

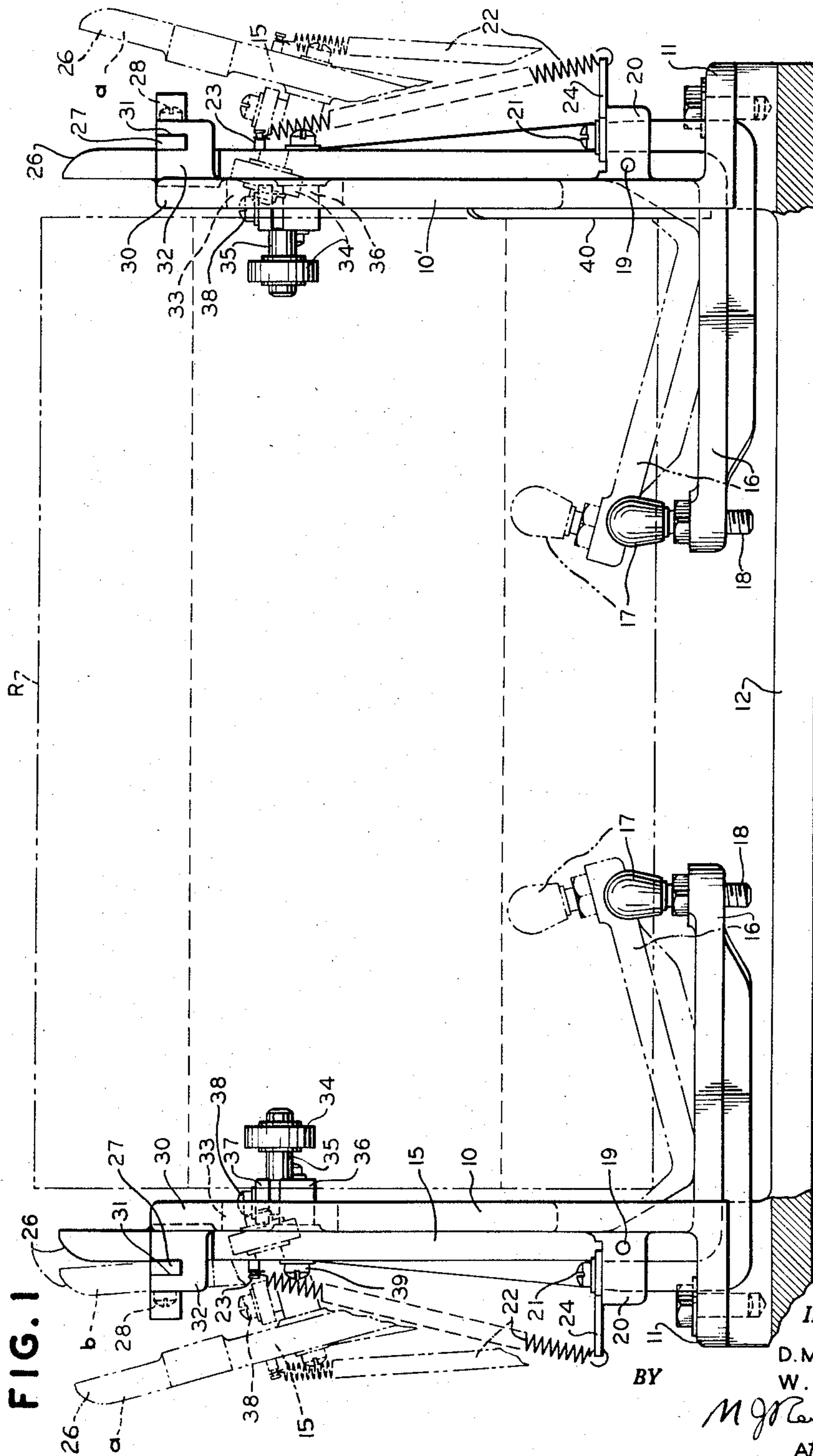
Sept. 23, 1958

D. M. ZABRISKIE ET AL
SPINDLELESS PAPER ROLL HOLDER

2,853,251

Filed April 16, 1957

2 Sheets-Sheet 1



INVENTOR.

