

(No Model.)

3 Sheets—Sheet 1.

T. MISTELSKI.
SAND MOLDING MACHINE.

No. 450,521.

Patented Apr. 14, 1891.

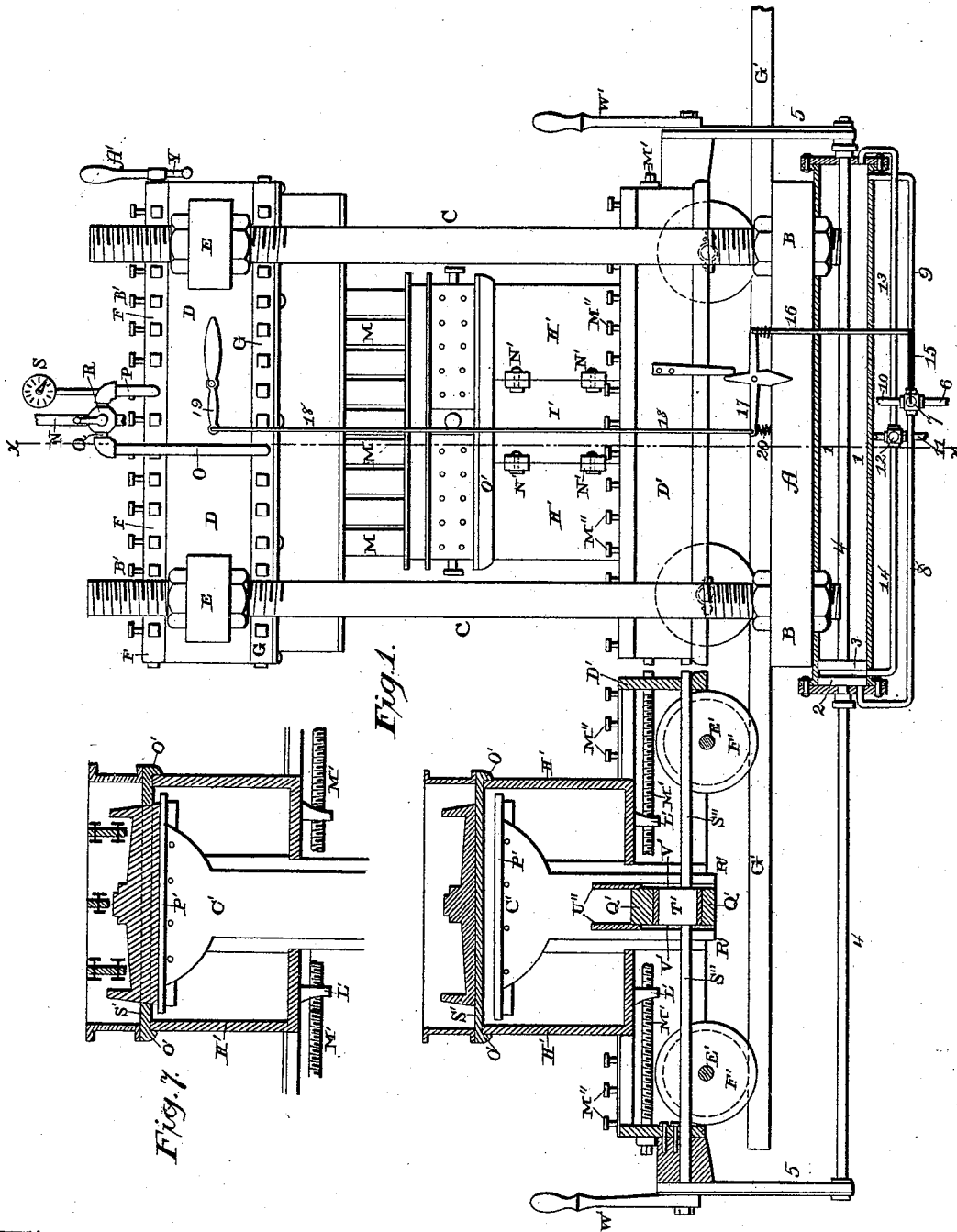


Fig. 1.

