

No. 773,441.

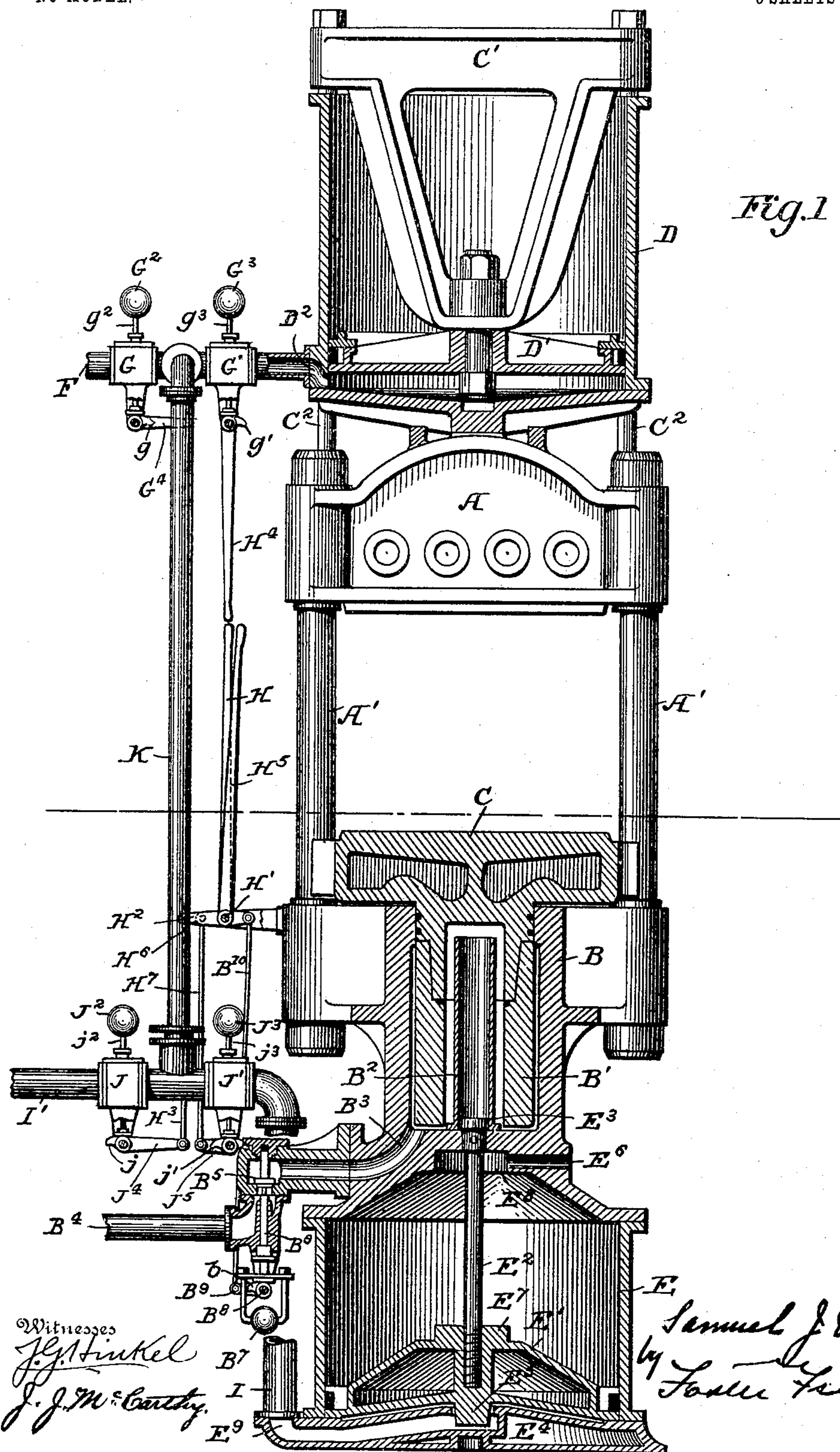
PATENTED OCT. 25, 1904.

S. J. WEBB.
PRESS.

APPLICATION FILED MAR. 20, 1899.

NO MODEL.

