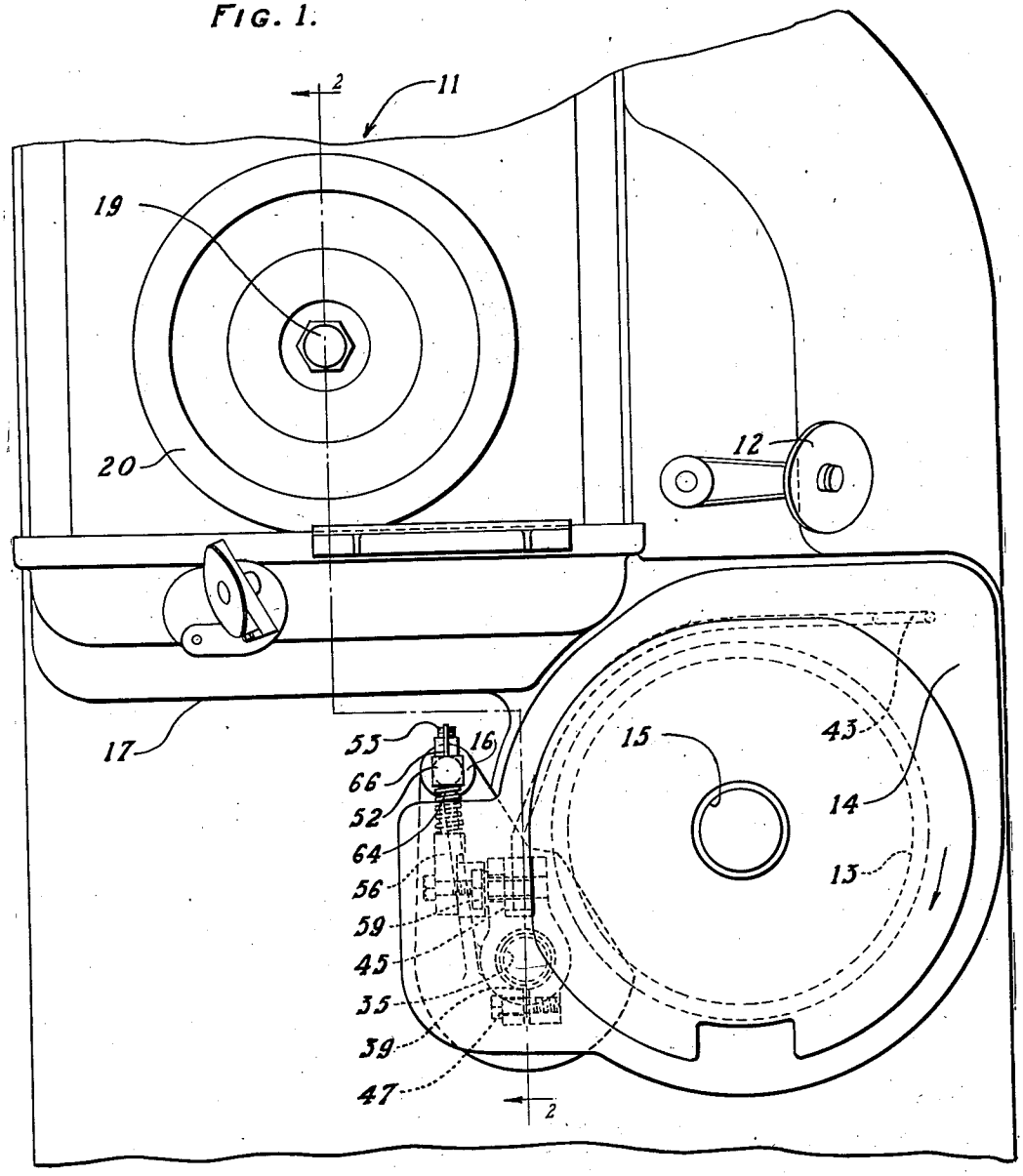
Feb. 20, 1934. E. J. McILVRIED 1,948,305

APPARATUS FOR HANDLING MATERIAL

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FIG. 1.



