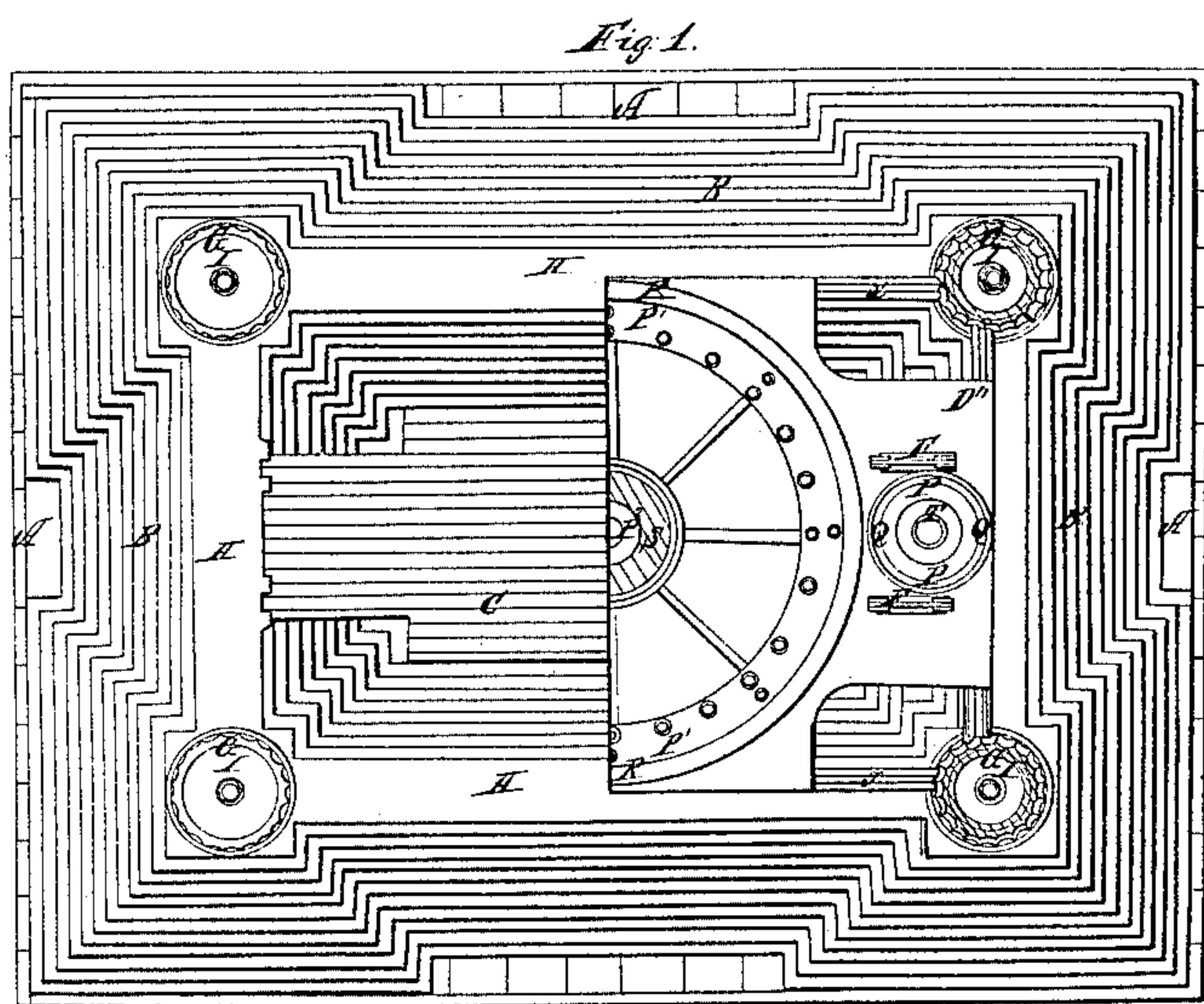


Sheet 1-3 Sheets.

