

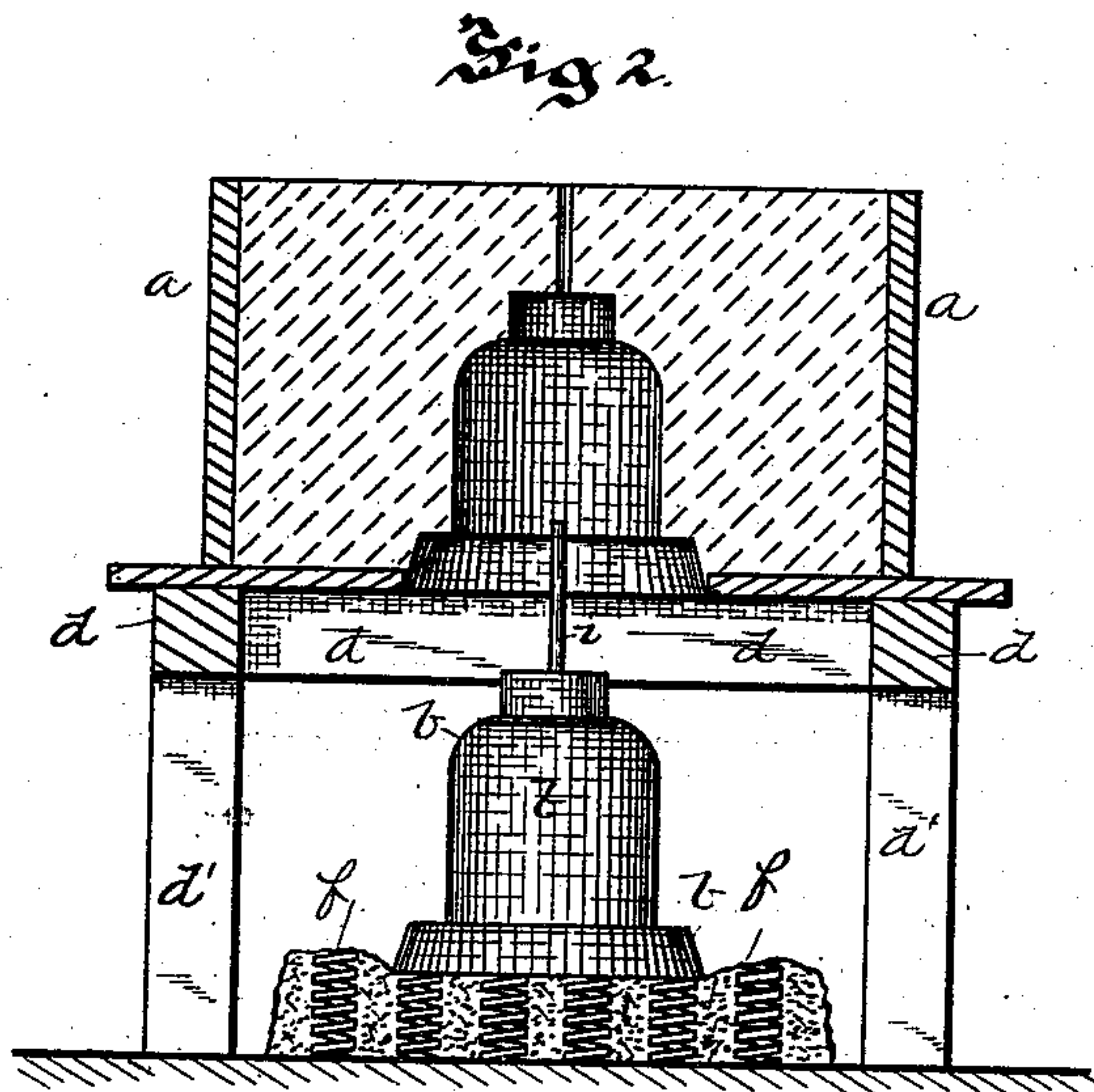
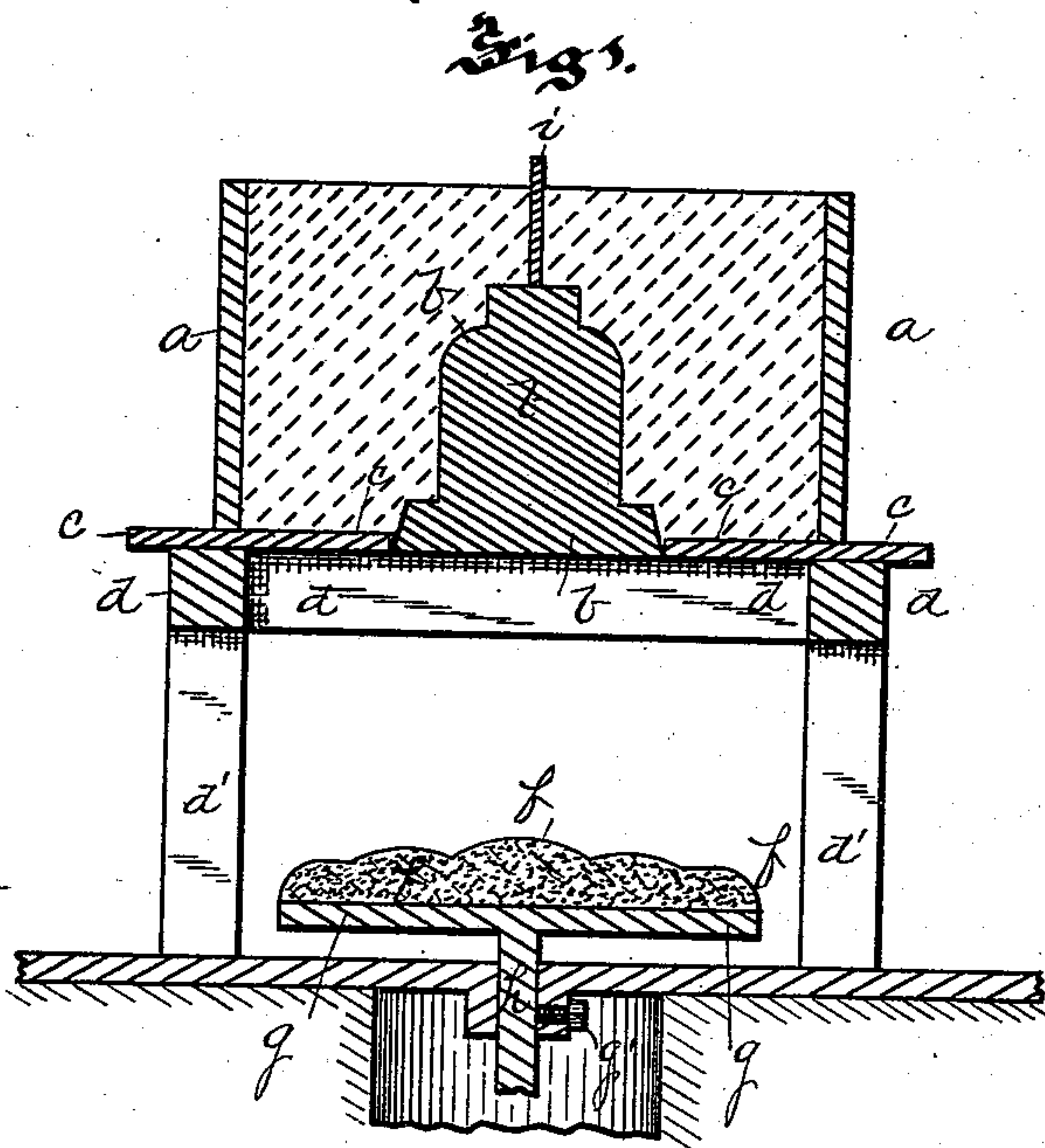
(No Model.)

