Feb. 22, 1927.

1,618,245

S. M. UDALE

PIPE MOLDING MACHINE

Filed Feb. 28, 1925

2 Sheets-Sheet 1

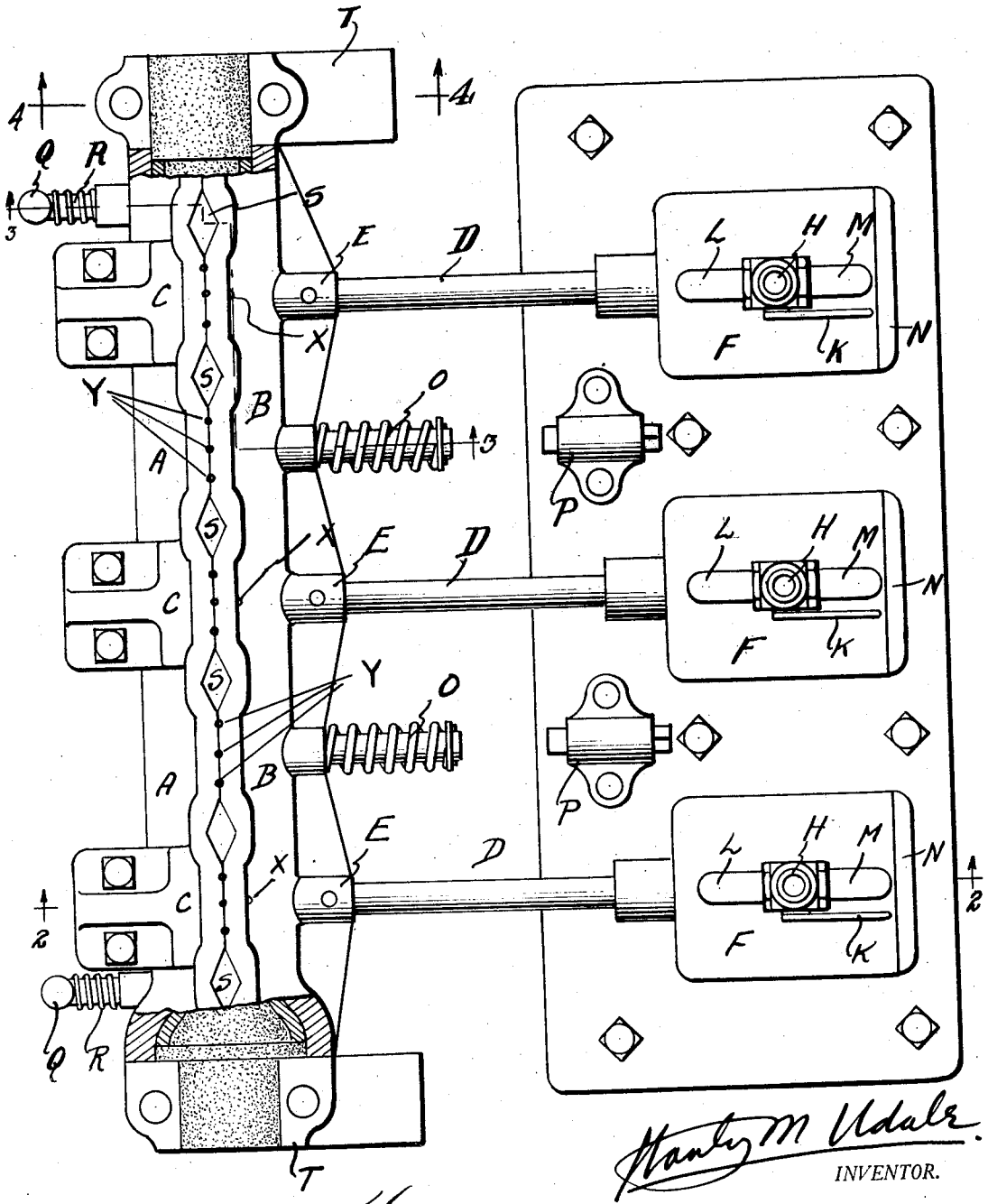


Fig. 1

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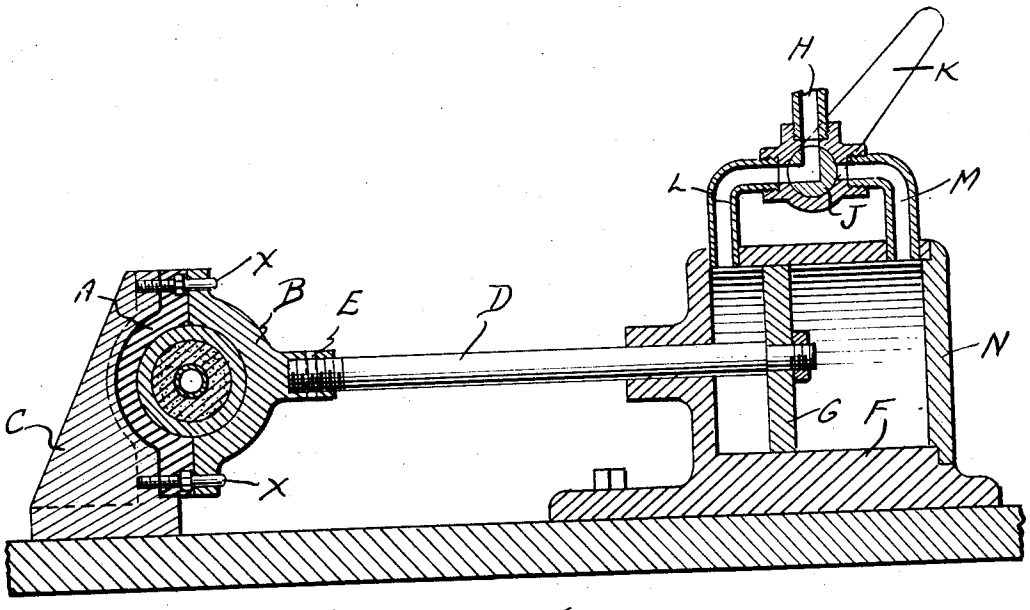


Fig. 2.

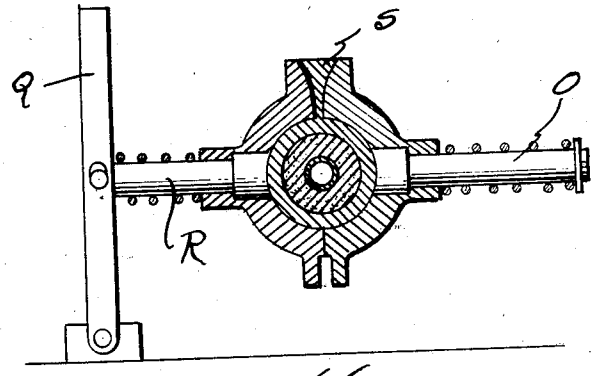


Fig. 3.

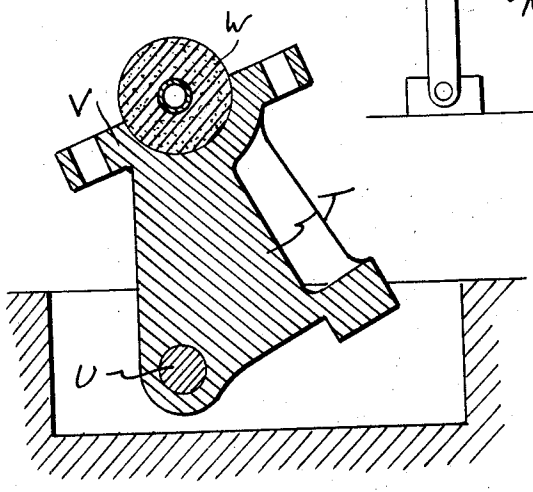


Fig. 4.

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Patented Feb. 22, 1927. 1,618,245

UNITED STATES PATENT OFFICE.

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PIPE-MOLDING MACHINE.

Application filed February 28, 1925. Serial No. 12,221.

This invention relates to means for casting iron pipes in metal molds. The specific object of this invention is to provide means whereby pipes may be cast in stationary metal molds, the molds being held in a horizontal position, and the center being formed by a core.

Figure 1 shows a plan view of the machine.

Figure 2 shows a cross sectional elevation on the plane 2—2 of Figure 1.

Figure 3 shows a cross sectional elevation on the plane 3—3 of Figure 1.

