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2,343,364

FEEDER FOR AUTOMATIC SCREW MACHINES

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Fig. 1.

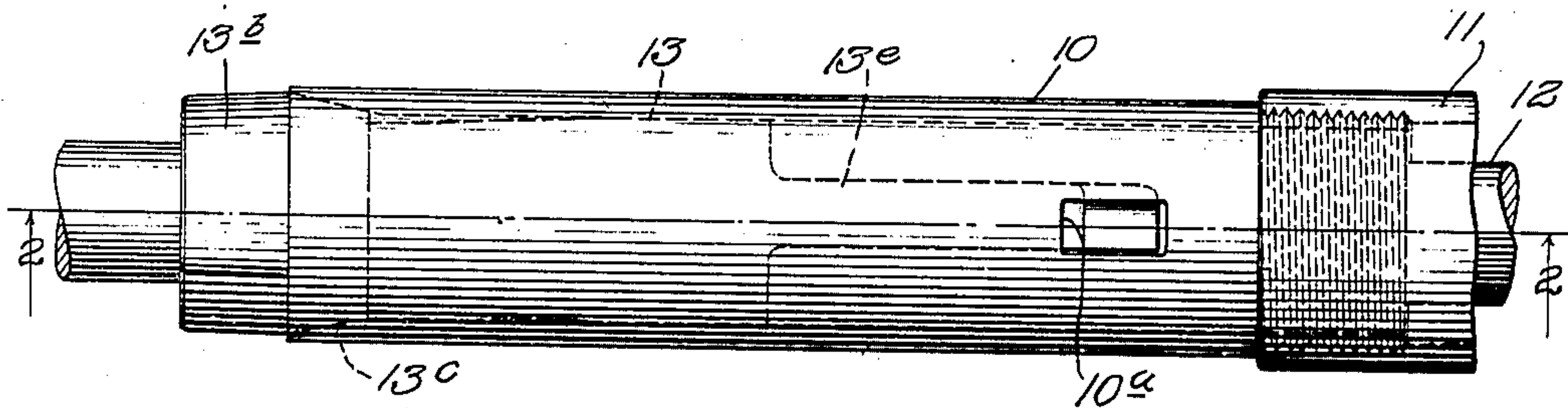


Fig. 2.

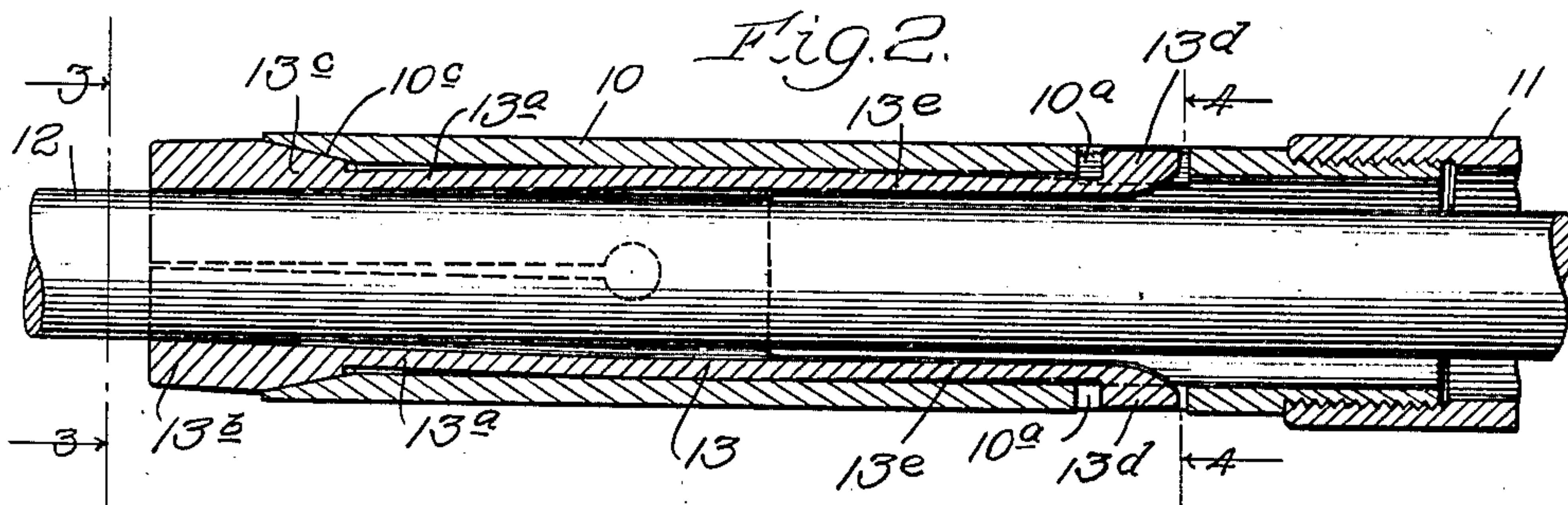


Fig. 3.

