Dec. 27, 1949 H. L. WILLIAMS ET AL 2,492,911

ARMATURE WEDGING MACHINE

Filed April 15, 1946 2 Sheets-Sheet 1

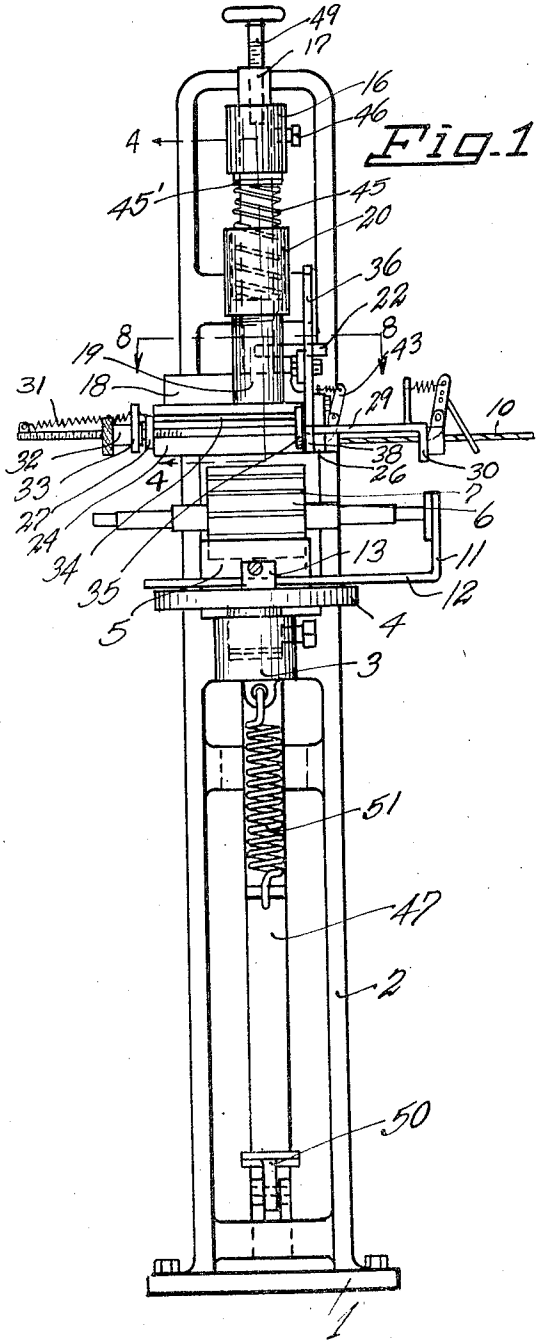


Fig. 1

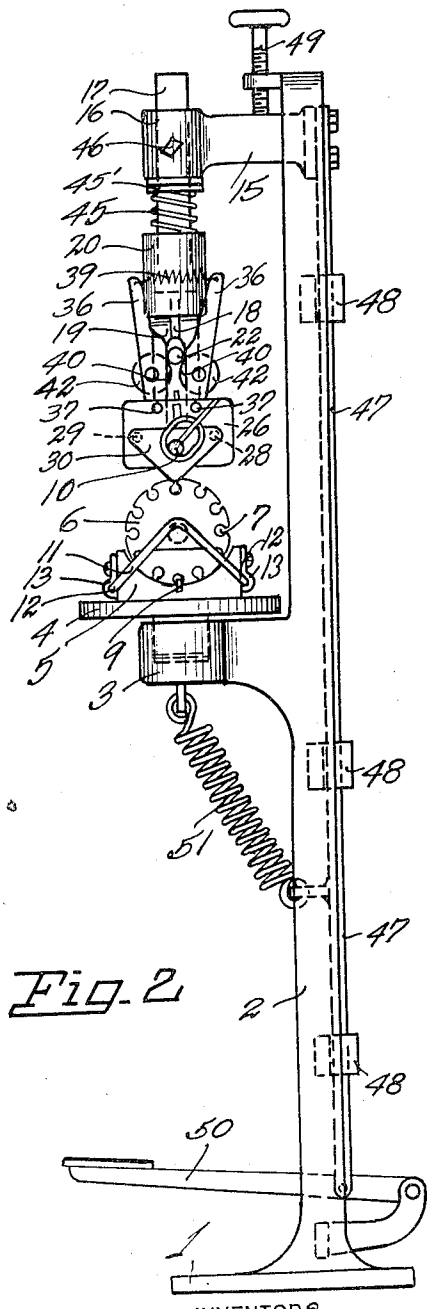


Fig. 2

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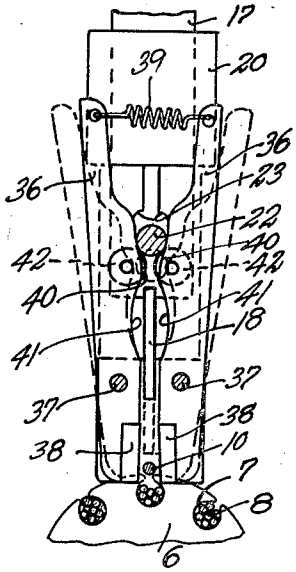


