

No. 799,354.

PATENTED SEPT. 12, 1905.

G. W. PACKER, DEC'D.

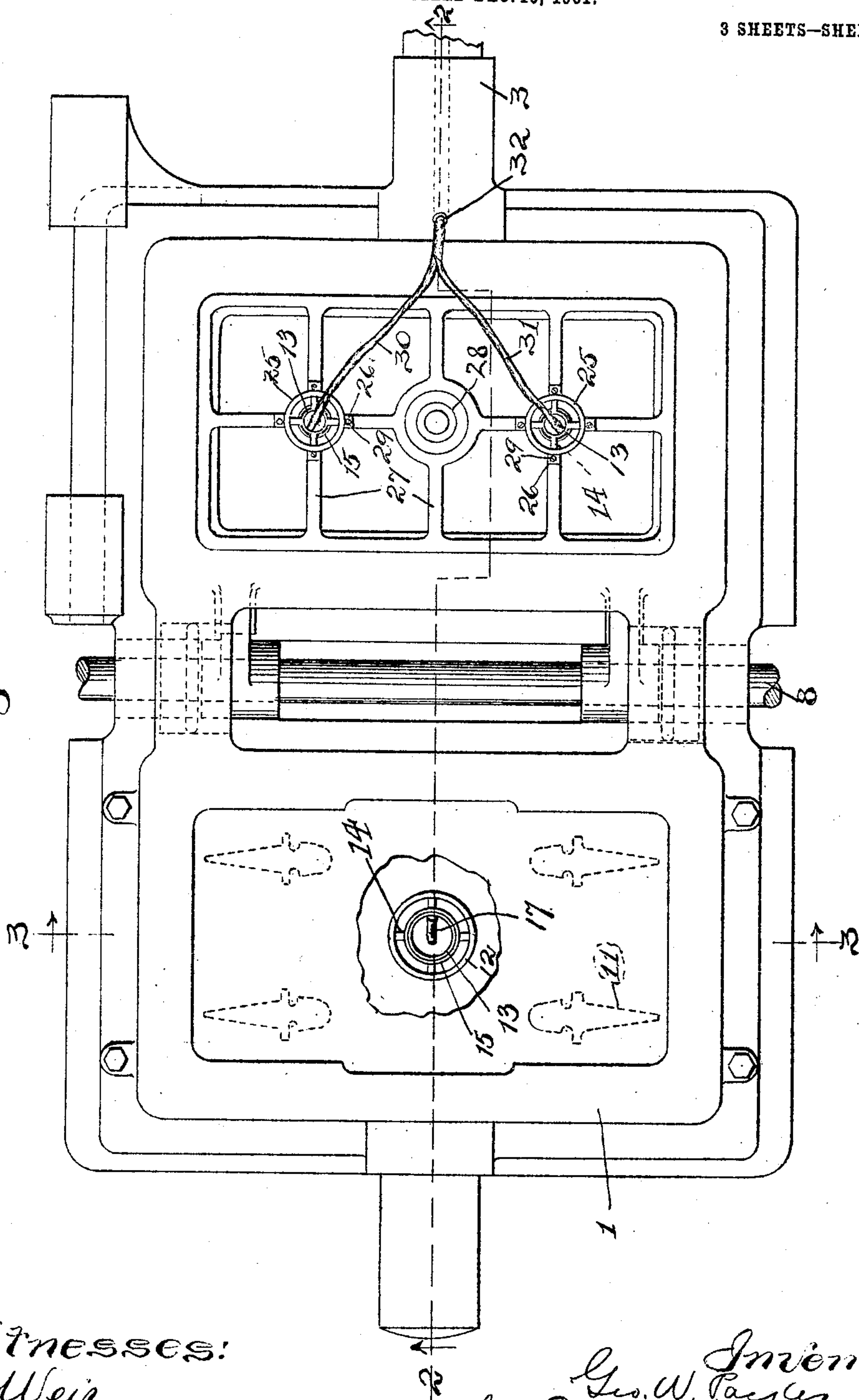
M. A. PACKER, ADMINISTRATRIX.

MOLDING MACHINE.

APPLICATION FILED DEC. 16, 1901.

