

S. J. WEBB.

PRESS.

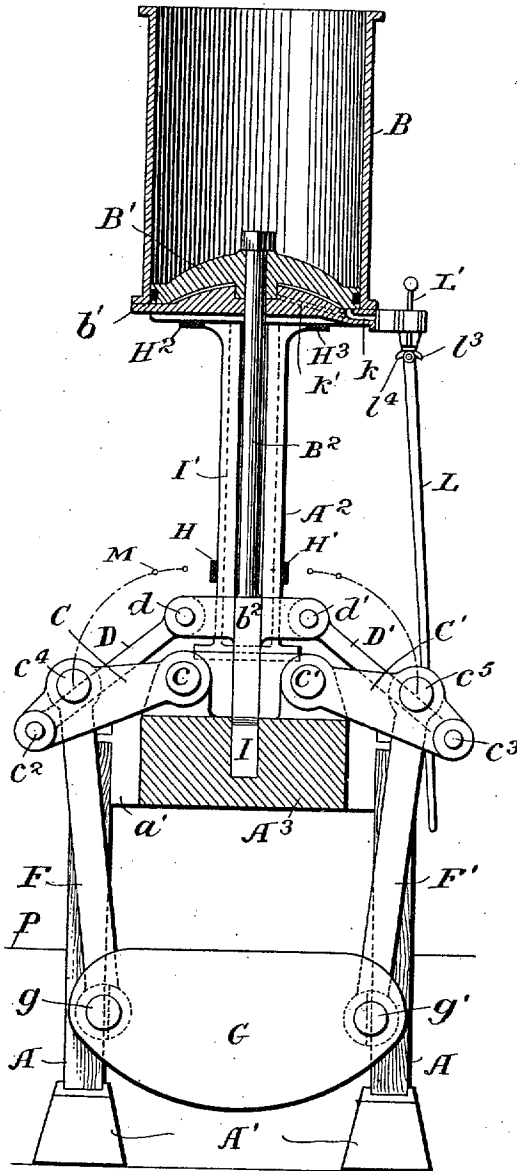
APPLICATION FILED JUNE 13, 1899.

966,067.

Patented Aug. 2, 1910.

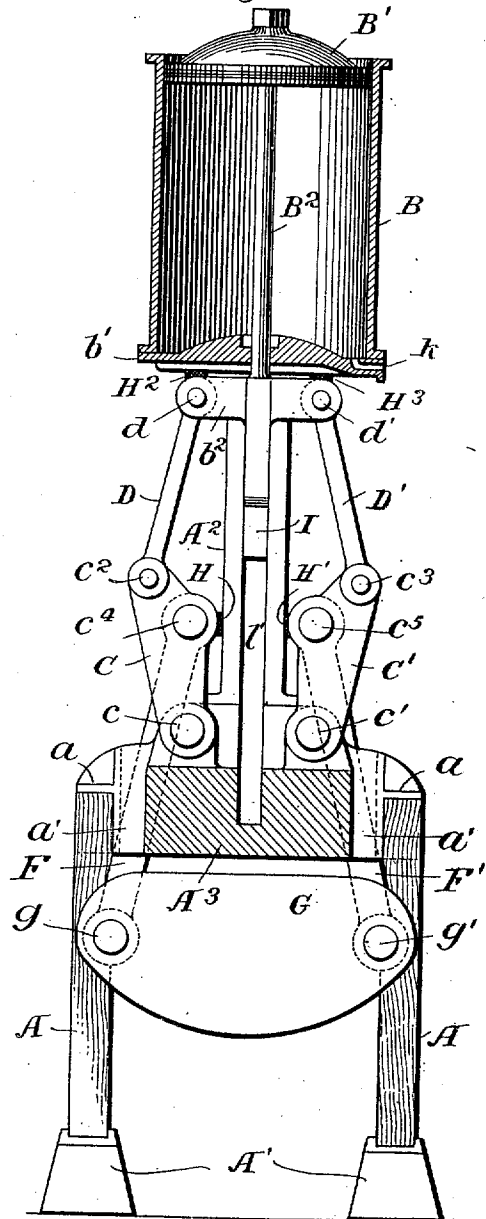
4 SHEETS—SHEET 1.

Fig. 1.



Witnesses
J. G. Stukel
J. J. McCarthy

Fig. 2.



