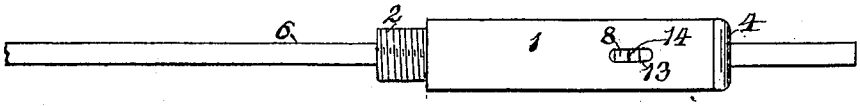
May 28, 1929. E. O. MALCOLM 1,714,684

ROD FEEDING DEVICE

Filed June 20, 1927

Fig. 1



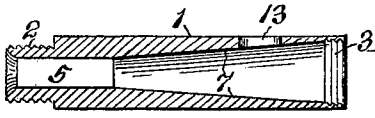


Fig. 2

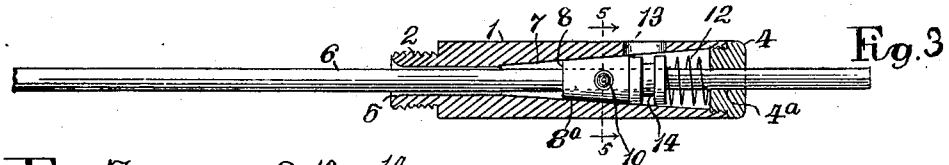
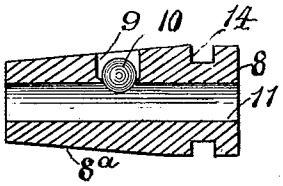


Fig. 3

Fig. 7



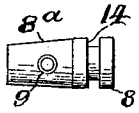


Fig. 4

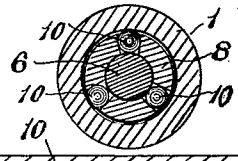


Fig. 5

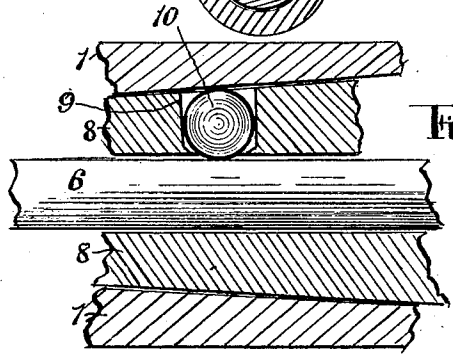


Fig. 6

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UNITED STATES PATENT OFFICE.

ELTON O. MALCOLM, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE EASTERN MACHINE SCREW CORPORATION, OF NEW HAVEN, CONNECTICUT.

ROD-FEEDING DEVICE.

Application filed June 20, 1927. Serial No. 200,001.

This invention relates to rod feeding devices adapted for screw machines and machines of like character, and it is specially adapted for feeding small rods or wire. Its construction and mode of operation will be more fully set forth in the following specification.

Referring to the accompanying drawings wherein the same reference characters indicate like parts throughout the several views—

Figure 1 represents a full view of the assembled device operatively mounted on a rod adapted to be fed,

Figure 2 is a central longitudinal section of the outer shell or feed collet,

Figure 3 is a central longitudinal section of the feed collet and a full view of the ball carrier and rod,

Figure 4 is a detail view of the ball carrier,

Figure 5 is an enlarged transverse sectional view of the feed collet, ball carrier and rod on line 5—5 of Figure 3,

Figure 6 is an enlarged, broken, longitudinal section of the feed collet, ball carrier, and broken view of the rod, and

Figure 7 is an enlarged central longitudinal section of the ball carrier.

The collet 1 has the threaded end 2 adapted to connect with supporting mechanism, not shown, and the threaded mouth 3 is adapted to be closed by the threaded cap 4. The part 5 of the bore of the collet is straight, and a trifle larger in diameter than the rod 6 to serve as a rear central guiding means for the rod. The bore 4^a of the cap 4 also serves as rod guiding means for the forward end of the collet. The rest of the collet's bore has the tapered wall 7, which extends from the straight bore 5, as shown, to the threaded mouth 3. However, that portion surrounding the spring could, if desired, be made straight.

8 is a floating ball carrier having the three recesses 9 arranged about its periphery and in which are seated the balls 10. The openings at the bottom of these recesses are preferably narrower than the balls, Figures 6 and 7, to prevent their dropping into the bore 11 of the carrier when the rod is withdrawn from the collet. The number of these balls could be increased, if desired.

While the tapered surface 8^a of the carrier is similar to the tapered wall 7 of the collet, it will be understood that at no time during the rod feeding operation are these tapered surfaces brought into gripping contact with each other. It is only when the rod is entirely withdrawn, and the balls released, that they are brought into contact by the spring 12. When the rod enters the carrier, one or more of the balls will lie in the path of the rod, Figure 7, to form, with the spring, a resistance sufficient to enable the rod to push the carrier back far enough to unseat it and thus permit the balls to have a gripping contact with the tapered wall 7 and the rod. This grip will be sufficient to advance the rod through the medium of the collet and carrier as a unit, or by holding the collet stationary and pushing the rod through the device the required distance and by the proper mechanism, not shown. The carrier is maintained in a floating position between the spring and the gripping contact of the balls as long as the rod is mounted in the carrier so that, while the rod is being pushed through the carrier, the ball grip will be temporarily released, and, at the completion of this forward feed of the rod, the spring will instantly force back the carrier to re-grip the balls to prevent a reverse movement or withdrawal of the rod.

As the rod cannot be withdrawn while under the grip of the balls, I have provided means for temporarily releasing the ball grip as follows: 13 is an elongated opening through the wall of the collet and directly over the groove 14 of the carrier so that a nail, or other like means, can enter the groove and thus force back the carrier against the tension of the spring and hold it in that position long enough to permit the withdrawal of the rod.

Having thus described my invention what I claim is:—

A rod feeding device of the character described, comprising a collet having a bore, a part of which, at one end, is adapted as a guiding support for the rod, the remainder of the bore tapered, a cap for the mouth of the tapered bore having a rod supporting bore, a carrier having a bore for the rod and an external tapered surface similar to the tapered

bore of the collet, and having partially bottomed recesses arranged about said tapered surface, balls freely mounted in the recesses and partially projecting into the bore of the carrier and adapted to be engaged by the rod and forced into gripping contact with the tapered wall of the bore and rod, a spring between the cap and carrier whereby the latter is maintained in a floating position and out of contact with the tapered surface of the collet while the rod remains in the carrier.

In testimony whereof I affix my signature.

ELTON O. MALCOLM.