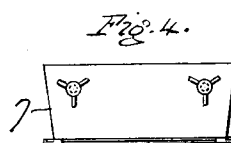
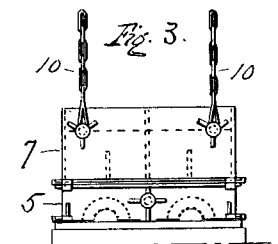
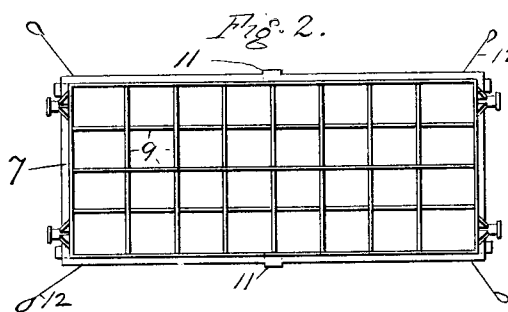
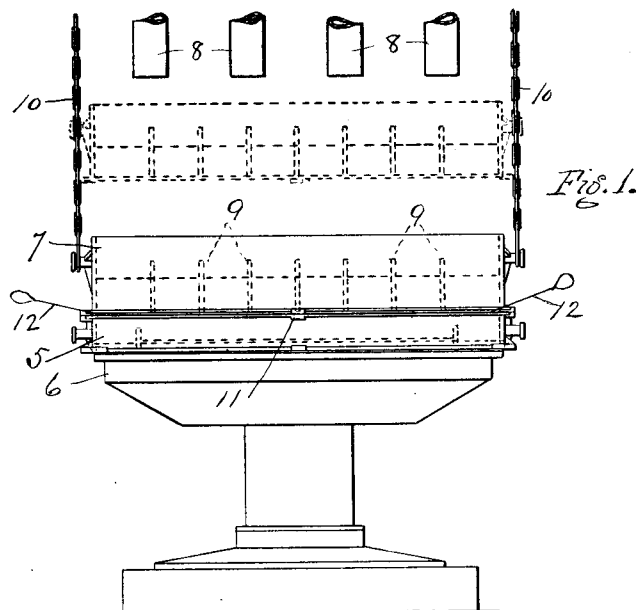


R. R. RUST.
MOLDING APPARATUS.
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1,029,563.

Patented June 11, 1912.



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ROBERT R. RUST, OF NEW YORK, N. Y.

MOLDING APPARATUS.

1,029,563.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ROBERT R. RUST, a citizen of the United States of America, and residing in the city, county, and State of New York, have invented a certain new and Improved Molding Apparatus, of which the following is a specification.

My invention relates to molding apparatus and particularly to mold packing apparatus, the object of my invention being to provide an improved hopper especially suitable for use with jolt ramming apparatus.

In the accompanying drawing, Figure 1 is a side elevation of a jolting ram with mold flask and hopper flask in position for ramming; Figs. 2 and 3 are a plan and end elevation respectively of the hopper flask shown in Fig. 1; and Fig. 4 is an end elevation of a hopper flask of modified form.

The present common foundry practice in the formation of a mold comprises, roughly speaking, the compacting, by jolting, compressing or otherwise, of the requisite sand in the mold flask (whether drag or cope) around the pattern therein, followed by the scraping off of any loose or surplus sand on the top of the flask so that the latter may have a flat resting surface. In some cases, the sides of the flask are temporarily raised by an open hopper frame superposed on the flask and serving to prevent the lateral escape of the sand during the compacting operation. This frame is removed after the flask is properly compacted and the loose or surplus sand must then be scraped off the top, as just mentioned, where no hopper frame is used. In either event it is usual, especially in the case of large flasks, to apply bottom boards to the thus leveled surface of the flask, since the sand is not sufficiently compacted, except by butt ramming, at this point to be self-sustaining, even when supporting bars are arranged within the flask. This practice is attended with various disadvantages, among which may be mentioned the waste of the sand that is scraped off of the flask, the cost in labor and time attending this operation and the adjustment of the bottom boards. Furthermore the mold itself is occasionally imperfect by reason of the fact that a sufficient head of sand is not afforded above the pattern to properly compact the sand around the same, and "soft" or "hard spots" in the mold result, which, unless remedied before the pour, give an imperfect casting. To

obviate these disadvantages, I now propose to use with the mold flask a hopper flask, supplying thereto a quantity of sand considerably in excess of that required by the mold flask, compact the sand in the mold and hopper flasks (preferably by jolt ramming), and then separate the hopper from the flask by a clean break with the excess sand retained in the hopper, thereby securing a mold flask with its sand so well compacted even to the top of the flask, by reason of the head of excess sand in the hopper. during the compacting operation, that bottom boards or butt ramming are rendered unnecessary, while the clean break between the hopper and mold flask obviates the necessity for the leveling and smoothing operation. Having separated the hopper from the mold flask, the latter is removed and a fresh flask placed beneath the hopper ready to receive the excess sand retained therein. Facing sand may, if desired, be applied to the pattern in the fresh flask before the sand in the hopper is fed thereto. Additional sand is then supplied to the hopper to afford the necessary head, and the operation repeated.