3 SHEETS—SHEET 1.

Fig. 1



Witnesses:
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Inventor
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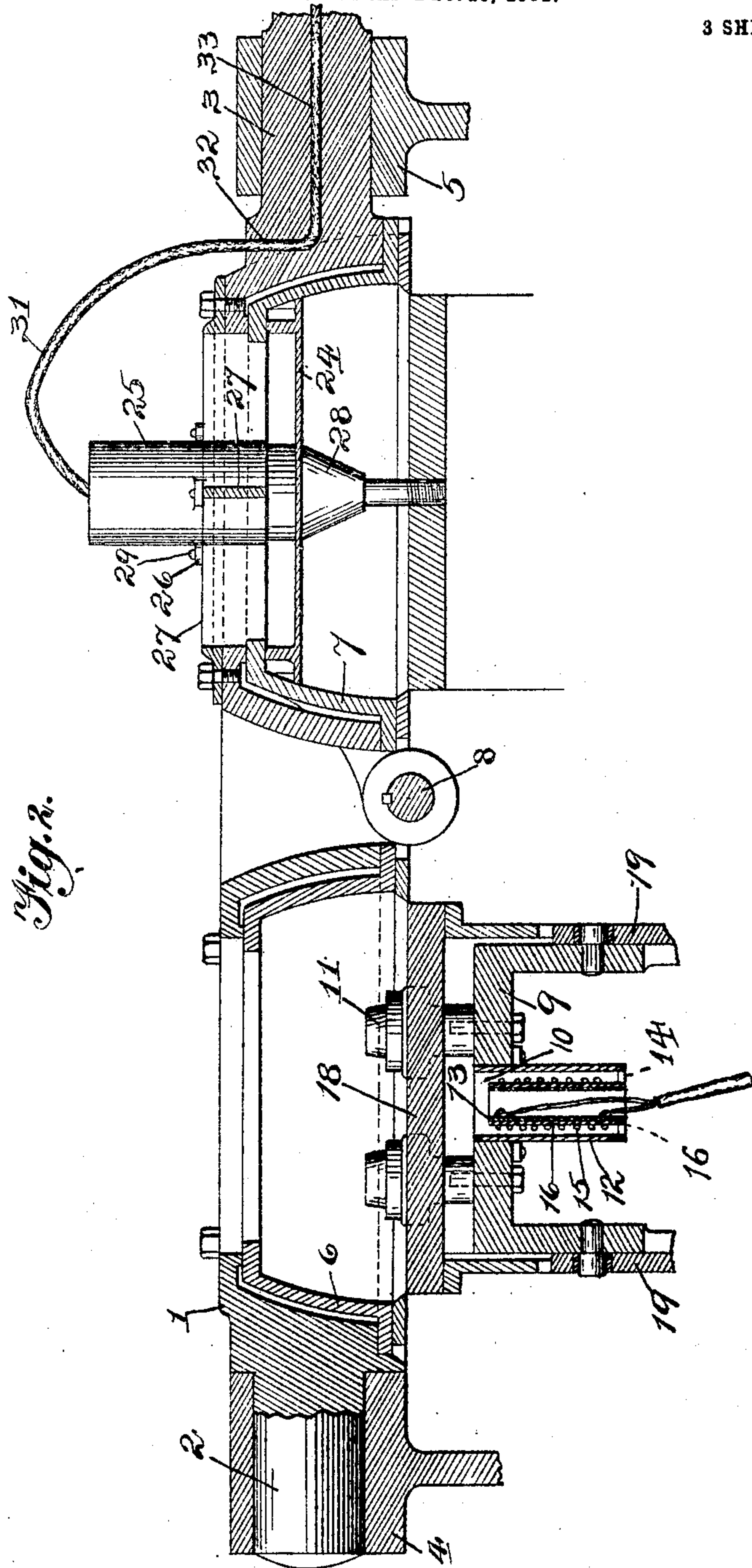
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MOLDING MACHINE.

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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 3.

