Jan. 26, 1926. 1,571,060

R. E. NAUMBURG

FULL CAN CHANGER STOP MECHANISM

Filed July 1, 1925 3 Sheets-Sheet 1

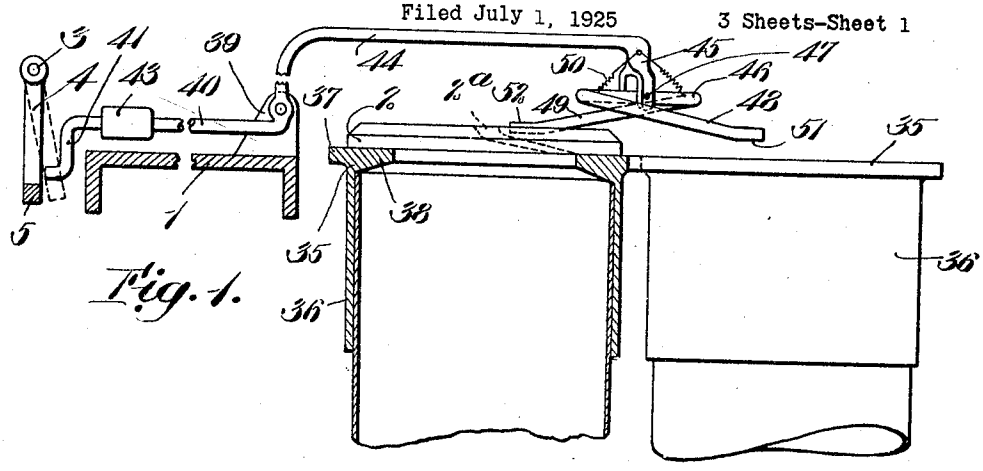


Fig. 1.

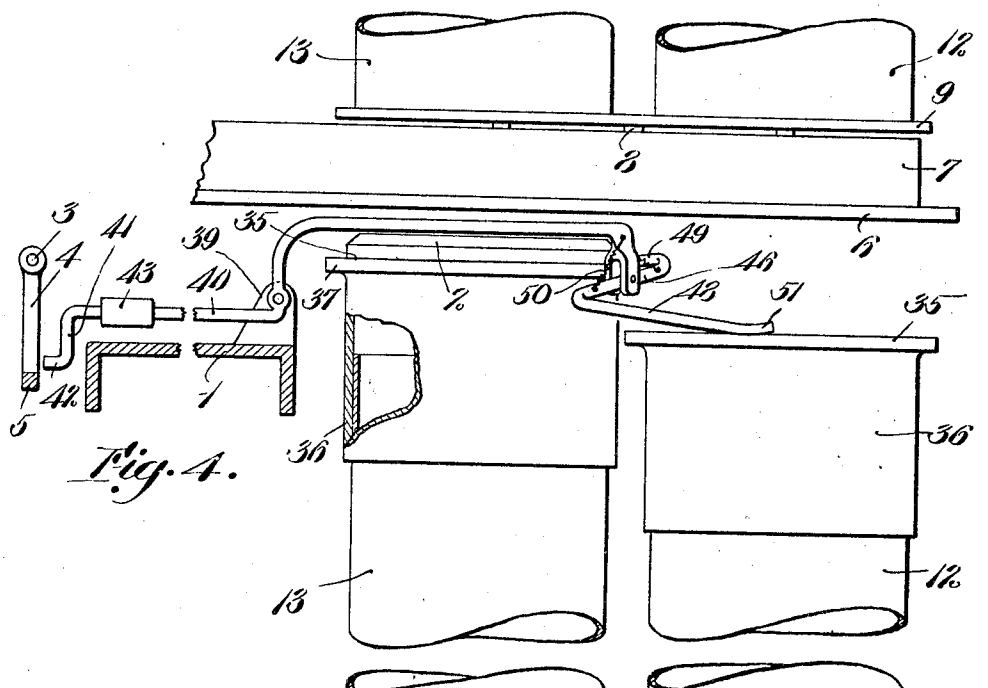


Fig. 4.

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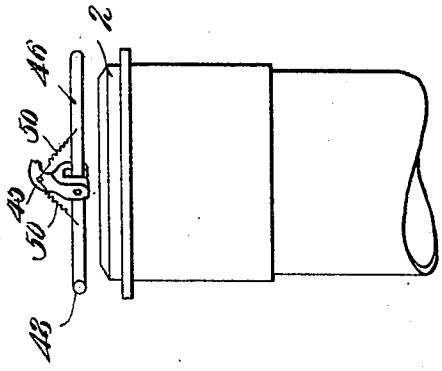


Fig. 10.

