No. 875,228. PATENTED DEC. 31, 1907.

E. E. WITHAM.

APPARATUS FOR FILLING CORE BOXES.

APPLICATION FILED DEC. 12, 1906.

2 SHEETS—SHEET 1.

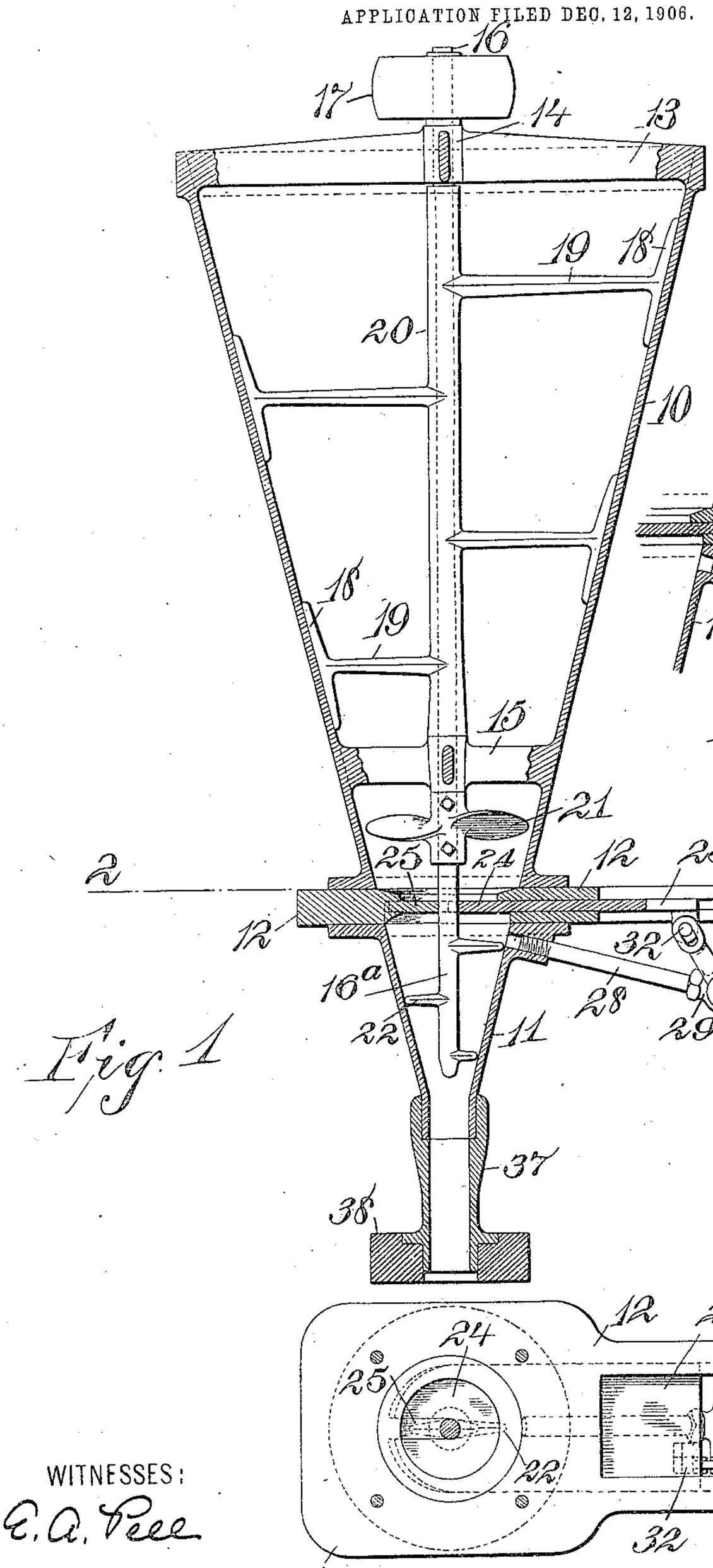

Fig. 1

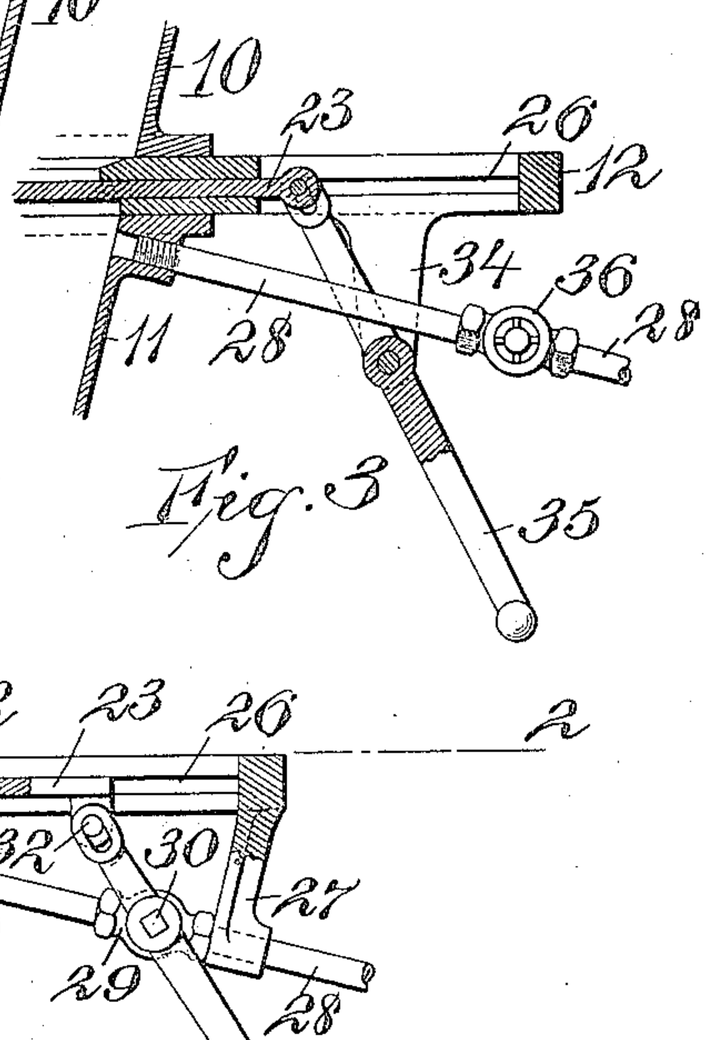

Fig. 3

Fig. 2

WITNESSES:

E. A. Pece

Ralph Lancaster

INVENTOR

Ervin E. Witham.

