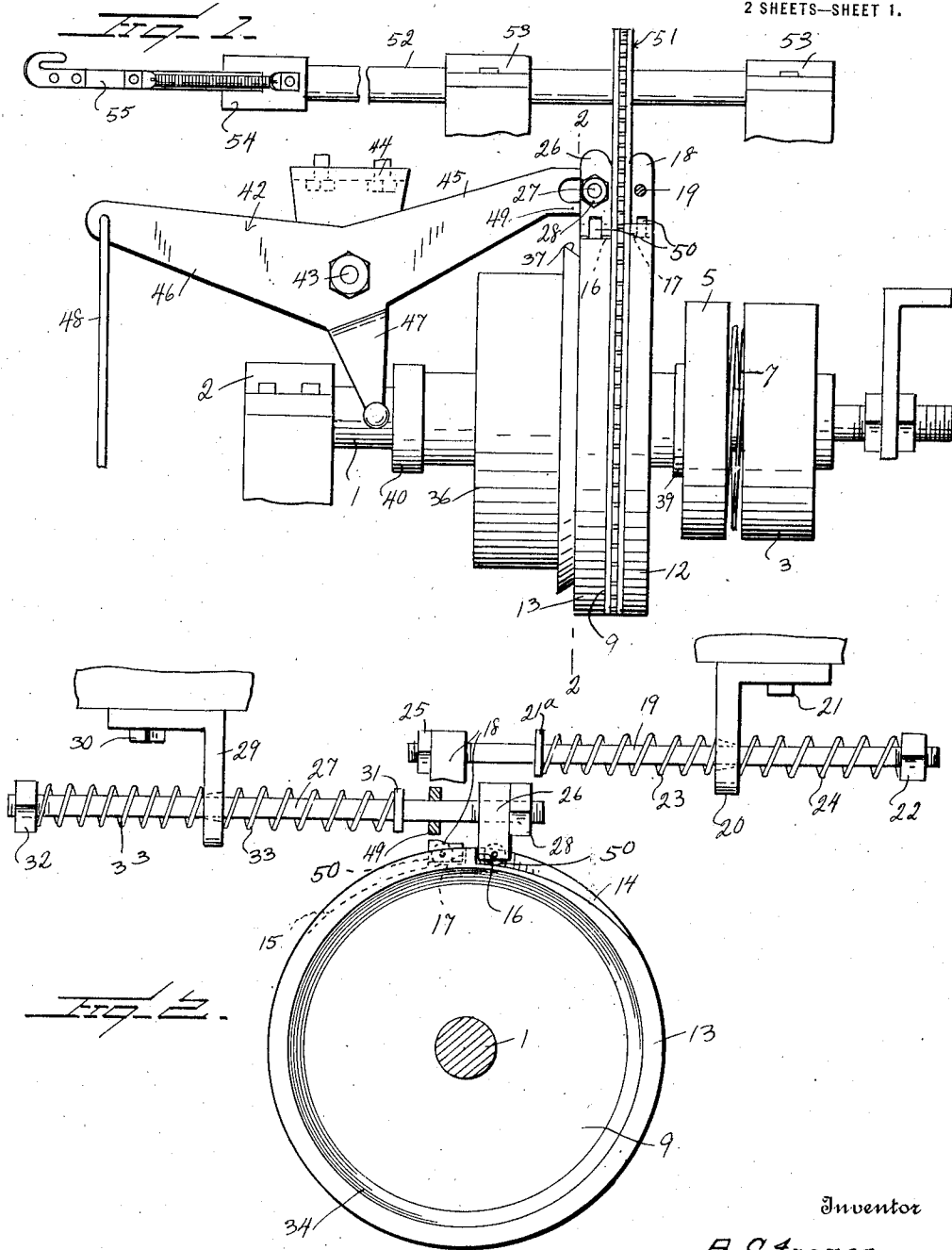


A. STRONER,
OPERATING MECHANISM FOR SACK TYING DEVICES.
APPLICATION FILED AUG. 2, 1919.

1,335,263.

