June 7, 1932. I. I. STONE 1,861,646

CENTERING CHUCK FOR WEB ROLLS

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Fig. 1.

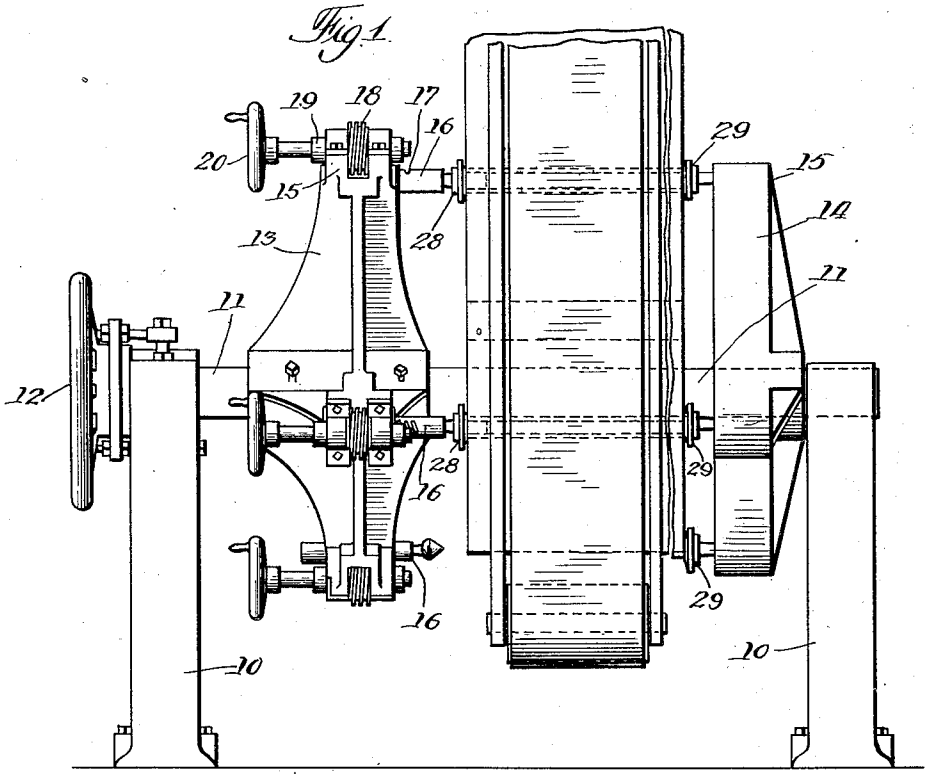
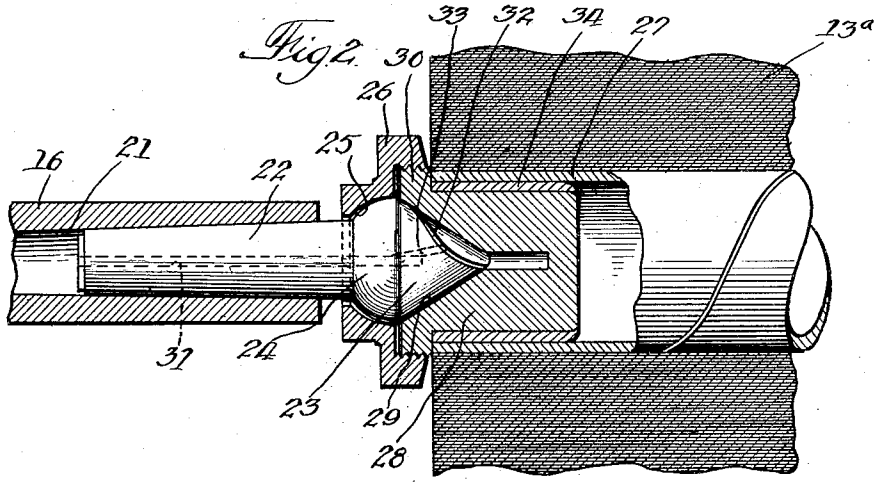


Fig. 2.



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CENTERING CHUCK FOR WEB ROLLS

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This invention relates to a device for supporting and centering the end of a web roll in position to feed the web to a newspaper printing press.

More particularly, this invention relates to means for supporting each end of the web roll from a pair of centers mounted in a firm manner, one center having longitudinal movement whereby the exhausted web rolls can be removed expeditiously and the mounting of the fresh roll can be correspondingly facilitated.

This invention also involves a means for permitting the axis of the web roll to rotate off-center with respect to the axis of the supporting centers whereby the web will not be torn should the web roll be defectively wound or should the web be irregularly fed in any manner. This invention further relates to a means for reducing or increasing friction as desired. When the web roll supply apparatus is in operation, that is, in the act of feeding the web to a newspaper printing press, it is desirable that an amount of friction be employed to retard the rotation of the web roll as it is being exhausted. Were the web supply roll run too freely, it would have a tendency to rotate faster than the paper is being consumed due, of course, to irregularities in the feed of the web, and the paper would pile upon the floor thereby causing confusion, delay and waste. Again, too much friction would tend to tear the web, which of course would cause as much trouble as in the previously recited instance. Further, when the web roll is being positioned in the supply apparatus, it is necessary, for divers reasons, as for example, in applying the pasters ordinarily used in attaching the web from an exhausted web roll to a new web roll, to rotate the roll by hand, and therefore, very little friction is desired.