3 SHEETS—SHEET 1.



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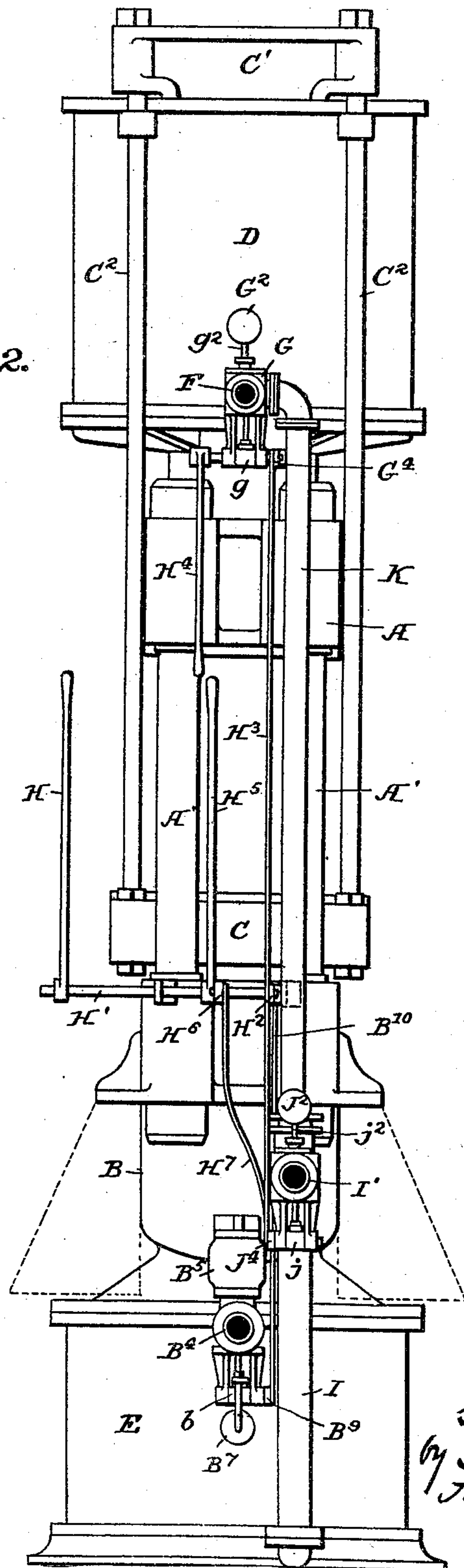
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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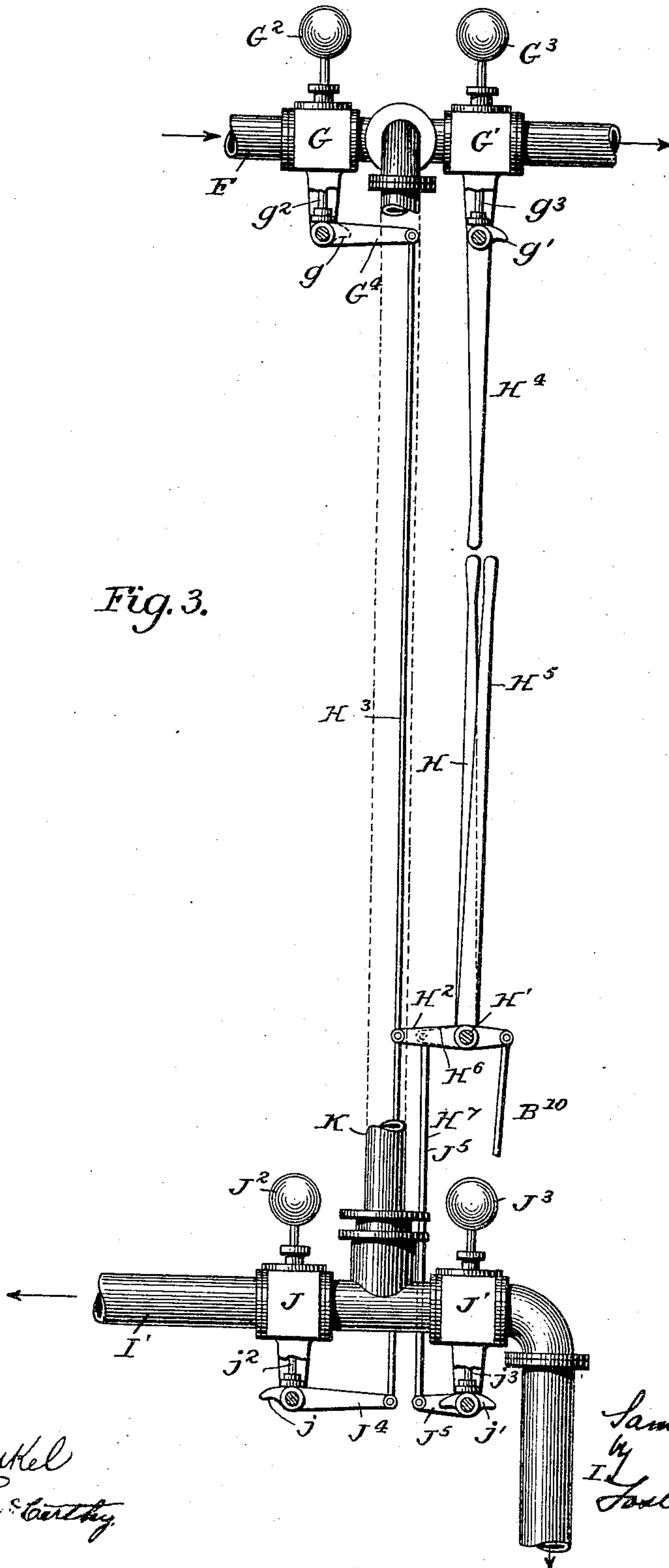
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UNITED STATES PATENT OFFICE.