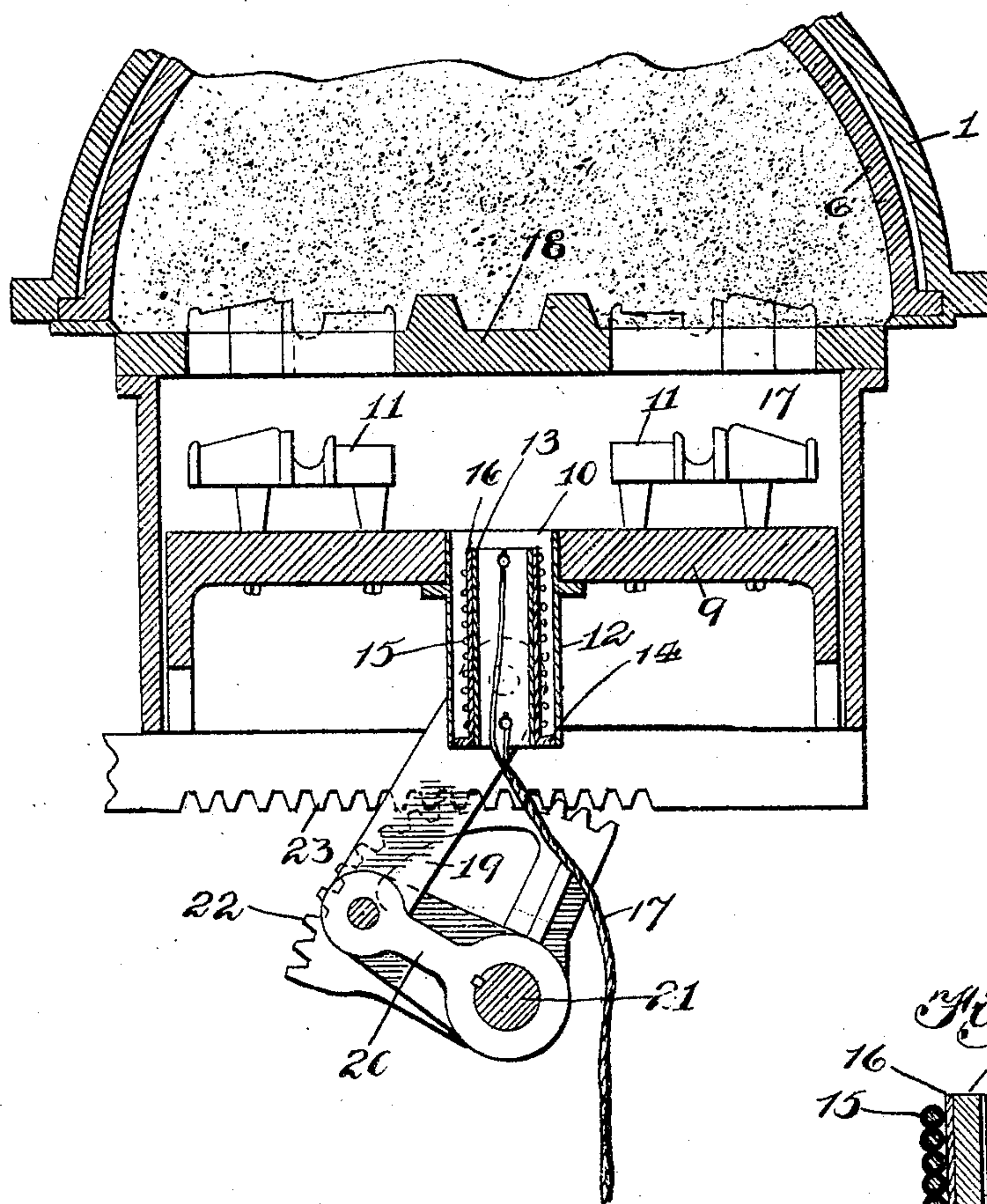
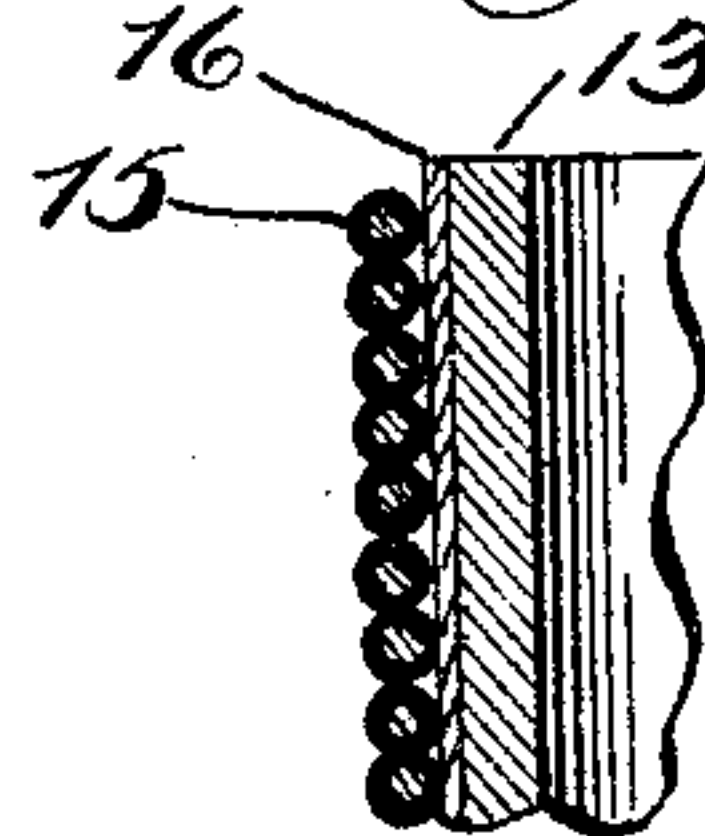


