

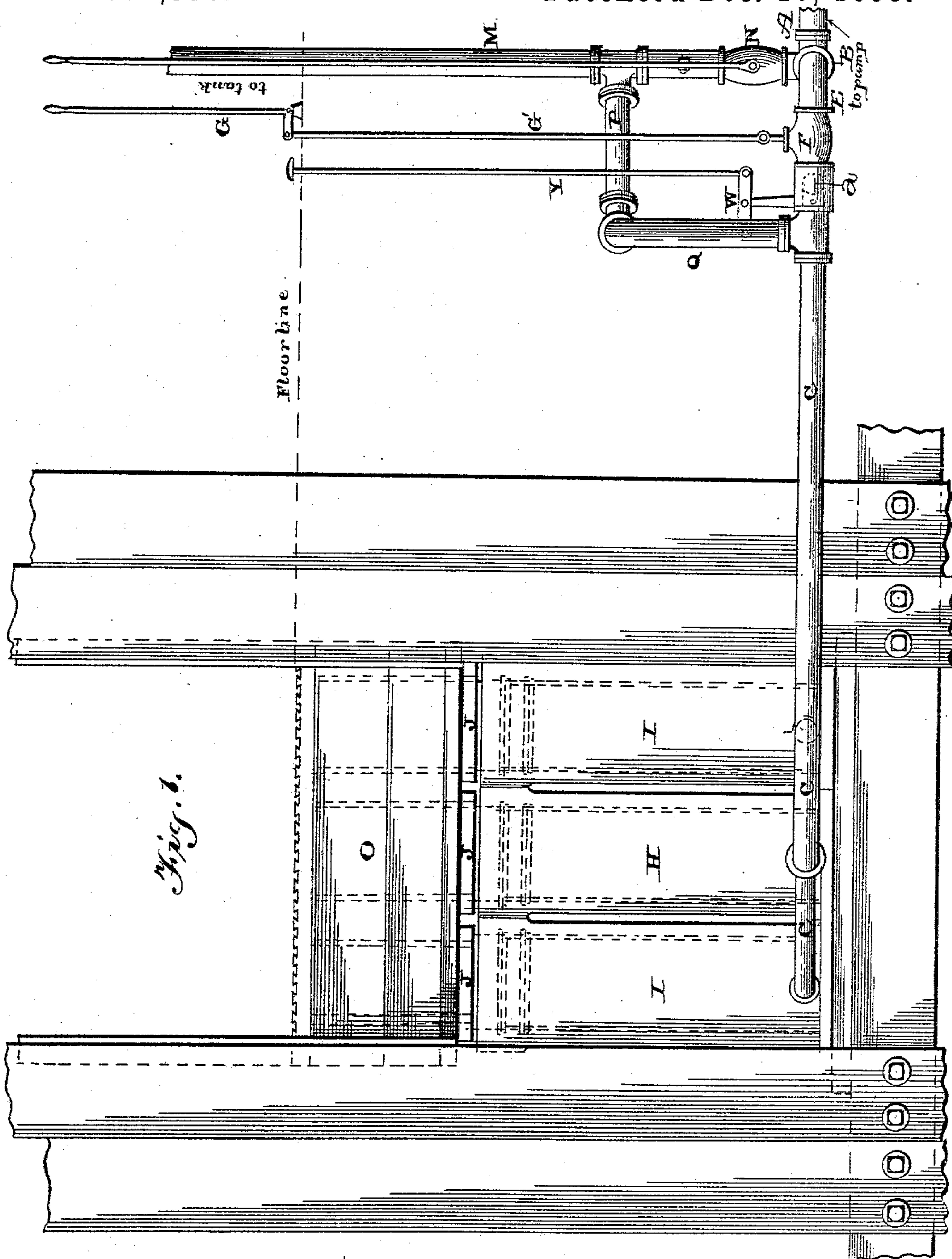
(No Model.)

2 Sheets—Sheet 1.

F. J. DUDLEY.  
HYDRAULIC PRESS.

No. 551,350.

Patented Dec. 10, 1895.



Witnesses:

Geo. C. French.

Franklin N. Hough

Inventor.

