May 22, 1928. 1,670,807

W. E. HALL

WALL PAPER DISPLAY MACHINE

Filed March 29, 1927 2 Sheets-Sheet 1

Fig. 4.

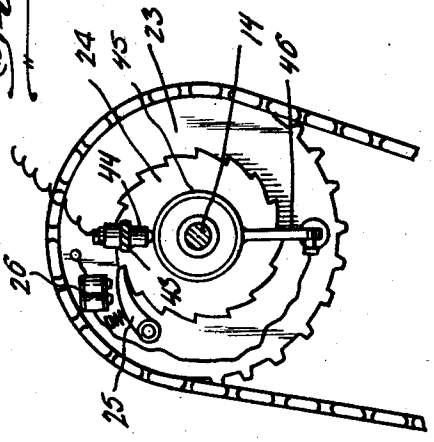
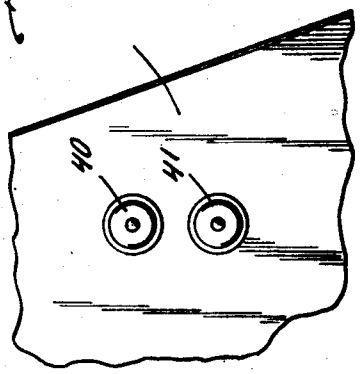


Fig. 5.



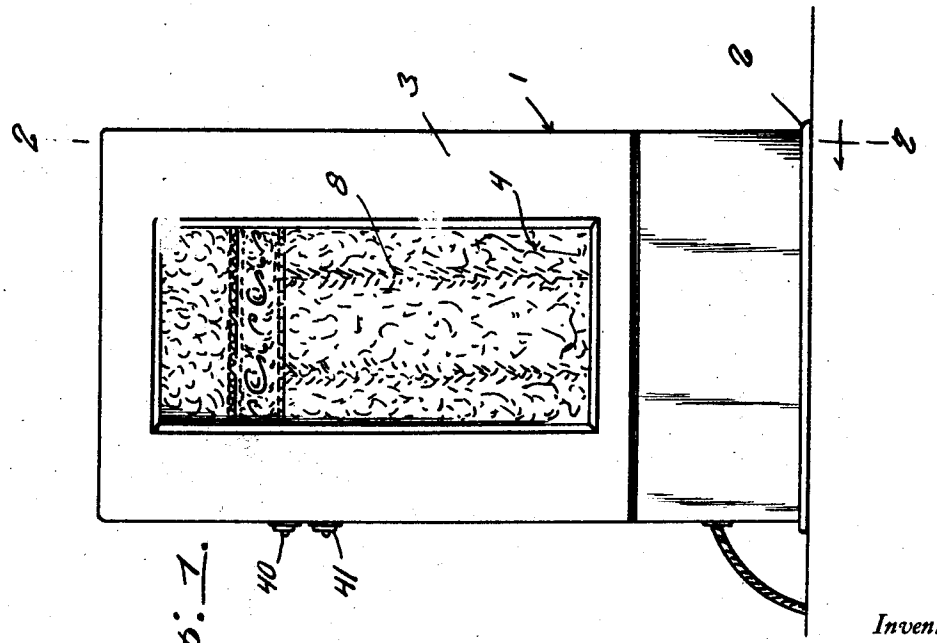


Fig. 1.

