(No Model.)

2 Sheets—Sheet 1.

W. B. BURNS.

MOLDING MACHINE.

No. 603,423. Patented May 3, 1898.

Fig. 1.

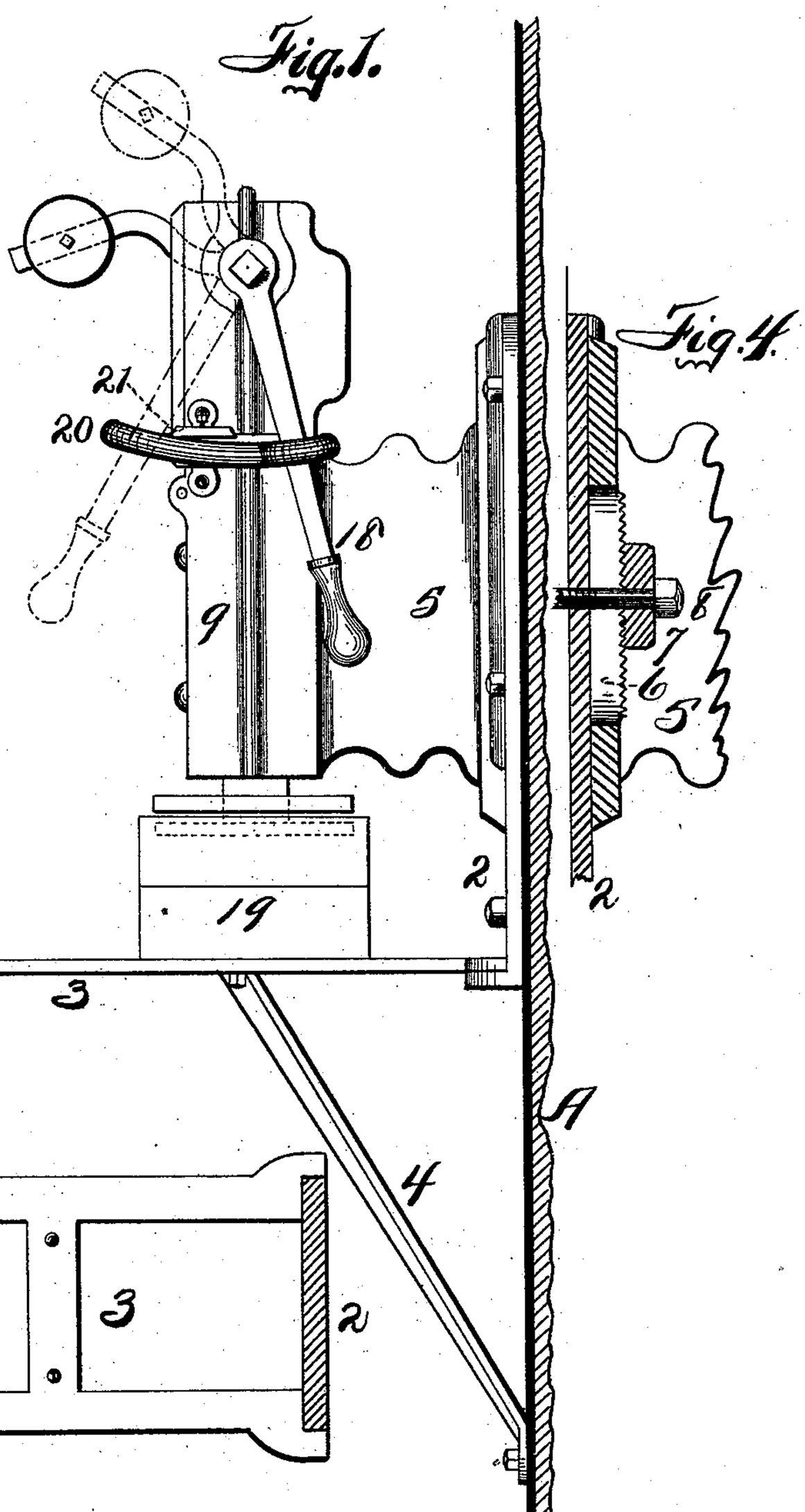


Fig. 4.

Fig. 7.

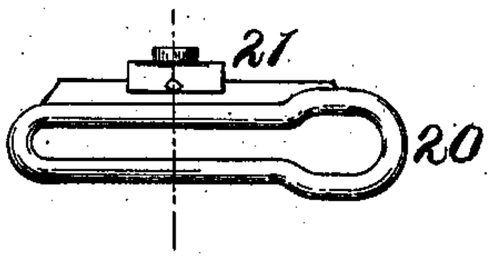


Fig. 8.