S. J. ADAMS.

METHOD OF WITHDRAWING PATTERNS FROM SAND MOLDS.

No. 377,010.

Patented Jan. 31, 1888.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

S. JARVIS ADAMS, OF PITTSBURG, PENNSYLVANIA.

## METHOD OF WITHDRAWING PATTERNS FROM SAND MOLDS.

SPECIFICATION forming part of Letters Patent No. 377,010, dated January 31, 1888.

Original application filed January 27, 1885, Serial No. 154,153. Divided and this application filed November 1, 1887. Serial No. 253,973. (No model.)

*To all whom it may concern:*

Be it known that I, S. JARVIS ADAMS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Withdrawing Patterns from Sand Molds; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the withdrawal or separation of patterns from sand molds, and more especially to heavy patterns which are difficult to withdraw by hand, this application being a division of one filed by me January 27, 1885, Serial No. 154,153.

Two methods have heretofore usually been employed for withdrawing patterns from the mold, one consisting in lifting the pattern out of the mold by hand, which with large heavy patterns is difficult to do without breaking or injuring the walls of the mold, and the other in the use of a machine. In the former case the difficulty is particularly noticeable where great accuracy is required, as in making mandrels or balls for the manufacture of wrought-metal tubing, the surfaces of which are parallel and which are condemned if out of round one-hundredth of an inch. In withdrawing by hand it is almost impossible to make a true mold, as there is always liability to press or drag on one side of the mold more than the other, so enlarging it and making it oblong. In the latter case, withdrawing by machinery, as the withdrawal of the pattern from the mold is regulated by the guides of the withdrawing apparatus, unless these guides are in accurate alignment with the lines of the mold, the pattern will in its withdrawal break the walls of the mold or enlarge the latter. In the practical use of these machines it is impossible to prevent the wear of the guides, as the sand from the molds accumulates on the guides and soon causes them to become worn out of alignment, which, as heretofore stated, injures the mold in the withdrawal of the pattern therefrom. There is also liability of the pattern or flask not having a true surface, or of sand falling or working in between the pattern, its supporting-plate, or the guides in such manner as to throw the patterns out of proper line with the guides, and in large patterns the

slightest variation at the base will throw the top considerably out of line. There is also danger of numerous accidents, inattention, or carelessness of the molder and like matters to contend with. These in the making of accurate castings are serious defects, as the molder, even when careful, cannot be certain that in withdrawing his pattern by the machine the size of the mold will not be enlarged or the mold be made oblong.

