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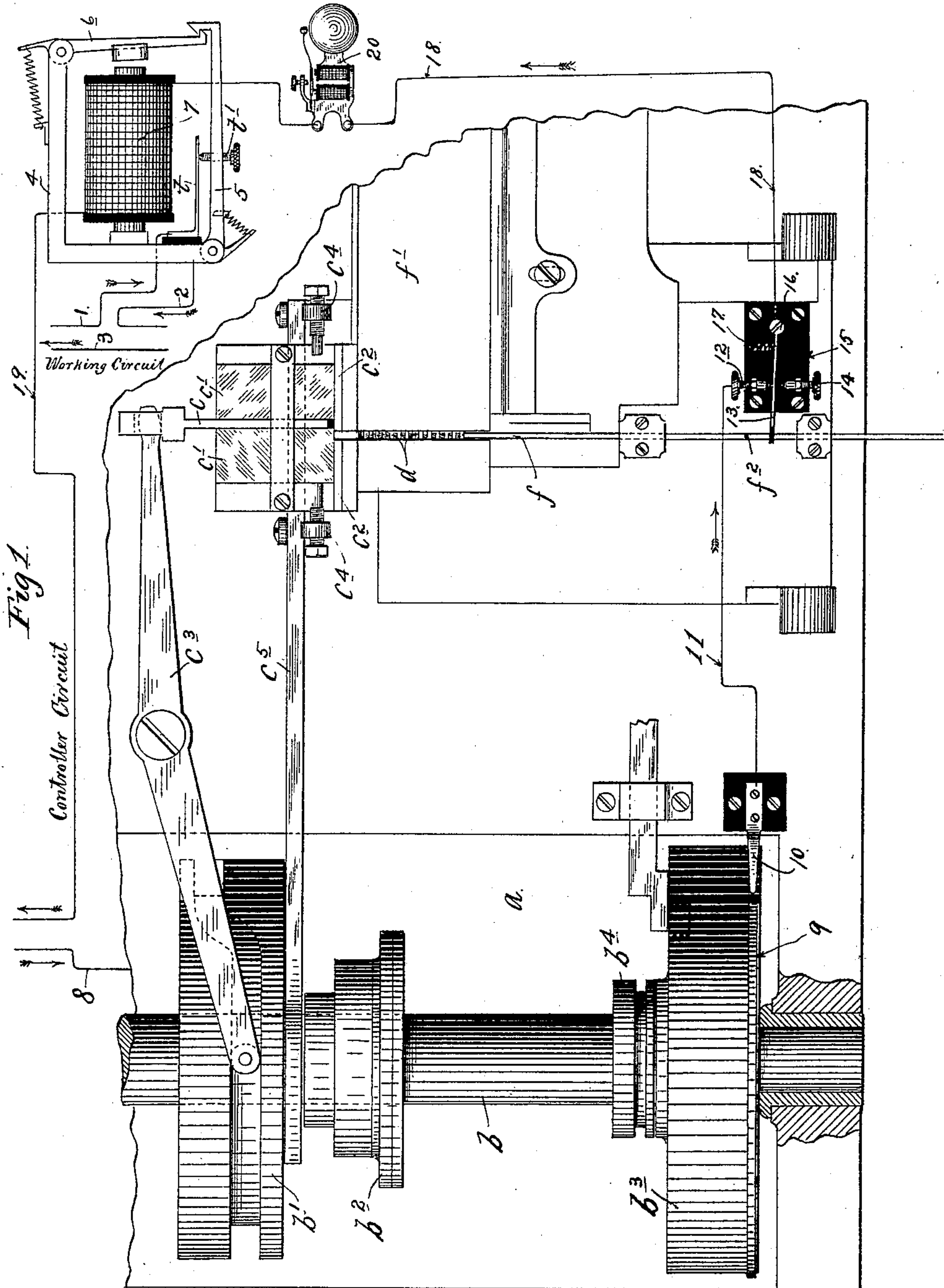
3 Sheets—Sheet 1.