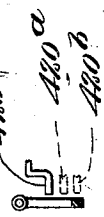


Fig. 11.

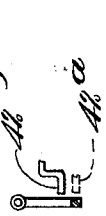


Fig. 3.

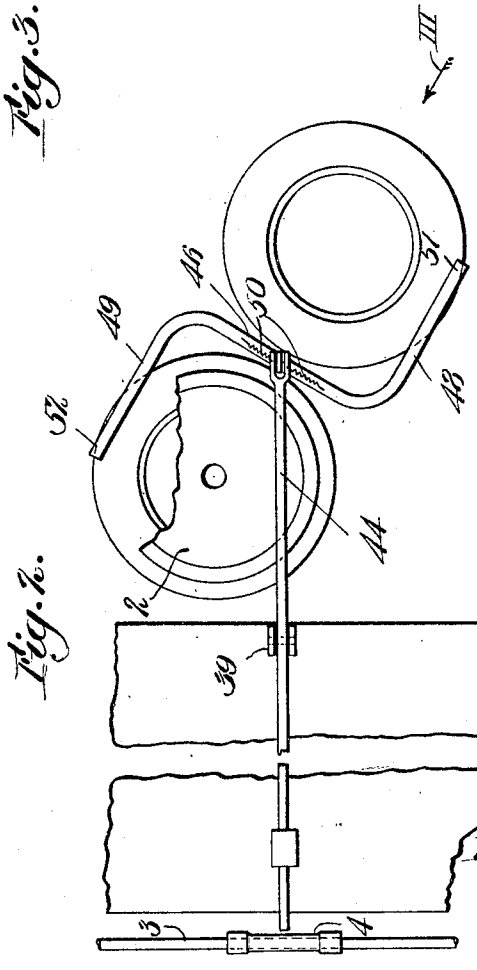


Fig. 8.

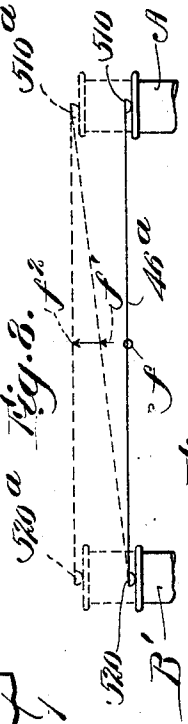
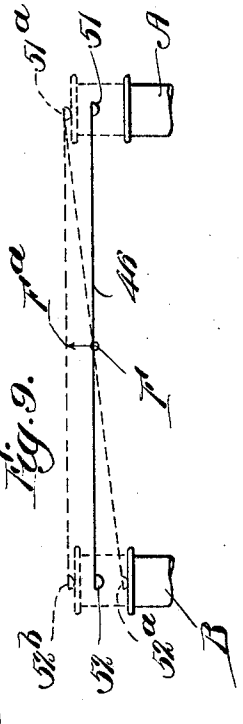


Fig. 9.



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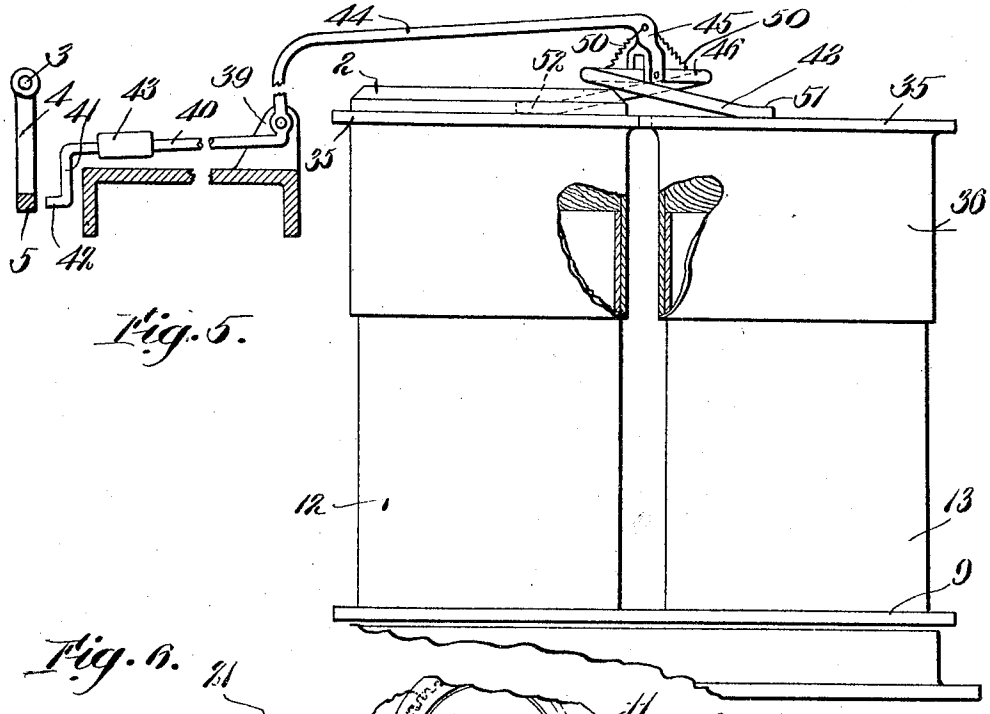


Fig. 5.

