

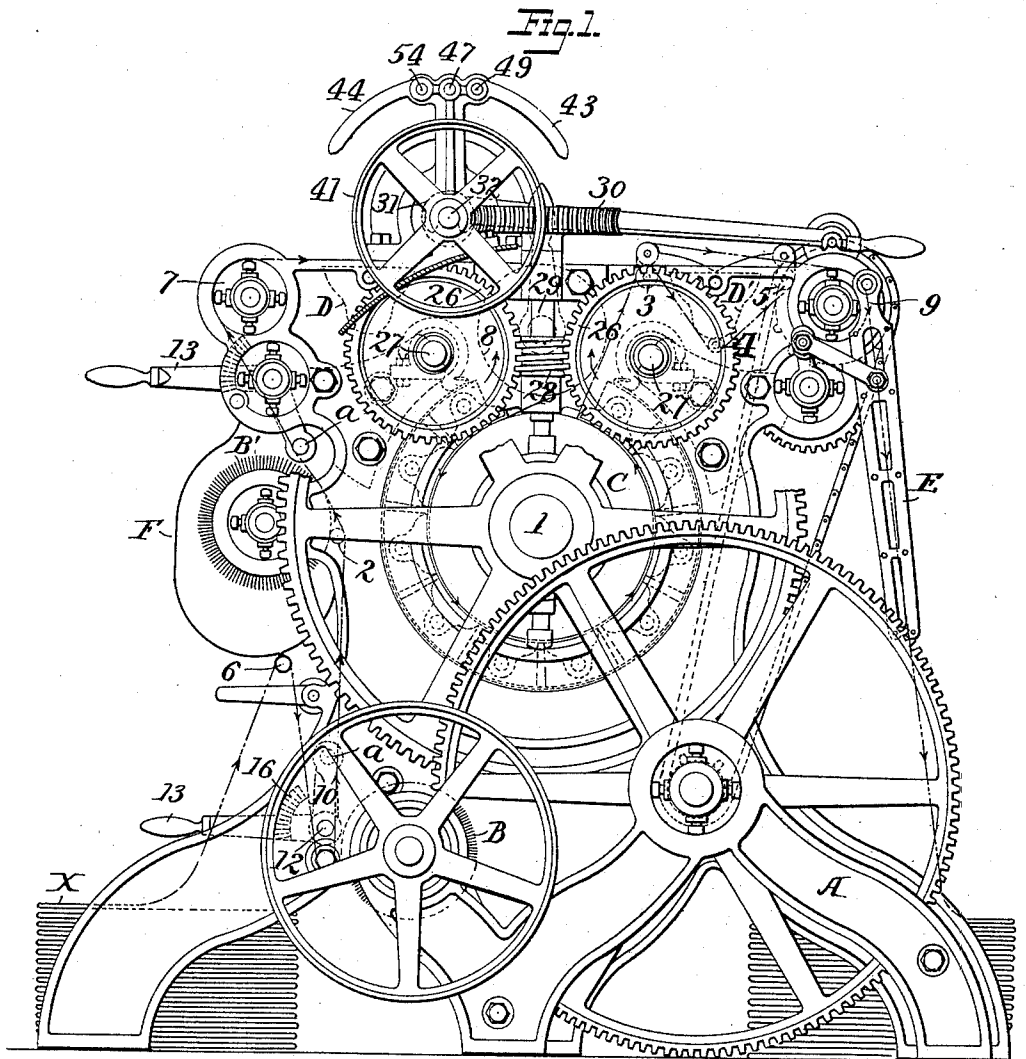
(No Model.)

4 Sheets—Sheet 1.

G. W. MILLER.
ROTARY CLOTH PRESS.

No. 468,815.

Patented Feb. 16, 1892.



WITNESSES

Prof. G. Hinkel

H. S. McArthur

INVENTOR

George W. Miller

By J. H. & L. H. Miller

Attorneys.

