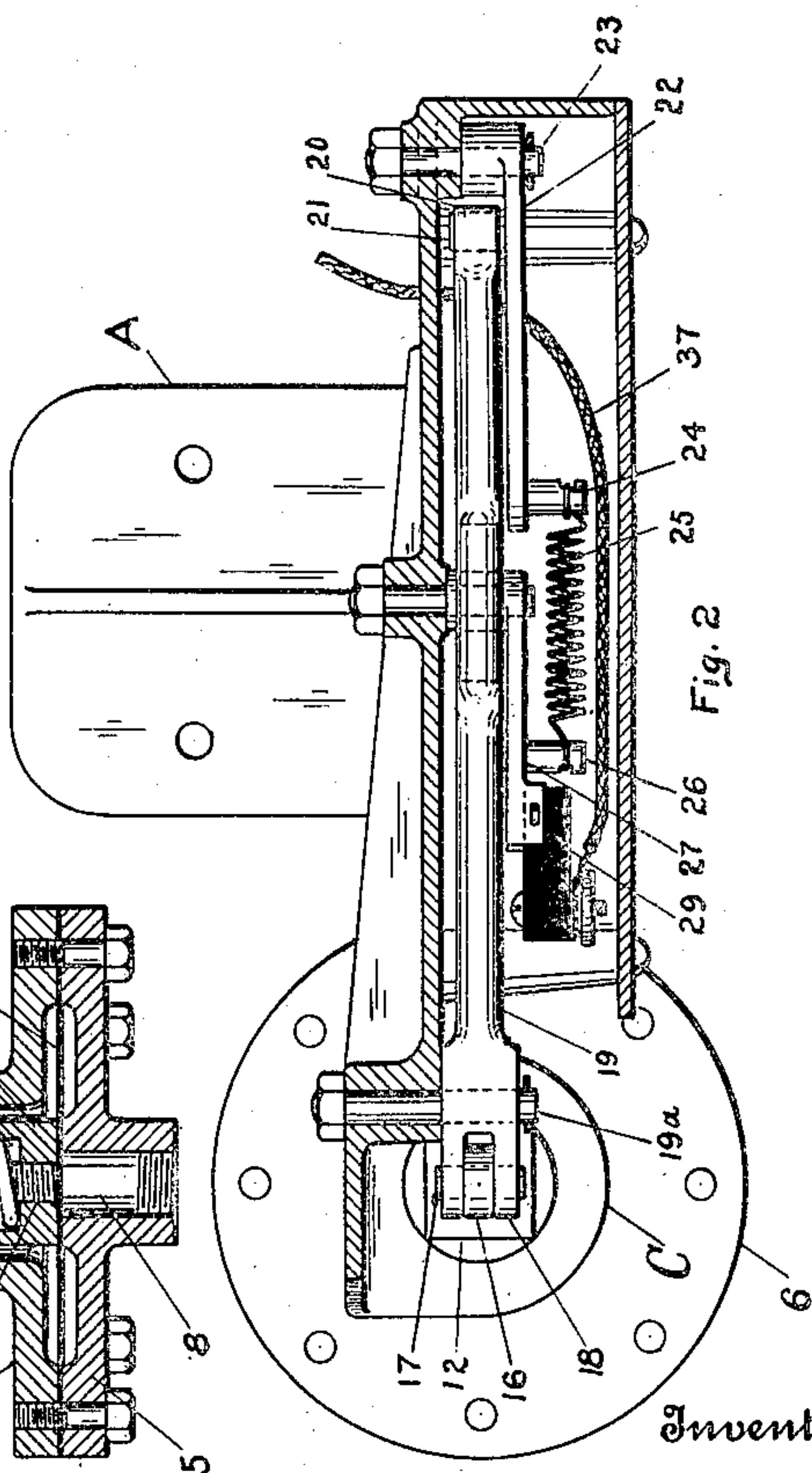
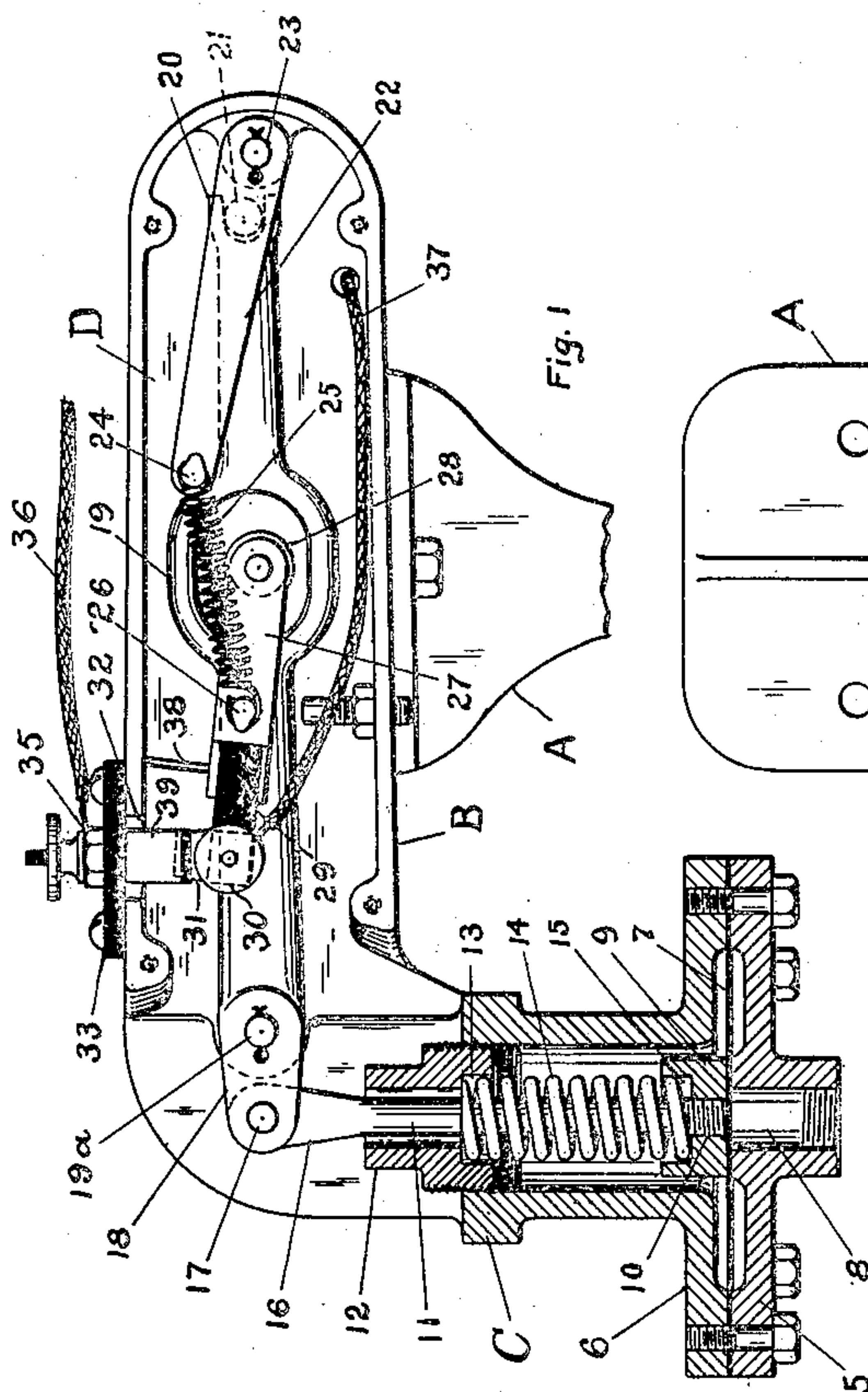
