross accumulations or a broken wire from the well cleaner may cause such a condition.

Transfer and Ejecting Position. In Fig. 221, the first-elevator cam *3* has rotated to a point where the cam roll *4* is on the high section of the cam. The first-elevator levers have raised the first-elevator slide *2* to the transfer channel, at which point the matrix line is transferred to the second-elevator bar. Note that the second-elevator lever *5* has been permitted to descend by a depression in the second-elevator cam *10*. This action positions the second-elevator bar within the transfer channel in alignment with the teeth of the matrices in the first-elevator jaw. Note also that the ejector lever *11* has started forward to the dotted position in preparation for the ejecting of the slug.

Machine stoppages at the position shown in Fig. 221 may be caused by factors related to the transfer of the line or to the ejection of the slug, as indicated on the following pages:

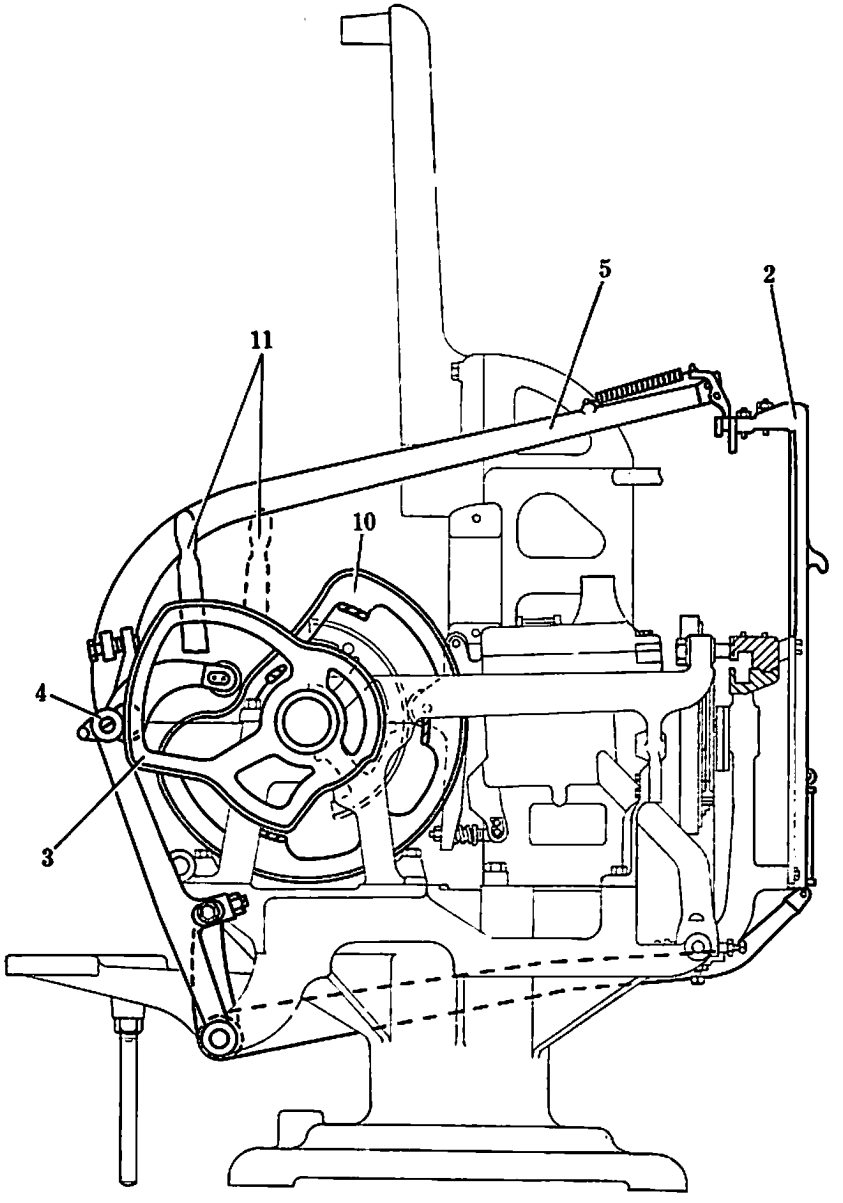

Fig. 221. Transfer Position of the Machine. The first-elevator slide *2* has been raised to the transfer channel by the first-elevator cam *3*. The second-elevator lever *5* has been permitted to lower by the depression in the second-elevator cam *10*. This action lowers the second-elevator bar to position within the transfer channel in alignment with the teeth of the matrices. The ejector lever *11* moves forward to the dotted position while the elevators are still at transfer position.

