Feb. 15, 1944. I. H. SHEFFER 2,341,744

FEED COLLET

Filed Sept. 17, 1942

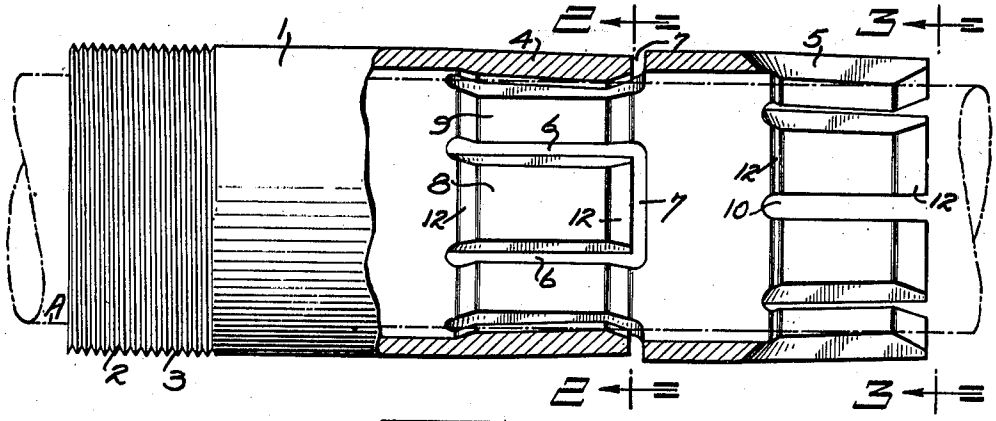


FIG. 1.

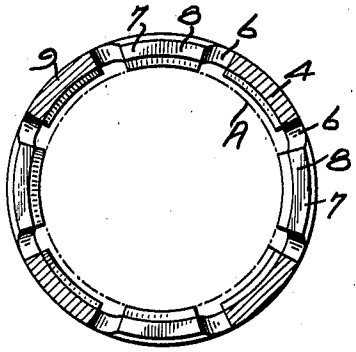


FIG. 2.

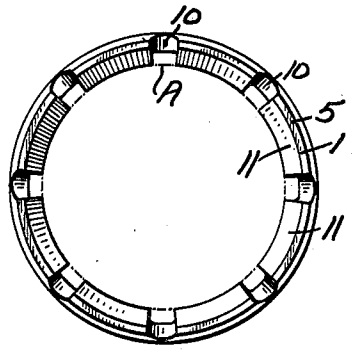


FIG. 3.

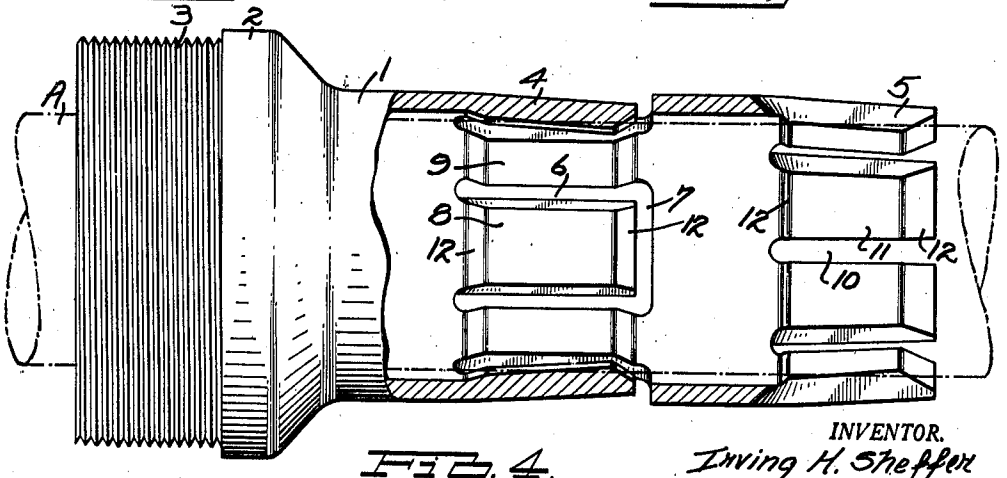


FIG. 4.

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Patented Feb. 15, 1944 2,341,744

UNITED STATES PATENT OFFICE

2,341,744

FEED COLLET

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Application September 17, 1942, Serial No. 458,683

7 Claims. (Cl. 29—62)

This invention relates to improvements in feed collets by which rods or bars of stock are fed through the hollow spindles of automatic machines.

It is an object of the invention to provide a feed collet primarily intended for handling larger, heavier stock, for to operate satisfactorily the collet must, upon each forward movement, move the stock until the latter contacts a stop in order that the same length of stock projects at the commencement of each operation. Consequently a firm grip on the stock must be obtained in order to insure its full movement. To achieve this the feed collet includes two sets of circularly arranged feed fingers longitudinally spaced from one another to increase the total effective gripping area of the fingers upon the stock because there is a limit to the effective gripping area that can be provided upon the separate fingers which are of course resilient and inwardly flexed towards the collet axis toward their free extremities. Moreover by providing a relatively large number of fingers a satisfactory grip may be obtained upon the stock even if its periphery is somewhat irregular; and by providing one set of fingers at the front extremity of the collet the stock may be fed when it becomes quite short. Again the longitudinal spacing of the two sets of fingers assists in maintaining the stock in a horizontal position so that it may be more effectively engaged by the fingers.

The invention also aims to provide a feed collet wherein the feed fingers are so arranged that they are readily separately adjustable so that they may be pushed inwardly and re-set after the tool has been in use to increase the life of the said tool; and the two sets of feed fingers may also be circularly staggered relative to one another both to increase the strength of the tool and also to further increase its gripping ability when handling somewhat irregular stock.

