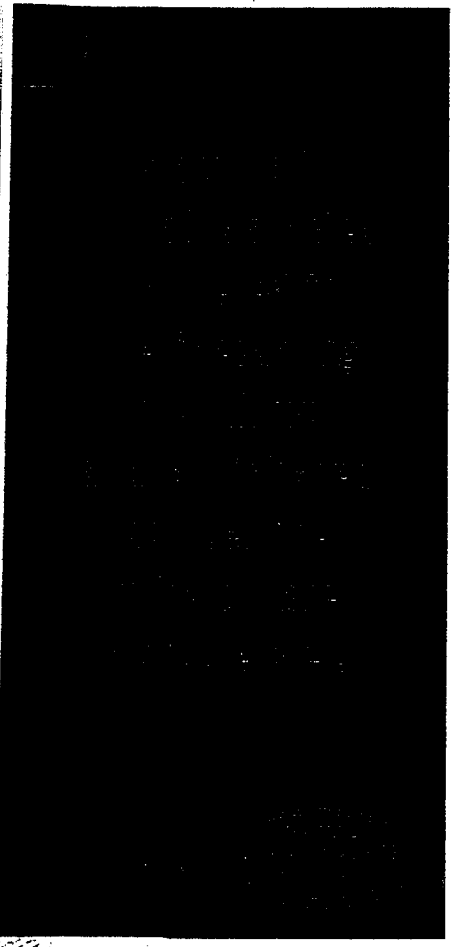
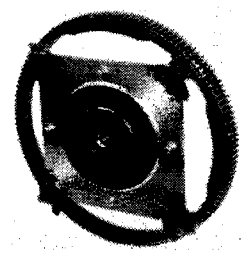
SHOP TALK

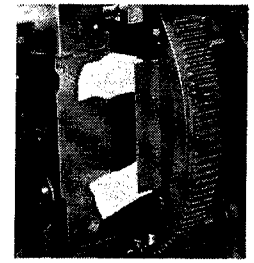
VOLUME 7 NO. 1

SUBJECT . .

Step-by-step stud and block job







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SHOP TALK

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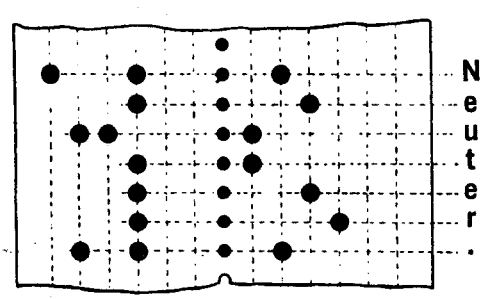
100 YEARS OF TAPE TYPESETTING.

Perforated tape, as a means of control for mechanical action, goes back to the mid-1700s when the power looms used in the weaving industry were controlled by tape or a series of perforated cards. The first tape-controlled "printing" was accomplished by means of a two-channel, sprocket-fed tape which printed out Morse code about 130 years ago. Our modern high-speed composing machines are direct descendants of these early efforts and are second cousins to the player piano. In 1848 a British patent was granted for the use of a perforated band of paper for controlling musical instruments and type composing machinery.

However, it was not until 100 years ago that perforated tape was put to practical composing room use. In that year the Mackie machine automatically composed

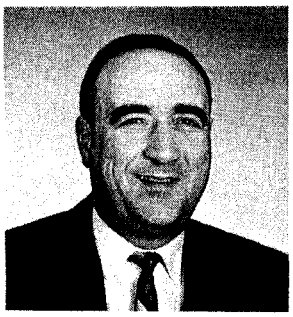


and justified lines of foundry type from a 12-channel center-feed tape. (Illus.) Apparently each line was deliberately overset, then squeezed back to proper length through the use of compressible interword spaces. The Guardian, in Manchester, England is said to have been composed by this machine and it was used for book composition on a fairly wide basis. It was not affectionately regarded by the typesetters of the day, since it earned itself the nickname of "the pickpocket".

In 1897 a most remarkable tape machine was invented in Budapest, Hungary. Known as the Electrotypograph, it utilized separate perforator and casting mechanisms. The perforated tape was passed through an electrical reader which sensed the holes in the tape and thus selected the character to be cast. Metal pot temperature was maintained by a mercury thermostat. As supplementary equipment, the perforator has a "Teletypograph" attachment which could read and transmit tape signals from one point to another at a maximum speed of 17 lines per minute.