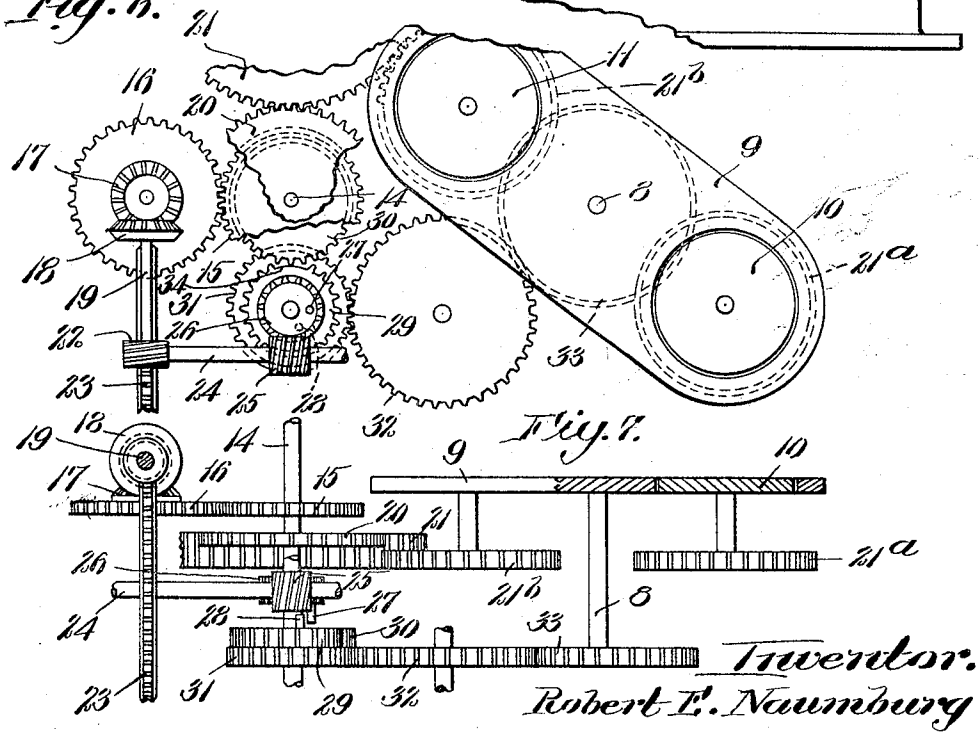


Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE.

ROBERT E. NAUMBURG, OF WINCHESTER, MASSACHUSETTS.

FULL-CAN-CHANGER STOP MECHANISM.

Application filed July 1, 1925. Serial No. 40,966.

To all whom it may concern:

Be it known that I, ROBERT E. NAUMBURG, a citizen of the United States of America, and resident of Winchester, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Full-Can-Changer Stop Mechanisms, of which the following is a specification.

This invention relates to full can changer stop mechanism and more particularly to stop mechanism for machinery of that type which delivers its product in the form of a continuous elongate body, for example a wire, strand, filament, sliver, roving or yarn to a can or other receptacle in which it is coiled or piled.

For convenience in description reference is hereinafter made to a drawing-frame as the machine in which the invention is embodied, although such reference is merely by way of example and is not to be regarded as restrictive of the environment in which the invention may be found useful.

Commonly each sliver delivered by a drawing-frame is coiled in a tall and narrow cylindrical receptacle termed a "can", which is slowly rotated about its own axis, while the sliver is fed into it by means of a coiling head or "tube gear" having a guide passage which revolves about the axis of the can thus disposing the sliver in loose overlapping coils in the can. The coiling head or tube gear forms a cover for the can while being filled and when the can is full, further delivery of sliver lifts the cover and thereby automatically actuates a stop motion to discontinue delivery of the sliver until the full can has been replaced by an empty one.

This arrangement is eminently satisfactory when a single can is provided to receive the sliver but when, as in some instances, it has been attempted to make the machine more automatic by providing a plurality of cans arranged for example upon an automatically actuated turntable so that when one can has been filled an empty can is substituted therefor, the above form of stop mechanism is inapplicable. This may be clearly understood by consideration of the fact that the purpose of providing the turntable with its plurality of cans is to keep the frame in continuous operation, at least until there are no longer any empty cans in the group or series provided.