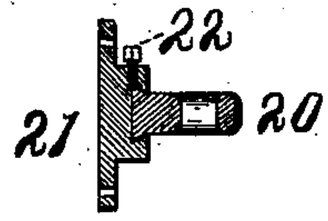
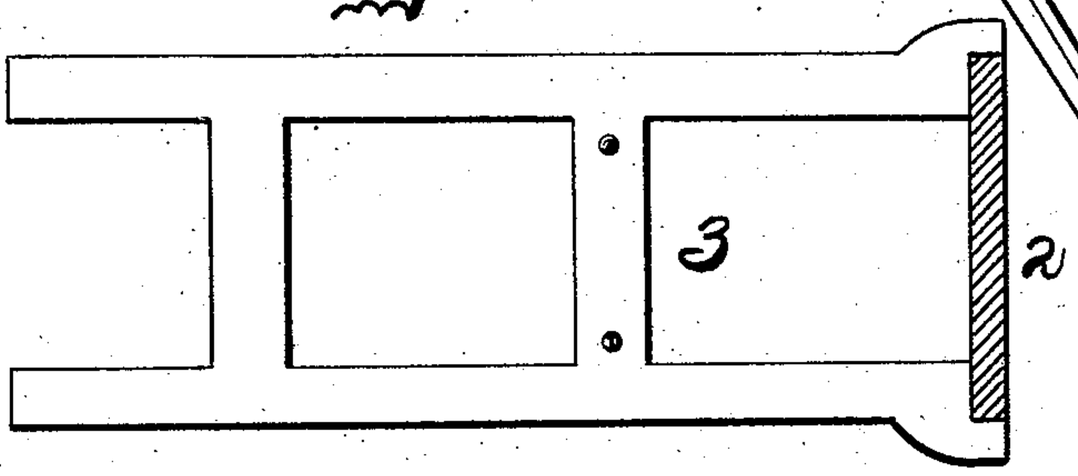


Fig. 9.



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(No Model.) 2 Sheets—Sheet 2.

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MOLDING MACHINE.

No. 603,423. Patented May 3, 1898.

Fig. 2.

