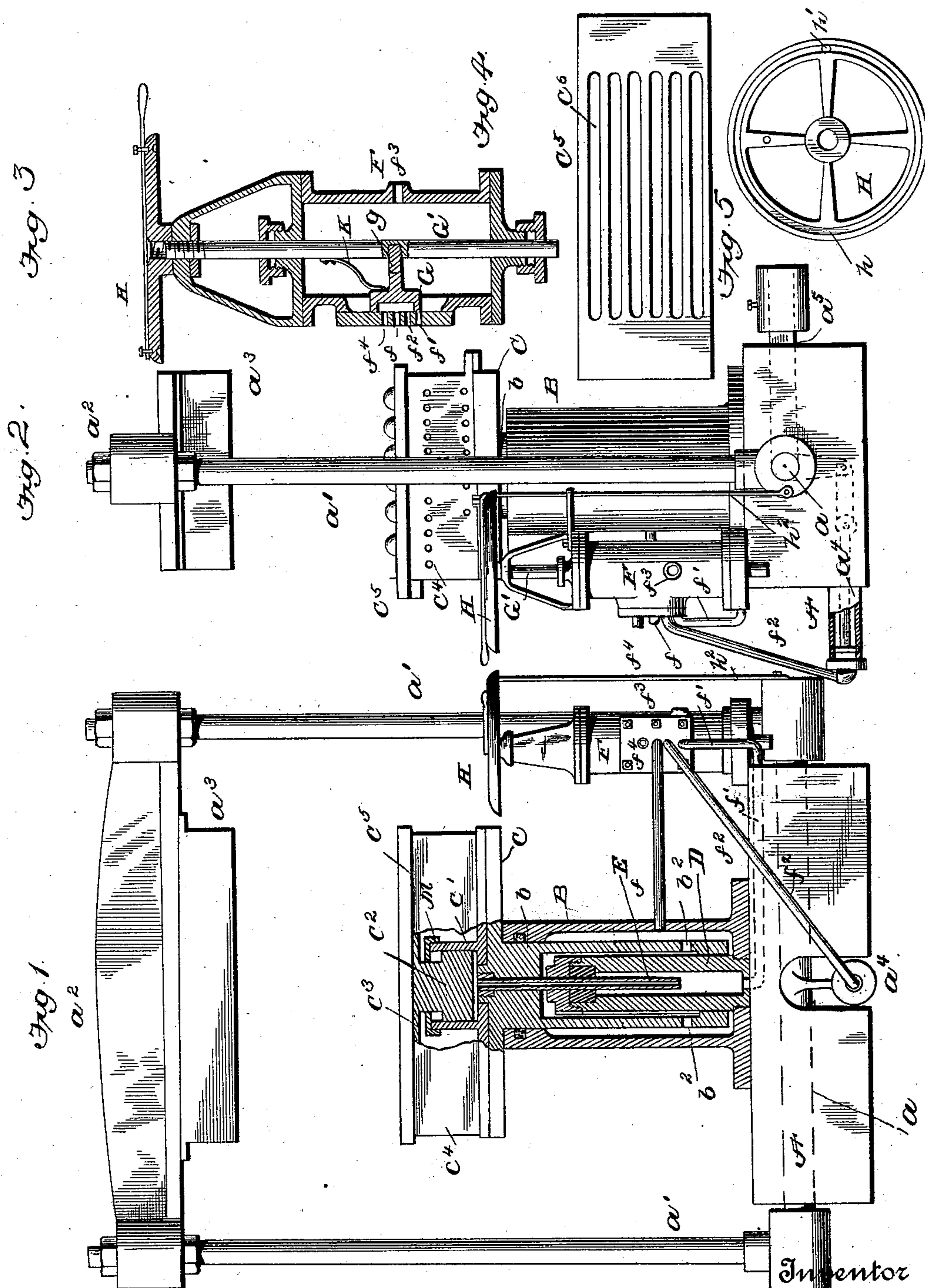


(No Model.)