D. M. ZABRISKIE
W. F. MOORE

BY

M. J. Reynolds
ATTORNEY

Sept. 23, 1958

D. M. ZABRISKIE ET AL

2,853,251

SPINDLELESS PAPER ROLL HOLDER

Filed April 16, 1957

2 Sheets-Sheet 2

FIG. 2

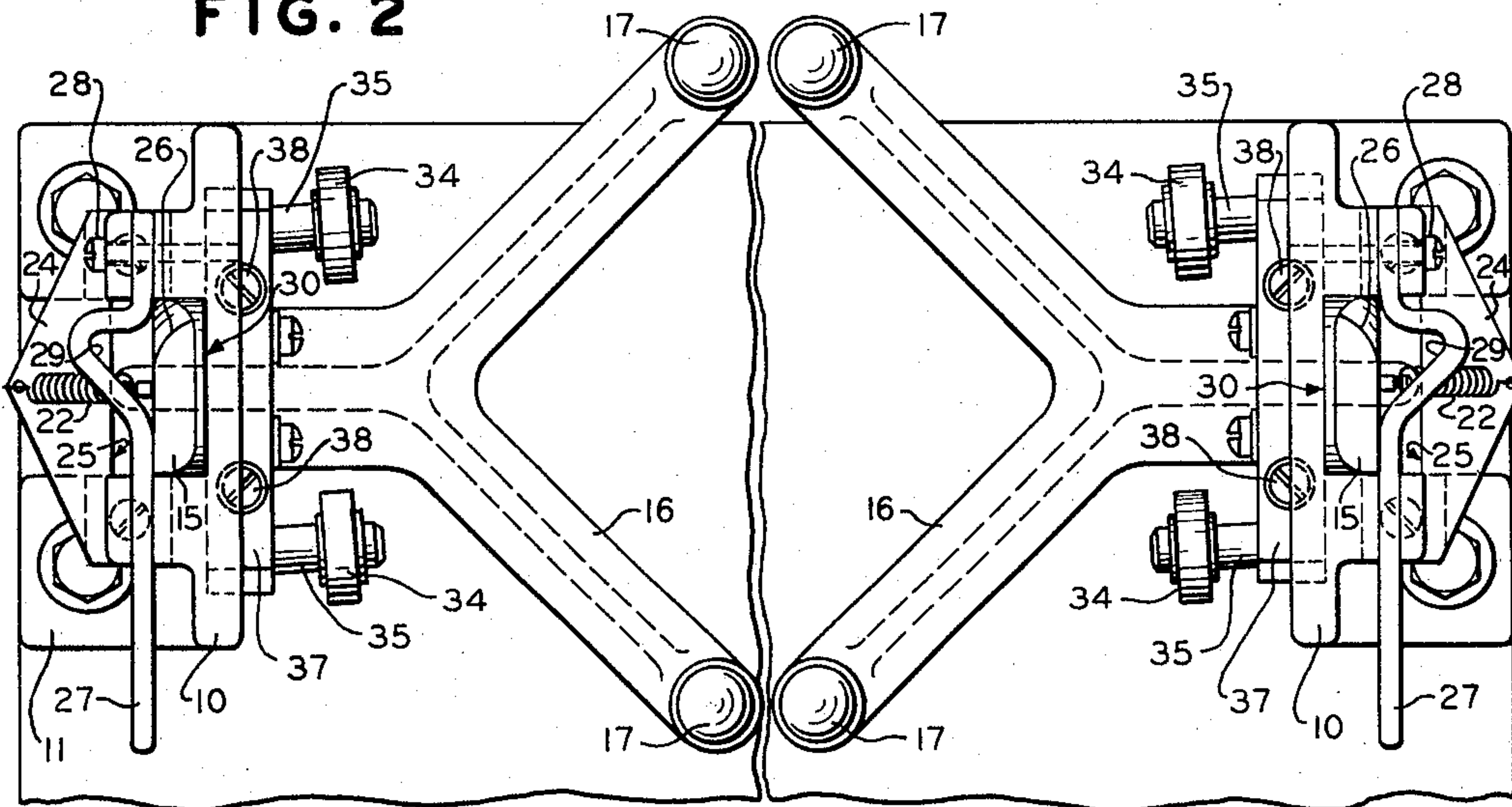
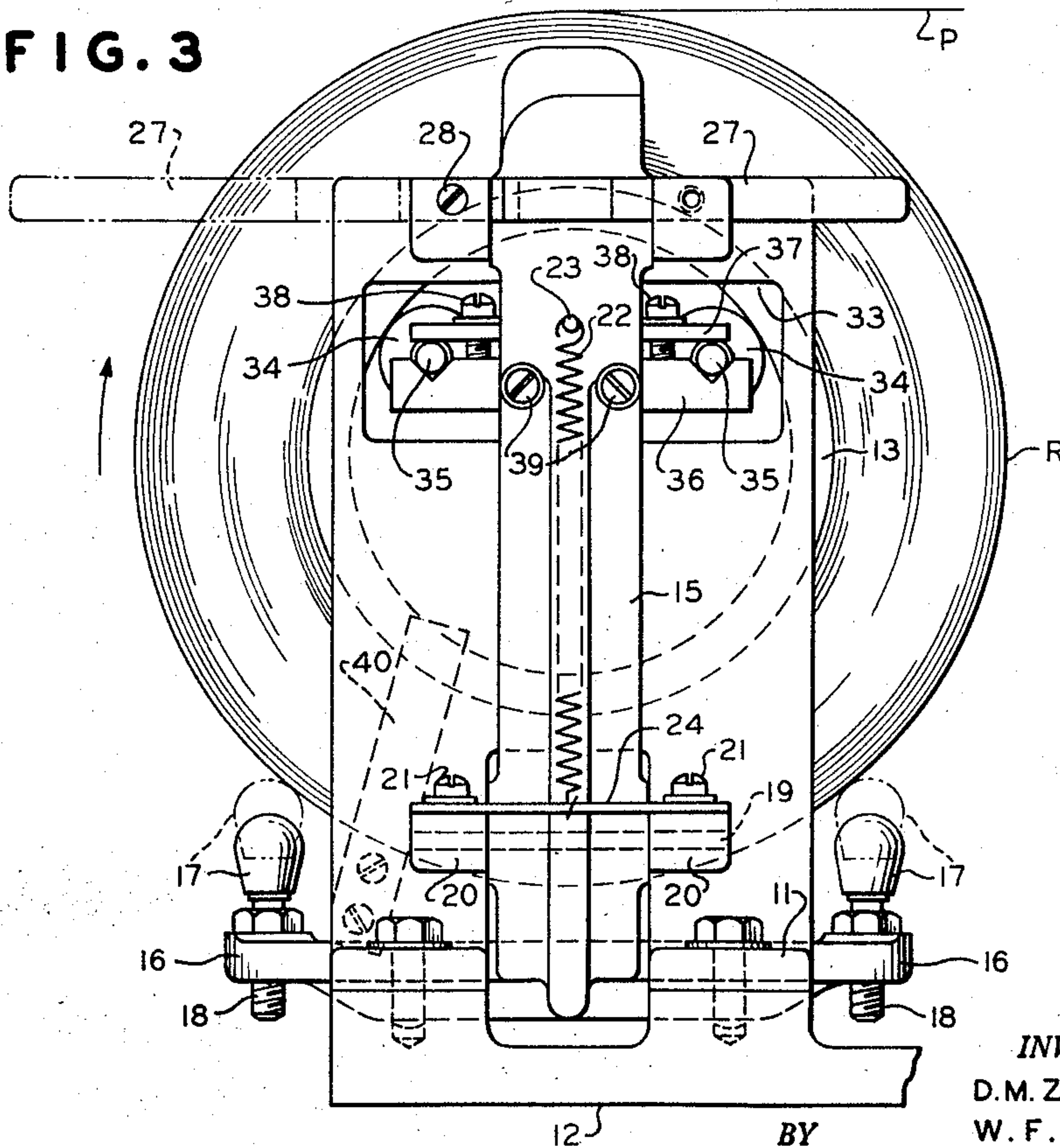


