

CHAPTER 6

Spacebands and Spaceband Box

THE SPACEBAND

THE SPACEBANDS and their use in the Linotype machine have already been described in a general way. In order to provide the correct amount of spacing for all types of work, spacebands of various thicknesses must be provided. The five kinds of Linotype spacebands can be individually identified by lines which appear on the lower front edge, as follows: one line, thick; two lines, extra thin; three lines, extra thick; four lines, special taper; five lines, wide range.

Extra Thin—minimum .028", maximum .0943". The extra thin spaceband should always be used on fine work where close spacing is required for good appearance and easy legibility.

Thick—minimum .0375", maximum .1035". The thick spaceband, often referred to as "regular," is the type used for normal spacing of medium-sized faces and for ordinary use when close spacing is not required.

Extra Thick—minimum .046", maximum .146". The extra thick spaceband, known in some shops as the "Jumbo," is used only for the larger display sizes.

Wide Range—minimum .0345", maximum .1194". This is a newly developed type of spaceband to give extreme flexibility of spacing. Thin enough for close spacing of small faces and in narrow measure, with ample range of expansion for wide spacing of larger faces.

Special Taper—minimum .0369", maximum .1219". Similar to the wide range, but half a point thicker all along the line.

THE SPACEBAND BOX

The spaceband box is directly above the right-hand side of the assembling elevator, as the operator faces the machine, and contains an escapement mechanism for releasing the spacebands one at a time. This escapement is necessarily entirely different from that which releases the matrices.

A vertically sliding blade with two springs, very sharp at the top, passes between the suspended shoulders of the consecutive spacebands, and at the same time lifts the spaceband over the stationary vertically projecting shoulders on the box. The shoulders also normally serve to retain the spacebands in the box. The spaceband box center bar should be set so as to allow only one spaceband to be raised at a time. After being lifted over the top of the shoulders, the spaceband slides down a short incline toward the right of the box, and then drops by gravity vertically through the channel.

The sliding blade has at its base on one side, a lug threaded to hold an adjustable screw having a deeply slotted large head underneath the lug. The sides of the slot serve to guide the end of a long cross lever, which is pivoted on a bracket

fastened to the face plate frame and operated by a vertical link which is lifted by the spaceband keyboard cam yoke and then allowed to fall. It is this return movement of the spaceband keyboard cam yoke which releases the spaceband.

There is a certain amount of lost motion left in the connections in this mechanism, in order to further delay the release of the spaceband in case the operator