1. See whether the first-elevator slide has made its full upstroke to the first-elevator slide guide. If any obstruction prevents this movement, the elevator transfer slide safety catch will not be disengaged from the transfer slide and the line will not be transferred. Use of the first-elevator slide recasting block, of course, will reduce the normal upstroke of the first-elevator slide and will cause the automatic safety pawl in the delivery and elevator transfer cam to stop the machine.

2. Related to the preceding cause, any obstruction between the matrix line and the transfer bar will prevent transfer of the line. Sometimes a piece of metal lodges in the matrix teeth and binds against the transfer bar when the line is raised to transfer position.

3. Verify the position of the first-elevator jaw duplex rail. When the first-elevator slide ascends to the guide, an operating bar retracts the duplex rail. If the rail is very gummy, the first-elevator slide may be prevented from rising to its full height as regulated by the adjusting screw in the stop at the bottom of the slide.

4. An obstruction to the full upstroke of the knife wiper may prevent the first-elevator slide from seating at transfer position.

With regard to the second-elevator lever, it is apparent that the second-elevator bar must be positioned within the transfer channel before the transfer can occur. Correct location of the bar is indicated by the second-elevator bar plate, which should seat firmly upon the transfer channel front and back plates when lowered by the second-elevator lever. An adjustable screw in the lever depresses the transfer slide releasing lever only when the second-elevator bar plate is fully seated. Obstructions to the seating of the second-elevator bar may be caused by the following conditions:

1. Spacebands inserted in the transfer channel during operation are sometimes placed too far to the left in the channel and hold up the second-elevator bar.

2. Dirt or metal accumulations in the depression of the second-elevator cam or on the top surfaces of the transfer channel will prevent the second-elevator bar plate from seating.

3. If the transfer bar has been readjusted, it may be set too far to the right. In this case, the second-elevator bar would bind against the transfer bar and would not seat.

4. The second-elevator bar plate angle and the lower second-elevator guide on the transfer channel sometimes become gummy and prevent seating of the second-elevator bar plate. The angle and the guide should be cleaned occasionally and lubricated with dry graphite.

5. If the matrix line is transferred fully to the second-elevator bar and the cam shaft is stopped, see whether the automatic safety pawl in the delivery and elevator transfer cam is pushed clear of the upper stopping lever. If the clamping screws in the elevator transfer cam roll lever work loose, the lever will fail to carry out this action.

From the standpoint of the ejection of the slug, note in Fig. 221 that the ejector lever *11* has moved forward to the dotted position while the line is still being transferred. The ejector blade contacts the slug and starts to push it out of