Inventor
Samuel J. Webb,
by Ernest Freeman

Attorneys

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4 SHEETS—SHEET 2.

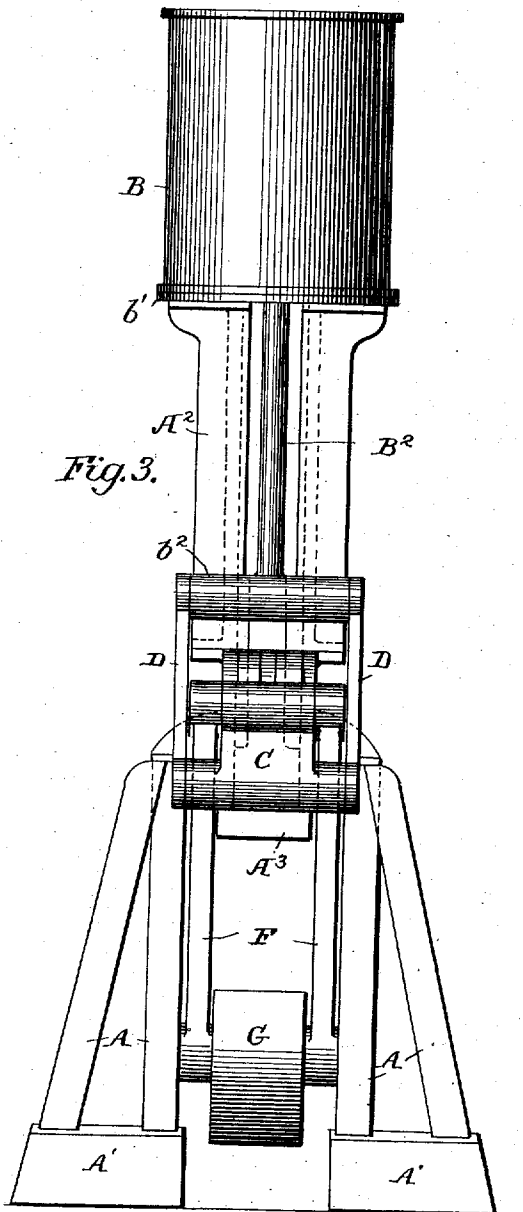


Fig. 7.

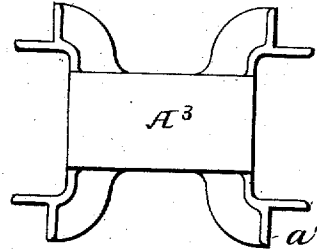


Fig. 8.

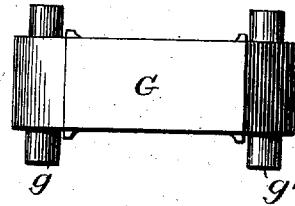
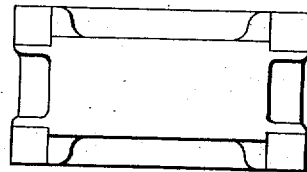


Fig. 9.



Witnesses

Arthur A. Fishes
J. J. McCarthy.