The object of the present invention is to provide a stop motion control for mechanism of the class described which will stop the frame only when all of the cans of the number provided have been filled, said stop motion remaining inoperative indefinitely if the operator substitute an empty can or cans for one or more of the filled cans before the last can of the series has been completely filled.

In the preferred embodiment herein chosen for detail illustration, I have shown but two cans mounted upon a rotary turntable, but I contemplate mounting more than two cans upon a turntable if circumstances should warrant, and employ the term "series" herein with reference to the number of cans employed as descriptive of two or more cans. Further, I may provide means other than a turntable for moving the cans to and from receiving position since in so far as the principle of the invention is concerned it is immaterial whether the cans move in a closed circular path or a path of other contour.

Referring to the drawings,

Fig. 1 is a vertical section, partly in elevation and partly broken away, illustrating the application of the present invention to a textile machine, for example a drawing frame, and showing the parts in the position which they occupy when both cans are empty;

Fig. 2 is a fragmentary plan view of the parts shown in Fig. 1;

Fig. 3 is a fragmentary elevation looking in the direction of the arrow III in Fig. 2;

Fig. 4 is a side elevation, partly in section, similar to Fig. 1 but showing the parts in the position which they occupy when one of the cans has been filled;

Fig. 5 is a similar view showing both cans filled and the stop devices disposed in position to stop the machine;

Fig. 6 is a diagrammatic plan view showing mechanism suitable for turning the cans and for reversing their position when one can has been filled;

Fig. 7 is a diagrammatic elevation of the mechanism shown in Fig. 6; and

Figs. 8 to 11 inclusive are diagrammatic views illustrating the principle of operation embodied in the invention.

The numeral 1 indicates a portion of the frame of the machine to which the present apparatus is applied, this machine for example being a drawing frame such as is employed in textile mills for drawing out and evening a textile sliver or roving. Such machines usually comprise stop mechanisms for stopping the machine when, for example, the sliver breaks or is exhausted or when the can into which the sliver is delivered is filled. Such stop mechanisms usually comprise an oscillating shaft, here indicated at 3, carrying a yoke member 4 provided with an abutment 5, and the stop mechanism is usually so constructed that when the oscillation of the abutment 5 is prevented and the shaft 3 is thus brought to rest the machine is automatically stopped. Such stop mechanisms being well known and common in the art it is unnecessary herein further to describe them in detail.

The numeral 6 designates a base member or support preferably provided with a casing 7 for enclosing the driving mechanism hereinafter referred to and providing bearings for a shaft 8 which drives a horizontal turntable 9. This turntable, is designed to support but two cans as herein illustrated, is preferably of elongate form to save floor space and is furnished at opposite ends with apertures for the reception of rotary can holders 10 and 11 respectively. These can holders are supported by the table in such manner that they may turn relatively to the table and form supports for cans 12 and 13 respectively of the usual type employed for receiving sliver from a textile machine. Such cans are usually cylindrical and relatively tall and narrow.

Referring more particularly to Figs. 6 and 7 the numeral 14 designates a vertical drive shaft which is constantly rotated, while the machine is in operation by suitable drive mechanism forming a part of the drawing frame or other machine with which the present apparatus is associated. This shaft 14 carriers a gear 15 meshing with a gear 16 which has fast thereto a bevel gear 17. The gear 17 meshes with a second bevel gear 18 carried by a horizontal shaft 19.

The shaft 14 also carries a pinion 20 which constantly meshes with a wide gear 21 which is adapted to mesh alternatively with either of two gears 21^a and 21^b concentric with and secured to the under surfaces of the can supports 10 and 11 respectively. When the gear 21 meshes with one of the gears 21^a and 21^b it turns the corresponding can support and thus turns the can about its own axis in the usual manner to facilitate coiling of the sliver therein.

The drawing frame or other machine with which the present apparatus is associated is furnished with the usual constantly rotating coiling head or tube gear 2 having the passage 2^a for the sliver and feed rolls, not shown, such coiling head being disposed above the can being filled and being vertically movable in the usual manner, so that when the can is filled to overflowing the coiling head may rise with the accumulating material in the can.

The shaft 19 carries a worm 22 meshing with a worm wheel 23 carried upon a shaft 24. This shaft in turn carries a worm 25 meshing with a worm wheel 26 upon a vertical shaft. The worm wheel 26 is provided with a depending pin 27 which is adapted to engage an upwardly projecting pin 28 carried by a mutilated gear 29. This mutilated gear is adapted in certain positions to mesh with a gear 30 fixed on the shaft 14.

