

CHAPTER V

THE ASSEMBLING ELEVATOR

QUESTION: The assembly on this machine is terrible. It never has been serviced, and there seem to be so many things wrong I don't know where to start. Could you outline a brief procedure for checking over the assembling elevator? — T. R. P., Bend, Ore.

HARDING: As with many other linecasting questions, it is difficult to answer this one briefly. It is not complicated, however, once you see all the angles, and an experienced machinist can rebuild most assembling elevators in a couple of hours, outside of welding worn spots, etc.

Side Play in Assembling Elevator

LOOMIS: First let us take up side play. The assembling elevator should fit snugly against the right side to avoid mats' catching in the crack. My first move is to loosen the four screws in the left hand gib. With a small screwdriver, pry the gib to the right and tighten the screws. If this doesn't do the job, and there is still too much "shake," take out the four screws entirely. Use discretion and pry the gib forward to release the pins. I have always been able to do this without removing the delivery channel. Drop the gib and take it out. Knock out the pins. You will find the screw holes a little large. Put the gib back on without the pins and try pushing it over and tightening. If there is still too much play, use a rat-tail file on the left side of each screw hole until you can tighten the gib against the assembling elevator. Now loosen all screws but the second one from the top. This is the most important one, for this is the most important position of the assembling elevator. Have this one tight enough to bind on the assembling elevator. With a linotype slug and a small hammer tap the gib to the left until the assembling elevator is just free. Now run the assembling elevator up and down a couple of times to square up the gib, then tighten screw No. 3 and try the assembling elevator again. You may do a little tapping. Now take No. 1, at the top. When you get through, see that you haven't lost your nice tightness at No. 2. If you have, you may have

to re-set No. 2 and do it over, putting this time a very little bend in the gib by tightening all screws, then holding No. 2 with a screwdriver blade while you tap No. 1 to the left. You can do this very easily if you have three arms; otherwise you need help.

Try the assembling elevator carefully several times. If it is perfectly free on the gibs (take off the small assembler entrance cover and the chute block, to avoid interference), and if it is still snug against the chute block when you put that back on, tighten the screws firmly. Personally, I like to put a dowel pin just above No. 2, but in the country you seldom have the tools to make a hole that fits. Those are $\frac{1}{8}$ " dowels, but it is seldom that a drill of that size will cut true. A No. 31 drill is .120" and will come close, but you may have to grind the pin a little. Otherwise you can use a $\frac{1}{8}$ " drill, then lay the pin on the vise and hammer it out of shape to make it fit. Or drill a pilot hole with a $1/16$ " drill, then go through with $\frac{1}{8}$ ". Be sure not to move the gib while drilling and pinning. Try the elevator again afterward to be sure it doesn't bind. The elevator should fall freely by its own weight. Use graphite only on the slides.

To Remove the Assembling Elevator

HARDING: The entire assembling elevator can be removed. Disconnect the lever link at the bottom. Remove the assembler slide roller bracket (lower right, which holds the spaceband buffer), take off the assembler slide finger so you can swing the assembler slide out of the way; take off the small gib that guides the assembler slide just under the chute block, if there is one; remove the assembler slide brake operating lever, and the assembling elevator by now is on the floor if you haven't held onto it.

While you have it off, turn it upside down and examine the adjusting screw under the right end of the delivery slide releasing wire, if it is a Linotype. Find a small screwdriver that will turn it, and be sure that it does turn. It is much easier to free it in this position than it is when you are standing on your head.

Okay, you've had your fun. Now we'll dive into it.

Adjusting the Two Halves of the Assembling Elevator

LOOMIS: Pull down the assembling elevator gate. With a little-used pi mat, test the space between the two halves at the place where the toes of the mats ride. There should be just clearance here. Adjust with paper shims at the bottom. Get both ends alike. *Do not file either of the surfaces at the bottom.* Even the experts avoid this. You will find some already filed. Those you can

only work with until you get them right — but the bad part is that they seldom go together the same way twice. You could have it squared up on a shaper or a grinder and make a filling piece out of brass leads and 1-point material. You could also buy a new assembling elevator.