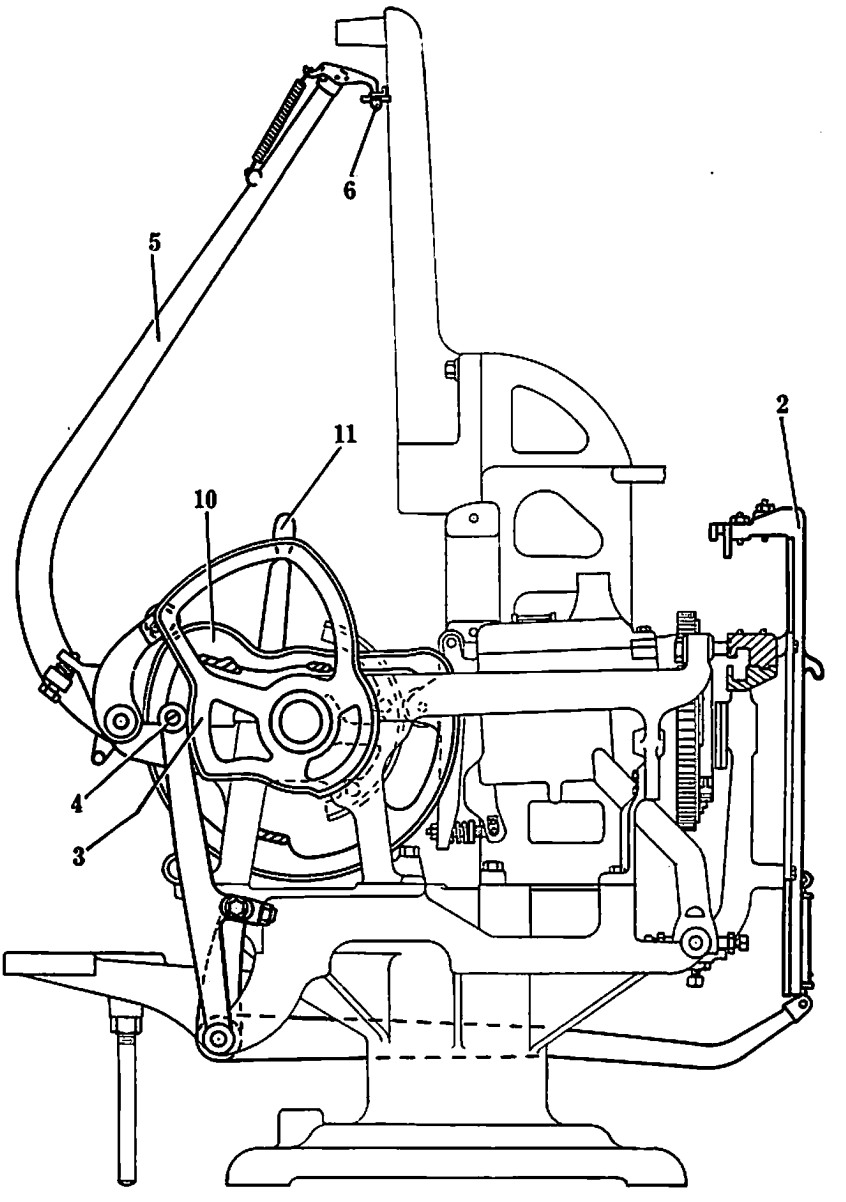

Fig. 222. Ejecting to Normal Position. The ejector lever *11* is fully forward and has ejected the slug from the mold. The first-elevator slide *2* and the second-elevator lever *5* are almost in normal position. Continued rotation of the cams will return the elevators as well as the ejector lever *11* to normal position, as shown in Fig. 219.

the mold. If any obstruction prevents slug ejection, the driving shaft friction clutch will slip and will prevent damage to the machine. The cause of the machine stoppage may be found among the following:

1. Failure to set the knife block when changing from a narrow to a wide measure.

2. Failure to set the ejector blade when changing to a different slug length.

3. Dirt or metal chips between the liners and the mold cap. This causes an oversize slug which may be too wide to pass between the knives. The right-hand knife will gouge the body of the slug in this case instead of merely trimming the ribs.

4. A similar condition may result if the mold cap swivel bolt nuts are not tightened sufficiently.

5. If the knife wiper does not make its full upstroke, the wiper blade will be interposed between the slug and the knives and will prevent ejection. The location of the wiper blade can be verified by raising the slug buffer and looking through the space between the knives.

Ejecting to Normal Position. In Fig. 222, the first-elevator slide *2* has been lowered almost to normal position by rotation of the cams. Note the position of the cam roll *4* with respect to the cam *3*. Continued rotation of the cam will position the first-elevator jaw in line with the delivery channel and the cam roll will occupy the position shown in Fig. 219. Note that the second-elevator lever *5*, Fig. 222, has been raised by its cam *10* and has almost returned the second-elevator bar *6* to its seat at the distributor. Continued rotation of the cams will complete this movement. The ejector lever *11* is starting to return to normal position at the point illustrated. The slug has been ejected from the mold and has been delivered to the slug galley.

The only cause for a machine stoppage at this point is a wedging of the ejector blade in the mold. This may result from a piece of metal separating from the slug. To remedy this condition, the knife block may have to be removed in order to provide room for removing the mold cap. When the wedging obstruction has been removed, the starting lever may be released in order to permit the machine to come to normal position.