Patented Mar. 30, 1920.

2 SHEETS—SHEET 1.



Inventor

A. Stroner

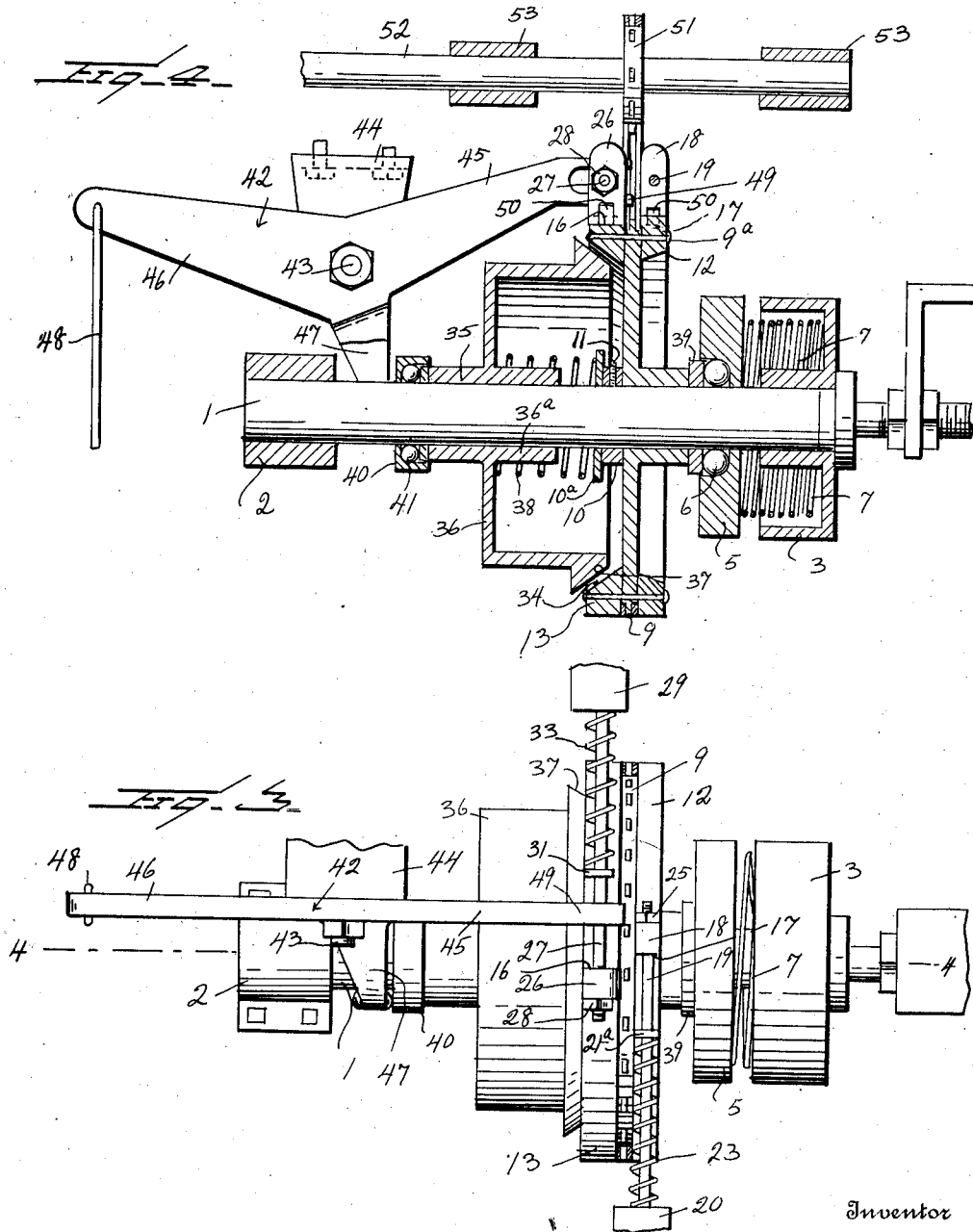
By *Watson E. Coleman*
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UNITED STATES PATENT OFFICE.

