

COTTON-PRESS.

No. 178,139.

Patented May 30, 1876.

Fig. 1

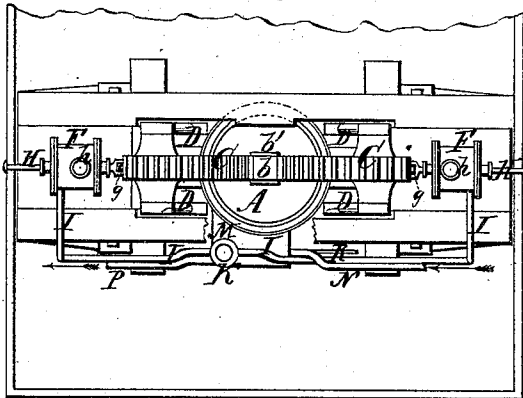


Fig. 2

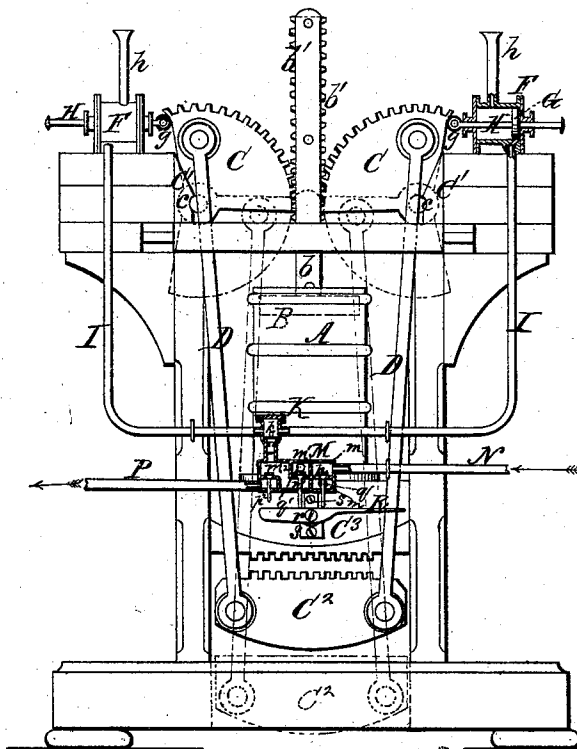


Fig. 3

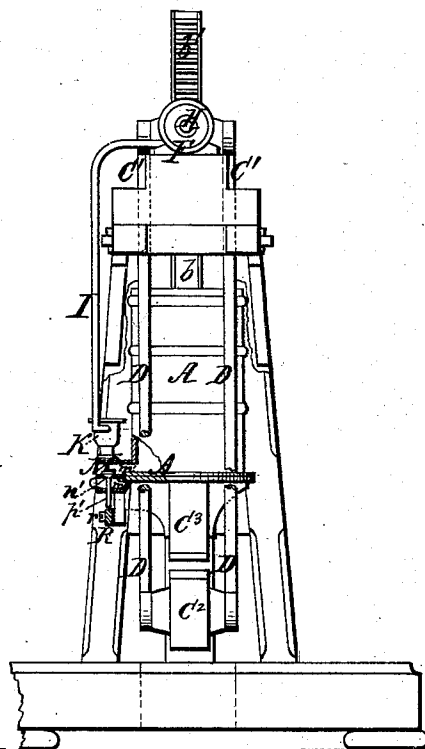
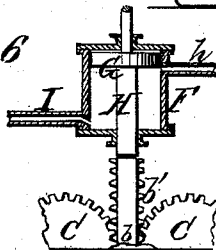


Fig. 6



Witnesses,
James Martin Jr.
J. P. Theodore Lang.

Inventor:
Samuel W. Gilman
by
Mason, Fenwick & Lawrence

UNITED STATES PATENT OFFICE

SAMUEL H. GILMAN, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN COTTON-PRESSES.

Specification forming part of Letters Patent No. **178,139**, dated May 30, 1876; application filed May 1, 1876.

To all whom it may concern:

Be it known that I, SAMUEL H. GILMAN, of New Orleans, in the county of Orleans and State of Louisiana, have invented new and useful Improvements in Cotton-Presses; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top view of my improved cotton-press. Fig. 2 is a side elevation and partial section of the same. Fig. 3 is a rear-end elevation and partial section of the same, with a portion of the main frame broken away. Fig. 4 is a vertical central section of the steam-chest, showing the valves and trip for operating the same. Fig. 5 is a vertical transverse section of one of the reversing-cylinders and connections thereof. Fig. 6 is a detail sectional view, showing another way of operating the rack and sectors of the press.

This invention relates particularly to that class of cumulative power presses known as the "Tyler," or other presses of similar construction, extensively used for compressing cotton or like substances, wherein a piston working in an open-top cylinder is provided with a rack or piston-rod, which moves up and down between the arcs of two toothed sectors, and the lower platen or channel-plate of the press being attached to the said sectors by lifting rods or levers, while the upper channel-plate forms the main bed-plate and supports the main cylinder.

The nature of my invention consists, first, in the combination of a reversing steam cylinder or cylinders with a compressing steam-cylinder, and a press adapted for pressing cotton and like substances, whereby the return of the rack and sectors to their normal position, as soon as the pressing is performed and the steam-pressure withdrawn from the pressing-piston, is effected by steam-pressure brought to bear directly upon either the sectors or the rack. It consists, second, in an arrangement of valves whereby the exhaust-steam from the compressing-cylinder is used for working the cylinder or cylinders which reverse the movement of the rack and sectors.

To enable others skilled in the art to un-

derstand my invention, I will proceed to describe it.