FIG. 3



INVENTOR.
D. M. ZABRISKIE
W. F. MOORE

BY *McKernold*
ATTORNEY

1

2,853,251

SPINDLELESS PAPER ROLL HOLDER

Douglas M. Zabriskie, Northvale, and William F. Moore, Passaic, N. J., assignors to The Western Union Telegraph Company, New York, N. Y., a corporation of New York

Application April 16, 1957, Serial No. 653,211

8 Claims. (Cl. 242—68.4)

This invention relates to a holder for paper rolls having a cylindrical hollow core, such as may be used for supplying a continuous web of paper to a facsimile recorder, page telegraph printer or the like, and more particularly to the mounting of such rolls without the use of centrally disposed shafts or spindles.

Paper rolls as commonly supplied are wound upon a cardboard tube which may have an internal diameter two or three or more inches. Such rolls heretofore have been mounted for withdrawal of the paper therefrom, either on a through shaft or on core spindles which fit into the opposite ends of the central tube. With a through shaft mounting the core, due to variations in the internal diameter thereof, normally fits somewhat loosely upon the shaft with the result that the paper roll is subject to endwise shifting or play during the feeding out of the paper therefrom. Also, in the absence of a tight fit adequate overrun braking of the roll is unobtainable. End spindles may be tapered to fit tightly into the ends of the core but such spindles may work loose in the feeding operation with a resultant endwise motion and loss of overrun braking.

It is important, in feeding paper to an electrical recording apparatus, that the paper be accurately aligned with the recording mechanism, particularly in facsimile scanning recorders where any variation in the alignment during a scanning cycle may result in undesirable weaving of the copy.

The present invention has for one of its objects the provision of a mounting for hollow core paper rolls which does not require the use of a central shaft or spindle bearing.

Another object is to provide a mounting for a paper roll which is suitable for rolls having varying internal core diameters.

Still another object is to provide a spindleless paper roll mounting in which the roll is self-aligning with respect to the paper utilizing mechanism, under the paper withdrawing operation.

A still further object is to provide such a paper roll mounting in which adequate overrun braking is inherent in the construction and operation thereof.

Other objects and advantages will hereinafter appear.

The invention will best be understood by reference to the accompanying drawings in which:

Fig. 1 is a side elevation of a spindleless paper mounting mechanism embodying the present invention;

Fig. 2 is a plan view of the paper mounting device; and

Fig. 3 is a lefthand view of the mounting device, as seen in Fig. 1.

The paper roll mounting device comprises a pair of spaced vertical plates or brackets 10 and 10' each having horizontal footed portions 11 whereby the brackets may be secured in properly spaced relation to the base 12 of the apparatus to which paper from the mounted roll R is to be fed. The paper roll has a central hard tubular core 13 upon which the paper P is wound and the roll

2

is mounted for withdrawal of paper therefrom in the direction shown by the arrow in Fig. 3. Each of the brackets 10 is provided with an L-shaped lever having a vertical arm 15 and a bifurcated horizontal arm 16, each branch of which has a paper roll engaging seat 17 adjustably carried thereby by means of the threaded shanks 18. Each of the lever arms 15 is pivoted to its bracket 10 or 10' on a pin 19 passing through a pair of spaced lugs 20 carried by the bracket members. This lever arm is biased outwardly away from the roll R by a spiral spring 22 extending between a pin 23 on lever arm 15 and the apex of a triangular plate 24 secured across the top of the lugs 20 as by screws 21. The inner edge 25 of plate 24 serves as a stop to limit the outward pivotal movement of the lever arm 15.

The arm 15 at its upper end is provided with an arcuate bevel 26 which is engageable by a swinging lever 27, pivoted at 28 to the bracket 10 and having a cam surface 29 for contact with the bevel 26 to cam the arm 15 from a partially actuated position into contact with the top face 30 of the bracket 10. The lever 27 in this position is received in a slot 31 of a boss 32 carried by the supporting bracket 10 for the purpose of locking the lever arm 15 in its fully actuated vertical position. Bracket 10 at its upper end has a rectangular opening 33 through which the paper roll supporting members may be moved out of and into position within the core of the paper roll. These paper roll supporting members comprise a pair of spaced antifriction rollers 34 rotatably carried on shafts 35 clamped in V-notches in a cross-bar 36 by a clamping plate 37, through the use of screws 38. The bar 36 is secured to the pivoted lever arm 15, as by screws 39.

It will be noted that the shafts 35 are disposed at a slight angle, as viewed in plan (Fig. 2) to the axis of the paper roll for a purpose which will appear hereinafter.

