

No. 870,012.

PATENTED NOV. 5, 1907.

J. P. BUCKLEY.
ELECTROMAGNETIC PRESS.
APPLICATION FILED APR. 19, 1907.

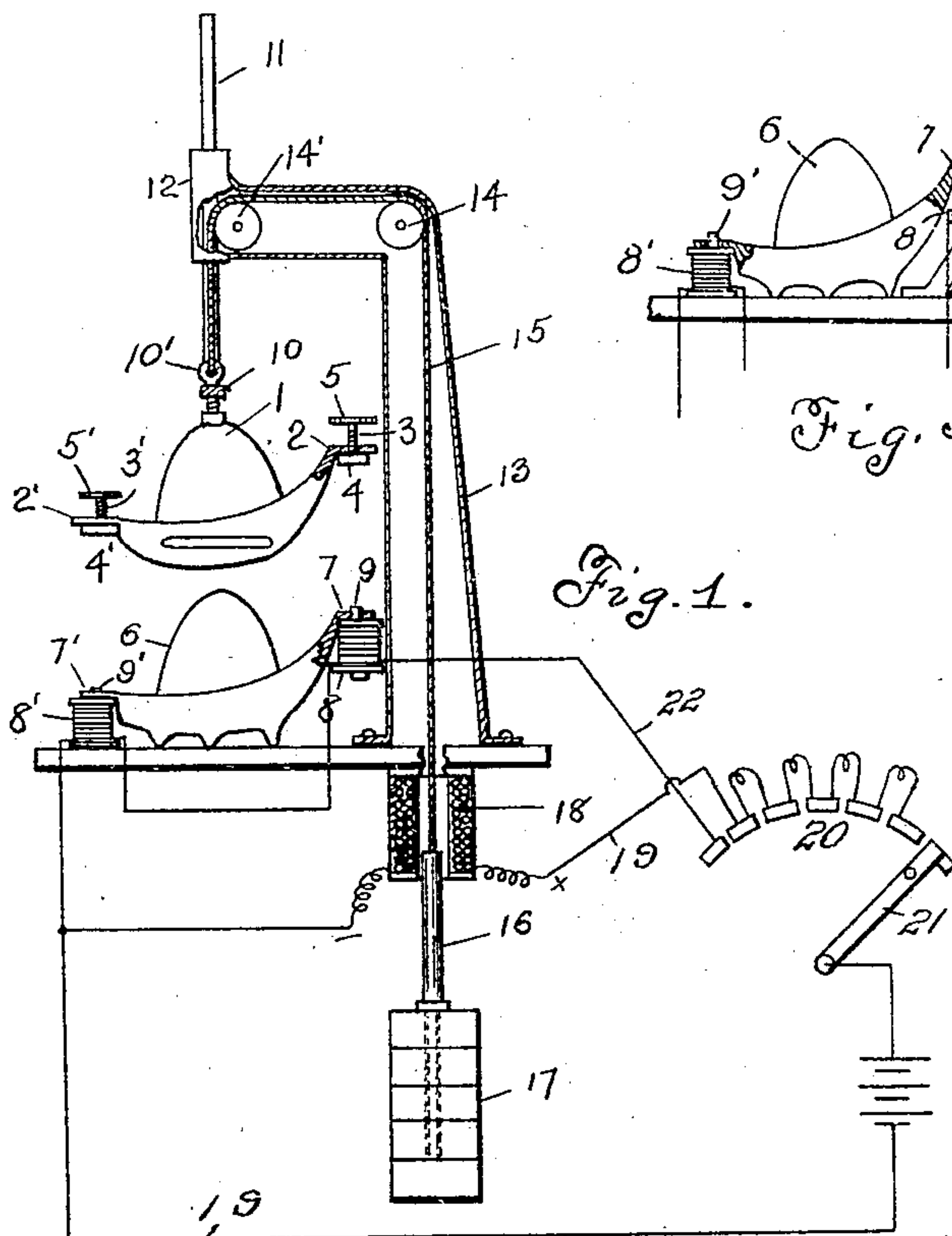


Fig. 1.