A gear 31 is secured to the gear 29 and constantly meshes with a gear 32 which in turn meshes with a gear 33 secured to the shaft 8 which drives the table 9.

Normally, that is to say, while one of the cans, for example the can 13, is being filled, that portion 34 of the gear 29 which is devoid of teeth is disposed opposite to the teeth of the rotating gear 30 so that the gear 29 remains at rest. At the beginning of the filling operation the pin 27 is at a considerable distance from the pin 28, but as the filling of the can progresses the pin 27 is moved gradually toward the pin 28 by the gearing above described and when the pin 27 engages the gear 28 the mutilated gear 29 is turned sufficiently to bring its teeth into engagement with the teeth 30. As the gear 30 is rotated at relatively high speed its engagement with the gear 29 turns the latter rapidly and the gears 32 and 33 swing the table 9 through a half revolution thus substituting the can 12 for the can 13. The length of the space 34 devoid of teeth on the gear 29 is such that at the end of a half revolution of the table 9, it is again brought opposite to the teeth of the wheel 30 so that the table 9 comes to rest.

The mechanism just described for revolving the turntable when a can has been completely filled has herein been shown and described merely for purposes of illustration, since it forms no part of the present invention and it is contemplated that other and equally suitable mechanism may be substituted if desired. It is also clear that if the turntable be arranged to carry a greater number of cans the actuating mechanism will be modified accordingly.

In accordance with the present invention each of the cans is preferably provided with a stop operating actuator which as here shown consists of a ring like member 35 having a depending cylindrical sleeve 36 adapted to fit loosely over the upper end of the can, such ring member also comprising an outwardly extending flange 37 and an inwardly extending flange 38. This inwardly extending flange projects in to a sufficient distance so that as the material accumulates in the can and begins to overflow the latter it presses up against the underside of the flange 38 and thus tends to lift the actuator ring. Normally, that is to say, when the can is empty, the flange 38 rests upon the upper edge of the can thus supporting the actuator ring in its normal or depressed position. Preferably the upper surfaces of the flanges 37 and 38 lie in the same plane and form a smooth contact surface for the detector devices hereinafter described.

At a suitable point upon the frame member 1 of the machine a bracket 39 is arranged, such bracket providing a fulcrum point for a lever which comprises an arm 40 having a downturned rear extremity terminating in a contact toe 42 which is adapted in certain positions of the lever to engage the oscillating abutment 5. If desired an adjustable counterbalance weight 43 may be mounted on the arm 40.

The lever also comprises an arm 44 which extends forwardly to a position substantially above the pivotal axis of the table 9 at which point it is provided with a downwardly directed bifurcated arm 45. A transmitter lever 46 is pivoted at its central point upon a pivot pin 47 carried by the arm 45. The lever 46 comprises oppositely directed detector arms 48 and 49 respectively which are preferably inclined downwardly from the fulcrum point 47 and which terminates in feeler or contact elements 51 and 52 respectively which are adapted to engage the upper or contact surface of the actuator rings.

As indicated in Fig. 2 the arms 48 and 49 lie in substantially parallel vertical planes, but are spaced apart a distance substantially equal to the diameter of one of the cans and so that the contact element 52 of the arm 49 is disposed to one side of the coiler head 2.

In the preferred construction the contact elements 51 and 52 are somewhat elevated above the plane of the contact surfaces of the actuator rings when both cans are empty. In order to retain the lever 46 in this normal position it is preferred to provide springs 50 extending from the bracket or arm 45 in opposite directions and engaging the lever 46 at points equally distant from the fulcrum point.

When both cans are empty the parts thus occupy the position indicated in Fig. 1 wherein the lever arms 40 and 44 are substantially horizontal and the toe 42 is above the abutment 5. In this position of the parts the gear 21 engages the gear 21^b and is slowly rotating the can 13 while the coiler head 2 is also rotating and by the combined motion of the coiler head and can the sliver is coiled in the desired manner in the can. When the can proper is completely filled, the sliver which is subsequently delivered through the coiler head 2 exerts an upward pressure which raises the actuator ring 35 until it assumes the position indicated in Fig. 4 where it has tilted the lever 46 by engagement with the detector member 52, thus swinging the contact element 51 down substantially into engagement with the contact surface of the ring 35 of the can 12. At substantially this time the table reversing mechanism comes into operation and revolves the table, thus substituting the filled can for the empty can, that is to say, placing the can 12 in the filling position formerly occupied by the can 13 as shown in Fig. 1. As the table revolves the actuator ring 35 of the can 13 swings from under the contact member 52, thus allowing the latter to reassume its normal position, but as the filled can 13 approaches the position formerly occupied by the can 12 it slides under the inclined arm 48 carrying contact member 51 and tips the lever 46 in the opposite direction, thus causing the contact member 52 to move downwardly so that when the empty can 12 reaches the filling position the contact member 52 substantially engages the corresponding actuator ring 35. During the operations just described the lever 46 swings freely upon its fulcrum pin 47 but without exerting any substantial upward pressure upon the forward end of the lever arm 44 so that the latter remains in its normal position.