Maintenance Routine

The specific maintenance requirements of the various parts of the assembling, casting, transfer and distributing mechanisms have been outlined in detail in the preceding sections. In each case, the lubricating points of the basic assemblies have been illustrated, the type of lubricant has been specified and the frequency of lubrication has been indicated. Since the greatest part of the maintenance procedure is generally carried out as a unit, however, it is desirable now to summarize the complete process in order to provide a ready reference for this important duty.

While it is impossible to specify how often each part of the machine should be oiled or how much lubricant should be used, it may be stated generally that all bearings and moving parts should be lubricated sufficiently, but not enough to cause a surplus of lubricant to flow out of the bearings. In this connection, it should be noted that parts which operate intermittently, such as the cam shaft,

do not require as much lubricant as those parts which turn continuously, such as the motor driving gear pulley. On the other hand, this does not mean that the pulley bearing should be flooded with lubricant and that the cam shaft should be left practically dry. It should be borne in mind that an excess of lubricant can be detrimental in causing dirt and grit to accumulate on working surfaces and eventually to wear them down. A wiping cloth should be carried during the oiling routine and all excess lubricant should be removed as the work progresses. Cleanliness is especially important on all parts which contact the matrices and spacebands. Oil and dirt on the machine will eventually deposit in the magazine and will clog the assembling units of the machine.

The following lubricants have been tested by Intertype Corporation and have proved highly satisfactory for use on the machine:

Intertype Lubricating Oil—Part No. W-1406 (half-gallon can), W-1407 (gallon can). This oil is used in most of the oil bearings of the machine and is replaced in only a few instances by other oils specifically designated for special purposes.

Keyboard Cam Oil—Part No. W-1408. This is a high grade of clock oil which combines the advantage of lightness with resistance to evaporation and consequent drying.

Alemite Grease—Part No. W-2876. For use in all bearings provided with grease fittings. A gun (W-2871) for pumping the grease into the bearings is carried in stock.

Dixon's Powdered Graphite for Spacebands—Part No. W-1397.

Vise Jaw Cushion Oil for use in the Quadding and Centering Device—Part No. W-2875. This oil is used in the vise jaw cushion cylinder to transmit a smooth, shockless action as the vise jaws are closed and opened by the operating mechanism.

The following maintenance routine provides a basic system applicable to the average conditions under which most line composing machines are used. Variable factors in these conditions, however, including climate and the relative cleanliness of the surroundings, will necessitate revisions in the general plan. A periodical inspection of the machine and its equipment, however, will reveal conditions which require attention at more frequent intervals than those outlined below.

EVERY DAY

Polish the spacebands on a flat pine board with dry graphite.

Clean the plunger with a wire brush; scrape the pot crucible well and clean the intake holes in the well.

Polish the galley chute spring at the bottom of the right-hand galley bracket with mold polish.

Apply a small quantity of dry graphite to the face of the molds, vise jaws and first-elevator jaw; wipe the top of the vise justification block to prevent graphite from depositing.

Brush metal trimmings from the machine.

Collect all matrices that may have accumulated in the tray at the rear of the machine or on the keyboard and return them to their proper magazines.

Dust the machine, especially those parts in immediate proximity to belts.

ONCE A WEEK

Oil the machine with the exception of the motor and distributor. A complete list of lubricating points is presented immediately following this general maintenance outline. Clean the cams with kerosene and wipe them dry.

Clean the matrix delivery belt pulley and the supporting plate with a cloth dipped in high test gasoline.

Wipe the pot crucible mouthpiece and scratch out the vertical vents lightly to remove oxides. Clean the back of the mold disk and the molds.

Roughen the back mold wiper with a stiff wire brush.

Clean the inside surfaces of the delivery slide fingers, the transfer slide finger and the face of the distributor shifter slide buffer with a cloth and high test gasoline.

Wipe the top of the second-elevator bar plate and the tops of the transfer channel plates where the elevator seats during transfer. In the case of double distributor machines, apply a very slight amount of oil to the top of the second-elevator bar plate after cleaning.

Inspect the cam rollers to see that they are turning freely.

Examine the distributor screws and wipe off any oil that may have worked out upon the threads. The oil, if permitted to remain on the threads, will foul the lugs of the matrices and may cause them to stick in the magazines.

EVERY TWO WEEKS

Oil the distributor bearings.

Oil the knife block.