Having thus briefly and broadly stated some of the objects and advantages of the invention I will now proceed to describe a preferred embodiment thereof with the aid of the accompanying drawing, in which:

Figure 1 illustrates a longitudinal section of the collet with the feed fingers in the position they assume when gripping a bar of stock.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is an end elevation on the line 3—3 of Figure 1.

Figure 4 is a longitudinal section showing a collet having a somewhat larger adapter end and the feed fingers flexed further inwardly into the position they assume prior to the insertion of a bar of stock; the latter however is also shown to more clearly bring out the additional flexing of the fingers.

Referring to the drawing, 1 designates a collet which is tubular throughout its entire length and is provided at its adapter end 2 with means such as the screw thread 3 for attachment to a feed tube—not shown. In Figure 1 a collet is shown the adapter end of which is of substantially the same diameter as that of the remainder of the tool whereas in Figure 4 the adapter end is larger. The size of the adapter end of course depends upon the size of the feed tube to which it is to be attached whereas the size of the remainder of the collet and particularly its bore depends upon the size of the stock to be handled.

The collet 1, both intermediately of its length and from its front extremity remote from the adapter end 2 is provided with portions 4 and 5 respectively of reduced bore; and the bore of these two portions is the same. Formed longitudinally in the collet 1 and extending preferably beyond the ends of the intermediate bore portion 4 are a plurality of slots 6 each adjacent pair of which is connected at its front extremities by a cross slot 7 so that each pair of slots thus connected by their cross slot define three sides of an intermediate feed finger 8, and between each of the latter the front and rear extremities of the collet are connected by integral ribs 9 which of course extend between adjacent pairs of unconnected slots 6. The collet is also longitudinally slotted at 10 from its front extremity through its front reduced bore portion 5 to form front feed fingers 11 which are forwardly spaced from the intermediate feed fingers 8 and the cross slots 7. These fingers 8 and 11, which are of course resilient are then forced inwardly sufficiently to grip the stock A extending through the collet and hold the said stock clear of the inner sides of the ribs 9.

It may here be noted that while the stock A is indicated in all the views its insertion in Figure 4 is merely to more clearly show the additional inward flexing of the feed fingers 8 and 11 when the stock is not there as obviously the fingers could not project inwardly beyond the periphery of the stock.

The slots 10 in the front reduced portion 5 are preferably disposed substantially centrally between adjacent pairs of slots 6 and are of course forwardly spaced from the latter. By this arrangement greater strength is afforded to the

tool, and a more satisfactory grip may also be obtained upon stock having a somewhat uneven periphery. Again due to the fact that a rib 9 extends between each adjacent pair of intermediate feed fingers 8 whereas front fingers 11 only are provided by the front extremity of the collet the number of front fingers may be double that of the number of the intermediate fingers. By thus providing a large number of feed fingers the effectiveness and life of the tool is increased, and the fingers themselves are all so arranged that they may be easily and quickly re-set to prolong the life of the collet.

It will also be noted that both extremities of front and intermediate reduced bore portions 4 and 5 are chamfered at 12 to prevent any binding action relative to the stock particularly when the collet is being moved independently of the latter.

While in the foregoing the perferred embodiment of the invention has been described and shown, it is understood that the construction is susceptible to such alterations and modifications as fall within the scope of the appended claims.

What I claim is:

1. A feed collet comprising a tubular member provided at its rear extremity with means for attachment to a feed tube, said member being slotted longitudinally both from its front extremity and intermediately of its length to form front and intermediate integral feed fingers which are longitudinally spaced from one another, and said fingers being inwardly flexed toward the axis of the tubular member.

2. A feed collet comprising a tubular member provided at its rear extremity with means for attachment to a feed tube, said member being longitudinally slotted intermediately of its length and having cross slots formed therein connecting the front extremities of adjacent pairs of the intermediate slots, intermediate feed fingers integral with the member each having three sides defined by each pair of connected slots and their cross slot, and said member being longitudinally slotted from its front extremity to divide that extremity into a plurality of front feed fingers, the rear extremities of the front slots being forwardly spaced from said cross slots, and said feed fingers being inwardly flexed toward the axis of the member.

3. A feed collet including the combination set forth in claim 1 wherein the front slots are circumferentially offset relative to the intermediate slots.

4. A feed collet comprising the combination set forth in claim 1, wherein the intermediate portion of the bore through which the intermediate slots extend and the front extremity of the bore are of somewhat smaller diameter than the remainder of the bore, and the feed fingers are sufficiently inwardly flexed to support stock clear of the intermediate bore portions which extend between the intermediate feed fingers.

5. A feed collet comprising a tubular member provided at its rear extremity with means for attachment to a feed tube, said member being slotted longitudinally both from its front extremity and intermediately of its length forming front and intermediate integral feed fingers between them, the front and intermediate fingers being longitudinally spaced from one another, and the bore of the front and intermediate portions through which the slots are formed being of smaller diameter than the bore of the remainder of the tubular member.

6. A feed collet comprising a tubular member provided at its rear extremity with means for attachment to a feed tube, said member being slotted longitudinally both from its front extremity and intermediately of its length whereby fingers are formed between adjacent pairs of slots, the bore of the slotted portions being of lesser diameter than the bore of the remainder of the member, the front extremities of the intermediate slots being spaced rearwardly from the rear extremities of the front slots, and said member having cross slots formed therein each connecting the front extremities of two adjacent intermediate slots.

7. A feed collet including the combination set forth in claim 6, wherein the front slots are circumferentially offset relative to the intermediate slots.

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