

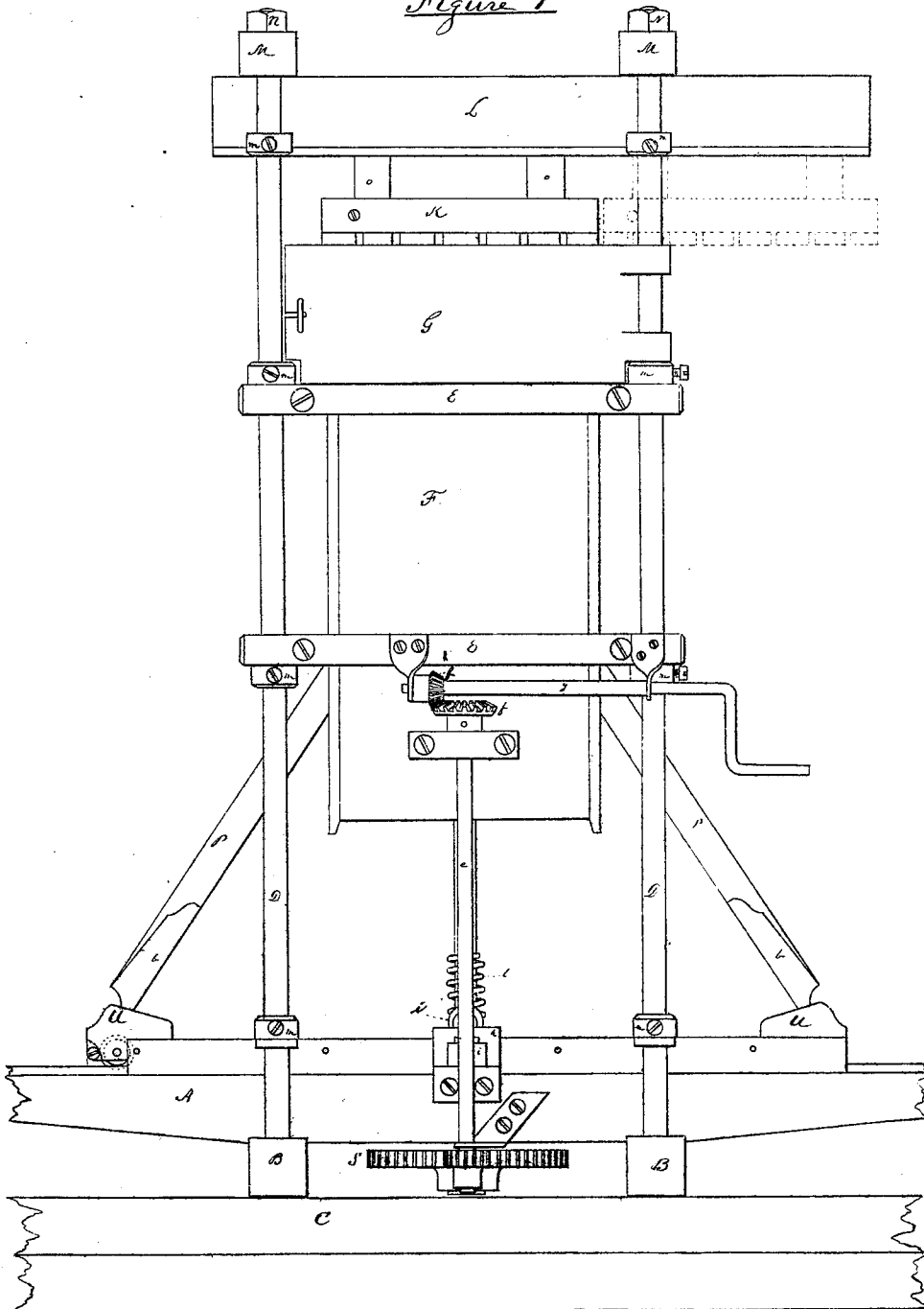
CHARLES H. SCHNELLE.

Improvement in Baling-Presses.

No. 126,415.

Patented May 7, 1872.

