Feb. 18, 1941. H. KASTRINSKY 2,232,536

FABRIC FINISHING MACHINE

Filed Oct. 21, 1939

Fig. 1.

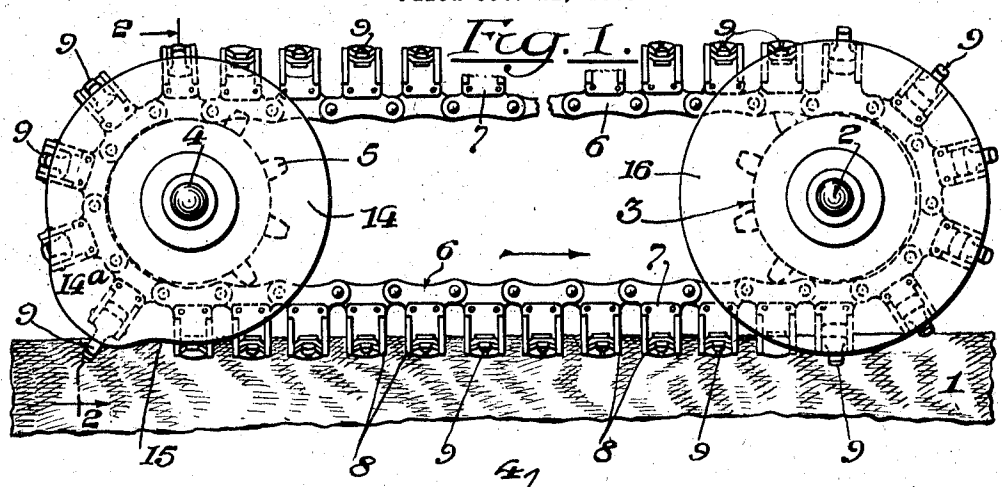


Fig. 2.

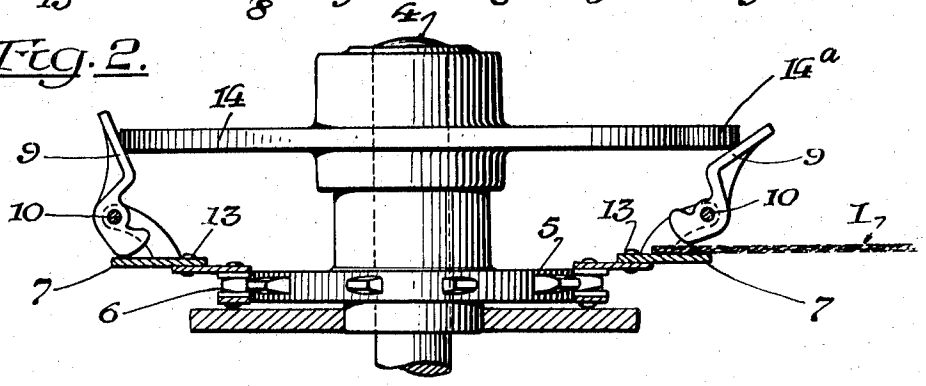


Fig. 4.

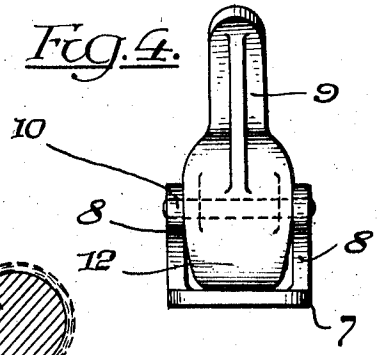
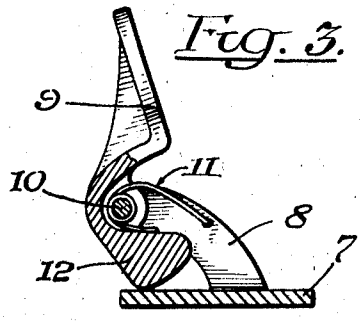


Fig. 3.



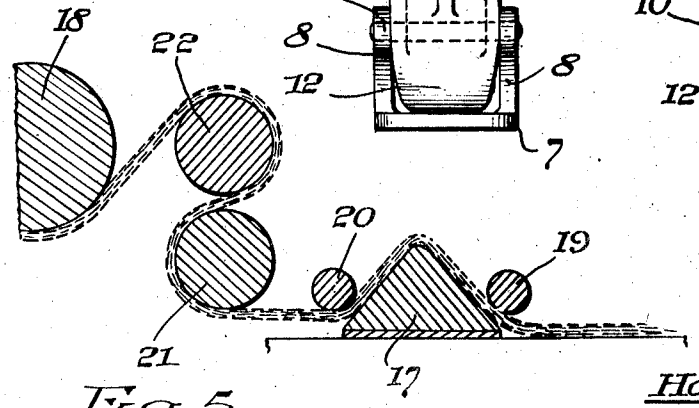


Fig. 5.