BY

Wm. H. Canfield

ATTORNEY

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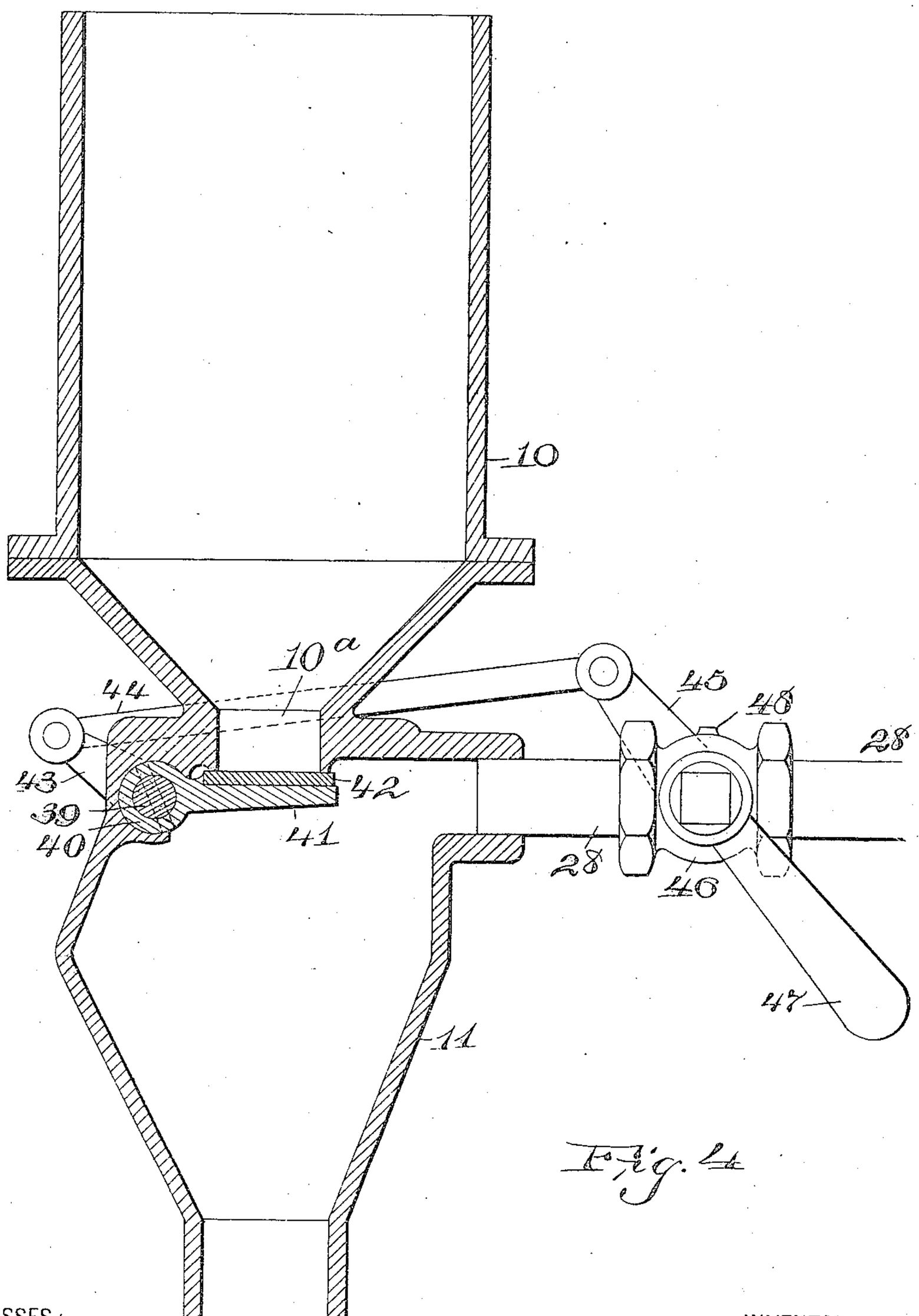

Fig. 4.

WITNESSES:

E. A. Pell

R. Johnson.

INVENTOR

Ervin E. Witham

BY

Mc V. Campfield.

ATTORNEY

UNITED STATES PATENT OFFICE.

ERVIN E. WITHAM, OF NEWARK, NEW JERSEY.

APPARATUS FOR FILLING CORE-BOXES.

No. 875,228. Specification of Letters Patent. Patented Dec. 31, 1907.

Application filed December 12, 1906. Serial No. 347,412.

To all whom it may concern:

Be it known that I, ERVIN E. WITHAM, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Filling Core-Boxes; 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to an apparatus for filling core-boxes with sand, and is arranged to put the sand in, under pressure, so that it will thoroughly fill the recesses that may be in the core-box, and be well packed in the box so that a smooth core is the result when the box is removed.

The invention is further designed to force the sand into the core-box by pneumatic or steam pressure, and my apparatus embodies means for controlling the entrance of the sand to the box, and for controlling the pressure on the sand when it is forced into the box.

The invention is illustrated in the accompanying drawings, in which

Figure 1 is a vertical section of the apparatus, and Fig. 2 is a section on line 2, 2, in Fig. 1. Fig. 3 is a section of a detail of the means for admitting sand and the pressure to the apparatus, this figure showing a modified form. Fig. 4 is a vertical central section of a modified form of apparatus with a swinging gate.

The apparatus is in the general shape of a hopper which is made up of the upper conical section 10 and the lower conical section 11, these securing between them a guide plate 12. The plate 10 has, on the top, suitable arms 13 which support a bearing 14, and another bearing 15, near the bottom of the section 10, serves, with the bearing 14, to support a shaft 16. On the top of this shaft is a pulley 17 for imparting motion to the shaft, and suitable agitators and scrapers 18 are arranged on the ends of the arms 19, and secured to the sleeve 20 which is arranged to rotate with the shaft 16. In the lower end of the section 10 is also secured a propeller or conveyer 21 which insures the downward motion of the sand, which, for molders use, is plastic and somewhat sticky, and is apt to cake unless suitable agitators and propellers are supplied. A short shaft 16ª extends down from the section 10 into the section 11, and has the projecting arms 22 to agitate the sand when it is in this compartment.

