(No Model.)

J. J. CARR.

PROCESS OF MOLDING.

No. 408,579. Patented Aug. 6, 1889.

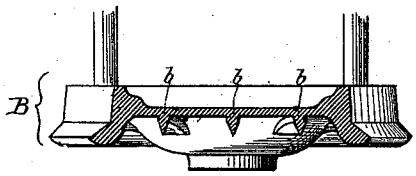


FIG. 1.

FIG. 2.

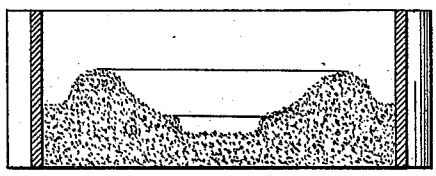
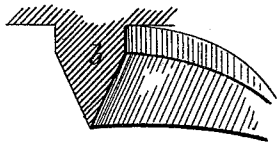


FIG. 6.



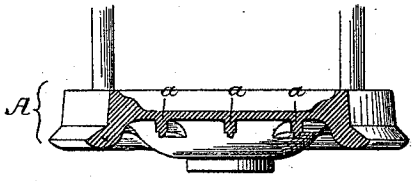


FIG. 3.

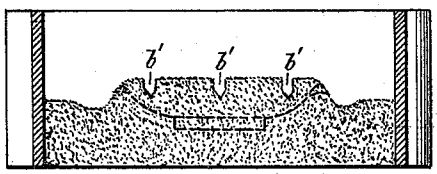


FIG. 4.

FIG. 7.

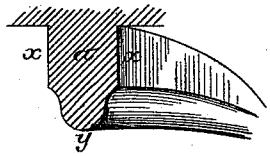
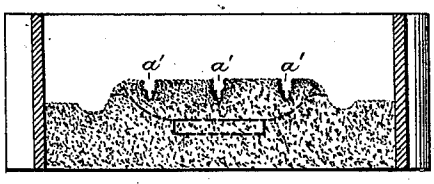


FIG. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH J. CARR, OF WILKES-BARRÉ, PENNSYLVANIA, ASSIGNOR TO THE WILKES-BARRÉ MOLDING MACHINE COMPANY, OF SAME PLACE.

PROCESS OF MOLDING.

SPECIFICATION forming part of Letters Patent No. 408,579, dated August 6, 1889.

Application filed April 19, 1889. Serial No. 307,699. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH J. CARR, a citizen of the United States, and a resident of Wilkes-Barré, Luzerne county, Pennsylvania, have invented an Improved Process of Molding, of which the following is a specification.

The object of my invention is to so form a sand mold that the impression therein may be made extremely sharp and well defined throughout, so that castings of a more perfect character than usual can be produced. This object I attain by forming the mold by a series of successive operations in such a manner that the sand is gradually brought to the final or finished shape without danger of breaking or failing to form any of the desired sharp corners or angles in the mold.

My invention is particularly applicable to the formation of molds for casting car-wheels, and in the accompanying drawings the invention is illustrated with reference to the formation of such a mold.

Figure 1 is a view, partly in section and partly in elevation, of a pattern for effecting the first step in the operation, Fig. 2 being a sectional view of part of the molding-flask, with the sand therein shaped by means of the usual sweep, so as to approximate to the general form of the pattern. Fig. 3 is a view, partly in section and partly in elevation, of the finished pattern for the wheel. Fig. 4 is a sectional view of part of the molding-flask, the section being in the same plane as that of the pattern shown in Fig. 3, and the view showing the condition of the sand in the flask after it has been subjected to the action of the preliminary or preparatory pattern, Fig. 1. Fig. 5 is a sectional view of part of the flask on the same plane as Fig. 4, and showing the condition of the sand after it has been subjected to the action of the final or complete pattern, Fig. 3; and Figs. 6 and 7 are enlarged views of parts of the patterns shown in Figs. 1 and 3, respectively.

In molding car-wheels by machinery the ordinary steps in the process are first to supply the section of the flask with a sufficient quantity of sand, then to form up this sand by means of a rotating sweep or scraper into substantial conformity with the outlines of the pattern, and then to press the pattern into the sand by suitable forcing mechanism. The pattern used, however, is that for the finished or complete wheel, and the forcing of such pattern into the sand in many cases fails to produce a properly-shaped and well-defined impression in the sand, the latter failing to conform closely to the ribs or projections of the pattern, and said projections having a tendency to roughen, break, or improperly form the corners of the mold and to render some portions of the mold more compact than others.

In carrying out my invention, therefore, I use a series of patterns—that is to say, in addition to the finished or complete pattern for the wheel I use one or more preparatory patterns, the projecting portions of which, corresponding to the projecting portions of the finished pattern, are of such shape that they will enter the sand easily and displace it gradually. Thus in the drawings I have shown the use, in addition to the finished pattern A for the wheel, of a preliminary pattern B, and while in the finished pattern there are ribs *a* with straight sides *x* and rounded ends *y*, as shown in Fig. 7, in the preparatory pattern the ribs *b*, corresponding with the ribs *a* of the finished pattern, are tapered or V-shaped, as shown in Fig. 6, so that when this preparatory pattern is pressed upon the sand in the flask the tapering ribs will displace the sand gradually without any abrupt downward pressure upon any part of it, so that before the finished pattern is pressed into the sand recesses *b'*, approximating in form to the shape of the ribs *a* of the finished pattern, will be formed in the mold, and the change in the shape of these recesses from the preparatory to the finished form is readily effected by the finished mold without undue pressure upon any portion of the latter and without risk of breaking, roughening, or failing to properly form any of the sharp corners of the mold, the sand being compressed to a substantially equal extent around all portions of the ribs or projections of the pattern.

It will be evident that, although I have described the use of but one preparatory pattern, any number of such patterns may be employed, the ribs or projections of the suc-

cessive patterns approaching more and more nearly to the outline of the ribs or projections of the finished pattern.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The within-described process of molding, said process consisting in pressing against the sand a succession of patterns, the preparatory patterns having their projecting portions so shaped in respect to the corresponding projecting portions of the finished pattern that the recesses will be formed in the mold by gradually displacing the material until it assumes the finished form, substantially as specified.

2. The mode described of forming molds for casting, said mode consisting in pressing against the sand a series of patterns acting successively upon the mold, the projecting portions of the preliminary or preparatory patterns being tapered, so as to effect the gradual displacement of the sand and the formation of recesses therein for the reception of the projections of the finished pattern, substantially as specified.

3. The within-described process of molding car-wheels, said process consisting in first pressing against the sand a pattern in which the ribs of the wheel are tapered in cross-section, and then subjecting the sand, after the action of the preliminary pattern, to the pressure of the finished pattern, having ribs of the finished shape, which enter the tapering recesses previously formed in the mold by the ribs of the preliminary pattern, substantially as specified.

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

JOSEPH J. CARR.

Witnesses:
JOHN E. PARKER,
HARRY SMITH.