W. EDGAR.
MOLDING MACHINE.

No. 517,737.

Patented Apr. 3, 1894.



Witnesses

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WILLIAM EDGAR, OF SANFORD, FLORIDA.

MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 517,737, dated April 3, 1894.

Application filed June 13, 1893. Serial No. 477,451. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EDGAR, a citizen of the United States, residing at Sanford, in the county of Orange and State of Florida, have invented certain new and useful Improvements in Molding-Machines; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates generally to molding machines and particularly to certain improvements upon my Patent No. 480,566, dated August 9, 1892.

The object of my present invention is to provide a very cheap and efficient machine of this class in which the patterns are easily withdrawn from the mold, and in which all the operations of the machine are controlled by hydraulic pressure.

With this object in view the invention consists of a molding machine having a hydraulic ram or plunger supporting the patterns and adapted to raise the same prior to pressing them into the sand, whereby when the pressure is removed, the patterns are withdrawn from the mold.

The invention consists also of a molding machine having its flask support provided with a series of openings through which the patterns are adapted to be raised by hydraulic pressure and withdrawn from the mold when said pressure is removed.

The invention consists also of a molding machine having its head plate, flask support, and pattern support operated by hydraulic pressure, and the invention consists also of certain details of construction and combination of parts, all of which will be fully described hereinafter and pointed out in the claims.

In the accompanying drawings:—Figure 1 is a front elevation partly in section of my improved molding machine. Fig. 2 is an end view thereof. Fig. 3 is a sectional view of the valve. Fig. 4 is a plan view of the flask supporting plate, showing the patterns arranged to pass therethrough. Fig. 5 is a bottom plan

view of the hand wheel for operating the valve.

In carrying out my invention I employ a base plate or platform A, and journaled therein is a horizontal shaft a , to which are attached the vertical rods a' connected at their upper ends by a cross-piece a^2 which carries the head-plate a^3 . All of these parts are substantially the same as in my prior patent and the shaft a is operated by means of a hydraulic piston a^4 , and carries a weighted lever a^5 , the same as in said patent. A main hydraulic cylinder B is mounted upon the base A and within said cylinder works a ram or plunger b , carrying the table or platform C upon its upper end. Upon the table C is a second cylinder C' carrying a plunger or ram C^2 supporting a pattern plate C^3 , the pattern being arranged upon the upper side of said plate. A casing C^4 surrounds the cylinder C' and is bolted fast to the table C. The casing C^4 is provided with a top C^5 which serves as the flask support and it will be noticed that this top is provided with a series of openings C^6 corresponding to the shape of the patterns, and through which the patterns are raised when the ram C^2 and supporting plate C^3 are raised independent of the table and casing.

In order to raise the pattern I provide a supplemental hydraulic cylinder D upon the base A, said cylinder being arranged within the ram b said ram being arranged to raise the table carrying the pattern or flask support. The lower portion of the ram b which envelops the supplemental cylinder is formed with openings b^2 to permit the entrance of water into said ram when it is desired to raise the table C.

A water pipe E is arranged within the cylinder D and passes through the table C into the cylinder C' whereby water is led into said cylinder to operate the ram C^2 and elevate the plate C^3 .

M indicates a collar screwed upon the upper end of the cylinder C' and through which the ram or plunger works. This collar is adjustable and regulates the distance the pattern plate shall drop upon the removal of pressure.

