(No Model.)

S. P. M. TASKER.

SAND MOLDING MACHINE.

No. 353,832. Patented Dec. 7, 1886.

Fig. 1.

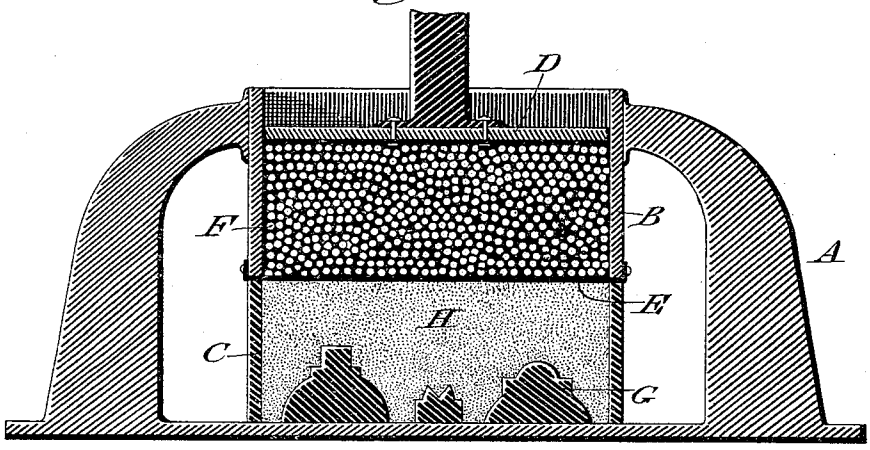
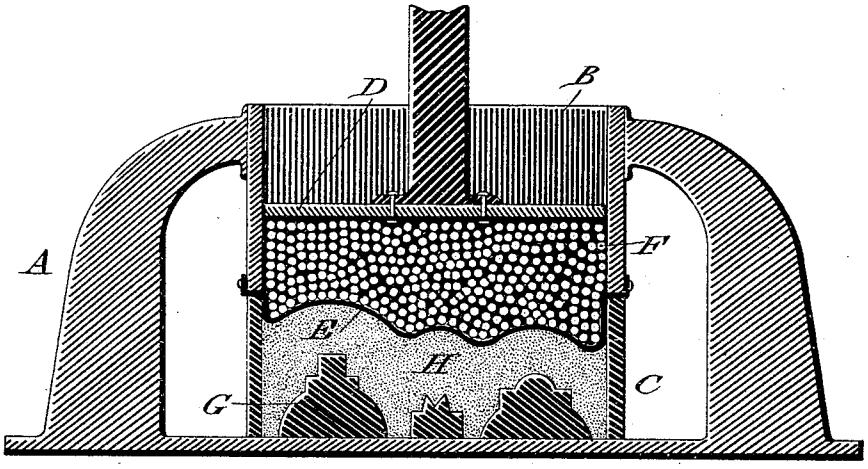


Fig. 2.



Stephen P. M. Tasker,
INVENTOR
By his Attorneys,
W. L. Saunders
J. Bonsall Taylor.

WITNESSES:
P. F. Eagle.
John Polley Jr.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

STEPHEN P. M. TASKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO O. G. HOLT, OF LOUISVILLE, KENTUCKY.

SAND-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 353,832, dated December 7, 1886.

Application filed October 21, 1886. Serial No. 216,787. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN P. M. TASKER, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain Improvements in Sand-Molding Machines, of which the following is a specification.

Broadly stated, my invention relates to systems of compressing a mixture of dampened earth, known as "green sand," of the character usually employed in the molder's art, by a yielding force applied over the entire upper surface of such sand contained in a flask about patterns within said flask, such operations being technically known as "tamping" or "ramming." In the foregoing operations it is essential that every portion of the sand should be evenly and equally compressed about the patterns, as irregular compression results, in a manner well known to practical molders, in defective castings.

Heretofore many attempts have, with greater or less success, been made to effect the requisite compression by the employment of flexible pressers employed in connection with a flask containing the patterns and urged to action by air, water, or other fluid, or by a plastic or semi-plastic substance.

The object of my invention is the construction of a machine in which a flexible presser or pressing diaphragm adapted to act direct upon the sand is backed by a sufficient quantity of shot, pebbles, sand, or other material, not being a plastic, the particles of which are neither coherent nor adherent, but capable of sliding past each other, after the manner of the granules of any granular substance when pressure is exerted upon the mass. This object I attain by a machine, a convenient embodiment of which is represented in the accompanying drawings and described in this specification, the particular subject-matter claimed as novel being hereinafter definitely specified.