Figure 1



*William Standish
More Appearally Witnesses*

*Charles H. Schnell
Inventor*

CHARLES H. SCHNELLE.

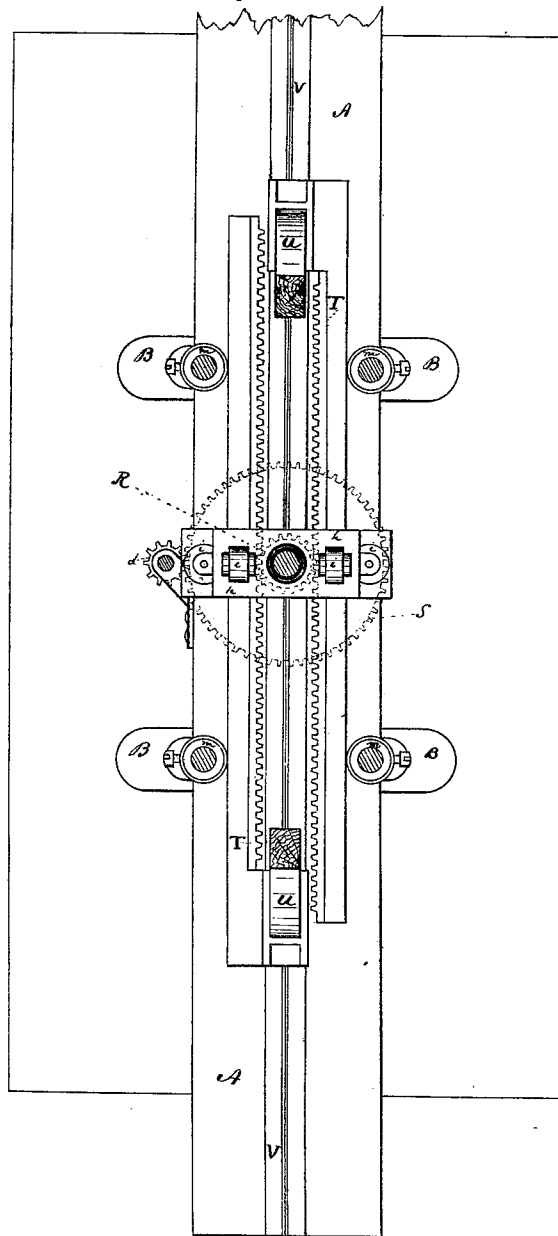
5 Sheets--Sheet 2.

Improvement in Baling-Presses.

No. 126,415.

Figure 2

Patented May 7, 1872.



William Standish }
Wm. Appinwall } Witnesses

Charles H. Schnell
Inventor

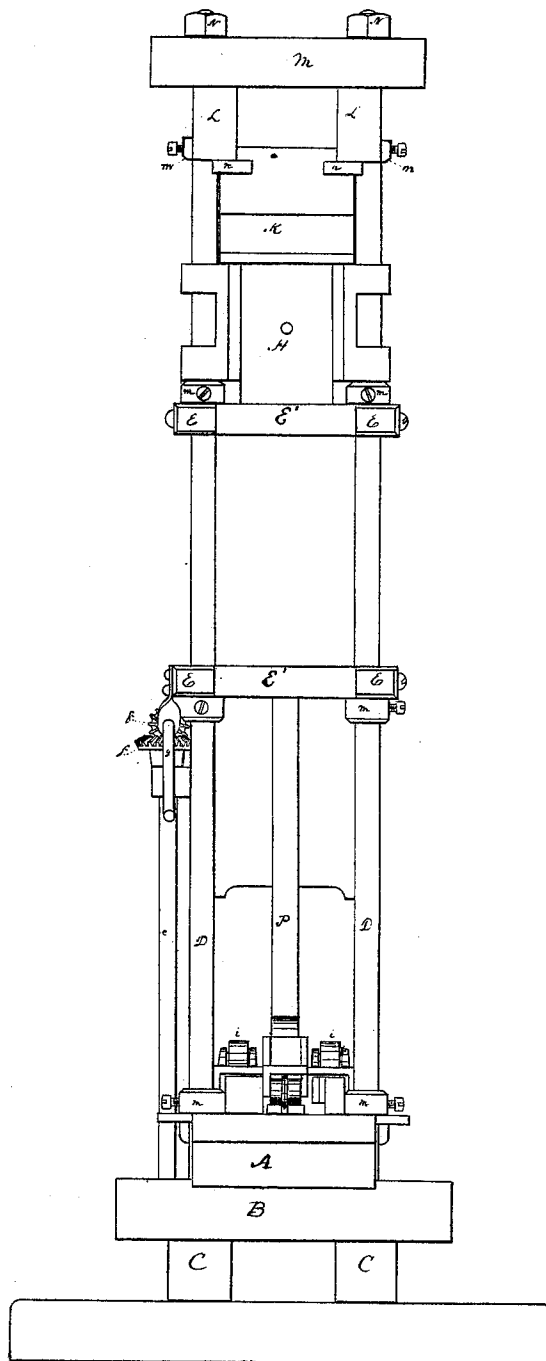
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Figure 3