Oil the assembling elevator gate spring roll and hinge rod sparingly, applying the oil with a wire or toothpick; oil the delivery slide releasing pawl and the delivery lever link studs at the rear of the face plate frame; oil the transfer slide link, the spaceband lever pawl and turnbuckle; oil the distributor shifter lever link.

ONCE A MONTH

Oil the motor.

Grease all bearings provided with alemite fittings. A grease gun (W-2871) is used for this work.

EVERY THREE MONTHS

In the case of a gas pot, remove the pot and mouthpiece burners, clean them with a stiff wire brush and wipe out the burner orifices underneath the pot.

Clean the front and back keyboard cams, rubber rolls and frames. *Lubricate the cam pivots with Keyboard Cam Oil only.*

Clean magazines and matrices. These need not be attended to at one time but the cleaning process can be spread over a period of several weeks.

ONCE A YEAR

Remove the entire keyboard from the machine and clean it thoroughly, including the keyrods and frame. Once a year is usually frequent enough for this unit, but if the surroundings are unfavorable, this operation may be necessary every six months.

Lubricating Points on the Intertype

The following outline lists the majority of lubricating points on the Intertype machine. For purposes of making the list as complete and as specific as possible, the Model G4-4s.m. machine has been selected. The outline may be applied to all other machines, however, because the lubricating requirements of all the models are basically the same. Since standard Intertype Lubricating Oil is used in the majority of places on the Intertype machine, all points listed below without lubrication specifications may be assumed to call for that lubricant. Where a special oil or grease is used, notation is made to that effect. In cases where more than one oiling point is provided for the same part, the number of points is indicated by a figure in parentheses directly following the name of the part. In the following outline, it is assumed that the work will be begun at the front of the machine and will proceed to the left around the machine. Any other systematic method of locating the lubricating points would be equally as good.

Matrix delivery belt pulleys (3), grease.
Keyboard cam rubber roll shafts, main and side (6).
Keyboard cams, main and side, keyboard cam oil.
Pi stacker star shafts (2).
Pi stacker idle pulley.
Keyrod frame shifting levers, main and side (2).
Keyrod frame shifting lever operating levers, main and side (2).
Assembler drive idle pulleys (2).
Assembler slide lever.
Magazine frame operating handle stud.
Magazine frame operating handle detent collar.
Magazine frame operating handle lock.
Magazine frame operating chain clutch lever detent.
Assembler slide lever fulcrum screw.
Assembler slide brake stud.
Assembler slide operating lever stud.
Assembler slide supporting roll.
Assembler slide bearing roller.
Assembler slide roll.
Assembler bearings (5). The latest assemblers are equipped with Oilite bearings which require renewal of oil once every six months.
Assembling elevator lever shaft (2).
Assembling elevator lever link (2).
Assembling elevator gibs (2), dry graphite.
Assembling elevator gate spring roll.
Assembling elevator gate hinge rod.
Delivery pawl fulcrum screw.
Delivery slide blocks, dry graphite.
Elevator transfer lever shaft (2). One oil hole at front of machine column and one at the back.
Spaceband lever shaft (2). Location of oil holes same as above.
Delivery lever shaft (2). Location of oil holes same as above.
Spaceband lever turnbuckle (2).
First-elevator jaw line stop, dry graphite.
First-elevator jaw duplex rail, dry graphite.
First-elevator slide gibs (2).
First-elevator lever link hinge pins (2).
Vise jaw rack gear operating lever rod detent (quadder).
Knife block operating screw.
Starting and stopping lever hinge pin.
Slug lever stud.
Slug lever operating roll, grease.
Slug lever operating cam support roll, grease.
Vise frame foot release and rest.
Vise jaw blocks (2), dry graphite.
Vise jaw right hand release lever pivot block (quadder), dry graphite.
Vise jaw right hand rack (quadder), dry graphite.
Vise jaw rack gear shaft (quadder).
Vise closing screw.
Vise closing connecting rod pin and roll.
Vise jaw rack pawl lever latch roll (quadder), grease.
Vise jaw rack pawl lever (quadder).
Vise jaw rack pawl lever wedge and block (quadder), grease.
Vise justification bar brace pin and cam, grease.
Vise justification bar hinge pins (2).
Vise justification bar roll.
Vise justification bar brace actuating finger roll (quadder), grease.
Vise jaw rack pawl lever (quadder).
Vise justification rods (2).
Vise automatic stop mold disk dog.
Vise automatic stop rod.
Vise automatic stop lever.
Mold disk locking studs.
Mold disk locking stud block (left hand) hinge stud.
Mold wiper (front) screw.
Knife wiper bar stud.
Pot leg bushings (2).

