

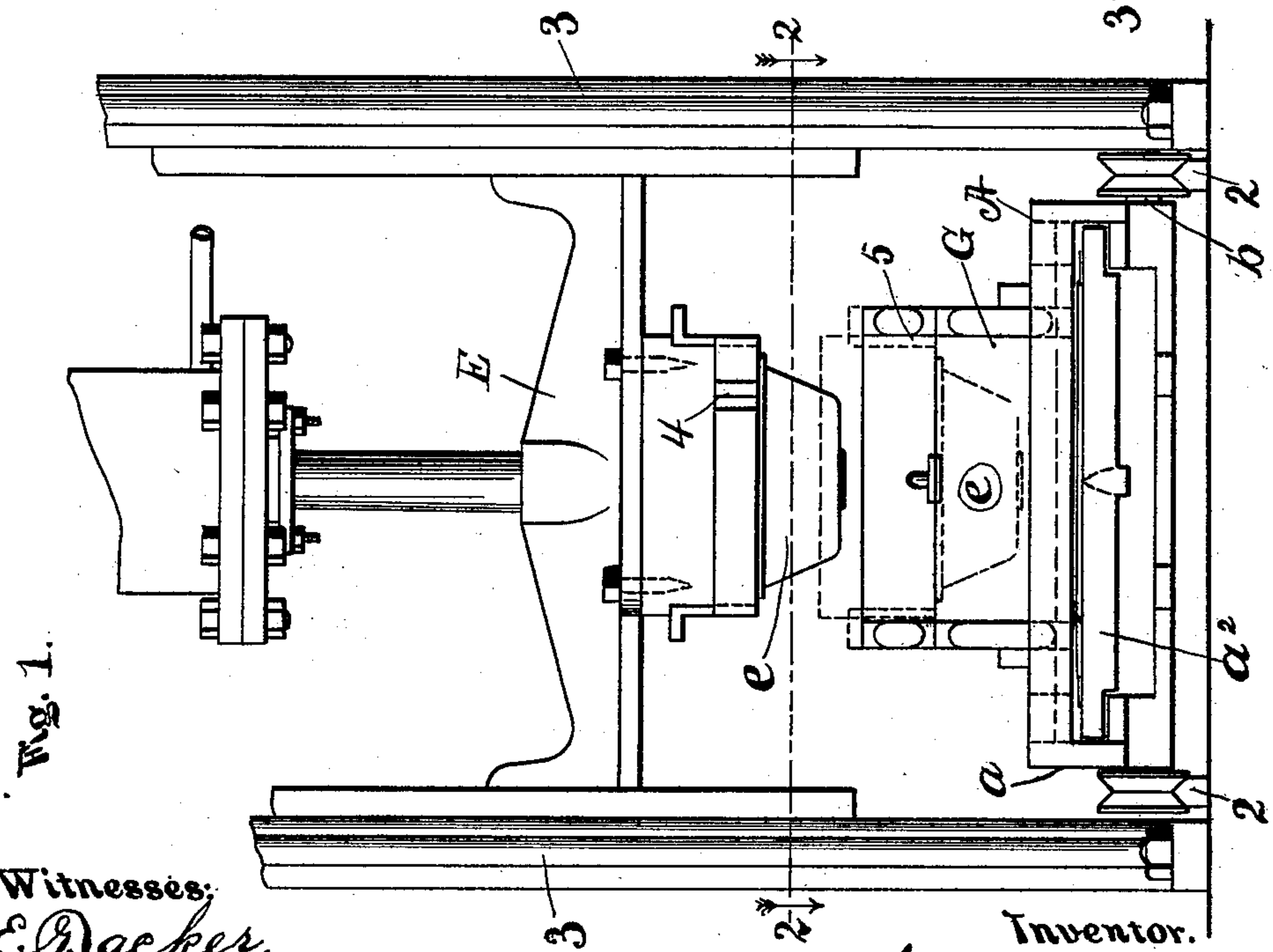
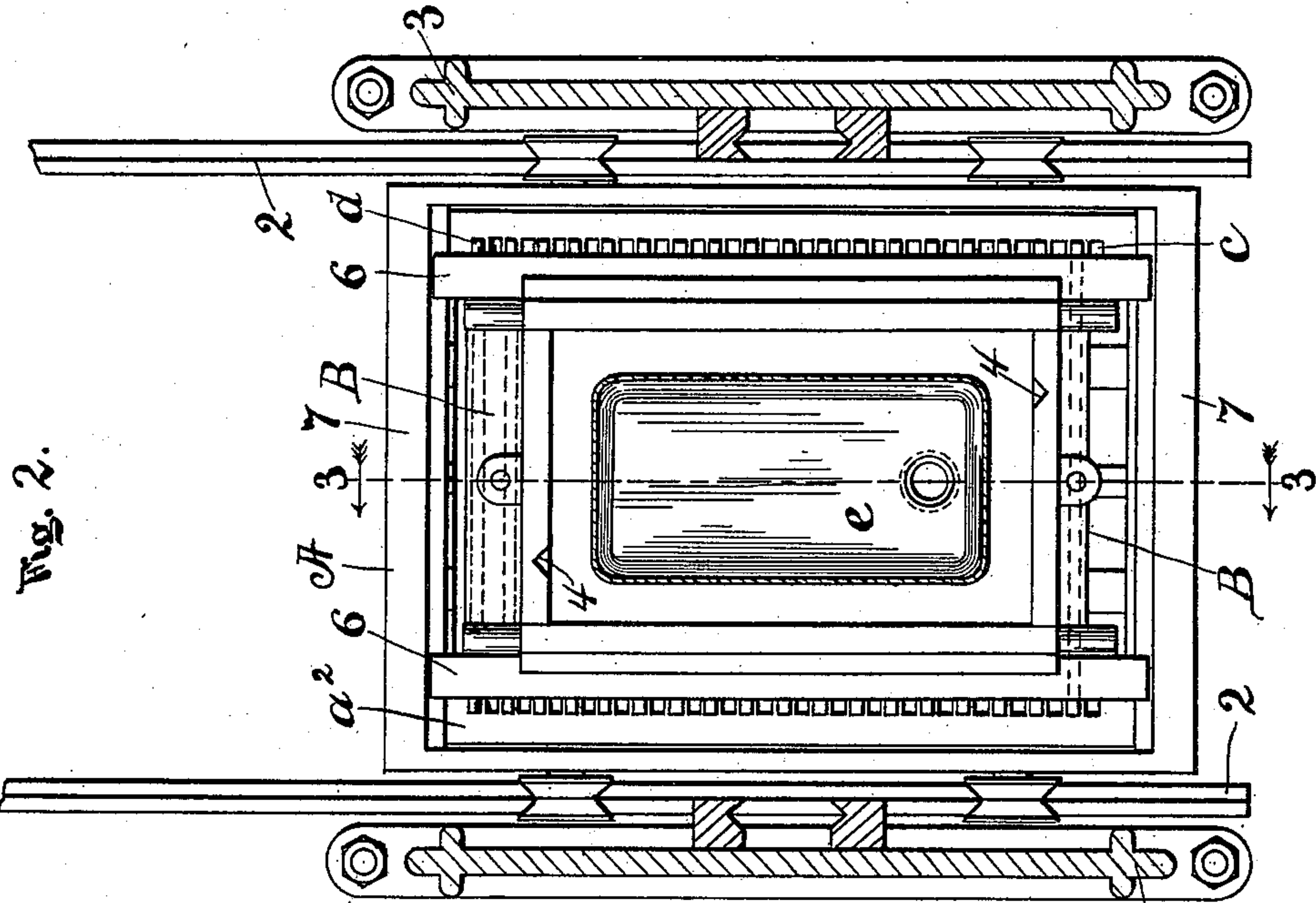
(No Model.)