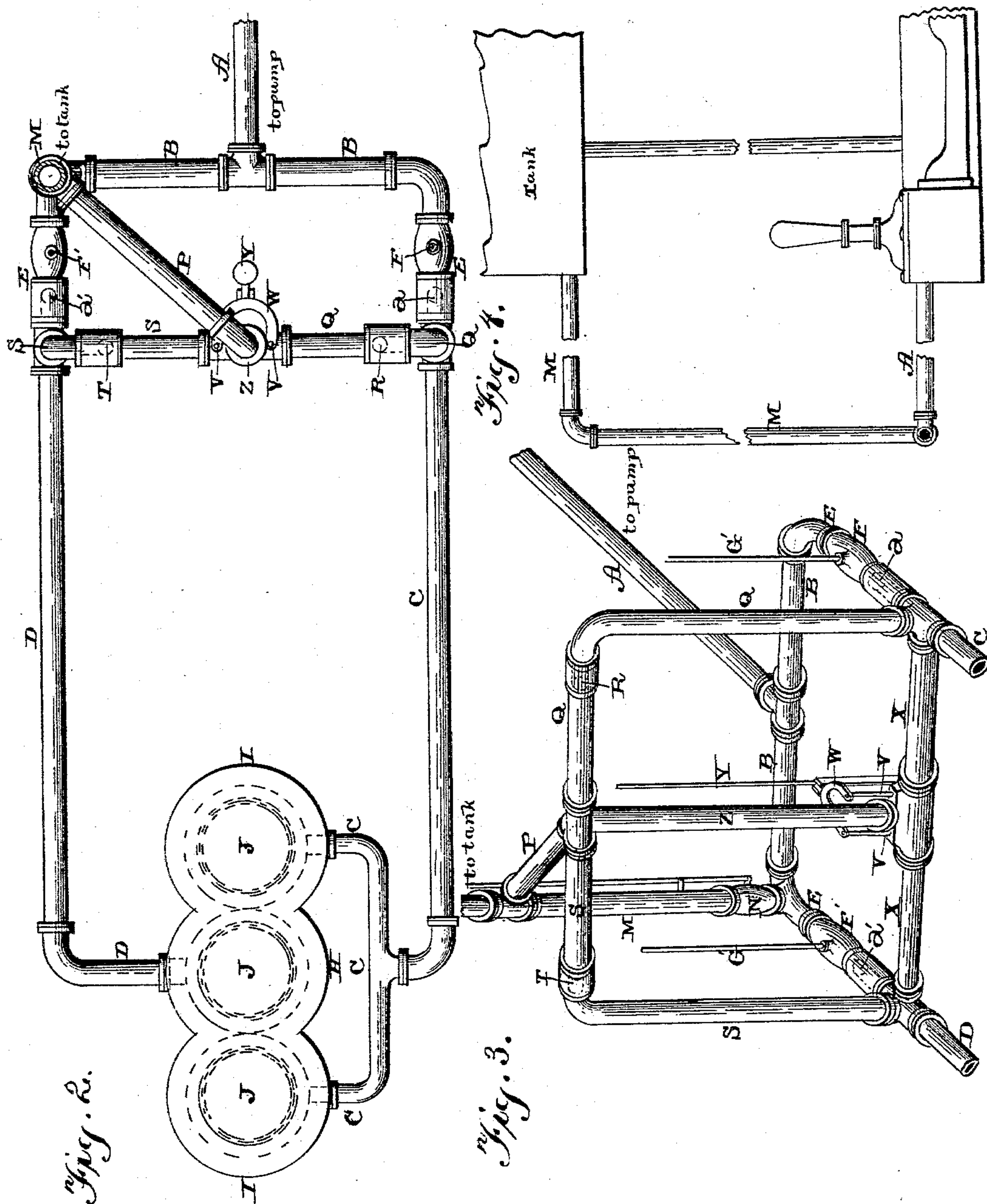
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# UNITED STATES PATENT OFFICE.

FRANK J. DUDLEY, OF AMOSKEAG, GEORGIA.

## HYDRAULIC PRESS.

SPECIFICATION forming part of Letters Patent No. 551,350, dated December 10, 1895.

Application filed May 6, 1895. Serial No. 548,301. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK J. DUDLEY, a citizen of the United States, residing at Amoskeag, in the county of Dodge and State of Georgia, have invented certain new and useful Improvements in Hydraulic Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in hydraulic presses; and it consists in the arrangement and combination of parts whereby a single cylinder is first brought into use, then two, and then all three together, as will be more fully described hereinafter.

The objects of my invention are to fill the idle cylinders with water from a raised supply-tank, while the other or others are being operated by the pump, thus enabling me to use but a single pump where two have been used heretofore and to effect a saving of over fifty per cent. in the amount of water pumped; to first use a single cylinder which is amply sufficient to give the initial pressure, then to use the other two to give the intermediate pressure, and then all three to give the final compression to a bale; to connect all three of the rams to a single platen so that they are raised simultaneously to allow the cylinders to partially fill with water from the tank and save a corresponding amount of pumping, and then after the compression of the bale is completed to unite their weight with the platen in forcing the water from the cylinders back to the supply-tank.