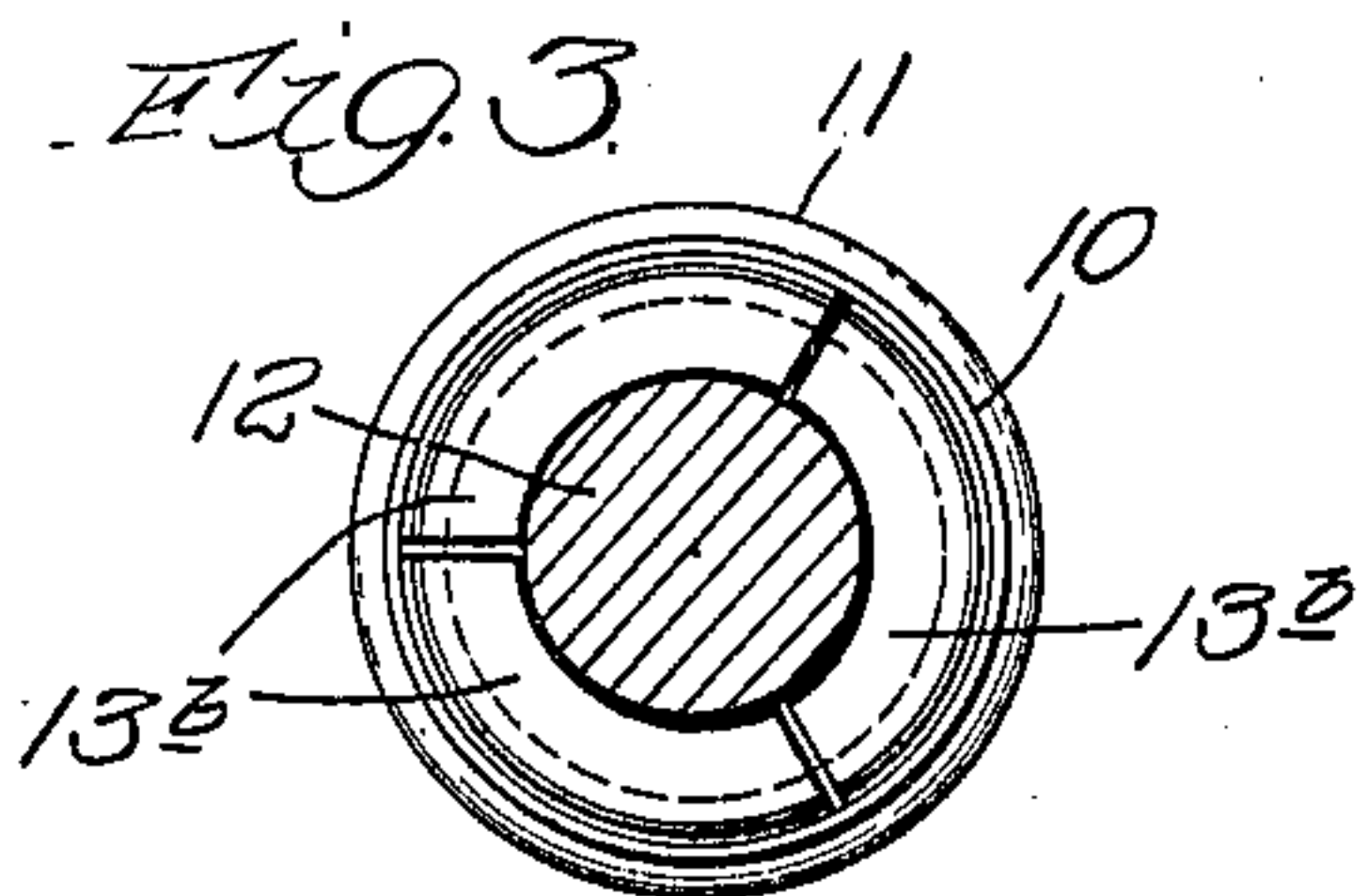


Fig. 4.

