Sept. 6, 1932. R. D. TACKABERRY 1,875,777

STRETCHER AND GUIDER

Filed Aug. 13, 1929 3 Sheets-Sheet 1

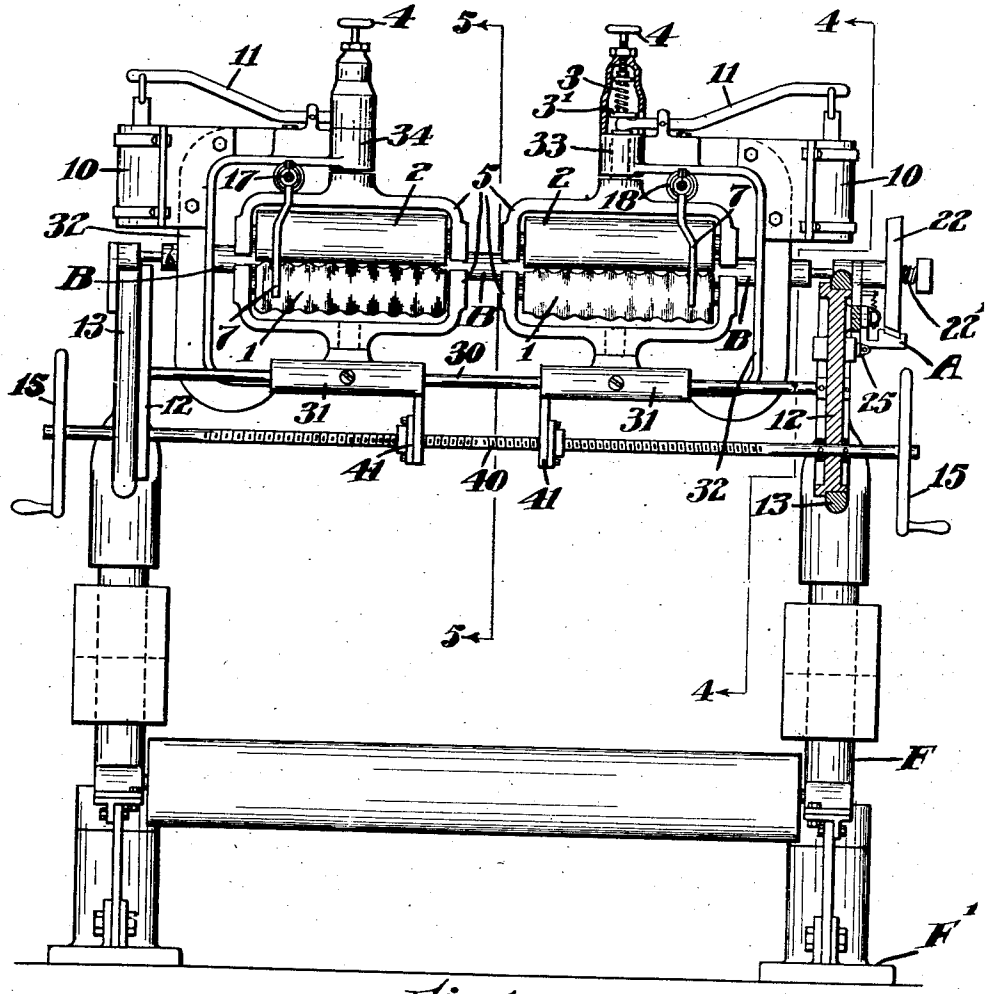


Fig. 1

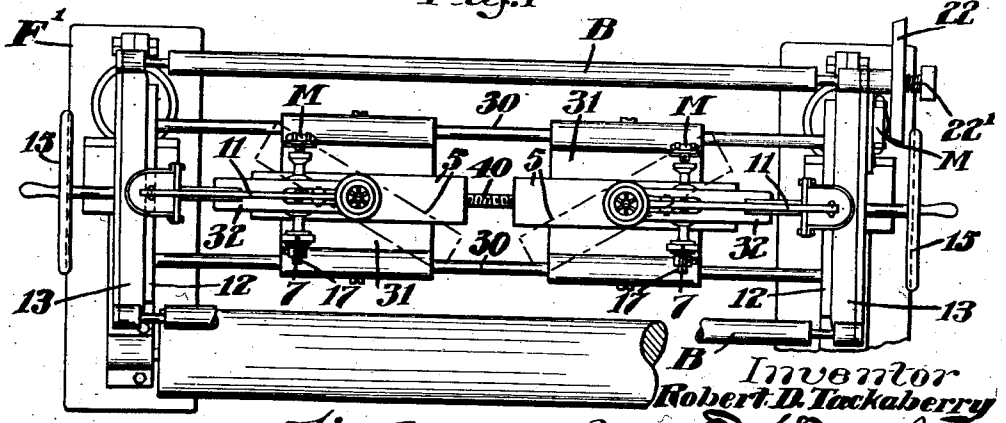


Fig. 2

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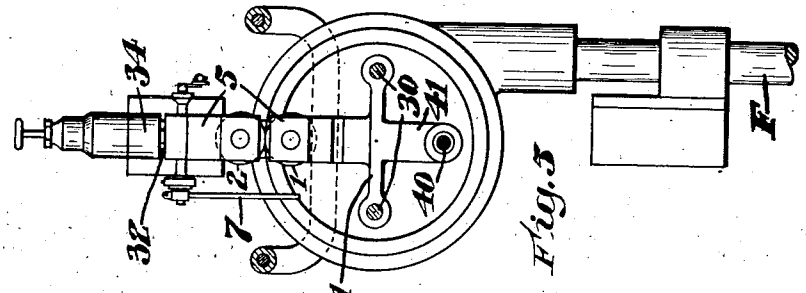