Mold disk stud, grease.
Mold disk slide. Apply a light film of oil on dovetail slides.
Mold disk guide support screw, grease.
Mold driving pinion shaft (2), grease.
Vise jaw lever (quadder).
Vise jaw operating safety lever (quadder).
Vise jaw operating lever link hinge pin (quadder).
Second-elevator guide, lower, dry graphite.
Spaceband lever pawl hinge pin (2).
Elevator transfer slide link (2).
First-elevator jaw duplex rail operating bar. Apply a light film of oil on the operative surface.
Elevator transfer slide. Apply dry graphite on bearing surfaces.
Delivery lever link studs (2).
Pump stop lever stud.
Mold cam lever hinge pin (2).
Mold cam lever handle shaft (2).
Pot pump lever shaft (2).
Pot lever shaft (2).
Pot pump cam roll.
Pot cam roll.
Mold turning bevel pinion shaft (2), grease.
Vise jaw operating lever shaft (quadder).
Vise jaw operating lever roll and shoe (quadder), grease.
First-elevator cam roll stud.
Distributor shifter lever shaft (2).
Distributor shifter cam rider and cam, grease.
Vise closing cam roll (2).
Justification cam roll (2).
Mold disk slide safety lock pin (2).
Mold disk slide safety lock link (2).
Cam shaft (2), grease.
Second-elevator cam roll (2).
Second-elevator cam lever link.
Second-elevator cam lever link sleeve studs (2).
Second-elevator lever shaft (2).
Second-elevator cam lever shaft (2).
Mold turning cam shoes (2). Oil bearing surfaces.
Mold turning bevel pinion block.
Elevator transfer cam roll.
Delivery lever cam roll.
Delivery air cushion piston link (2).
Delivery air cushion piston packing.
Magazine frame counterbalance lever shaft (2).
Magazine frame counterbalance lever hinge pin.
Automatic stop forked lever shaft.
Vertical starting and stopping lever shaft.
Mold disk slide safety automatic stopping lever, upper. Oil fulcrum pin and stopping lug surface.
Mold disk slide safety stop. Oil the bearing surfaces.
Automatic stopping lever (lower) fulcrum pin.
Mold cam roll.
Mold cam lever roll.
Mold cam safety lever hinge pin.
Ejector lever buffer rod (2).
Ejector lever pawl and plate.
Pot pump quick drop latch.
Pot return cam.
Automatic stopping pawl hinge pin.
Automatic safety pawl hinge pin.
Automatic safety pawl buffer.
Justification and vise closing spring rods (2).
Justification and vise closing lever shaft (2).
Justification lever (2).
Driving shaft bearings (2), grease.
Driving shaft clutch flange.
Second-elevator lever safety pawl.
First-elevator and ejector lever shaft (2).
Ejector lever (2). Also apply oil to return lug on lever which contacts delivery and elevator transfer cam.
Motor driving gear pulley, grease.
Motor (2), Mobiloil 10-10W.
Driving shaft friction shoe rods (4) and pins (2).
Intermediate shaft (2), grease.
Mold cooling blower compound pulley shaft.
Mold cooling blower impeller shaft, Mobiloil 10-10W.
Magazine frame operating chain adjusting bushing, side magazine.
Magazine frame operating chain intermediate sprocket, grease.
Magazine frame operating universal joint, right hand.
Magazine frame operating telescopic shaft. Apply light film of oil to surfaces which slide sidewise in sleeve.
Magazine frame operating universal joint, left-hand.
Magazine frame operating telescopic shaft sleeve driver bearing. Oil bearing and apply grease to slot in driver.
Magazine frame operating chain clutch collar.
Magazine frame operating chain intermediate sprocket, loose, grease.
Magazine frame operating chain (upper) adjusting collar.
Magazine frame operating chain intermediate sprocket, tight, grease.
Magazine frame operating chain clutch lever fulcrum screw.
Magazine frame lifting roll, side magazine.
Magazine lifting lever (lower) shaft (2).
Magazine lifting lever connecting link hinge pins (2).
Magazine frame counterbalance spring roll, side magazine.
Magazine frame auxiliary counterbalance lever screw, side magazine.
Magazine frame shaft upper rolls (2 main and 2 side), grease.
Magazine frame pinion links (2 main and 2 side).

