J. F. TAYLOR.

Steam-Cylinder for Cotton-Press.

No. 166,653. Patented Aug. 10, 1875.

Fig. 1.

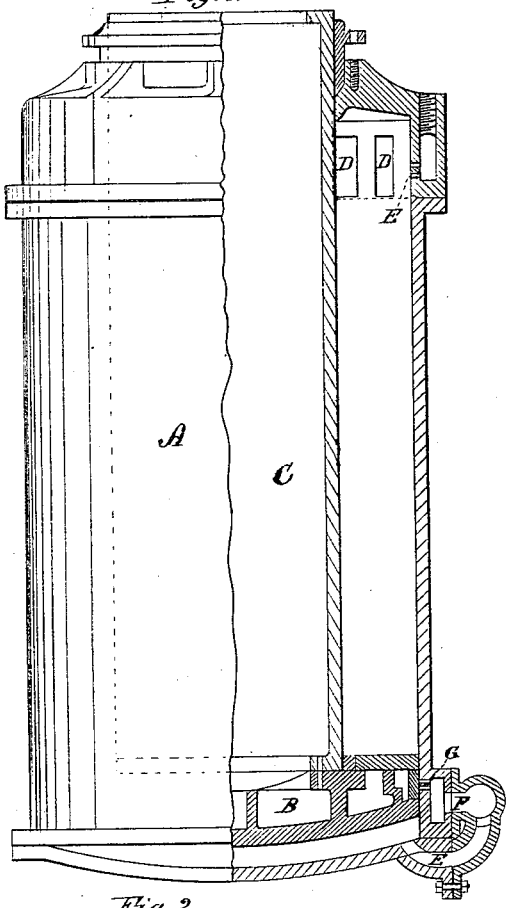


Fig. 2.

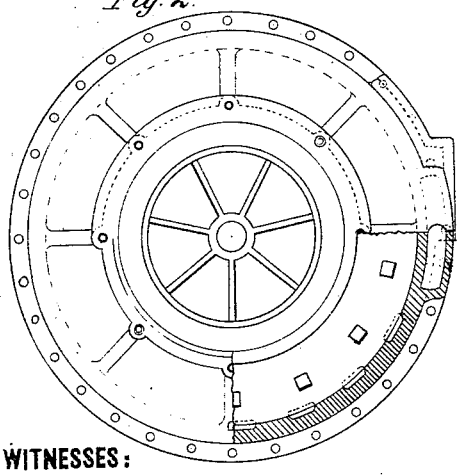
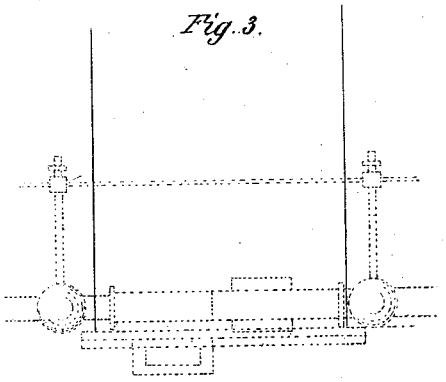


Fig. 3.



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JOHN F. TAYLOR, OF CHARLESTON, SOUTH CAROLINA.

IMPROVEMENT IN STEAM-CYLINDERS FOR COTTON-PRESSES.

Specification forming part of Letters Patent No. **166,653**, dated August 10, 1875; application filed June 24, 1875.

To all whom it may concern:

Be it known that I, JOHN F. TAYLOR, of the city and county of Charleston, and State of South Carolina, have invented a new and Improved Steam-Cylinder for Cotton-Presses; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a side elevation, partly in section; Fig. 2, a plan view with part broken away. Fig. 3 shows the application of valves to the cylinder in dotted lines.

This invention relates to certain improvements in single-acting steam-cylinders, designed to operate the toggle-arms of a cotton-press; and it consists in a cylinder having at the top, near the end of the stroke of the piston, and upon the inner periphery, a series of recesses of a greater length than the width of the piston, and also upon the same lever a series of holes communicating with the outer air, which admit the air to fill the space above the piston on the downward stroke, and allow the escape of the same upon the upward stroke, the said recesses serving to equalize the steam upon both sides of the piston when the latter is upon the same to break the momentum, and the air-holes, being closed when the piston is on the recesses, co-operate with said recesses to assist in breaking the momentum by forming in the top of the cylinder an air-cushion.

In the drawing, A represents the steam-cylinder; B, the piston, and C the piston-rod, which latter is made of a large size and of sufficient weight to bring down the piston by its own gravity. In the top of the cylinder, upon the inside, are recesses D, which are a little longer than the thickness of the piston, so that when the piston upon the upward stroke passes upon the same they act as passages or conduits, which admit the live steam from the under side of the piston to the space above the same. The pressure of the steam being thus equalized when the piston is near the end of its upward stroke, the momentum of the same is correspondingly reduced, a large portion of the jar is obviated, and the operation of the cylinder rendered smooth and uniform for this portion of the stroke. To still further reduce the momentum of the piston and rod I construct in the side of the cylinder holes E, which communicate with the air, over which holes the piston passes at the time of entering upon the recess, to produce in the top of the cylinder an air-cushion, which, in connection with the equalizing-recesses, renders the upward stroke perfectly smooth and devoid of jar. In the bottom part of the cylinder is arranged an induction-port, E′, controlled by a valve, and upon the side of the cylinder, near the bottom, an exhaust-port, F, also controlled by a valve, the valves being so arranged that they are alternately opened and closed. The exhaust-port communicates with the interior of the cylinder through a series of holes, G, which are arranged near the bottom of the cylinder, so that when the piston descends it closes the said holes and cushions upon the residual steam, and thus prevents all jar from the downward stroke. When live steam is admitted through the induction-port at the bottom the piston ascends and drives out the air above it through the outlets at the top. After the piston reaches said outlets, however, it cushions upon the air at the top, and the steam at the same time passes around the piston through the equalizing-recesses. The induction-port valve being now closed and the exhaust-port valve opened, the weight of the piston and its rod drives out the exhaust steam below and fills the space above with air through the holes at the top. As soon as the piston reaches the holes of the exhaust-port it cushions upon the remaining steam, and is ready for a continuation of the first action.

I am aware of the fact that double-acting steam-cylinders have been constructed which are provided with relief-passages near the ends of the same, and I therefore confine my invention to my particular construction of single-acting cylinder, whereby the momentum of the piston and rod is prevented from damaging or knocking out the cylinder-head, and a large amount of useless strain upon the toggle-arms avoided, the said cylinder being

especially adapted to be used with toggle-arms which transmit the greatest pressure near the end of their movement.

Having thus described my invention, what I claim as new is—

The combination, in a single-acting steam-cylinder for operating the toggle-arms of a press, of the equalizing-recesses D with the holes E, said recesses being located upon the inner periphery of the cylinder, near the end of the stroke, and the holes in the same plane with the same, so that the piston covers the holes when it passes upon the recesses, substantially as and for the purpose described.

JOHN F. TAYLOR.

Witnesses:

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