June 5, 1934. F. MURRAY 1,961,620

STOP ACTUATING MECHANISM FOR BRAIDING MACHINES

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FIG. 1

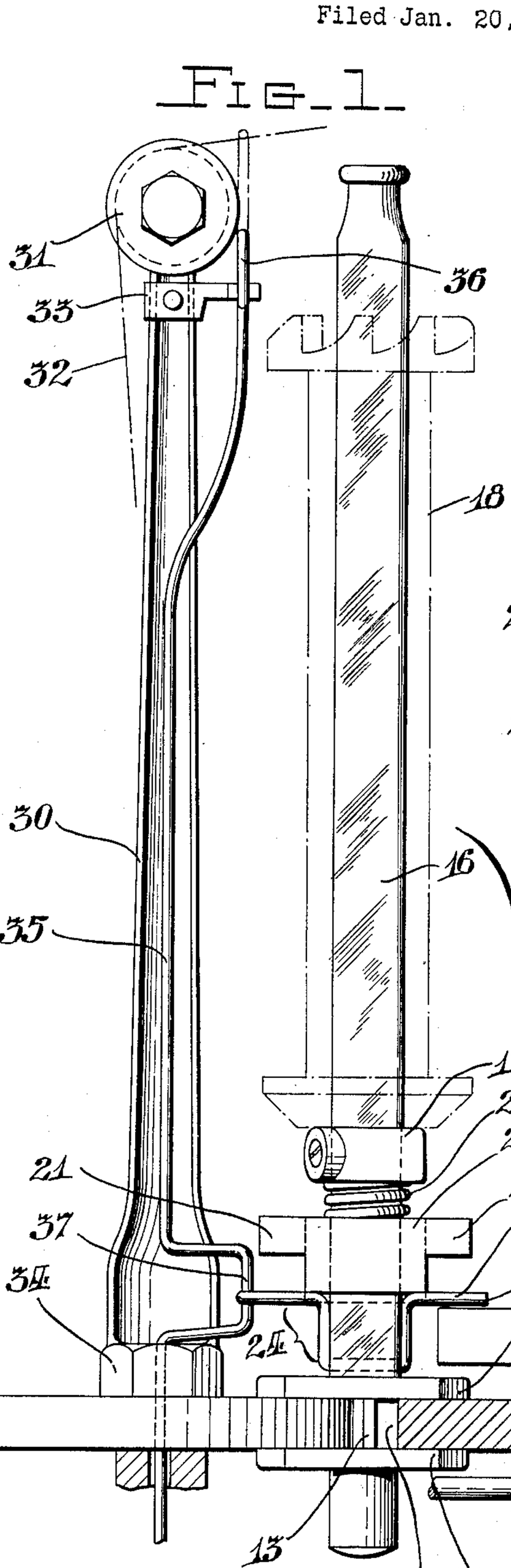

FIG. 2

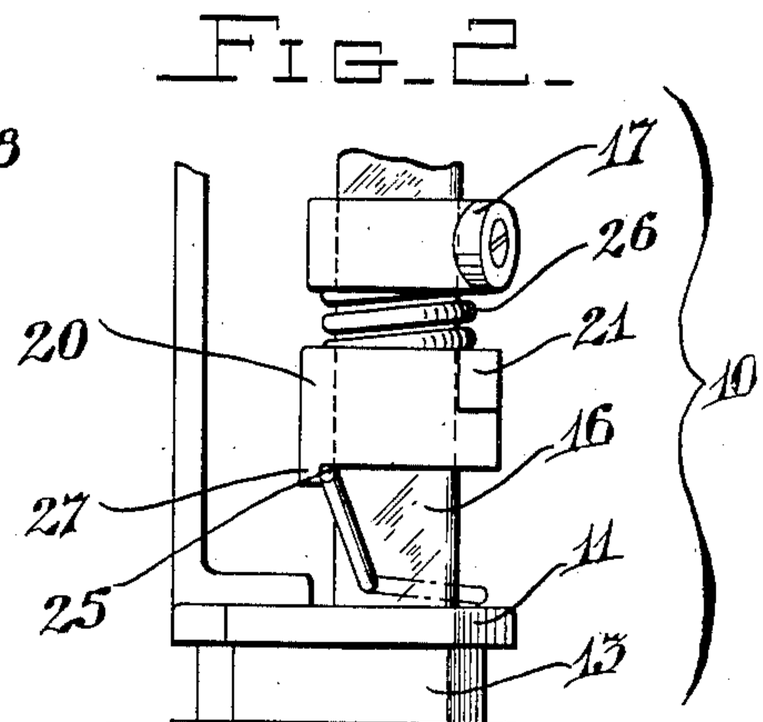

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FIG. 3.