J. Roy,
Cotton Press,

Nº 18,864,

Patented Dec. 15, 1857.



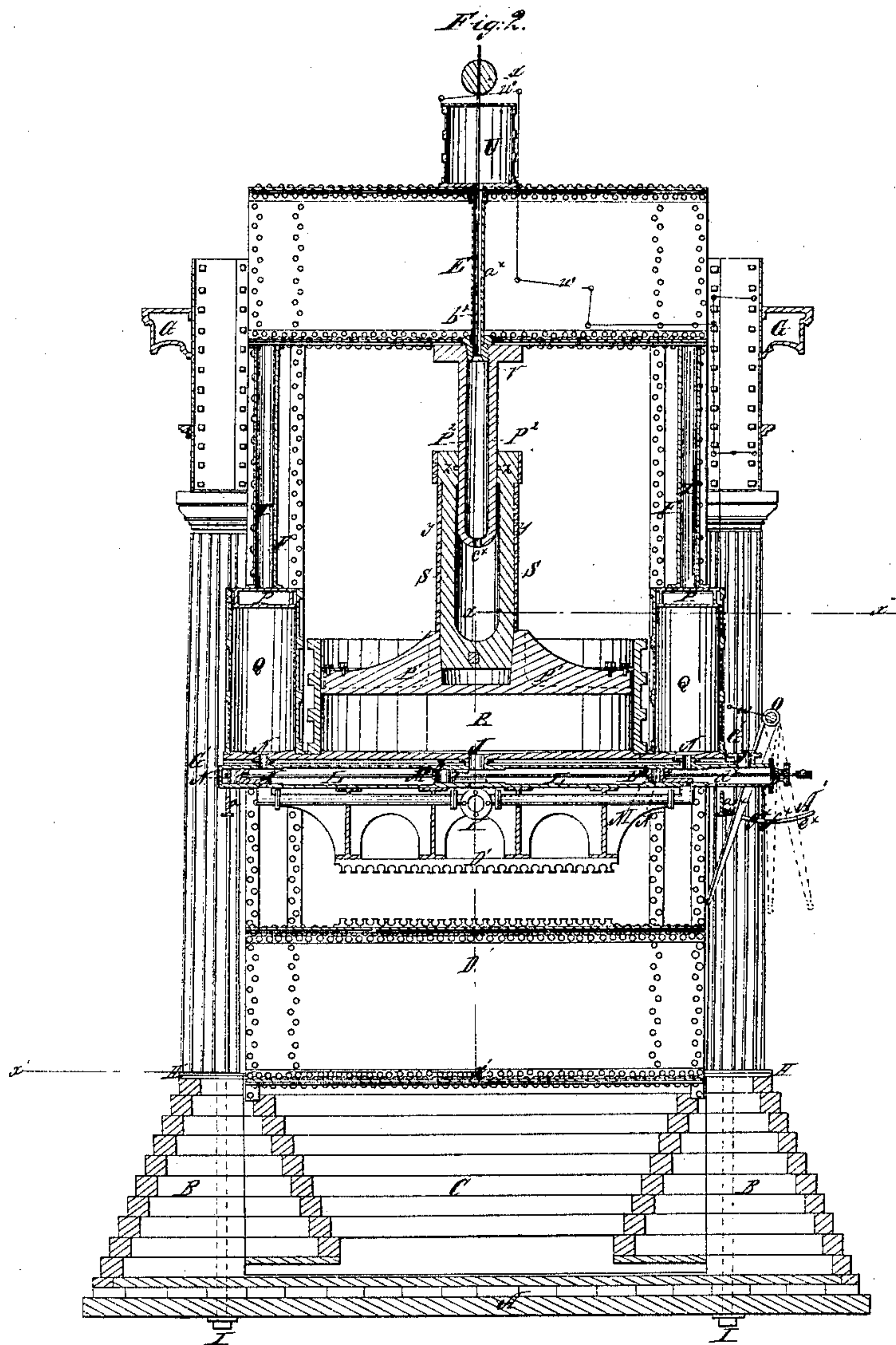
Inventor:
John Roy.