The right and lefthand brackets 10 and 10' and their assemblies are identical except that the righthand assembly as seen in Fig. 1 is provided with a braking strip 40 secured to the inner face of the bracket and extending in a substantially radial direction relative to the end of the roll R so as to face the end of the paper roll throughout the thickness of the tube 13 and the paper contained thereon of a full paper roll. The face of the strip 40 is preferably rounded or beveled to limit the area of contact thereof with the end of the paper roll and the core, as will presently appear. In the normal unloaded position of the roll mounting mechanism the locking or camming levers 27 are swung away from the lever arm 15, as shown in dotted lines in Fig. 3, and the levers 15 are held in their outwardly pivoted position by the spring 22 as shown in the dotted line position "a" in Fig. 1, so that the paper supporting rollers are disposed substantially within the openings 33 of bracket members 10 and 10' with the roll engaging seats 17 elevated to the dotted line position shown in Fig. 1. The operation of loading a roll in the mounting apparatus comprises lowering the roll between the brackets 10 and 10' onto the seats 17 which are thus depressed to the dotted line position of Fig. 3 with the consequent inward movement of the lever 15 and the rollers 34 carried thereby so as to position the rollers 34 partially within the core 13. The levers 15 at this time will occupy substantially the dotted line position "b" shown in Fig. 1. The cam levers 27 are then swung over to engage the cam faces 26 thereby to force the rollers 34 fully into the tube 13 and to lock the same therein by engagement of levers 27 with the locking notches 31. This final movement of levers 15 lowers the seats 17 below the surface of the roll so that the roll is supported entirely by engagement of its inner core with the antifriction rolls 34 upon which the paper roll may freely rotate.

The slight angular displacement of the shafts of rollers 34 from the axis of the paper roll R causes the paper roll, when it is rotated by withdrawal of paper therefrom, to creep to the right, Figs. 1 and 2, so as to bring the right end thereof into engagement with the braking strip 40, whereupon axial slippage occurs on continued rotation of the paper roll. The axial component of movement, however, exerts a continued pressure of the roll against the braking strip. The angular roll displacement and braking strip 40 thus serve the dual function of accurately aligning one edge of the paper with the paper utilizing apparatus, such as a facsimile recorder, and the braking action prevents overrunning of the roll when the pulling movement of the paper ceases, so that the paper web is retained tight between the roller and the paper utilizing apparatus. This is particularly important where intermittent fast feeding is desired as for instance where the final feed of the paper after a recording operation is rapid for the purpose of quickly bringing the end of the web into severing position.

In unloading a used roll it is only necessary to grasp the empty core with one hand and swing the levers to their unlocked position with the other, whereupon the rollers 34 are completely retracted from the core by the spring 22. The empty core may then be lifted from the mechanism.

It will be understood that various changes and modifications may be made in the mounting means disclosed without departing from the spirit or essential attributes of the invention, which is not to be regarded as limited except as indicated by the scope of the appended claims.

What is claimed is:

1. A spindleless holder for a paper roll having a hollow central core comprising a pair of supporting members spaced apart to receive a roll of paper endwise therebetween in mounting position, a pair of spaced anti-friction rollers carried by each of said supporting members and normally disposed out of the path of movement of said roll into mounting position, said supporting members being movable towards each other to insert said rollers internally of each end of said hollow core, at least some of said rollers having their axes disposed at an angle to the axis of said core whereby rotation on said rollers will cause axial movement of said roll in one direction, and means engageable by the forward end of said roll in said direction of movement for limiting said axial movement whereby to align said forward end of said roll with said last mentioned means.

2. A spindleless holder for a paper roll having a hollow central core comprising a pair of supporting members spaced apart to receive a roll of paper endwise therebetween in mounting position, a pair of spaced anti-friction rollers carried by each of said supporting members and normally disposed out of the path of movement of said roll into mounting position, said supporting members being movable towards each other to insert said rollers internally of each end of said hollow core, at least some of said rollers having their axes disposed at an angle to the axis of said core whereby rotation on said rollers will cause axial movement of said roll in one direction, and a braking strip disposed in the path of said axial movement of said roll and extending partially across the end of said roll for limiting said axial movement whereby to align said forward end of said roll with said last mentioned means and brake the unreeling movement of said roll.

3. A spindleless holder for a paper roll having a hollow central core comprising a pair of pivoted supporting members spaced apart to receive a roll of paper endwise therebetween in mounting position, a pair of spaced anti-friction rollers carried by each of said supporting members, spring means normally biasing said supporting members outwardly away from each other so as to retain said rollers out of the path of movement of said roll into mounting position, said supporting members be-

ing movable towards each other to insert said rollers internally of each end of said hollow core, means for retaining said rollers in said inward roll supporting position, at least some of said rollers having their axes disposed at an angle to the axis of said core whereby rotation on said rollers will cause axial movement of said roll in one direction, and means engageable by the forward end of said roll in said direction of movement for limiting said axial movement whereby to align said forward end of said roll with said last mentioned means.

