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MACHINE FOR TAPING WIRE COIL

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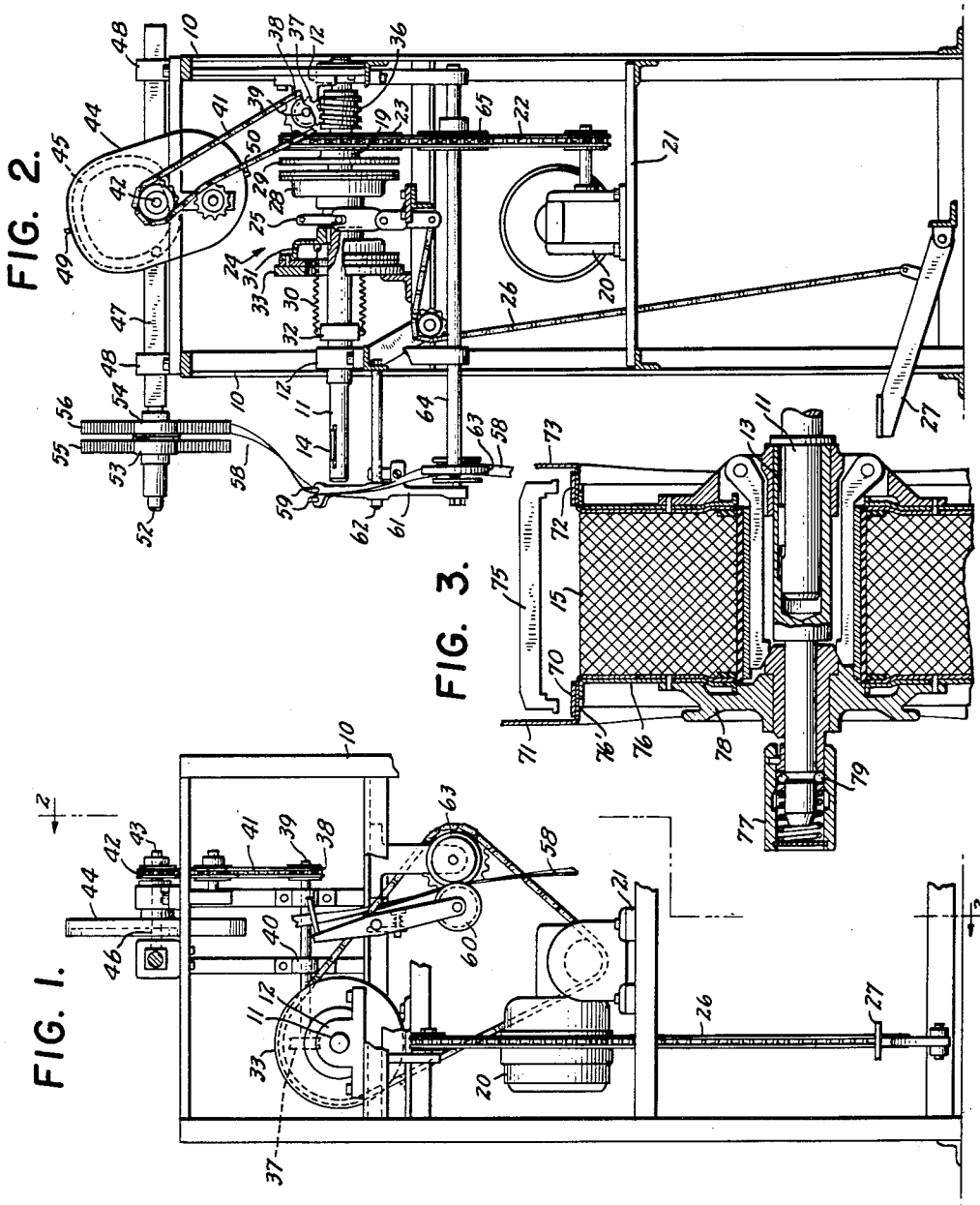


FIG. 1.

FIG. 2.

FIG. 3.

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MACHINE FOR TAPING WIRE COIL

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2 Claims. (Cl. 53—198)

This invention relates to improvements in packaging or taping machines and particularly machines for packaging a coil of wire.

The machine which is the subject of the present invention is particularly useful in connection with packaging a coil of wire such as that produced according to my co-pending application, Ser. No. 297,145, filed July 3, 1952, now Pat. No. 2,706,091. According to that invention a 360° twist and an adhesive coating was imparted to the wire prior to coiling it.

According to the present invention, a coil of such wire is placed on a shaft which may be intermittently rotated. Rolls of packaging material such as adhesive tape are supported on a transversely movable member whereby layers of adhesive tape may be wrapped around the coil to form a package.

The invention will be explained in greater detail in the following detailed description, appended claims, and drawings in which:

Fig. 1 is a front elevation view of the machine;

Fig. 2 is a side elevation of the machine; and

Fig. 3 is an elevation of the coil of wire, in section.

The machine comprises an upstanding, rectangular frame 10 including a main shaft 11 journaled transversely thereof by means of pillow block bearings 12 suitably secured thereto in spaced alignment. One end portion of the shaft 11 is provided with a key 14 and extends beyond the frame 10 for receiving an expansible mandrel 13, mounting a collapsible reel, axially thereof by means of a suitable bore in one end portion of the mandrel, the bore being provided with a keyway for receiving the key 14 when the mandrel 13, mounting a reel of wire 15, is placed on the shaft 11 for rotation therewith.