Referring now to Fig. 5 the parts are shown in the position which they occupy when the second can has been filled. As here shown the ring 35 of the can 12 has also been raised to its uppermost position and during its elevation it moves the contact member 52 of the lever 46 upwardly. Since the contact member 51 at this time is held in its most elevated position by engagement with the ring 35 of the filled can 13 any upward movement of the contact finger 52 exerts an upward pressure upon the forward end of the lever 44, gradually tilting the latter until it occupies the position shown in Fig. 5 where the toe 42 lies in the plane of the abutment 5 and prevents the free oscillation of the latter, thus stopping the drawing frame.

The general principle of operation involved in the above mechanism is diagram-

matically illustrated in Fig. 9 where the actuators A and B are shown in full lines in normal position. The contact members 51 and 52 in this instance are shown as normally out of engagement with the actuators A and B and the fulcrum point of the lever 40 is indicated at F. When the actuator A rises to the dotted line position it swings the lever 46 about the fulcrum F until the contact 51 assumes the position 51^a but without moving the fulcrum point F. When now the actuator B begins to rise it immediately starts to move the contact finger 52 from the position 52^a in which it was placed by the upward swing of the member 51^a until it rises to the position 52^b and during this movement the lever 46 fulcrums about the contact member 51^a and thus lifts the fulcrum point F to the point F^a. In Fig. 11 the corresponding positions of the stop toe are shown in full lines at 42 and in dotted lines at 42^a, the latter being the position in which it cooperates with the abutment 5 to stop the machine.

In Figs. 8 and 10 an alternative arrangement is shown in which the actuators A′ and B′ are shown in normal position in full lines. In this case the contact members 510 and 520 of the lever 46^a both engage their corresponding actuators when the latter are in normal position. With this arrangement when the actuator A′ rises to the dotted line position it carries the contact member 510 to the position 510^a and thus the lever 46^a swings about the point 520 as a fulcrum lifting the fulcrum f of the lever 46^a to the position f'. This results in moving the stop toe 420 from the full line position in Fig. 10 to the dotted line position 420^a but this movement is not sufficient to bring the stop toe opposite to the oscillating abutment 5.

When the actuator B′ rises to the dotted line position the lever 46^a swings about the point 510^a as an axis until the contact member 520 reaches the position 520^a. This operation raises the fulcrum f of the lever 46^a from the point f' to the point f^2, thus carrying the contact toe 420 down to the position 420^b where it is opposite the abutment 5 and thus stops the latter and brings the machine to rest.

The only substantial difference between the arrangements shown in Figs. 8 and 9 is that in the device shown in Fig. 8 the contact members are normally in engagement with the actuators when both cans are empty while in the arrangements shown in Fig. 9 both contact fingers are normally out of contact with the actuators. The latter arrangement has some advantages in that it involves less movement of the lever 46 when the table is revolved for exchanging the cans and also facilitates the entry of the cans beneath the contact fingers, but so far as the general underlying principle of the invention is concerned it is immaterial which of these specific embodiments is employed.

While I have herein illustrated the described invention as applied to cans mounted upon a turntable I contemplate that the principle of the invention may be applied to other arrangements, for example mechanisms in which the cans are moved to and from filling position by other devices and as above stated I contemplate the provision of a turntable upon which more than two cans may be mounted as falling within the scope of the invention.

I claim:

1. Apparatus of the class described comprising means for delivering a continuous strip of fibrous material, means for supporting and moving a plurality of receptacles successively into cooperative relationship to the delivery means to receive fibrous material therefrom, and means acting only when all of said receptacles have been filled to stop the delivery means.

2. Apparatus of the class described comprising means for delivering textile fibre, a series of receptacles, means for moving each receptacle as filled away from the delivery means and for substituting an empty receptacle for the filled one, and means responsive to filling of the last receptacle only of said series for stopping the delivery means.

3. Apparatus of the class described comprising means for delivering textile fibre in a continuous sliver, a movable support, a plurality of receptacles mounted upon the support, one of said receptacles normally being positioned to receive sliver from the delivery means, means operable when one receptacle is full to move the support whereby to bring an empty receptacle into receiving position, and means operative only when all of the receptacles of those upon the support have been filled, to stop the delivery means.