Magazine lifting lever shaft (2).
Channel entrance frame bracket fulcrum studs (3).
Channel entrance yoke studs (3).
Channel entrance operating lever fulcrum studs (2).
Channel entrance releasing link connecting screws (2).
Channel entrance operating link screws (4).
Magazine shutter operating lever fulcrum screws (2 for each main magazine).
Magazine shutter cams (2). Grease operative surfaces.
Channel entrance latch lever roll.
Channel entrance latch lever fulcrum and connecting screws (2).
Channel entrance latch stud.
Distributor box arm stud.
Second-elevator bar plate, top surface.
Second-elevator bar swivel.
Second-elevator bar link hinge pin.
Matrix lift cam roll.
Matrix lift cam.
Matrix lift cam lever shifter.
Matrix lift cam lever guide pin.
Matrix lift lever yoke stud.
Matrix lift lever yoke.
Distributor box plate lower rail block, dry graphite.
Distributor box clutch tripping lever shaft.
Distributor box shifter link slide stud.
Distributor box shifter link slide.
Distributor box shifter gear stud.
Distributor box clutch cam roll.
Distributor box clutch tripping lever shoe. Light film of oil on operative surface.
Distributor box clutch pawl fulcrum pin.
Distributor box clutch pawl lever plate. Light film of oil on operative surface.
Distributor box clutch stop.
Distributor box clutch cam roll pin.
Distributor box clutch pawl lever stud.
Distributor box clutch operating lever stud.
Distributor front screw, upper (2).
Distributor front screw, lower (2).
Distributor clutch shaft.
Distributor front screw bracket (right hand) idle gear stud.
Distributor middle screw (2). Raise back distributor screw assembly for access to middle screw bearings.
Distributor back screw, upper (2).
Distributor back screw, lower (2).
Distributor clutch lever (2).
Distributor clutch pulley.
Magazine frame safety latch stud, side magazine.
Magazine frame operating chain guard link hinge pins (2).
Magazine frame lifting cam rollers, side magazine (2).
Magazine frame lifting cam rollers, main magazine (2).
Magazine frame lifting rollers, main magazine (2).
Escapement rod depressing lever tripping lever screw.
Escapement rod depressing lever tripping lever roll screw.
Escapement rod depressing lever screws (4).
Magazine carriages. Light film of oil on sliding surfaces.
Magazine releasing rod.
Channel entrance releasing cam roll.
Channel entrance latch releasing cam hinge screw.
Magazine releasing bellcrank stud.
Magazine releasing cam lever and pin. Apply grease to pin and to cam track in magazine lifting lever stop bracket.

Machine Changes and Operation

Most operators follow a fixed routine in making changes relative to composition. It is advisable to follow such a method because the more habitual the process becomes, the less danger there will be of overlooking a change and damaging a part of the machine. The sequence of steps involved in a complete change of face, body and measure is outlined below in a logical order, but any other sequence would be equally as efficient as long as it is followed every time a change is made.

1. Mold.
2. Ejector blade.
3. Assembler slide.
4. Delivery slide long finger.
5. Knife block.
6. Line stop.
7. Left-hand vise jaw.
8. Font distinguisher.
9. Magazine.

Mold. If a mold carrying liners for the body and length desired is already in the four-mold disk, it is necessary only to turn the mold into operating position.

If it is necessary to change the liners, open the vise, turn the mold to casting position, loosen the two nuts on the mold cap swivel bolts, swing back the bolts, remove the mold cap and take out the liners; insert liners of the size required, replace the mold cap and turn the mold back to operating position. Tighten the swivel bolt nuts to a snug fit only. Make sure that the liners, mold cap and body are clean and free of metal chips.

Mold and liner changes have been minimized greatly by the six-mold disk. The six molds fulfil the greatest part of the slug requirements and are placed in operation simply by rotating the disk in the usual manner. Whenever a change is required in a mold, however, it is made with the same ease and speed as in the case of the four-mold disk. It is necessary only to loosen the two mold cap screws to remove the cap or the liner insert.