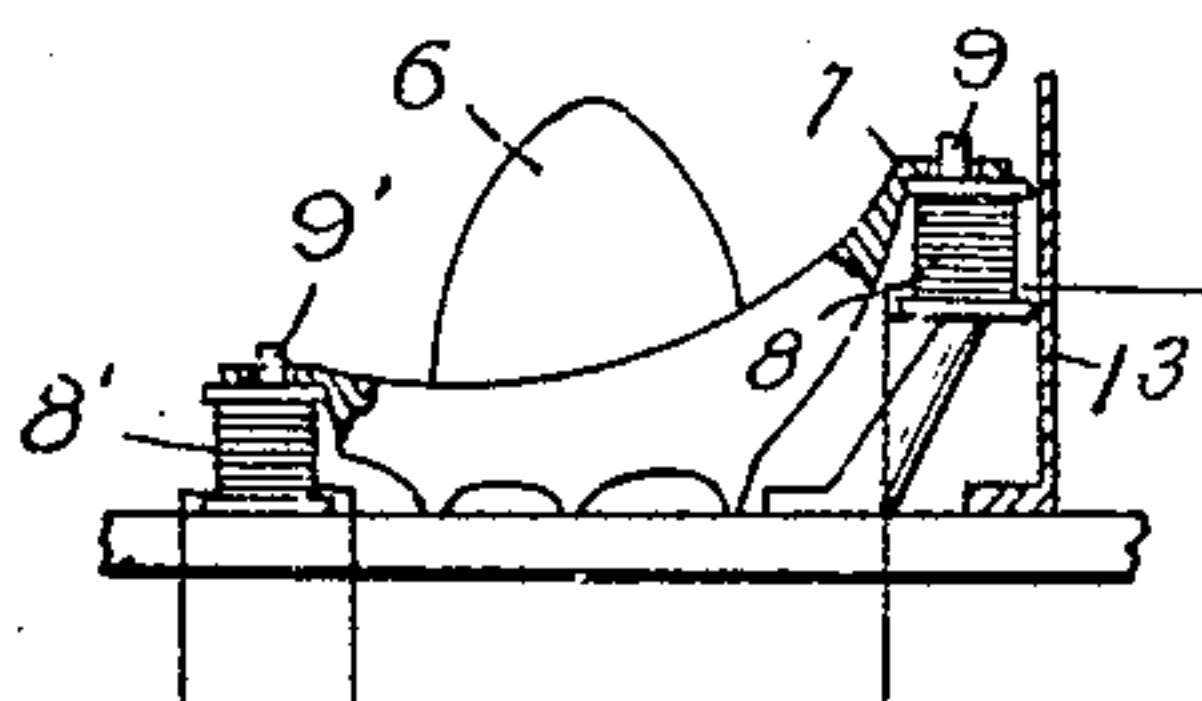


Fig. 5.