4. Apparatus of the class described comprising delivery rolls, a normally stationary turntable, a plurality of receptacles mounted upon the turntable, one of said receptacles normally being positioned to receive material delivered by said rolls, means for turning the turntable when one receptacle is filled to bring a second receptacle into receiving position relatively to the delivery rolls, and means operative to stop the delivery rolls when every receptacle upon the turntable is filled.

5. Apparatus of the class described comprising rolls for delivering a textile sliver, a turntable, a pair of cans mounted on the turntable, one of said cans being normally positioned to receive sliver from the delivery rolls, means operative when the first can is filled automatically to turn the table to bring the second can into sliver receiving position, and means automatically stopping

the delivery rolls when the second can is full.

6. Apparatus of the class described comprising means for delivering material, a plurality of receptacles, means for moving the receptacles relatively to the delivery means to receive material successively from the delivery means, mechanism for stopping the delivery means comprising a stop lever whose position is unaffected by the filling of receptacles precedent to the last receptacle of the group, and a member movable by the overflow of material deposited in the last receptacle of the group and operative only when all of the other receptacles of the group are full to change the position of the stop lever and thereby to stop the delivery means.

7. Apparatus of the class described comprising means for delivering fibrous material, means for moving a plurality of receptacles successively into co-operative relationship to the delivery means to receive fibrous material therefrom, mechanism for stopping the delivery means comprising a normally stationary stop lever, a movable element associated with each receptacle, each of said elements being movable to an abnormal position by the accumulation of material in its receptacle, and means dependent upon the combined movement of all of said elements to abnormal position for moving said stop lever to stop the delivery means.

8. Apparatus of the class described comprising means for delivering textile fibre, a plurality of receptacles, means for moving each receptacle as filled away from the delivery means and for substituting an empty receptacle for the filled one, mechanism for stopping the delivery means comprising a stop member, an actuator associated with each receptacle, said actuator being lifted to an abnormal position by the accumulation of fibre in the receptacle, and a transmitter common to the several receptacles engageable by the several actuators when the respective receptacles are filled, said transmitter moving the stop member to stop the delivery means only when engaged by all of said actuators concomitantly.

9. Apparatus of the class described comprising means for delivering fibrous material, means for moving a plurality of receptacles successively into cooperative relationship to the delivery means to receive fibrous material therefrom, a stop lever, and a transmitter device connected to the stop lever, said transmitter device having a contact element corresponding to each receptacle, said contact elements being raised from normal position by the accumulation of material in the corresponding receptacle, and concomitant elevation of all of said contact elements raising the transmitter bodily and thereby actuating the stop lever.

10. Apparatus of the class described comprising rolls for delivering a textile sliver, a turntable, a pair of cans mounted on the turntable, one of said cans being normally positioned to receive sliver from the delivery rolls, means operative when the first can is filled automatically to turn the turntable to bring the second can into sliver receiving position, a stop member, and a transmitter lever movable bodily and also tiltable about an axis, the bodily movement of the transmitter lever moving the stop member to stop the delivery rolls and the tilting of the lever being ineffective to actuate the stop member, the transmitter lever comprising oppositely extending arms so disposed relatively to the cans that when either can is filled the accumulated sliver therein tends to lift the corresponding arm of the transmitter lever.

11. Apparatus of the class described comprising means for delivering textile fibre, a plurality of receptacles, means for moving each receptacle as filled away from the delivery means and for substituting an empty receptacle for the filled one, mechanism for stopping the delivery means comprising a stop lever, an actuator associated with each receptacle, said actuator being lifted to an abnormal position by the accumulation of fibre in the corresponding receptacle, transmitting means connected to the stop lever, said transmitting means having arms corresponding in number to the number of receptacles, each arm being engageable by one of the actuators to be lifted by the latter when the corresponding receptacle is filled, the simultaneous lifting of all of the arms of the transmitting means moving the stop lever to stop the delivery means.

12. Apparatus of the class described comprising means for delivering textile fibre in a continuous sliver, a movable support, a plurality of receptacles mounted upon the support, one of said receptacles being positioned to receive sliver from the delivery means, means operable when one receptacle is full to move the support whereby to bring an empty receptacle into receiving position, a stop lever normally disposed in inoperative position, transmitting means connected to the stop lever, and an actuator slidable relatively to each receptacle and adapted to be lifted by the accumulation of sliver in the latter, each actuator engaging said transmitting means as its respective receptacle becomes full and thereby moving the transmitting means.