Figure 1 is a side elevation of a press which embodies my invention. Fig. 2 is a plan view of the same. Fig. 3 is a perspective of the water-pipes connecting the raised supply-tank and the pump with the cylinders. Fig. 4 is a detail showing the connection between the tank and the pump.

A represents the water-pipe extending from the pump, and which is connected at one end to the pipe B, which extends at right angles thereto. At each end of the pipe D there is secured a short pipe E in each of which there is placed a globe-valve F F' and a check-valve a a', which control the flow of water from the pump toward the cylinders. To each globe-

valve is connected a suitable operating-lever G and connecting-rods G', and by means of which levers the operator directs the flow of water from the pump first to the single cylinder H and then to the two cylinders I, that are connected by the same pipe C. These two valves are normally closed, and when it is desired to apply pressure to the single cylinder alone the valve F' is opened, and when it is desired to apply pressure to the two end cylinders the valve F' is closed and the one F is opened. When pressure is to be applied to all three of the cylinders simultaneously, both valves are opened.

The three cylinders H I are cast separately and placed side by side, and each one is provided with a ram or piston J of its own. The central one is supplied with water both from an elevated tank and from the pump through the pipe D, and the other two cylinders are supplied in the same manner through the pipe C. The tank is connected to both the pump and the cylinders, and the water which passes directly from the tank flows through the pipe M, which connects with the pipe B at its lower end and is provided with a globe-valve N, which serves to prevent the water from the pump from being forced back into the tank while the bale is being compressed. After the bale has been compressed, but while it is being tied, this valve N is opened and the valves F F' are closed and then there is free circulation of the water through the tank and pump.

The three rams J are all connected at their upper ends to the platen O, so that when the platen is raised by the ram of the central cylinder it draws up the rams of the other two, and when pressure is applied to the other two cylinders their rams force the platen up, carrying the ram of the central cylinder. In starting to compress a bale the valve F' is opened and the valve N is closed and water is forced from the pump directly into the cylinder H through the pipes A, B, E, and D. This one cylinder is amply sufficient to compress the bale about two-thirds of its original thickness. While the pump is in operation upon this cylinder H, water is flowing from the pipe M, through the pipes P and Q, down to the pipe C, and through this pipe C to the two cylinders I, which fill with water



as their rams are carried up by the platen. In this pipe Q is a check-valve R to prevent any return of water through this pipe. After the regulated amount of pressure has been applied to the bale through the cylinder H the valve F is opened and the one F' is closed, and then the pressure of the pump is applied to the two cylinders I, the rams in which unite in further compressing the bale. As the platen rises, the ram of the cylinder H is carried up, and water flows from the tank through the pipes M, P, S, and D to fill the cylinder H, the pipe S also being provided with a check-valve T to prevent any return of the water through this pipe to the tank. After the two cylinders I have exerted their full pressure through their rams upon the bale the valve F' is again opened, and then the pump forces water into all three of the cylinders at the same time, and the three cylinders unite then in giving the bale its final compression. The two valves F F' are now closed and the valve N is opened, and then the water circulates through the pump and tank, as above described, allowing the pump to operate continuously. Were it not for this construction, the pump would have to be constantly stopped and started with every bale. When the bale is tied, the two valves V, connected by a bent pivoted rod W in the pipe X, are opened by its rod Y, which has its upper end to extend just through the floor so as to be operated by the foot, and then the weight of the platen and the three rams force the water from the cylinders through the pipes C, D, and X, up through the vertical pipe Z, and

back through the pipes P and M to the tank.

Having thus described my invention, I claim—

1. The pump, an elevated tank, a pipe connecting the two, a pipe A, extending from the pump, and the tank pipe M, combined with the pipe B, to which both the pipes A, and M, are connected; the pipes E, C, D, extending from the pipe B, the three cylinders each provided with a ram of its own and to which the pipes C, D, are connected; the valves F, F', a a', placed in the pipes E, the valve N, in the pipe M, and suitable pipes connecting with the pipes E, M, whereby the water from the cylinders may be forced back into the tank, substantially as shown.

2. The pump, the tank, the pipe which connects the two, the pipe extending from the pump, the pipe M, leading from the tank, the pipe B, to which both of the pipes are connected, the pipes E, connected to the pipe B, and provided with the valves F, F', a, a', the valve N, in the pipe M; the pipes C, D, connecting the cylinders, and the cylinders, combined with the pipe X, connecting the two pipes E, and provided with the valves V, the three vertical pipes Q, S, Z, valves R, T, and pipe P, connecting at one end with the pipe M, substantially as shown.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK J. DUDLEY.

Witnesses:

F. A. LEHMANN,

FRANKLIN H. HOUGH.