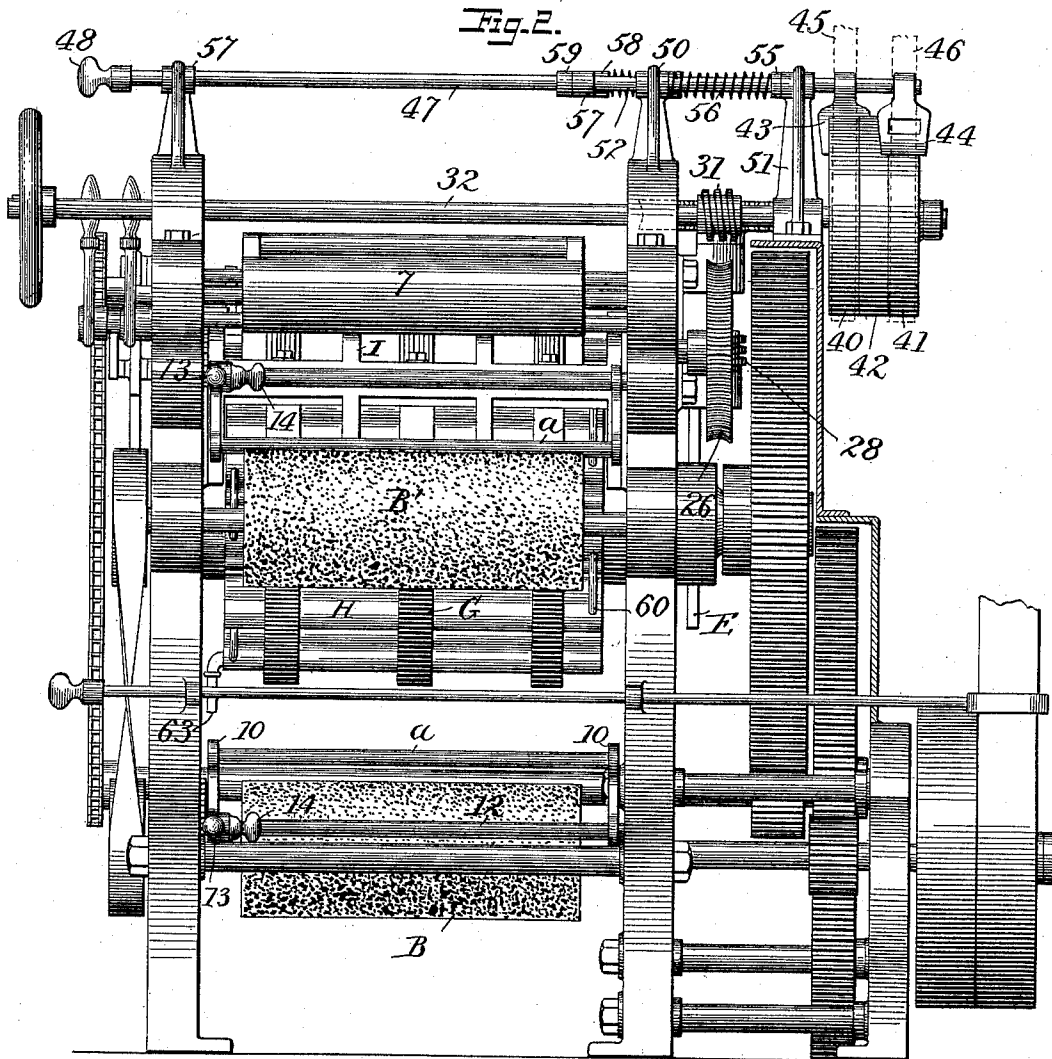
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WITNESSES

John G. Hinkel

W. S. McArthur

INVENTOR

George W. Miller.

By Foster & Freeman

Attorneys.

(No Model.)