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FIG. 2

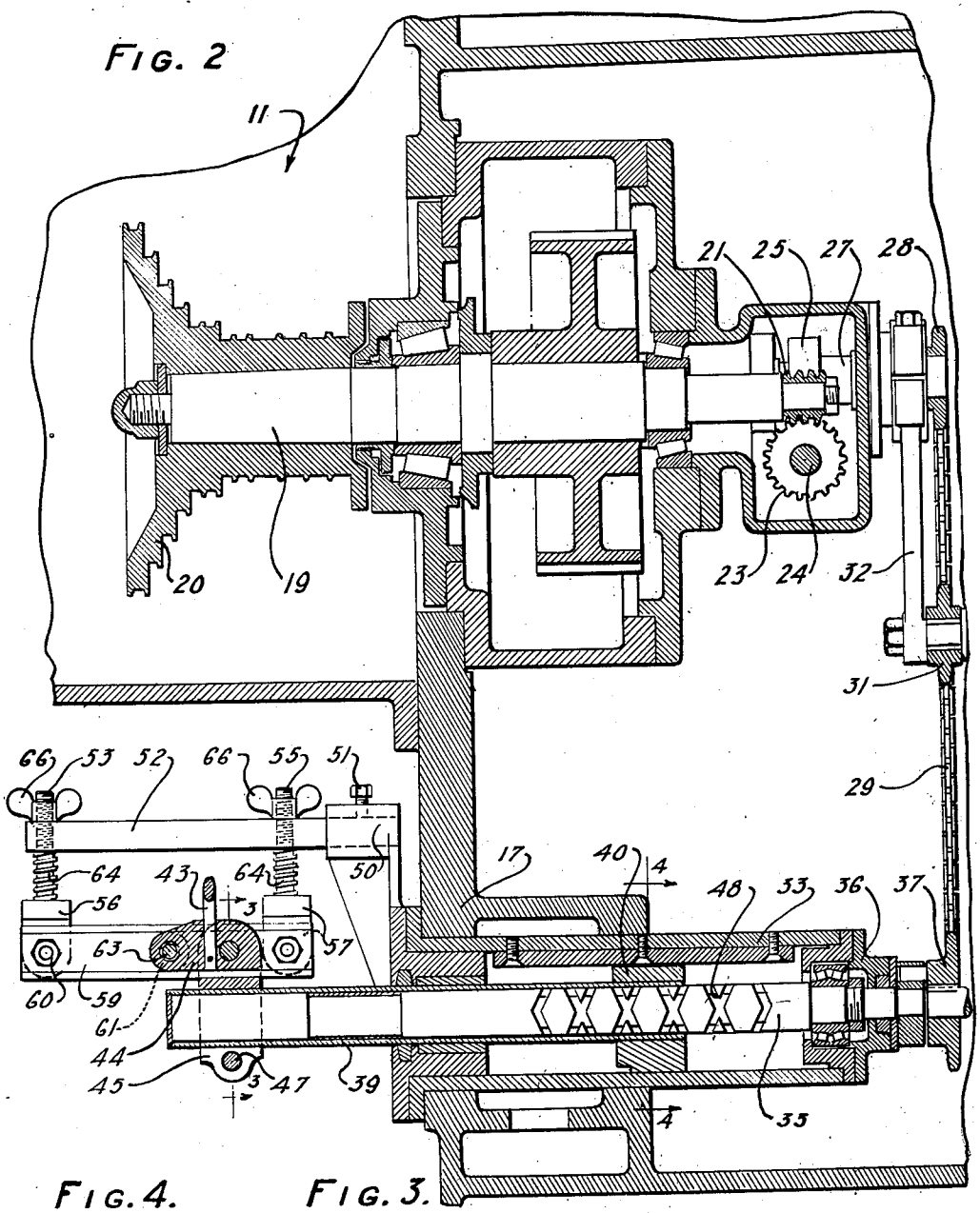


FIG. 4.

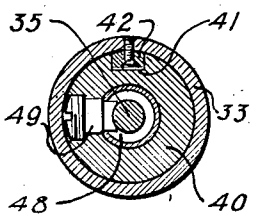
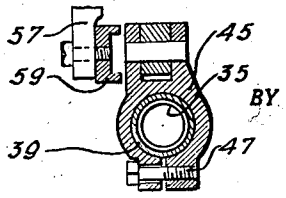


FIG. 3.



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FIG. 5.