The object of my invention is to provide a method of withdrawing the pattern by which any possibility of injury to the walls of the mold or its enlargement is avoided, as the withdrawal of the pattern is guided entirely by the walls of the mold.

To this end my invention consists in dropping the pattern from the mold by its own weight and guiding its withdrawal by the walls of the mold only.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a central vertical section of a mold and pattern ready to be dropped, and Fig. 2 shows the pattern dropped from the mold.

Like letters refer to like parts in each of the figures.

The sand molds may be packed in any suitable manner, either by ramming, jarring, or pressing, and with long narrow molds they are generally formed in a single flask, *a*, the patterns *b* usually extending up into the flask through a stripping or supporting plate, *c*, which generally surrounds the pattern at its largest diameter, but does not bear against the surface of the pattern, so as to guide it when moving from the mold, but acts solely to support the sand mold in the flask around the sharp edges of the pattern when it is withdrawn. The stripping-plate is not absolutely essential, as the binding of the sand of the mold on the interior walls of the flask is sufficient to hold the mold therein, though it is preferable to employ the stripping-plate, as it avoids any possibility of the mold coming out of the flask.

Any suitable form of table may be used to



support the flask while the pattern is being dropped from the mold. That shown in the drawings is simple in construction and satisfactory in use. It consists of a frame, *d*, supported on standards *d'*, on which frame the stripping-plate *c* rests, leaving the pattern unsupported by the table itself. The pattern is held in the mold until it is ready to be dropped either by the hand of the molder or other suitable support, or, as in most cases, by the adhesion of the sand of the mold on the surfaces of the pattern.

In order to provide a cushion for the reception of the falling pattern, and thus prevent its injury by impact on the floor, a cushion, *f*, is placed under the dropping-table. This cushion *f* may be of any suitable construction, two forms being shown in the drawings, one consisting of a spring-mattress, as in Fig. 2, and the other of a body of sand placed loosely on the floor, or inclosed within a cover, which is preferably supported on an adjustable table or platform, *g*, under the dropping-table, which platform, for the purpose of limiting the length of the fall of the pattern, is vertically adjustable by means of the set-screw *g'*, bearing on the shank *h* on the under side of the platform.

In carrying out the process, the mold having been made in the flask, the latter is carried by the molder to the table, he so holding the flask that the pattern will maintain its position in the mold, the adhesion of the sand of the mold on the surface of the pattern being ordinarily sufficient for this purpose.

The flask is set by the molder on the dropping-table with the large exposed end of the pattern down, and if, when he takes his hand from under the pattern, the latter does not drop from the mold, an initial movement is imparted, by hand or otherwise, to the pattern to overcome the adhesion of the sand thereto. For this purpose the pattern may be provided with a rod, *i*, which extends up through the mold, or a sharp thin bar can be thrust through that portion of the mold immediately over the

crown of the pattern for imparting this initial movement; or the pattern may be turned slightly in the mold, when it will freely leave the mold.

In falling from the mold, the pattern is guided entirely by the walls of the mold in its descent, and therefore there is no liability of the walls of the mold being broken or the mold-cavity being enlarged or injured by the pattern pressing against one side or the other, which would be the case were a machine used which was not properly adjusted, or in case the guides of the withdrawing table or plate were not in alignment with the lines of the mold.

I have found, practically, that the attraction of gravitation or the weight of the pattern acts perfectly to withdraw the pattern. The walls of the mold also form the most perfect guide for its withdrawal which can be obtained, each mold thus forming an independent guide for the withdrawal of the pattern, which cannot be affected by wear, as in machine guides, and even if the pattern is not in perfect line with the supporting-table the walls of the mold-form will guide the pattern perfectly as it drops without injuring the mold.

I do not claim in this application a pattern having a rod extending up through the mold, as that forms the subject-matter of a separate application by me, Serial No. 154,153, filed January 27, 1885, of which application this is a division.

Having now described my invention, what I claim is—

The method herein described of withdrawing patterns from sand molds, consisting in dropping the pattern from the mold and guiding such withdrawal only by the walls of the mold-form.

In testimony whereof I, the said S. JARVIS ADAMS, have hereunto set my hand.

S. JARVIS ADAMS.

Witnesses:

JAMES I. KAY,  
ROBT. D. TOTTEN.