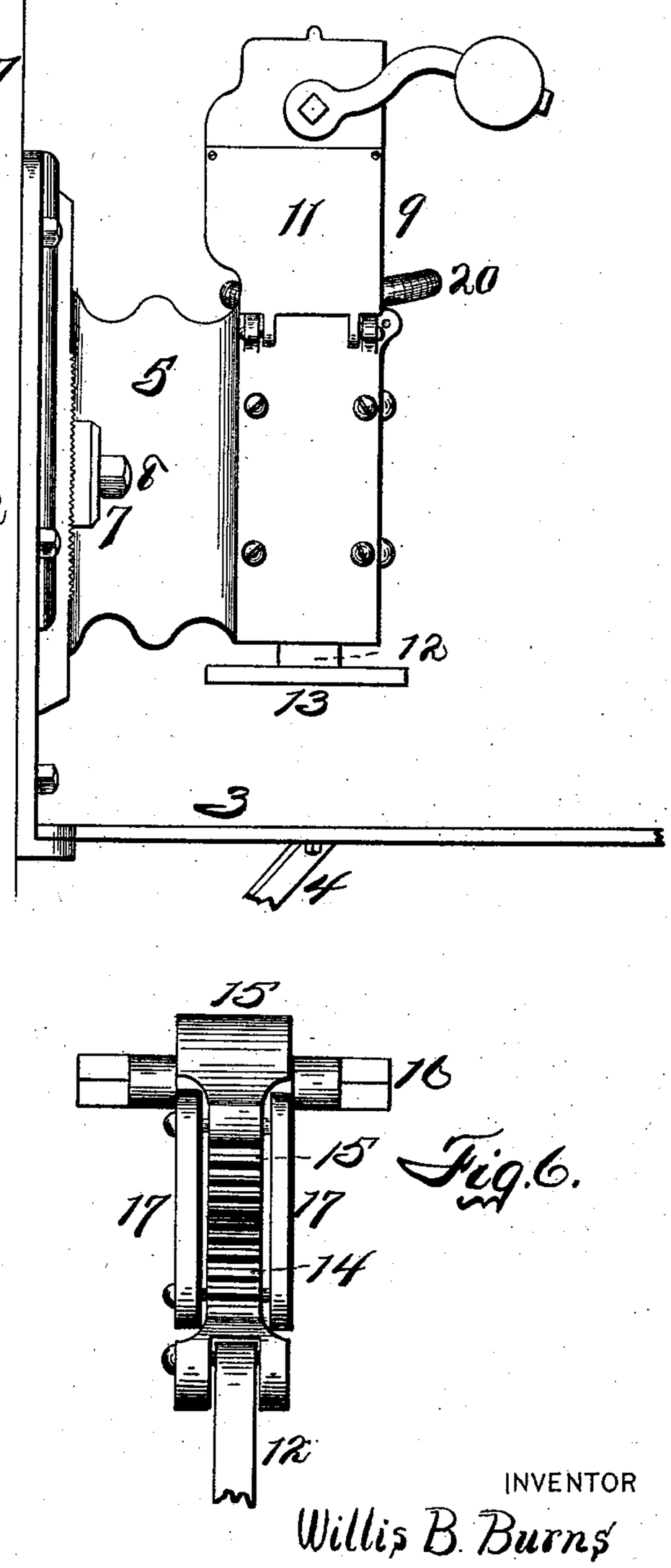

Fig. 3.

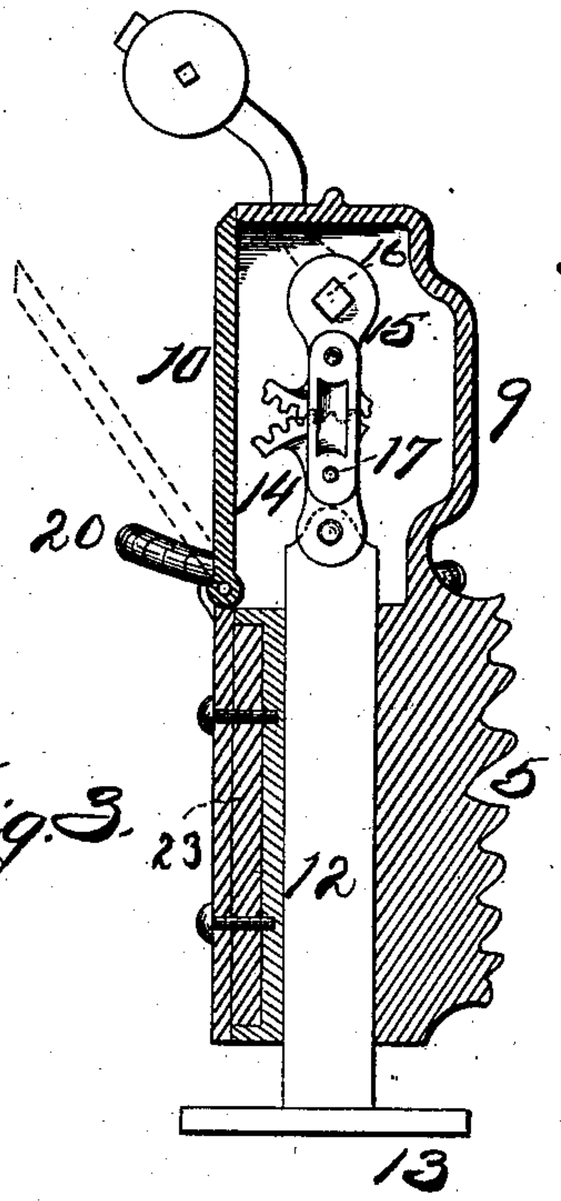

Fig. 5.

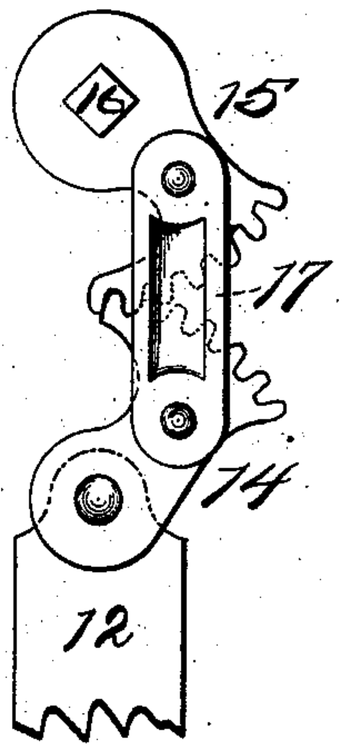

Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIS B. BURNS, OF SYRACUSE, NEW YORK.

MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,423, dated May 3, 1898.

Application filed June 14, 1897. Serial No. 640,630. (No model.)

To all whom it may concern:

Be it known that I, WILLIS B. BURNS, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Molding-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to founders' molding-machines for packing sand into flasks or flask-sections for making molds for castings.

My object is to produce an improved machine of the above class embodying a suitable table, a suitable frame adjustable vertically, a vertically-reciprocated packing-plunger, and means to operate it, and further provided with means to vary the vertical throw thereof and regulate the degree to which it packs the sand. The plunger-reciprocating mechanism comprises a pair of geared toggle-segments pivoted upon links which connect them, one of said segments being provided with a lever whereby it is rocked, which rocks the other segment to raise or lower the packing-plunger. The throw of said plunger is regulated by regulating the swing of the lever or levers by shifting the slotted link by which it or they are guided.

It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the machine erected, the dotted lines indicating the swing of the lever or levers and the head of the plunger in the sand. Fig. 2 is an elevation of the opposite side. Fig. 3 is a vertical section omitting the work-table. Fig. 4 is a sectional detail of the wall adjustment. Fig. 5 is an enlarged detail of the cam-segments detached. Fig. 6 is a front elevation of the same. Fig. 7 is a top plan of the lever-guiding link, which also regulates the extent of its swing. Fig. 8 is a cross-section thereof on line X. Fig. 9 is a top plan of a suitable work-table.

The apparatus is here shown as mounted upon an upright, as a wall or post; but it is evident that it can be mounted upon supporting-legs.

A represents a wall or post, to which a base 2 is suitably secured, and 3 is a work-table connected thereto and suitably supported, as by a brace 4. This places all working parts above and out of the sand, leaving the space underneath for storage of sand. A bracket 5 is adjustably mounted upon said base by means of an opening 6 in it, a block 7, and a bolt 8. The meeting faces of said block and bracket can be roughened or corrugated, substantially as shown. A casing 9, provided with doors 10 and 11 to permit of access to its interior, is suitably mounted upon said bracket, its object being to protect the working parts from sand. In a suitable way therein a piston or plunger 12 is suitably mounted to permit it to be guided and freely reciprocated and provided with a platen 13. A toothed toggle-segment 14 is suitably connected to this piston, and 15 is a like toothed toggle-segment provided with a transverse bar 16, suitably journaled in said casing, and both of said segments are pivotally connected to links 17, which connect said segments, so that when the upper one is rocked upon its pivot, as by a hand-lever 18, this will rock the other and raise or lower the piston. The lowering of said piston forces the platen down to sufficiently compact the sand in a flask 19 or in a section thereof, of any suitable form or construction, by one movement. The degree of packing is regulated by the swing of said lever, which is inserted freely through a slotted guide 20, suitably mounted in a bearing 21 upon said casing and secured in any desired position by means of a set-screw 22. This will also adjust the platen to flasks or flask-sections of varying height. A filler block or blocks 23 are suitably secured alongside of the piston. It will be seen that the limit of the packing pressure is reached when said pivots carried by the links are in alinement with the crank-bar 16 and the pivot which connects a segment to the piston, as shown in Fig. 3, and the rocking of the upper segment, which is prevented from rising, and the rocking of the lower one coöperate to swing it and said links forward and downward and thus force the piston down, and that the links take the thrust and hold the gear toggle-segments properly in mesh in all positions. It will be further seen that the inward rocking of the toggle-segments operates to swing said links directly into line with the piston and that they carry all of the strain or force which is applied to the piston and relieve the meeting faces of said segments

from the direct strain of the force exerted upon the piston; or, in other words, the gear-teeth are only subject to whatever strain is necessary to swing the links into alinement with the piston.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

In a molding apparatus, a reciprocating piston, the toggle-segment 14, pivoted to its upper end, the toggle-segment 15, the two segments being provided with teeth upon their engaging surfaces, the connecting-links by which the two segments are kept in gear with each other, the operating-shaft 16, which passes through the upper end of the segment 15, and a weighted operating-lever, connected to one end of the shaft, combined with a suitable inclosing frame that is provided with doors, and the slotted guide 20, secured to the side of the frame, substantially as shown and described.

In witness whereof I have hereunto set my hand this 9th day of June, 1897.

WILLIS B. BURNS.

In presence of—
C. W. SMITH,
HOWARD P. DENISON.