4. A spindleless holder for a paper roll having a hollow central core comprising a pair of pivoted supporting members spaced apart to receive a roll of paper endwise therebetween in mounting position, a pair of spaced anti-friction rollers carried by each of said supporting members, means normally biasing said supporting members outwardly away from each other so as to retain said rollers out of the path of movement of said roll into mounting position, means engageable by said roll in mounting position for moving said supporting members towards each other to insert said rollers internally of each end of said hollow core, means for retaining said rollers in said inward roll supporting position, said rollers having their axes disposed at an angle to the axis of said core whereby rotation on said rollers will bias said roll in one axial direction, and means engageable by the forward end of said roll in said direction of bias for applying a braking force to said roll whereby to prevent overrunning thereof on cessation of an unreeling force.

5. A spindleless holder for a paper roll having a hollow central core comprising a pair of brackets spaced apart to receive a roll of paper endwise therebetween in mounting position, a lever pivotally carried by each of said brackets, a plurality of spaced anti-friction rollers carried by each of said levers, spring means normally biasing said levers outwardly out from each other so as to retain said rollers normally disposed out of the path of movement of said roll into mounting position, roll engaging means associated with each of said levers and normally disposed in the path of movement of said roll into mounting position for engagement by said roll to actuate said levers toward each other to insert said rollers internally of each end of said hollow core, means for retaining said rollers in said inward roll supporting position, at least some of said rollers having their axes disposed at an angle to the axis of said core whereby rotation on said rollers will cause axial movement of said roll in one direction, and means engageable by the forward end of said roll in said direction of movement for limiting said axial movement whereby to align said forward end of said roll with said last mentioned means.

6. A spindleless holder for a paper roll having a hollow central core comprising a pair of brackets spaced apart to receive a roll of paper endwise therebetween in mounting position, a lever pivotally carried by each of said brackets, a pair of spaced anti-friction rollers carried by each of said levers, spring means normally biasing said levers outwardly out from each other so as to retain said rollers normally disposed out of the path of movement of said roll into mounting position, roll engaging means associated with each of said levers and normally disposed in the path of movement of said roll into mounting position for engagement by said roll to actuate said levers partially toward each other to insert said rollers internally of each end of said hollow core, other means for completing the inward movement of said rollers and removing said roll engaging means from contact with said roll, means for retaining said rollers in said inward roll supporting position, at least some of said rollers having their axes disposed at an angle to the axis of said core whereby rotation on said rollers will cause axial movement of said roll in one direction, and means engageable by the forward end of said roll in said direction of movement for limiting said axial movement

5

whereby to align said forward end of said roll with said last mentioned means.

7. A spindleless holder for a paper roll having a hollow central core comprising a pair of brackets spaced apart to receive a roll of paper endwise therebetween in mounting position, a lever pivotally carried by each of said brackets, a pair of spaced anti-friction rollers carried by each of said levers, spring means normally biasing said levers outwardly out from each other so as to retain said rollers normally disposed out of the path of movement of said roll into mounting position, roll engaging means associated with each of said levers and normally disposed in the path of movement of said roll into mounting position for engagement by said roll to actuate said levers partially toward each other to insert said rollers internally of each end of said hollow core, manually operable cam means engageable with said levers for completing said inward movement of said rollers and for removing said roll engaging means from contact with said roll, means for retaining said rollers in said inward roll supporting position, at least some of said rollers having their axes disposed at an angle to the axis of said core whereby rotation on said rollers will cause axial movement of said roll in one direction, and means engageable by the forward end of said roll in said direction of movement for limiting said axial movement whereby to align said forward end of said roll with said last mentioned means.

8. A spindleless holder for a paper roll having a hol-

6

low central core comprising a pair of brackets spaced apart to receive a roll of paper endwise therebetween in mounting position, an L-shaped lever pivotally carried by each of said brackets, a pair of spaced anti-friction rollers carried by one arm of said levers, spring means normally biasing said levers outwardly from each other as to retain said rollers normally disposed out of the path of movement of said roll into mounting position, the other arm of said lever being normally disposed in the path of movement of said roll into mounting position for engagement by said roll to actuate said levers toward each other to insert said rollers internally of each end of said hollow core, means for retaining said rollers in said inward roll supporting position, at least some of said rollers having their axes disposed at an angle to the axis of said core whereby rotation on said rollers will cause axial movement of said roll in one direction, and means engageable by the forward end of said roll in said direction of movement for limiting said axial movement whereby to align said forward end of said roll with said last mentioned means.

References Cited in the file of this patent

UNITED STATES PATENTS

855,038	Ball	May 28, 1907
1,722,508	Stone	July 30, 1929
2,163,010	Richards et al.	June 20, 1939