Nov. 29, 1932. H. M. BARBER 1,889,526

SELF ADJUSTING FEED ROLL

Filed Dec. 19, 1931

Fig. 1.

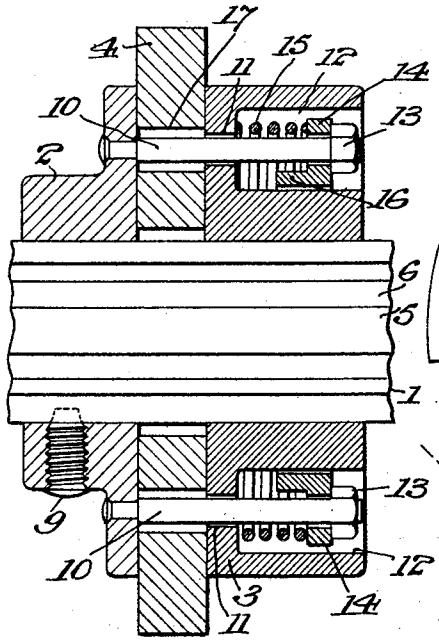


Fig. 2.

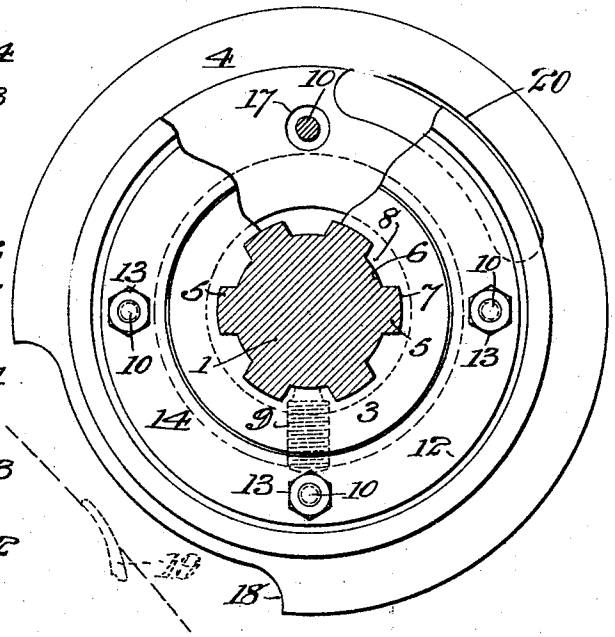


Fig. 3.

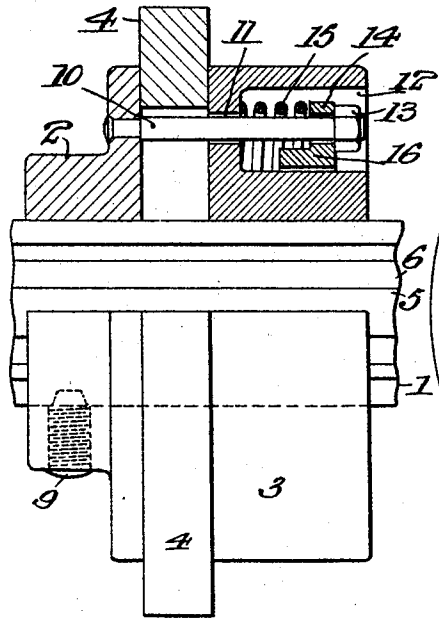
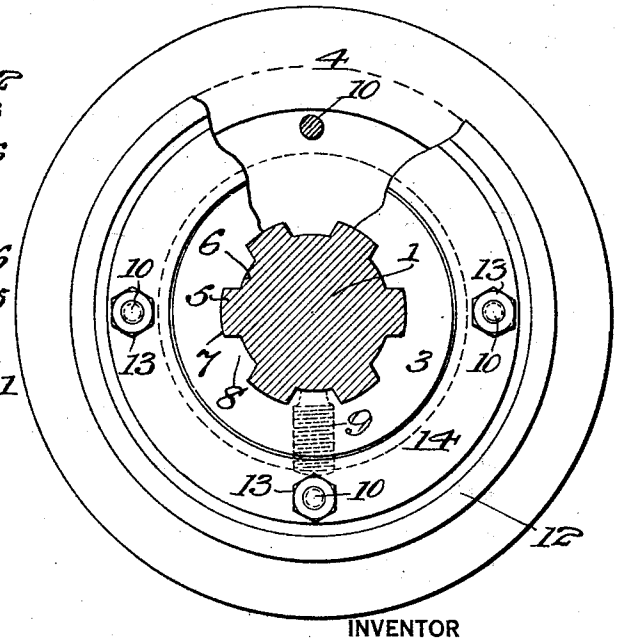