SAMUEL J. WEBB, OF MINDEN, LOUISIANA.

PRESS.

SPECIFICATION forming part of Letters Patent No. 773,441, dated October 25, 1904.

Application filed March 20, 1899. Serial No. 709,784. (No model.)

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, and while it may be used for many and various purposes it is intended more particularly for use in compresses for cotton and the like; and the object of the invention is to provide a construction wherein the initial pressure to the bale or other material may be attained through the medium of a direct-acting steam-piston connected to a movable platen and the second or final pressure may be obtained by means of a hydraulic steam-actuated piston; and a further object is to provide means whereby the steam-supply to both of these devices can be conveniently and economically regulated and controlled, so that they may be operated directly by the steam or compounded; and to these ends my invention consists in a press embodying the general features of construction and arrangement of parts and having the general mode of operation substantially as hereinafter more particularly pointed out.

Referring to the accompanying drawings, Figure 1 is a vertical section of a press embodying my invention. Fig. 2 is a side view thereof, and Fig. 3 is an enlarged detail view showing the arrangement of valves.

In the embodiment of my invention shown in the accompanying drawings, A is the stationary bed or platen connected to and supported by the upright rods A', the other ends of which in this instance are connected to the main hydraulic cylinder B, and the movable bed or platen C in this construction is connected to or provided with a plunger B', operating in connection with the main hydraulic cylinder B.

Suitably supported in connection with the stationary bed or platen A is a steam-cylinder D, open at its upper end and provided with a piston D'. This piston is suitably connected to the cross-head C', which in turn is secured to the lifting-rods C'', the lower ends of which are connected with the movable bed

or platen C. It will thus be seen that when the piston D' is moved upward on the admission of steam to the steam-cylinder D the movable bed or platen C is also moved upward, compressing the bale or other material between its surface and the surface of the stationary bed or platen A, and I utilize this construction to produce what is ordinarily termed the "initial" or "first" compression of the bale through the direct action of the steam on the piston D'. The second or final pressure on the bale or other material in the present instance is accomplished by a hydraulic steam-actuated piston, and in the drawings I have shown a steam-cylinder E as located beneath the main hydraulic cylinder B and forming a support for the press; but it is evident that the location of the steam-cylinder actuating the hydraulic plunger is immaterial to the essence of the invention, and the press may be otherwise supported and the parts differently arranged and located while being connected to operate in the manner substantially as herein set forth. In the present instance there is a steam-piston E' in the steam-cylinder E, provided with a piston-rod E'', having on its end a piston E'', connected to operate as a ram and working in a small cylinder B'', mounted in the main hydraulic cylinder B and extending upward into a recess in the plunger B'.

The steam-cylinder E is shown as provided with a cone-shaped piece having a recess E⁴ at its center forming the steam-port, and the piston E' has a tapered projection E⁵, fitting the recess, to act as a cushioning device in a manner well understood. Further, the steam-cylinder E being closed at its top in this instance I provide an opening E⁶ to permit the air and escaped steam to pass to and from the upper portion of the cylinder, and the upper portion of the piston is provided with a hub E⁷, adapted to enter the recess E⁸ and form an air cushioning device for the piston.