G. A. GOODSON.

CONTROLLER FOR TYPE CASTING AND SETTING MACHINES.

No. 605,956.

Patented June 21, 1898.



Witnesses

C. F. Kilgore

A. D. Merchant.

Inventor

George A. Goodson

By his Attorney

Law. F. Williamson

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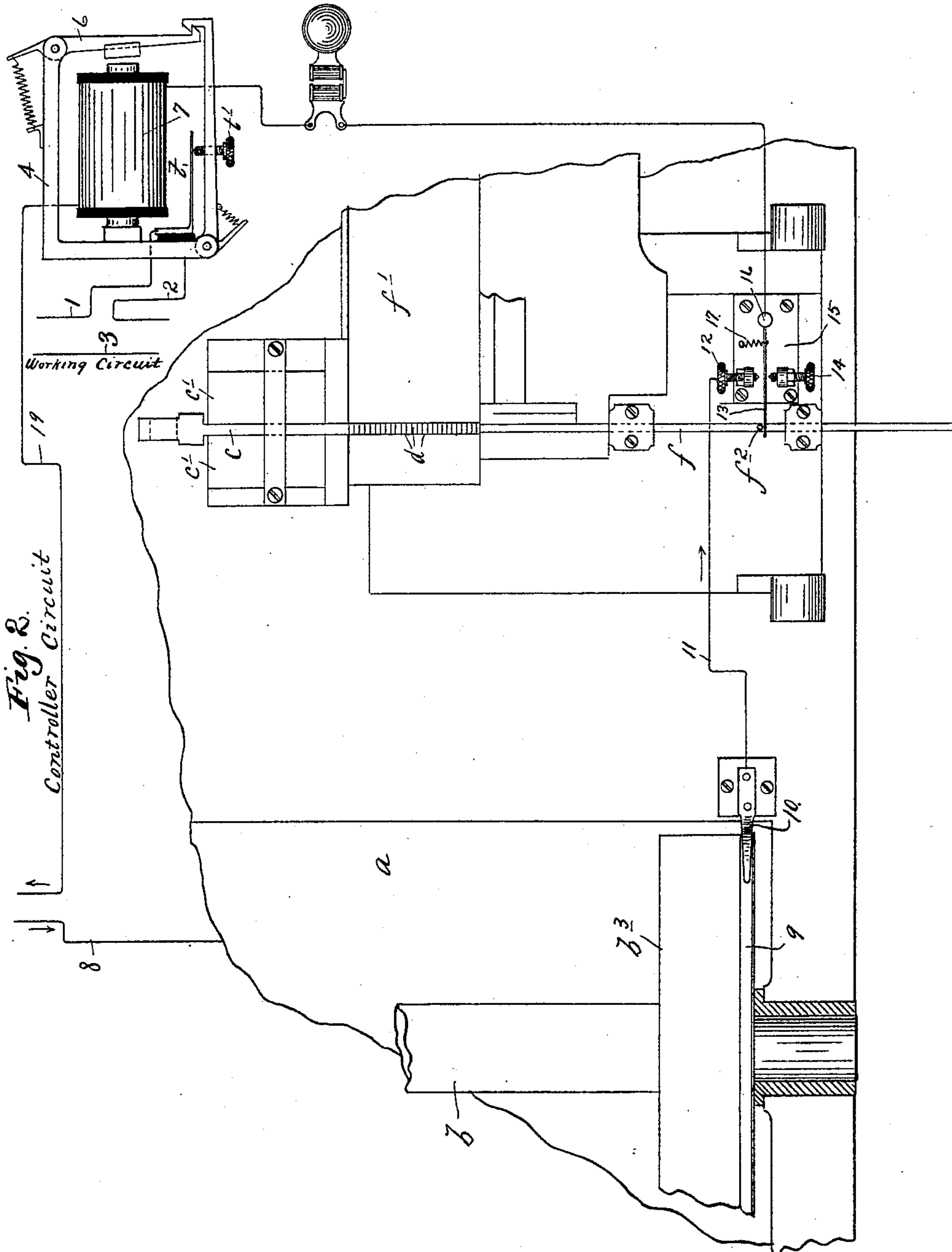
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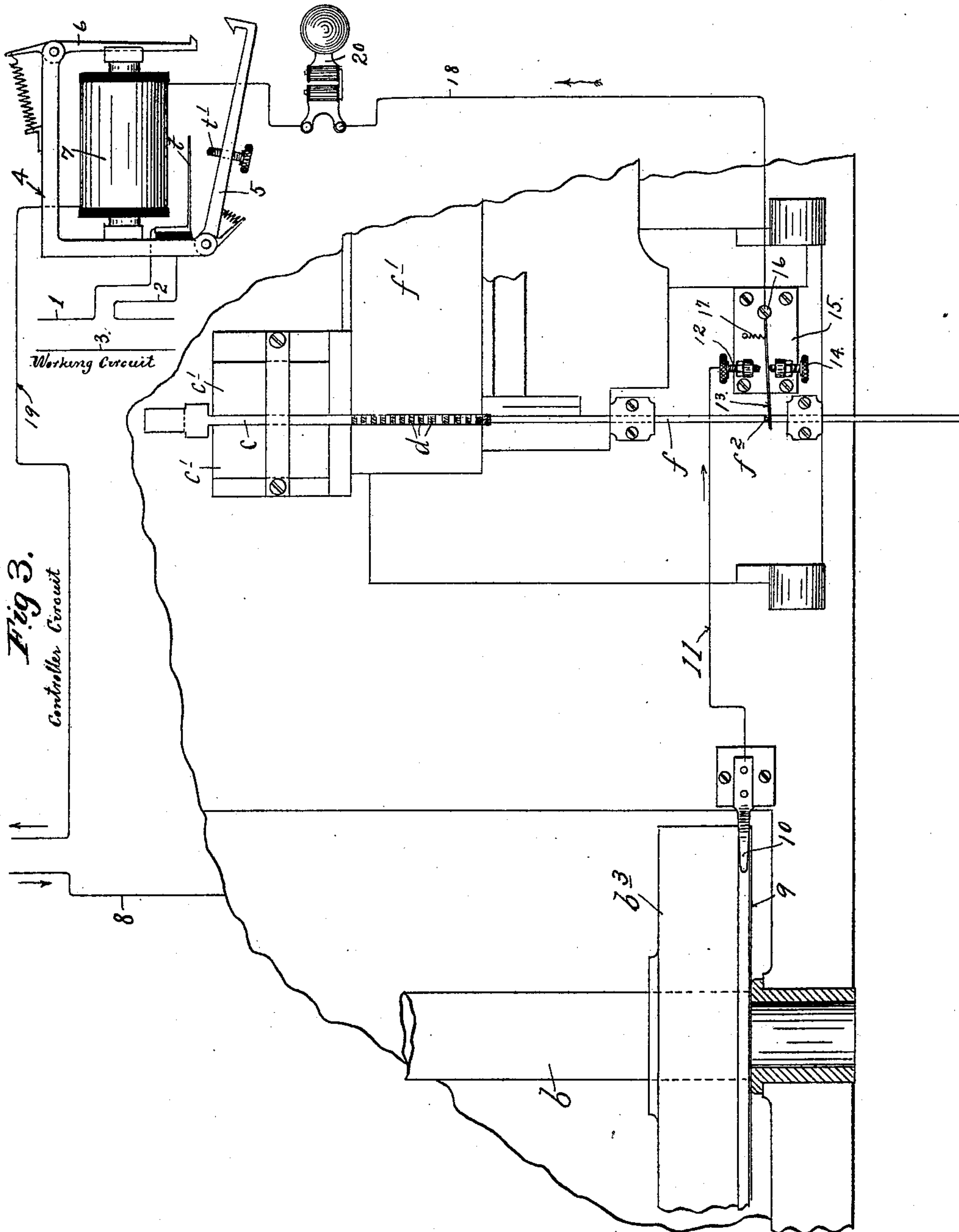
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UNITED STATES PATENT OFFICE.