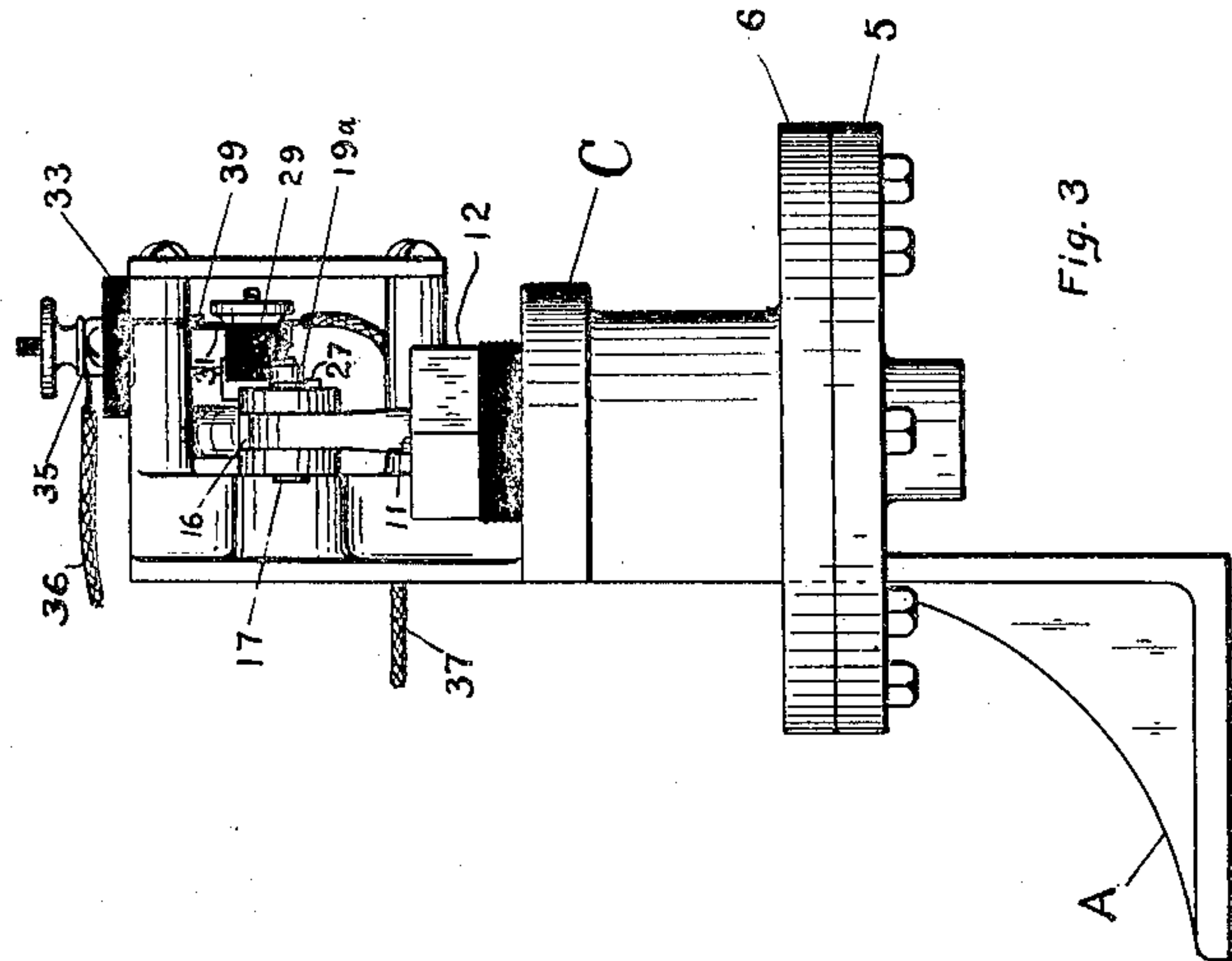