Let us assume that your surfaces are square. Now take out the one big screw and remove the front half, noting where the paper shims were. Oil them and stick them in place. Take the front half to the vise.

Now there a number of things to investigate. First take off the gate. (I assume you have the whole thing clamped in the vise.) Examine the matrix detaining plate on the right end. If broken or worn, it should be replaced. Take off the duplex rail cap carefully so as not to lose the small square filling pieces under the two screws. Carefully lift off the two duplex rails. Note that the right-hand end of the Linotype short duplex rail has a small pawl that extends upward. If this pawl has been broken off, replace the rail. Likewise, the long rail has a narrow extension on the left that frequently is broken off. If so, replace it. Emery cloth these rails and rub with graphite.

Under the rails may be a flat copper spring, very small round copper springs, or small springs with balls to act as detents. These are to hold the rails in place either in or out. Graphite the surface just under the rails, and the bottom surface of the cap. Replace.

Assembling Elevator Front Matrix Buffer

Take the front half out of the vise. If the fiber buffer is worn, replace it. This buffer is easy to replace but not always easy to fit. It is usually too thick, protruding above the rest of the assembling elevator. If so, take a sharp knife and peel off a point or so, or file it if you prefer. On an old machine you will often find the top edge of the buffer, where the mats ride, is higher than the adjoining rail. Use a sharp knife here to bevel it down, or you will have squabbed lines. Now there is one more place to trim — the right side (looking at it with the assembling elevator on the machine). This edge very often binds against the small assembler cover, and I file it down on principle.

Assembling Elevator Gate

HARDING: This too is tricky. If the right corner is gouged out by mats, you may need to smooth it with a file. Examine to see if the "legs" are straight and square — not spread and not twisted. Very often the assembling elevator gate roll stud is badly worn. Knock it out with a pin punch from the left, and put in a new one. The roll, if worn, should be replaced.

Now the pawl at the upper right. On old machines the pawl may be badly worn and need replacement. Sometimes it's the hole that's sloppy. On most pawls you can drill this with a 5/64" drill, and drill the gate also, then use 5/64" drill rod for the new pin — which must not protrude above the surface. Also, the tiny 1/16" pin against which the pawl banks may be worn out. Drive it out and replace with a piece of drill rod or a part of a mouthpiece drill.

The pawl should move freely, should not stick out in the way of mats, and should have just enough spring to keep it in place. Too little spring will not hold it up; too much will make mats jump out.

Put the gate back in place. Set the front half of the assembler aside.

Take off the back half as instructed in *To Remove the Assembling Elevator* above. Take care of the pawl the same as you did the pawl in the gate. It is only fair to say that sometimes you hit a hard one that you cannot drill, and for some reason this happens oftener on the back. Get a new pawl and pin.

Watch out for the tiny compression spring behind this pawl. Replace the lower matrix detaining plate if needed. This is held by a special small-headed screw which must be used. Anything bigger will rub against the chute block.

There is a steel matrix buffer in this back half. If this is worn, it must be replaced.

It is worth emphasizing that the front fiber buffer, when allowed to become badly worn, throws the burden of receiving the mats onto the back steel buffer, which burrs the toes on the casting side of the mats. The mats on the right end of the line should not tip forward when you open the assembling elevator gate.

Setting the Assembling Elevator Gate

LOOMIS: Put the assembling elevator back in place and together, and test the bottom clearance with that pi mat again. If it has changed, do it over. It should not have changed. Now let's set the gate. First be sure the assembling elevator gate hinge rod is not worn on the ends. Replace it with any 5/32" stock for the moment. If the holes in the legs of the gate are worn, you can peen them, but it's a messy job and won't last. Peen them on the back edge if you must.

The gate banks on a stud at the left side and on the head of the screw that holds the matrix detaining pawl on the right. Usually the screw head takes the burden of adjustment. Using your pi mat just to the left of the pawls, try for the same clearance you have below. Usually there is no clearance, and your only recourse is to peen the head of the screw on the front side with a small ball peen hammer. This too is messy and somewhat temporary.