The two figures of the drawings which form a part of this specification are each vertical sectional elevations through the entire machine, Figure 1 representing the parts in the position which they occupy before pressure is brought to bear upon the sand, and Fig. 2 the position which they occupy after pressure has been applied.

In the drawings, A A are standards which support a plunger-casing, cylinder, box, or other preferred receptacle, B, formed of metal or other suitable material, and preferably conforming in outline to the outline of a flask, C, which is placed upon an unyielding bed-plate in alignment below it. This plunger-casing contains a plunger, D, which accurately fits it and is adapted to have movement within it, being actuated to such movement by hydraulic, pneumatic, steam, or other power, or by levers, screws, or other mechanical motion-imparting devices. The plunger-casing is as to its entire lower opening (and in the form of apparatus represented it is simply a supported vertically-walled band to which the plunger is fitted) inclosed by a flexible diaphragm, E, of rubber or other suitable material, yielding or elastic in character and yet possessing the quality when expanded or extended of resuming its normal form and dimensions.

Contained between the plunger and the flexible diaphragm is a mass of shot, pebbles, sand, or other material, F, the particles of which are capable of sliding past one another when pressure is exerted by the plunger upon the mass as an entirety. In the drawings leaden shot are supposed to be represented; but many materials not of a plastic or semi-plastic nature may be advantageously employed—as, for instance, sawdust, or sawdust mixed with plumbago, talc, soapstone, or other lubricant. I believe shot to be perhaps best adapted to the purpose; but I do not confine myself to it, as other substances the particles of which are capable of sliding past each other will, as stated, answer the purpose.

Within the flask are contained patterns G and molding-sand H.

The operation is as follows: The flask containing the patterns, and preferably filled full of the molding-sand, is placed below the diaphragm of the plunger-casing, so as to be entirely covered thereby. Force is then exerted to depress the plunger, with the result that the shot is forced downward upon the diaphragm, crowding the latter into the sand regions of

least resistance, which are those of greatest depth or those most remote from the surfaces or thicker parts of the patterns, until the diaphragm has served to quite evenly compress and distribute the sand about the patterns, compacting it to a uniform solidity or hardness.

Having thus described a simple form of machine adapted to effectuate my invention, it is obvious that the form of the machine may be greatly varied, as it is manifestly inconsequential what form of plunger or plunger-casing is employed or what the character of the flask or the patterns to be molded may be.

Having thus described my invention, I claim—

1. In a machine for making molds, a flexible pressing-diaphragm backed by a mass of shot, pebbles, sand, sawdust, or other material, the particles of which are capable of sliding past each other without either cohering or adhering and adapted to compress sand, in combination with a flask and a pattern, substantially as set forth.

2. In a machine for making molds, a flexible pressing-diaphragm backed by a mass of shot, pebbles, sand, sawdust, or other material, the particles of which are capable of sliding past each other without either cohering or adhering, and adapted to compress sand, in combination with a plunger, a flask, and a pattern, substantially as set forth.

3. In a machine for making molds, the following elements in combination: a flask containing a pattern to be molded and sand or kindred molding material, a press having a flexible diaphragm adapted to bear upon the molding-sand, and backed by shot, pebbles, sand, sawdust, or other material, the particles of which are capable of sliding past each other without cohering or adhering, and suitable means for forcing the shot against the diaphragm, substantially as and for the purposes set forth.

In testimony whereof I have hereunto signed my name this 19th day of October, A. D. 1886.

STEPHEN P. M. TASKER.

In presence of—
J. BONSALL TAYLOR,
WM. C. STRAWBRIDGE.

Corrections in Letters Patent No. 353,832.

It is hereby certified that in Letters Patent No. 353,832, granted December 7, 1886, upon the application of Stephen P. M. Tasker, of Philadelphia, Pennsylvania, for an improvement in "Sand-Molding Machines," errors appear in the printed specification requiring the following corrections: In line 19, page 2, the comma after the word "material" should be stricken out; in line 21, same page, a comma should be inserted after the word "adhering;" in line 26, and also line 38, same page, the commas after the words "material" should be stricken out; and that said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 14th day of December, A. D. 1886.

[SEAL.]

D. L. HAWKINS,
Acting Secretary of the Interior.

Countersigned:

R. B. VANCE,
Acting Commissioner of Patents.