Nov. 29, 1932. H. M. BARBER 1,889,525

SELF ADJUSTING FEED ROLL

Filed Dec. 19, 1931

Fig. 1.

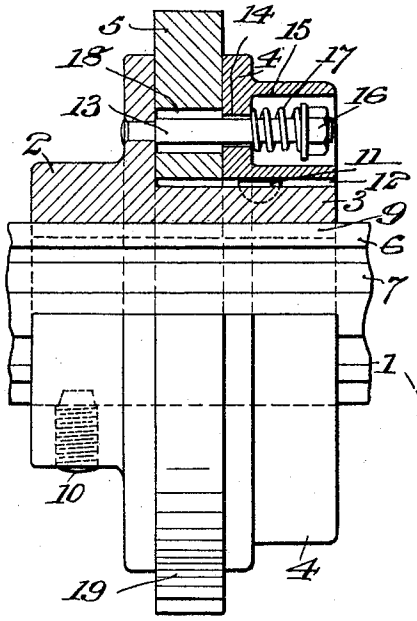


Fig. 2.

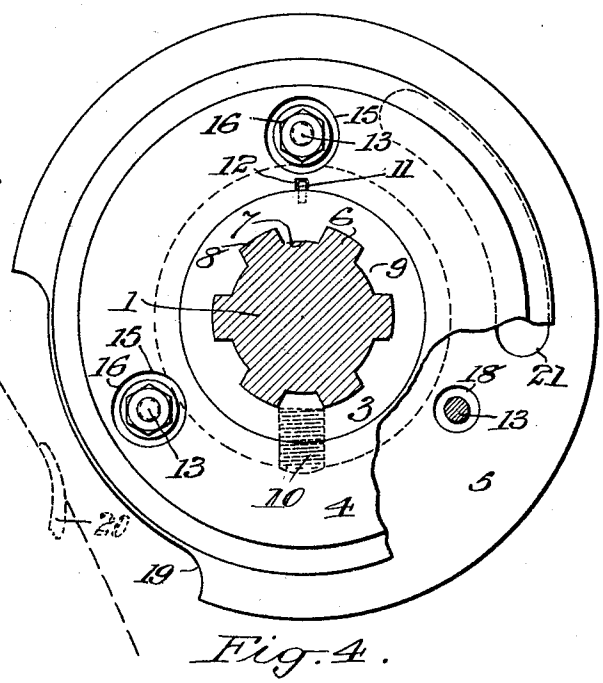


Fig. 3.

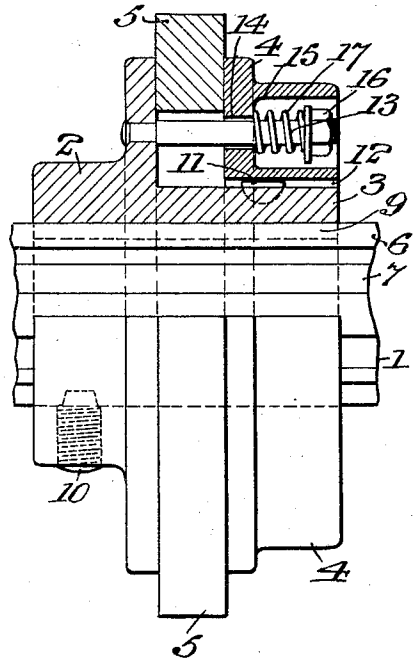
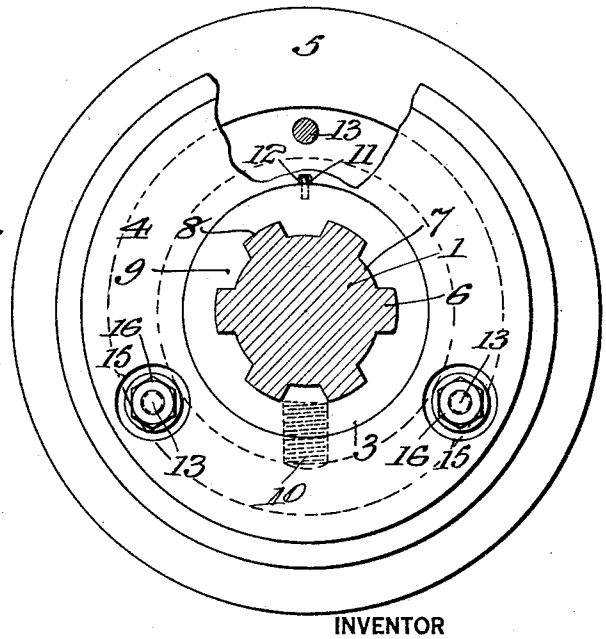


Fig. 4.



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UNITED STATES PATENT OFFICE

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SELF-ADJUSTING FEED ROLL

Application filed December 19, 1931. Serial No. 582,066.

The object of my invention is to provide a self-adjusting feed roll of novel construction, which feed roll is especially adapted for coaction 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 provided with a sleeve, a collar slidable on the sleeve, an interposed self-adjusting or floating annular feed roller and tension means carried by the fixed collar and 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 feed roller with respect to its shaft and collars where such a feature is desired.

