

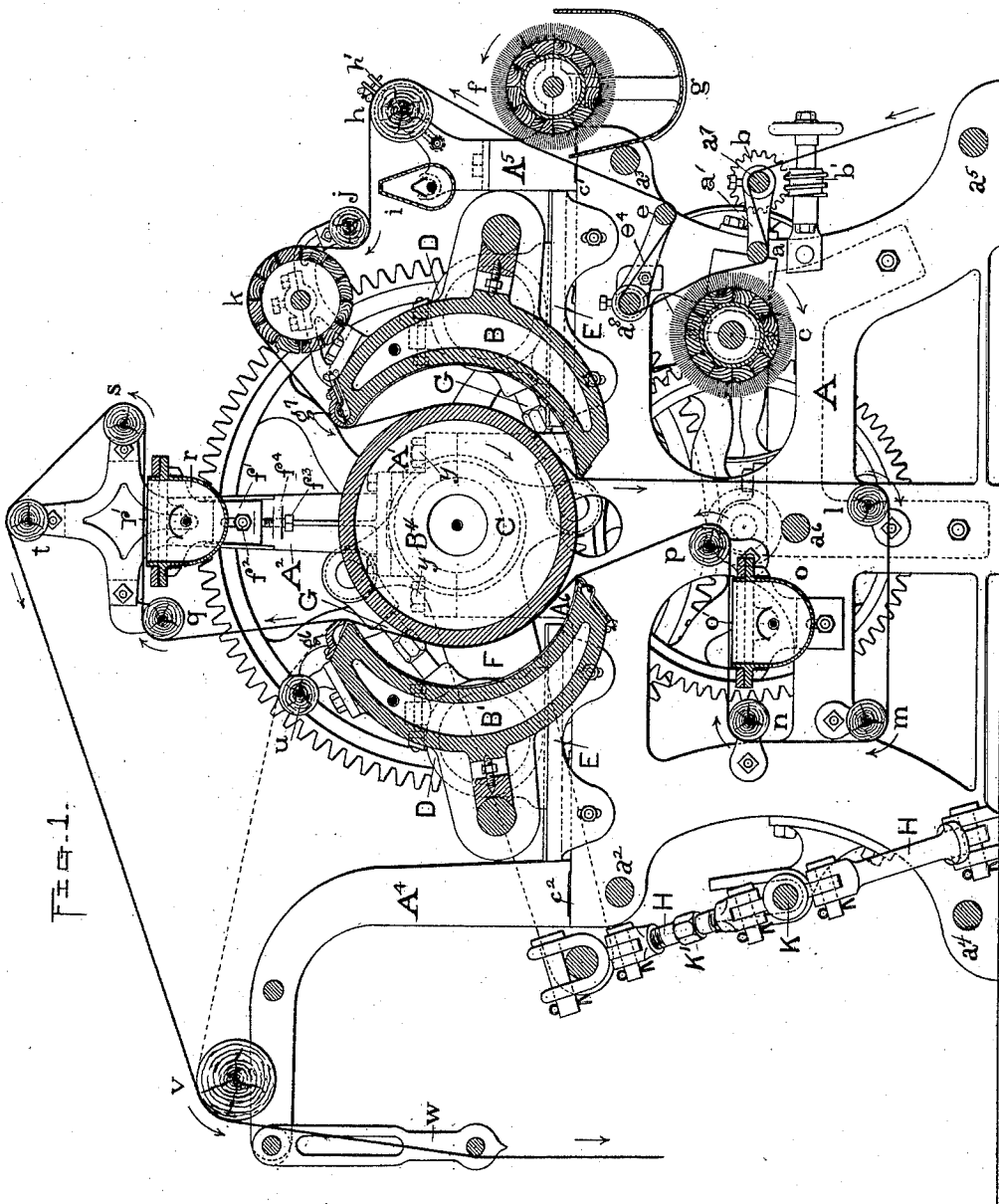
(No Model.)

4 Sheets—Sheet 1.

D. GESSNER.
CLOTH PRESSING MACHINE.

No. 469,372.

Patented Feb. 23, 1892.