2 Sheets—Sheet 1.

L. FINGAL.  
MOLDING APPARATUS.

No. 591,463.

Patented Oct. 12, 1897.



Witnesses:  
E. G. Jacker.  
H. S. Noble

By

Inventor.  
Leonard Fingal  
B. Singer Att'y.

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**Fig. 3.**

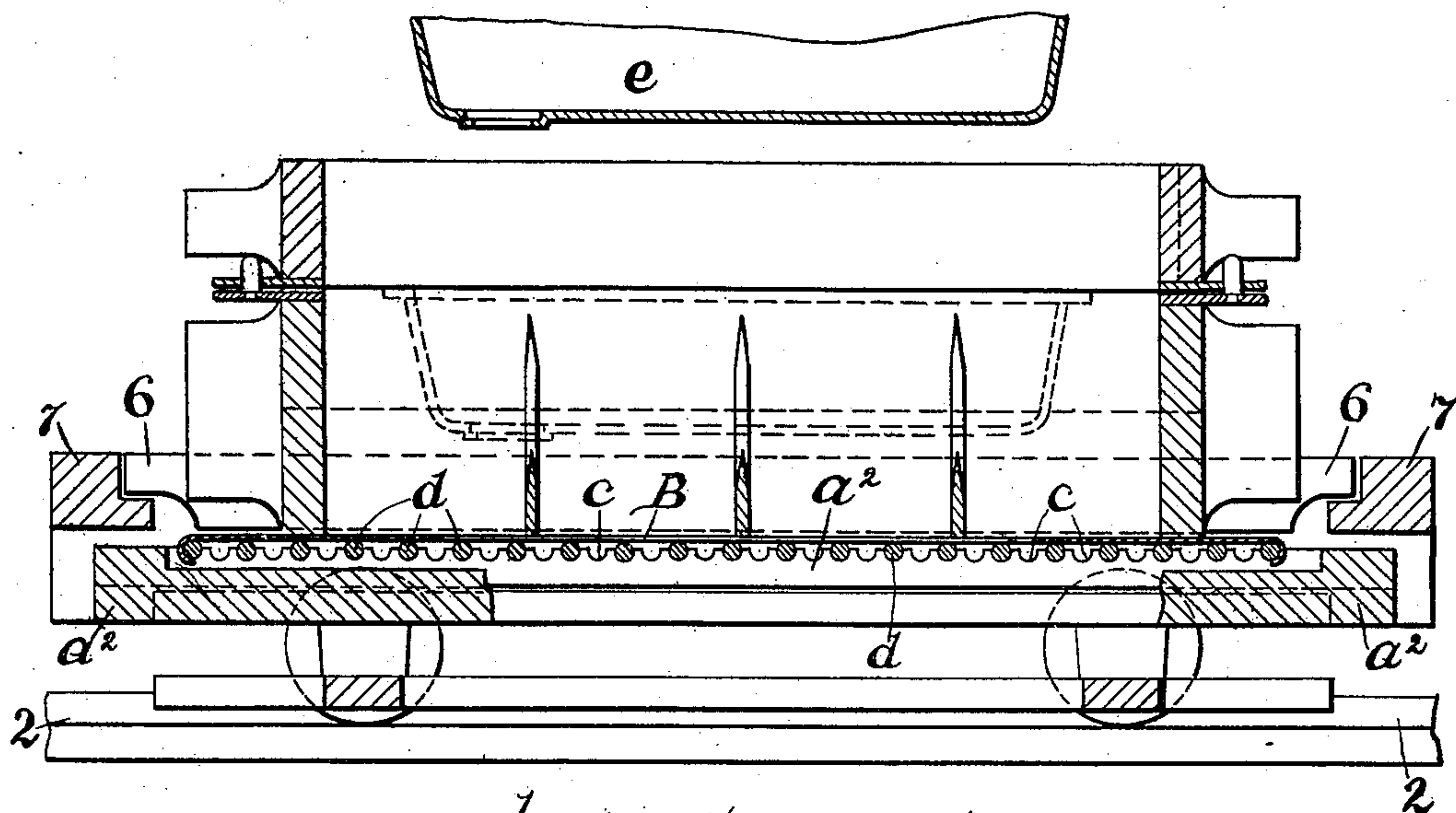
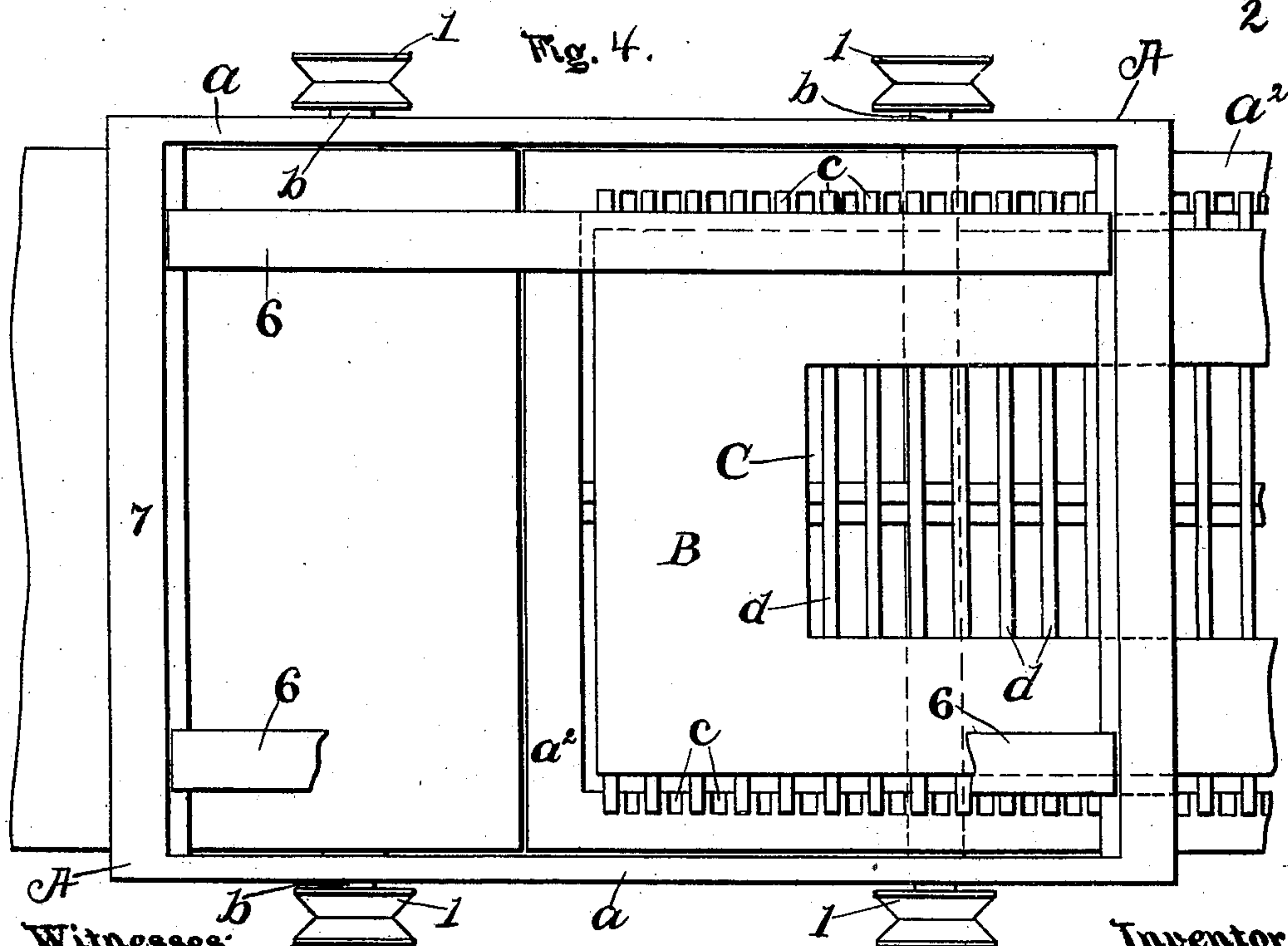