Sheet 2-3 Sheets.

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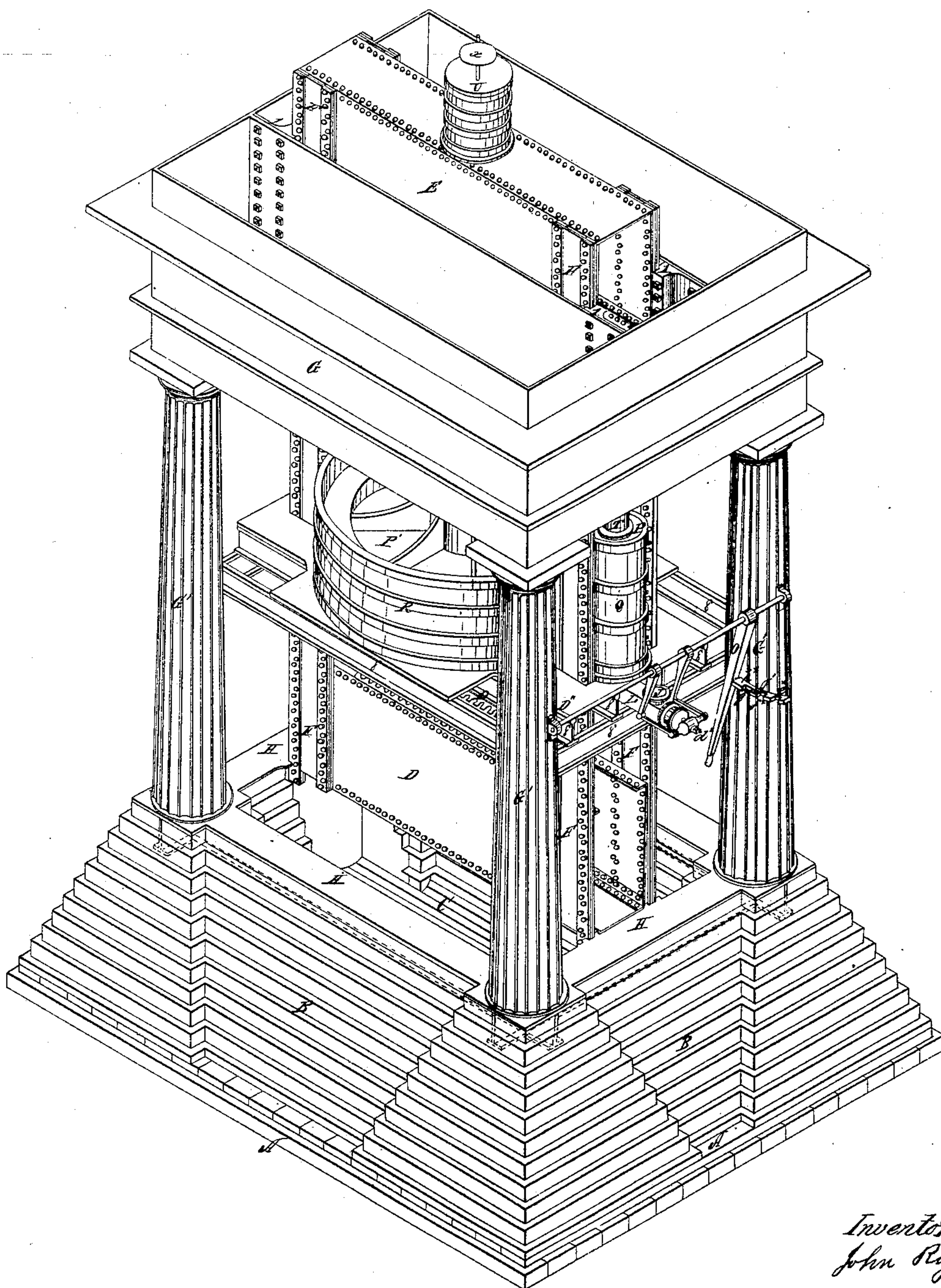
Inventor:
John Roy

*J. Roy,
Cotton Press,*

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Fig 5.