Figure 4 shows a cross sectional elevation on the plane 4—4 of Figure 1.

In the figures, A and B are the two halves of the stationary metal mold, split on the vertical plane and located in the horizontal position. C C C are the supports for the part A of the mold. These supports are bolted to the floor. D D D are the bars which apply pressure to the right hand half B of the mold. The bars D D D are threaded and pinned to the bosses E E E projecting from the mold B. The bars D D D are operated by the cylinders F F F through the pistons G G G reciprocating therein, as shown in Figure 2.

Compressed air connections H H H are provided, together with suitable port connections L L L and M M M and two-way valves J J J. A core W is shown supported on bearings V V, which are integral with the core supports T T. These core supports T are adapted to move through a small arc of a circle, being pivoted at U.

The compressed air which is admitted through the pipes H H H is controlled by two-way valves J J J which in its turn are controlled by levers K K K. Compressed air admitted through H H H passes the valves J J J and communicates with the cylinders F F F through the elbows L L L, where it acts on the side of the pistons G G G and causes the mold B to separate from the mold A.

When the lever K is depressed compressed air is admittted through H, past the two-way valves J J J, and through the elbows M M M to the back of the pistons G G G, thus causing the mold B to close onto the mold half A. By connecting the pipes H H H to the same source of compressed air uniformity in pressure is assured.

The entrance of the iron to the mold is provided through a plurality of gates S S. These gates are preferably of the diamond shape as shown, for the purpose to be described later. Small vents Y Y are provided for the escape of the air between the gates.

In order to support the core when it is placed in position, and also to support the casting when it is ejected from the mold, core supports T T are provided. These are hinged at U and provided with a bearing V in which the core W is supported. In order to center the mold in position dowel pins X X X are provided, see Figure 2. These dowel pins, which are threaded and are made from hexagon stock, also bolt the mold A to the mold supports C C C.

The molds are preferably coated with a dilute solution of sodium silicate in water containing a considerable quantity of fire clay in suspension, as set forth in the patent to Meloche, #1,453,593. The molds are also preferably provided with a relatively thick coating of lampblack, as described in the patent to Meloche, #1,492,694. The molds are also raised to a temperature of about 700° or 800° F., as also described in the above patent, the object being to eliminate as far as possible the need for prolonged annealing; the casting as ejected from the mold being substantially gray iron, free from white iron.

Operation.—A core W is placed in the bearings V V of the core supports T T. Air pressure is then admitted behind the piston G and the core W pushed into place in the mold A, carried by the rocking supports T T, and the mold half B closing upon the mold half A, guided by the dowel pins X X X. Pressure is then admitted to the rear of the piston G, so that separate pressure is exerted between the two halves of the molds A B to prevent iron leaking when it is poured in.

Molten iron is then poured in through the gates S S and the mold filled up, the air escaping through the vents Y Y Y. When the iron has set in the mold the valves K K are moved into the position shown and compressed air is admitted through L so as to forcibly open the mold. If the casting remains in the mold half A it is ejected therefrom by hand by means of the mechanism Q R, see Figure 3. If, on the other hand, the casting is carried by the mold B it will

be released therefrom by the impact of the knock-outs O O against the adjustable stops P P. Meanwhile the core supports T T will rock back on the pivots U U into the horizontal position and the pipe will be supported upon the core, which is re-enforced with a metal center.

The casting is ejected as soon as it has set sufficiently to be handled, and while it is still red hot (1600° F.). For this reason the problem of shrinkage is practically eliminated. However, by making the gates S S in the elongated diamonds, as shown, the only effect of contraction is to slightly wedge the molds apart. However, gray iron has the well-known property of expanding immediately after it freezes, due to the precipitation out of solution of the graphite which has a relatively low density, so that the problem of shrinkage is not at all serious. A more difficult problem is to prevent the iron leaking on the parting line, and to prevent this a substantial pressure must be applied (over 1,000 pounds per foot).

What I claim is:—

A pipe holding machine, comprising a substantially horizontal two-part metal mold split in the vertical plane, means for supporting one half, means for translating the other half in a substantially horizontal plane, a movable core support adapted to guide the core into place upon the closure of the mold, and to support the casting when it is ejected from the mold.

In testimony whereof I affix my signature.

STANLEY M. UDALE.