Fig. 2.

Witnesses:

E. P. Ellis
J. M. Nesbit

Inventor:

Theo. Mistelski
per Lehmann & Patterson
attys

(No Model.)

3 Sheets—Sheet 2.

T. MISTELSKI.
SAND MOLDING MACHINE.

No. 450,521.

Patented Apr. 14, 1891.

Fig. 2.

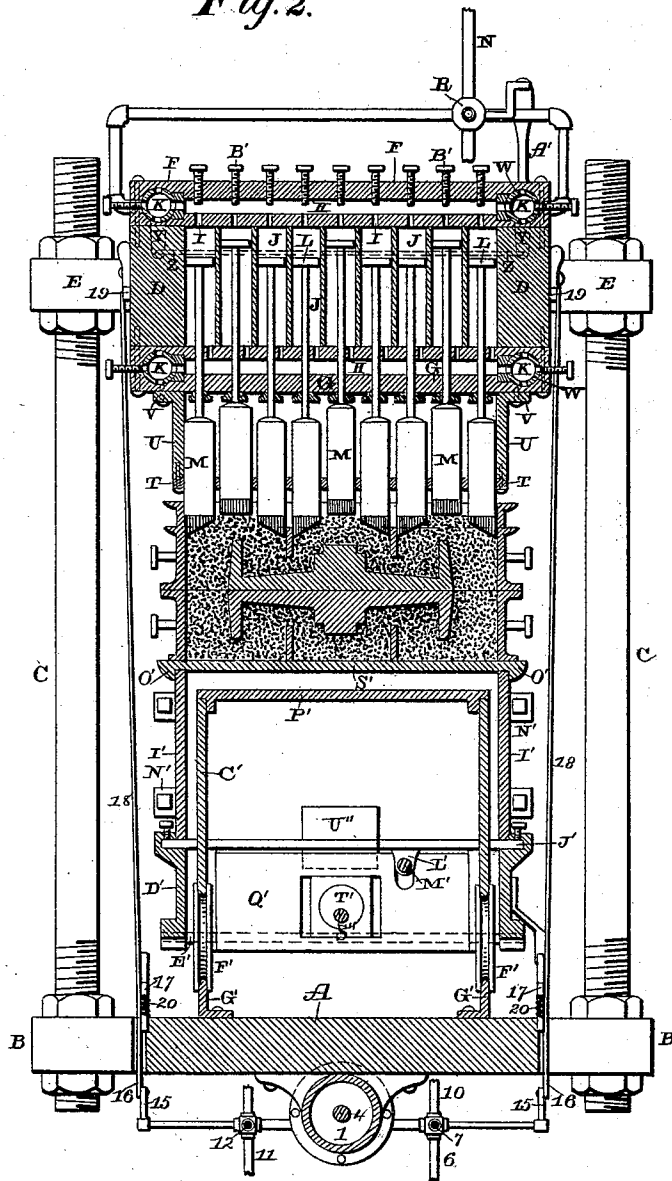
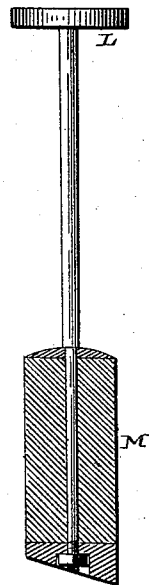


Fig. 4.



Witnesses:

E. P. Ellis,

J. M. Nesbit

Inventor

Theo. Mistelski,

per
Lehmann & Patterson,

attys.

(No Model.)

3 Sheets—Sheet 3.

T. MISTELSKI.
SAND MOLDING MACHINE.

No. 450,521.

Patented Apr. 14, 1891.