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UNITED STATES PATENT OFFICE

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FABRIC FINISHING MACHINE

Harry Kastrinsky, Brooklyn, N. Y.

Application October 21, 1939, Serial No. 300,533

1 Claim. (Cl. 26—57)

This invention relates to improvements in fabric finishing machines, and particularly to means for maintaining the fabric in even condition while being drawn through the machine, the principal object of the invention being to provide means for positively gripping the fabric at its edges and moving said edges along at the same speed as the center portion of the fabric.

A further object of the invention is to provide special means operable in association with the edge-gripping means for treating tucked or shirred fabrics whereby the tucks will be evenly pressed and caused to lie perfectly flat.

Other objects and advantages of the invention will appear as the description proceeds.

In the drawing accompanying this specification,

Fig. 1 is a plan view of an edge-gripping and moving element constructed in accordance with the present invention;

Fig. 2 is a transverse sectional view on an enlarged scale, taken approximately on line 2—2 of Fig. 1;

Fig. 3 is a sectional side view of one of the individual gripping devices;

Fig. 4 is a front view of the device shown in Fig. 3; and

Fig. 5 is a sectional view through the take-up rollers of a finishing machine illustrating the improved tuck-pressing device.

In finishing machines of the type with which the invention has to do, the general object is to cause a width of fabric to be unwound from a carrying roll and drawn through the machine wherein it receives suitable treatment such as steaming, spreading, pressing, etc., and is finally wound on to a rotating receiving or take-up roll at the delivery end of the machine. The pull necessarily exerted on the fabric to carry it around the various rollers over which it must pass has a tendency to produce irregularities in the finished fabric. In other words, the pulling tension on a fabric of substantial width is likely to be unequal at different points in the width. This is particularly noticeable in a fabric having transverse stripes, in which, owing to the fact that the fabric offers greater resistance to the pulling force at its side edges than at the longitudinal center line, after having passed through the machine the stripes are found to be arc-shaped or bowed. Attempts have been made to overcome this defect, by providing means contacting with the edges of the fabric and urging them forward. Such means have usually consisted of endless chains, one at each edge of the fabric traveling in the same direction as the fabric and carrying means in frictional contact with the said fabric edges. However, because of the yielding character of the fabric, any device which operates by frictional contact has a tendency to distort the edges of the fabric by reason of the pressure that must be exerted in order to create the desired frictional contact. The present invention, therefore, is an improvement over such frictional devices in that it provides means for positively gripping the edges of the fabric and moving them along, without exerting any pressure or "push" on the fabric from edge to edge.

In the drawing I have shown only one chain unit of the device, it being understood that one such unit is disposed at each side edge of the fabric 1, of which only a portion of the width is shown, and that such units may be driven from any suitable source of power and may be spaced at different distances apart to accommodate fabrics of different widths, as is common in practice.

The unit shown in the drawing comprises a rotatable shaft 2 having secured thereto a sprocket 3. A non-rotatable shaft 4 is mounted at a predetermined distance from shaft 2 and carries a sprocket 5 mounted for rotation thereon, and a chain 6 is mounted on said sprockets 3 and 5 for operation thereby in the direction indicated by the arrows in Fig. 1. Each link of the chain carries a gripping device a preferred form of which will now be described.

Each gripping device comprises a frame consisting of a base plate 7 having a pair of legs 8 extending upward and forward at an acute angle at opposite sides of the plate. A lever 9 is pivoted intermediate its ends on a pin 10 in the legs 8 near the free ends thereof, the portion of the lever that extends below the pivot pin being of such length that in one direction of its pivotal movement it will strike the top surface of the plate 7 near the forward end thereof so that the lever cannot pass beyond the forward edge of the plate, as clearly shown in Figs. 2 and 3. A coil spring 11 serves normally to maintain the lever in the plate-engaging position, said spring being mounted on the pivot pin 10 and having one end secured in an opening in one of the legs 8 while its opposite end rests on an enlarged nose 12 formed at the lower end of the lever. One complete device as so constructed is secured to each link of the chain 6 by rivets 13 passing through openings formed in the base

plate 7 near its rear end, as indicated in Figs. 1 and 2.