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MOLDING-MACHINE.

No. 799,354.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed December 16, 1901. Serial No. 86,177.

To all whom it may concern:

Be it known that I, GEORGE W. PACKER, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Molding-Machines, of which the following is a full, clear, and exact specification.

My invention relates more particularly to the means for heating the parts of molding-machines which come into direct contact with the sand to prevent condensation of moisture thereon and consequent damage to the mold resulting from the sand adhering to the wet surfaces. The patterns and pattern stripper-plates and the back of the flask are usually the parts to be heated to avoid this objectionable result.

The primary object of my invention is to heat one or more of these parts uniformly throughout notwithstanding their movability, whereby overdrying at one place and condensation at another place will be avoided.

A further object of my invention is to so construct and arrange the heater that it cannot be clogged up by loose sand falling from the mold or from the flask.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a plan view of two flasks of a molding-machine provided with my improvements. Fig. 2 is a vertical longitudinal sectional view thereof on the line 2 2, Fig. 1. Fig. 3 is a transverse section on the line 3 3, Fig. 1; and Fig. 4 is an enlarged vertical detail section of the coil and tube hereinafter described.

For the purpose of illustrating the construction and operation of my improved heater I have shown it in the accompanying drawings as applied to parts of a molding-machine which constitute the subject-matter of the claims of my pending application, Serial No. 63,968, filed June 10, 1900, for improvements in molding-machines, in which the flasks are hinged together and have a rotary motion on an axis common to both of them and an individual relative motion on another axis ex-

tending at right angles to said common axis, 55 and the stripper-plate is held up against the sand or face of the mold until the pattern-plate has descended a considerable distance for withdrawing the patterns; but it will be understood that this is only an example of 60 one of the various forms of molding-machines to which my invention is applicable. 1 is a flask-frame which is provided at opposite ends with trunnions 2 3, mounted in any suitable bearing 4 5, and which trunnions constitute the 65 axis common to both flasks 6 7, the form of which flask is fixed in frame 1, while the latter is hinged on a transverse shaft 8, so that it may turn over upon and face the companion flask 6, the latter constituting the drag and the former 70 the cope, and the flask 7 being overturned after both flasks have been inverted on the trunnions. In heating the patterns the pattern-plate and the stripper-plate in a molding-machine of this form or of any other form in which 75 the pattern-plate moves away from the stripper-plate to draw the patterns the heater is mounted upon and moves with the pattern-plate, which is shown at 9 and which is provided with an aperture 10; located between the pat- 80 terns 11 for the passage of the heat. The heater is electrical and consists of a tube or cylinder 12, which is secured in the aperture 10 in an upright position, and an internal tube or cylinder 13, secured in the cylinder 85 12 at the bottom or lower end by spider-arms 14 and is wrapped with a resistance-coil 15 over suitable insulation 16, the terminals of the coil being connected by conductors 17, 90 which pass downwardly through the cylinder 13 to any suitable source of electricity. The exterior of the cylinder 12 is of sufficient diameter to leave a considerable space between its inner surface and the coil 15, which serves the twofold purpose of permitting the heat to 95 rise and fill the chamber or space 17 left between the pattern-plate 9 and stripper-plate 18 when the pattern-plate descends and to allow any loose sand which may fall from the flask or mold above to pass out without clog- 100 ging the heater or short-circuiting the current. It will also be seen that as the pattern-plate 9 descends and creates suction between it and the stripper-plate 18 a forced current or draft of hot air will be induced, and consequently the entire space between the pat- 105 tern and stripper plates will be filled with air heated to a uniform degree throughout, and