Witnesses;
Fred Kueper
Wm. M. Cliff

Inventor;
David Gessner
By *Gifford Brown* his Attys

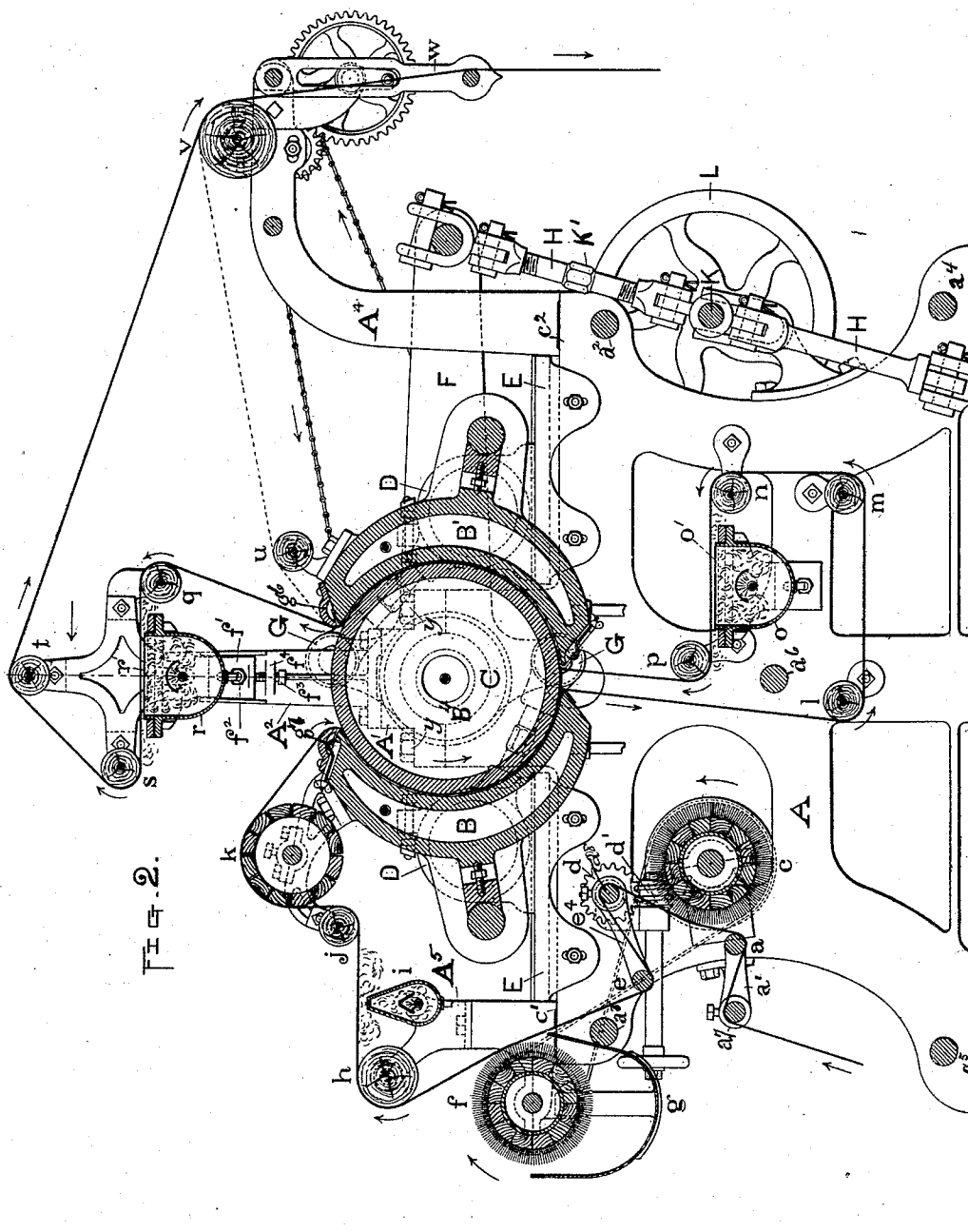
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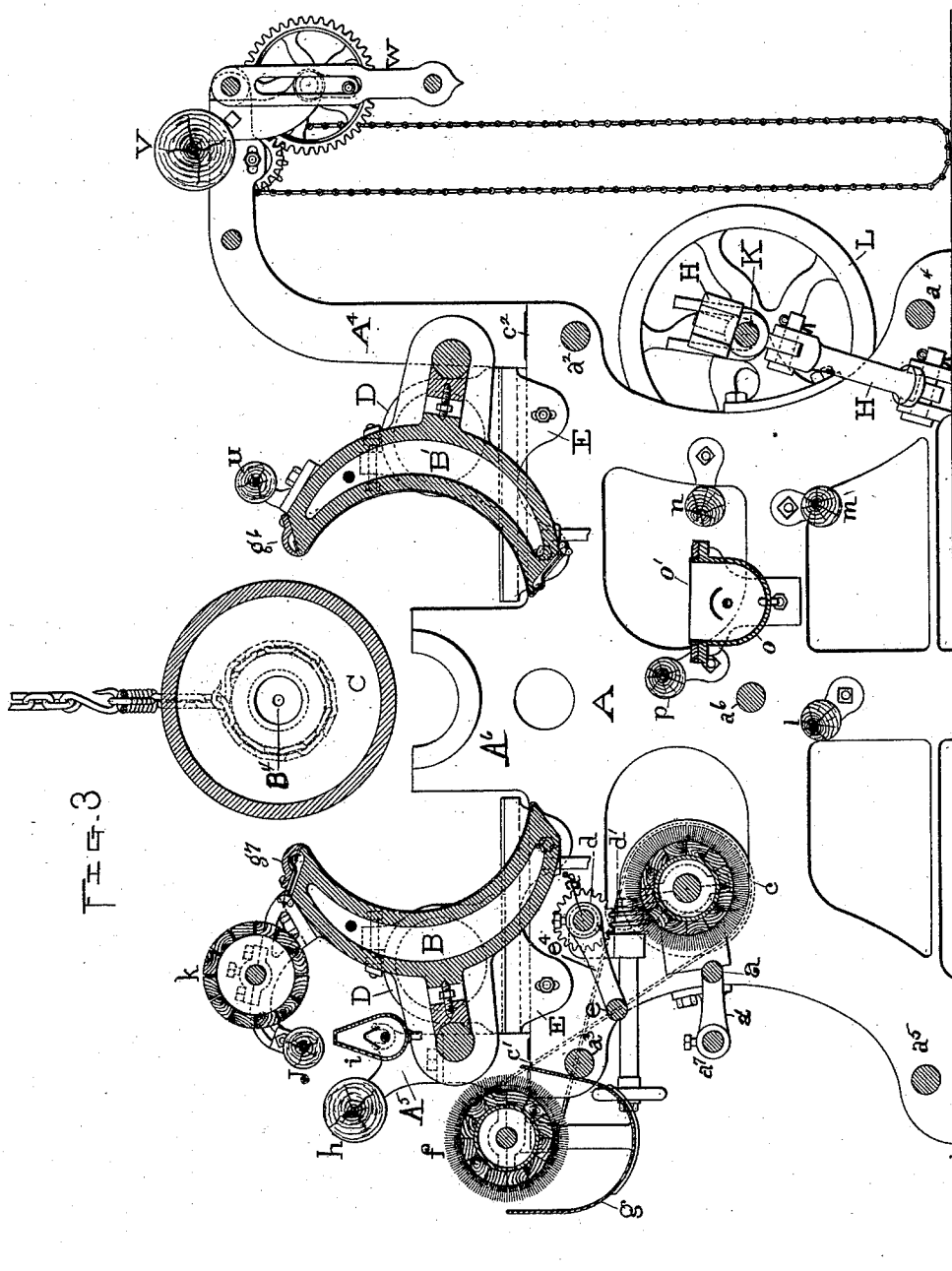
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4 Sheets—Sheet 3.