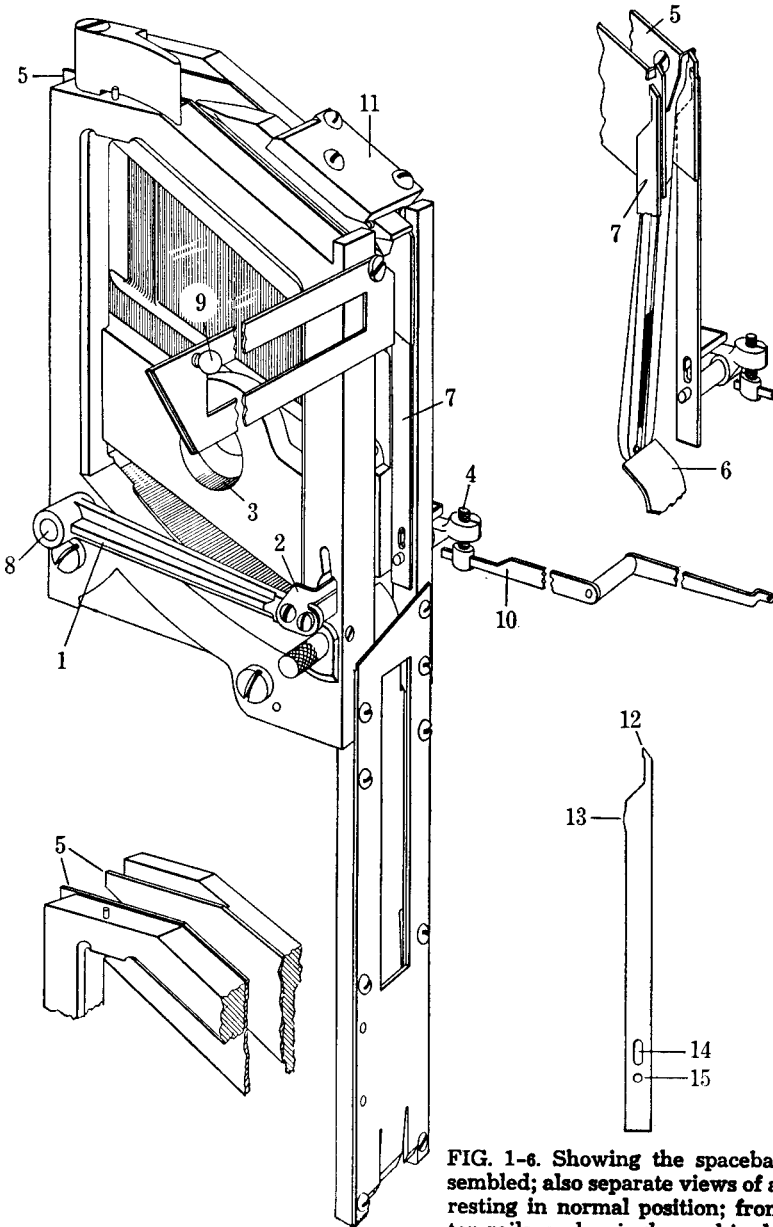


FIG. 1-6. Showing the spaceband box assembled; also separate views of a spaceband resting in normal position; front and back top rails; and a single pawl in detail.

should touch the spaceband key and the finger key for the final letter of the previous word at the same time.

The Spaceband Release Mechanism

Spacebands are always placed in the machine with the short sleeve turned to the right. The head of the spaceband stop pin should also be at the right.

They are released from their magazine or "box" by the operation of a special key at the left-hand side of the keyboard which controls the matrices. The position of the spaceband key is readily adjustable to the preference of the operator by means of a clamp screw which holds the key lever to its shaft.

As in the case of a matrix, a spaceband is released by machine power after the operator has touched the key mentioned in the previous paragraph. The spaceband cam is usually larger than the ordinary keyboard cam, so that it will take a longer time to make its revolution, and it will also be noted that the delivery of the spaceband by its escapement is at the end of the keyboard cam action instead of at the beginning, differing in this respect from the timing of the release of a matrix.

The object of all this is to give the matrix that is released just before the release of a spaceband an advantage in the matter of time to reach the star wheel first, and is further necessary because the spaceband not only drops a shorter distance than does the matrix, but drops vertically through a channel directly upon the star wheel instead of striking the star wheel at an angle as do the matrices. Rapid and correct action of assembling depends to a great extent upon the close and accurate timing between the matrices and spacebands.

MAINTENANCE

Care should be taken to see that the escapement of the spaceband is operating properly—that the points which separate and lift the spaceband shoulders over the vertically projecting shoulders on the spaceband box are sharp and of equal length, square and not worn, and finally that the lost motion is just enough to give the preceding matrix the proper advantage in the time of its travel to the assembling elevator. This adjustment is particularly important in the rapid operation of the Linotype.

Removing Spaceband Box—When necessary to remove the spaceband box from the machine, it is done in the following manner:

First remove all spacebands from the box, or pass them back into the intermediate channel. Push the starting lever in, and turn the cam shaft backward until the cam is away from the transfer lever roller, then press down on the elevator transfer slide releasing lever at the left, allowing the spaceband pawl to go over into the intermediate channel. In this position, the spaceband lever pawl does not interfere with the removal of the spaceband box and the pawl spring cannot fall out.

Where the "double e" attachment is a part of the equipment on the later model machines, there is a connecting link that extends through to the right-hand side of the spaceband box chute and is fastened there with a screw, which must be removed before the box can be removed.

Then remove the keyboard belt, touch the spaceband key, and turn the roll slowly until the lever 1, Fig. 1-6, which operates the spaceband box pawls 7 is at its lowest point; then remove the screw 3 in the center of the box, press up the pawl lever 1 so the adjusting screw 4 will clear the spaceband key lever 10, and

then pull the box outward to clear the dowels, being careful not to bend the ends of the upper rails 5, where they extend into the intermediate channel.

Replacing Spaceband Box—When replacing the box, leave the machine in the same position as when it was removed, hold up the pawl lever 1, see that the dowel holes are properly located, and that the spaceband chute is in place at the side of the assembling elevator gib.

