J. F. CULLIN.

WRAPPING MACHINE.

APPLICATION FILED OCT. 8, 1920.

1,380,531.

Patented June 7, 1921.

2 SHEETS—SHEET 1.

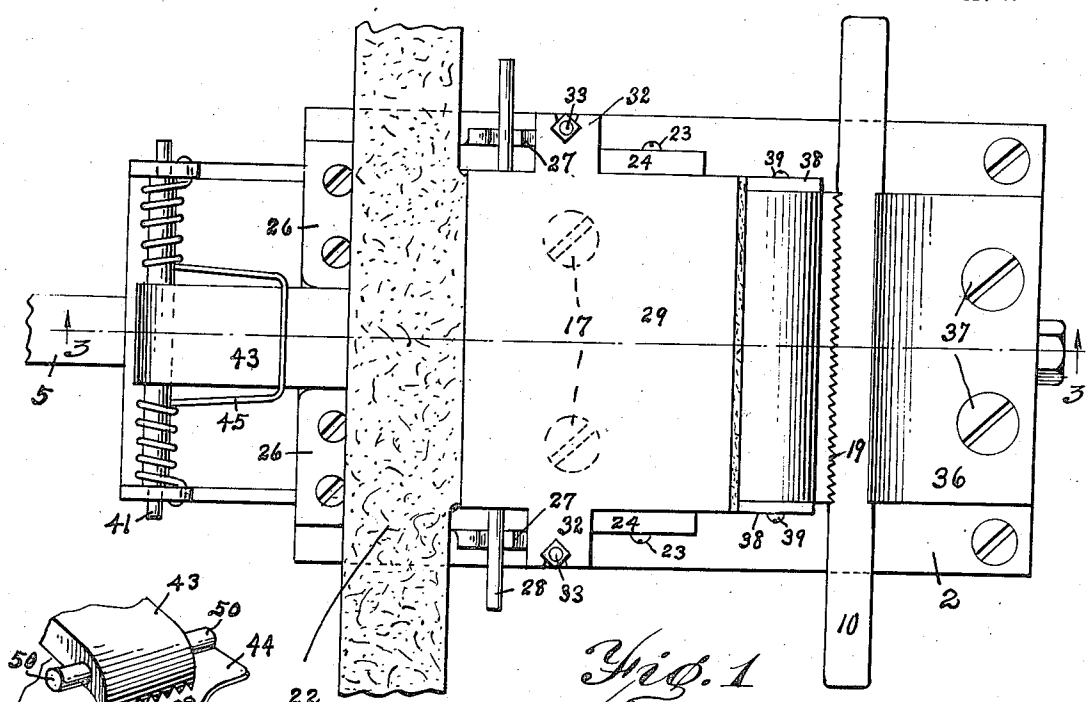


Fig. 1

Fig. 7

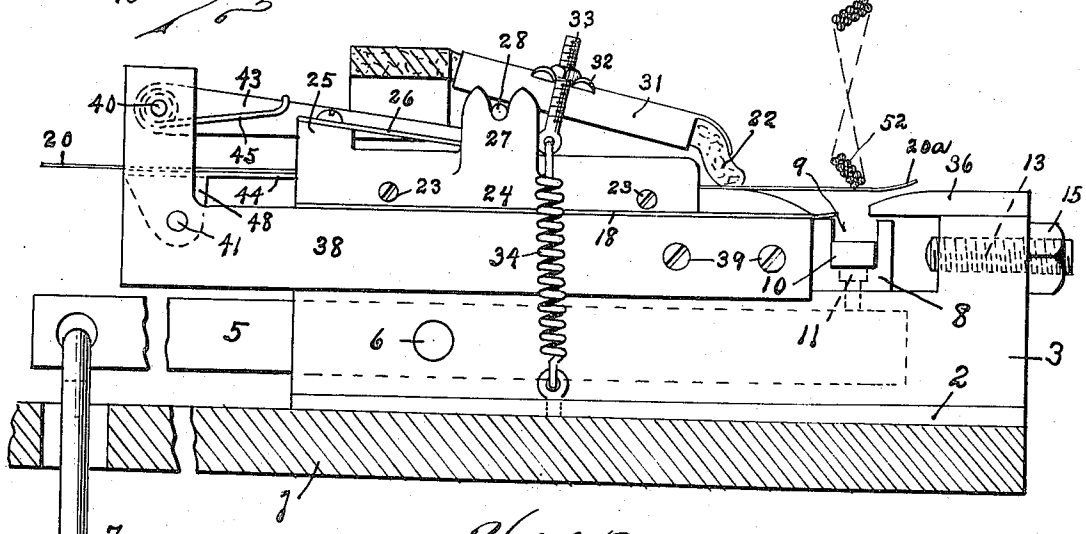


Fig. 2

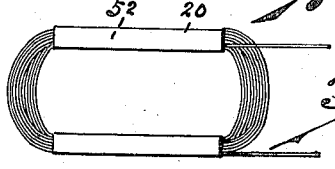


Fig. 8

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2 SHEETS—SHEET 2.