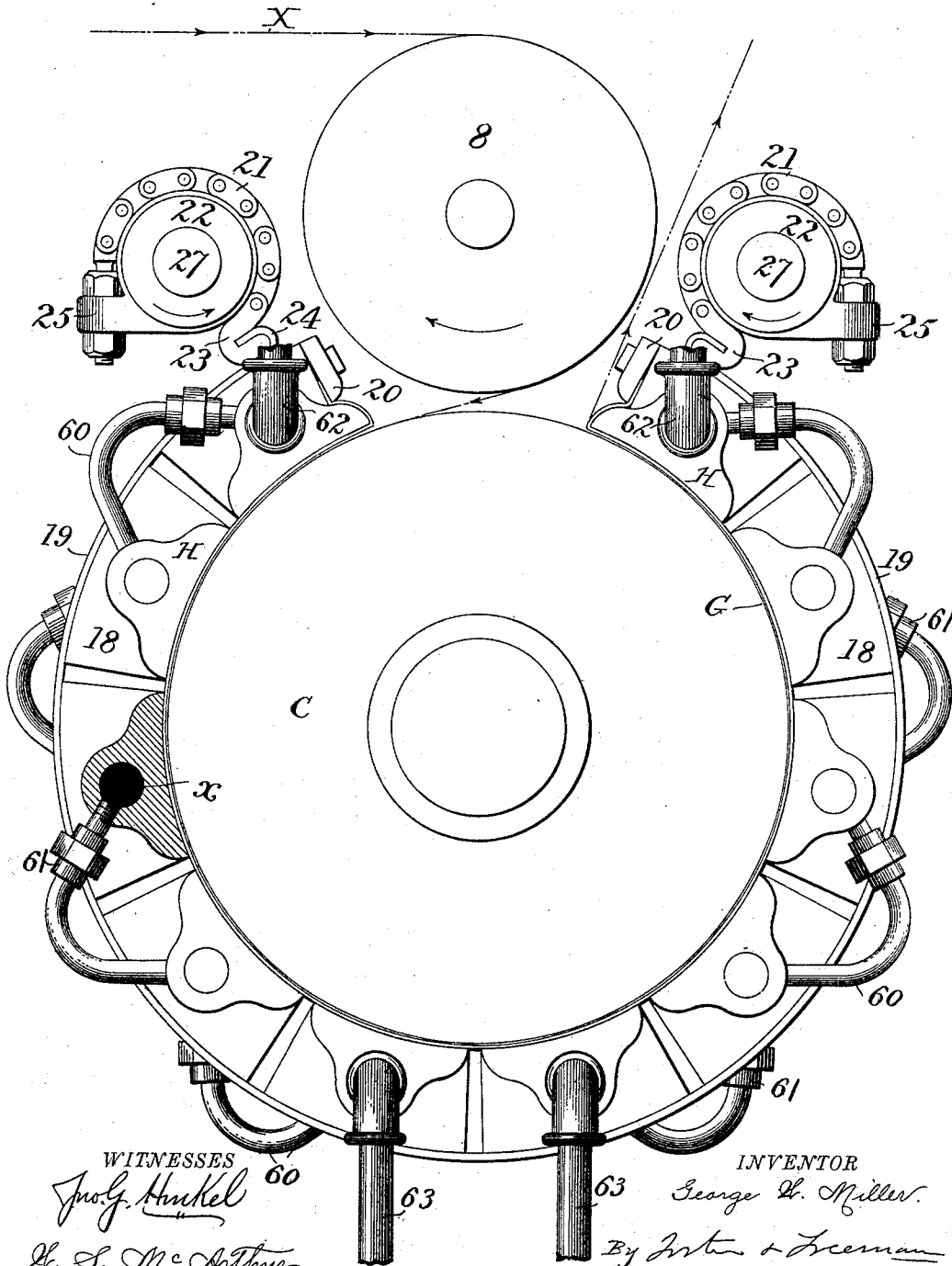
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Fig. 3.