Inventor

Samuel J. Webb
By Foster Freeman

Attorneys

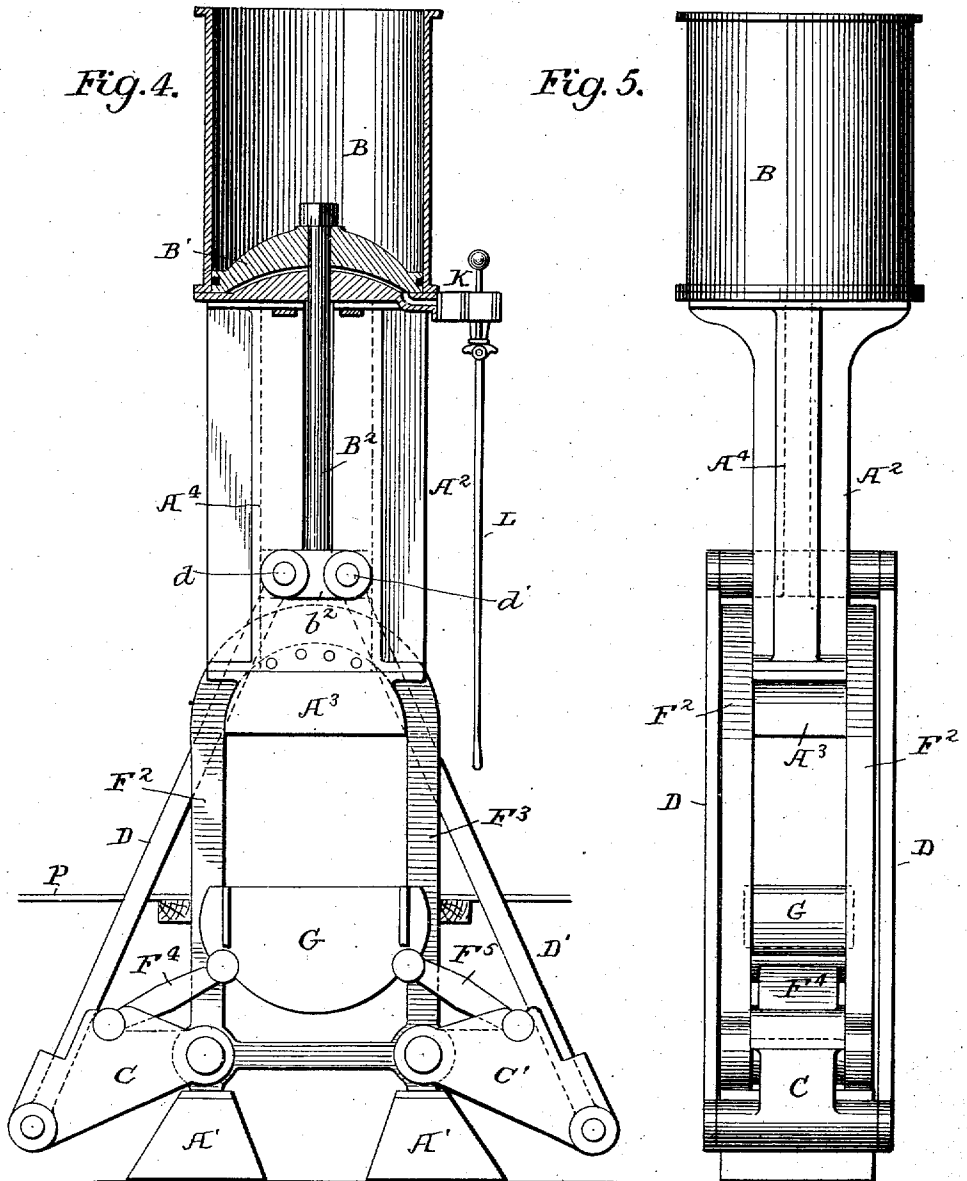
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Patented Aug. 2, 1910.

4 SHEETS—SHEET 3.



Witnesses
J. G. Hinkel
J. J. McCarthy

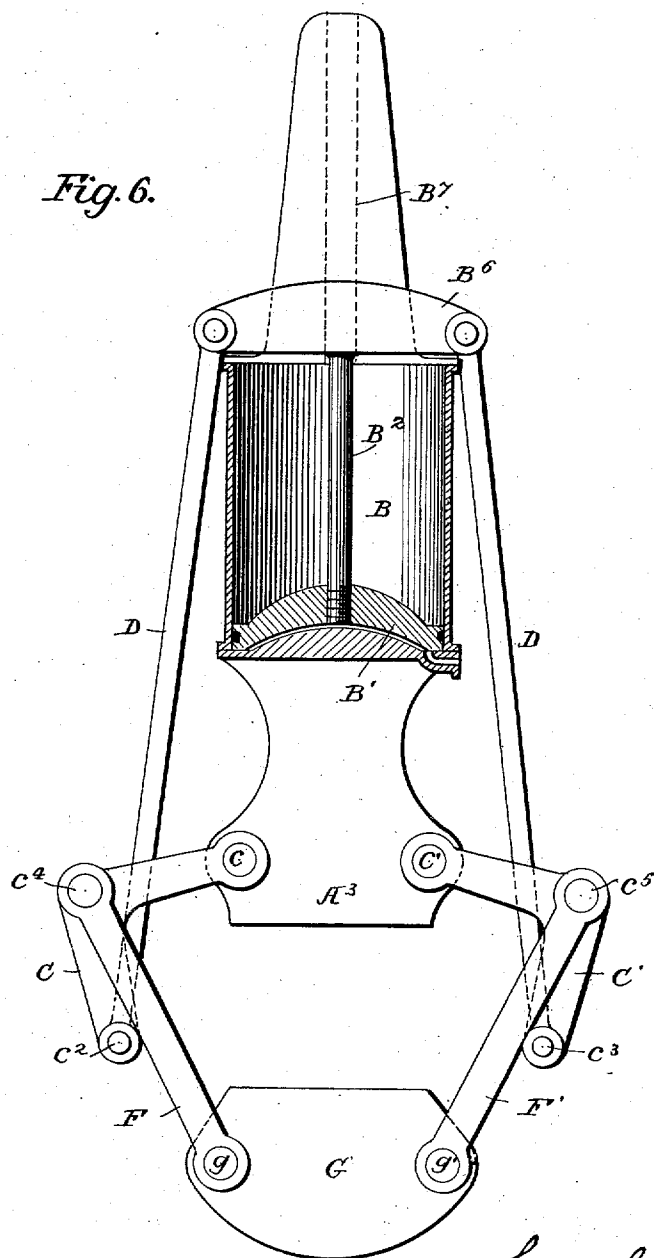
Inventor
Samuel J. Webb
By Louis L. Loomis
Attorney