Fig. 3

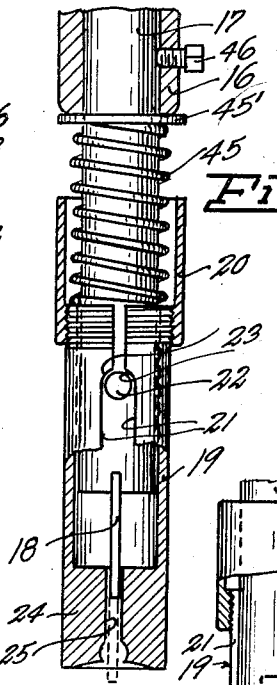


Fig. 4

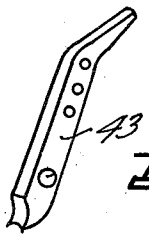


Fig. 5

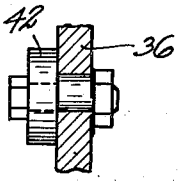


Fig. 6

Fig. 7

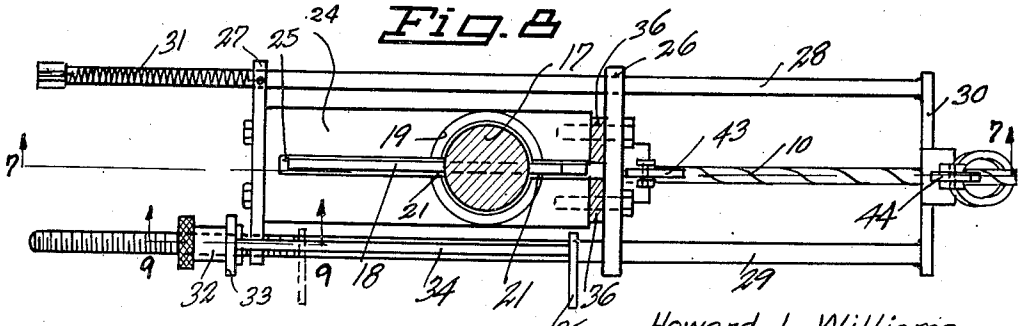


Fig. 8

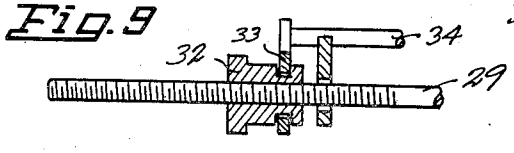


Fig. 9

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2,492,911

ARMATURE WEDGING MACHINE

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Application April 15, 1946, Serial No. 662,132

4 Claims. (Cl. 29—205)

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The present invention is directed to a machine for securing coils in armatures.

The primary object of the invention is to provide a machine of this nature so constructed that predetermined lengths of fibrous rope or the like will be effectively forced into the armature slots to positively retain the coil wires therein.

Another object of the invention is to provide a machine of this character which is simple in construction, positive in operation, and one which will function in an efficient manner.

Heretofore, the coils were retained in the armature slots or grooves by wedges of wood or fiber strips handled singly, and an important object of the present invention is to overcome this objection by utilizing predetermined lengths of fibrous rope, adapted to be successively forced into the armature slots and into engagement with the coils to positively retain the same in the respective slots.

With these and other objects in view, this invention resides in the novel features of construction, formation, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawings, in which:

Figure 1 is a front elevation.

Figure 2 is an end view.

Figure 3 is an enlarged detail of the rope cutting blades.

Figure 4 is a sectional view on line 4—4 of Figure 1.

Figure 5 is a perspective view of one of the rope feeding dogs.

Figure 6 is a sectional view on line 6—6 of Figure 2.

Figure 7 is a sectional view on line 7—7 of Figure 8.

Figure 8 is a sectional view on line 8—8 of Figure 1.

Figure 9 is a sectional view on line 9—9 of Figure 8.