A. B. STROHM.  
AUTOMATIC SWITCH.  
APPLICATION FILED DEC. 15, 1910.

993,804.

Patented May 30, 1911.



Inventor

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Witnesses  
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# UNITED STATES PATENT OFFICE.

ALBERT B. STROHM, OF COLUMBUS, OHIO.

## AUTOMATIC SWITCH.

993,804.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed December 15, 1910. Serial No. 597,523.

*To all whom it may concern:*

Be it known that I, ALBERT B. STROHM, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Automatic Switches, of which the following is a specification.

The present invention relates to certain novel and useful improvements in automatic switches, and has particular application to a switch adapted especially for use in connection with pumping mechanism.

In carrying out my invention, it is my purpose to provide a pump switch, in circuit with the pump motor and automatically controlled by the pressure in the storage tank or the like, whereby the pumping may be started or stopped according as the pressure in the pump reaches or falls below a predetermined amount.

Still a further object of my invention is to provide an improved form of switch embodying in its construction the desired features of simplicity, economy in cost and in installation and efficiency in operation.

With the above recited objects and others of a similar nature in view, my invention consists in the construction, combination and arrangement of parts set forth in and falling within the scope of the appended claims.

In the accompanying drawings—Figure 1 is a vertical longitudinal sectional view taken through a switch embodying my improvements, Fig. 2 is a top plan view partly in elevation and partly in section of the switch, and, Fig. 3 is a view in end elevation of my improved switch.

In the employment of my invention, the switch is adapted to be connected in circuit with an electric motor, the latter in turn being in driving engagement with the power wheel of the pump. It is my purpose to so construct and arrange the switch relative to the pump and the motor, that when the pressure in the storage tank rises to a predetermined point, such pressure will be exerted upon a diaphragm forming a portion of the switch and thereby cause said diaphragm to operate mechanism hereinafter described, whereby the circuit with the motor is broken and the motor stopped and consequently the pumping discontinued. When, however, the pressure in the tank falls below a predetermined point, the diaphragm is retracted into position to reestablish the electric circuit of

the motor and cause the pumping to be resumed.