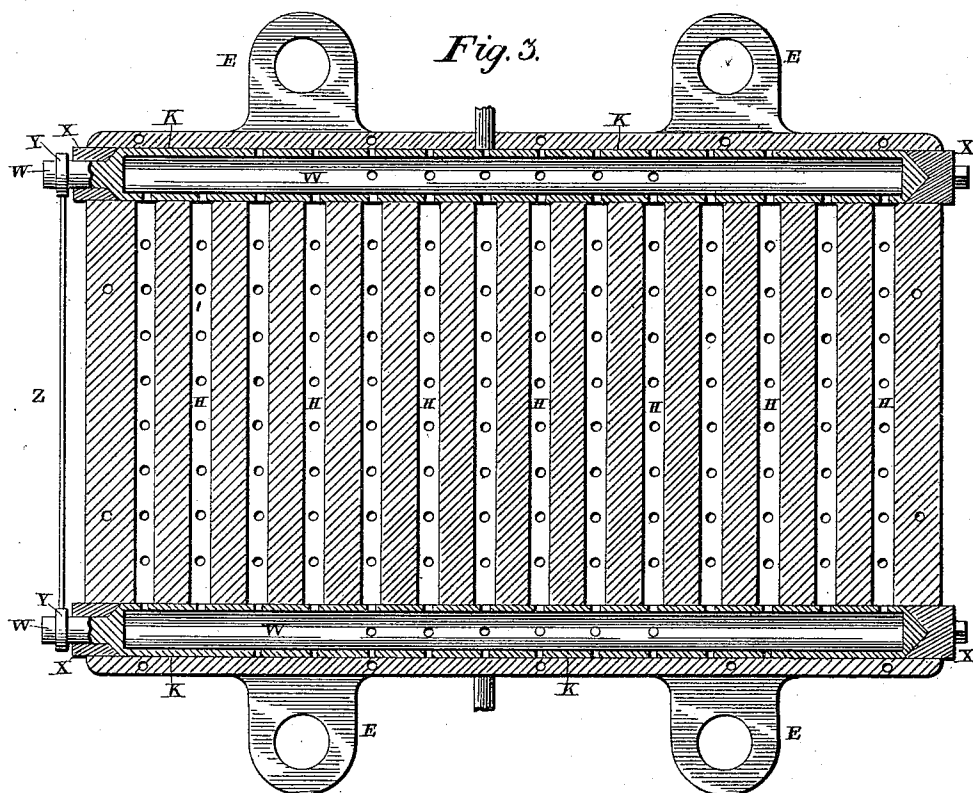
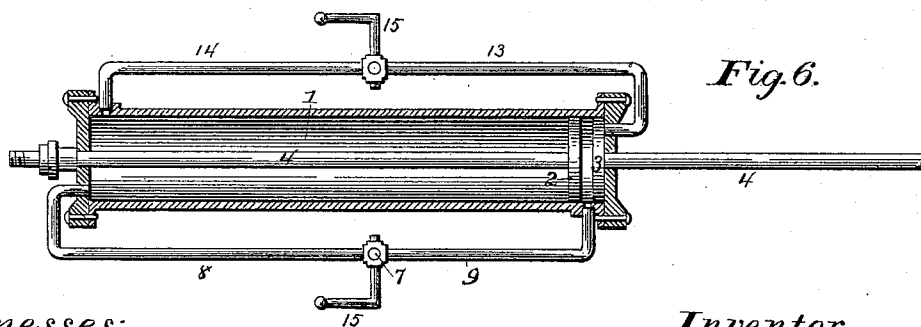


Fig. 5



Witnesses:

E. P. Ellis

J. M. Nesbit

Inventor

Theo. Mistelski

per
Lehmann & Patterson,
attys.

UNITED STATES PATENT OFFICE.

THEODOR MISTELSKI, OF ALLEGHENY, PENNSYLVANIA.

SAND-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 450,521, dated April 14, 1891.

Application filed December 9, 1890. Serial No. 374,049. (No model.)

To all whom it may concern:

Be it known that I, THEODOR MISTELSKI, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain
5 new and useful Improvements in Sand-Molding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to
10 make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in sand-molding machines; and it consists in
15 the construction, combination, and arrangement of parts, which will be fully described hereinafter, and is an improvement upon my patent granted June 24, 1890, No. 430,666.