Other objects and advantages will be apparent from the description and accompanying drawing forming a part of this specification to which reference may now be had for a more complete understanding of the characteristic features of this invention, in which drawing:

Figure 1 is a side elevational view of an apparatus for supporting a plurality of web rolls and embodying the principles of this invention; and

Figure 2 is an enlarged detailed central sectional view of a portion of a web roll and its relation to the supporting and centering means of this invention.

Referring now more particularly to the drawing, the supply apparatus for supporting the web rolls comprises a pair of supports 10 having a horizontally disposed shaft 11 supported therebetween and journalled therein. The shaft 11 is provided with a hand wheel 12 for manually rotating the shaft 11, the latter having suitable gearing or chains connected thereto and to a motor or other driving means when it is desired to have the shaft 11 rotate automatically. A pair of reels 13 and 14 are mounted on the shaft 11 and are rotatable therewith.

A plurality of web rolls 13*a* are mounted between the reels 13 and 14, the particular embodiment shown in the drawing containing three such web rolls. In this instance, the reels are each provided with three spider arms having suitable strengthening webs. Suitable bearings 15 are formed in each arm of the reels for receiving mechanism for supporting each of the web rolls.

A spindle 16 is journalled in each of the bearings 15 of the reel 13 and extends horizontally therethrough. The spindle has a rack 17 on one side thereof which is suitably cut or formed to mesh with a pinion 18. The latter mentioned pinion is mounted in an opening in the bearing 15 and is fixedly mounted on a shaft 19 journaled in the bearing 15. A hand wheel 20 is fixedly mounted on the reduced end portion of the shaft 19 to rotate the pinion 18.

One end of the spindle 16 is provided with an aperture 21 for receiving a shank portion 22 of a centering device having a conical centering head 23. The shank portion 22 has a drive fit in the aperture 21 of the spindle 16 and is therefore held firmly against rotation. The shoulder formed at the junction between the conical centering head 23 and the shank portion 22 is curved as at 24 to engage a socket 25 formed in a cap member 26, the

periphery of the socket having preferably the same radii as the arc of the curved portion 24. A centering device similar to the above described device is rigidly mounted in each of the bearings 15 on the reel 14 coaxially with their cooperating supporting centers on the reel 13.

The web roll 13*a* comprises a web wound on a spool 27, the latter being preferably made of a heavy paper or cardboard. For the purpose of supporting the web rolls 13*a*, a chuck 28, comprising a solid cylindrical shank, is inserted into the spool 27, the diameter of the shank snugly engaging the inner diameter of the spool and is preferably about 8″ long for use on an ordinary sized web roll. This dimension is, of course, merely for purposes of illustration and the shank portion may be extended or shortened at the will of the user. A similar chuck 29 is inserted in the spool 27 at the opposite end thereof. A conical shaped depression 29*a* is formed in the outer end of the chuck 28 for engaging the conical centering head 23. A flange is also provided each of the chucks and on the same end with the central depression for engaging the edge of the web roll to limit the extent to which the chuck will enter the spool.

The cap member 26 is internally threaded to engage external threads formed on the shank 30 of the chuck 28. This cap may be tightened so as to form a snug engagement between the socket portion 25 thereof and the annular shoulder portion 24 of the shank portion 22 or it may be loosened to provide for any desired amount of clearance therebetween. The hand wheel 20 may be operated to rotate the pinion 18 for slidably moving the spindle 16 in a longitudinal direction thereby providing for a relatively great amount of friction between the conical centering head 23 and its engaging depression 29*a*. Again, this operation may be performed in a reverse direction to obtain a minimum amount of friction between the conical centering head 23 and its engaging depression to afford a minimum amount of friction therebetween.

It may so happen that because of a defective winding of the web on the spool 27 that one end of the web may be drawn taut, while the other end is loose, thereby tending to tear the paper because of an uneven tension on the web. The conical centering head 23 may, in this instance, be loosened to a desired degree whereby the roller will depend for its support upon the engaging surfaces of the curved shoulder 24 and the socket 25. In this manner, the center of the web roll will extend off-center relative to the central axes of the spindles and the conical centering heads mounted therein. This, of course, will relieve the hereinbefore mentioned tension on the one side of the web roll and the web will be run off evenly.