William Standish }
Wm. Aspinwall } Witnesses

Charles H. Schnell
Inventor

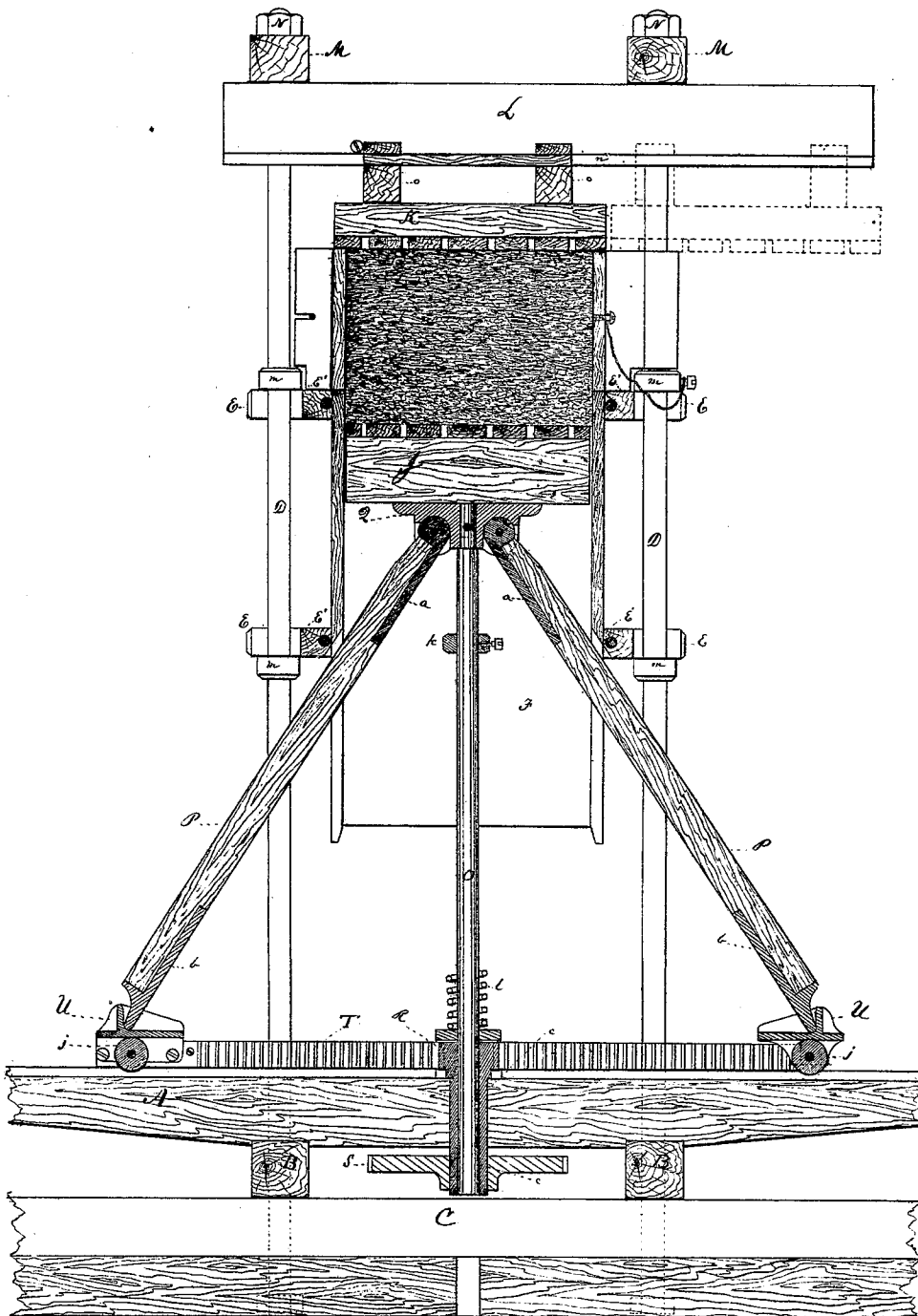
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Figure 4