Fig. 3

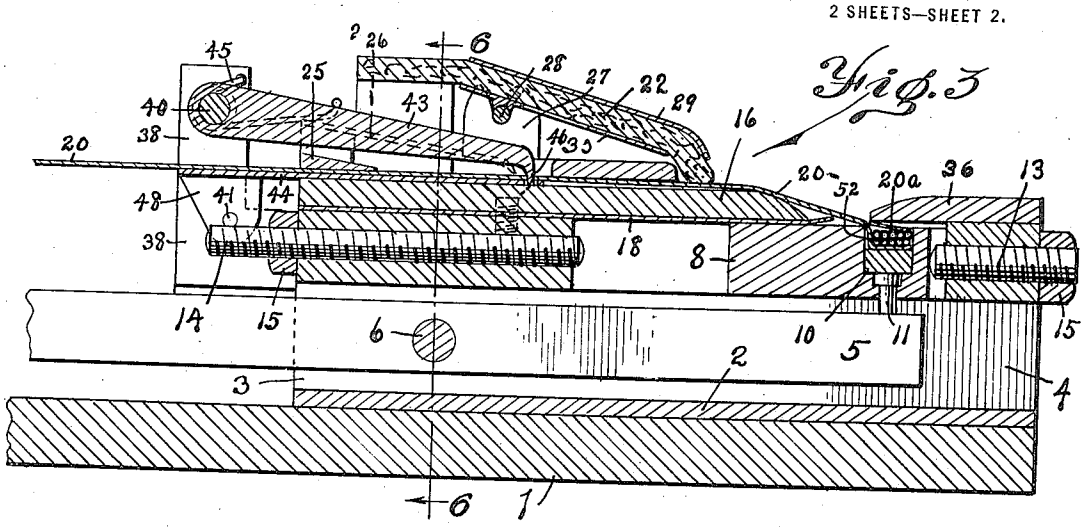


Fig. 4

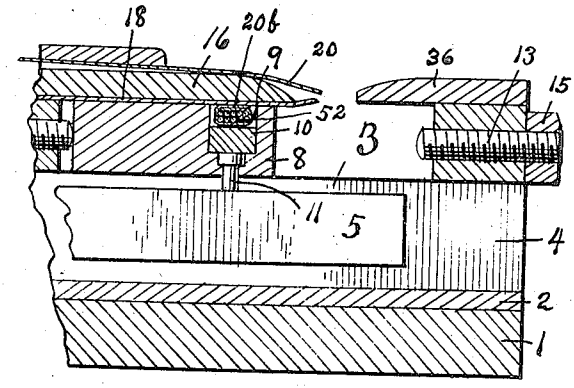


Fig. 5

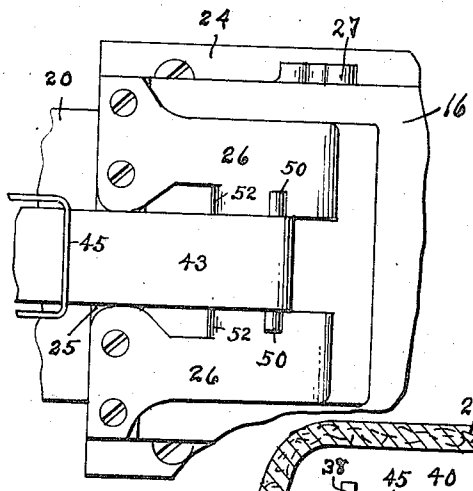
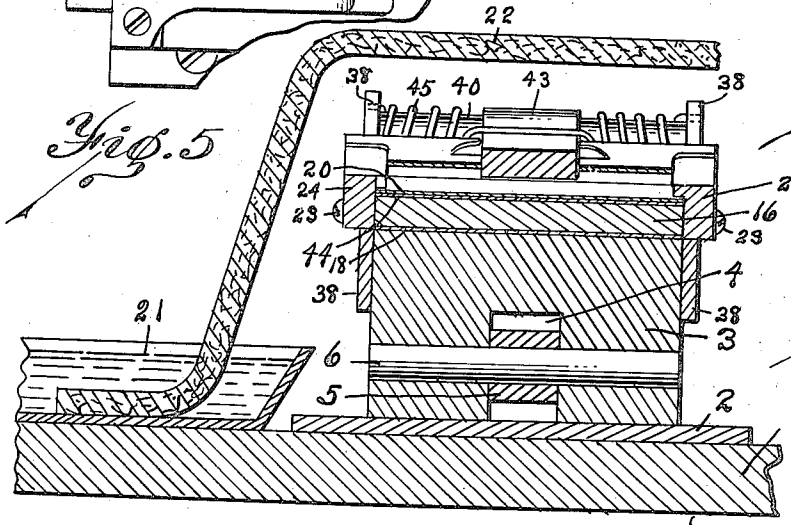


Fig. 6



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WRAPPING-MACHINE.

1,380,531. Specification of Letters Patent. Patented June 7, 1921.

Application filed October 8, 1920. Serial No. 415,554.

To all whom it may concern:

Be it known that I, JASPER F. CULLIN, a citizen of the United States, and residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Wrapping-Machine, of which the following is a specification.

This invention relates to means for wrapping short strips of paper around those parallel portions of armature windings which are to lie in the grooves in the cylindrical cores of armatures of electric machines, and its object is to provide a machine of this character which shall be simple in construction, rapid in operation and which may be constructed at low cost.

In the accompanying drawing, Figure 1 is a plan of this improved wrapping machine. Fig. 2 is a side elevation thereof. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is a portion of a similar section with the parts in a second position. Fig. 5 is a plan of the paper feeder. Fig. 6 is a section on the line 6—6 of Fig. 3. Fig. 7 is a detail of the operative end of the paper feeder. Fig. 8 is a plan on a smaller scale of a winding after being wrapped.

Similar reference characters refer to like parts throughout the several views.

The present machine is preferably mounted on a table 1 and may have a bed plate 2 on which rests the base 3 of the machine. The table 1 and bed plate 2 have no part in the operation of the device and may be omitted if desired. The base is provided with a longitudinal opening 4 on which the lever 5 is