13. Apparatus of the class described comprising rolls for delivering a textile sliver, a turntable, a pair of cans mounted on the turntable, one of said cans being normally positioned to receive sliver from the delivery rolls, means operative when the first can is filled automatically to turn the turntable

to bring the second can into sliver receiving position, a stop lever normally disposed in inoperative position, a transmitter lever pivotally secured to the stop lever, an actuator associated with each of the cans and adapted to be lifted by the accumulation of sliver therein into engagement with an arm of the transmitter lever, the upward movement of one actuator alone tipping the transmitter without moving the stop lever and the concomitant elevation of both actuators bodily lifting the transmitter and thereby actuating the stop lever to stop the delivery rolls.

14. Apparatus of the class described comprising rolls for delivering a textile sliver, a turntable, a pair of cans mounted on the turntable, one of said cans being normally positioned to receive sliver from the delivery rolls, means operative when the first can is filled automatically to turn the turntable to bring the second can into sliver receiving position, a stop lever, a two armed transmitter lever centrally supported by the stop lever, an actuator ring mounted upon the upper end of each can and having a part adapted to be engaged by sliver overflowing the can whereby the ring is lifted from normal position, each actuator ring having a part engageable with one arm of the transmitter lever, the rise of one ring only tilting the transmitter lever about its point of support and the concomitant elevation of both rings bodily lifting the transmitter lever and thereby moving the stop lever.

15. Apparatus of the class described comprising rolls for delivering a textile sliver, a turntable, a pair of cans mounted on the turntable, one of said cans being normally positioned to receive sliver from the delivery rolls, means operative when the first can is filled automatically to turn the turntable to bring the second can into sliver receiving position, an actuator ring mounted upon each can, each ring comprising a sleeve loosely fitting over the outside of the can and a flange extending inwardly over the top of the can in position to be engaged by sliver filling the can to overflowing and thereby to be lifted relatively to the can, a freely swinging lever engageable at its opposite ends by the respective rings, the upward movement of either ring tending to tilt the lever and the concomitant elevation of both rings tending to lift the lever bodily, and stop means responsive to such bodily upward movement of the lever to stop the delivery rolls.

16. Apparatus of the class described comprising rolls for delivering a textile sliver, a turntable, a pair of cans mounted on the turntable, one of said cans being normally positioned to receive sliver from the delivery rolls, means operative when the first can is filled automatically to turn the turntable to bring the second can into sliver receiving position, a coiling head cooperable with the can which is in receiving position to coil the sliver therein, an actuator ring mounted upon each can, each ring comprising a sleeve loosely fitting the cylindrical wall of the can, an inwardly extending flange at the upper end of the sleeve adapted to be engaged and lifted by the growing accumulation of sliver in the can, and an outwardly projecting radial flange of a diameter substantially larger than that of the coiling head, a stop device whose movement stops the delivery rolls, and a transmitter lever having oppositely directed arms adapted respectively to overlie the outwardly projecting flanges of the respective actuator rings whereby upward movement of said rings tends to tilt said lever, and means connecting the central part of the lever to the stop device whereby concomitant elevation of both rings and both arms of the lever moves the stop device to stop the delivery rolls.

17. Apparatus of the class described comprising delivery means, a turntable, a pair of receptacles disposed at substantially diametrally opposite points upon the turntable, the turntable normally being positioned to present one of the receptacles in position to receive material from the delivery rolls, means for turning the table to reverse the relative positions of the receptacles, a stop lever whose movement from normal position stops the delivery means, a transmitter lever centrally fulcrumed upon the stop lever, said transmitter lever having its opposite end portions bent in opposite directions to extend in substantially parallel planes and constituting lifter elements, and a vertically movable actuator mounted upon each receptacle, each actuator having a part normally underlying one of the lifter elements of the transmitter lever, said actuator rising with the accumulation of material in the receptacles, the concomitant elevation of both actuators bodily lifting the transmitter lever and thereby actuating the stop lever to stop the delivery means.

18. Apparatus of the class described comprising delivery means, a turntable, a pair of receptacles disposed at substantially diametrally opposite points upon the turntable, the turntable normally being positioned to dispose one of the receptacles in position to secure material from the delivery rolls means for turning the table to reverse the relative positions of the receptacles, a stop lever whose movement from normal position stops the delivery means, a transmitter lever centrally fulcrumed upon the stop lever, said transmitter lever having its opposite end portions bent in opposite directions to extend in substantially parallel planes, said end portions being downwardly inclined and terminating in contact elements, an actuator device mounted upon each receptacle, each

actuator comprising a flange member underlying one of the contact elements when the turntable is stationary, the inclined end portion of the transmitter lever engaging the flange, as the table turns in reversing the relative positions of the receptacles, thereby to clear the contact element from the path of the flange, the actuators rising with accumulation of sliver in the receptacles and when concomitantly elevated actuating the stop lever to stop the delivery means.

Signed by me at Boston, Massachusetts, this 29th day of June 1925.

ROBERT E. NAUMBURG.