D. GESSNER.
CLOTH PRESSING MACHINE.

No. 469,372.

Patented Feb. 23, 1892.



Witnesses;
Fred Kemper
Wm M. Cluff

Inventor;
David Gessner

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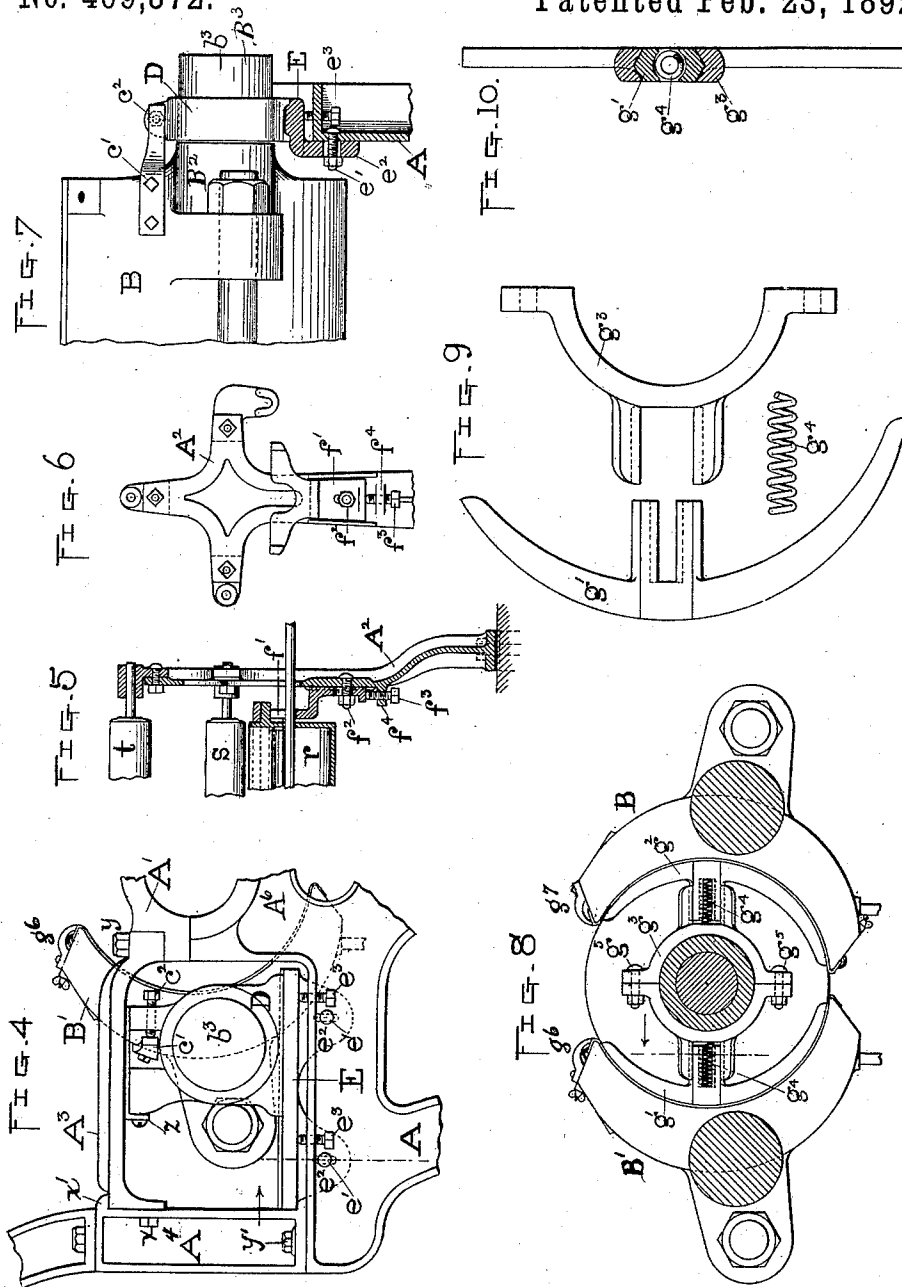
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4 Sheets—Sheet 4.