Fig. 5

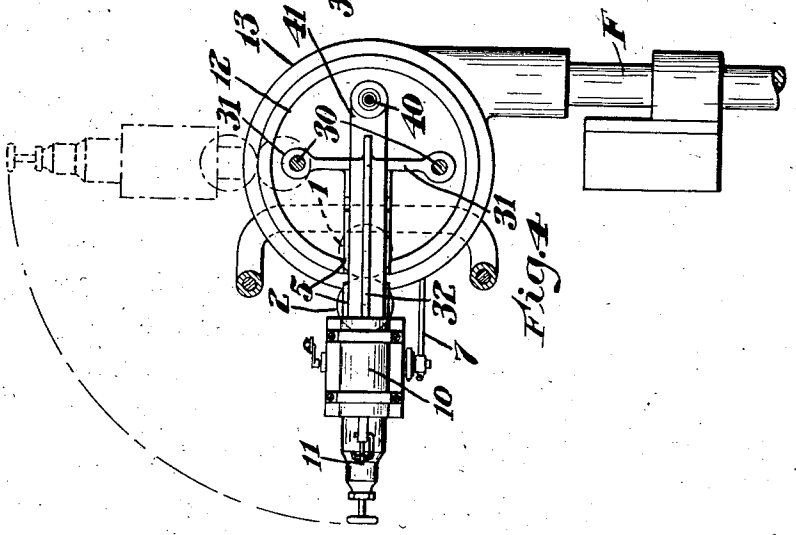


Fig. 4

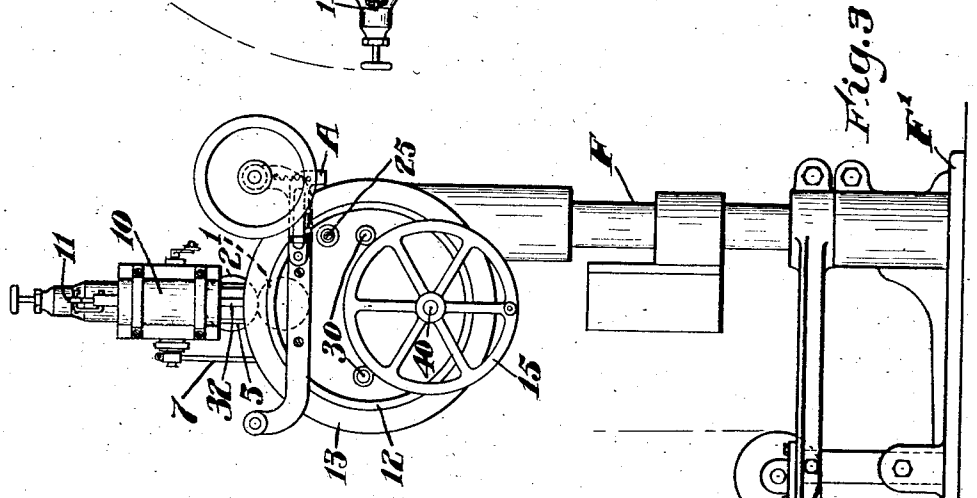


Fig. 3

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STRETCHER AND GUIDER

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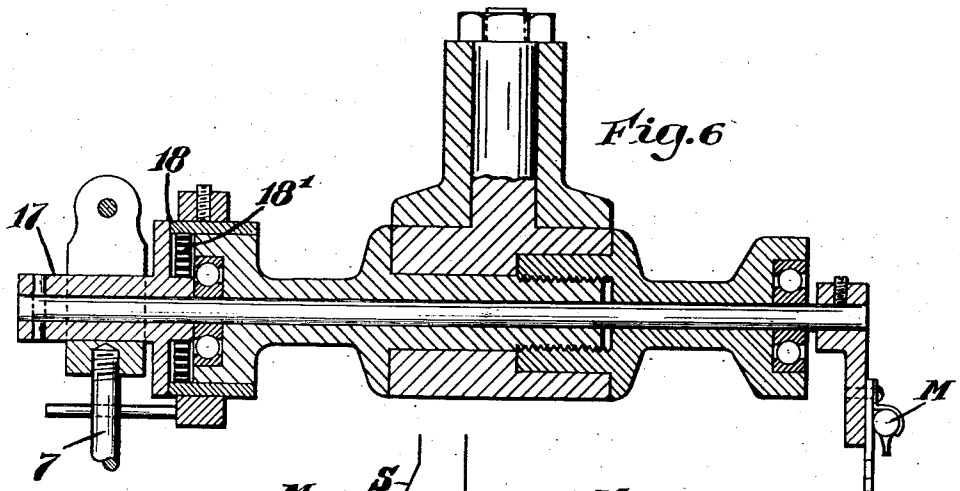


Fig.6

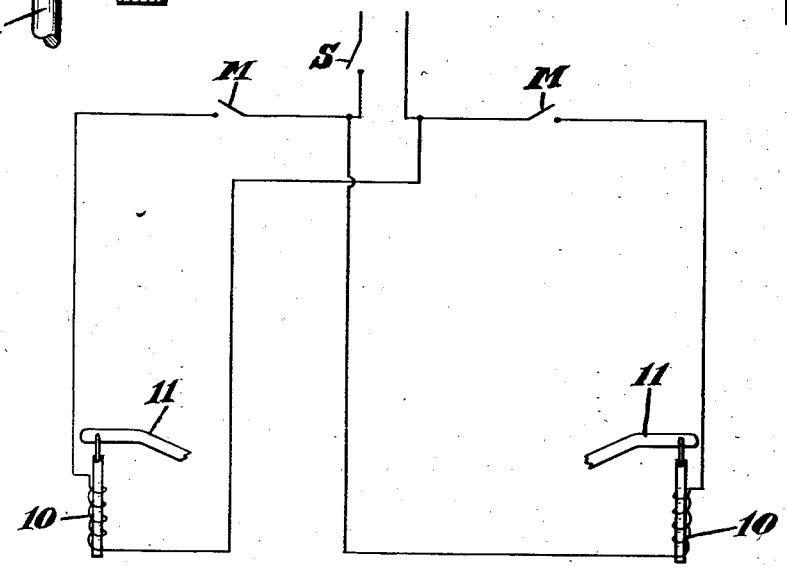


Fig.8

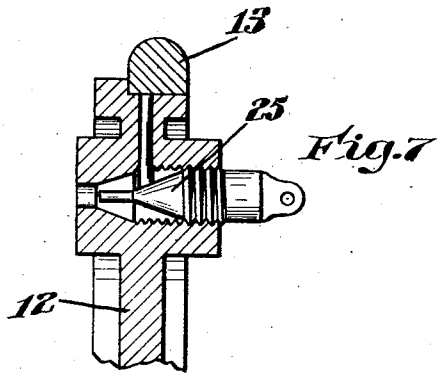


Fig.7

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Patented Sept. 6, 1932 1,875,777

UNITED STATES PATENT OFFICE

ROBERT DANIEL TACKABERRY, OF LEWISTON, MAINE

STRETCHER AND GUIDER

Application filed August 13, 1929. Serial No. 385,559.

My present invention relates to a stretcher and guider for cloth and like webs of material which are to be fed and/or stretched. It comprises in part an improvement on the device set forth in my prior Letters Patent No. 1,678,925, dated July 31, 1928.

In machines of this character much difficulty has been experienced in controlling the feed or the amount of stretch with cloths of certain characters—notably those of thin or sheer nature or those of loose weave. Various types of machines and rolls have been used with varying degrees of success, but there has been a constant demand for a better and more efficient functioning to meet production conditions.