GEORGE ARTHUR GOODSON, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO THE GOODSON TYPE CASTING AND SETTING
MACHINE COMPANY, OF SAME PLACE.

CONTROLLER FOR TYPE CASTING AND SETTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 605,956, dated June 21, 1898.

Application filed January 25, 1897. Serial No. 620,614. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ARTHUR GOODSON, a citizen of the Dominion of Canada, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Controllers for Type Casting and Setting Machines; 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.

My invention relates to type casting and setting machines, and is especially designed for use in connection with what is known as the "Goodson" type casting and setting machine, disclosed in my United States Patent No. 530,481, of date December 4, 1894. In the said Goodson type casting and setting machine, as may be seen by reference to said patent, the casting actions are electrically controlled by a punctured representative strip and coöperating thrust-pins, which establish the necessary connections for positioning the matrix-block and the mold-plunger as required to produce the type. The actions of the pump are also electrically controlled for coöperation with the matrix-block and mold at the proper time. There are also other electric features used in connection with the said machine. Current is or may be supplied to all of these electric features from a common supply-circuit. The said type casting and setting machine is organized to produce justified lines of type. Sometimes, although rarely, the line of cast type will prove to be too long or too short. The accumulation of dirt or particles of other foreign material may make the line too long. If the line be too long, it cannot be entered in the galley, and if too short this usually occurs from some accident, such as breakage of type, which should occasion the stoppage of the machine. In either event if the machine is not instantly stopped further serious accident to the mechanism may be caused thereby, occasioning much delay.

My present invention has for its object to provide controlling connections for the main supply or working circuit, which controlling

connections in turn are controlled by the line-delivery devices in such a way that if the cast line prove to be of normal length no stoppage will occur, but if the line be too short or too long the supply-circuit will be instantly opened, with the effect of stopping all further actions of the machine.

To the ends above noted my invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like notations refer to like parts throughout the several views.

Figure 1 is a plan view of part of the Goodson type casting and setting machine shown as equipped with my present invention with the circuit connections in the position which they would occupy while the line was being cast. Fig. 2 is a similar view, chiefly in diagram-lines only, showing the circuit connections as they would appear if the cast line turned out to be exactly of the right length or normal. Fig. 3 is a view similar to Fig. 2, illustrating the circuit connections as they would appear in case the cast line turned out to be too long.

For the purpose of this case it has not been deemed necessary to illustrate many of the parts of the type casting and setting machine to which this invention is applied. It is deemed sufficient to say that the type casting and setting machine may be assumed to be the same, or substantially the same, as that described in my above-identified patent.

For my present purposes it is thought to be sufficient to note the bed *a*, the constantly-running shaft *b*, the cam-wheels *b'* *b*² *b*³, the half-clutch *b*⁴, the mold *c* *c'* *c*², the lever *c*³, operated by the cam *b'* for moving the mold-plunger *c*, the levers *c*⁴, operated by rod *c*⁵ from the cam *b'* for shifting the movable parts of the mold from their casting position, as shown in Fig. 1, into their ejecting position, as shown in Figs. 2 and 3, the abutment-rack *f*, and the galley *f'*.

