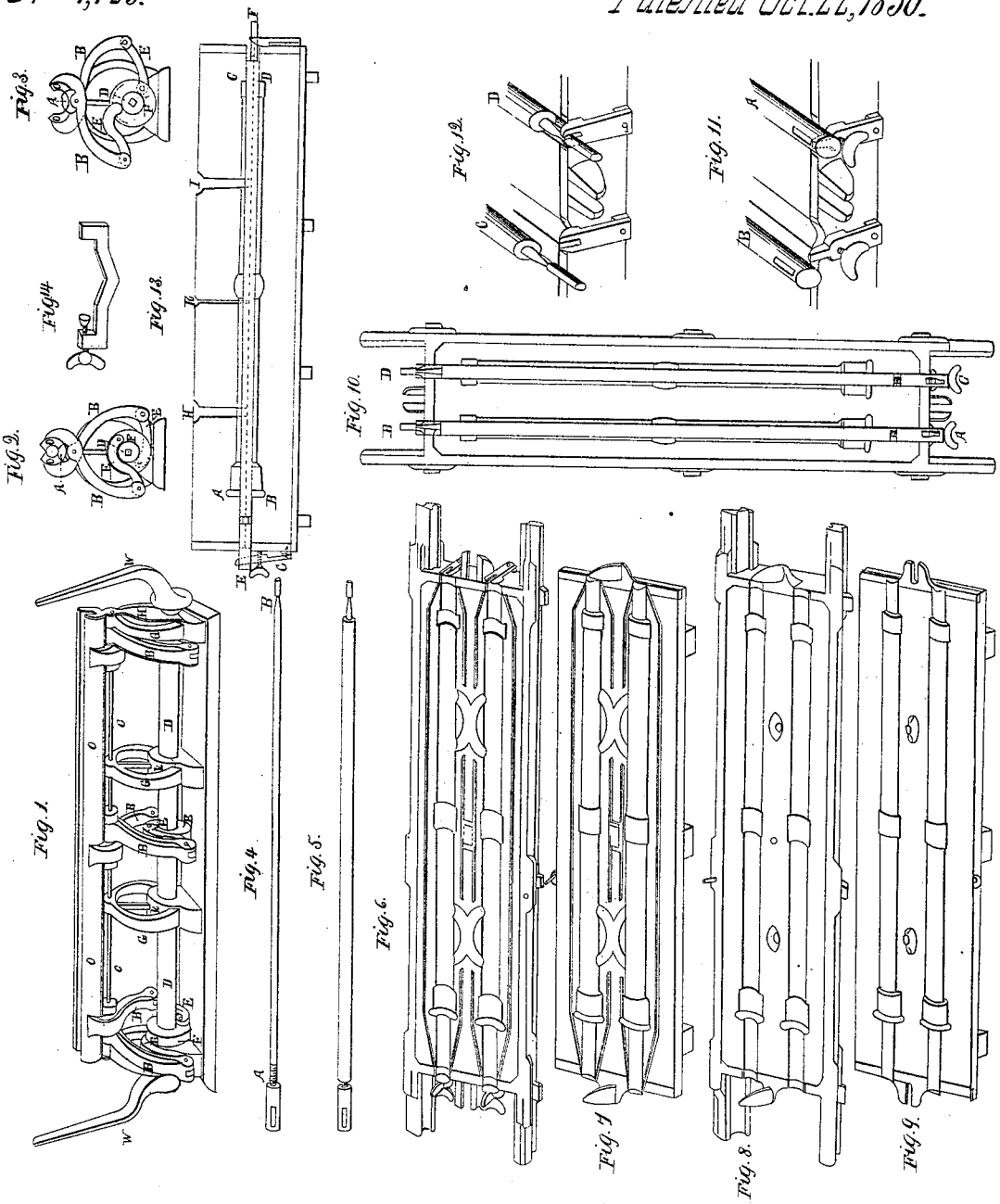
L. H. Crocker,

Molding Pipe.

No. 7,729. Patented Oct. 22, 1850.



UNITED STATES PATENT OFFICE.

LUTHER H. CROCKER, OF CINCINNATI, OHIO.

IMPROVEMENT IN MACHINES FOR MAKING AND HOLDING CORES FOR CASTINGS.