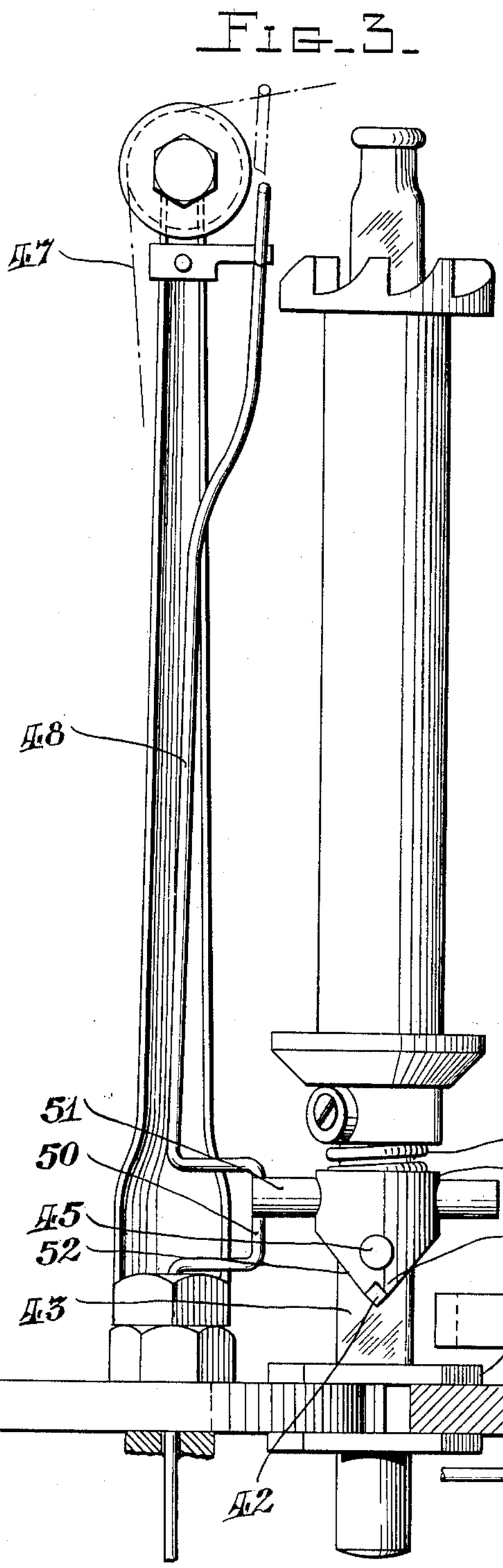
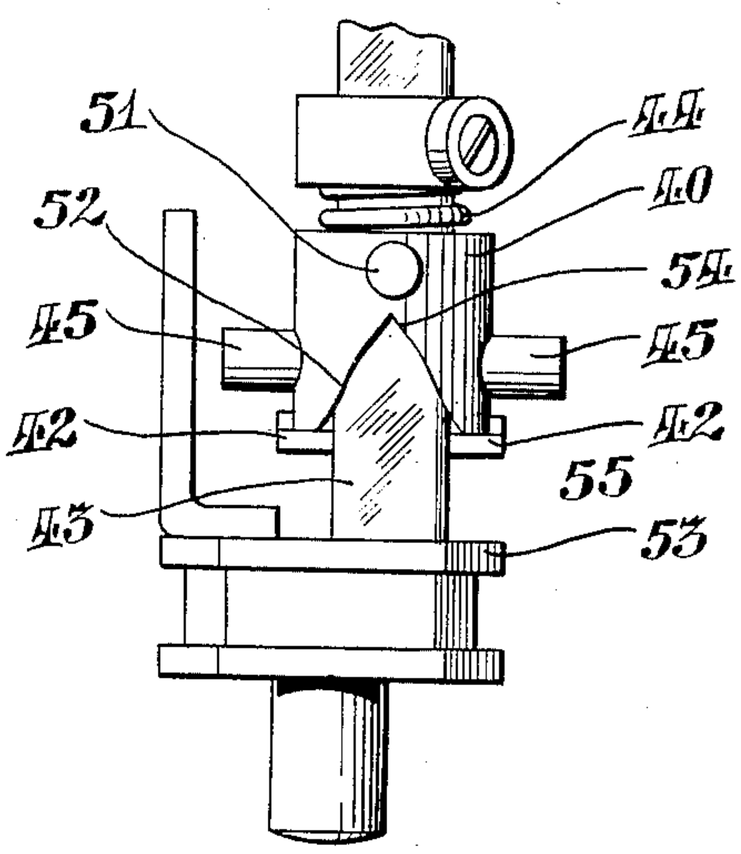