Other ingenious tape-operated machines were invented prior to 1900, some of the perforators even providing hard copy. But it was less than 40 years ago that the linecasting machine was first successfully automated. All previous inventors had devoted themselves to the automation of foundry type, and thereby hitched their genius to the wrong wagon.

Alfred Archer



Step-by-step stud and block job

By James Adamo *Ass't. Service Manager*

Jim Adamo's first job with Star Parts was apprentice assembler 20 years ago. He was soon promoted to machine rebuilder, then to a service engineer. Today, as assistant service manager, he is well known to many of our readers through his installation and service work in this country and in Latin America.

Worn studs and blocks can cause a variety of machine difficulties, which are familiar to all machinists. Yet the replacement of these parts can sometimes be an involved and time-consuming job.

This article has been prepared in step sequence, giving an outline of general procedure, going into detail where necessary. A good knowledge of the typesetting machine is necessary to accomplish the job with the accuracy which is required.

In several of the steps it is assumed that the reader has partially disassembled a machine in the past. For instance, Step 3 requires the removal of the mold disk. We do not explain the "how" involved, but state that it is to be removed in the conventional manner.

The procedure for Linotype and Intertype is generally the same, and where applicable both part numbers are given. Referring to the ejector blade or blades, it is assumed that either the single solid 30 em Intertype blade or the full complement of 13 individual Linotype blades are used.

Step 1—Stop the machine with the first elevator head resting on the vise cap, prior to mold disk advance. Turn off power and remove galley tray, left and right hand galley brackets, and slug lever. Open the vise to first position and remove the knife block, knife wiper and front mold wiper. Carefully place all units aside with their respective springs, screws, etc.

Step 2—Using a special "T" handle ⅜" square socket head wrench, or a standard ⅜" socket wrench, remove the left hand knife and the knife spring (E-759 or U-263). In the absence of a special ⅜" wrench, a good substitute is an extension handle from a ⅜" drive socket set. The socket end will serve to fit the square screw heads and the open end may be fitted with a standard ⅜" open or box wrench.

With the same wrench, loosen the stud block fastening screws (E-53 or W-544), and remove both left and right hand stud blocks. If the blocks are tight on their dowel pins, temporarily turn in the fastening screws about half way and tap on the screw head or the wrench to drive the blocks up from their position on the vise frame.

Open the vise to second position. Remove ejector blade link and disengage the mold cam lever by depressing the handle. Move the mold disk and slide forward until it is free of the mold turning pinion.

Step 3—Use a ¾" socket wrench to remove the mold disk guides (F-1197 and F-1198, or U-2030). Check the under side of the lower mold disk guide for possible wear. If wear is present, as it probably will be on older machines, grind, file or polish down to an even surface, carefully maintaining straightness. Use the unworn surface as a guide in this operation. On later model Intertypes, a hardened steel plate will be found on the under side of the mold disk guide. Remove the mold disk.

Step 4—If your present mold disk has one or more of the "ailments" listed below, then it will be wise to consider a new disk at this time:

A. Stripped mold cap clamping screw holes (Linotype).
B. Bad mold disk pockets or the use of shims to obtain parallel slugs.
C. Warped mold disk, affecting type high.
D. Mold disk cracked or welded.
E. Excessive play between the hub and the disk (Linotype).
F. Worn or oversized locking stud holes, caused by operating the machine with loose locking studs.

Star mold disks are supplied with locking studs already installed and replacing them in Step 5 will not be necessary. If the present disk is good or you decide against replacement at this time, proceed by removing molds and liners, keeping each (together with shims if any) as a unit, also noting the pockets they were removed from. Remove the back knife if it is to be replaced. If not, do not disturb the setting but cover well with a wiper rag. The sharp cutting edge can prove dangerous. Clean the disk, molds, liners, and machine areas that have now been exposed by the removal of parts.

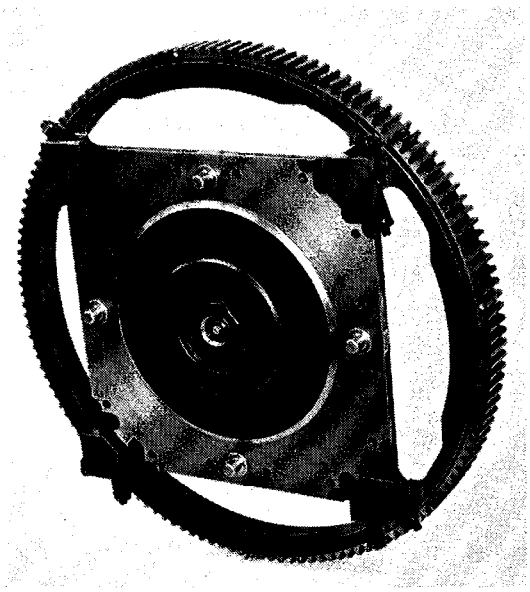


Figure 1. A new Star disk, for either Linotype or Intertype, is complete and ready to install.