In mounting a new web roll in position on the apparatus, the spindle 16 is operated longitudinally in a direction away from its cooperating centering head on the reel 14 so as to permit of a sufficient clearance for the web roll to be moved between the centering heads mounted in the spindles. One end of the web roll is lifted and located so that the conical center of one reel enters the conical depression in the chuck member disposed in the spool 27. The other end of the web roll is then raised into a substantially horizontal position whereafter the spindle 16 and the centering device thereon is moved towards its cooperating centering device on the first mentioned reel so that the conical centering head of the last mentioned reel will engage the depression of the chuck mounted in the spool 27 of that end. Any desired amount of tension may be placed on these centering heads to either retard the movement of the web roll or to permit the free action thereof as previously described. The caps 26 are then secured into position so that a desired amount of clearance may be obtained between the curved shoulder 24 and the socket portion 25.

It is desirable to provide for lubricating the engaging portions of this device because of the friction which may be obtained therein. A central aperture 31 is drilled or otherwise formed in the shank portion 22 and extends to a point near the apex of the conical centering head. The surface of the conical centering head is provided with a spiral groove 32 which is suitably connected to the aperture 31 as by means of the conduit 33. The spiral groove 32 may extend from the apex of the conical centering head to the extreme lower end thereof in order to lubricate the socket 25. A lubricating medium is forced into the aperture 21 of the spindle 16 whereafter it passes through the aperture 31 of the shank 22 to the spiral groove 32 and thence to the engaging surfaces.

It may be desirable in some instances to provide for a free rotation between the spool 27 and the chuck 28. This is accomplished by means of a collar 34 preferably formed of brass which is disposed on the outer periphery of the chuck 28 and in snug engagement therewith. Ordinarily, the chuck 28 revolves about the conical centering head 23. However, should an excessive amount of friction obtain therebetween, the spool 27 will rotate about the chuck 28. Again, if the chuck should have a drive fit with the spool, as at times may occur, the collar 34 may rotate upon the chuck 28 in order to prevent the web from tearing. It will be understood that the collar 34 does not freely turn on the chuck, but that it may turn under sufficient strain.

While but a single embodiment of this invention is herein shown and described, it is to be understood that various modifications thereof may be apparent to one skilled in the art without departing from the spirit and scope of this invention, and therefore, the same is to be limited only by the scope of the prior art and the appended claims.

I claim:

1. A device for rigidly supporting the end of a web roll for newspaper printing presses comprising a shank member adapted to enter the spool of said web roll and a supporting member, one of said members having a central depression therein for receiving a pointed end portion of the other of said members, said pointed end portion having a spherical portion, and means in engagement with said spherical portion for permitting a substantially universal engagement with the other of said members.

2. A device for rigidly supporting the end of a web roll for newspaper printing presses comprising a shank member and a supporting member, said shank member being adapted to enter the spool of said web roll, one of said members having a central depression therein for receiving a pointed end portion of the other of said members, said pointed end portion having a spherical portion, and a cap secured to one of said members and engaging said spherical portion for permitting a substantially universal engagement with the other of said members.

3. A device for rigidly supporting the end of a web roll for newspaper printing presses comprising a shank adapted to enter the spool of said web roll and having a depression on the outer end thereof, a supporting center for engaging said depression, and a cap surrounding and supporting said supporting center and secured to said shank.

4. A device for rigidly supporting the end of a web roll for newspaper printing presses comprising a shank adapted to enter the spool of said web roll and having a central depression in the outer end thereof, a pointed supporting center for engaging said depression, said pointed supporting center having a spherical portion, and means on said shank for engagement with said spherical portion permitting a substantially universal engagement with said supporting center.

5. A device for rigidly supporting the end of a web roll for newspaper printing presses comprising a shank adapted to enter the spool of said web roll and having a central conical depression in the outer end thereof, a conical supporting center for engaging said depression, said supporting center having a spherical portion, and an internally threaded cap member for engagement with external threads on said shank and having engagement with said spherical portion for permitting a substantially universal engagement with said supporting center.

6. A device for rigidly supporting the end of a web roll for newspaper printing presses comprising a chuck adapted to enter the spool of said web roll and having a central conical depression in the outer end thereof, a centering device comprising a shank portion and a conical head having a curved shoulder at the junction therebetween, a cap for engagement with said chuck having a socket portion, said shoulder being adapted to seat against said socket portion.

7. A device for rigidly supporting the end of a web roll for newspaper printing presses comprising a chuck adapted to enter the spool of said web roll and having a flange for limiting the extent to which the chuck will extend therein, said chuck having a central conical depression in the outer end thereof, a centering device comprising a shank portion and a conical head having a curved shoulder at the junction therebetween, a cap secured to said flange of said chuck having a socket portion, said shoulder being adapted to seat against said socket portion.

8. A device for rigidly supporting the end of a web roll for newspaper printing presses comprising a chuck adapted to enter the spool of said web roll and having a flange for limiting the extent to which the chuck will extend therein, said chuck having a central conical depression in the outer end thereof, a centering device comprising a shank portion and a conical head having a curved shoulder at the junction therebetween, a cap secured to said flange of said chuck having a socket portion, said shoulder being adapted to seat against said socket portion and a collar on said chuck in snug engagement therewith.

In witness whereof, I have hereunto subscribed my name.

IRVING I. STONE.