FIG. 4.



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UNITED STATES PATENT OFFICE

1,961,620

STOP ACTUATING MECHANISM FOR BRAIDING MACHINES

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Application January 20, 1932, Serial No. 587,644

3 Claims. (Cl. 96—19)

This invention relates to braiding machines and particularly to devices for actuating stopping mechanism therefor in the event of breakage of an elastic thread, or other core, guided to the braiding point for incorporation in the braid.

In carrying out the invention a movable hub is mounted on the spindle of each travelling thread-carrier of the braiding machine and has lugs for actuating stop-mechanism. The lugs are normally held in inactive position by pins extending at the side of the spindle and engaging shoulders on the hub. A wire normally supported by the elastic thread has a projecting portion adapted to be dropped into the path of the carrier to cause release of the hub from said pins to permit its movement to dispose its lugs in position to operate the stop mechanism. A spring mounted on the spindle engages the hub to insure that it is moved quickly to stop operating position when released.

In one embodiment of the invention a pair of notches engage the pins projecting from the spindle to hold the hub in raised position and a second pair of notches are provided for engaging the pins to lock the hub when turned on the spindle to rotatively position its lugs for actuating the stop mechanism. Camming surfaces provided on the hub cooperate with the pins projecting from the spindle to turn the hub as it is moved axially of the spindle.

In the drawings:

Figure 1 is a front elevation, partly in section, of part of a braiding machine and shows a travelling thread-carrier provided with a movable hub operable by a thread supported wire to effect actuation of stop mechanism for causing stopping of the machine.

Figure 2 is a side elevation of a portion of the mechanism shown in Figure 1.

Figures 3 and 4 are views, similar to Figures 1 and 2, illustrating another embodiment of the invention.

Referring to the drawings, the numeral 10 designates one of the various travelling thread-carriers with which a braiding machine is provided. Carrier 10 has a base comprising plates 11 and 12 spaced by a member 13 which cooperates with the usual sinuous grooves 14 in the machine bed 15 for guiding the carrier in its braiding movements. A spindle 16 which is square in cross section extends from plate 11 and is provided with a fixed collar 17 for supporting the braiding-thread spool 18 and also carries a slidably mounted collar or hub 20. Hub 20 has oppositely extending lugs 21 adapted on downward movement of the hub on spindle 16 to be positioned for engaging an operating lever 22 of any desirable form of stop mechanism such as is usually provided for stopping braiding machines. As shown, lever 22 is fixed to a pin 19 rotatably mounted in bed 15 and an arm 29 also fixed to the pin and movable with lever 22 is operatively connected to set the stop mechanism in operation.

Hub 20 is normally held in raised position on spindle 16, with the lugs 21 above the plane of lever 22, by the projecting and offset end portions 23 of a member 24 which, in the embodiment shown in Figures 1 and 2, comprises a pin 25 bent to the form of a crank and pivotally mounted intermediate its ends in an aperture in spindle 16. A spring 26 surrounding spindle 16 between collar 17 and hub 20 urges the hub towards base plate 11 and also causes a flange or shoulder 27 on the hub to engage the end portions 23 of the member 24 for supporting the hub.

A standard 30 fixed on bed 15 between the sinuous grooves 14 supports a pulley 31 which guides an elastic thread 32, or other core to be incorporated in the braid, from a suitably located supply spool to the braiding point. Standard 30 has a bracket 33 and a hollow base portion 34 which form guides for a wire 35 having a loop 36 supporting it on thread 32. Wire 35 is reversely bent to provide a projecting portion 37 adapted to be dropped on breaking of thread 32 into the path of movement of a projecting end portion 23 of the members 24 mounted on the various thread-carriers 10 of the braiding machine.

