

(No Model.)

J. SHEPHERD.

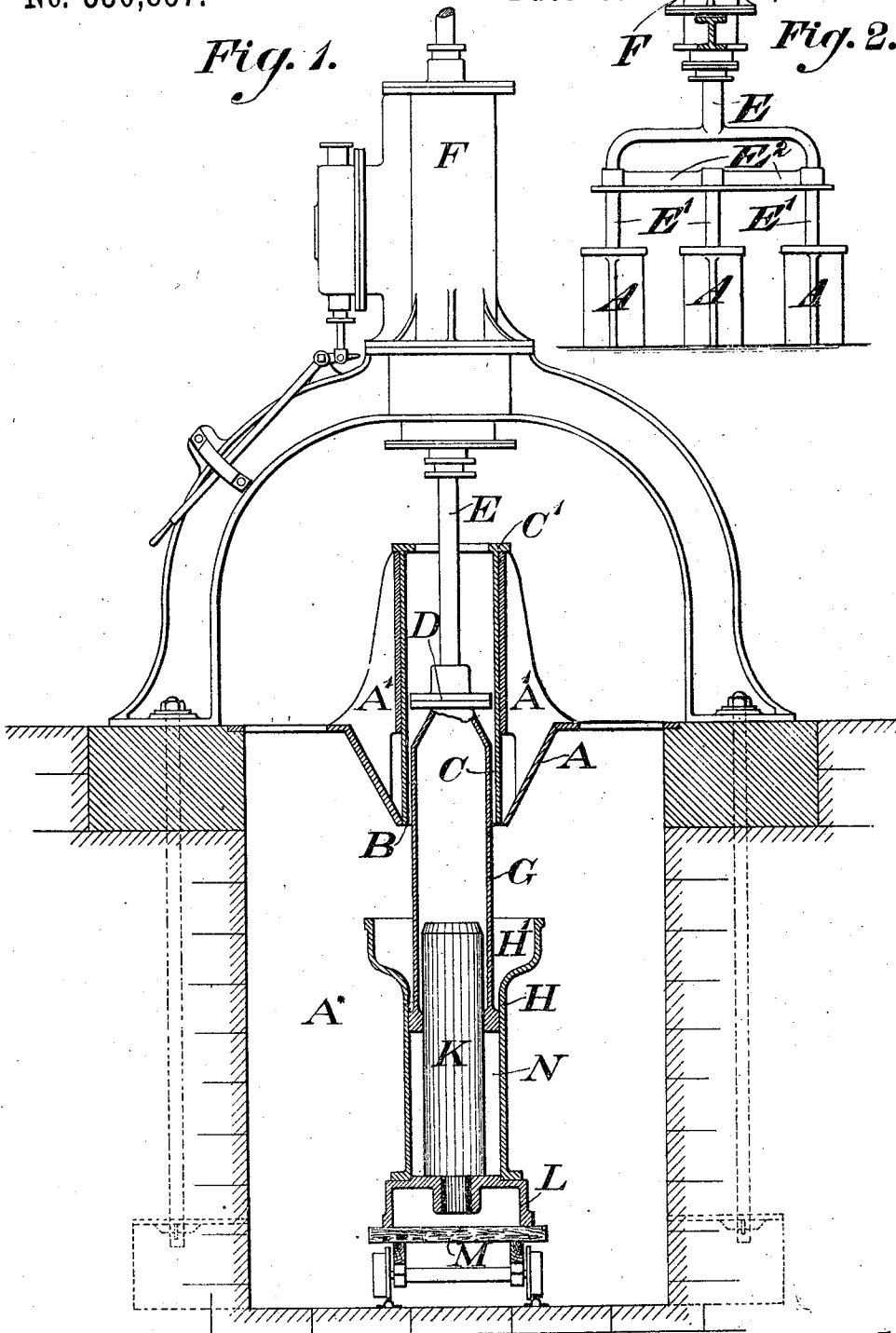
MACHINE FOR MAKING MOLDS AND CORES TO BE USED IN CASTING  
METAL PIPES, &c.