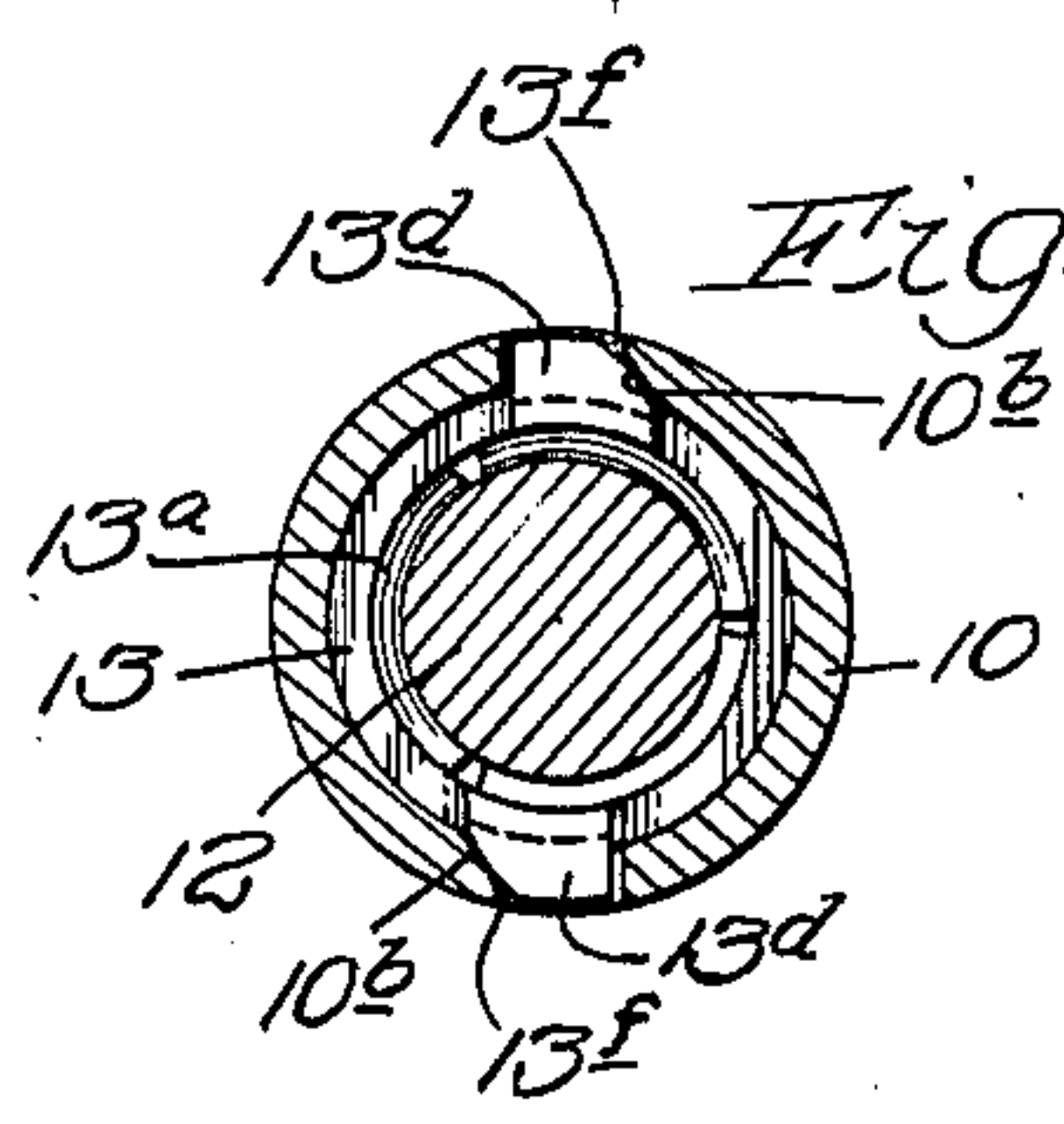
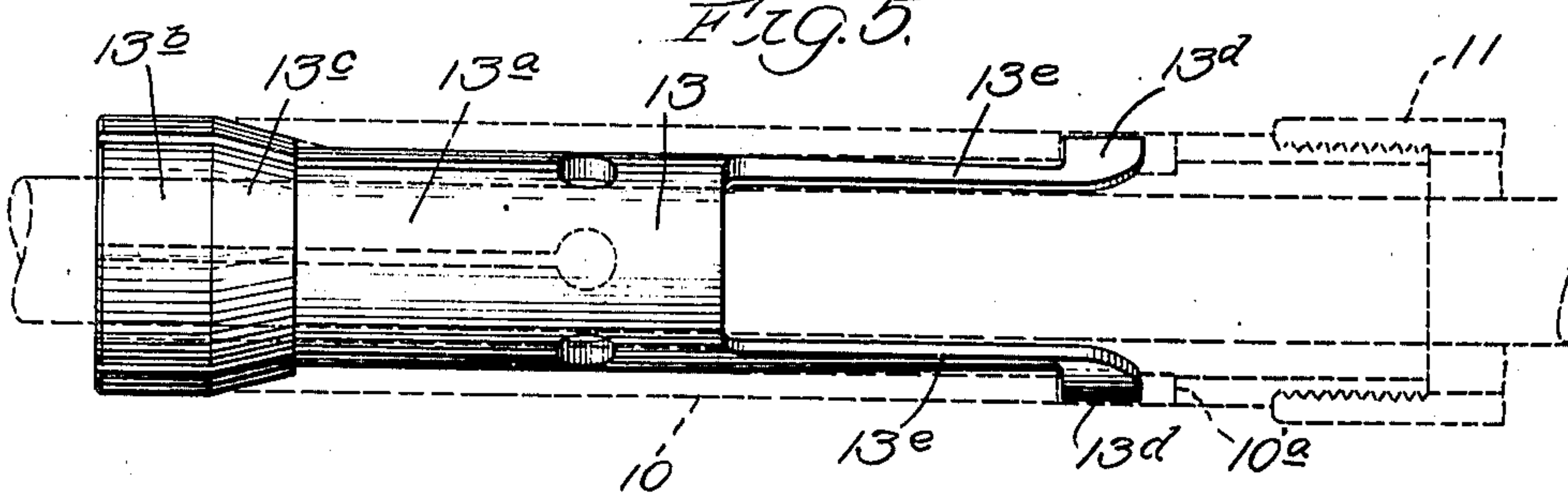