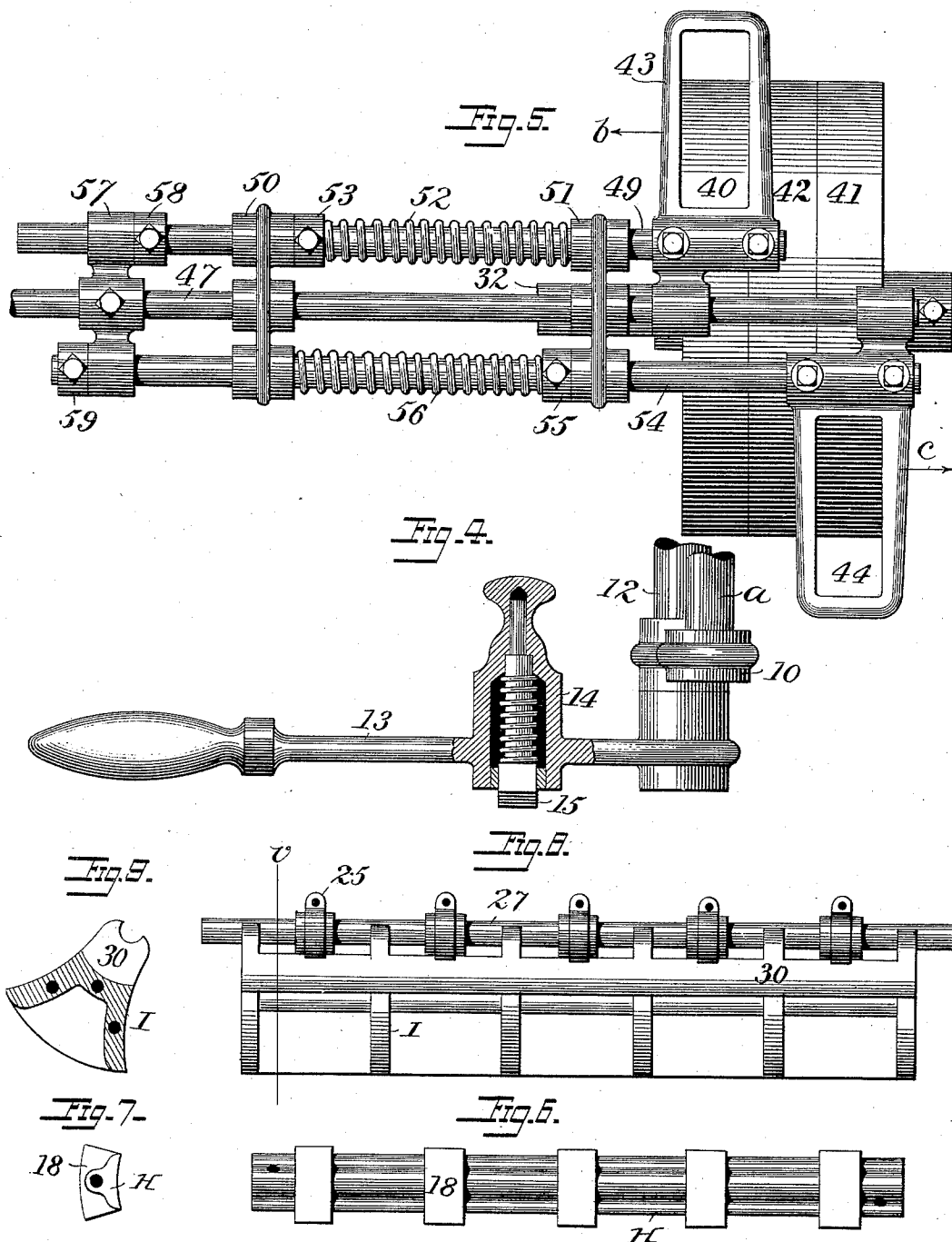
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WITNESSES
Geo. G. Hinkel
Chas. S. McArthur

INVENTOR
George W. Miller
By Porter & Freeman
Attorneys

UNITED STATES PATENT OFFICE.