Referring to the drawings, 1 designates a supporting base and rising therefrom is a standard 2, and formed intermediate the ends thereof is a platform 3 which rotatably supports a table 4. Carried by the table is a cradle 5 for supporting the armature 6 formed with the customary slots 7 for receiving the usual coils 8.

The cradle 5 carries a rib 9 adapted to engage the lowermost slot 7 of the armature to maintain the same in proper position for receiving the rope 10 to be "wedged" into the alined uppermost slot of the armature, as clearly shown in Figure 2.

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A yoke 11 is provided and includes horizontal laterally spaced arms 12 slidably adjustable in brackets 13 mounted on the sides of the cradle 5. Since the armature shafts frequently vary in length the yoke can be easily adjusted in order that one of its ends will be properly engaged therewith.

A vertically movable bracket 15 is associated with the standard 2 and is formed with a vertical bearing 16, and engaged therein is a plunger 17, the lower end of which has fixed thereto an elongated rope wedging plate 18. The plunger enters a cylinder 19, and threaded thereon for adjustment is a collar 20, the purpose of which will later appear.

The cylinder 19 is formed with opposed slots 21, and in which the plate 18 is adapted to operate during vertical travel, there being a pin 22 carried by the plunger 17 for engagement with the shoulders 23 of the cylinder 19, said pin being movable in one of the slots 21, the purpose of which will appear later.

A block 24 is carried by the cylinder 19 and has formed therein a longitudinal slot 25 alined with the slots 21 of the cylinder 19, and it is under this slot 25 that a selected armature slot 7 is placed when a section of the rope 10 is to be wedged into the slot by the blade 18.

Fixed to the ends of the block 24 are cross bars 26 and 27 and slidable in these bars are rods 28 and 29, having one of their ends connected by a cross head 30. The rod 28 is connected with the bar 27 by a coil spring 31, and the bar 29 has threaded on one end a nut 32. This nut has swivelly connected therewith a plate 33 fixed to one end of a rod 34 and fixed to said rod is a handle 35 and is slidable on the rod 29, the purpose of which will be later explained.

A pair of levers 36 are provided, and are pivotally connected, as at 37, to the bar 26, said levers having fixed thereto rope severing blades 38, said levers being connected at their upper ends by a coil spring 39.

Each lever has formed thereon a cam 40 adapted to engage the pin 22 carried by the plunger 17, and the confronting edges of the levers are formed with recesses 41 below said cams so that the pin will enter the area below the cams, defined by the recesses 41, when the plunger 17 moves downwardly. From constant use the cams 40 will wear and in which event rollers 42 are adjustably mounted on the levers to compensate for this wear by being in the path of movement of the pin 22.

Pivotally connected with the cross bar 26 is a

spring controlled dog 43, there being a similarly mounted dog 44 on the cross head 30, said dogs serving to control the feeding of the rope 10 which is fed from a reel, not shown.

Surrounding the plunger 17 and located between the bearing 16 and cylinder 19 is a coil spring 45, there being a washer 45' on the plunger adapted to contact with the upper end of the collar 20, and since this collar is adjustable on the cylinder 19 the depth of the stroke of the plunger can be regulated in an obvious manner.

The plunger 17 is fixed in the bearing 16 by a set screw 46.

The bracket 15 is connected with the link 47 slidable in guides 48 carried by the standard 2, the upward movement of the bracket being limited by a wheeled screw 49 mounted on the upper end of said standard, as clearly shown in Figure 2.

A foot treadle 50 is pivotally connected with the lower end of the standard for controlling the movement of the bracket 15 and its associated elements.

The link 47 is yieldably connected to the platform 3 by a coil spring 51 which serves to return the bracket 15, through the medium of the link to its uppermost position upon release of the treadle 50.

Briefly the operation is as follows:

The armature 6 is placed in the cradle 5 with its lowermost slot engaged with the rib 9 in order that its uppermost slot will be in alinement with the plate 18. The nut 32 is adjusted on the rod 29 to a position to cut the rope 10 to lengths corresponding to the lengths of the armature slots 7. The rope 10 is moved over the slot of the armature by moving the handle 35 to the left and in this manner the bars 28 and 29 correspondingly moved. Upon the handle 35 contacting the bar 27 a predetermined length of rope is positioned over the uppermost slot 8 of the armature, the rope being fed by the dog 44, the dog 43 serving to prevent reverse movement of said rope. Obviously movement of the handle 35 also moves the cross head 30 on which the dog 44 is pivotally mounted to grip the rope to feed the same a predetermined distance, it being of course understood that the bar 28 is also moved.