A cam disk 14 is secured on the shaft 4 at such height above the sprocket 5 that during the travel of the chain around said sprocket the upper portion of each successive lever 9 will pass around a portion of the periphery of the disk. The portion of the disk that overlies what may be termed the idle part of the chain, is of such radius that the levers 9 will pass freely around from said idle part toward the active run of the chain without contact with the disk. However, just in advance of the point where the disk overlies the beginning of the active run of the chain, the radius of the disk is increased in length to form a cam-like portion 14a so that the upper portion of each successive lever will "ride" on the periphery of the cam-like portion, thus causing the lever to swing on its pivot against the tension of the spring 11 and raising the nose 12 out of contact with the base plate 7, the lever being maintained in that position until it arrives approximately at right angles to the direction of travel of the fabric 1 at which time the nose 12 of the lever and the plate 7 are disposed in straddling relation to the edge of the fabric, as shown at the right-hand side of Fig. 2. At this point the periphery of the cam disk is sharply cut away as indicated at 15, so that when the lever arrives at this point its contact with the periphery of the disk ceases and, under the tension of the spring 11 the nose 12 grips the fabric between it and the base-plate 7. The edge of the fabric is thus positively held and carried along with the chain during its travel from the sprocket 5 toward sprocket 3.

It is of course necessary that the fabric be released from the successive gripping devices as they arrive at the end of the active run of the chain. For this purpose, a disk 16 is secured on the shaft 2 in the same horizontal plane as the cam disk 14. The diameter of the disk 16 is such that it will trip the levers 9 at any point where it overlies the chain, so that as the successive levers arrive at a point opposite the sprocket 3 they are caused to swing away from the plate in the same manner as above described in connection with the cam 14a, whereby the fabric is released and left free to continue its travel beyond the chain. The levers will remain in open or fabric-releasing position until they have passed out of contact with disk 16 on the inactive or idle run of the chain.

In Fig. 5 I have shown in section a device which may be used in a finishing machine either independently of or in combination with the fabric-gripping means above described. The said device comprises a horizontal bar 17 triangular in cross-section disposed in the path of the fabric 1 during its passage from the gripping means to the receiving roller 18. The fabric is led over the apex of the bar and is maintained in close contact with the two upper sides thereof by tension rollers 19 and 20 disposed in parallel relation with the bar adjacent to the opposite side edges of the base of the bar. From the bar 17 the fabric passes around rollers 21 and 22 and thence to receiving roller 18. This device is particularly useful in the treatment of tucked or shirred fabrics, since by reason of the passage of the fabric between the rollers 19, 20 and the flat sides of the bar the tucks are caused to lie perfectly flat and smooth.

It is believed that the operation of the gripping means will be readily understood from the foregoing description. I have deemed it unnecessary to illustrate a complete fabric-finishing machine herein, since such machines are well known in the art. It will be understood that a pair of complete gripping units such as that illustrated in Fig. 1 are disposed at opposite side edges of the fabric, and that the chain driving shafts 2 of both units are driven so as to cause the chains to travel at the same speed as the fabric is being wound on to the receiving roll. Because of the fact that the gripping devices herein described positively hold the side edges of the fabric the said edges are caused to keep pace with the movement of the longitudinal center line and consequently there can be no distortion of the fabric either transversely or longitudinally. Moreover, because of the acute-angled relation of the lever and its supporting legs to the base plate space is provided to receive a substantial portion of the width of the fabric between the lever and plate and any transverse pull on the fabric will act to increase the gripping action of the lever thereon.

Having thus described my invention, what I claim is:

The combination with an endless traveling chain, of a gripping device secured to each link of the chain and comprising a base plate extending laterally from said chain, a lever pivoted on said plate and disposed at an acute angle thereto, said lever having a rounded nose portion at its lower end, tension means normally maintaining said nose portion of said lever in engagement with the plate, a fixed disk disposed in overlying relation to the chain at one end of its runs and having a cam portion operative to engage said lever as the chain passes from one run to the other temporarily to move said lever on its pivot thereby to carry said nose portion out of engagement with the plate, the periphery of said disk being cut away at the base of said cam portion to permit return of said lever under the action of said tension means, and a disk in overlying relation to the chain at the opposite end of its runs, said disk being of such diameter as to project into the path of the lever whereby the lever will engage the periphery of the disk and be swung on its pivot thereby to maintain the nose portion out of engagement with the plate while the chain passes back to the first-mentioned run.

HARRY KASTRINSKY.