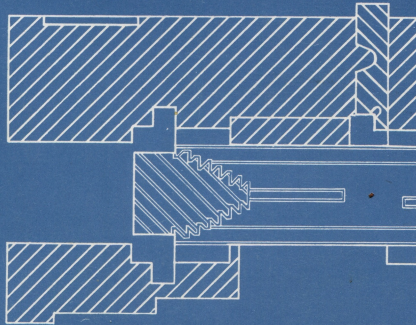


SHOP TALK

VOLUME 8 NO. 3



Shop Talk contains articles of interest to the linecasting machinist and is published as a service to help make his job easier.



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SOUTH HACKENSACK, NEW JERSEY

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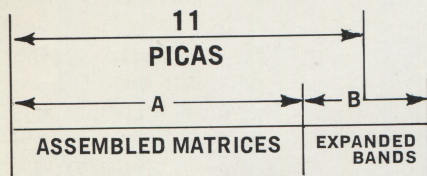
Text of this issue of SHOP TALK set in 9 and 10 point Star News.

THE COMPUTER IN THE COMPOSING ROOM by Alfred Archer

Continued

Turning now to the computer, its electronic memory will have been given a great many instructions by the "program" which has been specially prepared for typesetting in a particular plant. In addition to matrix widths, spaceband sizes and dimensions of various lengths of line, the computer will also have received instructions to perform certain functions when specific conditions have been met.

Part of the computer program also includes instructions for line justification. For example, in the illustration below a computer could be instructed that a line can be ended whenever (A) is less than 11 ems and (A) plus (B) is greater than 11 ems.



*(A) is
less than 11 picas
(A) plus (B) is
greater than 11 picas*

The computer has a "temporary" tape signal storage, into which tape signals are fed. Here

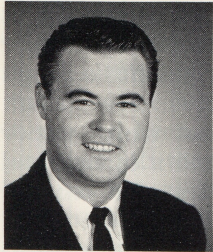
the computer stores the first batch of incoming signals, and then refers to its justification instructions. As soon as the line will justify, the signals are released for output perforation; the temporary memory "forgets" these signals and begins work on the next batch.

Because the computer has memorized many different point sizes and a variety of line lengths, an instruction must be given to it by the perforator operator for a specific point size and line length. For 9 point on 11 picas, this instruction could take the form of a code such as "S, em dash, 9, hyphen, 11". Until instructed otherwise the computer will then process all tape for 9 point on 11 picas.

Let us assume that unjustified tape is now being fed into the computer for 9 point face to be justified at 11 picas. No output tape is punched until the line justifies. The computer adds and remembers the accumulated widths of all matrices plus the minimum size of spacebands to obtain the total represented by A. In addition, it has added the total spaceband expansion to obtain the figure for B.

As the length of line approaches 11 picas the computer will constantly compare dimensions A and B with 11 picas. It will do so in a

MATRIX TRANSFER FROM FIRST TO SECOND ELEVATOR (PART 1)



By **Walter Butterworth**

Star Parts Service Engineer

Walter Butterworth began with Star Parts more than 15 years ago as an apprentice machine assembler. Since then he has had wide mechanical experience, both in Star's machine rebuilding department and as a travelling installation and service engineer.

The transfer of matrices from the first elevator jaws to the second elevator bar and transfer channel is extremely important, because maladjustment in one or more of the related parts in the transfer cycle can cause excessive matrix tooth wear and cause unnecessary machine stops.

Damaged tooth combinations will also affect the smooth operation of the distributor. So we would like to point out that a great deal of time and patience should be taken when setting the transfer, to be sure of perfect alignment.

Before attempting to set any portion of the transfer, it is recommended you check the following parts for wear or damage.

1. First elevator front and back jaws.
2. Second elevator bar, bar plate and link.
3. Transfer channel.
4. Transfer slide and finger.
5. Spaceband pawl and spring.
6. Second elevator lever roller. (check for flat spots)
7. Intermediate bar and pawl.