pivoted on the pin 6, a link 7 extending down to any desired operating mechanism (not shown) such as a cam or a foot pedal. The base is also cut across just above the opening 4 to receive the slidable head 8 which is in the form of a rectangular block whose length is the width of the base 3 and which has a groove 9 in which a cross bar 10 is mounted, which may be grasped to operate the machine by pushing it backward and forward to carry the head 8 with it. A pin 11 is mounted in the head just below this cross bar and when the rear end of the lever 5 is depressed its front end lifts this pin and the cross bar.

The movements of this head 8 are limited by the adjustable screws 13 and 14, held locked by the nuts 15. A top plate 16 is secured to the base, preferably by screws 17, shown in dotted lines in Fig. 1, and this top plate holds in place a thin sheet 18 of metal formed with a serrated front edge 19 which cuts the proper lengths of paper from the strip 20 which slides forward on the top plate 16. The upper surface of the paper is coated with mucilage or other cement which may be moistened by the pad 22 of felt or other water absorbent material, whose ends dip into the basins 21.

Secured to the edges of the top plate by means of the screws 23 (Figs. 2 and 6) is a saddle having side plates 24 and a cross bar 25 to which are secured the rear ends of the resilient sheet metal plates 26 which press down on the paper and prevent it from moving back. This saddle has a pair of notched ears 27 in which the rod 28 is mounted and this rod supports the sheet metal holder in which the moistening pad 22 is mounted, the holder consisting of top and bottom plates 29 and 30 and end plates 31 and has ears 32 to receive the screws 33 on the springs 34 whereby the front edge of this moistening pad is held against the paper.