In the guide plate 12 is arranged a sliding plate 23, the end of which forms a gate 24 to close up the opening between the sections 10 and 11, the cut-away portion of the gate, which allows the gate to slide, being closed when the gate is shut by a web 25 on the plate 12. The plate 23 slides in the guide ways 26 in the guide plate 12, and the plate 12 is preferably provided, on its end, with a bracket 27 that assists in supporting a pipe 28, the end of which enters the section 11 directly underneath the gate 24. The pipe 28 is supplied with a valve 29 which has turning means 30, and a lever 31 is installed to actuate the valve 29, the upper end of the lever 31 engaging a pin 32 on the plate 23 to work the plate and consequently the gate, the whole adapted to be manually operated by means of the handle 33.

In operating this device, the sand is put into the hopper and it is fed down against the gate 24. When the handle 33 is operated, the gate 24 is opened and the sand passes down into the section 11, and after considerable sand has passed through, the handle is again thrown back into the position shown in Fig. 1, which again closes the gate 24, but opens the valve 29 in the pipe 28. This pipe conveys steam or air at a pressure of say 40 pounds, and this pressure drives the sand out of the section 11 into the core-box. It will thus be seen that by an intermittent motion of the handle 33, a core-box can be thoroughly filled and tightly packed with sand, even to its farthest recesses, by reason of the pressure blowing the sand in the box.

I prefer to install a thimble 37 on the outlet of the section 11, the outer end of this thimble being adapted for different size core-boxes, there being a separate thimble for each size of box to be used. A soft rubber ring 38 is fitted on the end of the thimble 37 so that the juncture between the thimble and the core-box will be tight, and there will be no scattering of sand from between the apparatus and the core-box.

It may be desirable not to have the gate of the hopper and the valve of the pipe moved together, and I can supply a struc-

ture shown in Fig. 3. In this case the plate 12 is provided with a bracket 34, on the end of which is pivoted a lever 35 which is adapted to be manually operated, and the upper end of which moves the plate 23 to open or close the gate 24. In this case the pipe 28 is provided with a hand valve 36.

In Fig. 4 I illustrate a modified form in which the hopper 10 is provided, on its lower end, with a throat 10^a, and has the lower section 11, and in the section 11 and adjacent to the bottom of the throat 10^a is a pivotal pin 39 which has secured thereto, the eye 40 of a swinging gate 41, which has the packing disk or ring 42. The pivotal pin 39 is moved to actuate the gate by means of a lever 43 which is connected, by means of a link 44, with a second lever 45 which is fastened to one end of the stem of a valve 46, the other end of the stem being actuated by the handle 47, the valve 46 being in the air pipe 28. This mechanism operates so that when the valve 46 is opened, the gate 41 is swung so as to close the opening, and the air pressure coming from the pipe 28 assists in holding the gate 41 shut. The valve 46 may be of the ordinary three-way venting style, and can be provided with a vent 48 so that when the air from the pipe 28 is shut off, and the gate 41 opened, the air in the conical portion 11, on the core-box, is allowed to pass out through the vent opening 48, and does not blow the sand up through the hopper 10.

This style of apparatus is cheap to make, is very stable, and provides an easy operating structure.

Having thus described my invention, what I claim is:—

1. An apparatus for filling core-boxes comprising a hopper, a gate to close the hopper, a pipe to convey compressed fluid to the hopper beneath the gate, a valve in the pipe, and means for simultaneously closing the gate and opening the valve, and vice versa.

2. An apparatus for filling core-boxes comprising a hopper, a swinging gate adapted to close the hopper, a pipe entering the hopper beneath the gate, a valve in the pipe, and means for simultaneously opening the valve and closing the gate, and vice versa.

3. An apparatus for filling core-boxes comprising a hopper having a reduced portion therein, a swinging gate adapted to close the reduced portion, a pipe conveying pressure to the hopper beneath the reduced portion, a valve in the pipe, means for operating the valve, and a connection from the valve to the gate acting to close the gate when the valve is opened.

In testimony that I claim the foregoing, I have hereunto set my hand this 11th day of December 1906.

ERVIN E. WITHAM.

Witnesses:

E. A. PELL,

WM. H. CAMFIELD.