I have shown the plunger B' as being made separate or detachable from the movable platen C in order that the packing-rings of the main hydraulic plunger can be reached for adjustment; but it is evident that any other equivalent construction and arrange-

ment of the plunger can be used and instead of the small cylinder B^2 being arranged, as shown, within the hollow plunger B' any other equivalent and well-known construction and arrangement operating in substantially the same manner is within my invention.

In the present instance the fluid for the hydraulic cylinder is supplied through the port B^3 from the pipe B^4 , connected to any suitable source of supply—as, for instance, a tank on the roof—and there is a valve B^5 in this pipe, (shown in the present instance as a check-valve provided with a loose stem B^6 , carrying a weight B^7), and I have shown a shaft B^8 , carrying a cam b , adapted to operate on the loose stem B^6 , and there is also an arm B^9 , connected by a rod B^{10} to an operating-lever H . It will be understood that this valve operates automatically to permit the fluid to flow into the main hydraulic cylinder as its plunger is lifted by the direct-acting steam-piston, and then the valve acts as a check while the hydraulic steam-actuated piston operates to produce the final compression, and then to restore the parts to their normal positions the valve B^5 is raised through the medium of the operating-lever H to permit the fluid to flow from the hydraulic cylinder into its source of supply under the weight of the moving platen and its connections.

It is evident that some suitable means must be provided for controlling the supply of steam to the steam-cylinders, and while various devices may be used I have shown a simple and effective construction and arrangement of valves which permits the use of the steam either directly in both steam-cylinders or allows the steam to be compounded, and I will now describe the construction and arrangement shown.

A steam-pipe F is connected with some suitable source of supply and is connected with the port D^2 of the steam-cylinder D , and arranged in said pipe are two valve devices $G G'$. These valve devices may be of any well-known construction; but, as shown, they are each provided with weighted valves $G^2 G^3$, which are normally closed, and these valves are provided with stems $g^2 g^3$, adapted to be operated by cams $g g'$, respectively, or some other equivalent and well-known means for operating them at will.

Connected to the port E^0 of the steam-cylinder E is a pipe I , acting both as a steam inlet and exhaust pipe, and connected to this is an exhaust-pipe I' , and interposed between these two pipes are two valve devices $J J'$, which while they may be of any suitable construction are similar to the valve devices before described in that they have weighted valves $J^2 J^3$ with valve-stems $j^2 j^3$, operated by cams $j j'$, respectively, or some equivalent operating means.

Extending from the main inlet-pipe F from a point between the two valves $G G'$ therein

to the exhaust-pipe I' at a point between the two valves $J^2 J^3$ there is a pipe K , which, as will be seen hereinafter, carries the live steam to cylinder E or the exhaust-steam from the cylinder D either to cylinder E or to the exhaust-pipe I' .

The valve G may be properly designated as the “main inlet” steam-valve and the valve J as the “main exhaust” steam-valve, while the valves G' and J' are properly termed “cut-off” valves, and it will be seen that they are located between the point of connection of the pipe K and the parts of the respective cylinders.

As above indicated, any suitable means may be used for operating the various valves; but in the present instance I have shown the main inlet steam-valve G and the exhaust-valve J as being operated by the lever H , this lever being pivoted at H' and provided with an arm H^2 , to which is attached a connecting-rod H^3 , the upper end of which is attached to an arm G^4 , controlling the cam g , and the lower end of which is connected to an arm J^4 , controlling the cam j , and it will be seen that the cams are so arranged that when the lever H is moved in one direction it will operate the steam-inlet valve and in the other direction the exhaust-valve. As before described, this operating-lever H will operate the check-valve B^5 of the hydraulic cylinder at the proper time to exhaust the fluid therefrom. The valve G' in the present instance is shown as provided with an operating-lever H^4 , controlling the cam g' , and the valve J' is shown as operated by a lever H^5 through an arm H^6 and rod H^7 , connected to an arm J^5 and controlling the cam j' .