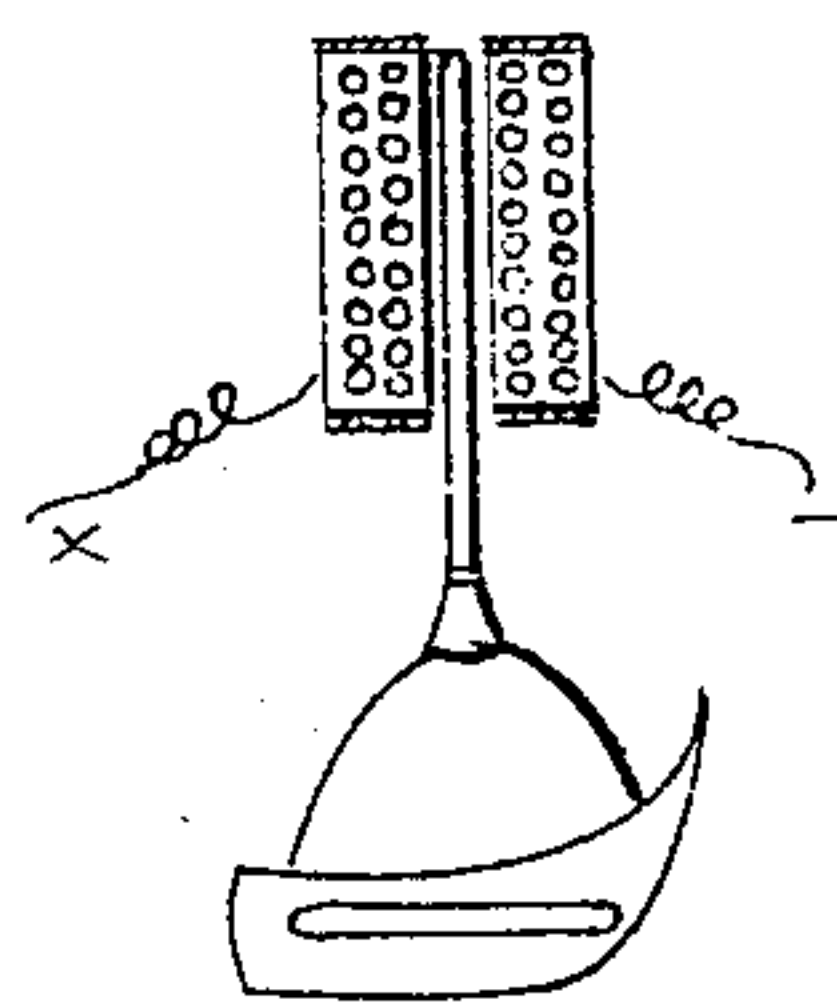


Fig. 4.

Fig. 2.