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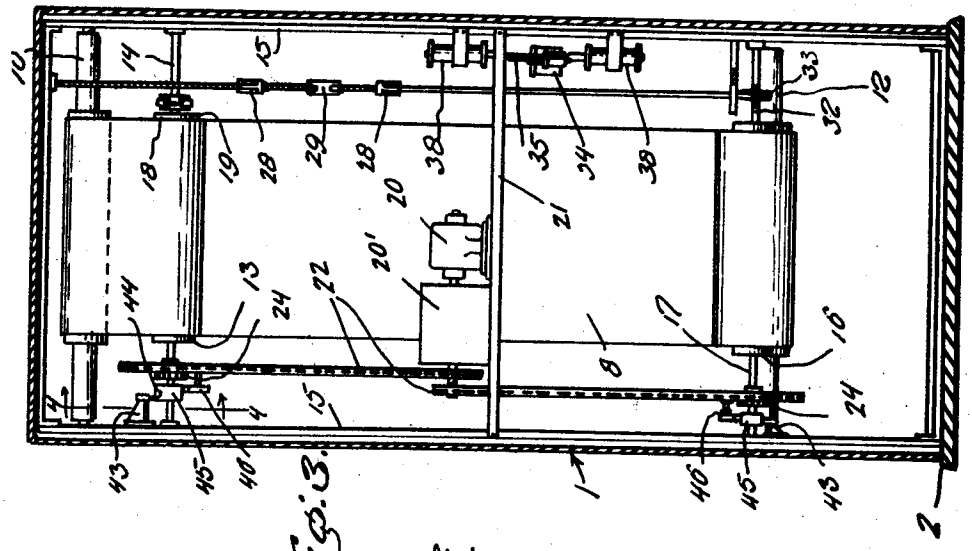


Fig. 3.

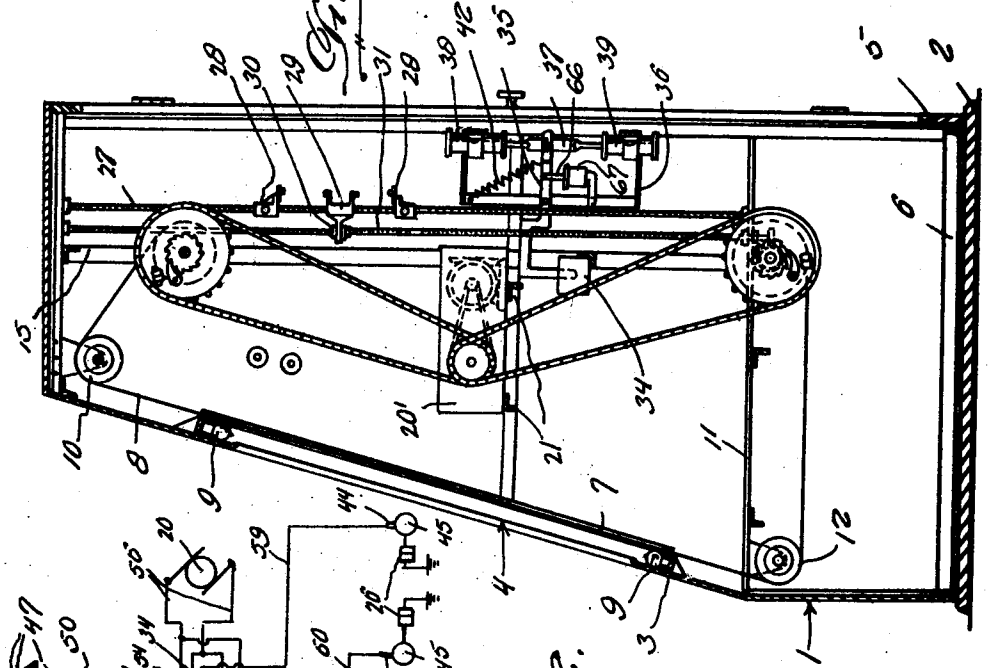


Fig. 2.

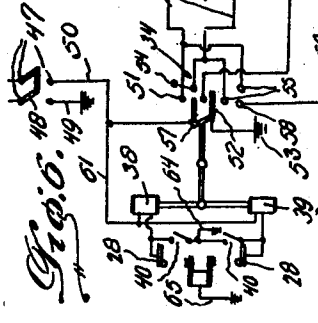


Fig. 6.

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Patented May 22, 1928. 1,670,807

UNITED STATES PATENT OFFICE.

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WALL-PAPER DISPLAY MACHINE.

Application filed March 29, 1927. Serial No. 179,375.

This invention relates to improvements in machines for displaying wall paper.