*Inventor:
John Roy*

UNITED STATES PATENT OFFICE.

JOHN ROY, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN STEAM COTTON-PRESSES.

Specification forming part of Letters Patent No. **18,864**, dated December 15, 1857.

To all whom it may concern:

Be it known that I, JOHN ROY, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and Improved Steam-Press for Compressing Cotton and other Substances or Articles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a horizontal section of my improvement bisected in two different planes, as indicated by the lines xx , $x'x'$, Fig. 2. Fig. 2 is a vertical central section of same. Fig. 3 is a perspective view of same.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to economize in the application of steam to the press, so that a requisite amount of power is obtained to perform the required work with the least possible expenditure of steam.

The invention consists in the employment or use of three steam-cylinders—one being of much greater capacity than the other two—and so arranging said cylinders and their concomitant parts, as hereinafter shown, that a progressive or varying power is obtained, a comparatively small amount of steam being first applied, when not much power is required, and the steam increased toward the end of the process, when additional or greater power is required.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a wooden platform or bed, on which a foundation, B, of masonry is built, said foundation having a pit or opening, C, within it to receive the "platen" or follower D, which is allowed to work freely up and down therein. The foundation may be built in any proper way, as circumstances may require. The platen or follower D is connected by rods F to a cross-head, E, which is fitted between guides 1 1 in an entablature, G, supported by pillars G'.

D' represents a stationary platen attached to a horizontal plate or frame, D'', which is connected to the pillars G' about midway between the foundation B and entablature G.

H is a bed-plate placed on the upper part

of the foundation B, the pillars G' being secured thereto by bolts I.

Q Q represent two steam-cylinders, which are placed one at each end of the plate D''; and R is a steam-cylinder, the diameter of which, as represented in the drawings, exceeds that of the cylinders Q nearly five times. The proportion of the cylinders may vary, however, as circumstances may require, the cylinder R being in all cases much larger than the other two. The cylinder R is placed on the frame D'' between the two cylinders Q Q.

P P are the pistons of the small cylinders Q Q, said pistons being connected to the cross-head E by rods T T.

P' is the piston of the larger cylinder R. This piston is connected with the cross-head E in a novel way, and as follows: A hollow cylinder, S, is attached to the piston P'. This piston may be encompassed by hoops y , to insure strength, and a hollow rod, P², is fitted therein, the upper end of said rod being attached to the under side of the cross-head E. On the top of the cross-head E a water tank or cistern, U, is placed, which communicates with the interior of the rod P² by means of a pipe, a^* , which passes through the cross-head.

V is the valve, the seat of which is at the lower end of the pipe a^* . The rod b^* of this valve passes up through the pipe a^* and the tank or cistern U, and has a ball or weight, X, on its upper end.

W represents a system of levers connected with the weight X or rod b^* . The use of these levers will be presently shown. An opening, c^* , is made in the lower end of the rod P², and said rod works water-tight within the cylinder S by means of a suitable packing, Z.

L is a steam-chest placed below the three cylinders Q Q R, and having three slide-valves, M, placed within it, said valves being attached to a rod, d^* , connected with a lever, O.

J is the steam induction-pipe, and K is the exhaust.

N represents the steam-ports.