A motor and speed reducer 20 are mounted on supporting bars 21 of frame 10 and are connected by a chain 22 to a sprocket 23 mounted on bearing 19 surrounding shaft 11. A clutch arrangement generally indicated at 24 keyed to shaft 11 is actuated through a clutch yoke 25 and chain 26 connected to a pedal 27 in the bottom of frame 10. When pedal 27 is depressed, clutch portion 28 is moved into contact with plate 29 mounted on bearing 19 which is continuously driven by sprocket 23 and shaft 11 thereby rotated. When pressure is removed from pedal 27, springs 30 connected between clutch plate 31 and collar 32 fastened to shaft 11 by a set screw (not shown) moves the clutch assembly to the left and stops the shaft by means of brake 33.

A worm 36 keyed to shaft 11 meshes with a worm wheel 37 which drives a sprocket 38 on a shaft 39 supported in pillow blocks 40 fastened to frame 10. A chain 41 from shaft 39 drives via a sprocket 42 and stub shaft 43 a traverse cam 44. A groove 45 provided in cam 44 is engaged by a cam follower 46 mounted on traverse bar 47, which is supported in bearings 48 on frame 10. The bearings permit horizontal movement of the traverse bar through the frame. Pins 49, 50 projecting from opposite sides of cam 44 are adapted to actuate a micro-switch (not shown) to stop the motor after bar 47 has been moved

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a distance corresponding to that required to place a layer of adhesive tape, to be described, across the reel. In order to restart the motor and initiate a new cycle a push button (not shown) on the machine is actuated.

A shaft 52 fastened to bar 47 projects from the frame and carries two bushings 53, 54 for supporting rolls 55, 56 of pressure sensitive adhesive tape. The inside roll of tape 56 is of a double adhesive nature, that is, both surfaces of the tape are tacky, and therefore has a paper liner 58 which has to be disposed of in a manner described below. Roll 55 has only one adhesive side and no liner.

The mechanism for disposing of liner 58 comprises a spring loaded roll 60 supported at one end of arm 61 pivoted on shaft 62. Two fingers 59 on the other end of arm 61 serve to guide liner 58. The periphery of roll 60 is contacted by a rubber rimmed wheel 63 on a shaft 64 having a sprocket wheel 65 driven by chain 22. The end of liner 58 is led through fingers 59 and between roller 60 and wheel 63. When the machine is operated, the liner will be pulled from the roll of adhesive tape and may be conveniently received in a container (not shown) at the base of the machine.

With the mandrel 13, including a reel of wire thereon, mounted on the shaft 11 the taping and packaging of the coil takes place as follows: An end of tape 56 is stuck to the surface of the wire at one side of the reel. Foot pedal 27 is held depressed to rotate the reel until one layer of adhesive tape is deposited. The tape is cut and garter strap 70 is thereupon removed and canvas flaps 71 pressed down against the adhesive tape. Another layer of adhesive tape 56 is deposited over flaps 71. The tape is again cut and garter strap 72 is removed from the other flange and canvas flaps 73 pressed down on the tape. Adhesive tape 55 which is tacky on only one side is now stuck to the folded flaps and the machine run until a layer of this tape has been deposited. The packaging of the coil is now complete. During the taping procedure carrying rings (not shown) may be secured to the reel of wire to facilitate handling.

However, before the mandrel 13, mounting a reel of wire 15 thereon, is removed from the shaft 11, after a tape applying operation, three C links are each secured in opposite, angularly spaced notches 76', provided therefor about the outer peripheral edge portion of the annular end plates 76 of the collapsible reel, to hold the end plates and coiled wire together. By pushing on the hub 77, the ball lock 79 and the removable flange 78 are released whereby the mandrel 13 may be removed from the shaft 11 and the reel of wire 15 subsequently from the mandrel and stored for a period of time sufficient to permit drying of the adhesive previously sprayed on the wire and setting of the adhesive tape so as to hold the package in a strong bonded assembly. This time will usually be less than 24 hours, after that, the C clamps are removed permitting the end plates also to come off, leaving the coil of wire in a taped canvas package.

What is claim is:

1. A machine for applying adhesive tape to a coil of wire mounted on a reel which comprises in combination a frame, a gear reduction drive electric motor mounted on said frame, a shaft protruding from said gear reduction drive, said shaft having a sprocket at one end, a rotatable shaft including a clutch journaled transversely of said frame with one end portion of said shaft extending beyond said frame and provided with reel engaging means, said rotatable shaft having a sprocket drive near the other end, chain drive means connecting said shaft to the sprocket on the gear reduction drive shaft, a foot pedal operably connected to said clutch adapted to rotate said reel engaging means, a slide bar including a cam follower journaled transversely of said frame in spaced parallelism with said rotatable shaft, and a cam journaled

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on said frame with its axis of rotation normal to said slide bar and adapted for reciprocating said bar, sprocket and chain drive means connecting said cam to said rotatable shaft in a worm gear, said slide bar including an extended end portion with means for receiving a roll of tape, and switch means actuated by said cam for stopping said motor after each traversing movement of said slide bar.

2. A machine for applying adhesive tape to a coil of wire mounted on a reel which comprises in combination a frame, a gear reduction drive electric motor mounted on said frame, a rotatable shaft including a clutch journaled transversely of said frame with one end portion of said shaft extending beyond said frame and provided with reel engaging means, drive means connecting said shaft to said motor, a foot pedal operably connecting said shaft clutch adapted to rotate said reel engaging means, a slide bar including a cam follower journaled transversely of said frame in spaced parallelism with said rotatable shaft, and a cam journaled on said frame with its axis of rotation normal to said slide bar for reciprocating said bar, drive

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means connecting said cam to said motor, said slide bar including an extended end portion with means for receiving a roll of tape with each layer of tape separated by a liner, guide means including a pair of coactable rollers mounted in said frame for feeding the liner from said tape roll through and between the coactable rollers while the tape is fed to a coil of wire mounted on said reel engaging means, and switch means actuated by said cam for stopping said motor after each traversing movement of said slide bar.

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