When a thread 32 breaks and drops the related wire 35 the portion 37 thereof is engaged by an offset end portion 23 of the member 24 on the first carrier 10 to reach the point at which a thread 32 has broken. Inasmuch as portion 37 of wire 35 also engages the side of standard 30 it does not yield and as a result the end portions 23 of member 24 are rotated to the position shown in dotted lines in Figure 2, thus releasing hub 20 and permitting spring 26 to move the hub quickly downwardly on spindle 16 so that the lugs 21 are positioned in the plane of lever 22. On engagement of the lever by one of these lugs, upon further travel of the carrier, it is operated to cause stopping of the braiding machine.

In the embodiment illustrated in Figures 3 and 4, the lower edge of the hub 40 is provided with diametrically located notches 41 of inverted V-shape providing shoulders for engaging pins 42

extending from opposite sides of spindle 43. In this embodiment the spindle 43 is so shaped that hub 40 may rotate thereon. Pins 42 are preferably square in cross section with their diagonals extending axially of the spindle and are adapted to seat in notches 41 to hold hub 40 in raised position against the force of a spring 44 so that lugs 45 on the hub are normally positioned above a lever 46 operable thereby for actuating suitable stop mechanism for the braiding machine.

Upon breakage of a core thread 47 which supports a wire 48 the projecting portion 50 of the wire is engaged by a projection 51 on the first travelling carrier to reach the point at which a thread has broken and the hub is turned to rotate the lugs 45 into position for operating lever 46. The initial turning of the hub causes inclined edges of notches 41 to act as cams and raise the hub from pins 42 so that it may be moved axially of the spindle to position the lugs 45 in the plane of lever 46.

The lower edges of the hub are reversely cut from the outer edges of notches 41 to provide camming surfaces 52 adapted to coact with the pins 42 to turn the hub when it is released from the holding action of pins 42. In the absence of spring 44 the hub would tend to gravitate downwardly on spindle 43 as wire portion 50 and the camming surfaces 52 effected turning of the hub. However, spring 44 acts to quickly move hub 40 towards the base 53 of the carrier and assures its turning and axial movements to aline and engage other diametrically located notches 54 with pins 42. The notches 54 are also of inverted V-shape and are positioned above and angularly relatively to notches 41. Shoulders 55 are provided between the upper ends of camming surfaces 52 and notches 54 for lockingly engaging pins 42. Thus, the hub is held against further movement so that the lugs 45 are locked in their rotated position in the plane of lever 46 to insure engagement, on further travel of the carrier, of one of the lugs 45 with the lever for operating the latter to cause stopping of the braiding machine.

It should be noted that the engagement of a projection 51 with wire portion 50 need rotate hub 40 only sufficiently to raise notches 41 from pins 42 for releasing the hub from the holding action of the pins because thereafter the proper rotative and axial movements of the hub to dispose lugs 45 for operating lever 46 are assured by the action of spring 44.

What I claim is:

1. In a braiding machine having a lever operable to actuate stop devices for the machine and a thread carrier provided with a spindle; a hub mounted for movement axially of said spindle and having lugs adapted to engage and operate said lever; a pivotally mounted member having a portion extending at the side of said spindle into engagement with said hub to hold the latter positioned for rendering said lugs ineffective to operate said lever; and thread-released means for disengaging said hub and member to permit movement of said hub for disposing a lug thereof in position to operate said lever.

2. In a braiding machine having a member operable to actuate stop devices for the machine and a thread carrier provided with a spindle; a hub slidably mounted on said spindle and having lugs adapted to engage and operate said member; a pivotally mounted pin having an offset portion extending from one side of said spindle into holding engagement with said hub to retain the lugs thereof from operative relation with said member; and thread-released means for engaging and pivotally moving said pin from holding engagement with said hub.

3. In a braiding machine having a member operable to actuate stop devices for the machine and a thread carrier provided with a spindle; a hub mounted for movement axially of said spindle and having lugs adapted to engage and operate said member; a pin pivotally mounted on said spindle and having offset end portions projecting from the side of said spindle into holding engagement with said hub to retain the lugs thereof from operating relation with said member; thread-released means for engaging an offset end portion of said pin to pivotally move the latter from holding engagement with said hub; and a spring on said spindle engaging said hub to move the latter axially of said spindle for positioning the lugs thereof in position to operate said member.

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