The operation is as follows: By referring to Fig. 2 it will be seen that the follower D is at its culminating point or extreme height, the pistons of the several cylinders being all elevated to their highest points. It will also be seen that the cylinder S is filled with water, and also the rod P², that the valve V is closed,

and that the ports N of the steam-cylinders are all open or communicating with the chest L. By moving the lever O so that it will catch into the outer notch, e^* , of a rack, A', the ports N of the several valves will register with the ports N of the several cylinders, and the steam will exhaust or pass from the cylinders and out through the pipe K. The pistons of the cylinders, the platen, or follower D will consequently descend to their lowest points, and just as the downward movement commences the ball or weight X is allowed to descend by operating the levers W, either by hand or otherwise, and the valve V opens, so as to allow the water in cylinder S to pass into the rod P² and up within the tank or cistern U as the rod P² descends. When the lever is within the notch f^* of the rack A', the ports N of the several cylinders are closed. The bale to be compressed is placed on the platen or follower D, and the lever O is moved and fitted in the notch g^* of the rack A'. This movement or adjustment of the lever opens the ports N of the two smaller cylinders Q Q, and the platen or follower D is raised a certain distance—about two-thirds of its stroke or movement—by the pressure of the steam against the pistons P of the said cylinders. This power is sufficient at first, for comparatively little power is at first required; but when the follower has arrived at a certain point of its stroke—about two-thirds of its length, as above stated—the lever O is again moved and fitted in the notch h' , and the steam then passes into the large cylinder R, and acting against the piston P' the bale is compressed between the two platens or followers D D' with an increased power commensurate, of course, with the area of the piston P'. When the pistons P of the smaller cylinders Q commence to ascend, the valve V is opened, so that as the rod P² ascends with the cross-head E the cylinder S fills with water, and when the steam is admitted into the large cylinder R the valve is closed, and as water practically is incompressible a rigid connecting-rod is obtained, and still a compensating one. When the pistons have reached their culminating points, the compressed bale is bound. The lever O is then moved into the notch e^* , the steam exhausts from the cylinders, the valve V opens, the platen or follower D descends, the compressed bale is removed, and another to be compressed placed on the follower D and the operation repeated.

I would remark that the levers W may be connected to the lever O, so that the valve V may be operated automatically, if desired. By this arrangement a considerable saving of steam is effected, for a comparatively small

amount is used during two-thirds of the movement of the stroke, the increased power being applied during the last third of the movement of the stroke. If the large cylinder R were only used and made of sufficient length—that is, equal to the length of stroke required—it is evident that a volume of steam equal to the capacity of said cylinder would be used at every stroke of the follower or platen D; but by my improvement only one-third of such volume of steam is employed plus the capacity of the smaller cylinders Q Q, the aggregate of which is materially less than the whole of the cylinder R when of the size alluded to. It will be seen, of course, that the steam may be let into the larger cylinder R at any time or at any part of the stroke; but the later it can be let into said cylinder and perform the required work the greater will be the saving, the length of cylinder R, of course, corresponding to the time or the portion of the length of stroke it is designed for the steam to act upon its piston.

I am aware that steam has been directly applied to the followers of cotton and other presses; and I do not claim, broadly, the employment or use of steam-cylinders for such purpose; but,

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

1. The employment or use of a plurality of steam-cylinders of different dimensions, arranged and applied to the press as shown, or in an equivalent way, so that the cylinders of small capacity may be first used, or used at the commencement of the stroke, and the larger one used near the completion of the stroke, whereby the steam is applied in quantities commensurate with the power required at different parts of the stroke, and a saving of steam thereby effected.

2. Connecting the piston P' with the cross-head E by means of the cylinder S and hollow rod P², arranged as shown, and in connection with the tank or cistern U and the loaded valve V, with levers W attached, whereby a compensating piston-rod is obtained, the rod being allowed to contract as the cross-head descends and to expand as it ascends; and at the same time, when expanded or drawn out, being, in consequence of the hydraulic arrangement described, perfectly rigid, so that the full effective force exerted against the piston P' will be communicated to the cross-head E and follower D.

JOHN ROY.

Witnesses:

W. THIEL,
PHILLIP GREY.