The Pawls—When the spaceband box does not work properly, remove it from the machine and examine the pawls 7 for wear. If they are badly worn, they should be replaced with new ones. To obtain a clear view of the pawls, swing the spaceband chute hinge plate 9 out of the way and remove the pawls by loosening the two screws in the pawl spring 2. Both the spring and the long screw extend through the front casting and are connected with the pawl at 14 and 15. Look for wear on the end of the long screw.

If the pawls are in fair condition it may be possible to adjust them back into shape by following the same course as when fitting new ones, but it might be necessary to use an oilstone on the points to bring them to a sharp edge. If new pawls are to be fitted they should be polished on the sides and must be perfectly straight. The slots where they fit must be clean, and as the pawl levers 1 operate by gravity only, it is plain that there must be no friction.

The pawl springs 2 should have just enough tension to bring them into position when a spaceband is to be used. Too much tension will interfere with the dropping of the pawl levers.

After the new pawls have been connected, see that both points are even when raised to the top, and if there should be a slight difference, examine the pins that hold the levers 1 to the shaft 8, and see that they are tight. The most important detail is to get the pawls fitted so they will be in the correct position when they lift the spaceband. The top points of the pawls, shown at 12, should be as far to the left under the spaceband ears as possible, but must not touch the ears of the second band when the first one is lifted. If the points go too far in, they can be brought out by peening the left-hand side near the top of the pawl as shown at 13, to bring it to the proper distance. If the pawl has been spread too much, dress it down with an oilstone or fine file. After the box has been reassembled, raise the lever 1 by hand and see that the pawls drop freely without the slightest friction. The box should then be placed back on the machine and tested.

Other Points to Check—If the spaceband box pawls are known to be correct, and the spacebands fail to work properly, make a simple test in this way: Press down on the pawl lever 1 and allow it to raise very slowly, then see if the bottom of the spaceband clears the detaining plate 6 when the top of the band has been released by the action of the pawls 7.

It may be that some of the bands have worn ears, which would allow them to extend too far down past the detaining plate so that while the spaceband pawls might lift the top, the bottom of the band might not clear the detaining plate enough to allow it to swing outward when the band is lifted.

It is also possible for the detaining plate to become bent forward too far, and if that condition is found it may be necessary to grind off a slight amount at the top. This piece is made of hardened steel, and if an attempt is made to bend it care should be used to prevent breakage. A new spaceband should be used when making this test.

Another source of trouble might be caused by the spaceband itself if the sleeve should bind at the top of the band, and not go quite all the way to the end; it

would be too short to rest against the detaining plate, and would cause the other bands to clog up the chute.

The keyboard rubber roll should be examined for undue wear. If badly worn it would be too small to give enough throw to the spaceband pawls. The spring on the spaceband rod at the right-hand side of the keyboard should be of sufficient strength to raise the pawls to their full height.

It may be necessary to adjust the stroke of the spaceband pawl levers 1 and a test should be made before starting.

To make this test, remove the keyboard belt, then turn the roll until the cam has moved the front end of the spaceband key lever 10 to its lowest point and see if it allows the pawls to come low enough to engage under the ears of the spacebands on its upward stroke. If this setting is correct, turn the keyboard roll until the spaceband key lever 10 has raised the pawls to their full height. At this point, the pawl lever 1 should be all the way up so that no lost motion can be detected. The key lever adjusting screw 4 must be used to get this proper setting of the stroke of the spaceband pawl levers 1.

It seldom happens, but it is possible, for the spaceband key lever 10 to work loose where it is riveted together at the center, and in that case it would be difficult to get the proper adjustment until it is tightened.

The center plate 11 should be removed occasionally so that the sides of the upper rails 5 can be polished where the spacebands come in contact with them.

Fig. 1-6 shows the spaceband chute box which has an extension not supported on the sides. The function of this extension is to guide the spaceband toward the star wheel. It should be bent in as far as possible, but the opening must be wide enough to allow the bottom of the spaceband to pass through without binding.

Lubrication—Do not use oil on any part of the spaceband box. If the shaft which connects the pawl levers becomes sluggish, take apart and wipe dry; and when replacing, a small amount of graphite may be used in the bearing.