Practical embodiments of my invention are represented in the accompanying drawing in which:

Fig. 1 represents one form of my feed roller unit, one-half being shown in side elevation and one-half in central longitudinal section with the unit 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 provided with a sleeve 3, a collar 4 slidable on the sleeve 3 and an interposed self-adjusting or floating annular feed roller 5. 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 collar 2 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 6 and intermediate recesses 7 adapted to engage corresponding longitudinal recesses 8 and longitudinal teeth 9 along the bore of the collar and its sleeve.

The collar may be secured in its desired position along the shaft by means of a set screw 10. This fixed collar is shown as presenting an extended frictional bearing surface beyond its sleeve to one side of the annular feed roller 5.

The collar 4 may be slidably interlocked with the sleeve 3 of the fixed collar 2, as for instance by providing the sleeve with a key 11 and the bore of the collar 4 with a longitudinal key-way 12. This slidable collar 4 also presents an extended frictional bearing surface to the opposite side of the annular feed roller 5.

The fixed collar 2 is provided with a plurality of bolts 13 (three in the present instance) which project from its inner face through the annular roller 5 and holes 14 in the slidable collar 4 into recesses 15 where the ends of the said bolts are provided with tension adjusting nuts 16 threaded thereon; coil springs 17 being interposed between the said nuts 16 and the bottoms of the said recesses 15 in the slidable collar.

In the form shown in Figs. 1 and 2, the bore of the self-adjusting feed roller 5 is somewhat larger than the outside diameter of the sleeve 3 projecting from the fixed collar 2 to permit the roller to float or yield. In this form the tension bolts 13 extend through holes 18 in the feed roller, said holes being somewhat larger than the diameter of the bolts to also permit the floating or yielding of the roller under a greater or lesser degree of friction between the collars, the roller at the same

time being prevented by said tension bolts from rotative movement with respect to its shaft and collars. In this form the face of the self-adjusting feed roller 5 may be cut away as shown at 19 to clear a projecting part of the cylinder with which it coacts. Such projecting part may be a gripper 20 as illustrated in dotted lines on Fig. 2 of the drawing. To properly balance the self-adjusting feed roller 5, I provide a slot 21 in the roller diametrically opposite the cut away portion 19.

In the form shown in Figs. 3 and 4, the bore of the feed roller is enlarged to a point beyond the tension bolts 13 sufficiently to permit the roller to float or yield. This enlarged bore also permits rotative movement of the 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 contact 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 ends of the bolts, the tension springs and their adjusting nuts being all 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 embodiments 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, said collar being provided with a sleeve, another collar slidable on said sleeve, a self-adjusting roller interposed between said collars 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 and coil springs interposed between said nuts and slidable collar.

2. A feed roll shaft and a feed roller unit carried thereby comprising a collar fixed to the shaft, said collar being provided with a sleeve, another collar slidable on said sleeve, a self-adjusting roller interposed between said collars 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 and coil springs interposed between said nuts and slidable collar, said tension means including a slot in the roller and a pin projecting from one of the collars.

3. A feed roll shaft and a feed roller unit carried thereby comprising a collar fixed to the shaft, said collar being provided with a sleeve, another collar slidable on said sleeve, a self-adjusting roller interposed between said collars 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 and coil springs interposed between said nuts and slidable collar, said tension means including a slot in the roller and a pin projecting from one of the collars, 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, said collar being provided with a sleeve, another collar slidable on said sleeve, a self-adjusting roller interposed between said collars 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 and coil springs interposed between said nuts and slidable collar, said tension bolts passing through the bore of the said roller.

5. A feed roll shaft and a feed roller unit carried thereby comprising a collar fixed to the shaft and provided with a sleeve, another collar slidable on said sleeve and interlocked therewith, a self-adjusting feed roller interposed between said collars, tension means to frictionally clamp the roller between said collars and means preventing rotative movement of the roller with respect to its collars.

6. A feed roll shaft and a feed roller unit carried thereby comprising a collar fixed to the shaft and provided with a sleeve, another collar slidable on said sleeve and interlocked therewith, a self-adjusting feed roller interposed between said collars, tension means to frictionally clamp the roller between said collars and means preventing rotative movement of the roller with respect to its collars, said means including a slot in the roller and a pin projecting from one of the collars.

7. A feed roll shaft and a feed roller unit carried thereby comprising a collar fixed to the shaft and provided with a sleeve, another collar slidable on said sleeve and interlocked therewith, a self-adjusting feed roller inter-

posed between said collars, tension means to frictionally clamp the roller between said collars and means preventing rotative movement of the roller with respect to its collars, said means including a slot in the roller and a pin projecting from the fixed collar.

8. A feed roll shaft and a feed roller unit carried thereby comprising fixed and slidable collars, a self-adjusting feed roller interposed between said collars, a portion of the periphery of the feed roller being cut-away, tension means to frictionally clamp the roller between said collars and means preventing rotative movement of the roller with respect to its collars, said means including a slot in the roller and a pin projecting from one of the collars.

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

HOWARD M. BARBER.