Directing attention now to my improvements, the current may be assumed to be supplied to all the electric devices on the type casting and setting machine through the main

wires 1 2 3. Of these members the wires 1 and 2 constitute a loop in the main or working circuit through circuit making and breaking contacts t and t' of a suitable circuit-controller. As shown, the loop-wire 1 connects to the insulated contact t , and the loop-wire 2 connects to a part of the metallic frame 4, having a pair of spring-held pivoted arms 5 and 6, which engage or latch together at their free ends. The spring-held pivoted arm 5 carries the contact t' and is normally held by the pivoted arm 6 in position to keep the contact t' against the contact t , thereby keeping the working circuit closed at the controller; but the spring-held arm 6 is in the form of a pivoted armature which is subject to a magnet 7 in the independent or controlling circuit, and when this magnet 7 is energized the arm 6 will be pulled away from the arm 5, thereby permitting the arm 5 under the action of its spring to fly outward, thereby separating the contacts t and t' and opening the working circuit at the controller.

Having regard to the connections for the controlling-circuit, the wire 8 represents the supply-conductor leading to the bed a of the machine. From said bed the current can pass to a contact-strip 9 on the cam-wheel b^3 . When the cam-wheel b^3 is started into action, the contact-strip 9 thereon will engage with an insulated contact 10 on the bed, which connects by wire 11 with the insulated member 12 of a pair of contacts 12 and 14, which are spaced apart from each other on a suitable insulating-plate 15, but with the member 14 extending downward to the machine-bed a . An insulated contact 13 is pivoted to insulated contact-post 16 and plays between the contacts 12 and 14. The pivoted contact 13 is normally held by a spring 17 in contact with the member 12, and its outer or free end is made of insulating material. The post 16 connects by wire 18 with its controller-magnet 7. The wire 18 passes also through the magnet of an electric bell 20. Wire 19 extends from the controller-magnet 7 back to the source. The type d are ejected by the mold-plunger c against the head of a movable abutment-rack f . This abutment-rack f underlies the pivoted contact 13 and carries a vertical stud f^2 , which, if the line of type be of normal length or greater than normal length, will engage the free end of the pivoted contact 13 and move the same outward toward the contact member 14. If the line of type be exactly of normal length, the pivoted contact 13 will be moved by the stud f^2 of the rack into a central position between the contacts 12 and 14; but if the line be too long then the said stud f^2 will move the said pivoted contact 13 outward to its limit or until brought into engagement with the contact 14 of the switch.

The cam-wheel b^3 on the constantly-running shaft b is loose on the said shaft and is made to turn therewith only at the end of each line. The said cam-wheel b^3 is then

made to turn once while the shaft b turns twice through a suitable differential gearing (not shown) which is tripped into action through a suitable clutch, the shifting member of which is shown at b^4 . Normally or during the time that a line is being cast the cam-wheel b^3 stands, as shown in Fig. 1, with clearance between the contact-strip 9 thereon and the insulated contact 10 on the bed, which coöperates therewith. Hence during all the time that a line is being cast the controller-circuit will be open at the cam-wheel or between the contacts 9 and 10, and all the parts will stand as shown in Fig. 1. Otherwise stated, the working circuit 1 2 3 for the type casting and setting machine will be closed by the contacts $t t'$ at the controller. If the cast line prove to be too short, then the stud f^2 on the abutment-rack f will not engage the pivoted contact 13, and hence when the cam-wheel b^3 begins to turn so as to close the controller-circuit by bringing together the contacts 9 and 10 at the cam-wheel the controlling-circuit will be closed also at the switch by contacts 12 and 13. Hence if the line be too short the controller-magnet 7 will be energized when the cam-wheel b^3 starts, thereby causing the said controller-magnet 7 to pull the armature-lever 6 away from the pivoted lever 5 of the controller and permitting the latter to be thrown back by its spring, thus separating the contacts $t t'$ and breaking the working circuit at the controller. This of course will have the effect of instantly stopping the casting and other electrically-controlled actions of the type casting and setting machine.