Fig. 4.



INVENTOR

Howard M. Barber

BY

Brown & Howard

ATTORNEYS

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UNITED STATES PATENT OFFICE

HOWARD M. BARBER, OF PAWCATUCK, CONNECTICUT, ASSIGNOR TO C. B. COTTRELL & SONS COMPANY, OF WESTERLY, RHODE ISLAND, A CORPORATION OF DELAWARE

SELF-ADJUSTING FEED ROLL

Application filed December 19, 1931. Serial No. 582,068.

The object of my invention is to provide a self-adjusting feed roll of novel construction, which feed roll is especially adapted for co-action with another roll to feed paper or other fabric, the adjustability of one of the feed rolls permitting the even feeding of the material though it should vary in thickness or have any other inequalities therein.

A further object of my invention is to provide a self-adjusting feed roll comprising a shaft and one or more feed roller units adapted to be adjustably positioned along the shaft according to varied requirements.

My invention consists generally in a feed roller unit comprising a fixed collar, a slidable collar and an interposed self-adjusting or floating annular feed roller, the fixed collar carrying tension means acting on the slidable collar to clamp the roller between the collars with an adjusted degree of friction, as required.

My invention also includes means for preventing rotative movement of the roller with respect to its shaft and collars where such a feature is desired.

A practical embodiment of my invention is represented in the accompanying drawing in which:

Fig. 1 represents one form of my feed roller unit, the unit being shown in central longitudinal section in position on its shaft;

Fig. 2 represents the roller unit in end elevation, the shaft being shown in cross section and a portion of the slidable collar being broken away;

Fig. 3 represents another form of my roller unit, one-half being shown in side elevation and one-half in central longitudinal section with the unit in position on its shaft; and

Fig. 4 represents the unit in end elevation, the shaft being shown in cross section and a portion of the slidable collar being broken away.

The shaft of the self-adjusting feed roll is denoted by 1, on which shaft any desired number of feed roller units may be mounted.

Each feed roller unit comprises a fixed collar 2, a slidable collar 3 and an interposed self-adjusting or floating annular feed roller 4. The fixed collar 2 carries an adjustable tension means acting on the slidable collar to clamp the feed roller between the collars with the desired degree of friction.

The collars 2 and 3 may be interlocked to the shaft 1 against rotative movement thereon by any desired means, as for instance by providing the shaft with a circumferential series of longitudinal splines 5 and intermediate recesses 6 adapted to engage corresponding longitudinal recesses 7 and teeth 8 along the bores of the fixed and slidable collars 2 and 3.

The collar 2 may be secured in its desired position along the shaft by means of a set screw 9. This fixed collar is shown as presenting an extended frictional bearing surface to one side of the annular feed roller 4.

The collar 3 which is slidable along the shaft 1 toward and away from the fixed collar 2 also presents an extended frictional bearing surface to the opposite side of the annular feed roller 4.

The fixed collar 2 is provided with a plurality of bolts 10 (four in the present instance) which project from its inner face through the annular roller 4 and holes 11 in the slidable collar 3 into an annular recess 12 where the ends of the said bolts are provided with tension adjusting nuts 13 threaded thereon. An annular follower 14 is slidably mounted on the bolts 10 and a coil spring 15 is interposed between said follower and the bottom of the annular recess 12. The annular follower 14 may be provided with an annular flange 16 to more efficiently guide the follower along the inner wall of the annular recess 12 in the slidable collar.