Specification forming part of Letters Patent No. **7,729**, dated October 22, 1850.

To all whom it may concern:

Be it known that I, LUTHER H. CROCKER, of Cincinnati, State of Ohio, have invented a new and improved machine for making cores for cast-iron pipes, and also a new and improved mode of keeping core-rods straight and stiff without the use of anchors, of which the following specification, and drawings attached, are a full, clear, and exact description, showing the nature and character of my improvement.

First, I make a frame of cast-iron or any other metal of a suitable size and strength to make the different sizes of pipes required. The frame consists, first, of a cast-iron plate a little longer than the length of the core to be made and about five inches wide, and from three-quarters of an inch to one inch and a half thick, No. 1, Figure 1. To this plate are attached and cast with the plate four or more upright stands, G G, one inch to one and a half inch thick, and about four inches wide at the bottom, the upper part being made with a circular ring about an inch or inch and a half wide, which are all connected with and attached to, as a part of the same casting, an upper plate, A, Fig. 3. In this plate is a circular groove or segment of a circle of the shape of the core, and about one-fourth of the circumference of the core to be made. On the under side of this plate there are projections cast, through which the long bolt runs, hereinafter named, to hold the plate in its place, (marked C.) This plate for a three-quarter-inch pipe should be made about two inches wide and about five-eighths of an inch thick, and for larger pipes should be increased in size within an inch of the bottom of and in the stands G G. There is a box forming, as it were, a pillow-block, (on which rests and moves a shaft,) D, about an inch and a quarter to two inches in diameter, running the whole length of the core, the machine having on each end a lever, W, for the purpose of turning the same, and made of wrought-iron.

In each of the stands G is a cap, K, which, being placed over the box above referred to, forms the top of the pillow-block, to keep the shaft D in its place, and this cap is kept down by a screw which extends from the cap to the under side of the top of the ring part of G. On the shaft there are four or more wrought-iron rings, F F, welded on, about three-fourths of an inch thick, and projecting from the shaft three-quarters to an inch, for the purpose of fastening the levers marked E E. To these rings, on opposite sides, are attached, by a pin or bolt of a suitable size, under-connecting levers E E, of a circular shape. These levers are again attached to other levers, which I call "upper" levers, B B, by a similar pin or bolt. These upper levers are also of a circular shape, and are made with the jaws that form the sides and top of the core in a solid piece. These upper levers have a hole near to the top, as have also all the stands G G, about an inch below the under side of the top plate, A, through which holes a bolt about five-eighths of an inch diameter runs the whole length of the machine, and upon which the upper jaws work as a fulcrum. The jaws *o o*, Fig. 3, which form the side and top of the core, are attached to the upper levers, and are made from one to two inches thick, depending upon the size of the pipe wanted, and are of a circular shape on the outside. These jaws, when closed up by means of the levers, meet each other in the under side of the jaw at the top of the core, and are beveled off from this point toward the outside, so as to leave two sides of a square, the object of this square being to cut off any surplus sand which may be squeezed out of the core-space. Each side of the top of the upper plate for its whole length, and from the outside of the groove or segment, is a planed circle struck (for the three-fourths-inch pipe) at a distance one and five-eighths inch from the center of the long bolt running the whole length of the frame. On these planed circles the lower edges of the jaws are made to fit and turn close, so as to prevent the sand getting between them. Each end of the jaws are so finished as to form when connected and closed a circular end.

At each end of the machine, and fastened onto the cap K, and by a hole for that purpose passing over the upper bolt, is a spring of plate-steel, H, Fig. 1, reaching up to the top of the jaws, and so shaped as to fit close the circular end of the jaws. A space is cut out of the upper part of the spring of sufficient size to lay in the end of the core-rod, and when this core is formed and the jaws opened the circular shape of the ends of the jaws operat-

ing upon the circular shape of the steel spring presses the latter gently and gradually from the ends of the core so as not to injure the same. The machine being thus formed, I lay in, by measure, sufficient green sand to form the lower half of the core, then press gently down the core-rod onto this sand. I then put into the jaws a sufficient quantity of sand to form the upper part of the core, and then by means of the levers W press the jaws together, and the core is formed.