If the cast line prove to be of exactly the right length, then the stud f^2 on the abutment-rack f will engage the pivoted contact 13, as hitherto noted, and move the same into a central position between the contacts 12 and 14, and when the cam-wheel b^3 is tripped into action all the parts will occupy the position shown in Fig. 2. Otherwise stated, the controller-circuit will be opened at the switch before the said controller-circuit is closed by the contacts 9 and 10 under the movement of the cam b^3 . The controller-circuit thus remaining open the controller-magnet 7 will not be energized, and hence the working circuit will remain in its normal or closed position at the controller.

If the cast line should prove to be too long, then the stud f^2 on the abutment-rack f will move the pivoted contact 13 into engagement with the contact 14, as hitherto noted, and all the parts will assume the positions shown in Fig. 3, when the cam-wheel b^3 is tripped into action, but the controller-circuit will be closed at the switch whether the cam-wheel b^3 moves or not. This is true for the reason that the contact 14 connects with the bed a of the machine and hence can receive current therefrom without regard to the contacts 9 and 10. Hence when the pivoted contact 13 is forced over against the bed-contact 14

the controller-circuit will be closed regardless of whether the cam-wheel b^3 has been tripped into action or not. This feature is of importance for the reason that the line of type may
 5 be too long simply because the proper holes have not been made in the representative punctured strip to start the cam-wheel b^3 into action at the proper time. The controller-circuit will therefore be closed at the switch in
 10 case the line of type prove to be too long from any cause whatever regardless of whether the cam b^3 is tripped into action or not.

From the controlling connections hereinbefore described it is obvious that by the in-
 15 vention herein disclosed the working circuit for the electric devices of the type casting and setting machine will remain closed if the cast line of type prove to be of the normal required length; but if the line of cast type
 20 prove to be too short or too long the working circuit will be broken under the action of the controller, thereby instantly stopping the casting action and all the other actions of the type casting and setting machine which are
 25 produced or controlled by electric devices that are supplied with current from the so-called "working" or "supply" circuit.

The wire 18 from the switch in the controller-circuit to the magnet 7 of the electric
 30 controller passes through the magnet of the electric bell 20, as hitherto noted. Hence whenever the controller-circuit is closed, as hitherto described, the electric bell 20 will be operated, thereby giving notice that some-
 35 thing has gone wrong and the casting-machine has been stopped.

The value of the invention herein disclosed for preventing serious accidents and delays will be appreciated. Such a controller is es-
 40 pecially desirable on a machine like the Goodson type casting and setting machine, which is designed to be entirely automatic in its action. One man is supposed to take care of
 45 machines, and without some such a controller

as herein disclosed serious derangement of the mechanism might take place before the operator's attention should happen to be called thereto.

What I claim, and desire to secure by Letters Patent of the United States, is as follows: 50

1. The combination with an electrically-operated type casting and setting machine and its supply or working circuit, of an electric controller in said supply or working circuit, and circuit connections for said controller including a pair of contacts normally separated to open the controller-circuit, during the casting action, but which engage to close the controller-circuit, at that point, during the line-delivery action, and a switch, operated by the type-delivery devices, for cooperation with said pair of contacts to close the controller-circuit if the line of type be of other than normal length, and to open the controller-circuit, at the switch, if the line of type be of normal length, substantially as and for the purposes set forth. 55 60 65

2. The combination with an electrically-controlled type casting and setting machine and its supply or working circuit, of a controller in said supply or working circuit and connections for said controller, including the switch-contacts 12, 13 and 14, with the pivoted member 13 thereof subject to the abutment-rack f against which the type are ejected, as described, and the pair of contacts 9 and 10 with the member 9 carried by the cam-wheel b^3 and separated from the contact 10 during the casting action, but engaging with the contact 10 under the movement of the cam-wheel, in the line-delivery action, all substantially as and for the purposes set forth. 70 75 80

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

GEORGE ARTHUR GOODSON.

Witnesses:

JAS. F. WILLIAMSON,
 C. F. KILGORE.