An object of the invention resides in providing a machine having a suitable belt member on which a plurality of wall paper or other specimens of sheet material may be mounted in which the strip member carrying the specimens is normally carried by a pair of roll members, so that an intermediate portion of the belt between the rolls is displayed through a suitable opening and in which an electric motor mechanism is used for driving the roll element to feed the strip from one roll to the other and vice versa, in such a manner that it may be operated to feed the strip automatically through a predetermined zone of movement or through suitable manual control means.

A further object of the invention resides in providing a display machine in which a suitable traveling web has the opposite ends mounted on a pair of spools or rollers adapted for operation in opposite directions, and in which suitable means is provided for electrically and automatically controlling the motor to reverse the operation of the motor for moving the web in opposite directions, when it reaches the end portion in which the motor control means is operated by the web operating means.

The invention comprehends numerous other objects residing in the specific relation and construction of the parts for carrying the invention, all of which are more particularly pointed out in the following detailed description, and in the claims directed to a preferred form of the invention, it being understood however, that various changes in the size, shape and relation of the parts may be made without departing from the spirit and scope thereof, as herein set forth.

In the drawings forming part of this application:—

Figure 1 is a front elevational view of the improved display machine.

Fig. 2 is a vertical sectional view through the machine, taken approximately on the line 2—2 of Fig. 1.

Fig. 3 is a rear view of the machine with the back wall removed.

Fig. 4 is a detail sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is an end elevation of the portion of the casing showing push buttons showing the manual control of the motor feed device.

Fig. 6 is a wiring diagram showing the electrical connection for the several parts of the construction to obtain the proper automatic or manual control of the motor.

This improved display machine includes a suitable housing 1 carried by the base 2 having the sloping front wall 3, as clearly shown in Fig. 2, provided with the display opening 4 through which the samples of wall paper or other sheet material are exhibited to view, while the rear wall of the casing is open and provided with the door 5 suitably hinged to one side for normally closing the same.

The housing is reinforced by a suitable metallic frame 6 which forms the supporting medium for the apparatus used to display the sections of sheet material, such as wall paper and the like.

A guide frame 7 is mounted on the inside of the front wall 3 in the rear of the opening 4 and is provided with guide slots for sliding the web 8 in its movement in opposite directions past the display openings. This frame carries suitable electric bulbs 9 at the upper and lower ends thereof contained in a suitable lighting circuit and adapted to illuminate the samples displayed on the web through the openings.

The guide roller 10 is rotatably mounted in suitable brackets carried by the upper end portion of the frame 6 while the cross bar 11 of said frame carries the lower guide roller 12, for rotation in suitable brackets thereon. The opposite end portions of the web 8 extending beyond the frame 7 is passed over these guide rollers 10 and 12 as shown in Fig. 2.

The web after passing over guide roller 10 extends to the upper spool 13 carried by the upper operating shaft 14 which is rotatably mounted in the vertical supporting bars 15 carried by the frame 6. The lower end of the web 8 after passing over the guide roller 12, extends to and is mounted on the lower supporting spool 16 carried by the lower operating shaft 17 which is rotatably mounted in suitable bearings carried by the bars 11 in the frame 6.

A friction brake is indicated at 18 in Fig. 3, which is suitably connected to the frame 6 and acts on the brake drum 19 carried by the upper drive shaft 14 in order

to obtain a tension on the web 8 of the machine.

The drive mechanism for the web includes an electric motor 20 mounted on the supporting bars 21 carried by the frame 6 and extending transversely between the sides thereof, which drives any suitable form of reduction gearing mechanism indicated by the numeral 20' having a drive shaft mounting suitable pinions for driving the endless chains 22. A pair of these chains 22 are illustrated, each of which is fitted over the driven sprocket 23 carried by respective upper and lower drive shafts 14 and 17 so that both shafts are rotated simultaneously with the operation of the motor in order that the web may be wound in either direction from one spool to the other.