My present invention is directed to such ends, and I have shown in the accompanying drawings an embodiment which has proven to be of the desired efficiency and versatility. Such showing is not to be understood as in any way limiting, however, and while I do make specific claim to certain novel features, the machine so shown is to be understood as disclosed primarily as an embodiment offered as illustrative of broader principles capable of other embodiment, arrangement or design.

The drawings to which descriptive reference is made in the following specification comprises the following figures:

Fig. 1 is an elevation of the above mentioned machine.

Fig. 2 is a plan view of the same.

Fig. 3 is an end elevation from the right of Fig. 1.

Fig. 4 is a fragmentary section on the line 4—4, of Fig. 1, with the yoke turned at an angle of 90°.

Fig. 5 is a section on the line 5—5, of Fig. 1.

Fig. 6 is a sectional detail of the switch control.

Fig. 7 is a detail of the disc lock, and

Fig. 8 is a detail of the wiring diagram.

My invention is directed to the guidance and stretch of cloth or like material, as in passing to a mangle or a drier or any subsequent machine to prevent the variation in the path of the material or to remove folds or fullness or otherwise to provide a sidewise tendency or trend in the feed or flow of the web.

The machine as shown comprises a pair of tubular frame uprights F supported on footings F^1. On these frame uprights are carried ring bearing members 13 in each of which is rotatably mounted a head disc 12 held in desired position of adjustment by a lock 25 (for detail see Fig. 7). The purpose of changing the position of disc 12 is to permit the yoke, shown in Fig. 4, to be turned through an angle of 90° or less to a position such for example as that shown in Fig. 5. The means for securing the disc 12 in different positions relative to the ring bearing members 13 is more clearly shown in Fig. 7, in which a tapered end of an adjusting or lock screw, engages a pin passing through the head disc 12 which pin is forced out against the ring bearing member 13 to hold the parts in proper relative position.

The discs 12 are connected across by a pair of guide rods 30 on which are slides 31 carrying brackets 32 and being provided with opposed bearings 33 and 34 in which are swivelled the yokes 5 which carry the rolls 1 and 2.

The slides 31 are relatively adjustable to position the two roll pairs to grip the margins of webs of cloth or other strips of different widths. This adjustment is effected by a transverse feed screw 40 of reversed threads which engage with internally threaded brackets 41 hung from the slides 31. The screw is journalled at each end in the discs 12 and rotated by the hand wheel 15.

Adjustment is thus made for different widths in whatever position of feed or guidance the roll pairs may be. The bearing 34 for the yoke 5 of the upper roll 1 is a simple swivel bearing. The bearing 33 for the yoke 5 of the upper roll 2 is a combined swivel and slide bearing.

The stem of this yoke in the bearing 33 is pressed down by a spring 3 acting on a plate 3^1 which bears directly on the end of a lever 11 which thus controls the spring 3 and can release its pressure on the roll 2.

The lever 11 is controlled by a solenoid 10

which is included in the circuit of a control, the feeler of which is indicated as a lever 7 pivoted to the frame 32 at the intended marginal limit of travel of the web to be guided.

The lever 7 carries any suitable switch. This may be a tilting mercury switch as indicated at M or a contact switch as generally indicated at S, see Fig. 6, in which the mercury switch M of a type well-known in the art, is mounted on an arm which is tilted through rotation of the shaft on which the sleeve 17 is mounted. The feeler lever 7 rotates the sleeve 17 which is secured to the shaft. The function of the feeler lever 7 is to actuate this control lever 11 and release the pressure on the roll 2 thus letting slip its grip on the margin of the cloth passing between it and its opposed roll 1. The control of the lever 11 by the feeler lever 7 is obtained through a switch M controlled by the feeler lever 7 (see Fig. 6) and the solenoid 10 which actuates the control lever 11. In Fig. 8 is shown the mercury switch M in the circuit of the solenoid 10 which controls the control lever 11.

The lever or feeler arm 7 as shown in Fig. 6 is on the sleeve 17 of a hub 18 controlled by the coiled clocklike spring 18^1 (see Fig. 6) coiled within the hub 18, one end of the spring being fixed to the sleeve 17, the other end being fixed to the relatively movable hub 18. This holds the feeler arm 7 yieldingly against the edge of the web. Over-pressure on this arm 7 actuates the release of the roll 2 through the switch M, solenoid 10, and the lever 11 so that the opposite roll pair will draw the web laterally in that direction.

The opposite margins of the cloth or other fed web are thus released or gripped according to the lateral trend. In this way the roll pair or pairs are effective at any moment either to exert their lateral urge or yield to the other roll pair to correct the feed trend.