In order to keep the cores on the core-rods from springing, instead of using anchors in the ordinary way, I keep the core-rod straight and stiff as follows: first, I cut a screw on one end of the core-rod, and at the other end of the rod I cut a double notch, one on each side, which falls into a slot or notch in the upper end of a piece of iron screwed onto the head of the flask, which vibrates on the screw, so as to preserve the core in the center of the core-print. At the other end of the core-rod, and to the screw cut thereon, I screw another piece of iron of the size of the core, being, as it were, a continuation of the core. This piece may be two to three inches long and extending beyond the head of the flask, so as to admit of a mortise, and near the end of this piece of iron I cut a perpendicular mortise outside the head of the flask in a similar manner to the piece as above described. Through this piece of iron, and just below the bottom of the core-rod, I drill a screw-hole and put in a metal screw, forming a male and female screw, and this screw, going through the piece of iron (marked C, Fig. 11) and pressing against the head of the flask, tightens the core-rod and keeps it straight and stiff, thereby making a straight pipe of an equal thickness all around.

Fig. 1 represents the core-press in a perspective view when half opened. O O is the barrel in which the core is pressed. It is composed of three parts, distinctly shown in Figs. 2 and 3. Six levers, which cross each other in pairs and are fastened to the side pieces of the core-barrel, for the purpose of opening and closing it, are marked B B. An iron rod, C C, holds the levers hinge-like together. D D is a shaft moved by the two levers W. To this shaft are attached three rings, welded on, two of which can be seen in the drawings, marked F F, Figs. 2 and 3. Six curves joined to the rings and the cross-levers put them in motion, by which the core-barrel is opened and closed. The four supporters are marked G′, to which is fastened the bottom pieces of the core-barrel. A flat spring, shutting the core-barrel at each end, is marked H, one of which is seen in the drawings.

Fig. 2 represents a side cut of the core-press when closed. A O O are the three pieces of which the barrel is composed; B B, the cross-levers; F F, the rings, with D D, the shaft; E E, the curves attached to the rings and cross-levers.

Fig. 3 represents a side cut of the core-press when opened, and shows more distinctly the mechanism and motion of the different parts. (Lettered as in Fig. 2.)

Fig. 4 shows the core-rod at A, to the end of which is attached a piece of iron the size of the core, fastened to the core-rod with a screw, by means of which it can be shortened or lengthened. The end B is dovetailed, as seen in the drawings.

Fig. 5 shows the core when finished.

Fig. 6 represents the drag or bottom part of the mold, showing the gates for the metal to run, and the recesses for the escape of the gas. (Drawn in a perspective view.)

Fig. 7 represents follow-board, over which the drag is molded.

Fig. 8 represents the cope or upper part of the mold in a perspective view.

Fig. 9 represents follow-board, over which the cope is molded.

Fig. 10 represents a horizontal view of the drag, with the cores A B and C D put in. The core C D is shown to be drawn straight by driving on the screw at C, the gates and gas-recess shown in Fig. 6 being left out.

Figs. 11 and 12 show more particularly the mechanism by which the cores are drawn straight. In Fig. 11, A and B show one end of the cores. A is shown to be put in the hook. B is left out of it, to show the particular shape of it. In Fig. 12, E D, is shown the other end of the cores. The end D is put into the holder. The end C is left out of the holder, to show better the shape and use of it.

Fig. 13 shows a vertical cut of the length of the mold when ready to be poured with metal. A B C D is the excavation to be filled with metal. E F is the core, drawn straight by driving on the screw of the hooks C. H and I are the gates for pouring the metal in. K is the flue for letting out gas. The dotted line in the middle shows the parting of the mold.

Fig. 14 represents one of the four clamps, by which the molds are held fast.

Having thus fully described my apparatus, I wish it understood that I do not claim the making of cores by compression, as that process has been employed before; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. The combination of the two moving jaws *o o*, with the stationary piece A, said moving jaws being shaped and actuated substantially in the manner and by the mechanical devices herein specified.

2. Keeping the cores straight and stiff in the flasks without the use of anchors by means of contrivances substantially such as are herein described.

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Witnesses:

CHARLES FOX,

SAMUEL S. ASHCRAFT.