Ratchet disks 24 are mounted on the shafts 14 and 17 respectively, adjacent to the gears 23 which are relatively rotatable on said shaft. The sprocket gears 23 carry spring-pressed pawls 25 which are normally adapted to engage the teeth of the ratchet disks 24. In the operation of the web in opposite directions, it will thus be seen that this provides a drive connection with one spool only, while the web is pulled over the guide rollers 10 and 12 from the other spool, adapted to freely rotate in view of the fact that the pawl and ratchet connection provides a drive in only one direction, between the sprocket and the drive shaft.

Each sprocket gear 23 carries electro-magnets 26 adjacent to the spring pressed pawls 25 which are adapted to release said pawls from engagement with the ratchet disks 24, and are operated in such a manner that the pawl on the unwinding shaft for the web, is released from engagement with its ratchet disk, which is occasioned through the alternate energization of the electro-magnets 26 in the operation of the motor to wind the web in either direction.

In order to provide means for automatically controlling the operation of the motor so as to reverse its direction of speed of the web adjacent the end when one end portion is reached and before the end is wound off of the roller to which it is attached, a suitable supporting and guide bar is mounted in the frame 6 and at one side thereof, as indicated at 27 on which are adjustably mounted a pair of adjustable spaced contacts 28 suitably insulated from the bar 27, and a slidable contact member 29. The guide bar 27 is threaded enabling the contacts 28 to be moved vertically thereon whereby to regulate the interval between the engagement of the contact 29 with the upper and lower contacts 28.

This slidable contact member has an extension 30 which is threadedly engaged with the rotatable threaded screw shaft 31 rotatably mounted in bearings in the frame 6 and having a worm gear 32 on the end thereof, intermeshed with the worm pinion 33 carried by the lower operating shaft 17. In this way, the screw shaft 31 is constantly rotated during the operation of the motor and the feeding of the web.

An oil switch is provided for reversing the operation of the motor 20, comprising a plurality of contacts generally indicated at 34 which are operated by the pivoted arm 35 pivotally mounted on the bracket member 36. An operating member 37 has its intermediate portion with a pin and slot connection to the free end of the operating arm 35 for the oil switch, and the opposite ends connected to the armatures of electro-magnets 38 and 39 respectively, which have electrical connections with the contacts 28 in a manner which will be hereafter described to alternately move the switch from one position to another in order to reverse the direction of operation of the motor to feed the web between its limits of movement in opposite directions successively.

A pair of push buttons 40 and 41 shown in Figs. 1 and 5, are mounted on the outside of the casing 1 and are adapted to manually interrupt the operation of the motor so as to obtain the reversing of the direction thereof, at any desired point between its limits of movement under the control of the automatic mechanism.

A piston rod 66 extends downwardly from the arm 35 within the oil cylinder 67 attached to the bracket 36, a piston of the usual type being fitted in the cylinder and pressurely actuating against the action of the members 37 to return the arm 35 to normal position when the device is idle. A coiled spring 42 attached to the arm 35 facilitates the return movement of the arm 35.

For the purpose of transmitting energy to the electro-magnet 26, a bracket 43 is mounted on the main frame 6 and carries a contact member 44 as shown particularly in Fig. 4. This contact member 44 has engagement with the rotatable contact ring 45 carried by the supporting arm 46 which is secured at its end to the sprocket gear 23 having an electric wire connection with one terminal of the electro-magnets 26 while the opposite terminal is grounded.

With particular reference to Fig. 6, showing the wiring diagram, it will be understood that a suitable source of current supply is obtained through the wires 47 having a main control switch 48 governing the operation of the machine. One terminal of the switch 48 has a ground connection at 49 with the frame of the machine, while the other terminal has a wire connection 50 with the movable switch blade 51 of the oil switch 34. The other movable switch blade

52 of the oil switch is grounded as indicated at 53.

These switch blades 51 and 52 have upper contacts 54 and lower contacts 55 with which they are adapted for alternate engagement to close the circuit connections 56 to the motor, the upper circuit making connection with the motor to rotate in one direction, while the opposite contacts are connected so as to reverse the direction of current in the motor and reverse its direction of operation, any suitable form of reference being used.

