(No Model.)

J. J. KINZER, Jr.

APPARATUS FOR FORMING SAND MOLDS.

No. 457,321. Patented Aug. 4, 1891.

Fig. 1.

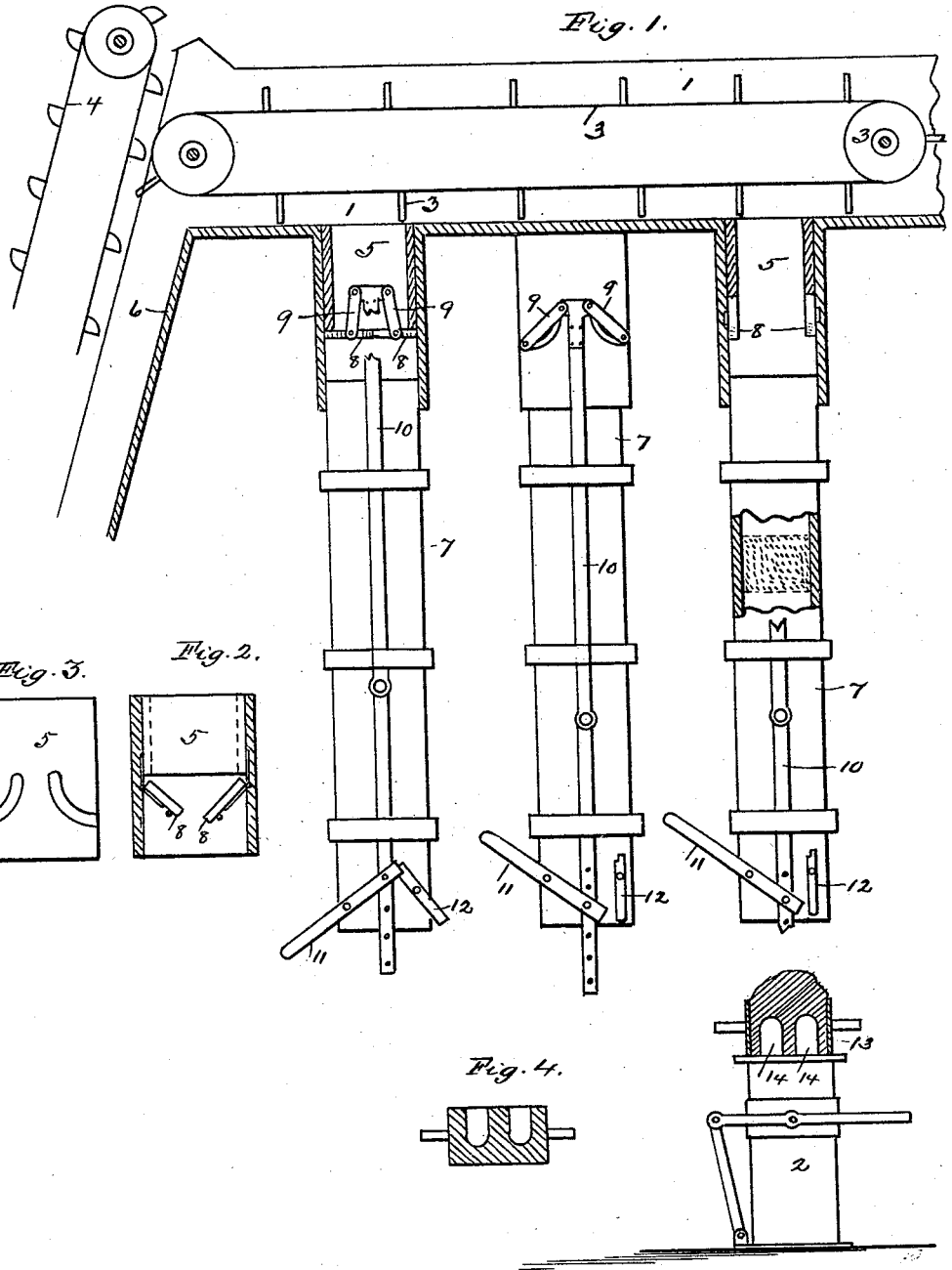

Fig. 3.

Fig. 2.

Fig. 4.

Witnesses:

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APPARATUS FOR FORMING SAND MOLDS.