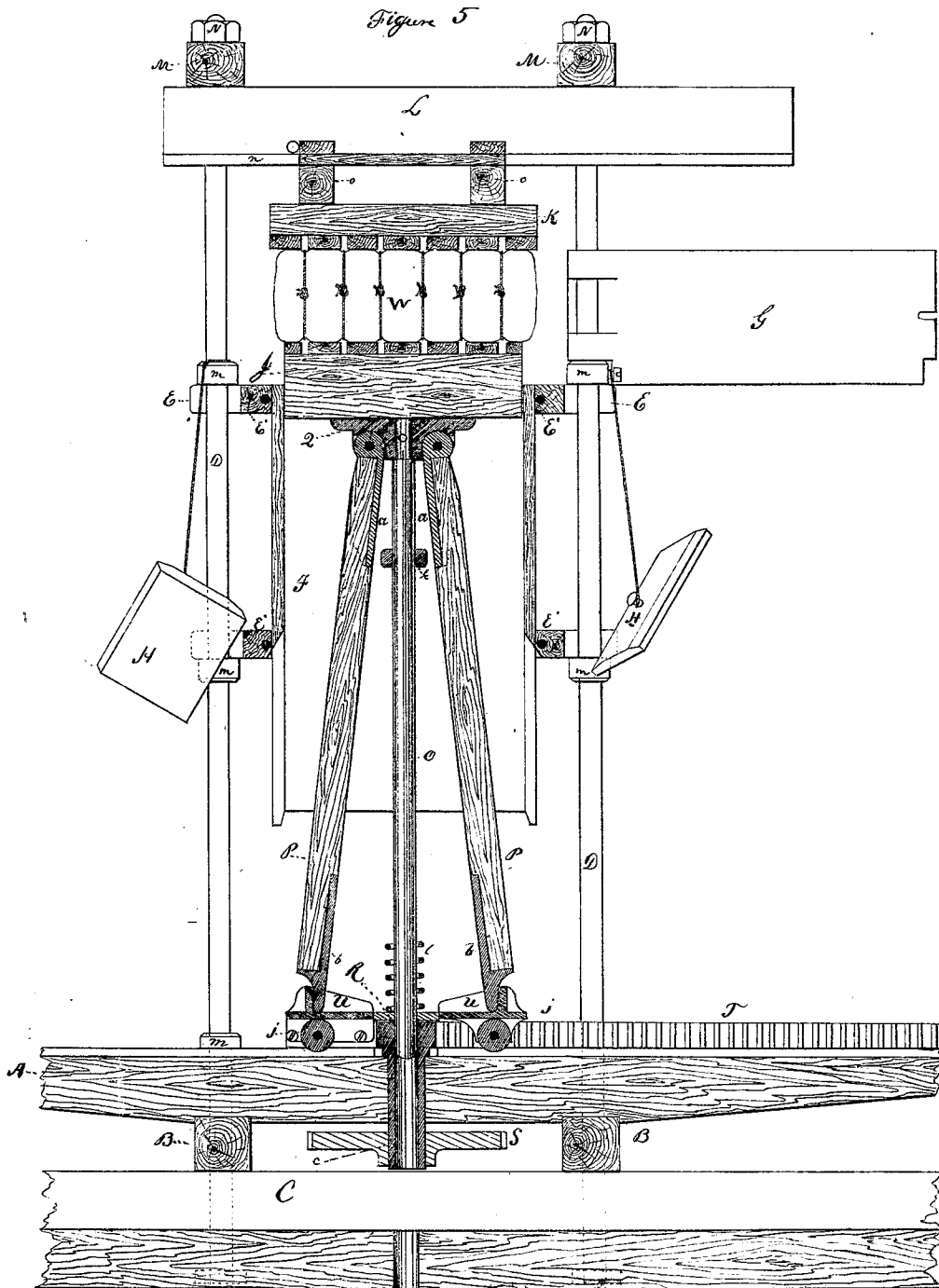
William Handish }
Wm. Aspinwall } Witnesses