GEORGE W. MILLER, OF WOONSOCKET, RHODE ISLAND.

ROTARY CLOTH-PRESS.

SPECIFICATION forming part of Letters Patent No. 468,815, dated February 16, 1892.

Application filed June 22, 1891. Serial No. 397,090. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MILLER, a citizen of the United States, residing at Woonsocket, in the county of Providence and State

of Rhode Island, have invented certain new and useful Improvements in Rotary Cloth-Presses, of which the following is a specification.

My invention relates to certain improvements in machines for pressing cloth; and it consists in constructing the different parts thereof, as fully set forth hereinafter, and as illustrated in the accompanying drawings, in which—

Figure 1 is a side view of sufficient of a cloth-pressing machine to illustrate my improvements. Fig. 2 is a front elevation in part section. Fig. 3 is an enlarged view in part section, showing the pressing-cylinder, pressing-bed, and adjuncts. Fig. 4 is a detached enlarged view in part section, showing part of the frame and the lever for deflecting the fabric. Fig. 5 is an enlarged plan view of the shifting devices; Fig. 6, an enlarged plan of one of the shoes; Fig. 7, an end view of one of the shoes. Fig. 8 is an elevation showing one of the drum-shafts and its bearings. Fig. 9 is a section on the line *v*, Fig. 8.

The frame A of the machine is suitably constructed to support the working parts, including one, two, or more brushes B B', to which rotary motion is imparted in any suitable manner, a pressing-cylinder C, secured to a revolving shaft 1, and one or more steamers D D', and between the side frames extend guide-bars 2 3 4 5 6, which may be stationary or turn upon suitable bearings, and between the said frames are also supported guide-rolls 7 8 9, the said guide-bars and guide-rolls serving to direct the fabric X in its proper course adjacent to the brushes, over the steamers, around the pressing-cylinder, and to a swinging laying-frame E, to which a reciprocating motion is imparted, as usual, in order to deposit the fabric in suitable folds at the back of the machine.

The extent to which different fabrics should be subjected to brushing action varies according to the fabrics and the condition of the fabric, and is greater sometimes upon one side than on the other, and I therefore pro-

vide means whereby one side of the fabric is presented to one brush B, while the other brush B' is arranged to act upon the opposite side of the fabric, and means whereby the fabric can be brought from a normal position out of contact with each brush into a position against said brush with greater or less pressure, as desired. This I effect by means of swinging or movable deflecting-bars *a*, each of which may be carried against the fabric, so as to deflect or bend the latter to any desired extent toward and upon the adjacent brush. As shown, each deflecting-bar *a* is carried by two side arms 10 10, secured to a rock-shaft 12, and to one end of the latter is secured a hand-lever 13, having a box 14, receiving a spring-bolt 15, with a tapering end adapted to engage frictionally the beveled teeth of a rack 16 upon the adjacent side frame. The spring-bolt tends to hold the frame carrying the bar *a* in any position in which it may be set, but will yield when sufficient pressure is applied to the hand-lever to swing the frame to bring the bar *a* to a different position.

The extent to which the fabric is deflected from its normal line and brought against the brush will be determined by the extent of the action to which that side of the fabric is to be subjected, and after the bar *a* has been set in the proper position to determine the action upon the cloth it will be retained in that position by the locking-bolt 15. Where the fabric is of such a character that the lint or flock is removed by the action of the brush, the distribution of the loose particles over the fabric and through the machine may be prevented by surrounding said brush by a casing F, supported between the side frames and open only at that side past which the fabric travels, the fabric therefore closing the casing at such side.

The pressing-bed is in the form of a flexible sheet or band G, preferably of steel, almost encircling the cylinder C and connected at its ends with suitable supports capable of being drawn together to tighten the bed upon the cylinder and of being separated to slack the tension, and pressure is also applied to the outside of the bed-plate by the means of a series of metallic bars or shoes H, each curved to correspond to the curve of the bed at the

face that bears upon the bed and each provided with a series of curved seats 18 for a series of supporting-bands 19, which are secured to the said seats, as shown, and the ends of the bed-plate G are folded over the edges of the upper two shoes H, and are clamped thereto by clamps 20 20, as best shown in Fig. 3.