While I have shown a pair of co-operating rollers which are so supported as to be swiveled about or skewed at an angle, it is to be understood that other types of rolls such as the spiral type, or a roll having a tapered surface, may be employed. In Fig. 2, the dotted line position indicates the position of the respective pair of rollers adjusted in the swivel bearing 33, so that the rollers are arranged at an angle to the longitudinal travel of the material through the machine. The effect or action of angular disposition of the rolls is to obtain a stretching in the direction of the width of the material.

In such a machine as herein involved there is a need of a general power control to prevent continuance of circuit at breakage or piece ends or at shut down. I therefore preferably provide a stop device which will provide for any such emergency.

As shown in the drawings I provide a roll B over which the web runs so as in normal operation to keep it in continuous rotation. The end shaft of the roll B is threaded. This is preferably with a sharp pitch and multiple thread to effect a quick throw of the nut 22. This nut 22 is opposed by a spring 22^1 so that upon failure of the roll B to continue rotation, the nut 22 is run back by the spring 22^1 to tip the lever A and thus actuate a switch M or S and thus cut the current as at M, S in Fig. 8. The nut is indicated in the form of a disc 22 which is threaded on the end of the shaft of the roll B, the threaded portion of the shaft being concealed in Figs. 1 and 2 of the drawings by the spring 22^1. The arrangement of the lever A on which the mercury switch M is mounted is more clearly indicated in Fig. 3. The mercury switch M mounted on the lever A (see Figs. 1, 2 and 3) is of a type well-known in the art and either establishes or interrupts a circuit, by a tilting of the switch M, which causes a quantity of mercury to flow so as to either interrupt or complete a circuit between two terminals arranged in a glass tube.

As indicated in Fig. 1, the parts including the disc nut 22, the lever A, and the mercury switch M, are in a position when the machine is idle, when the disc nut 22 holds the lever A in a horizontal position. (See Fig. 3). When the machine starts, the disc nut 22 is driven by centrifugal force towards the end of the shaft against the pressure of the spring 22^1 when the lever A is released. As the lever A is then out of locking contact with the nut 22 the lever A is pulled upwards by the spring indicated in Fig. 1. When the machine stops, the disc nut 22 is returned to its former position by the coil spring 22^1, and the lever A is again restored to its original position, which in turn causes a tilting of the mercury switch mounted on the lever A. It is understood, of course, that the mercury switch for releasing the roll pairs and the mercury switch operated through the nut 22 and lever A are independent switches.

In operation such a machine functions substantially as follows. It will be understood at the outset that the machine as shown, or as may be otherwise organized, may need to be run at different angles.

In the machine as shown, regardless of the angle of feed, the rolls 1 and 2 of the roll pairs will be set to the degree of angularity which will give the trend or the desired stretch as may be desired. When the pair of rolls are arranged at an angle, such as the dotted line position indicated at Fig. 2 assuming that the material is fed downwardly, the effect of the angular disposition of the rolls 1—2 is to stretch the material in the direction of its width; the degree of stretching may be varied with the angular setting of the rolls.

As the web runs the rolls grip it margin-

ally according to the pressure applied through the adjustment screw 4. The lower roll 1 is shown as corrugated and the upper roll plain. All such is optional, but specifically I provide a soft or compressible upper roll 2 and a grooved lower metal roll as at 1 coacting therewith. This works most favorably with certain weaves which are most difficult of control.

The configuration of the rolls or otherwise construction, may all be varied. It is to be recognized that there is a plural function desirable in any such machine, these functions being closely combined or coordinated, and one of the advantages of my invention consists in that possibility of mechanical coordination.

What I therefore claim and desire to secure by Letters Patent is:—

1. In a device of the class described, a frame, a pair of rolls rotatably mounted therein on horizontal axes, and each roll being independently swivelled on a vertical axis therein, and means for adjustably holding the rolls in contact with each other.

2. In a device of the class described, a frame, a pair of heads rotatably mounted therein on horizontal axes, a pair of rolls in each head and each roll being independently swivelled on a vertical axis therein, and means for adjustably holding the rolls in contact with each other.

3. In a device of the class described, a frame, a pair of heads rotatably mounted therein on horizontal axes, a pair of rolls in each head and swivelled on a vertical axis therein, means for holding the rolls in contact with each other, a lateral feeler disposed adjacent the marginal limit of the travel of the cloth through each roll pair, and an electro-responsive controlled roll release controlled by said feeler.

In testimony whereof I affix my signature.

ROBERT DANIEL TACKABERRY.