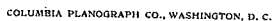


1,065,126.

Patented June 17, 1913.



UNITED STATES PATENT OFFICE.

GEORGE A. HARDER, OF NEW YORK, N. Y.

MOLDING-MACHINE.

1,065,126.

Specification of Letters Patent.

Patented June 17, 1913.

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To all whom it may concern:

Be it known that I, GEORGE A. HARDER, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented an Improvement in Molding-Machines, of which the following is a specification.

My invention relates to an apparatus for molding mechanically.

I am aware that heretofore various machines have been designed for mechanical molding; for example, machines have been constructed in which the flasks containing the patterns have been filled with molding sand and then the flasks so filled have been passed under rollers for compacting the sand. In this type of machine, however, the tendency has been to compact the sand to a greater degree adjacent to the rollers than at the bottom of the flask, in many cases making the sand so compact adjacent to the rollers as not to provide properly for the escape of the gases, and this form, therefore, has this disadvantage.

Machines of this type have also been designed in which the molding sand has been more or less compacted in the flasks around the patterns at the same time or simultaneously with the feeding of the molding sand. In this type of machines, however, the sand has not been compacted uniformly, merely from the fact of the different depths of the mold due to the patterns contained therein it being manifest that the sand will be more closely compacted above the patterns than in the deeper portions of the flask.

Now, the object of my invention is the provision of a molding machine in which the molding sand is simultaneously fed and compacted to a predetermined extent in the flasks and that that portion of the molding sand in the deeper parts of the flasks is then further compacted to make the molding sand in the entire flask, and particularly that adjacent to the patterns as uniform as possible. The apparatus by which this is effected will be hereinafter more particularly described.

In the drawing, Figure 1 is a partial longitudinal section illustrating my improved molding machine. Fig. 2 is a partial transverse section illustrating one form of rollers employed. Fig. 3 is a similar view showing a modified form of the rolls, and Fig. 4 is a diagrammatic illustration of the manner in which the sand in the flasks

is compacted, after having passed under the hopper and compacting feed screw.

Referring particularly to the drawing, it will be seen that in carrying out my invention, I preferably employ a suitably supported platform 10, to which are connected depending hangers 11 and 12. In these hangers, a drive shaft 13 is journaled and the drive shaft is driven from any suitable source of power through a spur gear 14 or otherwise. At one end, the shaft 13 is provided with a beveled gear 15 meshing with a corresponding gear 16 which is secured to a cross shaft 17, the cross shaft being journaled in suitable hangers, one of which is shown at 18. I also employ a second cross shaft 19, and on these cross shafts the sprockets, indicated at 20 and 21, are secured. Passing around the sprockets is an endless chain, indicated at 22, and suitably mounted in spaced positions in the platform 10. I prefer to employ guide rolls 23, over which the endless chain passes, and by which the same is prevented from contacting with the upper surface of the platform and is maintained at a uniform distance therefrom in the operation of the apparatus. In suitably spaced positions on the endless chain 22 are pivotally connected levers 24, the function of which will be hereinafter specified. I also employ a plurality of cars, indicated at 25. Each of these cars, as is usual, is suitably fitted with trucks, the wheels of which are indicated at 26 and are adapted to roll on the tracks 27 suitably secured to the platform 10. One end of each car 25, at the side thereof, is provided with a hook 28, and the opposite end in a similar position with a pin 29, so that, as will be apparent, the cars may be connected by causing the pins at the end of one car to be engaged by the hooks at the ends of the adjacent car so as to form a train of the cars, each of which is adapted in the operation of the cars to support and carry a molding flask, as will be hereinafter explained. I also employ a hopper 30 which is suitably mounted upon the platform 10. A shaft 31 extends within the hopper and at its lower end is provided with a feed and compacting screw 32, the lower edge of which extends in a line coincident with the plane extending across the bottom of the hopper. Also arranged in suitable positions on the platform 10 are posts 33, and journaled in these posts is a shaft 34. Mounted on the shaft

34, in the necessary positions, I employ rolls 35 with the intermediate rolls 36, as indicated in Fig. 2 or as shown in Fig. 3, and as will be hereinafter more particularly explained, I may dispense with the rolls 36 and merely use the rolls indicated at 37, which are in all respects similar to the rolls 35, as shown in Fig. 2.

In illustrating my invention, I have shown the same as adapted particularly for casting iron pipes, in which of course it is necessary to employ flasks 38, in which are placed, as usual, the necessary patterns 39. Each of these flasks is placed and secured on one of the cars 25, and the train of cars caused to travel beneath the hopper 30, which, as will be understood, contains the necessary molding sand for filling the flasks.

The levers 24 are adapted to right themselves automatically as the chain reaches the upper surface of the platform 10, and are so spaced that the upright portion of each lever 24 engages the rear end of one of the cars so that by means of these levers, through the movement of the endless chain, the cars 25 are caused to travel through the apparatus.

As each flask passes beneath the hopper, the shaft and the feed and compacting screw being turned by any suitable means, it will be understood that the flask is filled with sand and the same compacted to a certain extent by the action of the feed and compacting screw 32. As hereinbefore stated, the sand as compacted by the action of this screw is more or less uneven, due to the different depths of the flask, the sand immediately over the patterns being compacted more tightly than that in the deeper portions of the flask, as is indicated at 40, in Fig. 4. Now, as the cars continue traveling, and as each one passes from beneath the hopper, it is caused also to pass under the rolls 35 and 36, as indicated in Fig. 2, or under the rolls 37, as indicated in Fig. 3, the manifest action of these rolls being to further compact the sand 41 in the deeper portions of the flask so that the consistency of the sand in those portions of the flask adjacent the patterns is as uniform as possible and at the same time is sufficiently compact for molding.

I claim as my invention:

1. In a molding machine, the combination with a platform and endless chain, a plurality of cars, each adapted to support and

carry a molding flask, and means for moving the cars across the platform through and by the endless chain, of means for feeding sand and compacting the same in the flasks as the cars cross the platform, and means operative thereafter for further compacting the sand in those portions of the flasks in which the sand is the thickest.

2. In a molding machine, the combination with a platform and endless chain, a plurality of cars, each adapted to support and carry a molding flask, and means for moving the cars across the platform through and by the endless chain, a hopper mounted above the said platform and beneath which the cars travel, means for feeding sand through the said hopper and compacting the same in the flasks as the cars pass beneath the hopper, and means operative thereafter for further compacting the sand in those portions of the flasks in which the sand is the thickest.

3. In a molding machine, the combination with a platform and endless chain, a plurality of cars, each adapted to support and carry a molding flask, a hopper mounted on the said platform and beneath which the cars pass in traveling across the same, a feed and compacting screw operative within the said hopper for feeding the sand to the flasks and compacting the same therein as the cars pass beneath the hopper, and means operative thereafter for further compacting the sand in those portions of the flasks in which the sand is the thickest.

4. In a molding machine, the combination with a platform and endless chain, a plurality of cars, each adapted to support and carry a molding flask, a hopper mounted on the said platform and beneath which the cars pass in traveling across the same, a feed and compacting screw operative within the said hopper for feeding the sand to the flasks and compacting the same therein as the cars pass beneath the hopper, a shaft and rolls mounted thereon beneath which the cars pass after leaving the hopper, and by which rolls the sand is further compacted in those portions of the flasks in which the sand is the thickest.

Signed by me this 22d day of November 1912.

GEORGE A. HARDER.

Witnesses:

GEO. T. PINCKNEY,
J. B. LE BLANC.