Ejector Blade. To change the ejector blade of the four-mold disk, depress the locating lever, move the shifter lever until the desired length of blade is indicated on the em scale and release the locating lever. Move the shifter lever sidewise slightly after releasing the locating lever in order to make sure that the locating lever will lock in position.

Ejector blade changes have been eliminated completely on the six-mold disk. An automatic ejector selector stops the correct ejector blade in position after the desired mold is turned into operating position.

Assembler Slide. To change the setting of the slide, depress the adjusting block detent and move the block until the indicator registers with the desired mark on the scale.

Delivery Slide Long Finger. Lift the detent on the delivery slide long finger block, move the finger until its right side is at the setting desired, then release the detent.

This change is completely eliminated on machines equipped with the quadding and centering device. The delivery slide long finger is set constantly at 30 ems. The delivery slide fingers close automatically against the matrices when the line is raised to the slide.

Knife Block. To set the knife block, lift the detent, turn the dial until the desired body size comes to position, then release the detent.

Line Stop. The first-elevator jaw line stop should be pushed back to the right whenever the length of line is changed to a shorter measure. Machines equipped with the automatic quadding and centering device have a line stop which is returned automatically to normal position by a returning pawl on the transfer slide.

Left-Hand Vise Jaw. To set the vise jaw for the desired length of line, pull out the adjusting knob at the left of the vise cap and turn it until the desired measure is indicated by the indicator rod em scale. Releasing the knob will lock the setting.

Font Distinguisher. On machines equipped with manually-operated font distinguishers or selectors, set the finger or feelers at the correct slot locations. The font distinguisher is set by a rod projecting through the indicator plate on the machine column. The font selector feelers of double distributor machines are set by disks interposed between the font selector arms.

Magazines. The essential facts relative to front and rear removal of magazines have been described previously in connection with magazine frame equipment. The removal procedure is so well known that it need not be repeated here.

Operating Hints

It is not feasible to outline a system of machine operation in this book because the scope of the subject is as extensive as that of maintenance. A few basic suggestions are outlined below, however, to assist the operator in attaining maximum efficiency in his work.

The art in operating the Intertype keyboard with maximum speed and accuracy lies in touching the keybuttons evenly and smoothly so that matrices will come to rest in the assembling elevator in their proper sequence. Consistent practice and faithful application of the principles of a touch system are fundamental requisites for the attainment of that skill.

It is not necessary to watch the keybuttons after having mastered a touch system of operating — the fingers will locate the keys automatically. The eyes will be free to watch the copy and the assembler. Nervous and physical energy will thus be devoted to the important factor of concentration on the copy being set. When a touch system has been mastered, the operator soon develops a sixth sense which enables him to detect the failure of a matrix to respond properly to the keyboard touch. The operating skill attained through a touch system helps the operator to set straight matter so rapidly that alterations or thin-spacing can be done without always interrupting continuous machine operation.

Uniform Finger Movements. Control the movements of the fingers so that the intervals between the dropping of matrices will be evenly timed. If a matrix fails to respond, do not pound the keybutton. Locate the cause of non-response and correct it. Nothing is gained by losing one's temper and pounding the keybutton or the magazine.

Spacing of Lines. An efficient operator always fills out the matrix line as nearly as possible to the measure being set without crowding more matrices into the assembling elevator than will enter freely. If necessary, insert thin spaces between the words to fill out the line. It is just as easy to thin-space lines correctly on an Intertype as it is when setting type by hand. Any spacing effect may be obtained by using suitable spacebands, which are made in various thicknesses for all classes of composition.

Neatness. Operators should acquire the habit of keeping the keyboard neat and orderly. Keep all the spacebands in the spaceband box. Deposit matrices from overset lines temporarily in the keyboard pi box. Before changing magazines, return the matrices to the magazine from which they were drawn. The annoyance and loss of time caused by wrong fonts will thus be obviated.

Type Metal. It is important to keep the type metal consistently at the correct level in the crucible. The solidity of the slug body and the quality of the face are largely dependent upon this factor. When the metal is permitted to run low, the plunger and the well are apt to become coated with dross and oxide. Porous slugs may result from this condition. The level of the metal should be maintained close