Photo H. J. Schmitt
Inventor

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William Standish
Wm. Aspinwall } Witnesses

Charles H. Schnell
Inventor

UNITED STATES PATENT OFFICE.

CHARLES H. SCHNELLE, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN BALING-PRESSES.

Specification forming part of Letters Patent No. 126,415, dated May 7, 1872.

I, CHARLES H. SCHNELLE, of St. Louis, in the county of St. Louis and State of Missouri, have invented certain Improvements in Bale-Presses, of which the following is a specification:

Nature and Object of the Invention.

My invention relates to those bale-presses where the force is applied through the medium of levers operating like toggle-bars to the under side of the object, and bears upward against a platform or follower. The first part of my invention relates to the mode of moving and adjusting said levers by means of a pinion placed in the center of the bed of the apparatus, acting upon two racks, one on each side, and moving them in opposite directions, horizontally, and in a line with the longitudinal direction of said bed. These racks are fixed upon stiffening-timbers and guided by rollers and ways, and on the inner side of the outer end of each is firmly bolted a truck or wheeled shoe, which runs in a way traversing the middle line of the bed. The outer or lower ends of the levers are stepped into these shoes. Upon applying the power to the above-named pinion, the racks are moved in opposite directions and the levers so moved as to raise or depress the inner or upper ends at will, always moving simultaneously in the same perpendicular plane. The second part of my invention relates to the employment of an upright piston bar or standard, provided with an adjustable collar for holding it at any height, and the upper end of which is inserted in the center of the head-block, between the heads of said levers, the lower end passing through the said pinion and the center of said bed and being of such length that when the levers are raised to their extreme height the lower end of the piston-bar shall not escape from the pinion. By this arrangement the piston-bar will always hold the head-block in its horizontal position and prevent the derangement that would otherwise attend any impediment to the equal pressure of the levers. The third part of my invention relates to the mode of supporting the receiving-box, platforms, and other parts of the apparatus for holding the material while the pressure is applied. This part of the apparatus is supported upon four standards resting upon and fastened to the foundation form-

ing the corners of a parallelogram, fastened together at the top, upon which the frame of this part of the apparatus is so fastened as to be moved up and down to suit convenience, and held in place by the fourth part of my invention, which consists in the movable collars placed upon said four standards, arranged with set-screws, by which said receiving-box and its appliances are adjusted and held in position. An adjustable collar is also placed upon said piston-bar, by which the extent of its downward movement is regulated. The fifth part of my invention relates to the mode of constructing and swinging the doors which inclose the upper section of the receiving-box or space between the upper and lower followers, which contains the bale when the pressing is completed. One of the advantages of this part of my invention is that when the pressure is completed and the bale ready for tying all sides of the section may be opened at once and the effect of the unequal springing of the bale avoided; also, the bale is thus exposed on all sides to the workmen in tying or moving it. The sixth part of my invention relates to the mode of constructing the receiving-box and its frame, which are so made that they may be taken apart and removed from the standards, leaving the press in condition to operate upon materials not requiring a receiving-box.

Description of the Accompanying Drawing.

Figure 1 represents a front view of the press. Fig. 2 represents a horizontal section of the press on a line with the top of the shoes. Fig. 3 represents an end view. Fig. 4 represents a longitudinal vertical section with the levers partly elevated. Fig. 5 represents a longitudinal vertical section with the levers fully elevated and the bale in place and fastened.