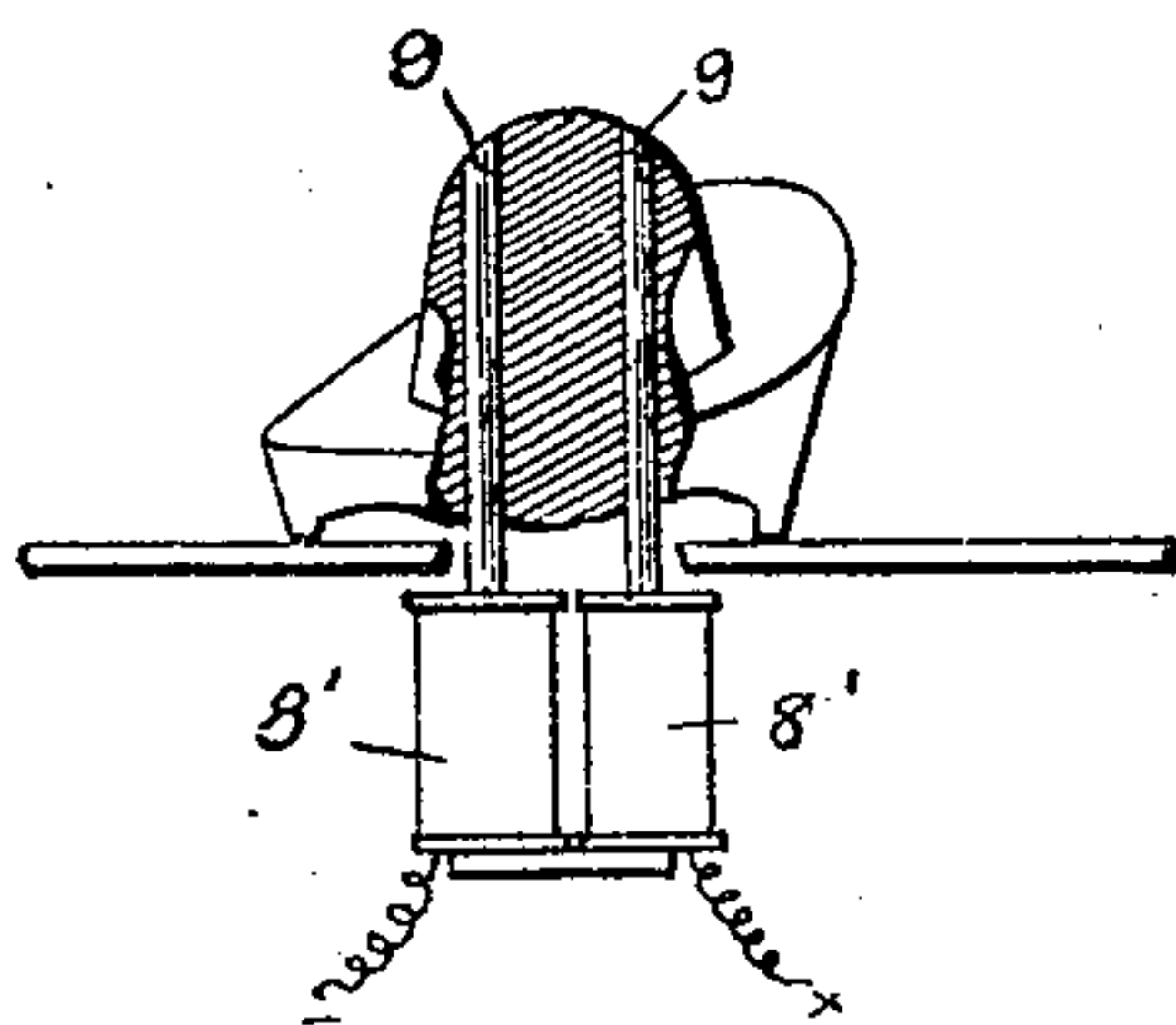
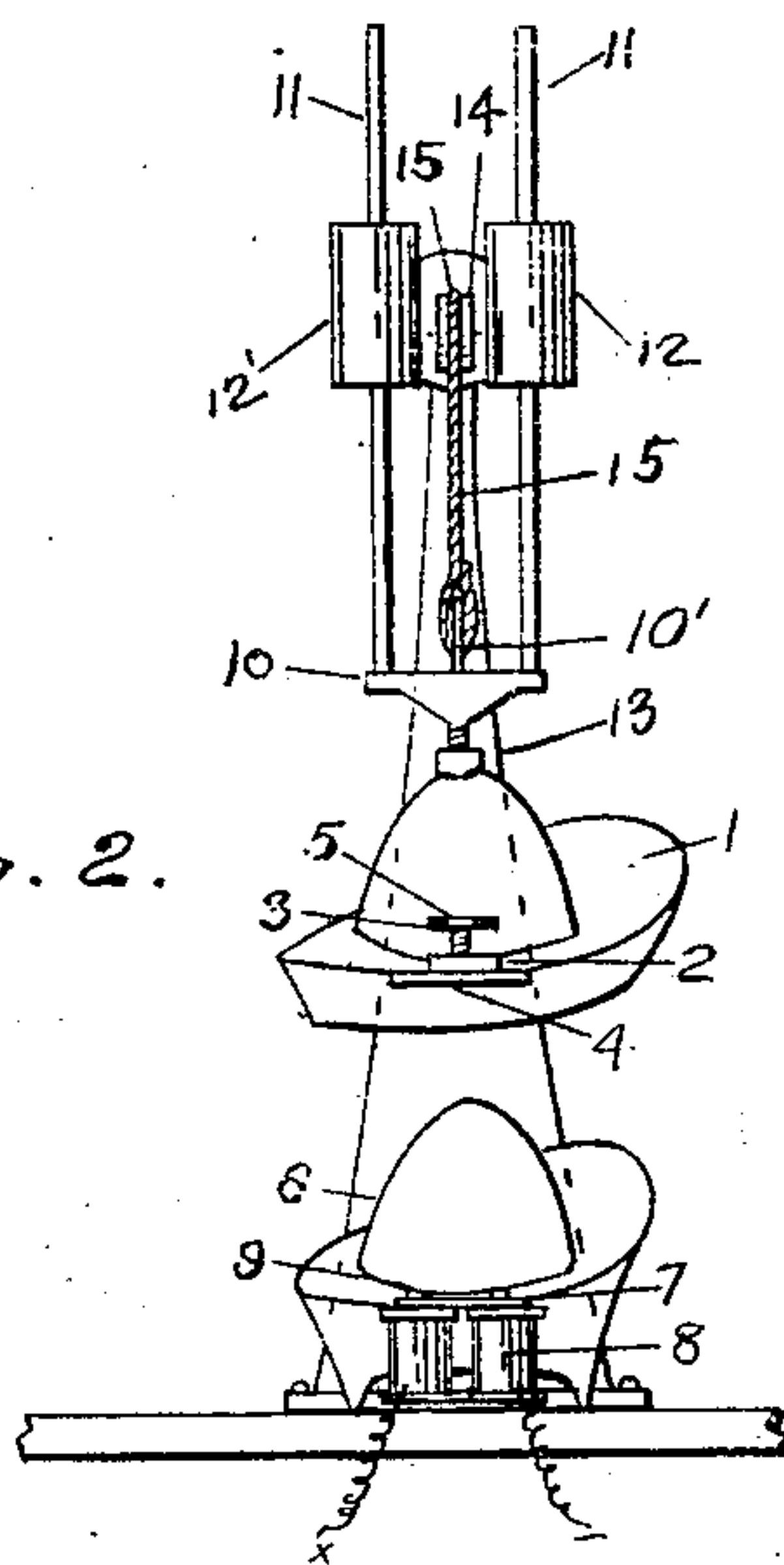