D. GESSNER.
CLOTH PRESSING MACHINE.

No. 469,372.

Patented Feb. 23, 1892.



Witnesses;

Frederick Kempfer
Wm. Mc. Cliffe

Inventor;

David Gessner

By Gifford & Thorne his Attys

UNITED STATES PATENT OFFICE.

DAVID GESSNER, OF WORCESTER, MASSACHUSETTS.

CLOTH-PRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 469,372, dated February 23, 1892.

Application filed November 16, 1889. Serial No. 330,523. (No model.) Patented in England February 26, 1890, No. 3,093.

To all whom it may concern:

Be it known that I, DAVID GESSNER, of Worcester, in the State of Massachusetts, have invented a new and useful Improvement in Cloth-Pressing Machines, of which the following is a specification.

One of the most important points to be obtained in the construction of a cloth-pressing machine is the avoidance of vibration when running at high speed, combined with great pressure and extensive pressing-surface. To the attainment of this object contribute to a greater or less extent the various features and combinations contained in my present machine, with the result of attaining at high speed an extraordinary degree of stability with an extraordinary pressure, both in extent of surface and power applied.

Another important advantage obtained is to facilitate the setting up of the machine, so that the heavy parts (the cylinder, bed-plates, and carriages) may be placed in position before the lighter parts are mounted, and the workman shall not be impeded or intercepted by the presence of the lighter parts.

Other advantages will appear from the following description.

The machine which I am about to describe I have described in English Letters Patent No. 3,093, dated February 26, 1890.

In the accompanying drawings, Figures 1 and 2 are cross-sections of the machine viewed, respectively, from opposite ends, Fig. 1 showing the pressure released and Fig. 2 showing the pressure being exerted by the bed-plates. Fig. 3 is a cross-section showing the dismemberment of the machine to the extent necessary for the removal of the main cylinder. Figs. 4, 5, 6, 7, 8, 9, and 10 are details.

A is the main frame of the machine, of which there are two—one at each end. Each of these frames contains two horizontal upper surfaces c' and c'' on the same level, separated by a middle upward projection A^6 , upon the top of which rest the bearings of the cylinder. The two end frames are combined by the connection bars or ties a^2 , a^3 , a^4 , a^5 , and a^6 . Slide-rests E E E E are mounted two on each end frame on each side of the upward projection A^6 .

C is the cylinder, the journals of which rest

on top of the upward extension A^6 and are held down by removable caps A' .

DDD are bed-plate carriages constructed so as to rest and move on the said slide-rests.

B and B' are the bed-plates, each of which is connected with and carried by two of the carriages, one supported by each end frame, so that the bed-plates themselves form connections for each pair of carriages between the two end frames. The bed-plates are connected with the carriages by journals, which project out beyond the carriages to form an attachment B^3 for the actuating lever-arms. The connections between each bed-plate and its two carriages are arranged to the rear of the center of gravity of the bed-plate, so that gravity tends to move each bed-plate downward. This is an important feature, especially for the bed-plate at the delivery side of the cylinder, since it opposes the weight of the bed-plate to the upward movement of the cloth in contact with it.