In the accompanying drawings I have represented a well known Tyler press with my improvement applied to it, and in which A represents an open-top steam-cylinder, which is supported upon the upper channel-platen C³, within the main frame of the press; B, a piston having a piston-rod, b, which is provided with a rack, b', on its upper end. C C are toothed sectors, pivoted at c to the hangers C¹, attached to the upper portion of the frame of the press. These sectors engage with the rack b' of the piston B, and serve to raise and lower the rack and piston during the operation of the press.

D D are lifting rods or levers, pivoted at their upper ends to the sectors, and at their lower ends to the lower platen or channel-plate C², by which the said lower platen or plate C² is brought to bear against the substance to be pressed, which is between it and the upper platen C³ when the sectors are moved back to their fullest extent and the piston and rack raised. F F are auxiliary steam-cylinders employed for reversing the movement of the main piston B, its rack, and the sectors of the press. Each of these cylinders is constructed with a piston, G, and piston-rod H, which latter are about double the length of the cylinders, and work through both ends thereof. On the ends of the said piston-rods, next to the sectors, friction-rollers g are provided, which bear against the plain backs of the sectors, and, by the action of steam on the pistons G G, cause these sectors to return the rack and main piston B to their original starting position. On the opposite ends of the piston-rods H caps are provided to prevent the striking of the pistons against the heads of the cylinders. The said auxiliary cylinders are provided with exhaust-pipes h, whereby the steam is permitted to pass out when the piston G and its connections are fully reversed. M is a steam-chest, of suitable size and form, constructed with valve-chambers m m¹ m², passages n n¹ n², and valves p p¹ p², for closing the said passages between the valve-chambers. The supply-valve chamber m is provided with an inlet-port, q, through which steam is admitted to the main cylinder from the main supply-pipe N, leading from the

boiler. The exhaust-valve chamber m^1 is also provided with an outlet-port, q' , through which the exhaust-steam from the main cylinder passes, to enter the auxiliary exhaust-pipes, for moving the pistons of the reversing-cylinders; and the exhaust-passage of the exhaust-valve chamber m^2 receives the remaining exhaust-steam from the main cylinder, and discharges it through a main exhaust-pipe, P , after the press has been reversed. The valves $p^1 p^2$ have long stems, which pass through the bottom of the steam-chest, in order to be operated separately by a trip or tappet lever, R , which is pivoted at r to a projection, s , of the main frame. This lever acts upon the stems of the valves $p^1 p^2$, and causes them to open and close the passages $n^1 n^2$ of the valve-chambers, as required. The stem of the valve p^2 is made shorter than that of the valve p^1 , in order that it shall not be raised until the exhaust-steam has passed into the pipes I and cylinders $F F$, and effected the return movement of the main piston and its connections. The tappet-lever is made long enough on one end, and has the requisite range of movement, for raising the valve p^2 and allowing the surplus steam to escape after the valve p^1 has been raised. The connection of the auxiliary steam-cylinders $F F$ with the steam-chest M and the main cylinder of the press is effected by means of branch exhaust-pipes $I I$, as shown. The said branch exhaust-pipes connect with a union valve-chamber, K , which is on top of the steam-chest, and the said union-chamber is provided with a check-valve, k , by which the exhaust-steam from the main cylinder, after entering the branch exhaust-pipes, is prevented from flowing back.

The steam-power for reversing the motion of the rack and sectors would be the same in its effect if applied to the top of the rack, as in Fig. 6, instead of to the backs of the sectors, and in such case one large cylinder, similar to one of those F , might answer, instead of the two cylinders $F F$.

It will be seen that by my invention I am enabled, with the use of steam-power, to reverse the upward movement of the sectors, rack, and piston of a Tyler or other similarly-operating cotton-press, and force them inward and downward much quicker than their own proper weight will cause them to do, after they have arrived at their greatest upward limit of movement and the steam-pressure under the piston relieved, and that the steam-pressure

for this purpose is obtained by exhausting in part the steam from the main cylinder into the auxiliary cylinders.

Operation: The press having been placed in a working position, with the piston, rack, and sectors down, steam is admitted from the steam-chest M into the main cylinder A by raising the tappet-lever R , thereby operating the valve p , and permitting the steam to pass through the inlet-port q in the supply-valve chamber m to the main cylinder A , thus causing the piston, rack, and sectors, with the lower platen or block C^2 , which carries the substance to be pressed, to rise toward the stationary platen C^1 and perform the pressing operation.

To reverse the movement of the press the tappet-lever R is depressed, and the valves p^1 in the exhaust-valve chamber m^1 thereby raised, and the exhaust-steam from the main cylinder A permitted to pass into the union valve-chamber K , from whence it passes, by raising the check-valve k from its seat, into the exhaust branch pipes $I I$ and cylinders $F F$, thus causing the press to be reversed ready for another operation—the exhaust-steam from these cylinders $F F$ passing out at h .

When the press is again operated the pistons of the cylinders $F F$ will be moved back to their original position by the sectors bearing against the friction-rollers of their rods.

By my invention it will be perceived that a greater range of upward movement of the main piston, rack, and sectors is made available than is practicable in presses reversed in the ordinary way—viz., by their weight.

I do not claim one or two steam-cylinders for producing the pressing operation in cotton-presses; but,

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A supplemental cylinder or cylinders so located that the piston or pistons thereof, actuated by steam or any other power, may move the sectors and rack of the press in reversing the movement of the follower, substantially as described.

2. The arrangement of the valves p^1 , p^2 , and k , by which the escape-steam is used to work the supplemental cylinder or cylinders $F F$, substantially as described.

SAMUEL H. GILMAN.

Witnesses:

W. A. S. WHEELER,
CHAS. J. LEWIS.