Fig. 5.



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FEEDER FOR AUTOMATIC SCREW
MACHINES

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5 Claims. (Cl. 29—62)

This invention relates to improvements in feeders and more especially a feeder for automatic screw machines, forming or cutting-off machines, and the like.

In feeders of the character referred to, it has been customary to provide a member with resilient fingers for gripping the stock which ordinarily is a bar, circular in cross-section, or of other shape. The gripping has ordinarily been accomplished by frictional engagement between the fingers and stock and difficulty has been encountered owing to the fact that with too much friction the stock was scratched or scored, and with too little friction the feeder would not operate properly.

Among the features of my invention is the provision of a feeder including a carrier with a reciprocating collet therein and means operating automatically to increase the grip of the collet on the stock during the forward movement of the feeder and diminish the same during the backward or recovery movement.

Another feature of my invention is the provision of an improved feeder that can readily be attached to any standard automatic screw machine, or the like, in place of the conventional feeder now being used, without substantial changes, alterations or adjustments.

Another feature of my invention is the provision of a feeder in which the collet can be readily removed, permitting the substitution of other collets of different sizes, that is, with different bores, thus permitting quick and easy adaptation of the feeder to operate on stock of various sizes and shapes.

Other features and advantages will appear more fully as I proceed with my specification.

In that form of device embodying the features of my invention, shown in the accompanying drawing, Figure 1 is a view in side elevation; Figure 2 is a view taken as indicated by the line 2 of Figure 1; Figure 3 is a view taken as indicated by the line 3 of Figure 2; Figure 4 is a view taken as indicated by the line 4 of Figure 2; and Figure 5 is a view similar to Figure 2, showing the parts in an altered position.

As shown in the drawing, the feeder comprises a tubular carrier 10 having one end threaded into the tube 11, which is a reciprocating member of conventional feeding mechanism. 12 indicates the stock, here shown as a round bar. It is to be understood that the members 10 and 11 move back and forth in a conventional manner in feeding the stock. More particularly, it may be stated that the carrier 10 moves for-

wardly, to the left, for the feeding stroke to feed the stock 12 a sufficient distance into the machine for one operation. The member 10 is then moved backwardly, or retracted to the right for the recovery stroke during which time the stock 12 remains stationary. The cycle is then repeated.