A narrow plate 36 is secured to the front of the base by the screws 37. Side plates 38 are attached to the head 8 by screws 39 and carry the cross rods 40 and 41. The rod 40 supports the finger 43 which is normally held against the lower plate 44 by means of the spring 45. The finger 43 is preferably formed with teeth 46 at its front end, as shown in Fig. 7, to enter the small holes 47 in the plate 44. This plate has perforated ears 48 at its rear end to receive the rod 41 on which the plate is pivoted. The paper strip 20 passes between the two parts 43 and 44, being pushed forward each time the slidable head is moved forward. When the head and finger 43 are moved back, the two pins 50 extending laterally from the front end of the finger ride up on the spring plates 26, as indicated in Fig. 5, until the shoulders 52 on these plates are reached, at which point these pins slip off and the finger falls onto the paper strip. The plate 44 has also slid back under the paper, but the friction is not sufficient to move the paper back in opposition to the pressure of the spring plates 26, particularly when pressed down by the pins 50 under the action of the spring 45. When the finger 43 moves forwardly the pins 50 pass along under the spring plates 26.

The armature winding to be wrapped is shown in cross section in Fig. 2 and is shown wrapped in Fig. 8, and the parallel portions 52 of the windings are usually made up of several layers of strands. The operation of the machine is as follows. The moistened paper strip is fed forwardly until in the position shown in Fig. 2, when the side 52 of the armature winding is pressed down into the groove 9 in the head 8, after which the head is moved forwardly to the position shown in Fig. 3, the plate 36 folding an end or flap 20^a of the paper over the winding. The link 7 then momentarily swings up the front of the lever 5 and the cross bar 10 which presses the winding against the sticky flap 20^a and against the plate 36. The head immediately moves back to the position shown in Fig. 4, and in doing so, cuts the second flap 20^b free from the body of the paper strip by pulling it against the serrated edge 19. At the same time, this folds this flap 20^b onto the flap 20^a already stuck to the winding. The lever 5 then presses up the cross bar 10, the winding and the two flaps against the plate 18 and the top plate 16, securely uniting the two flaps to the winding. The head then moves forwardly to the position shown in Fig. 2, which permits the wrapped side of the winding to be removed and the other side or another winding inserted. With the forward movement of the head, the paper strip is also fed forwardly as shown in Fig. 2.

It will be understood that this machine is not limited in its operations to the wrapping of armature windings, but may be employed to wrap any other articles to which it may be adapted by properly proportioning the feed of the paper and the size of the groove in the head. While the cross bar 10 extends sufficiently from the ends of the head 8 to be easily grasped and thus constitutes a convenient operating mechanism, the head and the parts connected thereto may be actuated synchronously with the device for pushing up this cross bar 10 against the top plates by means of automatic mechanism which may be designed by any mechanical engineer.

The details of this construction and the proportions and sizes of the parts may all be changed by those skilled in the art without departing from the spirit of my invention as set forth in the following claims.

I claim:—

1. In a wrapping machine, the combination of a movable head having a groove into which cement covered paper may be pressed by the article to be wrapped, a plate under which the head may be moved to fold the loose end of the paper down on the article to be wrapped, a cutting device for the paper so positioned that the paper is severed when the head is moved under it, and by which the second end of the wrapping is pressed down.

2. In a wrapping machine, the combination of a head movable forward and backward and having a groove into which a cement covered paper strip may be pressed by the article to be wrapped, a stationary plate extending above the groove when the head is at either end of its movement to fold the loose ends of the paper onto the article to be wrapped, a cutting device for the paper at the forward edge of the rear plate, and means to press the article to be wrapped against said plates at the ends of the movement of the head.

3. In a wrapping machine, the combination of a head movable forward and backward and having a groove into which a cement covered paper strip may be pressed by the article to be wrapped, a stationary plate extending above the groove when the head is at either end of its movement to fold the loose ends of the paper onto the article to be wrapped, a cutting device for the paper at the forward edge of the rear plate, means to press the article to be wrapped against said plates at the ends of the movement of the head, and means connected to said head to move the paper strip forward during the movement of the head in one direction.