Fig. 3.

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ELECTROMAGNETIC PRESS.

No. 870,012.

Specification of Letters Patent.

Patented Nov. 5, 1907.

Application filed April 19, 1907. Serial No. 369,135.

To all whom it may concern:

Be it known that JOHN P. BUCKLEY, a citizen of the United States, residing at New York, in the county of New York and State of New York, has invented certain new and useful Improvements in Electromagnetic Presses, of which the following is a specification.

My invention relates to electro-magnetic presses, more especially designed for molding or shaping hats, shoulder-forms and similar articles of apparel, when rapidity and ease of operation is essential; and the object is to provide a machine with which such articles may be molded by unskilled labor at much less cost than is possible with machines used at present. I attain these objects by the constructions shown in the accompanying drawings, in which:—

Figure 1 is a side elevation of one form of press, parts being broken away to more clearly illustrate its construction. Fig. 2 is a front elevation and Figs. 3, 4 and 5 are detail views of modifications.

1 represents the top or female member of a set of hat-shaping dies; the member being provided with a plurality of lugs or projections; two such being shown, as at 2, 2'. Each of these lugs is tapped to receive threaded stems, as 3, 3', carrying at one end armature pieces 4, 4', and provided at their opposite ends with suitable adjusting means, as thumb-pieces 5, 5', for adjusting the armatures for the purpose hereinafter described.

6 represents the lower or male die member of the set, detachably connected to the base of the main frame and also provided with a plurality of lugs, as 7, 7', aligned with the lugs 3, 3', respectively, and preferably serving to support the electro-magnets 8, 8', in any suitable manner. Any suitable means of attaching the magnet-cores 9, 9', to the lower lugs may be used; as set-screws, (not shown), though I prefer to make these cores a driving fit in the perforations of the lugs. As will be readily apparent the magnets 8, 8' may be supported on the base of the main frame, and not secured to the die 6; while the mounting of the armatures 4, 4' may be varied as desired.

A cross-head or member 10 is suitably secured to the top die-member 1, as by a screw-threaded extension fitting a tapped boss in the apex of the die-member; though a set-screw or self-locking bayonet joint may be substituted, as will be readily understood. The cross-head is preferably provided with a central eye 10', and its lateral extensions support two guide-rods 11, which are adapted to reciprocate through the housings 12, 12', on the frame 13, to prevent rotation of the upper die-member and cause it to always seat properly upon the lower die-member.

14, 14' represent peripherally grooved guide-pulleys for the cable 15; these pulleys being suitably journaled in the frame. The cable 15 is attached at one end to the eye 10' and at its other end to a core-like extension 16 of a counter-weight 17. Around the core

16 is located a solenoid coil 18, secured to the base of the main frame; while the weight of counter-weight 17 may be varied by the addition or removal of sections, as will be readily understood. The solenoid 18 may be directly connected to the top of the frame; one or both guide-rods 11 serving as an armature, or armatures for the purpose of increasing the pressure upon the goods.