After the proper length of rope is fed over the slot the treadle 50 is actuated to move the bracket 15, and thus the plunger 17 downwardly whereupon the pin 22 in its downward travel rocks the levers 36, thus causing the blades 38 to cut the rope so that a proper length thereof will be positioned over the slot. Continued downward movement of the plunger will cause the blade 18 to force the length of rope into the slots of the armature with a wedging action, and since the rope is somewhat resilient it will pass through the restricted throats of the slots and then expand under the action of the blade 18.

It will be understood that the spring 31 will be placed under tension when the handle 35 is moved to the left, and will act to return the rod 28, and thus the rod 29 and associated parts to the position as shown in Figures 7 and 8.

After one slot has been filled with a section of the rope it is only necessary to lift the armature to free the lowermost slot from the rib 9 and upon turning the same the slots thereof will be successively alined with the blade 18.

What is claimed is:

1. In an armature wedging machine, a plunger mounted for vertical reciprocating movement over an armature holder, a sleeve about the lower portion of said plunger slidable vertically thereon and urged downwardly, a block at the lower end of said sleeve and formed with a longitudinally extending vertically disposed slot for receiving a length of rope to be forced into coil-receiving recesses of an armature, a plate carried by the lower end of said plunger and operating in the slot of said block for forcing rope downwardly into a recess of an armature when the plunger is shifted downwardly, levers at one end of the block disposed vertically and pivotally mounted and having blades at their lower ends moved towards each other from opposite sides of the slot for cutting engagement with a rope when upper ends of the levers are moved away from each other, confronting side edges of said levers having cam surfaces, and a pin extending laterally from said plunger through a vertically extending slot in the sleeve and between the levers for engaging the cam surfaces and moving the levers in a cutting direction as the plunger is shifted downwardly to bring the blade in engagement with a rope in the slot of the block and force the rope into recesses of an armature.

2. In an armature wedging machine, a plunger mounted for vertical reciprocating movement over an armature holder, a sleeve about the lower portion of said plunger slidable vertically thereon and urged downwardly, a block at the lower end of said sleeve and formed with a longitudinally extending vertically disposed slot for receiving a length of rope to be forced into coil-receiving recesses of an armature, a plate carried by the lower end of said plunger and operating in the slot of said block for forcing rope downwardly into a recess of an armature when the plunger is shifted downwardly, a cutter movably mounted at one end of said block, and movable into and out of position for severing a length of rope in the slot of the block from a supply of rope, and a pin extending laterally from said plunger and having engagement with the cutter to impart severing movement thereto as the plunger is moved downwardly.

3. In an armature wedging machine, a plunger mounted for vertical reciprocating movement over an armature holder, a sleeve about the lower portion of said plunger slidable vertically thereon and urged downwardly, a block at the lower end of said sleeve and formed with a longitudinally extending vertically disposed slot for receving a length of rope to be forced into coil-receiving recesses of an armature, a plate carried by the lower end of said plunger and operating in the slot of said block for forcing rope downwardly into a recess of an armature when the plunger is shifted downwardly, a cutter movably mounted at one end of said block, adapted to be moved in a severing direction during downward movement of the plunger, rods slidable longitudinally of said block, a cross bar carried by said rods, a rope gripper carried by said cross bars, a cross bar carried by said block, a rope gripper carried by the second cross bar, a spring yieldably resisting movement of the rods longitudinally in a direction for feeding rope through the slot of said block, and an adjustable stop carried by one rod for limiting movement of the rods by said spring.

4. In an armature wedging machine, a plunger mounted for vertical reciprocating movement over an armature holder, a sleeve about the lower portion of said plunger slidable vertically thereon and urged downwardly, a block at the lower end of said sleeve and formed with a longitudinally

extending vertically disposed slot for receiving a length of rope to be forced into coil-receiving recesses of an armature, a plate carried by the lower end of said plunger and operating in the slot of said block for forcing rope downwardly into a recess of an armature when the plunger is shifted downwardly, a cutter movably mounted at one end of said block, adapted to be moved in a severing direction during downward movement of the plunger, and a rope feeder consisting of rods slidable longitudinally of the block, cross bars carried by said block across ends thereof and through which said rods slidably pass, a cross head connecting said rods, rope grippers carried by the cross head and the cross bar at the adjacent end of the block, a handle for sliding the feeder longitudinally and moving rope through the slot of the block, a spring connected with one rod for returning the feeder to its normal position, and a nut threaded upon the other rod and serving to limit movement of the feeder by said spring and thereby cause a section of rope of predetermined length to be engaged by the gripper carried by the cross head when the feeder is moved to its normal position.

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