ANTHONY STRONER, OF FLORENCE, COLORADO.

OPERATING MECHANISM FOR SACK-TYING DEVICES.

1,335,263.

Specification of Letters Patent.

Patented Mar. 30, 1920.

Application filed August 2, 1919. Serial No. 314,958.

To all whom it may concern:

Be it known that I, ANTHONY STRONER, a citizen of the United States, residing at Florence, in the county of Fremont and State of Colorado, have invented certain new and useful Improvements in Operating Mechanism for Sack-Tying Devices, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to an improved operating mechanism for a sack tying device, in fact for revolving a spindle, which carries the tying device proper, such as set forth, illustrated and claimed in co-pending application filed June 21, 1919, Serial No. 305,797 in the name of Anthony Stroner.

As one of the objects of the invention it is the aim to provide an improved spindle operating mechanism including means whereby a spindle may be operated intermittently, for a pre-determined number of revolutions, in order to completely form the tie.

A further object of the invention is to provide means comprising revoluble members approximately of the ratio of three to one for operating the spindle, in combination with means for automatically stopping one of said members at the end of each complete revolution, so that when the spindle has completed its plurality of pre-determined revolutions, the tie will be completed.

A further object of the invention is to provide an operating mechanism of this kind for actuating the spindle several complete revolutions, in combination with means whereby the spindle may be stopped positively at the same point.

A further object of the invention is to provide an abutment lock for one of the revoluble members and an additional lock adapted to be actuated by a clutch operating member, to release said revoluble member, so that the spindle may revolve a certain pre-determined number of revolutions relatively to the single revolution of one of the members.

While the design and construction at present illustrated and set forth is deemed preferable, it is obvious that as a result of a reduction of the invention to a more practical form for commercial purposes, the invention may be susceptible to changes, and the right to these changes is claimed, pro-

vided they are comprehended within the scope of what is claimed.

The invention comprises further features and combination of parts, as will be hereinafter set forth, shown in the drawings and claimed.

In the drawings:

Figure 1 is a view in elevation of the improved spindle operating mechanism constructed in accordance with the invention.

Fig. 2 is a sectional view on line 2—2 of Fig. 1.

Fig. 3 is a plan view.

Fig. 4 is a vertical sectional view longitudinally of Fig. 3 on line 4—4.

Referring more especially to the drawings, 1 designates a shaft, which is mounted stationary in suitable bearings 2, and mounted on the shaft is a container 3 having a cushioning spring 7, and also mounted upon the shaft to rotate is a plate 5, between which and the container 3, the cushioning spring 7 is interposed, thereby cushioning the plate 5. A single spring 7 is disclosed in the drawings, but it is obvious that several springs may be employed, if desired. The plate 5 is chambered out, and receives anti-frictional ball bearings 6, and moreover the spring 7 is designed to be attached to the plate 5 in any suitable manner (not shown).

A sprocket 9 is loosely mounted upon the shaft 1 and is adapted to make intermittent single revolutions. The sprocket 9 is provided with a hub, which contacts with a ring plate 39, which extends into the chambered out portion of the plate 5, and bears against the anti-frictional ball bearings 6, so that the sprocket may freely rotate relatively to the plate 5, and in such a manner that the friction will reduce substantially to a minimum. A set collar 10 is fixed to the shaft 1, by means of a set screw 11. The sprocket 9 contacts with the set collar 10, and it is to be noted that when the container 3, the spring 7 and the plate 5, and also the sprocket 9 are arranged on the shaft, the sprocket is positioned so as to put the spring 7 severely under tension, so that it may constitute a cushion for the plate 5 and the sprocket. The set collar is then secured to the shaft 1 to hold the spring 7 under tension. The set collar 10 is also designed to hold the sprocket in a uniform position between the container and the collar.