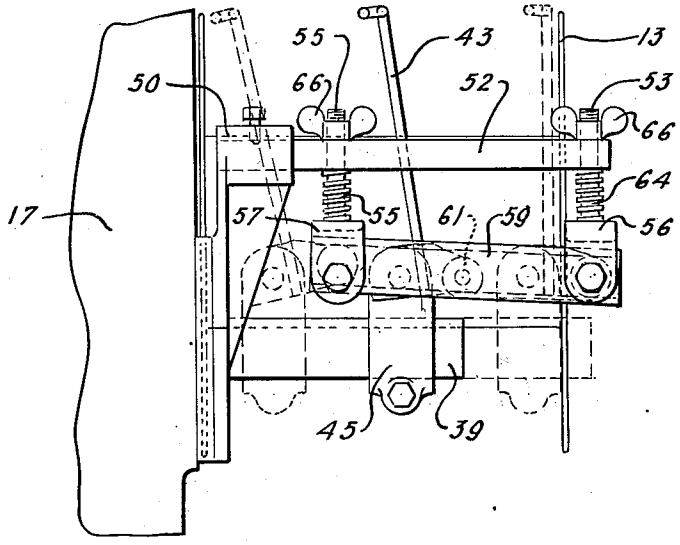
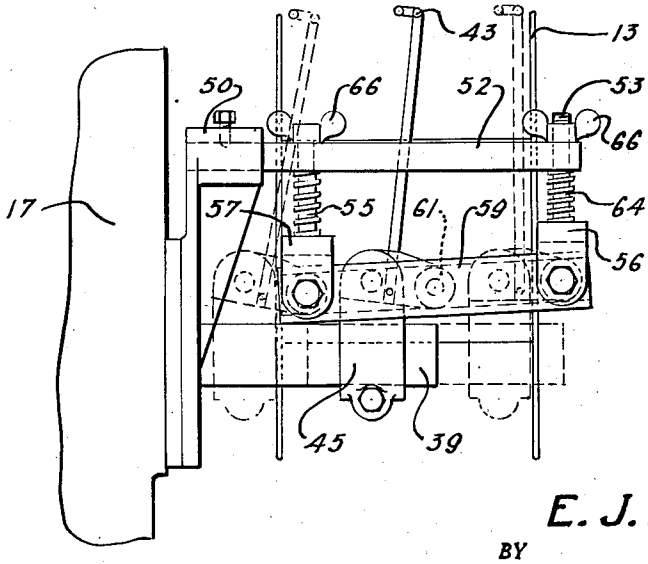


FIG. 6.



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UNITED STATES PATENT OFFICE

1,948,305

APPARATUS FOR HANDLING MATERIAL

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Application April 2, 1930. Serial No. 440,927

6 Claims. (Cl. 242—158)

This invention relates to an apparatus for handling material and more particularly to an apparatus for handling continuously moving material.

An object of the invention is to provide an apparatus for handling continuously moving material which will be simple, efficient and flexible to permit its employment under a variety of conditions.

One embodiment of the invention contemplates the provision of a distributor for the take-up spool of a wire drawing machine comprising a distributing finger or wire guide which is carried upon a movable supporting member. One end of the member is pivoted to a collar secured to the end of a reversible sleeve, the other end of the supporting member terminating in a roller which traverses a channel track. The channel track is suspended at each end by adjustable bolts surrounded by springs, from a fixed rod paralleling the sleeve so that the travel of the distributing finger may be varied to conform to the length of the spool.

A better understanding of the invention may be secured from the following detailed description, read in conjunction with the accompanying drawings forming a part thereof, in which

Fig. 1 is a fragmentary front elevation of a wire drawing machine embodying one form of the invention;

Fig. 2 is a fragmentary section taken on the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary section taken on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary section taken on the line 4—4 of Fig. 2;

Fig. 5 is a fragmentary left-hand side elevation of the distributing mechanism shown in Fig. 1, and looking toward the right, indicating the operation of the mechanism with a large size spool; and

Fig. 6 is a fragmentary view corresponding with Fig. 5 showing the operation of the device with a smaller spool.