No. 530,857.

Patented Dec. 11, 1894.

*Fig. 1.*

*Fig. 2.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

JOB SHEPHERD, OF LOWER BREDBURY, NEAR STOCKPORT, ASSIGNOR TO HIMSELF, AND THOMAS BOWES LEIGH, OF HEATON MERSEY, NEAR MANCHESTER, ENGLAND.

MACHINE FOR MAKING MOLDS AND CORES TO BE USED IN CASTING METAL PIPES, &c.

SPECIFICATION forming part of Letters Patent No. 530,857, dated December 11, 1894.

Application filed March 1, 1894. Serial No. 501,975. (No model.) Patented in England December 12, 1892, No. 22,785; in Germany January 6, 1894, No. 77,640, and in Belgium May 18, 1894, No. 110,026.

*To all whom it may concern:*

Be it known that I, JOB SHEPHERD, a subject of the Queen of Great Britain and Ireland, residing at Lower Bredbury, near Stockport, in the county of Chester, England, have invented Improvements in Machines for Making Molds and Cores to be Used in Casting Metal Pipes and Other Articles, (for which patents have been granted in foreign countries as follows: Great Britain, dated December 12, 1892, No. 22,785; Germany, dated January 6, 1894, No. 77,640, and Belgium, dated May 18, 1894, No. 110,026,) of which the following is a specification.

15 This invention has reference to an improved machine for making molds and cores to be used in casting metal pipes and other articles, and it has for its object to enable molds and cores of good quality to be produced in a rapid and economical manner.

20 The machine comprises a rammer to which a reciprocating motion is imparted by the piston and rod of a fluid pressure motor, a hopper for containing the material of which the mold or core is to be made, and a valve that is arranged to control the passage of material from the hopper to a mold or core box below and is operated by or from the plunger the arrangement being such that molding material will be admitted to the mold or core box each time the rammer rises and such material will be pressed to the required form by the rammer when the same descends. In some cases several rammers may be used with one motor  
35 common to them.

In the accompanying drawings, Figure 1 shows, partly in elevation and partly in vertical section, a mold making machine according to this invention. Fig. 2 is a diagrammatic view to a smaller scale illustrating a modification.

40 Referring to Fig. 1, A is an annular hopper provided with dividing ribs A' and with an annular opening B controlled by a tubular valve C. This valve is provided with a lip or projection C' by which it is raised, and consequently opened, by the flange D when the rod E to which it is connected moves upward. Into the said hopper there is fed the material,

such as earth, loam, or sand, of which a mold 50 or core is to be made, for casting purposes, such as the casting of pipes, columns, cylinders, retorts, and similar articles.

The rod E is connected to a piston in a cylinder F to which actuating fluid, such as steam 55 or air is admitted as required to operate the piston and rod E. To the rod E is secured an annular rammer G at the upper end of which the flange D may be arranged as shown.

H is a mold box with wide mouth H' and K-60 is a pattern, these being supported on the base L carried by the trolley M mounted to run on rails at the bottom of a pit or underground chamber A\* at the top of which the hopper A is supported. As the rammer G rises, the 65 flange D comes in contact with the lip or projection C' of the valve C and raises that valve so as to open the outlet B, through which earth, loam, or sand falls into the annular space N around the pattern K in the box H. 70 As the rammer G descends the valve C will close and the rammer will compress the material that has fallen into the annular space N. On the completion of the mold the pattern K is withdrawn.

75 If desired means may be provided to prevent rotation of the rammer.

When making cores, there will be substituted for pattern K a box or core barrel of suitable form, and for the box H there will be substituted a suitable core box which may be made in parts so as to open as well understood; an appropriate form of rammer being also used when necessary in lieu of that shown. The rammer might be worked by hydraulic power 85 but that would be less advantageous because the rammer could not be so quickly actuated.