hence the entire surfaces of both the pattern and stripper plates, as well as the surfaces of the patterns, will be uniformly heated throughout, and the danger of overheating them at one place while other parts will be underheated will be entirely avoided. In this particular example of molding-machine, in connection with which my invention is shown, the pattern-plate 9 is raised and lowered by toggle-arms 19 20, the latter of which is secured to a shaft 21, which is rocked back and forth at the proper time by a segment 22, secured on such shaft and deriving motion from a reciprocating rack-bar 23, all as fully described in my aforesaid pending application and to which reference may be had for an understanding of these parts, if desired; but the particular type of molding-machine is entirely immaterial, so far as my present invention is concerned, so long as the pattern-plate is moved relatively to the stripper-plate, and this action is common in molding-machines and well understood—that is to say, the movement of the pattern-plate relatively to the stripper-plate is essential for the operation of my invention where the suction produced by such movement is relied on for inducing a draft between the cylinders 12 13, bringing heated air into intimate contact with the parts to be heated, and for also blowing out particles of sand that might lodge between the cylinders; but where my invention is applied to the back of the flask—as, for example, as shown in Figs. 1 and 2, which illustrate it as applied to the back of the flask-frame for warming the backboard of the flask—this aforesaid movement of the pattern-plate relatively to the stripper-plate is not used and is not essential.

In the application of my heater to the back of the flask for warming the backboard or top member 24 I employ the form of heater already described, comprising concentric cylinders, the outer one of which is shown at 25 and is provided with peripheral lugs 26, by means of which the cylinder may be secured to the flask-frame. In the particular form of flask-frame shown that part which is directly over the flask is composed of a grating or skeleton frame 27, which is provided for reinforcing the backboard or member 24 and to which skeleton frame the flanges 26 are secured by screws 29 or other suitable devices. The sprue-pattern 28 being located at the center of the flask, as shown in Fig. 1, it is desirable to employ two of the heaters for the cope-flask, one at each side of the sprue-pattern, so that the hot air will rise between the concentric cylinders of the heater when the flask is inverted and impinge against the backboard or member 24 of the flask after passing between the bars of the skeleton frame 27.

The conductors 30 31 for supplying these two heaters with the necessary current may be brought together, as shown in Fig. 1, and carried through an upright channel 32 in the frame 1 and thence through an axial passage 33 in the trunnion 3, whereby the flask-frame may be inverted without interference from the conductors 30 31.

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

1. In a molding-machine the combination of a cylinder or casing arranged adjacent to a part to be heated, a resistance-coil arranged in said cylinder or casing and at a distance therefrom, so as to form a space between the inner walls of a cylinder or casing and said coil and means for conducting current to said coil, substantially as set forth.

2. In a molding-machine the combination of a cylinder or casing arranged adjacent to a part to be heated, a hollow member arranged in said cylinder or casing and being of considerably smaller diameter than said casing, whereby a space will be formed between the two, spider-arms supporting said hollow member in said cylinder or casing, a resistance-coil surrounding and insulated from said hollow member and conductors for placing said resistance-coil in circuit with a source of electrical energy, substantially as set forth.

3. In a molding-machine the combination of two plates at least one of which is movable relatively to the other and whose movement creates suction between the two, and a heater having an air-passage opening into the space between said relatively movable plates, and an inclosing means for one of said plates fitted to the opposed side of the other and inclosing the space between them, substantially as set forth.

4. In a molding-machine the combination of two members one of which is movable relatively to the other and is provided with an aperture, a heater having a casing located in said aperture so as to communicate with the space between said members, said heater having an air-passage through it, substantially as set forth.

5. In a molding-machine the combination of a stripper-plate, a pattern-plate, said plates being relatively movable, and one of which is provided with an aperture communicating with the space between the plates, and an electric heater having an air-passage through it arranged in said aperture, substantially as set forth.

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Witnesses:

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