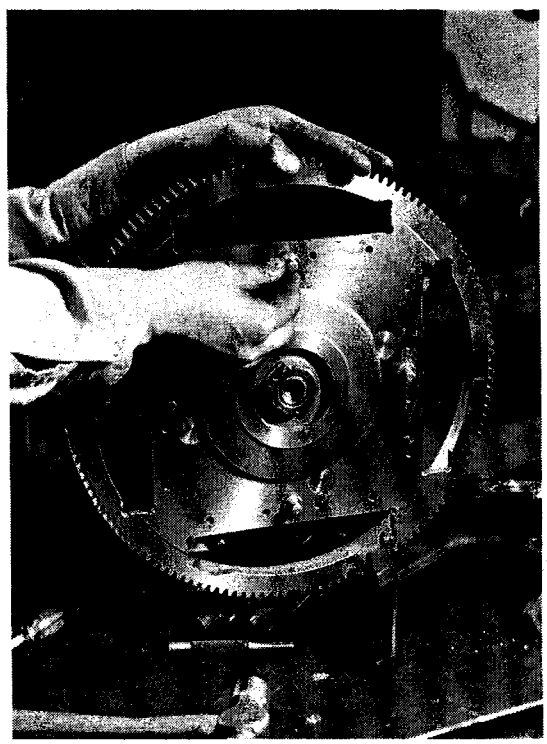


Figure 2. Don't ever do it this way! A flat clean surface is essential when replacing studs.

Step 5—Place mold disk on a flat surface that has been covered with cloth or paper. Remove and replace the locking studs. When inserting the new studs, position the slots in the stud base to line up with the keeper slots on the back of the disk. Start the studs by hand, inserting them perfectly straight and drive carefully into place, using a piece of soft metal. This is normally a ream or "snug" fit. If play exists between the stud base and the receiving holes in the disk, this has been caused by operating the machine with loose studs.

If the hole is not too badly worn then a special oversized Star locking stud may be used (F-1264-A or U-89-A). This stud will be .002" larger on the base dimension. After replacing the studs, turn the disk over and insert keepers (F-1265 or U-88). Lock together using screw F-1266 or W-505 and tighten securely. Check to see that the studs, keepers and screws are below the flat surface of the disk so they will not interfere with the back knife. Using a small chisel or center punch, lock the screw and keeper together by "swaging" part of the screw head material into the small slots provided in the keeper.

Step 6—Select one mold, preferably new, or one that is known to be true and assemble (less cap) to disk. Because this mold will have no provision for clamping down tight, care must be exercised to assure that the mold body is fully seated in the pocket. Tap down lightly with a 30 em slug before tightening up the four body fastening screws. Replace the remaining molds and liners in their respective pockets. Unless it is absolutely certain that a mold or a pocket is "out", then do not insert shims at this time. They may be replaced if required at the time of adjusting for parallel trim. Set the mold disk aside and go on to Step 7.

Step 7—In aligning the mold disk slide to the column, it will be necessary to temporarily replace the lower mold disk guide. Tighten the guide securely in position and push the slide back to its approximate normal position, onto the mold disk guide support screw.

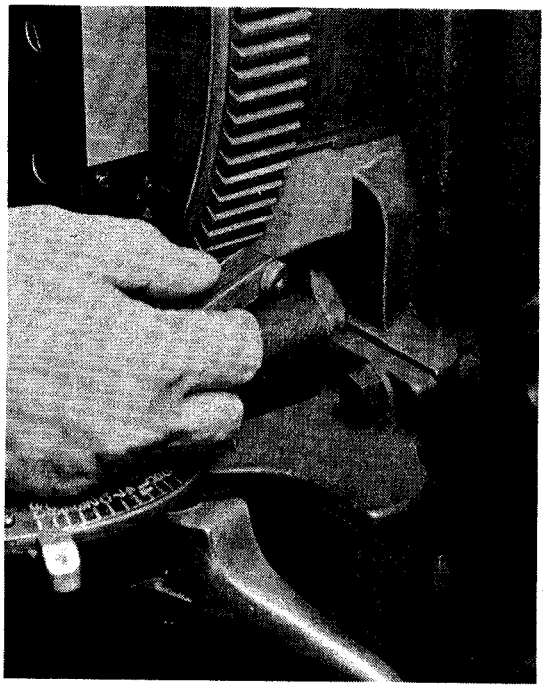


Figure 3. This adjustment helps to remove "slop" in the slide as it moves forward to lock-up.