If any of these parts are in questionable condition we recommend replacing them before starting the

transfer adjustments. Star has made several improvements on most of the related transfer parts which will improve machine operation and reduce maintenance time. For example the second elevator bar can be replaced with a new three-step style. This style bar cuts down damage to both second elevator bar and distributor box bar. If you replace the second elevator bar with the three-step style it will be necessary to replace the distributor box bar also. Another improvement is the transfer channel (D-6691-A or V-1715-A). The new channel has an adjustable front plate and replaceable top rails. It also has a built-in spaceband buffer. Once you have inspected these parts you can proceed to adjust the transfer.

Step. 1. Remove the line stop from the first elevator jaws and remove the transfer slide (D-3158 or V-97-A) by loosening the screw on the top of the transfer lever and pull the pin from the lever. Then remove the intermediate bar by loosening the two $\frac{3}{8}$ by 16 hex head bolts on the front of the first elevator slide guide. Also remove the duplex rail actuator (D-2858 and D-2583, or W-4801) from the

slide guide. Remove the pot pump plunger pin and run the machine around to transfer position with the second elevator resting on the transfer channel. Be sure that the second elevator bar plate is resting firmly on the transfer channel. Check the second elevator roller (B-309 or W-1) and adjust bolt (B-3 or W-150) so that the second elevator roller is off the second elevator cam by $1/32''$. This is to insure that the second elevator bar plate is resting firmly on the transfer channel.

Step 2. Now lift the second elevator up out of the way and check the lineup of the first elevator to the transfer channel. The first elevator jaw should be slightly higher than the transfer channel (approximately $.010''$). This adjustment is made by the bolt (No. 1, Figure 1)

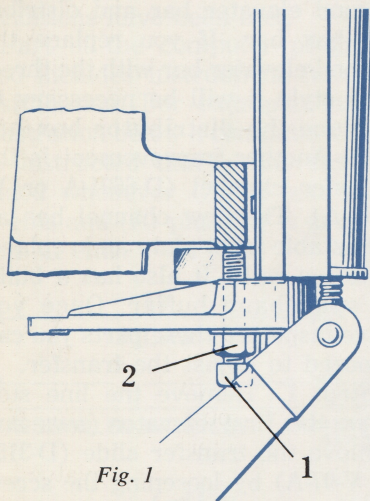


Fig. 1

at the lower right side of the first elevator slide. Now lower the second elevator so it rests on the transfer channel. Find a good pi mat, check it for burrs on the combination and also the ears and toes. Any burr will make the mat

sit improperly in the first elevator.

Now slide the pi mat into the first elevator jaws and onto the second elevator bar. Be sure it is still between the first elevator jaws, just to the right of the detent pawls.

Take a piece of white paper about 2" by 3", fold it in half and place it in the transfer channel near the spaceband box. Then place a light on top of the transfer channel so the paper will reflect the light towards the first elevator. Now you are ready to start adjusting the first elevator and transfer channel so that the mat will line up with the second elevator bar. It is most important to obtain a near perfect lineup of the mat to the second elevator bar. If you look through the first elevator jaw from the left hand side, you will see the mat supported by the first elevator jaws and also in contact with the second elevator bar (see Figure 2). If you can visualize an inverted Christmas tree,

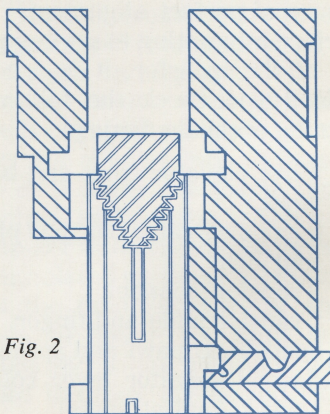


Fig. 2

this is what the combination of the mat and the second elevator bar should resemble. It is extremely important that you allow equal

clearance on both top and bottom and sides of the mat in relation to the second elevator bar. Referring back to the screw (No. 1, Figure 1) adjust the first elevator either up or down until you have equal clearance vertically. If the mat does not seem to set properly it may be because the lateral adjustment of the second elevator bar has not as yet been set. Adjust the front plate on the transfer channel on Linotype or the second elevator post on Intertype until you feel there is equal space on both sides of the combination. Recheck the vertical adjustment and when you are sure this is right, lock the nut (No. 2, Figure 1). Recheck the lateral clearance to be certain the second elevator bar looks centralized to the matrix combination.