The object of my present invention is to
20 provide a machine which is constructed as hereinafter shown and described, for the purposes hereinafter specified.

Figure 1 is a side elevation of a machine which embodies my invention, one of the car-
25 riages and the cylinder being shown in section. Fig. 2 is a vertical section taken on the dotted line X X of Fig. 1. Fig. 3 is a horizontal section of a portion of the plunger or packing apparatus. Fig. 4 is a detached view
30 of one of the packers. Fig. 5 is a detached view of one of the pipes or valves used to regulate the amount of power applied to the packers. Fig. 6 is a detached view of one of the cylinders, showing a slight modification
35 in the arrangement of the pipes. Fig. 7 is a detached vertical section of one of the flasks, showing the pattern resting upon the plate of the adjustable head of the carriage.

A represents a bed-plate, from the corners
40 of which project four perforated lugs B, through which the lower ends of the supporting-rods C pass, and are rigidly secured by means of nuts or other equivalent means.

Supported between the upper ends of the
45 standards is a vertical plate or platen D, by means of the perforated lugs E, which pass over the upper ends, and which are adjustably secured in place by means of screw-nuts above and below the said lugs. Secured to
50 the upper end of this box or platen D is a platen F, and to the lower end is a similar platen G. Each of these platens is provided

with transverse grooves or chambers H, which are provided with vertical perforations I, which connect with the vertical cylinders J, 55 which are placed between the said platens F G. Extending along the sides of the platens F G, at right angles to the chambers H, are the chambers K, which are connected with the chambers H in any suitable manner. 60

Placed within the cylinders are the piston-heads L, and the piston-rods connected at their upper ends therewith, which rods carry the packers M, of any suitable shape or size, upon their lower ends. To the lower ends of 65 the packers is secured a piece of flexible material to prevent the blocks from injuring the pattern should it accidentally come in contact therewith.

While I here show the platens F G secured 70 to the top and bottom of the platen D, the platen D could readily be made of a solid block of cast-iron bored and cored out to produce the desired number of cylinders and chambers. So, also, I describe that the plat- 75 ens F G are provided with a series of chambers which pass through them; but the said platens can be made solid without any chambers within them, but be formed by suitable grooves made in the inner face of each platen, 80 and so arranged, when secured to the top and bottom of the platen D, as to form chambers H K. Should it be desired, however, each of the platens F G can consist of one large chamber which would cover openings I, 85 which pass into the cylinder J.

A pipe N conducts the steam, air, water, or other fluid to the pipes O P, which are connected, respectively, with the chamber K of the upper and lower platen F G, through the 90 short pipe Q. At the junction of the short pipe Q and the supply-pipe N is a four-way valve R, which is provided with a handle for operating it, and by means of which the motive power is fed either to the upper or lower 95 end of the cylinders J, according as it is desired to raise or lower the packers M.

A gage S is connected with the chamber H by means of a pipe, and indicates the amount of pressure applied to the packers, and there 100 is an even uniform pressure to each packer owing to the fact that the fluid pressure will flow into each cylinder and give each block the same degree of force. This will pack the

sand to the same density, since those packers which come in contact with the soft sand will be forced lower and until a degree of density is reached which is equal to the density of the hardest portion of the sand. In order to pack the sand more firmly around the bars and sides of the flask, they are made wedge-shaped, as shown, and the points turned next to the sides of the bars and the flask. These packers will be made of different shapes and sizes to suit the particular size and shape of pattern, so that the sand will be tuckered around the pattern and the bars.

In order to prevent the sand coming in contact with the piston-rods, each of the packers M passes through and fits closely an opening made therefor in the platen T, which is secured to the bottom of an open box U in any suitable manner, the box being secured to the under side of the lower platen G by means of bolts or screws, which pass through the flange V.