Referring to the drawings, in which similar parts are indicated by identical reference numerals, a wire drawing machine generally designated by the numeral 11, includes a pulley 12 for directing drawn wire to a receiving member or take-up spool 13 of any convenient type, which is normally enclosed by a safety shield 14, and is secured upon an arbor 15 of any suitable type. It will be understood that the arbor 15 is adjustable, by any suitable means (not shown), to accommodate spools of a variety of sizes. A distributing mechanism 16 is secured to a frame 17 of the wire drawing machine and is also normally substantially enclosed by the shield 14. A rotatable shaft 19 is mounted in the framework 17 of the wire drawing machine and carries at one end a capstan 20 which it rotates to draw the wire through die boxes (not shown) in the conventional manner. At the opposite end, the shaft 19 is provided with a worm 21 which meshes with and rotates a gear 23 mounted upon a shaft 24. A gear 25 mounted upon a shaft 27 is rotated from the shaft 24 and rotates a sprocket 28. The sprocket 28 is engaged by a driving chain 29 which is passed over a tensioning sprocket 31 mounted upon an arm 32 which is suitably mounted in the frame 17 of the wire drawing machine. Beneath the shaft 19, and to the right thereof, is provided a cylindrical housing 33 (Fig. 2) rigidly mounted in the frame 17 of the machine, and which encloses a rotatable shaft 35. The cylindrical housing 33 is provided with a right-hand bearing portion 36 whereby any longitudinal movement of the shaft 35 is effectually prevented. A sprocket 37 is keyed to the inner end of the shaft 35 and is engaged by the driving chain 29 in order to procure the rotation of the shaft 35 with the shaft 19 at any desired relative speed as determined by the ratios of the gears 23 and 25 with reference to the worm 21.

A cylindrical sleeve 39 is slidably mounted in the left-hand end of the cylindrical housing 33 and is fitted over the shaft 35 in such a manner as to permit rotation of the shaft with reference to the encircling sleeve 39. A ring member 40, having a groove 41 (Fig. 4) in the periphery thereof to mesh with a guide plate 42 secured to the inner surface of the cylindrical housing 33 at the top thereof, is slidably mounted in the interior of the cylindrical casing 33 and secured to the periphery of the inner end of the sleeve 39. An elongated distributing finger or wire guide 43, being curved substantially concentrically with the periphery of the reel 13, projects thereabove and is rigidly secured to a supporting member 44. The supporting member is pivotally mounted in a collar 45 which is secured to the outer end of the sleeve 39 by an adjustable bolt 47. The shaft 35 is provided along its central longitudinal portion with oppositely extending threads 48 by means of which the ring 40 is moved continually from one end to the other of the cylindrical housing 33 by the continuous rotation of the shaft 35 in one direction, by reason of the engagement with the

threads 48 of a lug 49 which is secured to the ring 40.

An apertured bracket 50 rigidly secured to the frame 17 of the machine is provided with a bolt 51 whereby a perforated bar 52 is rigidly secured therein and parallel with the sleeve 39. The perforations of the bar are spaced and a left-hand bolt 53 is engaged by a threaded end in one and a right-hand bolt 55 engaged by a threaded end in the other. Connecting a depending head 56 of the bolt 53 and a depending head 57 of the bolt 55 is a channel beam or track 59 to which the heads are pivotally secured by means of bolts 60—60. A roller 61 rotatably mounted upon a pin 63 projects from the end of the supporting member 44. Surrounding the bolts 53 and 55, respectively, are relatively heavy compression springs 64—64 which are seated against the lower surface of the bar 52 and the heads 56 and 57 of the bolts, tending to force the bar and the heads apart. The threaded extremities of the bolts 53 and 55 project above the bar 52 and receive thereon thumb nuts 66—66 which mesh with the threaded surface of the bolts, in order to permit the distance between the bar 52 and the heads 56 and 57 of the respective bolts to be varied by turning the thumb nuts 66—66.

From the foregoing, it may be observed that the turning of one thumb nut 66 more than the other will cause one of the bolts 53 or 55 to be lower or higher with respect to the horizontal bar 52 than the other. In the condition shown in Fig. 2, the heads 56 and 57 are equidistant from the bar 52 and the channel track 59 is parallel with the bar 52 and with the sleeve 39. Under such conditions, the distributing mechanism is effected to satisfactorily control the distribution of the strands of wire upon a take-up spool of the average length. When by rotating the threaded shaft 35, the ring 40 is moved from one to the other ends of the cylindrical casing 33, the distributing finger support member 44 is moved alternately from head to head along the channel track 59 without causing the distributing finger 43 to deviate from a true vertical position, thus enabling it to accurately distribute the drawn wire along the entire face of the average spool without piling or skimping at either end.