Secured concentrically to the sprocket, 110

preferably by rivets 9^a, though not necessarily, for other means may be employed, are concentrically arranged opposite rings 12 and 13. These rings, as shown in Fig. 2, have segmental cutaway portions 14 and 15 which are immediately adjacent each other. Where these cut away portions 14 and 15 occur, the rings are provided with abutment shoulders 16 and 17. Engaging the cut away portion 15 adjacent the shoulder 17 is an abutment finger 18. This abutment finger is secured upon a rod 19, which is mounted slightly loosely in a bearing 20, which may be secured to any suitable stationary support as shown at 21. The rod 19 has a collar 21^a near one end, and a nut 22 threaded on the opposite end. Engaging the opposite sides of the bearing 20 and in surrounding relation to the rod 19 between the collar 21 and the nut 22 are coil springs 23 and 24, which permit the rod 19 to yield in either direction axially. The abutment finger is threaded upon the rod 19, there being a lock nut 25 to hold the abutment finger in place. A second abutment finger 26 is threaded upon a second rod 27 and is secured in place by means of the lock nut 28, this abutment finger 26 being designed to cooperate and engage with the abutment shoulder 16, to hold the sprocket 9 against revoluble movement in one direction, while the abutment finger 18 engaging the shoulder 17 prevents movements of the sprocket 9 in the opposite direction. The rod 27 is mounted in a bearing 29, which may be secured to any suitable support, as shown at 30. The rod 27 is provided with a collar 31 and a nut 32, arranged in surrounding relation on the rod 27 and engaging between the collar 31 and the nut 32 and arranged on the opposite sides of the bearing 29 are coil springs 33. These springs act to bear against the collar and the nut and cooperate with the bearing so as to hold the rod in a slidable position, so that when the shoulder 17 is engaged by the abutment finger, there is a cushioning action.

The ring 13, which is riveted to the sprocket, has a beveled friction surface 34, and loosely and slidably mounted upon the shaft 1 is a pulley 36, which is hollowed out, as shown, and its flange is provided with an enlarged rim or ring having a beveled friction clutch surface 37, which engages frictionally with the beveled clutch surface 34, when the pulley 36 is moved toward the sprocket 9, so that the sprocket 9 will operate with the pulley as one body. The collar 10 also acts to prevent the sprocket 9 from following the male clutch member 37, when disengaging the female clutch surface 34. The pulley 36 continuously rotates, since it is driven by means of the belt (not shown), and when its male clutch member is in engagement with the female clutch member,

the pulley, sprocket and the rings 12 and 13 all rotate together. A coil spring 38 is interposed between the ring 10^a, which is adjacent the set collar 10, and the end wall of the pulley 36, thereby holding the male clutch of the pulley out of engagement with the female clutch. This coil spring 38 surrounds one end of the hub 36^a of the pulley, thereby acting to maintain the spring 38 concentrically positioned. A collar 40 is mounted upon the shaft 1 and carries ball bearings 41 and is positioned adjacent one end of the sleeve of the clutch member 36. A lever 42 is pivotally mounted at 43 upon a stationary support 44, and this lever comprises three arms 45, 46 and 47. A pedally operated rod 48 is connected to the arm 46 of the lever 42 so that the lever may rock upon its pivot. The arm 47 is provided with forks which straddle the shaft 1, and the terminals of the forks are spherically shaped and engage the collar 40 as illustrated. The arm 45 of the lever 42 terminates in forks 49, which straddle the rod 27 at a point adjacent the abutment finger 26. The abutment fingers 18 and 26 are provided with rollers 50, so as to engage the surface of the opposite rings 12 and 13. A sprocket chain engages the teeth of the sprocket 9 between the rings 12 and 13. This sprocket chain also passes about a sprocket 51 of a counter spindle shaft 52, which is mounted in bearings 53. The end of the spindle shaft is threaded into the head 54 of the sack tying device 55, which is similar to that illustrated in the copending application heretofore mentioned.