SPECIFICATION forming part of Letters Patent No. 457,321, dated August 4, 1891.

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To all whom it may concern:

Be it known that I, JOHN J. KINZER, Jr., a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Forming Sand Molds; 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved apparatus for forming molds; and it consists in the peculiar construction and arrangement of parts, as will be fully set forth hereinafter.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a series of molding apparatus which are constructed in accordance with my invention. Fig. 2 is a section elevation of the gage or measuring box, showing the trap-doors or valve partly open. Fig. 3 is an external elevation of the same. Fig. 4 is a sectional elevation of one of the finished molds.

To construct a molding apparatus in accordance with my invention, I place a large trough 1 above a series of molding-benches 2 and arrange therein a suitable sand-conveying device 3, capable of receiving the sand from another conveyer 4 and carrying the same to the opposite end of the trough 1, and then back along the bottom of the same and discharging the sand into measuring or gage boxes 5, located at regular intervals beneath the conveyer 3. The surplus sand is carried back and discharged into a chute 6, leading from the trough 1 to the bin or point from which the same was taken. These measuring-boxes 5 are arranged at the mouth of a series of vertical chutes or guides 7, which extend downward to a point a short distance above the molding-benches 2. Arranged at the base of these measuring-boxes 5 are trap-doors 8, hinged to the same in a manner that when the said doors are down an uninterrupted or free passage will be formed for the sand in its downward descent into the guides 7. To operate these doors 8, I attach the same to two short links 9, which are pivoted to a rod 10, which extends downward and is connected to a hand-lever 11 and the said doors held locked by a latch 12. This rod 10 is formed in two pieces and the same hinged together, so that the lower portion may oscillate to correspond with the movement of the lever 11.

In operation the sand is conveyed into the measuring-boxes 5, as above described, and the surplus removed. The mold-flasks 13 are arranged on the benches 2 and the patterns 14 placed therein in a manner well-known to the art. The hand-lever 11 is released from the latch 12 and the same given a quick upward movement, which will open the doors 8 and permit the sand contained therein to drop in a body into the flask 13, thereby packing the same evenly throughout the entire mold. If it is desired to form larger molds, the measuring-boxes 5 may be removed and boxes of a greater length put in their place. The advantages of this method of molding are many, and among which are that the sand is evenly and gradually placed into the measuring-boxes, thereby insuring the exact quantity of sand necessary to form the mold, and when the same in its descent through the guide enters the mold it will run to all parts of the same and pack with sufficient density to require no ramming or other pressure to complete the mold. This apparatus will be found particularly useful when castings of a regular and even size are to be formed, such as "pipe-slugs" for welding wrought-iron tubing, and many other castings where the greatest degree of exactness is required, which could not be obtained if the sand is not measured and dropped from a given height into the mold and allowed to pack itself by its own weight or gravity.

Having thus described my invention, I claim—

1. The combination, in a sand molding apparatus, of gage-boxes, trap-doors hinged therein, vertical chutes extending from said gage-boxes to a point adjacent to the molding-benches, links each secured at one end to one of said trap-doors, a rod connecting the adjacent ends of each pair of links, as shown, and means for operating said rod to open and close said trap-doors.

2. The combination, in a sand molding apparatus, with a trough, a sand-conveying device therein, means for elevating the sand

into the top of said trough onto the conveying means therein, and means for carrying off the surplus sand, of gage-boxes having communication with the interior of said trough, trap-doors hinged therein, vertical chutes having their lower ends adjacent to the molding-benches, links each secured at one end to one of said trap-doors, a rod connecting the adjacent ends of each pair of links, as shown, and means for operating said rods to open and close said trap-doors.

3. The combination, in a sand molding apparatus, of gage-boxes, trap-doors hinged therein, vertical chutes having their lower ends adjacent to the molding-benches, links each secured at one end to one of said trap-doors, rods secured to the adjacent ends of each pair of links, as shown, each of said rods being made in two parts pivotally secured together, a lever pivoted to the lower of said parts, a latch engaging said lever, and means for filling said gage-boxes.

In testimony that I claim the foregoing I hereunto affix my signature this 25th day of March, A. D. 1891.

JNO. J. KINZER, JR. [L. S.]

In presence of—
CHARLES LARGE,
M. E. HARRISON.