Passing through the chambers K is a perforated pipe or valve W, which has closed ends. The ends of the chambers K are closed by means of the plugs X, through one of which the ends of the valves W pass, and have secured to them a crank or arm Y, which are connected by means of a rod Z. One of the valves has attached to the same end a handle A', by means of which it is revolved, and this revolving movement is conveyed to the other valve by means of the cranks and the connecting-rods. As before stated, these valves are provided with a longitudinal series of openings, and each series is made of a different diameter, as shown in Fig. 5. By means of this construction any desired amount of pressure can be applied to the piston-heads, according to the character of the work being done.

Instead of regulating the pressure by valves, as before described, it may be regulated by means of the screws B', which extend through the upper platen F, so as to register with the openings made therein, and by means of which the said openings can be more or less closed, as desired.

Referring to the devices by which the flasks are brought under the packers and removed therefrom—which consists of two carriages, each of which is provided with a table for supporting the flask—placed within each table is a vertically-moving cross-head C', upon which a removable plate P' is placed, and upon this plate the pattern may be placed, as shown in Fig. 7. In this instance the top of the table is provided with an opening corresponding to the shape of the pattern, and the pattern can be removed from the mold by lowering the adjustable head, as will be readily understood.

Each of the carriages consists of an open frame D', made of iron or any other suitable material, and this frame is mounted upon the axles E', which are suitably journaled upon the said frame D'. Secured to each of the

said axles are two grooved or flanged wheels F', which travel upon the rails or track G'.

Placed upon the frame D' is a table, which is composed of the two end portions H', which are separated by intermediate portions I'. The end portions H' consist of an open box having two sides and one end and a bottom, the latter extending beyond the sides of the box to form flanges J', which move in longitudinal grooves made in the inner sides of the sides of the frame near their upper edges, as shown.

Depending from each end portion H' is a lug L', which is provided with a screw-threaded opening, through which extends an operating-shaft M'. These shafts extend longitudinally through the carriages and are journaled in the ends thereof, and the shaft and lugs are provided, respectively, with right and left screw-threads, so that by applying a wrench or crank to one end of the shaft, and which extends through one end of the frame and shaped to receive it, the two portions of the table can be moved toward or away from each other, as desired. When the portions have been properly adjusted, they can be clamped into their adjusted positions by means of the screws M'', which engage the flanges J'. The intermediate removable portions I' have no bottoms or flanges, and they are to be made in sets of different widths to correspond to the different sizes to be given to the table, and they are fastened to the end portions by means of bolts, which pass through the lugs N', formed upon both the end and intermediate sections.

A plate S' forms the top of the table and which may be provided with a depending flange O' to fit over the outer sides of the end portions H', and plates of various sizes are necessary to suit the different sizes that the table is to be adjusted to, and in each plate may be cut an opening corresponding with the shape of the pattern, through which the pattern may be projected and withdrawn, as will be understood by reference to Fig. 7.

Instead of providing the top of the table with an opening through which the pattern projects, as shown in Fig. 7, the plate may be made imperforate, as shown in Figs. 1 and 2. In this instance the pattern (or one-half of the pattern) is placed directly upon the table-top, as shown in said figures, and sand then packed around it. The flask containing the sand and the pattern is then removed from the table and replaced thereon bottom side up, and sand then packed upon that side of the pattern, as shown in Fig. 2. The pattern can then be removed by separating the two halves of the mold, as will be readily understood.

Secured to the lower ends of the standards is a cross-head Q', which slides in the vertical guides R' on the inside of the frame D'. The cross-head is suitably cut away to avoid striking the shaft M' when it is raised or lowered, and this vertical movement must be sufficient

to withdraw the pattern from the mold. A shaft S'' passes longitudinally through the frame D', and through which a rectangular or square opening is made.