Fig. 4.



**Witnesses:**

E. G. Acker.  
S. S. Noble

**Inventor.**

Leonard Fungel  
by B. Singer  
Att'y.



# UNITED STATES PATENT OFFICE.

LEONARD FINGAL, OF CHICAGO, ILLINOIS.

## MOLDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 591,463, dated October 12, 1897.

Application filed April 9, 1897. Serial No. 631,345. (No model.)

*To all whom it may concern:*

Be it known that I, LEONARD FINGAL, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have  
5 invented a new and useful Improvement in Molding Apparatus, of which the following is a specification.

The object of my invention is the saving of skilled labor by using a press with power for  
10 packing the sand in the flask in making molds for founding purposes instead of the present method of ramming the sand by hand labor, and is particularly adapted for the lighter classes of iron-casting, especially stove-plate,  
15 agricultural implements, and similar castings.

My device is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of the front of my  
20 device. Fig. 2 is a horizontal section on line 2, Fig. 1. Fig. 3 is a longitudinal vertical section on line 3, Fig. 2. Fig. 4 is a top view of the truck hereinafter described.

Similar letters and figures refer to similar  
25 parts throughout the drawings.

In the construction of my device any ordinary flask may be used, either of wood or of iron, if of uniform size, for each pattern or set of patterns, so that the cope may fit on  
30 any nowel, and when the cope is provided with bars to let the edge of the bars be so arranged that they will not interfere in pressing the sand. In this method of founding a greater quantity of loose sand is required  
35 than in the present method. To provide for this I use what may be termed a "reservoir" to contain the extra sand. This is simply an addition to the flask placed on top of it, as  
40 5, Fig. 1. It is of the same width and length as the flask to which it belongs and equipped with guide-pins and eyes the same as the cope and nowel, the height of the reservoir depending upon the requirements of the pattern to be molded or the space it will occupy in the  
45 flask.