F indicates the water supply cylinder from

which water is admitted to the main cylinder, supplemental cylinder, and the horizontal cylinder for operating the head plate by means of a valve G. The main and supply cylinders are connected by means of pipe f , the supplemental cylinder by means of a pipe f' and the horizontal cylinder by the pipe f^2 , and f^3 indicates the supply pipe and f^4 the exhaust. It will thus be seen that there are five ports to the water cylinder and co-acting with four of them is a single valve G having a horizontal stem g which is attached to a vertically movable rod G' , working in the cylinder F and provided at its upper end with a hand wheel H, said wheel having an annular groove h in its under side, and within this groove at a predetermined point is arranged a stop h' for a purpose hereinafter explained. A vertical shaft h^2 is attached at its lower end to the shaft a and its upper end is adapted to rest in the groove h when the head plate is thrown back out of use. A spring K is interposed between the rod and valve to keep the valve in place when the cylinder is empty. The valve is susceptible of four distinct movements and by turning the wheel H one-eighth of a revolution, the port governing the pipe f' is opened and the supplemental cylinder to the cylinder C' raises the ram C² and pattern plate C³, thus forcing the patterns through the flask support. The patterns are now in position to be forced into the sand and are held in such position. By continuing the revolution of the wheel the valve is moved to admit water to the horizontal cylinder which operates the head plate and this movement of the wheel will be limited by the stop h' contacting with the rod h^2 bearing in the groove. The moment, however, that the head-plate is raised, rod h^2 drops out of the groove and the revolution of the wheel may be continued admitting water to the main cylinder which raises the table C, flask support, and pattern plate. By reversing the movement the flask support is lowered, the head-plate is thrown back, and the patterns withdrawn through the openings in the flask support or stripping plate.

It will thus be seen that by means of a single valve, I can quickly and easily raise the patterns and press them into the mold and then by reversing the valve, withdraw the patterns and bring all the parts back to their original positions.

I claim as my invention—

1. In a molding machine, the combination with a main cylinder, of a supplemental cylinder therein, a main ram carrying a table, a cylinder arranged thereon and having a water-pipe extending into the supplemental cylinder and a supplemental ram arranged therein, a pipe leading into the supplemental cylinder, a flask support or stripping plate ar-

ranged upon the table, the pattern located upon the supplemental ram and beneath the stripping plate and patterns, and the water supply pipes leading into the main and supplemental cylinders, substantially as set forth.

2. In a molding machine, the combination with a base, of a shaft journaled therein, rods connected thereto and carrying a head-plate, the main cylinder located upon the base, a supplemental cylinder arranged therein, a main ram arranged in the main cylinder and carrying a flask support, a supplemental ram within the flask support, a water-pipe extending from the supplemental cylinder to beneath the supplemental ram and the pattern plate upon said supplemental ram, the water cylinder and valve therein, the hand wheel for operating the same, the pipes leading from the water cylinder to the main and supplemental cylinder, the stop upon the wheel, and the stop-rod upon the shaft journaled in the base, substantially as set forth.

3. In a molding machine, the combination with a water supply cylinder having four ports, and an inlet, of a valve arranged opposite to said ports, a base, a shaft journaled therein and connected by means of rods with the head-plate, a main, and supplemental cylinders arranged upon the base, a horizontal cylinder arranged below the base and provided with a ram, connected to a crank upon the shaft in the base, the water pipes connecting said cylinders to the main ram, the flask support carried thereby, the supplemental ram within the support, a water-pipe extending from the supplemental cylinder to beneath the supplemental ram and the pattern plate carried by the supplemental ram, substantially as set forth.

4. In a molding machine, the combination with a base, of the shaft journaled therein, the rods connected thereto and carrying the head plate, the horizontal cylinder located beneath the base, and provided with a ram connected to a crank upon the shaft in the base the main and supplemental cylinders arranged upon the base, a water supply cylinder having four ports, a valve arranged opposite said ports, a stem and hand wheel, said wheel having a stop, a stop rod arranged upon the shaft and adapted to contact with the stop, the main ram arranged in the main cylinder, the flask support mounted upon said main ram, a supplemental ram located within the flask support, and a pattern plate supported by said supplemental ram, substantially as set forth.

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

WILLIAM EDGAR.

Witnesses:

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CHARLES L. PARTRIDGE.