By this invention the production of molds and cores is facilitated, their cost is reduced, and better molds or cores may be obtained 90 than usual.

When making molds or cores for small pipes, the machine may be constructed with several rammers such as G, each working through a separate hopper and valve, and all 95 carried by the same piston rod, means being provided to prevent the piston rod rotating about its center. Fig. 2 shows the upper part

of an arrangement of this kind suitable for making three molds or cores simultaneously. In this case the three rammers are carried by rods E' connected to a common support E<sup>2</sup> fixed to the lower forked end of the piston rod E, the three hoppers A serving to prevent rotation of piston rod and rammers.

What I claim is—

1. A mold or core making machine comprising a hollow rammer, means for vertically reciprocating said rammer, a hollow stationary feeding hopper provided at its lower end with an outlet, a tubular valve arranged to slide vertically within said hopper and to control said outlet, and means operated by said rammer for automatically raising said valve during the ascent of said rammer, substantially as herein described for the purpose specified.

2. A mold or core making machine, comprising a fixed vertically acting reciprocating motor, a vertically reciprocating rammer arranged below and directly and rigidly connected to the reciprocating part of said motor and having its lower end corresponding in cross sectional form to that of the mold or core to be produced, a hollow stationary feeding hopper provided with a lateral outlet, a tubular valve arranged to slide vertically within said hopper and control said outlet, and means operated by said rammer for automatically raising said valve during the ascent of the rammer, substantially as herein described for the purpose specified.

3. A mold or core making machine comprising a fixed vertical fluid pressure reciprocating motor, a rammer rigidly connected to and actuated directly by the piston of said motor, a mold or core box having a central pattern or core barrel arranged below said motor, a stationary feeding hopper fixed independently of and above said mold or core box and provided with a feed outlet and a tubular and normally stationary valve arranged to slide vertically in said hopper to control said feed outlet, and to be automatically raised and opened by said rammer at each upstroke thereof, substantially as herein described for the purpose specified.

4. A mold or core making machine, comprising a fluid pressure reciprocating motor, a vertically movable rammer connected to the piston of said motor, a hopper having at its lower end an outlet surrounding said rammer, a tubular valve arranged within said hopper so as to control the outlet therefrom and provided with a lip or projection and a projecting part carried by said rammer and arranged to act against said lip or projection on each upward movement of said rammer

substantially as herein described for the purpose specified.

5. A mold or core making machine, comprising a plurality of vertically reciprocating rammers each corresponding in cross sectional form to that of the mold or core to be made, a plurality of stationary feeding hoppers each provided with an outlet and arranged to surround one of said rammers above the corresponding mold or core box, a plurality of tubular valves each normally stationary and adapted to control the outlet of one of said hoppers and arranged to be automatically raised and opened by the corresponding rammer when the same moves upward, a cross head common to said rammers and to which they are fixed, and a fixed vertical reciprocating motor having its reciprocating part rigidly connected to said cross head, all substantially as herein described for the purpose specified.

6. The combination with a vertical mold or core box having therein a fixed pattern or core barrel, of a vertically reciprocating annular rammer carrying a projecting part a fixed vertically reciprocating motor arranged above and having its reciprocating part rigidly connected to said rammer, a stationary feeding hopper fixed above and independently of said box and having a lateral feed outlet, and a tubular valve arranged to slide vertically within said hopper and control its feed outlet, and provided with a lip or projection arranged in the path of the projecting portion carried by said rammer substantially as herein described.

7. A mold or core making machine, comprising the hopper A formed with lower outlet B and arranged at the top of a molding pit or chamber A\*, the tubular valve C with lip or projection C', the vertical rammer G with flange D, the fluid pressure motor F having its piston rod E extending through said hopper and connected to said rammer, and the mold or core box H supported below said hopper, formed with an enlarged upper end II' and provided with a central pattern or core barrel K substantially as described and shown for the purposes specified.

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

JOB SHEPHERD.

Witnesses:

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