Inside of the carrier 10 is a reciprocable collet 13 with three resilient stock gripping fingers 13a. The forward ends of the fingers 13a are thickened as indicated by 13b, the portions between 13a and 13b being beveled or tapered as indicated by 13c. The forward inner end of the carrier 10 is also tapered as indicated by 10c to engage the tapered portions 13c of the fingers so that when the collet 13 is moved rearwardly (to the right) with respect to the carrier 10, the fingers will be pressed against the stock 12, and when it is moved in the reverse direction, they will be released.

The fingers 13a are resilient or springy and preferably are formed so that they will always frictionally engage the stock 12 to some extent. This friction is sufficient so that as the carrier 10 moves back and forth, the collet 13 will reciprocate therein. Consequently, as the carrier 10 moves forwardly during the feed stroke, the surfaces 10c and 13c will engage to close the fingers more tightly against the stock; and on the recovery stroke the surfaces 10c and 13c will become disengaged so that there will be less pressure of the fingers against the stock.

Reciprocation of the collet 13 in the carrier 10 is limited in one direction by the lugs 13d carried by the extensions 13e. The lugs 13d operate in slots 10a in the carrier 10, and the ends of these grooves or slots are engaged by the lugs 13d to limit the reciprocating stroke of the collet 13 in the carrier 10 to the left as viewed in Figure 5.

The extensions 13e are somewhat springy and the sides of the lugs 13d are beveled, as indicated by 13f. These engage beveled surfaces 10b in the slots 10a so that the collet can be easily removed by rotating the same to the right (viewed in Figure 4). This rotation causes the lugs 13d to be sprung inwardly to release the same from the slots, permitting removal of the collet from the carrier 10. It is to be understood that this removal is accomplished when the stock 12 is removed. In this manner other collets with different sizes of bores may be easily substituted in order to adapt the feeder to stocks of various sizes and shapes. Rotation of the collet in the carrier, under normal conditions, is prevented by the location of the lugs 13d in the slots 10a.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims, in which it is my intention to claim all novelty inherent in my invention as broadly as permissible, in view of the prior art.

What I claim as new, and desire to secure by Letters Patent, is:

1. A feeder of the character described, including: a carrier; a collet reciprocally mounted in the carrier; resilient feeding fingers on the collet; cooperating beveled surfaces on the carrier and feeding fingers respectively, whereby reciprocations of the collet in the carrier cause alternate tightening and loosening of said fingers; a longitudinal slot in the carrier; and a spring extension on the collet having a lug adapted to be received by and to be longitudinally movable in said slot, the lug and slot cooperating to prevent rotation of the collet in the carrier during feeding and being the sole means for maintaining the collet in operative position in the carrier.

2. A feeder of the character described, including: a carrier; a collet reciprocally mounted in the carrier; resilient feeding fingers on one end of the collet; cooperating beveled surfaces on the carrier and feeding fingers respectively, whereby reciprocations of the collet in the carrier cause alternate tightening and loosening of said fingers; longitudinal slots in the carrier; and spring extensions on the other end of the collet having lugs on the ends thereof adapted to be received by and

to be longitudinally movable in said slots, the lugs and slots cooperating to prevent rotation of the collet in the carrier during feeding and being the sole means for maintaining the collet in operative position in the carrier.

3. Apparatus of the character claimed in claim 1, wherein said lug has a transversely beveled surface, whereby forced rotation of the empty collet releases the lug from the slot.

4. Apparatus of the character claimed in claim 2, wherein said lugs have transversely beveled surfaces, whereby forced rotation of the empty collet releases the lugs from the slots.

5. A feeder of the character described consisting of only two pieces and including: a carrier, a collet reciprocally mounted in the carrier; resilient feeding fingers on one end of the collet; cooperating beveled surfaces on the carrier and feeding fingers, respectively, whereby reciprocations of the collet in the carrier cause alternate tightening and loosening of said fingers; longitudinal slots in the carrier; and spring extensions on the other end of the collet having lugs on the ends thereof adapted to be received by and to be longitudinally movable in said slots, the amount of possible longitudinal movement of said lugs in said slots being greater than the movement required for the alternate tightening and loosening of the feeding fingers, the lugs and slots cooperating to prevent rotation of the collet in the carrier during feeding and being the sole means for maintaining the collet in operative position in the carrier, but said lugs having transversely beveled surfaces, whereby forced rotation of the empty collet releases the lugs from the slots.

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