I construct a truck A, Fig. 4, upon the axles  
50 *b b* of four tram-wheels 1 1 1 1, running upon an iron tramway 2 2, Fig. 3. The rails are shaped like an inverted V, so that the sand will not collect on the track. The wheels are grooved to run thereon. This truck consists of two cast-iron frames *a* and *a'*, the frame

*a'* fitting inside of frame *a*, Fig. 4. The inner frame *a'* rests on two slides, which run the entire length of the inside of the frame *a*.  
55 Both ends of frame *a* are left open, so as to permit the admission and removal of the frame *a'*. The two sides of frame *a'* contain racks *c c*, into the niches of which are laid closely across the truck steel rods, as *d d*,  
60 from one-fourth to three-fourths of an inch in diameter, depending upon the character of work to be done, which rods form a grate in the bottom of the truck for the purpose of providing a means of escape for the surplus  
65 sand under pressure. The rods *d d* are loose in their receptacles and removable when desired. The larger the flask used the heavier the rods should be, and the higher the reservoir the greater the apertures between the  
70 rods forming the grate to allow the sand to escape more freely. A piece of sheet-iron B, covering the rods, as shown here, has a large rectangular space, as C, Fig. 4, removed, the object of which is to uncover the rods *d d*  
75 where the pressure is greatest to allow all the superfluous sand to escape when under pressure in forming the mold. The shape of the opening in the sheet-iron cover shall be made in accordance with and follow the shape of  
80 the pattern and be adjusted according to its requirements.

When the pattern is irregular in shape or uneven in thickness, so that one portion will reach farther down in the sand than another,  
85 the apertures in the grate should be larger at the point underneath that portion, so that the sand may escape more freely there, so that when the pattern reaches its intended place in the flask the sand will have obtained  
90 its proper consistency.

In Fig. 1, *e* represents the pattern in the flask G when the pressure is applied, all the superfluous sand being forced through the apertures between the rods *d d* underneath.  
95

The press E, Fig. 1, should be made of a size suitable for the class of work required and as large as practicable. The press may be operated either by steam or other means and is provided with guides fitted in the slides  
100 3 3 and arranged so that the truck or carriage can be run under it.

The match-board, to which the pattern *e* is attached, is provided with guides 4, fitting



in slides on the inside of the reservoir, so that no shifting may occur. There should be four or more bolt-holes in the press E, Fig. 1, to secure the match-boards to same. Whenever  
 5 a pattern is split straight, the halves can be attached to a straight and smooth follow-board, but when the pattern is whole or irregular in shape and must be made partly in the cope and partly in the nowel a double match  
 10 or follow board should be used.

The flask and reservoir are stationary, permitting the match-board with pattern to pass snugly through the reservoir to the edge of the flask and stop there.

15 In making the mold the flask G, which is provided on each side with bearings or brackets, rests on two bars 6 6, one on each side, these bars 6 6 resting on the two ends 7 7 of the outer frame of the truck, so that the flask  
 20 may almost touch the rods *d d*. When the mold is pressed and before the pattern is withdrawn, the inner frame *a''*, carrying the rods or grate *d d*, is shoved out with a wooden bottom board, which fits snugly below the  
 25 flask. The pattern is then withdrawn and the nowel lifted with the bottom board. The object of removing the inner frame *a''* and replacing it with a bottom board in making the  
 30 as a support in lifting it from the truck. As the cope is provided with bars for supporting the sand no bottom board for that is required. In making a mold where no escape of sand is  
 35 needed the grate is removed and the truck covered with a board and the flask placed thereon.

Having thus described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. In a sand-press for founding, the combination of a flask on a truck, a reservoir placed upon the top of the flask for the purpose of holding extra sand for molding, a series of grate-bars under the flask through the apertures of which sand under pressure  
 45 may escape in forming the mold, and a sheet-iron cover for the grate-bars with an opening therein corresponding with the pattern in the flask as and for the purpose above described.

2. In a sand-press for founding, the combination of a cast-iron frame open at both  
 50 ends, carrying a second frame within it which has a rack on each side, into the niches of which are placed steel rods forming a grate in the body of the truck, the grate being partially covered by a sheet-iron plate having a  
 55 portion removed, corresponding to the shape of the pattern in the flask to permit the sand to escape through the grate where the shape of the pattern causes the press to exert the  
 60 most pressure as and for the purpose specified.

3. In a sand-press the combination of a flask, a reservoir for extra sand placed on top of the flask and which is removed after the mold is pressed, the pattern with its match-  
 65 board attached to the press, two frames of cast-iron one within the other, mounted upon wheels, the outer having open ends, the other having a rack on each side on which are laid steel rods across the truck forming a grate,  
 70 removable when desired, providing a means of escape for the surplus sand under pressure, the flask resting on two loose bars over the grate, as and for the purpose specified.

LEONARD FINGAL.

Witnesses:

L. HANKE,

HENRY BOEHMER.