The requisite tension, which in some cases is very powerful, is applied to the bed-plate and the pressure-shoes by means of straining belts or chains 21 21 upon opposite sides and above the cylinder, each chain passing partially around a drum 22, having a hook 23 at one end for engaging the hook end 24 of one of the bands 19, while the other end of the chain is bolted to a projecting arm 25 of the drum. By turning the drum in the direction of the arrow, Fig. 3, the hook 23 is carried in the direction upward tangential to the surface of the bands 19, and as both of the drums are turned simultaneously all of the bands are thereby strained or tightened to apply a pressure upon the flexible bed-plate that is proportional to the extent to which the drums 22 are revolved.

Different means may be employed for imparting the desired movements to the drums 22 and for securing a sufficiently powerful effect. As shown, a toothed wheel 26 upon the shaft 27 of each drum 22 meshes with a worm 28 upon a vertical shaft 29 at one side of the machine, and the shaft 29 carries at the top a worm-wheel 30, that gears with a worm 31 upon a transverse shaft 32. By turning the shaft 32 in one direction or the other the shaft 29 is revolved, so as to simultaneously impart like movements to the shafts 27 27 and either tighten or relax the flexible bed-plate, while the worm-gears effectively hold the parts in the position to which they are set.

As under some circumstances the strains upon the shafts 27 would be so great as to bend the same, so that the pressure upon the shoes at the center of the cylinder would not be so great as at the ends, I provide bearings for each shaft at points between the ends. Said bearings may be of any suitable form; but as shown they are recessed ears 30 upon a cross-frame I, bolted at the ends to the side frames, the recess in each ear receiving the shaft 27 and preventing the bending the same under the strains to which it is subjected.

In order to insure the prompt application of the power to the devices for straining and relaxing the flexible bed, I make use of reverse driving-belts and belt-shifting devices of a peculiar construction. Thus, as shown in Figs. 2 and 5, the shaft 32 is provided with two idler-pulleys 40 41 and an intermediate driving-pulley 42, secured to the shaft, and there are two shifting-loops 43 44, one for shifting the direct belt 45 and the other for shifting the cross-belt 46, and a sliding bar 47, provided with a handle 48, serves to move the loops. That both loops may be moved from

the same bar and in order that neither belt can pass to or from the driving-pulley 42 until the other has left said pulley, I combine with each loop a spring, which tends to keep the loop in position opposite its idler-pulley, and I provide the bar 47 with a contact-piece, which moving in one direction shifts one loop and moving in the other direction shifts the other loop. Thus the loop 43 is carried by a sliding rod 49, supported in bearings 50 51 upon the frame, and a spring 52, coiled round the rod 49, bears upon a collar 53, secured to the rod 49, and tends to move the latter and the loop 43 in the direction of the arrow *b*, Fig. 5, and the loop 44 is carried by a sliding rod 54, also supported in the said bearings and provided with a collar 55, against which bears a spring 56, tending to move the loop 44 in the direction of the arrow *c*, Fig. 5. The shifting-bar 47 carries a cross-piece or contact-piece 57, which when moved in the direction of the arrow *c* makes contact with a collar 58 on the rod 49 and shifts the latter, compressing the spring 52, so as to carry the direct belt 45 onto the driving-pulley 42. When the pressure upon the bar 47 is released, the spring 52 carries it to the position shown in Fig. 5, together with the loop 43, the direct belt being therefore carried onto and from the driving-pulley by the movement of the shifting-bar without any movement of the loop 44 or its belt.