PRESS.

Patented Aug. 2, 1910.

4 SHEETS—SHEET 4.

966,067.



Witnesses
J. G. Hinkel
J. J. McCarthy

Inventor
Samuel J. Webb
by Foster & ...
Attorneys

UNITED STATES PATENT OFFICE.

SAMUEL J. WEBB, OF MINDEN, LOUISIANA.

PRESS.

966,067.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Application filed June 13, 1899. Serial No. 720,390.

To all whom it may concern:

Be it known that I, SAMUEL J. WEBB, a citizen of the United States, residing at Minden, in the parish of Webster and State of Louisiana, have invented certain new and useful Improvements in Presses, of which the following is a specification.

My invention relates to presses for compressing cotton and other material, and the object of this invention is to provide a lever press that will give practically a uniform pressure during the latter part of its stroke, so as to press every bale of cotton to about the same density, regardless of thickness, and has for its further object to improve and simplify the construction of such presses, and the invention consists in a press embodying the various features of construction and arrangement of parts, operating substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings: Figure 1 is a vertical section through a press embodying my invention; Fig. 2 is a similar view, showing the parts in a different position; Fig. 3 is an end view; Fig. 4 is a vertical section of a modification; Fig. 5 is an end view of said modification; Fig. 6 is a vertical section of another modification; Figs. 7, 8 and 9 are detail views.

As above indicated, one of the objects of my invention is to provide a simple, compact press and one in which the strains during the operation are inward or toward the main frame of the press.

Another object is to provide a press in which the pressure applied to the bale or other material rapidly increases during the first part of the operation, and during the latter part the increased or maximum pressure is practically constant, so that bales may be pressed to practically a uniform density, regardless of the ultimate thickness of the bale.

Another object is to provide a construction of the character above indicated, in which are combined the advantages of a lever mechanism and a steam or other motive fluid actuated device, making what may be termed a compound lever and steam press.

While such a press may be used for many and various purposes, and the details of construction may be altered to adapt it for various purposes, it is more especially intended for compressing cotton bales, and I

will describe my invention as embodied in a press of this character.

The press comprises a suitable frame, which in the present instance includes four posts, A, mounted on a suitable base, A', and a main frame portion, A², supported on the posts, as at *a*. This main frame portion may be differently constructed but in the present instance it carries, or has formed integral with it, the stationary bed or platen, A³, and in this connection I provide brackets, *a'*, extending from the bed or platen, A³, and secured to the posts, A. This main frame portion forms a suitable support for the operating parts of the press, they preferably being attached to this portion substantially in the manner hereinafter pointed out.

Supported upon the upper part of the main frame portion, A², there is a cylinder, B, provided with a bottom, *b'*, and a suitable inlet and outlet port for steam or other motor fluid, and with a piston, B' moving therein to which is attached a piston-rod, B², extending down through the recess of the main frame portion. This piston-rod at its lower end is provided with a head, *b*².