5 Placed upon the shaft S' is an eccentric T', and placed within the said opening in the cross-head is a block having an opening in which the eccentric fits and partially or wholly revolves. The opening in the cross-head may
10 be closed, to protect it and the eccentric from sand or dust, by means of the plates U'', which are placed in grooves V', made in the cross-head upon each side thereof. This shaft is suitably journaled in the ends of the frame
15 through which it passes and has a lever or handle W' secured to one end, by means of which the shaft is revolved and the platform raised and lowered, through the medium of the eccentric, as will be readily understood.
20 Secured to the under side of the bed A, by means of bolts or screws, is a cylinder 1, and placed within the cylinder are the two piston-heads 2 3, to which the piston-rods 4 are secured at their inner ends, their opposite and
25 outer ends being secured to the lower ends of the depending arms 5, which are attached at their upper ends to the carriage. A pipe 6 conveys the compressed air, fluid, or steam to a four-way valve or cock 7, which directs
30 it into either one of the pipes 8 9, which are connected therewith, which lead, respectively, to opposite ends of the cylinder, the exhaust-fluid escaping through the pipe 10. Another pipe 11 conveys the fluid pressure to the four-way
35 cock 12, which directs it into either one of the pipes 13 14, which are connected therewith at one end, and the cylinder near opposite ends, as shown, to admit the fluid between the two piston-heads.

40 The cocks 7 12 are provided with operating levers or cranks 15, to which are connected, respectively, the vertical rods 16, which project through the bed and are connected to one end of the levers 17 upon opposite
45 sides of the machine, their opposite ends being connected to the lower ends of the vertical rods 18, which have their upper ends connected to the operating-levers 19. By depressing one of the handles 19 one of
50 the pistons will be forced outward, carrying with it its carriage, and when the carriage reaches the end of its stroke a projection upon the carriage strikes the lever 17 and closes the valve. The other carriage is moved in a
55 similar manner by depressing the handle upon the opposite side of the machine, and by pushing the handle up the carriage will move back to place.

As shown, the fluid is directed between the
60 two piston-heads, forcing one against the cylinder-head and moves the other toward the opposite end of the cylinder-head. When

the packers are operated, both piston-heads are at the same end of the cylinder, and when one valve is open the other remains closed, 65 so that each piston can be moved independently of the other.

The levers 17 may be provided with springs 20 at each end to keep the valves safely closed when not in use.

Having thus described my invention, I
70 claim—

1. In a sand-molding machine, a flask, a support therefor, a series of cylinders, chambers above and below the cylinders, supply
75 and exhaust pipes connected therewith, a series of pistons and packers, and a plate between the lower chamber and the flask, having a separate opening for each packer, substantially as shown and described. 80

2. In a sand-molding machine, a flask-support, a series of cylinders, a series of pistons having packers secured thereto, a chamber
80 above and below the cylinders, supply-chambers connected with the said chambers, and
85 perforated revolving pipes within the said supply-chambers, and supply-pipes connected with the supply-chambers, substantially as described.

3. In a sand-molding machine, a flask-sup- 90 port, a series of cylinders, a series of pistons and packers secured thereto, chambers above and below the cylinders, supply-chambers connected with the said chambers, tubes within the said supply-chambers, having a longi- 95 tudinal series of perforations, each series of perforations being of different sizes, and supply-pipes connected with the tubes, substantially as shown and described.

4. In a sand-molding machine, the combi- 100 nation of a packing mechanism, a track, two carriages placed thereon, a cylinder, two separate piston-heads within the cylinders, two rods connected therewith at one end and to the said carriages at their opposite ends, and 105 inlet and exhaust pipes for the cylinder, whereby the two carriages may be operated separately, substantially as specified.

5. In a sand-molding machine, a series of cylinders, a series of pistons having packers 110 secured thereto, a series of chambers above and below the cylinders, having openings into the cylinders, one or more supply-chambers extending transversely through the said chambers, perforated revolving tubes within the 115 said supply-chambers, and supply-pipes connected with the tubes, substantially as shown.

In testimony whereof I affix my signature in presence of two witnesses.

THEODOR MISTELSKI.

Witnesses:

DANIEL H. BURKE,
A. M. GILMORE.