Upon the sliding rod 54 is a collar 59, in position to be struck by the cross-piece 57 when the latter is moved from its normal position in the direction of the arrow *b*, this action serving to shift the reverse belt onto the driving-pulley, and when the pressure upon the shifting-bar is released the spring 56 carries the parts back to the position shown in Fig. 5. Thus the independent movements of both loops are effected from a single shifting-bar, while each belt is prevented from moving onto the driving-pulley until the other belt is absolutely free from contact therewith.

When the temperature of the pressing devices should be varied, I may make use of a hollow cylinder C, as usual, or instead or in addition I may vary the temperature of the bed by passing a fluid of proper temperature through chambers in the shoes H. To permit of this latter operation, I make each shoe H with a longitudinal channel *x* and connect the said channel with that of the next shoe through the medium of a connecting-pipe 60, preferably bent so as to yield slightly, as required by the change of the positions of the shoes, and each pipe preferably in two sections connected by an ordinary coupling 61. The inlet-pipe 62 is connected with one of the upper shoes or with both of the upper shoes on opposite sides, in which case there are two outlet-pipes 63, each connected with one of the lowermost shoes.

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim—

1. The combination, with the brush of a cloth-pressing machine, of guides for supporting the fabric in a position normally out of contact with the brush, a swinging frame provided with a deflecting-bar arranged at one side of the fabric, and means for carrying it to different positions to bring the fabric against the brush to a greater or less extent, and a lock for holding the frame in different positions, substantially as set forth.

2. The combination, with the brush of a cloth-pressing machine, of guides for supporting the fabric in a position normally out of contact with the brush, a swinging frame provided with a deflecting-bar *a*, and an operating-handle and a locking-bolt for engaging teeth for holding the frame in different positions, substantially as set forth.

3. The combination, with a flexible bed-plate, a series of shoes bearing upon said bed-plate, and bands extending round the shoes, of straining chains or bands, drums to which the latter are connected, and means for turning the drums, substantially as set forth.

4. The combination, with the shoes, bands, straining-chains, and drums, of worm-wheels connected with the drum-shafts, and a worm gearing with said wheels, and means for turning the worm to turn said wheels and revolve the drum-shaft, substantially as set forth.

5. The combination, with the shoes *H*, having separated bearings *18*, of bands encircling the series of shoes and in contact with said bearings and means for straining the bands, substantially as set forth.

6. The combination of the shoes, bands, shafts carrying a series of drums, and chains passing around said drums and connected with the bands, substantially as set forth.

7. The combination, with the cylinder *C*, of the shoes arranged around the cylinder, bands encircling the shoes, chains attached to the bands, a shaft *27*, drums mounted thereon for receiving the chains, and a series

of bearings *30* for the shaft, located between the drums, substantially as described.

8. The combination, with the cylinder, of the shoes surrounding the cylinder, bands encircling the shoes, shafts provided with drums, ears *25* upon said drums, and chains passing over the drums and connecting the ears with the bands, substantially as described.

9. The combination, with the driving-shaft of a machine, of the driving-pulley *42*, idler-pulleys *40 41*, direct and cross belts *45 46*, and two independent sliding loops, a spring for carrying each loop to a position opposite one of the idler-pulleys, and a single shifting-bar provided with a contact-piece arranged to make contact with an attachment of one of the loops when moving in one direction and with an attachment of the other loop when moving in the opposite direction, substantially as set forth.

10. The combination of the loops *43 44*, each secured to a sliding rod, springs bearing upon collars of said rods in opposite directions to hold each loop in its normal position, a shifting-bar provided with a cross-piece, and collars upon the sliding rods, arranged upon opposite sides of the cross-piece, substantially as and for the purpose set forth.

11. The combination, with a single shifting-bar *47* and with belt-shifting loops *43 44* and springs for holding the latter in their normal positions, of contact-pieces carried by the shifting-bar and other contact-pieces carried by rods connected with the loops and arranged upon opposite sides of the contact-piece of the shifting-bar, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE W. MILLER.

Witnesses:

EVA M. LEE,
THOMAS Z. LEE.