FF are two three-armed levers, one of which is mounted upon each journal of the cylinder C. The long arms of these levers are operated by the toggle-joints H H H H, constructed as shown in Patent No. 387,290, and the short arms are respectively connected with the plates B B' by the adjustable rods G G G G at the points of attachment B^3 . Each bed-plate is thus operated at each end by a short lever-arm, and the two short lever-arms which operate each bed-plate are journaled upon the same shaft, (the cylinder-shaft B^4), extending through the machine from end to end. These two short lever-arms are thus also operated by a toggle-joint mechanism at each end of the machine, and the mechanism (screw-threads) by which the toggle-joint mechanisms are operated is mounted upon the same shaft K, extending from end to end of the machine. This toggle mechanism, the length of which is adjustable by nuts K', finds its rear bearing upon the frame at the bottom of the machine, and the members connecting it with the lever-arms, which are fulcrumed above the level of the slide-rests, extend outside of the connection rod a^2 , by which the end frames of the machine are combined. The pressure of the toggle mechanism upon each bed-plate is transmitted through a lever F,

having a fulcrum above the level of the slide-rests, the long arm of which is connected with the toggle mechanism and the short arm with a member on the carriage of the bed-plate.

5 It will be observed that there is a short lever-arm having pivotal connection with the carriage of each bed-plate and that these two short arms are combined so as to operate upon a single fulcrum and by a single long
10 arm and a single toggle-joint; but I do not wish to be limited to having a single fulcrum or a single long arm. It will also be observed that the fulcrumed short arms by virtue of the connecting-rods are enabled to be so far
15 removed from the two bed-plates as to have a common fulcrum instead of having fulcrums separated from each other, as would result from a direct connection of the short arms with the bed-plate carriages; but I do
20 not wish to limit myself to this construction, the function in either case being to connect or unify the fulcrums of the two arms between the bed-plates, so that the fulcrum strain of the one draws upon a member in antagonism to the other.

It will be seen that the points at which the rods G are connected with each bed-plate at opposite ends are in substantially the same vertical plane with the points at which each
30 bed-plate is connected at opposite ends with its carriages; also, that the carriage slide-rests are extended sufficiently so that they form a substantial bearing on the frame slide-rests to about an equal distance both forward
35 and backward of such vertical plane. They are also extended toward the cylinder sufficiently, so that their bearing-surfaces upon the frame slide-rests extend to or beyond the line of the resultant tangential forces communicated to the bed-plate by the friction of
40 the cloth traveling with the cylinder. In the construction shown in the drawings this resultant will be nearly in the tangent to the arc of the bed-plate midway between its two edges. The connection-rods a^2 a^3 , by which
45 the two end frames are combined, are thus at the ends of the base of the triangle of which the cylinder-shaft is the apex and the sides of which intersect the planes of the frame slide-rests.

On the plane surfaces c' and c^2 of the end frames at each side of the central cylinder-support are mounted brackets or stands A^4 and A^5 , there being corresponding ones at
55 both ends of the machine. These stands are detachable from the frame (see Fig. 4) and are removable from the same and from the cylinder-support and slides. The stands A^5 carry the brush f , roll h , and steamer i , and the
60 stands A^4 carry the delivery-roll V and folder W . The roller h is provided with a clamp h' , by which it is retarded, so as to perform the function of a friction-roll. This construction of the main frame with a middle bearing for the cylinder and a rest on each
65 side thereof for independent stands to carry

on one side of the cylinder the steamer, friction-roll, and brush and on the other side of the cylinder the delivery-roll and folding mechanism is one of the most valuable features of this machine, because in setting up
70 the machine it enables the cylinder to be put in position first, then the carriages and bed-plates to be mounted upon the slides in proper working order before the lighter parts,
75 which I mount upon the stands A^4 and A^5 , are put in position. Thus the movements of the workman and his access to the cylinder, bed-plates, carriages, and slides (the heavy parts of the machine) are not hindered by these
80 lighter portions, as has heretofore been the case.

It will be seen that the stands A^4 and A^5 are on top of the horizontal portion of the frame, and the downward projections of the
85 slides E E , by which they are supported, are arranged on the inside of the frame; also, that the mechanism by which the bed-plates are moved is connected with the bed-plate carriages outside of the vertical plane of the
90 slides; also, that the two end frames of the machine are connected by the girders or connection-rods a^2 and a^3 , which are located immediately below the plane of the slides.