Check to see if the bar plate is parallel to the rear plate of the transfer channel. This is extremely important to the spacebands. Remove the pi mat from the second elevator bar and place a spaceband in the transfer channel. Slide it from left to right under the second elevator bar. If you feel a bind, it may be because the second elevator is not parallel to the transfer channel. Correct the problem by adjusting the plate or post until the bar is parallel. Then recheck to see if the pi mat will move freely onto the second elevator bar from the first elevator.

At this time it may also be a good idea if you would take about 15 picas of mats, raise the second elevator up from the transfer channel by hand and place the mats on the bar. Then lower the second elevator back down onto the transfer channel and slide the mats left to right as you did with

the spaceband and then push them into the first elevator jaws. When you bring them back onto the second elevator bar, they should move freely without any hesitation. If this test fails, adjust the pi mat alignment until they move freely.

Step 3. Take the intermediate bar and examine the bar pawl. Be sure there is ample vertical movement of the pawl and also be sure that the pawl is not bent.

Now replace the intermediate bar in the first elevator slide guide. The intermediate bar must line up directly with the second elevator bar. On a Linotype and new Intertype you will find two small 8/32 set screws in the rear of the first elevator slide guide. These screws can be adjusted so that the intermediate bar will be in the center of the second elevator bar. Again look through the left hand side of the first elevator with the light shining through the transfer channel. Before you attempt to adjust these two screws it will be necessary to loosen the three $\frac{3}{8}$ x 16 hex fastening bolts on the top of the slide guide.

Now adjust the two set screws until the intermediate bar is in perfect center with the second elevator bar. It is also necessary to keep the intermediate bar parallel with the first elevator front jaw. When you feel that the right side of the intermediate bar is in line with the second elevator bar, place a feeler gauge between the intermediate bar and front jaw and then check to see if there is the same clearance on the left side of the intermediate bar. Once you have established this, lock the three hex bolts on the top of the slide guide.

Check the intermediate bar pawl for proper height. There are two set screws on top of the first elevator slide guide to adjust the bar up or down. Loosen the two hex head bolts that hold the bar and set it so the bar pawl will raise slightly above the second elevator bar when depressed by your finger. This means that when it falls free it will be slightly lower than the bottom of the second elevator bar.

After the height of the bar is set on the right side, it is necessary to set the left side to be parallel. Lower the first elevator and place two mats the same size flat on the top of the first elevator jaws. Raise the first elevator by hand and let the mats come in contact with the intermediate bar. (Remember that the height on the right side has been set). Determine whether the left side should be moved up or down to make the intermediate bar even.

Step 4. Now you can replace the first elevator duplex rail operating blocks (D-5828 and D-2583 on Linotype and stud W-4801 on Intertype).

The operating blocks or stud should be set so that the duplex rail is moved out far enough to allow the mats to fall of their own weight to the regular position in the first elevator jaw.

On Linotypes the plate D-582 should not be pushed in any further than necessary, or a bind will be created between the first elevator front jaw and the intermediate bar. When you push in on the operating blocks be sure that both sides move equally. Check the spring tension of the duplex rail lever (E-1547). Be sure that both springs have equal tension with only enough tension to return the rail to normal. Excessive pressure on these springs may cause a "bang" when the first elevator rises. With the first elevator in transfer position, place a mat in the first elevator jaws and check the up and down movement of the mat. There should be a minimum of .010" clearance between the mat and the intermediate bar. Bring the machine back to normal position and replace the line stop and transfer slide.

To be continued

THE COMPUTER IN THE COMPOSING ROOM *Continued*

series of steps which might be as follows:

1. Add next full word and compare to justification instruction.
 - 1a. If yes, punch line and add "elevate".
 2. If overset, use hyphenation program and break word into syllables.
 - 2a. Compare to justification instruction.
 - 2b. If hyphenation produces justified line, punch line, add hyphen, and add "elevate".
 3. If hyphenation does not produce justified line, omit last full word and
 4. Add en space to each spaceband and compare to justification instructions.
 - 4a. If yes, punch line and add "elevate".
 5. If no, add thin plus en space

to each spaceband and compare to justification instructions.