A is the bed of the press, upon which the racks and trucks are constructed, and which is supported upon B B, which are cross-beams supporting A, through which I pass and secure the upright standards D D D D. C C are sills upon which the cross-beams B B rest. I place them so far out as to expose the nuts or other devices by which I fasten to the said cross-beams the lower ends of the standards. D D D D are four upright standards made fast to the foundation at points forming the four

corners of a parallelogram inclosing a space, and said standards being of a length sufficient to permit the operations of the apparatus constructed to work upon them and within the said space, as hereinafter described. These standards should be iron bars capable of supporting the weight of said apparatus and taking the tensile strain of the pressing-power. They should be so formed as to permit the apparatus comprising the receiving-box and its frame and appurtenances to be moved up and down upon them and fixed at any desired position. E E E E are the longitudinal timbers of the frame of the receiving-box, which is constructed within them. The standards D D D D pass through these, or are in some other way coupled to them, so as to permit their being raised or lowered thereon. E' E' E' E' are the end timbers of said frame, and so coupled by bolts and screws or other means to the last-named timbers that said frame may be readily taken apart, and, with the receiving-box F, be removed from said standards. F is the receiving-box, constructed within and upon said frame, in which the material to be pressed is deposited. This is constructed in the usual manner, care being taken that the inner surface presents no obstacle to the free movement of the material and the follower as it is pressed upward. G G are doors hung at one end upon said standards, at corners opposite to each other, and directly over and in line with the sides of box F. These, with the end pieces H H, when closed, and the upper and lower followers J and K, form an upper or bale section of the receiving-box, which contains the material when pressed ready to be tied into a bale. H H are movable end pieces, suitably adjusted to fit within and be held in place by cleats or other devices on said doors, in a line with the ends of box F. I is a hook contrived to hold both doors at once. Any device for fastening will answer, so that it will hold both doors, and, when released, will let the doors G G and the end pieces H H fall apart at the same time. J is a platform or follower fitting the inside of said box F and made to bear upward the material placed therein to be pressed. K is a platform or follower, against which the material is pressed, placed directly over the doors G G and the box F, and so placed upon its supports as to be easily moved aside from said position. Both followers, J and K, have their inner surfaces scored with channels crosswise, of proper depth and at proper distances from each other, to admit of passing the fastening-bands over and under the bale while the same is held between the followers. L L are timbers fixed upon standards D D D D, against which the follower K bears and upon which are placed the supports that sustain said follower and the ways upon which it slides. M M are cross-pieces, also fixed upon said standards, placed over and across said timbers L L, and held in place upon said standards by any suitable means, such as N N, which are nuts securing said cross-beams M M upon said stand-

ards and resisting the upward pressure when the operation of pressing is in progress, said timbers L L and M M being made, like the frame E E, so as to be placed at any point on said standards and there held. O is an upright piston-bar or standard inserted and fastened at its upper end in the center of the head-block Q and extending perpendicularly downward through the center of the pinion-wheel R, the large wheel S, and the bed A, into a well or space below, if the extent of the motion of the pressing apparatus requires such a provision. In this kind of press one of the difficulties to provide against is the liability of the follower J to lose its exact horizontal position and thus bind and pinch when being forced upward. My piston-bar is intended to prevent this, and it should be made of iron and of such dimensions and so inserted and fastened in the head-block that it will hold it firmly and stiffly in its horizontal position, in case either of the levers should break or become inoperative. By its use I am able to dispense with all friction-rollers or other kindred devices usually employed upon the follower to prevent its binding. The piston-bar is fastened into the head-block by a pin or other suitable means. P P are the levers in their position, operating like toggle-bars. They should be of wood and of such dimensions and strength as to suit the work required to be done. The upper ends of the levers are shod with hinge-pieces *a a*, and the lower ends with heel-pieces *b b* made of metal and fitted in form to their respective positions hereinafter described, and each extending over the ends and some distance on the under part and two sides of the levers, to give support and strength. Q is the head-block, fastened at the center of the under side of the platform J, against which the pressure is applied by means of the levers P P. This should be of good metal, and is best made in one casting. Through the center is a hole to receive the end of the piston-bar O. At each side of the center, and far enough to secure the requisite strength, are made sockets in which the upper hinge-pieces of the levers work. Their sides are in right lines, but the bottoms are made in the segments of a circle and admit the free sweep of the levers in a perpendicular plane. This form of socket and hinge-piece makes a firm working joint.