The cloth enters the machine at one side
95 and passes over the bar a^7 at the axes of the arms a' , thence under the bar a , which, as shown in Fig. 1, is mounted upon the extremities of arms a' , whose angle of inclination is adjustable by means of screw-gearing
100 b b' , thence over the bar a^8 at the axes of the vibrating arms e^4 and under the bar e , which is mounted upon the extremities of the vibrating arms e^4 , which vibrating arms are adjustable upon the bar a^8 by means of the set-screw
105 shown. The vibrating arms e^4 when in operation are fixed in position, as shown, upon the bar a^8 , from which they project laterally, and by adjusting them at different angles of inclination to the horizontal the bar e , which is carried
110 by their projecting ends, is raised or lowered. By adjusting the arms a' and e^4 the bars a and e may be made to press the cloth lightly or heavily against the brushes c and f . Beneath the brush f is located the flock-receptacle g . The cloth next passes over the guide-roller h and the steamer i and under the guide-roller j and over the stretcher k to the bed-plate B . The stretcher k is mounted, as shown,
120 upon the bed-plate B . After passing between the bed-plate B and the cylinder the cloth passes away from the cylinder and around the rollers l m n and over the steamer o , which is located within the loop of the cloth, and around the guide-roller p to the bed-plate B' .
125 In thus passing away from the cylinder the cloth is cooled more or less, and by the action of the steamer o loses on the side next the cylinder some of the luster which was received under the pressure of the bed-plate B .
130 After passing under the pressure of the bed-plate B' the cloth passes around the guide-

roller q , over the steamer r , and around the guide-rollers s , t , and v to the folder w , and thence out of the machine. Sometimes I prefer to omit the last steaming, and in such case the cloth passes, as shown in dotted lines, from the bed-plate B' over the roller u to the roller v , mounted upon the upright arm or stand A^4 , and thence as before.

Where the steamer r is employed, it will serve to reduce somewhat the luster produced by the pressure of the bed-plate B' and to improve the cloth. The steamers o and r are so constructed that the steam escapes therefrom through a covering o' and r' of felt or other textile material, which, though not shown in the drawings as actually in contact with the cloth, will be forced up against the cloth by the force of the passing steam, and thus contact will be maintained between the two.

The construction of the carriages D and their combination with the slides E are more particularly shown in Fig. 4. The slide E is there represented as adjustably secured in a vertical direction to the frame A by bolts e' e' , passing through slots in the lugs e^2 of the slide E . By this means the slide E may be raised or lowered and be made level or inclined, as required. This adjustment is still further facilitated by the set-screws e^3 e^3 , forming a threaded connection with the frame and bearing against the under side of the slide E . A section of this arrangement for adjustment is shown in Fig. 7. The carriage D and the slide E form a tongue-and-groove connection, as shown in Figs. 4 and 7.

In Figs. 1, 2, and 3 I have shown the bed B' as being provided only with upwardly-facing slide-rests; but in practice I may provide it also with downwardly-facing slide-rests to prevent any tendency to lift off of the upwardly-facing slides. All of these slides may occupy any convenient position with respect to the support of the bed-plates on the carriages; but I prefer to locate them as shown in Fig. 4.

A^3 in Fig. 4 is the top slide. It is fastened at one end by bolt y , which also holds down the cap A' of the cylinder-bearing, while the opposite end of A^3 rests against a projection or nose x' of the upright stand A^4 , to which it is further fastened by the bolt x . The upright stand A^4 , which is made of two parts, is connected to the main frame by the bolt y' .

z is a key planed on both sides and fastened to the top of the carriage D and is used merely as a means of adjustment for fitting the carriage D conveniently between the top slide A^3 and lower slide E . The journal b^3 of the bed-plate has its bearings in the carriage D , so as to permit of the oscillation of each bed-plate on its two carriages. To limit the extent of this oscillation a stop c' is secured to the bed-plate, as shown in Figs. 4 and 7, and bears against the point of a set-screw c^2 , threaded in a lug projecting from the carriage D . Since the center of gravity of the bed-plate is in such position as to give it a tendency to fall forward at the top toward

the cylinder, the adjustments of the set-screws c^2 will determine the position which the bed-plate occupies on its bearings.

The arrangement for supporting the steamer r is more particularly shown in Figs. 5 and 6, which represent the mechanism employed at each end of the steamer. A^2 is a supplemental frame mounted upon the cap A' and which is of the form shown in Fig. 6, adapted to contain the journals of the rollers q s t . f' is a slide adapted to support one end of the steamer and adjustably secured in a vertical direction to the supplemental frame A^2 by the bolt f^2 , passing through a slot in the slide f' . The slide rests upon the point of a set-screw f^3 , which is threaded in a lug or seat f^4 on the supplemental frame. By this means the steamer r may be set up to the cloth to any extent desired.