The operation of the press, assuming the parts to be in the positions shown in the drawings and the bale or other material to be compressed being on the movable platen C , may briefly be stated as follows: Moving the lever H to the right opens the main steam-inlet valve G , and the steam flows in, filling pipe K , and then the cut-off valve G' is operated, permitting steam to enter the steam-cylinder D , forcing the piston D' upward, carrying the moving platen C and producing the first or initial compression of the bale. The plunger B' , carried in this instance by the movable platen, of course rises in the hydraulic cylinder B , and the fluid flows through the pipe B^4 past the check-valve B^5 , keeping the hydraulic cylinder full. If then live steam is to be used in making the second compression, the valve J' is opened by the lever H^5 , permitting live steam from the pipe K to flow into the cylinder E , forcing piston E' upward, and the piston E^3 , entering the small cylinder B^2 , produces a further compression of the bale by hydraulic pressure through the multiplied action of the steam. It will be understood, of course, that the check-valve B^5 seats itself, preventing the outward flow of

the fluid from the hydraulic cylinder during this operation. When the bale has received sufficient pressure, the lever H is moved to the left, closing the main inlet-valve G and opening the exhaust-valve J and also opening the check-valve B⁵, which permits the steam to escape from both steam-cylinders and the fluid from the hydraulic cylinder, and the parts by their weight descend to their normal positions. If now it is desired to compound the steam in the steam-cylinders, the lever H is moved to the right, as before, and then the valve G' is operated, as before, permitting the live steam to enter the cylinder D and produce the initial compression, as before described. The lever H is then moved to its upright or normal position, closing the steam-inlet valve G, and the cut-off valve J', being then operated by its lever H⁵, permits the steam from cylinder D to exhaust into cylinder E, and the final compression is produced by this exhaust-steam. If, however, it is found that this exhaust-steam does not produce sufficient pressure, the cut-off valve G' is closed, and the lever H is moved to the right, permitting live steam to enter through the steam-inlet valve G and pass through the cut-off valve J', supplementing the exhaust-steam in the cylinder E, or, again, if desired, the cut-off valve G' may remain open, and the live steam in that case will enter cylinder D, as well as cylinder E, and the bale will be subjected to the combined action of the direct steam-pressure in cylinder D and the multiplied action from the exhaust-steam supplemented by live steam in cylinder E through the hydraulic cylinder B. It will thus be seen that by properly manipulating the various valves the steam may be used directly on either or both of the steam-cylinders or may be compounded and the compounded steam may be supplemented by the direct steam in either one or both of the cylinders. Moreover, it will be observed that the mechanism for accomplishing this is relatively simple, not liable to get out of order, and under the control of the operator, so that the movements may be rapid and the proper and desired amount of compression on the bale produced.

Having thus described my invention and illustrated the preferred embodiment thereof, without limiting myself to the precise details

of construction and arrangement shown, what I claim is—

1. In a press, the combination with the stationary and movable platens, of two steam-cylinders, a main inlet-valve, a main exhaust-valve, a valve for each cylinder, and a direct steam connection between the inlet-valve and exhaust-valve, substantially as described.

2. In a press, the combination with the stationary and movable platens, of two steam-cylinders, a main inlet-valve, a main exhaust-valve, a valve between the inlet-valve and one of the cylinders, a valve between the exhaust-valve and the other cylinder, and a steam connection located between and communicating with the four valves, substantially as described.

3. In a press, the combination with the stationary and movable platens, of two steam-cylinders, a main inlet-valve, an exhaust-valve, a cut-off valve between the inlet-valve and one of the cylinders, a cut-off valve between the exhaust-valve and the other cylinder, a steam connection located between and communicating with the four valves, a valve-lever connected to control the inlet and exhaust valves, and separate levers controlling each of the cut-off valves, substantially as described.

4. In a press, the combination with the stationary and movable platens, of two steam-cylinders and a hydraulic cylinder, a feed-pipe for the hydraulic cylinder having a valve, a main steam-inlet pipe, an exhaust-pipe, a steam-inlet valve, an exhaust-valve, a cut-off valve between the inlet-pipe and one of the steam-cylinders, a cut-off valve between the exhaust-pipe and the other steam-cylinder, a steam connection located between and communicating with the four steam-valves, a lever controlling the inlet and exhaust steam valves and the hydraulic valve, and separate levers controlling the cut-off valves, substantially as described.

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

SAMUEL J. WEBB.

Witnesses:

F. L. FREEMAN,
W. CLARENCE DUVALL.