R is a pinion-wheel on a hollow axle or journal, *c*, which extends downward and forms the journal of the large spur-wheel S. Through the center of both of these the piston-bar O passes. This pinion gears into the racks T T, and carries them in opposite directions when it is set in motion. Its dimensions must be proportioned to the width of the bed and the power to be exerted. S is a large gear-wheel, to which the power is applied in any convenient manner. As illustrated by my model and drawing, the power is applied by means of a pinion-wheel, *d*, and an upright shaft, *e*, and a set of bevel-gears, *f f*, and a crank-shaft, *g*; but the power may be applied to wheel S in

any manner; and, indeed, as the purpose is to move the racks T T by means of pinion R, it is wholly unimportant how that pinion is set in motion. In place of wheel S a windlass or capstan may be constructed that shall move said pinion, or it may be driven in any other convenient manner. T T are two racks, into which pinion R gears. They are of metal, and made fast upon timbers to give them sufficient strength and stiffness, and at the same time keep them light. The racks are moved along upon each side of the bed A by means of pinion-wheel R. Ways should be prepared for the racks to move in, or said bed should be so constructed that they may be unimpeded in their passage backward and forward. These racks with their timbers are kept in place in their lines of motion by the guide-strap or block *h* bolted to the bed A and the rollers *iii i*. U is a shoe bolted onto the inner side of each of these racks and timbers at opposite ends, which projects over the center line of the bed, and rests upon the wheel *j*. This may be made to rest upon two or even more wheels, according to the use required of it. The upper side of this shoe is made like a section of a box without the top and one end, or in any other form that conveniently admits the foot of one of the levers P to be stepped into and then held while the pressing is in progress. These shoes must each project so far inward and over the middle line of the bed that the levers P P, when stepped into them, shall be in a line with each other and with the piston-bar O, and that said levers shall exert their force in one perpendicular plane. V is a bar or way extending along the center line of the bed A, save where it is interrupted by the pinion R. This is formed for the wheels *j j* to run in, and must be capable of bearing the pressure of the levers, and so constructed as to guide the wheels *j j* as they are drawn along by the movements of the racks T T. As I have shown this in my model it is a grooved bar; but the form is not important, so it be capable of bearing the pressure of the levers and guiding the wheels. W is a bale of cotton as compressed and tied. *a a* are metal hinge-pieces placed on the inner sides and upper ends of the levers P P, rounded at the ends, so as to fit and work in the sockets before named in the head-block Q. *b b* are metal heel-pieces fixed upon the inner sides and lower ends of levers P P, and adapted substantially in form to the places in the shoes U, in which they are to be stepped, and by which they are held, as, in the progress of pressing, these ends of the levers are drawn together. *c* is the hollow axle or arbor, bearing the large and small pinion-wheels S and R, and through which the piston-bar O passes. *d* is a small pinion-wheel, by which, in my model and drawing, the power is communicated to the large wheel S from an upright shaft. *e* is said upright shaft, which, on its upper end, bears and is moved by one of a set of bevel-gears. *f f* are said gears, one of which is fixed upon and