Loosen the ⅞" hex nut that locks the mold disk guide support screw (Point A Figure 3). Turn screw (A-173 or W-666) causing slide to pick up at this point, or until a .003" feeler can be inserted between the vertical machined surface of the column and the corresponding surface of the mold disk slide (Figure 3).

In the absence of a .003" feeler, a piece of newsprint or .003 shim stock very carefully used, may be substituted. Holding the feeler in place, allow the slide to drop by loosening the adjusting screw (A-173 or W-666) and causing feeler to bind, then slowly turn screw upward until feeler can be pulled out with a slight drag. Tighten lock nut securely and double-check the required clearance. This setting may be adjusted with the mold disk in place, but the clearance (.003) is more easily set with the mold disk off.

Step 8—Pull slide forward and remove lower mold disk guide. Replace the mold disk being certain at this time that the disk contact surfaces are clean, and apply a light coat of oil to the bearing surfaces. At this time the disk may be checked for end play and corrected if necessary. Replace mold disk guides and adjust so the clearances between the outer edges of the mold disk and the guides are equal.

If a new back knife is to be applied, use a piece of newsprint as a spacing between the back knife and molds. Upon adjusting and tightening the back knife, the newsprint should pull out from between the knife and the back of the molds with a slight resistance. This setting will generally start you about .002" to .003" **over** type high. This reduces the possibility of accidentally scraping the molds and liners. Final type high adjusting will take place when machine is completely assembled and casting.

Step 9—Remove mold disk turning pinion (F-2251 or S-1042), and push mold disk slide back to approximately normal position. Set ejector at 30 ems and replace ejector link. (Do not hook on to ejector lever.) Turn the disk until the pocket containing the mold body only is in ejection position. Pick up the vise to first position. Before proceeding further we must be certain that the vise frame does not have two sets of dowel pin holes (4 holes) for each block. In realigning the disk we are, of course, going to pin the blocks in

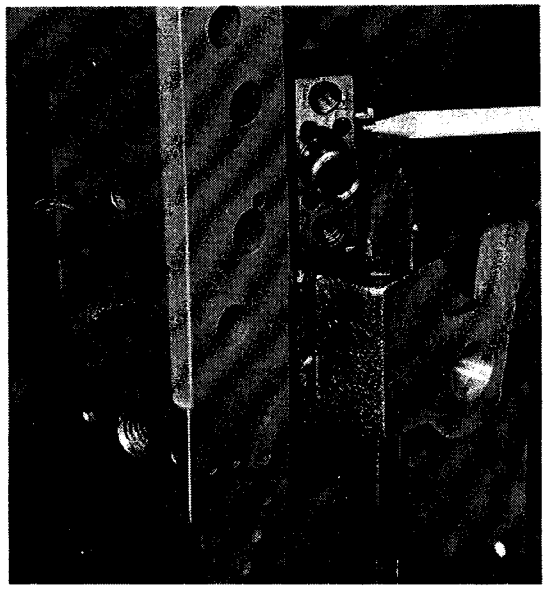


Figure 4. The extra holes at upper right and lower left help dowel this new block in position.

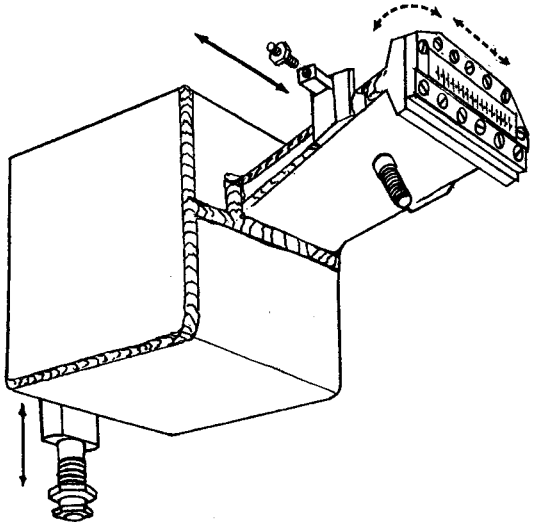
a different position. You will notice that your new Star stud blocks have an additional pair of dowel holes. The new dowel holes, which are diagonally opposite the original ones, will be used in doweling the blocks to the vise frame. If your vise frame already has four existing holes in it, then it will be necessary to plug these so as to provide new material for the dowel holes which will be used for the new stud blocks.