Referring to the accompanying drawings in detail, the letter A designates a base or standard of any suitable character, and which may be mounted at any preferred place, said standard supporting the casing B in which is mounted the switch mechanism. As will be seen by reference to the drawings, this casing comprises in the present instance a vertical section C and a horizontal section D. The vertical section C of the casing is formed with a diaphragm casing comprising the two plates 5 and 6 between which is held the diaphragm 7 of thin metal or other suitable material, the section 5 having a threaded bore 8 into which is adapted to be screwed a pipe or the like, which in turn is connected with the storage tank (not shown). It will thus be noted that the tank pressure is transmitted to the diaphragm.

The numeral 9 designates a block into which is threaded the end 10 of the rod 11, a sleeve as at 12 being threaded into the vertical section C of the casing, said sleeve having an enlarged or shoulder portion 13 against which bears one end of the spring 14, the opposite end of said spring lying within the recessed portion 15 of the block 19. The upper end of the rod 11 is preferably flattened as at 16 and is pivotally connected as at 17 to the end 18 of the yoke lever 19, the latter being fulcrumed as at 19<sup>a</sup>, and said lever extending lengthwise of the horizontal section of the casing and is bifurcated or forked as at 20, said forked portion of the lever engaging the stud 21, carried by the arm 22 pivoted as at 23 to the casing. The free end of said arm 22 is provided with a lug 24 with which engages one end of the spring 25, the opposite end of said spring engaging with the lug 26 carried by the contact arm 27 which is pivoted to a stud 28 projecting from the wall of the casing. Carried by the free end of the arm 27 is the insulated block 29, which in turn carries the binding post 30 and contact member 31. The numeral 32 designates a slot or opening in the top of the casing section, over which is fastened the insulated plate 33 carrying the other contact member 39, while 35 designates the binding post for the wire 36, said wire together with the wire 37 leading to the motor (not shown).



At 38 I have shown a pin carried by the arm 27, for limiting the upward movement of the movable contact.

From the above description, taken in connection with the accompanying drawings, the construction and operation of my improved switch will be readily apparent to those skilled in the art to which it appertains. In the position shown in Fig. 1, the contact members are in position closing the circuit to the motor, and said motor may be assumed to be running and driving the pumping mechanism. Should the pressure upon the underside of the diaphragm now exceed a predetermined point, said diaphragm will be raised slightly, thereby pushing up upon the rod 11 against the tension of the spring 14, swinging the lever 19 on its fulcrum point 19<sup>a</sup>, so that the yoked end of said lever engaging the pin 21, pulls down the arm 22. As said arm is connected through the spring 25 with the movable contact arm, as soon as said arm has passed a dead center, the spring which has been pulled downward toward the base of the casing section, will also pull down the contact arm 27 and consequently bring the contact member 31 away from the member 34, thereby breaking the circuit and causing the motor to stop. Conversely, as soon as the pressure upon the underside of the diaphragm falls below a certain point, the action of the spring 14, bearing upon the upper side of the diaphragm, will bring the contact members again into operative position, thereby making the circuit, thus starting the motor and the pumping. If it be desired to adjust the tension of the spring 14, so as to make the diaphragm responsive to a selected pressure, it is only necessary to turn the sleeve nut 12, to increase or decrease the tension on the spring 14.

It will be seen that I have devised an exceedingly simple, compact and efficient form of device, one presenting few delicate parts, thereby obviating the liability of the switch requiring frequent repairs.

While I have herein shown and described

one particular embodiment of my invention, I wish it to be understood that I do not confine myself to all the precise details of construction which I have herein shown by way of illustration, as modification and variation may be made without departing from the spirit of the invention or exceeding the scope of the claims.

What I claim, is—

1. In combination with a fluid controlled diaphragm, a switch operated thereby comprising a rod connected to the diaphragm, a pivoted arm connected to said rod, a stationary contact, a swinging contact pivoted within an opening formed in said arm, a bifurcated end on said arm, an elbow lever movable vertically upon pivotal movement of said arm through the medium of said bifurcation, and a spring connecting said movable contact with said elbow lever and adapted upon movement of said elbow lever past its dead center to move said movable contact into co-action with or away from said stationary contact.

2. In combination with a fluid controlled diaphragm, a switch operated thereby comprising a pivoted arm enlarged and apertured at a substantially central point, a bifurcated end on said arm, an elbow lever having one end fitting in said bifurcated end, a contact arm having a pivotal support within the apertured enlargement of said arm, a stationary contact, a tension spring connecting said movable contact and the other end of said elbow lever whereby said contact is moved after said elbow lever passes a dead center, a rod connected to the shorter end of said pivoted arm and to the diaphragm, a compression spring surrounding said rod, and an adjustable collar for regulating the compression power of said spring.

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

ALBERT B. STROHM.

Witnesses:

JOSEPH V. EAGLESON,  
A. L. PHELPS.