In Figs. 8, 9, and 10 is illustrated more particularly the mechanism by which the edges of the sheet-metal facings for the bed-plates are prevented from springing up away from the surfaces of the bed-plates. This consists of two pieces g' g^2 with their faces curved to correspond with the curvature of the sheet-metal facing when in contact with the bed-plate. These pieces form a radially-sliding connection with the collar g^3 , mounted concentrically with the journal of the cylinder. The curved pieces g' g^2 are forced outward with a yielding pressure from the collar g^3 by the coil-springs g^4 . The collar g^3 is formed in two parts, connected together, as shown in Fig. 8, by the bolts g^5 g^5 . g^6 and g^7 are clamps secured, respectively, to the receiving and delivery end of the bed-plates. Each of these projects from below the path of the cloth over the edge of the bed-plate and overlaps the edge of the sheet-metal facing or jacket. The cloth as it is received and as it is delivered passes in contact, as illustrated, with the upper curved surfaces of these two clamps and thence onto the surface of the sheet metal, and these clamps, therefore, both at the receiving and delivery end, serve to cover up the joint or crevice between the sheet metal and the bed-plate, so that no flocks which are stripped from the cloth can find their way in between the sheet metal and the bed-plate.

One of the great advantages afforded by this machine is the facility which it affords for the removal of the cylinder and the obtaining of access to the surfaces of the cylinder and bed-plates. The means of accomplishing this is illustrated in Fig. 3, and it consists, principally, in disconnecting the upper ends of the toggle-joints from the long arms of the levers F , then removing the caps A' , supplemental frames A^2 , top slide A^3 , and the levers F , thus disconnecting the two bed-plates and enabling them to be slid back to the extremities of the slides E . The bearing-surfaces of the cylinder and bed-plates are then readily accessible, and the cylinder may be lifted bodily out of the machine without

further disturbing the other parts, as indicated in Fig. 3.

The power applied to the single hand-wheel L is distributed to each end of the two bed-plates, each of which encompasses nearly a semi-circumference of the cylinder. This power is multiplied, first, by the screw surfaces on the rod K, which also distributes it to the toggle mechanism at opposite ends of the machine; second, by the toggle mechanism; third, by the leverage of the long over the short lever-arms. The power-imparting mechanism and pressing surfaces produce a great tendency to vibration, which must be overcome to render them effective, and to this end they are combined with the tongue-and-groove slide-rests. The carriages, the position occupied by the bed-plates relatively to the carriages and slide-rests, and the position of the slide-rests relatively to each other, to the main frame, to the cylinder and its bearings, and to the connection-bars between the end frames, all of which features, as in fact the construction and disposition of parts throughout the whole machine, co-operate and combine with the pressing-surfaces and power-imparting mechanism to produce the all-important result of a non-vibrative and readily applied and released high pressure.

I claim—

1. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, carriage slide-rests, stands separate from the frames and mounted thereon on each side of the upward projections, mechanism mounted upon one pair of said stands for conducting the cloth after the pressing operation, and mechanism mounted upon the other pair of said stands for conducting the cloth in advance of the pressing operation, whereby the said conducting mechanisms are disposed on removable stands behind the bed-plates, substantially as described.

2. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, an upwardly-facing slide-rest for each carriage, and downwardly-facing slide-rests for the carriages on the delivery side of the cylinder, substantially as described.

3. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, and carriage slide-rests, said carriages and carriage slide-rests having tongue-and-groove connections, substantially as described.

4. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, carriage slide-rests,

a connection between each bed-plate and its carriages, lever-arms by which said carriages are reciprocated, and connections between said lever-arms and said carriages, the points of connection with each carriage of the bed-plate and the lever-arm being substantially in the same vertical plane, substantially as described.

5. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, carriage slide-rests, and a connection between each bed-plate and each of its carriages, arranged substantially in a vertical plane passed midway between the extremities of the carriage-bearing surface on the slide-rest, substantially as described.

6. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, carriage slide-rests, lever-arms whereby said carriages are reciprocated, and connections between said lever-arms and the carriages, connected with said carriages substantially in a vertical plane passed midway between the two extremities of the bearing-surface of each carriage on its slide-rest, substantially as described.

7. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, carriage slide-rests, and connections between the bed-plates and carriages, arranged at the rear of the center of gravity of the bed-plates, substantially as described.

8. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, and carriage slide-rests, the bearing-surfaces of said carriages upon the carriage slide-rests being extended forward substantially to or beyond the line of the resultant tangential forces communicated to the bed-plate by the friction of the cloth traveling with the cylinder, substantially as described.

9. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, carriage slide-rests, connections between the bed-plates and the carriages, arranged to the rear of the center of gravity of the bed-plates, and an adjustable stop on the carriage, whereby the overhang of the bed-plate is supported, substantially as described.

10. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side thereof, a carriage at each end of each bed-plate, a slide-rest for each carriage, the lever

arms for reciprocating said carriages, fulcrums for said lever-arms, means whereby the fulcrums at opposite ends of the machine are connected, toggle-joint mechanism for operating said lever-arms, and a shaft whereby the mechanism for operating the toggle-joint mechanism at opposite ends of the machine is carried, substantially as described.

11. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, two end frames each provided with an upward projection for the cylinder-bearings, carriages for each bed-plate, carriage slide-rests mounted upon said end frames below the level of the cylinder-bearings, and two connection-rods extending between said end frames below the level of said slides, the cylinder-shaft being at the apex and the two connecting-rods being at the base points of a triangle the side lines of which are intersected by the plane of the slide-rests, substantially as described.

12. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, two end frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, carriage slide-rests, connection-rods between the two end frames, lever mechanism for reciprocating said carriages, extending outside of said connection-rods, and toggle mechanism connected with the frame below said connection-rods, whereby said lever mechanism is operated, substantially as described.

13. In a cloth-pressing machine, in combination, a cylinder, a bed-plate on each side of the cylinder, frames provided with upward projections for the cylinder-bearings, carriages for each bed-plate, carriage slide-rests, lever mechanism of the first order, whereby said carriages are reciprocated, and toggle mechanism whereby said lever mechanism is operated, substantially as described.

14. In a cloth-pressing machine, in combination, the cylinder, the bed-plates arranged on each side thereof, two end frames having upward projections for the bearings of the cylinder, bed-plate carriages, carriage slide-rests, lever mechanisms having their fulcrums connected with the end frames respectively, toggle mechanism whereby said lever mechanisms are operated, a shaft extending from one end frame to the other, and toggle-operating mechanism mounted upon said shaft, whereby the mechanisms at opposite ends of the machines are moved in unison, substantially as described.

15. In a cloth-pressing machine, in combination, a cylinder, the bed-plates arranged on each side thereof, the frames having upward extensions for the cylinder-bearings, bed-plate carriages, carriage slide-rests, lever mechanism whereby the carriages are reciprocated, toggle mechanism whereby the lever mechanism is operated, and means of adjustment connected with the lever mechanism,

whereby the position of the carriages on the carriage slide-rests may be varied relatively to the throw of the toggle mechanism, substantially as described.

16. In a cloth-pressing machine, in combination, the cylinder, a bed-plate arranged on each side thereof, frames having upward extensions for the bearings of the cylinder, carriages for the bed-plates, carriage slide-rests, a lever mechanism fulcrumed above the level of the slide-rests, whereby the beds are reciprocated, and a toggle mechanism having its bearing on the frame below the level of the slide-rests, whereby the said lever mechanism is operated, substantially as described.

17. In combination, the cylinder, a bed-plate, the frame of the machine provided with bearings for the cylinder, the slides for the bed-plate, carriages located on said slides, and means of vertical adjustment between said slides and the frame, substantially as described.

18. In combination, the cylinder and the two co-operating bed-plates, the guides by which the cloth is conducted away from the cylinder between its pressures by said bed-plates, a moistener by which the cloth is treated between the pressures of the bed-plates, and a steamer by which the cloth is treated after passing from the pressure of the second bed-plate, substantially as described.

19. In a cloth-pressing machine, in combination, the frame, the bed-plates, a slide separate from the frame at each end of the bed-plate, and separate means of vertical adjustment at opposite ends of the slides, whereby the inclination and elevation of the same may be adjusted, substantially as described.

20. In a cloth-pressing machine, in combination, the frame, the bed-plates having journals, a carriage for each journal, a cylinder, a slide separate from the frame at each end of the bed-plate, means of vertical adjustment for the slides, and a stop whereby the movement of the bed-plate on its carriages is stayed, substantially as described.

21. In a cloth-pressing machine, in combination, the cylinder, a bed-plate, the sheet-metal facing of said bed-plate, the piece g' , bearing against said facing, means whereby it is thrust outward, the collar g^3 , made in two parts, and means for connecting said two parts together, substantially as described.

22. In a cloth-pressing machine, in combination, a cylinder, two bed-plates, a sheet-metal facing for each bed-plate, the pieces g' , g^2 , bearing one against each facing, means whereby they are thrust outward, and the collar g^3 , made in two parts and combining said two parts together, substantially as described.

23. In a cloth-pressing machine, in combination, a cylinder, two bed-plates, a moistener arranged along the path of the cloth as it passes from one bed-plate to the other on the side of the cloth presented to the cylinder, and a moistener arranged along the path of the

cloth as it approaches the first bed-plate on the side of the cloth to be presented to the bed-plate, substantially as described.

24. In a cloth-pressing machine, in combination, a cylinder, two bed-plates, a moistener arranged along the path of the cloth as it passes from one bed-plate to the other on the side of the cloth presented to the cylinder, and

a moistener arranged along the path of the cloth after it leaves the last bed-plate on the side of the cloth presented to the cylinder, substantially as described. 10

DAVID GESSNER.

Witnesses:

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