Mounted on the main frame portion are levers or arms, C, C', they being pivoted to the main frame portion as at *c*, *c'*. The outer ends of these levers are connected to the piston-rod, B², by means of links, D, D', and pins *d*, *d'*, and *c*², *c*³. These levers C, C', are connected to the movable platen, G, by means of lifting rods, F, F', one end of the lifting rods being connected to the levers, C, C', at a point between the ends thereof by means of pins, *c*⁴, *c*⁵, and the other ends of the lifting rods are connected to the platen G, by means of pins *g*, *g'*. The platen, G, is guided by the posts, A. In this case I show two pins *d*, *d'*, where the links connect to the piston rod, but they may be connected with one pin. These levers may be operated by any other suitable device. In this case I show the movable bed or platen, G, on practically a level with the floor of the platform, P, when the press is down or in its normal position. H, H', are bumpers arranged so that when the parts reach the end of their movement the upper ends of the lifting rods strike against these bumpers, and thus prevent any further movement of the parts. These bumpers may be so located that some other moving part may strike them for the same purpose. The

press may also be provided with bumpers H^2 , H^3 , and arranged so that a projection on the piston-rod will strike them to stop the press. The lower end of the piston-rod is guided in the frame and in this case I show
 5 a projection, I, extending downward and laterally into vertical slots, I'.

K, are valves connected to the inlet and outlet ports k , k' , and are operated by means
 10 of a lever, L, and connecting rod, L', to control the inlet and outlet of the motor fluid.

k is the inlet port, which may enter through the cylinder bottom or through the wall of the cylinder, and k' is the exhaust
 15 port, which is located in this case in the cylinder bottom back of the inlet port as shown by dotted lines, Fig. 1, and extends to a recess in the center of said bottom, and the hub, on the piston, B', is arranged to
 20 automatically close the inner end of this port and thus cushion the downward movement of the piston, preventing any jar to the moving parts. The object of having a separate inlet port is that when the piston
 25 is down and the projection has closed the exhaust port it also cuts off the supply of steam where the same port is used; therefore, I think it best to use a separate supply port, which will make the press start
 30 off much easier and faster.

It is not necessary to describe the valve mechanism in detail, as I have already described it in former patents, and will use the same form of valves in this case, but
 35 there will be two valves, one to control the supply port and one to control the exhaust port. Both may be operated with the lever L, by means of cams, I³, I⁴. In Fig. 1 I have shown the parts in what is termed their
 40 normal positions.

When it is desired to operate the press, steam or other fluid is admitted into the cylinder, B, beneath the piston, B', and the piston raises under the direct pressure of
 45 the steam, and as the piston-rod moves upward the links, D, D', are also lifted, which lift the outer ends of the levers, C, C', thus lifting the main links or lifting rods, F, F', and the movable platen, G. It will thus be seen
 50 from the arrangement of the links, D, D', and levers, C, C', that a faster movement will be given to the platen than that of the piston in the beginning of the stroke, and pins, c^2 , c^4 , and c^3 , c^5 , are so arranged that when the pins
 55 c^4 , c^5 , reach points about as indicated at M, the relation of the parts is such that the lifting power of the links, D, D', decreases in about the same proportion as the lifting power of the levers, C, C', and lifting rods, F, F', increases, but when pins, c^4 , c^5 , have
 60 reached point, M, the relation of the parts is such that the press has reached its maximum power, and the parts are so arranged that the press will hold about this same
 65 power until the end of its stroke is reached,

thus applying practically the same power on every bale from point, M, to the end of the stroke, regardless of the thickness of the finished bale, this range of uniform power being ample to press any ordinary bale of
 70 cotton.

While it is sufficient for many purposes if the power applied to the platen before it reaches its final position is uniform, the
 75 proportions and arrangement of parts shown in the drawing will not only attain the maximum power when the parts are at the position indicated at M, but will slightly diminish the pressure after the parts pass the
 80 maximum point M, and during the remainder of the travel of the platen and engine. This results in a reduced impact of the levers against the stop or bearing upon the
 85 frame. In this class of presses where the parts are exceedingly heavy and move under high pressures and at a comparatively high rate of speed, the reduction in the impact is a matter of a great deal of importance.