bears the upright shaft *e*, and the other is fixed upon and carried by the horizontal shaft *g*. *g* is a horizontal crank-shaft fixed upon the frame E, by which motion is given to the mechanism. *h* is a strop or block bolted on each end to the bed A at the center, and passing over the same, and over the racks T T. Through the middle of this the piston-bar O passes. In this, on the top and the ends each side of the said shaft, and directly over and at the outside of each of said racks, are fixed, upon axles in said strap, friction-wheels *iii i*, which guide said racks and keep them in direct lines upon said bed, and parallel with the center way, and in gear with said pinion-wheel R. *j j* are the wheels or rollers bearing the shoes U U, and made to run in said center way or bar V. *k* is a movable collar on the piston-bar or standard O, which, fixed thereon at any point by a set-screw or other device, limits its descent by striking upon any resisting object fixed above the bed A. I prefer to receive it upon a spiral spring around said piston-bar, and resting at its lower end upon the strap *h*. *l* is that spiral spring. *m m m m* are movable collars on the upright standards D, which are fixed thereon by set-screws or other means at any point. Upon and against these the frame E is supported and held in position, and may be raised or lowered at will to accommodate the work required. *n n* are metal or wooden straps fastened upon the upper timbers L L, and projecting inward, so as to form ledges or ways, on which the upper follower or platform is borne as it is moved to and from its position over the receiving-box. These straps may be provided with rollers to relieve friction, or other devices for that purpose may be placed upon said follower. The means are unimportant, so that the follower be made easily to move to and fro at the will of the operator. *o o* are blocks fastened upon the follower K, so constructed as to form on each end grooves that embrace both sides of the straps *n n*, the lower shoulders bearing against the under side of said straps and of the timbers L L, and bearing the upward pressure upon said follower; and the upper shoulder resting upon the upper side of said straps and supporting the weight of said follower.

Mode of Operation.

When the apparatus is in position, and the material placed in the receiving-box ready to be pressed, and the crank-shaft set in motion, or in any way the pinion-wheel R is moved in the right direction, the racks T T are drawn in opposite directions, so as to bring shoes U U along the center-bar or way, and toward the middle of the bed and the piston-bar or standard O. The levers P P, being in place—to wit, their upper ends hinged in the sockets of the head-block Q, and their lower ends stepped in the shoes U U—are borne thereby in a right line toward said piston-bar, while their upper ends are borne upward against

and carrying the head-block Q, the levers all the time maintaining the same perpendicular plane with each other and piston-bar O. The head-block Q carries the follower J, which, moving in the box F, presses the material contained therein upward against the upper follower K, and into the upper section of said box, formed, as before named, by the doors G G and the end pieces H H. When the compression is effected, doors G G are opened, and the bale tied or bound by passing the binding-straps through the channels heretofore described in the upper and lower followers, and fastened in the usual manner. When the bale is thus completed the lower follower is lowered by reversing the motion of the wheels and racks sufficiently to relieve the pressure against the upper follower, which is then moved on its ways from over the receiving-box, the bale removed, and the apparatus is ready, when the lower follower is lowered until the collar K strikes upon the spiral spring l to receive the materials for another bale.

I contemplate the use of pairs of levers of different lengths in my press, if the raising or lowering the apparatus on the standards makes a change desirable.

Claims.

I claim as my invention in a press—

1. The combination of the rollers or trucks *j j* with the shoes U U attached to the racks T T, as and for the purpose herein described.
2. The combination of the pinion-wheel R, the racks T T, and shoes U U, for the purpose of moving the levers P P in one vertical

plane perpendicular to the bed A and the follower J, substantially as set forth.

3. The combination, in a press, of the piston-bar O with the adjustable collar K, as and for the purposes described.

4. The combination of the receiving-box of the press with the standards D and the adjustable sliding collars *m* for retaining the box and its contents at any height on said standards, substantially as shown and described.

5. The frame of the receiving-box F, constructed substantially as shown, so that it may be raised or lowered on the standards D, or wholly removed therefrom, as described.

6. The combination of the follower J and platen K with the timbers L and M, constructed substantially as described, so that they may be used with or without the receiving-box and frame, as set forth.

7. The combination of the doors G, the standards D, and collars *m*, constructed and arranged substantially as shown, so that said doors may be raised or lowered and fixed at any desired point upon said standards, as herein described.

8. The press, herein described, consisting of the wheel R, racks T T, shoes U U, way V, standards D, piston-bar O, follower J, movable platen K, and the adjustable frame and receiving-box, combined, substantially as and for the purposes described.

CHAS. H. SCHNELLE.

Witnesses:

WM. ASPINWALL,
WILLIAM STANDISH.