An apparatus suited to this method of operation is illustrated in the drawing.

The mold flask 5 lies on top of the jolt ramming table 6, in its usual position. Above the mold flask I arrange a hopper flask 7 of any desired shape, to retain the excess sand coming from the usual chutes 8. Within the hopper flask 7 I preferably arrange sand supporting bars 9 in any suitable way. Preferably these bars are placed with their lower faces substantially flush with the bottom of the hopper and they are made of such height and so positioned with relation to each other than they do not interfere with a proper and even distribution of the sand in the hopper. As the sand is compacted by the jolting table, the excess contained within the hopper flask packs between the supporting bars so that not only is any rebound of the sand in the mold flask prevented, but also upon lifting the hopper flask from the mold flask, for example by means of the lifting chains 10, the excess sand is retained in the hopper and parts cleanly from that in the mold flask, the line of cleavage corresponding substantially with the lower face of the supporting bars in the hopper flask. An inconsiderable quantity of sand which is loosened by the parting of the

hopper flask from the mold flask, may remain on top of the latter, but its presence is negligible and it does not affect the compactness of the sand in the body of the mold flask. This is particularly true when the mold flask is provided with sustaining bars. In some cases it may suffice to merely incline the sides of the mold flask, the wedge action thereby secured being sufficient in the case of small hopper flasks to pack the sand in the lower portion thereof, without the use of supporting bars.

If desired, spacing lugs 11 may be interposed between the juxtaposed faces of the mold and hopper flasks to leave room for a severing device such as a wire 12 which may be laid between the flasks before the sand is filled in, and subsequently be sawed through the sand after the latter has been compacted. Such a severing device however is, under ordinary circumstances, needless, since the flasks are sufficiently cleanly parted after ramming by reason of the supporting bars in the hopper flask.

The advantages of the present method of operation are obvious. The labor in butt ramming and the usual loss of time and waste of sand, attendant upon the scraping off of the mold flask is entirely obviated as is also the delay occasioned by the necessity of applying bottom boards. The excess sand retained by the hopper flask is in position to be rammed into an empty flask without waste or further handling as soon as the fresh flask is placed in position, thus expediting the filling thereof. While in addition to the more expeditious method of operation thus secured a more evenly and densely compacted mold is secured.

It is obvious that this improved method of operation may be equally well applied to the molding of cores, by shaping the hopper flask to the core-box, and in the following claims I use the term "mold flask" in a sense broad enough to include a core-box, since the method of operation and apparatus are substantially the same so far as the present invention is concerned.

I claim as my invention:—

1. An improved mold packing apparatus which comprises a hopper flask adapted to be superposed upon a mold flask during

charging and jolting, in combination with rigid retaining bars arranged within said hopper flask serving to prevent rebound of the sand in the mold flask and to sustain any excess of sand over that required for the mold upon the separation of the hopper and mold flasks.

2. An improved mold packing apparatus which comprises a hopper flask adapted to be superposed upon a mold flask during charging and jolting, in combination with rigid retaining bars arranged within said hopper flask, adjacent its parting face, said bars serving to prevent rebound of the sand in the mold flask and to sustain any excess of sand over that required for the mold upon the separation of the hopper and mold flasks.

3. An improved mold packing apparatus which comprises a hopper flask adapted to be superposed upon a mold flask during charging and jolting, in combination with a grid of retaining bars of various heights arranged within said hopper flask with their lower faces lying in substantially the same plane adjacent the parting face of the hopper flask, said bars serving to prevent rebound of the sand in the mold flask and to sustain any excess of sand over that required for the mold upon the separation of the hopper and mold flasks, substantially as described.

4. An improved mold packing apparatus which comprises a hopper flask adapted to be superposed upon a mold flask during charging and jolting, in combination with a grid of retaining bars arranged in said hopper, said bars having sufficient vertical height to insure the packing of the hopper sand between the same so that they serve not only to retain any excess of sand over that required for the mold upon the separation of the hopper and mold flasks, but also serve to prevent the rebound of the sand in the flask during jolting.

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

ROBERT R. RUST.

Witnesses:

WALTER ABBE,
L. H. GROTE.