In the form shown in Figs. 1 and 2, the bore of the self-adjusting annular feed roller 4 is somewhat larger than the outside diameter of the shaft 1 and the tension bolts 10 carried by the fixed collar extend through holes 17 in the feed roller. These holes are somewhat larger than the diameter of the bolts and the bore of the roller is somewhat larger than the outside diameter of the shaft thereby permitting the floating or yielding of the roller under a greater or lesser degree of friction between the collars. In this form the roller is prevented by the tension bolts

from rotative movement with respect to its shaft and collars. In this form the face of the self-adjusting roller 4 may be cut away as shown at 18 to clear a projecting part of the cylinder with which it coacts. Such projecting part may be a gripper 19 as illustrated in dotted lines on Fig. 2 of the drawing. To properly balance the feed roller 4, I provide a slot 20 in the roller diametrically opposite the cut away portion 18.

In the form shown in Figs. 3 and 4, the bore of the feed roller is enlarged to a point beyond the bolts 10 sufficiently to permit the roller to float or yield. This enlarged bore also permits rotative movement of the feed roller with respect to its shaft and collars.

From the above description it will be seen that I have provided a feed roller unit which is extremely simple and which is readily adjustable not only along its shaft but also as to its frictional effect on the feed roller which is interposed between the fixed and slidable collars of the unit.

It will also be seen that the tension means which acts upon the slidable collar is carried by the fixed collar, the projecting end of the bolts, the tension spring, the annular follower and the adjusting nuts all being housed within the slidable collar thereby eliminating projecting parts which would tend to cause damage to any material which might come in contact with the unit.

It will also be seen that in the form illustrated in Figs. 1 and 2 the bolts of the tension means serve also to prevent the rotative movement of the feed roller without affecting its floating or yielding movement.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the particular embodiment herein shown and described, but

What I claim is:

1. A feed roll shaft and a feed roller unit carried thereby comprising a collar fixed to the shaft, a collar slidable on the shaft, an interposed self-adjusting roller and tension means carried by the fixed collar and yieldingly engaging the slidable collar to frictionally clamp the feed roller between said collars, said tension means including bolts projecting from the fixed collar into the slidable collar, tension adjusting nuts threaded on said bolts, an annular follower slidable on the bolts and engaged by said nuts and a coil spring interposed between the follower and the slidable collar.

2. A feed roll shaft and a feed roller unit carried thereby comprising a collar fixed to the shaft, a collar slidable on the shaft, an interposed self-adjusting roller and tension means carried by the fixed collar and yieldingly engaging the slidable collar to frictionally clamp the feed roller between said collars, said tension means including bolts projecting from the fixed collar into the slidable collar, tension adjusting nuts threaded on said bolts, an annular follower slidable on the bolts and engaged by said nuts and a coil spring interposed between the follower and the slidable collar, the slidable collar having an annular recess for housing the projecting ends of the bolts, their nuts, the annular follower and the coil spring.

3. A feed roll shaft and a feed roller unit carried thereby comprising a collar fixed to the shaft, a collar slidable on the shaft, an interposed self-adjusting roller and tension means carried by the fixed collar and yieldingly engaging the slidable collar to frictionally clamp the feed roller between said collars, said tension means including bolts projecting from the fixed collar into the slidable collar, tension adjusting nuts threaded on said bolts, an annular follower slidable on the bolts and engaged by said nuts and a coil spring interposed between the follower and the slidable collar, said roller having enlarged holes for the passage therethrough of the said tension bolts.

4. A feed roll shaft and a feed roller unit carried thereby comprising a collar fixed to the shaft, a collar slidable on the shaft, an interposed self-adjusting roller and tension means carried by the fixed collar and yieldingly engaging the slidable collar to frictionally clamp the feed roller between said collars, said tension means including bolts projecting from the fixed collar into the slidable collar, tension adjusting nuts threaded on said bolts, an annular follower slidable on the bolts and engaged by said nuts and a coil spring interposed between the follower and the slidable collar, the said tension bolts passing through the bore of the said roller.

In testimony, that I claim the foregoing as my invention, I have signed my name this 15th day of December, 1931.

HOWARD M. BARBER.