A third upper contact 46 and a corresponding-lower contact 58 is provided in the oil switch for engagement by the switch blade 52 for supplying energy to the electro-magnets 26 in the proper alternate relation thru the wire connections 59 and 60 respectively, the connection extending through the bracket brush 44 and ring 45 for each electro-magnet.

A branch supply wire 61 is connected with one terminal of each of the operating electro-magnets 38 and 39 respectively, while the opposite terminals of these electro-magnets are respectively connected through the wires 62 and 63 respectively, with the upper and lower respective contacts 28 of the automatic control mechanism. These conductors 62 and 63 are also connected with one terminal of the respective switches 40 and 41 while the opposite terminals of these switches are suitably grounded as indicated at 64. The slidable contact member 29 is provided with a ground connection as indicated at 65.

In the operation of this display machine, it will be understood that a series of wall paper sample sheets are suitably attached in successive relation, and if desired the machine may be used for displaying any other form of sheet material samples that may be desired. By closing the switch 48 to supply energy to the wires 49 and 50, the device will be placed in normal automatic operation through the normal action of the spring 42 to close the oil switch for operating the motor 20 in one direction.

This will correspondingly drive through one of the chains 22 one of the drive shafts, and will automatically energize one of the magnets 26 to release the pawl on the shaft from which the web is being unwound so that the web will be gradually fed at a slow rate of speed under the display opening 4 in the casing for displaying the sample sheets attached to said web. As the web is fed from one roll to the other and reaches its limit of speeding movement, the slide member 29 due to the rotation of the screw shaft 31 will feed said member so that one of the contacts thereon will engage one of the previously adjusted stationary contacts 28. This will produce an electric circuit to the proper electro-magnet 38 or 39 which will thus be energized and immediately reverse the position of the oil switch, thereby reversing the direction of current through the motor, deenergizing the previously energized electro-magnet 26, and energizing the previously de-energized one.

This reverse of rotation of the motor will immediately reverse the direction of travel of the web so that it will continue its direction of travel in the reverse direction until the slide member 29 moves to engage the other stationary contact 28, when the opposite electro-magnet 38 or 39 will be energized to again reverse the oil switch 34.

This operation will be maintained automatically and continuously as long as current is supplied to the motor. The zone of movement of the web for the display of samples may be controlled by adjustment of the stationary contacts on the guide rod 27. The operation of the switches 40 and 41 manually will serve to reverse the direction of the motor at any intermediate point of the zone of travel of the web under control of the automatic mechanism, so that if it is desired to display one sample substantially continuously, to a prospective customer, the salesman may operate the buttons 40 and 41 to keep the motor operating in such direction, as to maintain the particular sample in view under the window or display opening 4.

It will thus be seen that an automatic sample display machine has been provided by the present invention in which the parts are normally and automatically operated through the cooperation of suitable electric operating control means for an electric drive motor, in which any desired time to operate the parts can be obtained.

Having thus described my invention, what I claim as new is:—

1. An automatic control for a tape reeling mechanism comprising in combination, a pair of rotatable rollers arranged for opposite reeling action, drive means for the rollers, means for reversing the same and an electro-magnetically controlled pawl and ratchet connection between each of the rollers and the drive means.

2. An automatic control for a tape reeling mechanism comprising in combination, a pair of rotatable rollers arranged for opposite reeling action, drive means for the rollers, means for automatically reversing the same at predetermined intervals, a pawl and ratchet connection between the drive means and each of the rollers, an electro-magnetic control means for the pawl actuated through said reversing means whereby to operatively engage or disengage the same.

3. An automatic control for a tape reeling mechanism comprising in combination, a pair of rotatable rollers arranged for opposite reeling action, drive means for the roll-

ers, electro-magnetic control means for automatically reversing the same at prededermined intervals, means for adjusting the control means whereby to regulate the intervals between the reversing action, a pawl and ratchet connection between the drive means and each of the rollers and disposed for opposite operation with respect to each other and electro-magnetic control means for each of the pawls actuated through the reversing action whereby to alternately engage and disengage the same.

In testimony whereof I affix my signature.

WILLIAM E. HALL.