The relative ratio between the sprockets 9 and 51 is substantially three to one, and when it is desired to impart several revolutions to the spindle counter shaft 52, the pedally operated rod 48 is actuated, which in turn oscillates the lever 42. The forks of the arm 47 will bear against the collar 40 and move the pulley and its clutch member axially toward the sprocket 9, causing the friction clutch beveled surfaces 34 and 37 to engage. Prior to this action of the lever 42 the sprocket 9 is held locked, owing to the cooperative connections between the shoulders 16 and 17 with the abutment fingers 18 and 26. However, at the time of operating the lever 42 and moving the clutch member 36, the forks 49 act to tilt the rod in its bearing 29 sufficiently to remove the abutment finger 26 from the path of the shoulder 16. The abutment finger 26 will remove from the path of the shoulder 16 substantially at the same time that the cooperative engagement of the beveled surfaces 34 and 37 occurs, and since the pulley 36 is rotating continuously, movement will be imparted to the sprocket 9. However, the sprocket 9 will only rotate a full revolution, in which case the abutment shoulders

will cooperate with the abutment fingers to stop the sprocket 9 at the end of its complete revolution. The sprocket 51 will operate three revolutions to one revolution of the sprocket 9, hence to the spindle will be imparted three revolutions, sufficient to make a complete tie of the sack. When operating the mechanism, it is the aim to release the pull upon the lever 42 just immediately before the shoulders cooperate with the abutment fingers, so that the lever 42 will restore to initial position in time to permit the fingers to cooperate with said shoulders. As soon as the tension on the lever 42 is relieved somewhat, the spring 38 will act to separate the clutch member 36 from engagement with the beveled clutch surface 34 of the sprocket 9. The ring 12 constitutes a positive stop, owing to its shoulder cooperating with the finger 18, and is designed to take up the recoil.

The invention having been set forth, what is claimed as new and useful is:

1. In a spindle operating mechanism, the combination with a stationary member and a driven member, of a friction clutch carried by the stationary member and having abutment shoulders and provided with gear connections with the driven member, abutment fingers yieldably mounted for cooperating with said shoulders to lock the friction clutch, a pedally operated element for disengaging one of the fingers to release the friction clutch and a second friction clutch operative by the pedally operated element to move it into cooperative engagement with the first friction clutch, whereby the first friction clutch may rotate with the second friction clutch for actuating the driven member.

2. In a spindle operating mechanism, the combination with a stationary member and a driven member, of a friction clutch carried by the stationary member and having gear connections with the driven member, said friction clutch having abutment shoulders, abutment fingers yieldably mounted for cooperating with said shoulder to lock the clutch, a pedally operated element for dis-

engaging one of the fingers to release the clutch, a constantly rotating friction clutch rotatable and slidable on the stationary member and operated by the pedally operated element to move it into cooperative engagement with the first friction clutch, whereby the first friction clutch may operate the driven member, and means for governing the position of the second friction clutch relatively to the first friction clutch.

3. In a device of the kind set forth, the combination with a supporting shaft, of an element revoluble thereon and having operative connections with a member to be driven, a friction clutch part carried by said element and provided with abutments, cushioning devices mounted for cooperation with said abutments to lock the friction clutch, a shiftable friction clutch rotatably mounted upon said shaft and having a pulley part adapted to be driven, and pedally operated means to actuate the second clutch toward and in contact with the first clutch and having means to engage one of the fingers to release the first friction clutch.

4. In a clutch and stop mechanism, the combination with male and female friction clutches, of a supporting shaft on which said clutches are rotatable, means to prevent axial movement of the female friction clutch, the male friction clutch being slidable axially on said shaft, means on the shaft between the two friction clutches to hold the male clutch normally out of engagement with the female clutch the female clutch having abutments, cushioning elements cooperating with said abutments to lock the female clutch, and means to disengage one of the cushioning elements to release the female clutch and having means to operate the male clutch toward and in frictional contact with the female clutch.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

ANTHONY STRONER.

Witnesses:

A. L. JEFFREY,
J. W. BROWN.