4. In a wrapping machine, the combination of a head movable forward and backward and having a groove into which a cement covered paper strip may be pressed by the article to be wrapped, a stationary plate extending above the groove when the head is at either end of its movement to fold the loose ends of the paper onto the article to be wrapped, a cutting device for the paper at the forward edge of the rear plate, means to press the article to be wrapped against said plates at the ends of the movement of the head, and a spring held moistening pad in engagement with the upper surface of the paper strip.

5. In a wrapping machine, the combination of a head movable forward and backward and having a groove into which a cement covered paper strip may be pressed by the article to be wrapped, a stationary plate extending above the groove when the head is at either end of its movement to fold the loose ends of the paper onto the article to be wrapped, a cutting device for the paper at the forward edge of the rear plate, and means to press the article to be wrapped against said plates at the ends of the movement of the head, and means to carry forward the paper strip comprising a pair of side plates attached to the ends of the head, a pair of horizontal rods extending across between the side plates one above and the other below the paper strip, a feeding member mounted on each rod and a spring to

cause the paper to be pressed between said members.

6. In a wrapping machine, the combination of a head movable forward and backward and having a groove into which a cement covered paper strip may be pressed by the article to be wrapped, a stationary plate extending above the groove when the head is at either end of its movement to fold the loose ends of the paper onto the article to be wrapped, a cutting device for the paper at the forward edge of the rear plate, and means to press the article to be wrapped against said plates at the ends of the movement of the head, and means to carry forward the paper strip comprising a frame extending rearwardly from the ends of the head and comprising two horizontal rods extending above and below the paper strip, a flat horizontal plate mounted on the lower rod and having perforations in its forward end, a curved member mounted on the upper rod and having downwardly extending teeth at its front end adapted to enter the perforations in the lower plate, and a spring to press down the upper member.

7. In a wrapping machine, the combination of a head movable forward and backward and having a groove into which a cement covered paper strip may be pressed by the article to be wrapped, a stationary plate extending above the groove when the head is at either end of its movement to fold the loose ends of the paper onto the article to be wrapped, a cutting device for the paper at the forward edge of the rear plate, and means to press the article to be wrapped against said plates at the ends of the movement of the head, and means to carry forward the paper strip comprising a frame extending rearwardly from the ends of the head and comprising two horizontal rods extending above and below the paper strip, a flat horizontal plate mounted on the lower rod and having perforations in its forward end, a curved member mounted on the upper rod and having downwardly extending teeth at its front end adapted to enter the perforations in the lower plate, a spring to press down the upper member against the paper strip during the forward movement of the head and the feeding mechanism, and means to lift the upper member out of engagement with the paper strip during the rearward movement thereof.

8. In a wrapping machine, the combination of a head movable forward and backward and having a groove into which a cement covered paper strip may be pressed by the article to be wrapped, a stationary plate extending above the groove when the head is at either end of its movement to fold the loose ends of the paper onto the article to be wrapped, a cutting device for the paper at the forward edge of the rear plate, and means to press the article to be wrapped against said plates at the ends of the movement of the head, and means to carry forward the paper strip comprising a frame extending rearwardly from the ends of the head and comprising two horizontal rods extending above and below the paper strip, a flat horizontal plate mounted on the lower rod and having perforations in its forward end, a curved member mounted on the upper rod and having downwardly extending teeth at its front end adapted to enter the perforations in the lower plate, a spring to press down the upper member against the paper strip during the forward movement of the head and the feeding mechanism, and means to lift the upper member out of engagement with the paper strip during the rearward movement thereof comprising a pair of resilient inclined plates and a pair of laterally extending pins on the upper member which pins ride on the inclined plates and elevate said upper member during its backward movement.

9. In a wrapping machine, the combination of a grooved reciprocating head, means to wrap the end of a paper strip around the article in the groove in the head, a flat plate connected to the head and reciprocating therewith and having perforations at one end, the paper strip lying on said plate, a horizontal rod connected to said plate and movable therewith, a finger mounted thereon, a spring to press the free end of the finger against said plate to grip the paper strip during their movement in one direction, and means to disengage said finger when moving in the opposite direction.

JASPER F. CULLIN.