To lower the press, steam or other fluid is exhausted from the cylinder, and the parts
 90 return to their former position by gravity. In most steam presses it is necessary to have a wedge or other mechanism to adjust one of the platens, so that the press may work
 95 its levers to a certain fixed point, in order to get its full power, but as I have explained before this press will increase in power to a certain point, and then hold the same power until it finishes its stroke, therefore,
 100 avoiding the use of a wedge and dispensing with any skill required by the engineer to uniformly press the different sized bales. The cylinder is filled, say, to 100 pounds
 105 pressure and the bale is pressed, regardless of its thickness, then after it has been banded the steam or fluid from the cylinder is exhausted and the press returns to its former position, making a very simple operation in comparison with most other presses.

In Fig. 4 it will be seen that the upper
 110 platen and frame are mounted upon stationary standards, F², F³, and that the levers, C, C', are pivoted to the lower ends of the links below the movable platen, and are
 115 connected to the movable platen by means of short links, F⁴, F⁵, and it will be seen in this arrangement the levers, C, C', and links, F⁴, F⁵, form a sort of toggle joint for lifting or driving up the platen, and with
 120 this arrangement I am enabled to shorten the stroke of the steam piston. In many cases this form of press would be desirable, but in some places where it would not be
 125 desirable to locate so much of the press below the floor line, P, the arrangement shown in Fig. 1 would be preferable.

It will be seen that the cylinder is mounted on the frame and the piston-rod is guided in the frame practically in the same manner
 130 as in Fig. 1. This frame in either case may

extend from the face of the upper platen to the cylinder bottom, or it may comprise the upper platen in one piece with two columns, A⁴, mounted on the upper or stationary
5 platen, and the cylinder bottom mounted upon said columns.

Of course, the object of my invention may be carried out by a combination of other mechanisms, but what I wish to protect is
10 the arrangement of the levers or arms and links so as to obtain a practically uniform pressure during the latter part of the stroke upon each bale, regardless of its thickness.

It will be seen that the position of the levers, C, C', links, D, D', and lifting rods F, F', is practically nearly in a vertical line when the press has completed its final stroke, and when the press is in its normal open position, as shown in Fig. 1, the points c', c⁵,
15 c⁴ of the levers, C, C', are in an approximately horizontal position. This arrangement, it will be seen, is simple of construction and the parts may be made strong and effective, and it will also be seen that the
20 tendency of the strains on the parts is inward toward the main frame portion, which subjects this frame to a compression strain instead of a tension; therefore, it may be made of cast iron and greatly reduced in
25 weight, and be much stronger than the usual way of making frames for presses, therefore it can be made at much less cost than the ordinary frames.

It will be seen that when the press is
35 open the pins c⁴, c⁵, on the levers C, C', are located a little above the center line between pins c, c², and c', c³ but a very good result may be obtained by locating the pins differently; therefore, I do not wish to limit
40 myself to any particular location for these pins, the object being to accomplish the result above described.

I have shown the pivot pins in each lever are located so as to form a triangle. The
45 pins, c⁴, c⁵, or trunnions as they may be called, where the movable platen is connected will be practically located between pins, c, c² and c', c³, to obtain the best results, but they may be located in a right angle tri-
50 angle or even farther out and obtain very good results.

In Fig. 6 I have shown a modification embodying the same general construction of parts differently arranged, in that the cyl-
55 inder, B, is mounted on the stationary platen and the piston, B', is connected to a cross-head, B⁶, above the cylinder, the cross-head being guided by uprights, B⁷, and the links, D, D', are extended to connect the cross-head to the levers, C, C', so as to operate in
60 the manner before described.

It will be seen that in each construction the connections between the engine and the movable platen are so proportioned and ar-
65 ranged that the platen moves more quickly

than the engine at the beginning of its traverse, and that the maximum pressure instead of being at the end of the traverse as usual is attained before the platen or engine has
70 completed its movement so that the terminal part of the travel is with a substantially uniform or decreasing pressure. It will be further seen that the point of connection of the engine links with the levers C, C'
75 is such that as the platen assumes its normal or lower position the said links will cross the points of connection of the lifting links with the levers. It therefore follows that the engine links swing toward each other as the movable platen approaches the other
80 platen, and as also the engine links are connected to the piston rod between the levers C, C' and the engine, the apparatus is more compact and the leverage is better applied than if otherwise constructed.