5a. If yes, punch line and add "elevate".

The computer will have several additional alternatives, such as adding em spaces, and inserting thin spaces as letter-spacing, beginning with the shortest word. These successive choices will be made until the line justifies.

It is obvious that a computer performs no functions which could not be done by a man with pencil, paper and an adding machine. The difference, of course, is that the computer can perform the succession of operations necessary for justification in milliseconds while minutes would be required for manual computation of justification. In fact, computers operate so rapidly that their circuits are inactive a majority of the time, even while accepting unjustified tape from several perforators and simultaneously distributing justified tape to a battery of linecasting machines.

A number of newspapers are using computers to obtain near-perfect justification without the use of spacebands. In this case interword spacing consists of the standard em, en and thin spaces, plus two special-width space matrices. One computer system utilizes special spacing of $7\frac{1}{2}$ and $10\frac{1}{2}$ units. These special space matrices are called thuts and bolts.

It is not possible to set a line to exact measure, even with the special spaces. To take care of the slight variation in line length a quadder is required on each straight matter machine, and every line is quadded. When using thut

and bolt spaces, justification to within $1\frac{1}{2}$ points can be attained.

In this type of composition a "target" of three points might be said to exist. That is, the length of line can be no longer than 11 picas and no shorter than 10 picas plus 9 points.

Practically all of the computer functions described in this discussion have been those of a very high speed automatic calculator, acting under tape instructions. A future Shop Talk article will discuss the hyphenation capability of computers, in which words are broken into syllables, not by memorizing a dictionary but through vowel-consonant sequences of letters. In the hyphenation of a word the computer makes a programmed series of decisions based on "logic" almost completely foreign to the human reasoning.



Previous issues of SHOP TALK have covered a wide variety of machine adjustment areas. The major articles are listed below. To obtain any of this material, just drop a line to the editor of SHOP TALK. As long as the supply lasts, these are yours for the asking.

Descenders—Keep Them on the Slug

How to Use Oversize Pot Plungers

Checkpoints for Distributor Box Problems

Assembling Elevator Adjustments

Front Lockup

Drills and Taps

Do's and Don't's of Distributor Adjustments

The Matrix Cycle—How to Check

Parts Inventory—Some Suggestions

Smooth Matrix and Spaceband Assembly

The Hairline Problem

Hints on Matrix Care



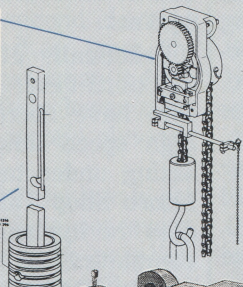
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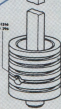
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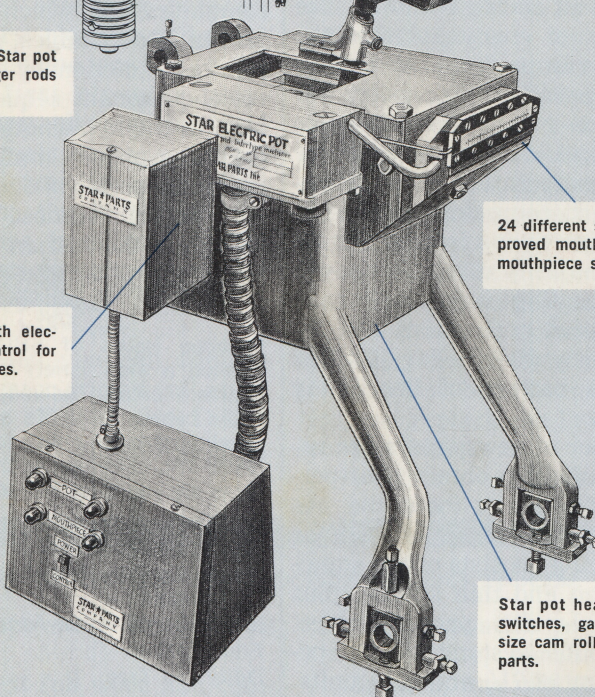
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