If your gate is worn in the holes or otherwise decrepit, I strongly advise a new one, and I much prefer those with adjusting screws on the front, so you don't have to depend on the screw head.

After the right end of the gate is set, try the left end. There may be six points' difference between the two ends. Miomi! This can be mayhem, but it needn't be. (This seldom occurs with a new gate.) Take a screwdriver with a 6" blade and stick it through the gate diagonally. If you don't play Atlas, you can bend the gate to exact evenness. But remember, that screwdriver is big. You can break the legs off of the gate unless you say when.

You may now have a mysterious bind. Be sure the hinge rod is not too long or not sticking through on either side. Sometimes the left leg of the gate is twisted so it binds against the line delivery channel. There is not much clearance there.

What is the Proper Height of the Assembling Elevator?

LOOMIS: This is another measurement that I got from Frank Phillips of Teletypesetter. The correct distance from the top of the bottom inside rail of the back half of the assembling elevator (the rail on which the mats stand in light-face position) to the bottom of the "button" on the assembling elevator stop bar banking plate (the assembling elevator cushions against this button when you send up a line) should be $5\ 9/16"$. By taking off the front half of the assembling elevator, you can measure this distance accurately. You will note that it is determined by the elevator's coming to rest on the end of the assembler slide brake operating lever. This may get beaten down and increase the distance, or it may be peened out by somebody else and the distance decreased, or very often a new one is too thick. At any rate, this is where you set the height of the assembling elevator.

Final Adjustments on Assembling Elevator

HARDING: Now our assembling elevator is set for side play, for mat clearance, and for height. Let's see if we can persuade it to send the mats into the delivery channel.

Note the hook on the left side at the back. Loomis should have told you to check the hook and the spring which operates it when you took off the assembling elevator, so let's hope the spring is okay. It usually is. But the hook may be rounded so it doesn't hang on up above. It must do that to prevent the elevator from dropping before the mats get out. If it is rounded,

file it square. If this takes off very much, you'll need a new one, for then it won't hold the assembling elevator high enough as the mats go across.

While you're at it, take out the one screw that holds the assembling elevator stop bar banking plate up above. This little strip will go on upside down, but in that position will not allow mats to be delivered in the bold face position. Some otherwise Christian men have resorted to strong language over this little gadget. Now take off the stop bar itself and note the spot where the hook catches. If this is battered and worn, order a new one. Replace the parts.

Note the ratchet at the upper right. This holds and releases the line delivery. Put a small dab of grease on the ratchet teeth.

Now back away the line delivery releasing wire adjusting screw in the bottom of the assembling elevator which you were told to loosen previously. See that the wire is straight. It is $1/16$ " in diameter and should be steel wire. It is set in a brass bushing, and if you get hold of the wire with a pair of pliers, usually the whole works will come out. Back off the adjusting screw a couple of turns. Now send up the first elevator until it banks against the button. The hook should catch firmly in this position, and should not allow the assembling elevator to drop more than a point. While the elevator is suspended by the hook, turn up the adjusting screw until the releasing wire trips the ratchet and releases the line delivery. This should be just about right.

Replace Spaceband Buffer When Worn

LOOMIS: It is hardly necessary to say that the spaceband buffer, below the assembling elevator proper, should be replaced when a hole starts in it. This will materially improve assembly. And now, with the assembling elevator all set, we dive into the next chapter and try to find out how to make a machine assemble properly. The subject of transpositions comes up—and there are a lot of answers.

Newer spaceband buffers are made with a hump that drags on the bottom end of the band and therefore causes the top end of the band to slant to the left, thus allowing more room for the next mat to enter.

LINECASTING OPERATOR-MACHINIST

Compiled by

EDWIN B. HARDING

Professor Emeritus of Journalism and Printing

South Dakota State College

Edited by

NOEL M. LOOMIS

Linecasting Machinist

Minneapolis, Minn.

STOCKTON BOOK PUBLISHERS . PITTSBURGH, PENNSYLVANIA