While I have illustrated in Figs. 4, 5 and 6 different embodiments of the main fea-
85 tures of my invention, I do not here claim the details of such structures; nor the arrangement of engine, movable platen and links therein shown, as the same will con-
90 stitute the subject-matter of a divisional application for Letters Patent.

What I claim is:

1. A press provided with a movable
95 platen, an engine having a piston and connections proportioned to impart a traveling movement to the movable platen faster than the travel of the piston at the beginning of the stroke of the latter.
100
2. In a press, the combination with a movable platen and a motor for moving the same, of connecting means between the motor and the platen proportioned and arranged to impart to the platen progressively
105 increasing power during the first part of its travel and substantially uniform power during the latter part of its travel, for the purpose set forth.
3. In a press, the combination with a mov-
110 able platen and a motor for moving the same, of connecting means between the motor and the platen proportioned and arranged to impart to the platen progressively increasing power during the first part of its
115 travel and the maximum power before the platen completes its travel, for the purpose set forth.
4. In a press the combination with a mov-
120 able platen and a motor for moving the same, of levers and connections between the motor and the platen proportioned and arranged to impart to the platen progressively in-
125 creasing power during the first part of its travel and substantially uniform power during the latter part of its travel, for the purpose set forth.
5. In a press, the combination with a mov-
130 able platen and a motor for moving the same, of levers and connections between the

motor and the platen proportioned and arranged to impart to the platen progressively increasing power during the first part of its travel and the maximum power before the platen completes its travel, for the purpose set forth.

6. The combination with the movable platen and engine of a press, of levers and connections between the engine and platen proportioned and arranged to move the platen during the terminal part of its travel with a substantially uniform pressure.

7. The combination with the movable platen and engine of a press, of levers and connections between the engine and platen proportioned and arranged to move the platen at first at a speed greater than that of the piston and during the terminal part of its travel with a substantially uniform pressure.

8. The combination in a press of a movable platen, an engine and levers and connections proportioned and arranged to move the platen with increasing power until a maximum pressure is secured and thereafter with a practically uniform power.

9. In a compress the combination of a movable platen, engine and connections arranged and proportioned to secure a substantially uniform application of power during the latter part of the travel of the movable platen.

10. The combination with the movable platen and engine and piston of a press, of means for applying the maximum pressure to the platen before the piston completes its travel.

11. The combination with the movable platen and engine and piston of a press, of means for moving the platen faster than the piston at the beginning of the stroke and for applying the maximum pressure to the platen before the piston completes its travel.

12. In a press, a movable platen, engine, lifting levers each pivoted to a fixed point and also connected to the engine and platen, and all proportioned and arranged to secure a decrease of the lifting power applied to the levers in proportion as the lifting power between the levers and platen increases.

13. The combination of the movable platen, engine and lifting levers connected with the platen, and also connected with the piston rod at a point between the cylinder of the engine and the levers.

14. The combination with the movable

platen and engine of a press, of lifting levers each pivoted at one end to a fixed point, links connected with the platen, and with points on the levers, and links connected with the piston rod between the cylinder of the engine and the platens and with the levers to swing past the points of connection with the links connected with the platen as the latter descends.

15. The combination in a compress and with the movable platen and engine having a piston rod extending downward, of lifting levers and lifting links connecting them with the platen, and links connecting the piston rod and the outer ends of the lifting levers, all proportioned to permit the latter links to swing downward across the points of connection between the lifting levers and the lifting links.

16. The combination in a press, with a stationary upper platen, a steam cylinder with closed lower end mounted above the platen, a piston in the cylinder carrying a piston rod and cross head said piston rod extending through the closed lower end of the cylinder, levers having their inner ends connected to the stationary platen and their outer ends connected to the piston rod and guides for said cross head arranged between the cylinder and said platen.

17. The combination in a press, with a stationary platen, an engine mounted above the platen having a cylinder and piston, and a piston rod extending below the cylinder, lifting levers with their inner ends connected to the press above the working face of the platen and connected at a point above the levers to the piston rod.

18. The combination in a press, with a stationary upper platen, a motor cylinder mounted above the said platen and carrying a piston and piston rod the said rod extending through the cylinder bottom and carrying a cross head between the levers and cylinder, lifting levers or arms connected at their inner ends to said platen, of direct connections between their swinging ends and the cross head.

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

SAMUEL J. WEBB.

Witnesses:

W. Z. DECK,

ELMER W. DECK.