The solenoid coil 18 and magnet coils 8, 8', are included in a suitable exciting circuit 19, which circuit also preferably includes a rheostat 20, for gradually increasing the current in the solenoid coil; and a controller arm 21 is preferably arranged to close a shunt circuit 22 through the coils 8, 8' as soon as the resistance is completely removed from the solenoid circuit. Such wiring features are well known to electricians and, since they form no part of my present invention, are illustrated by diagram only, and need not be further described.

In the modification shown in Fig. 3, the cores 9 of the magnets 8' extend through the body of the lower die; which die is then preferably made of some non-magnetic material, such as spelter.

In the modification shown in Fig. 4, the top die is connected directly to the core of a solenoid, the coil of which is supported on the frame of the machine, as will be readily understood. By means of a pole-changing switch, the die and solenoid core may be reciprocated, as will be readily understood. It will also be readily understood that dies of any desired contour may be substituted for the hat-shaping dies illustrated in the drawing.

The operation of my device is as follows: The goods or article to be pressed is stretched between the two dies and the controller arm thrown to gradually cut out the resistance from the solenoid circuit. The core 16 and counterweight 17 are thereby gradually elevated, and the upper die lowered upon the article to be shaped. As soon as the armatures 4, 4', have approached the magnet cores 9, the circuit will be closed through the coils 8, 8', and the armatures, and with them the upper die, drawn downward upon the goods with increasing force. In the meantime, the solenoid 18 acts to support the counterweight 17. The armatures should be so adjusted as never to come in direct contact with the cores 9; as thereby the forward movement of the top die would be obviated; but they should be so adjusted that when the material between the dies is fully compressed, only the smallest possible space should remain between the armatures and the magnet cores, so as to exert the greatest possible attraction and pressure. It will be understood that the counterweight 17 is so adjusted as to just slightly overbalance the weight of the die 1 and the friction of the parts, so that when the circuit is broken by throwing the controller arm to "off" position, the counter-

weight will raise the die 1 from the work. Of course the first action of reversal of the controller arm is to break the circuit of the magnets 8, 8', and thereafter gradually insert the resistance into the solenoid circuit and finally break this circuit altogether. As soon as the dies have been thus separated, the shaped article may be removed and another piece readily substituted. It will be understood that the dies may be sufficiently heated to form and dry the articles without interfering with the action of the magnets.

From the above description, the action of the modifications shown in Figs. 3 and 4 will be readily understood. If desired, the modification shown in Fig. 4 may be operated by a mere pole-changing switch and made to operate in conjunction with the magnets 8, and 8'.

Many other changes may be made in my device without departing from my invention since

What I claim is:

- 20 1. In a press, a plurality of platens and magnetic means for relatively moving said platens.
2. In a press, a plurality of die-members and magnetic means for causing the approach of said die-members.
- 25 3. A press having die-members comprising magnetic material, and electro-magnetic means for moving said die-members.
4. A press having relatively movable die-members, armatures on one of said members, electro-magnets on the other member, and an exciting circuit for said electro-
- 30 magnets.

5. A shaping press having relatively movable die-members, armatures adjustably mounted on one of said members, electro-magnets on the other member, an exciting circuit for said magnets and controlling means for said circuit.

6. In a shaping press, in combination, a stationary die carrying electro-magnets; a counterbalanced movable die comprising magnetic material, and electro-magnetic means for bringing said movable die into the field of said electro-magnets.

7. In a shaping press, in combination, a lower die, electro-magnets mounted thereon, a counterbalanced upper die carrying armatures, a solenoid for lifting the counterbalance, exciting circuits for said solenoid and electro-magnets, and means for successively closing said circuits.

8. In a shaping press, in combination, removable, co-operating dies, electro-magnets mounted on one of said dies, adjustable armatures on the other die, a counterbalance for said last named die, a solenoid for lifting said counterbalance, exciting circuits for said solenoid and electro-magnets, and controlling means for said circuits.

9. In a shaping press, in combination, a lower die, electro-magnets mounted thereon, a counterbalanced upper die carrying armatures, guiding means for said upper die, a solenoid for lifting the counterbalance, exciting circuits for said solenoid and electro-magnets, and means for successively closing said circuits.

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

JOHN P. BUCKLEY.

Witnesses:

M. PRESTO,
L. BRISKMAN.