TO BE CONTINUED

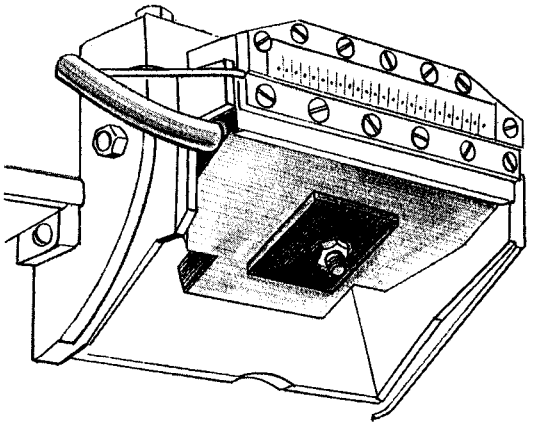
MECHANICAL "FIRSTS" IN NEW POT

It isn't often we blow our own horn in the editorial section of this magazine. However, the new Star Electric Pot has so many mechanical improvements that we believe our readers will find them interesting.

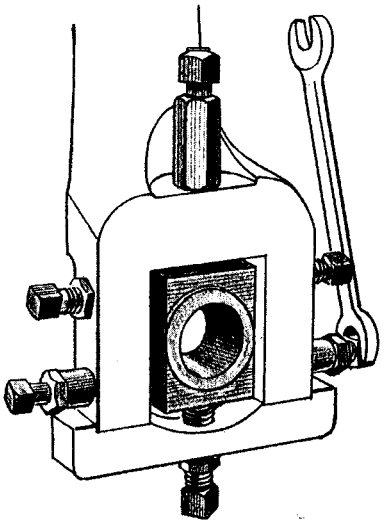
For the first time, a crucible may be adjusted within the pot jacket without disturbing other adjustments and without removing any of the asbestos packing. Illustration A shows the bolt which protrudes through a hole in the bottom of the jacket, allowing up-down adjustment. The crucible can also be moved from side to side by means of adjustment on the throat of the crucible. The addition of these two adjustments simplifies the mouthpiece-to-mold settings.



The crucible and throat heaters are easy to get out, and either can be replaced in a few minutes. The throat heater (B) is protected by a removable shield. One nut holds it in place, and the heater itself comes loose after removing another nut. No crucible removal or pot repacking is involved. The main crucible heater comes out just as easily. After loosening the outboard terminals, removal of two screws is all that is needed.



A lot of machinists will appreciate the arrangement of the adjusting screws and lock nuts on the pot legs. As you will see the two lower screws are outboard so you can get a wrench on them easier. You can reach the head of the top adjusting screw, which stands clear of the little cutaway in which it usually nestles. This same screw has a lubrication hole drilled through its length, the top being sealed with a spring-loaded ball to keep dirt out.



We have a 6-page folder on this new pot, from which the illustrations in this article were taken. Just drop a line to Star Parts Company in South Hackensack, New Jersey and we will be glad to send it along to you.

Star Slic in plastic containers is a low-viscosity silicone and absorbs readily into front and back mold wiper felts. Silicone acts as a liquid glass film on molds, vise jaws, spacebands and other parts where metal can accumulate. Metal cannot adhere when this film is present.

To keep molds clean in the average shop, Slic need be applied about once every two weeks to front and back mold wipers. Assuming the front and back mold lock-up are correct, an occasional wipe with a rag is all that is necessary between applications. A slight dampening with Slic will prevent "frost" build-up on vise jaws and metal accumulation on spacebands.

Slic is non-corrosive and cannot harm molds, liners, spacebands, vise jaws, matrices or other machine parts. It will not evaporate or decompose at linecasting machine temperatures. Silicone is harmless to the skin — in fact it is the base of many hand lotions.

When used as instructed, Slic will stop metal build-up troubles. Available as 100% silicone in 8 oz. and 16 oz. bottles (part numbers Z-83-8 and Z-83-16) and as a 20% solution in a handy new pressure can (Z-83-A).

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