It is frequently found desirable to employ spools which are either longer or shorter than the average spool, and in such cases it is necessary to alter the path of the distributing finger 43; lengthening it where a longer spool is being wound, and shortening it where the spool being wound is shorter than the average spool, in order that the drawn wire taken up by the spool may be evenly distributed across the entire length of the spool. In the representation afforded in Fig. 5, wherein a take-up spool of more than average length is being employed, it will be noted that the thumb nut 66 has been turned in a direction to elevate the bolt 55 against the pressure of the spring 64. The channel track 55 being pivotally mounted upon the heads of the bolts, that end secured to the bolt head 57 is elevated. In this condition, the position of the bolt 53 is not altered. When the ring 40 is at the outer end of the cylindrical casing 33, the distributing finger 43 is at the outer end of the reel 13, and is in a true vertical position. As the ring moves centerward of the casing 33 however, the sleeve 39 moves inwardly thereof propelling the supporting member 44 inwardly from the bolt head 56 toward the bolt head 57. The sleeve 39 and the bar 52 remaining parallel, and the roller 61 traversing the inclined channel track 59, a gradual rotation of the supporting member with reference to the collar 45 takes place and this movement becomes accentuated as the roller 61 progresses up the inclined channel track. Since the distributing finger 43 is rigidly secured to the supporting member 44, it swings gradually from the vertical until, as shown in Fig. 5, when the ring 40 has reached the inner end of the cylindrical casing 33, the roller 61 has attained the height of the incline and the distributing finger 33 at the innermost limit of its travel has been inclined relatively far from the vertical. It will thus be seen that by elevating the bolt 55 the inner end of the track is raised, thus changing the path of the supporting member from one parallel with the sleeve 39, and the finger 43 is tilted to permit the wire to be distributed over the entire length of the reel 13.

Fig. 6 of the drawings shows the apparatus arranged to permit the even distribution of wire along the entire face of a reel 13 which is less than average length. It will be noted that the thumb nut 66 of the bolt 55 is turned to depress the head 57 thereof with the result that that end of the track 59 is tilted downwardly from the level position shown in Fig. 2. Under such conditions, when the distributing finger 43 is at the outermost limit of its travel, it is vertical. As the sleeve 39 is moved inwardly, the roller 61 is carried downwardly of the inclined track resulting in a gradual tilting of the distributing finger outwardly, until when the sleeve 39 has reached the innermost limit of its travel, the roller is at the innermost and the lower end of the track 59, causing the distributing finger 43 to tilt outwardly and assume the final position which marks the extreme length of the reel.

Although the travel of the sleeve 39 and the roller 61 is the same under the three conditions described above, by adjusting the bolts 55 or 53 with relation to the bar 52 and tilting the track as desired, the path of the distributing finger may be readily altered to accord with the different lengths of the varying types of reels carried by the arbor. Since the resistance of the distributing finger to being tilted may at times be of considerable moment, the springs 64—64 are necessarily sufficiently strong to maintain the heads of the bolts and the fixed bar 52 apart for the full extent permitted by the thumb nuts.

Although the invention has been described above in connection with a wire drawing machine of a particular type, it is to be understood that the invention is capable of numerous modifications to meet conditions differing from those contemplated in the foregoing description, and it should, therefore, be limited only by the scope of the appended claims.

What is claimed is:

1. In a strand distributing apparatus including a reel, a movable distributing finger for the strand, means to move the finger, a track for defining the path of the finger, a bar for supporting the track, a support for the finger having a roller engaging the track and threaded means for adjusting the track angularly with respect to the bar to alter the path of the distributing finger to accord with the size of the reel.

2. In an adjustable distributing apparatus, a supporting bar, a track, a positively actuated distributing means movable on the track, and

spaced threaded members engaging the bar and the track for altering the angular position of the track with relation to the bar.

3. In an adjustable distributing apparatus, a supporting bar, a threaded member associated therewith, a head for the threaded member, a track pivotally secured to the head of the threaded member and means for varying the relative position of the supporting bar and the threaded member for rotating the track.

4. In a strand distributing apparatus, a distributing finger, a track for controlling the travel of the finger, a perforated bar, a pair of spaced supporting members associated therewith for normally maintaining the track in level position and means for varying the position of either of the supporting members to tilt the track.

5. In a material handling apparatus, a rotatable shaft having oppositely extending threads, means for rotating the shaft, a cylindrical sleeve having a portion disposed within the threads of the shaft to oscillate longitudinally of the shaft, a collar adjacent one end of the sleeve, a member pivoted to the collar and having a roller journalled thereon, and a guide finger mounted on the member.

6. In a material handling apparatus, a cylindrical housing, a cylindrical block slidably mounted in the housing, a cylindrical sleeve penetrating the block axially thereof and extending exteriorly of the housing, an oppositely threaded shaft extending into the sleeve within the housing, a member engaging the block and sleeve and having a portion disposed within the threading of the shaft, means for rotating the shaft, a collar mounted on the sleeve exteriorly of the housing, a member pivotally supported by the collar and a material guiding finger carried by the pivoted member.

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