

J. M. ANDERSEN.
ELECTRIC SWITCH.

APPLICATION FILED OCT. 13, 1905.

2 SHEETS—SHEET 1.

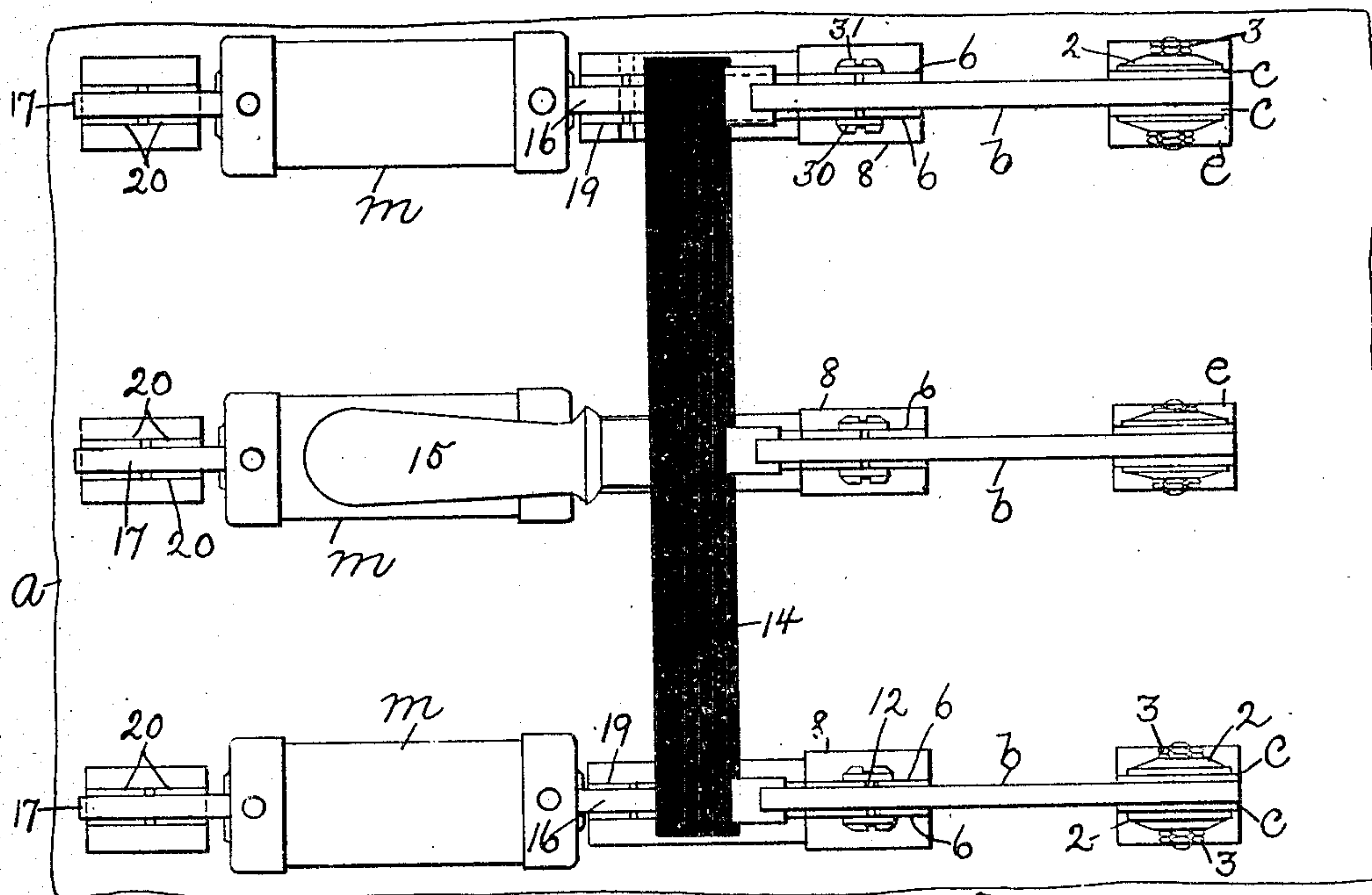


Fig. 1.

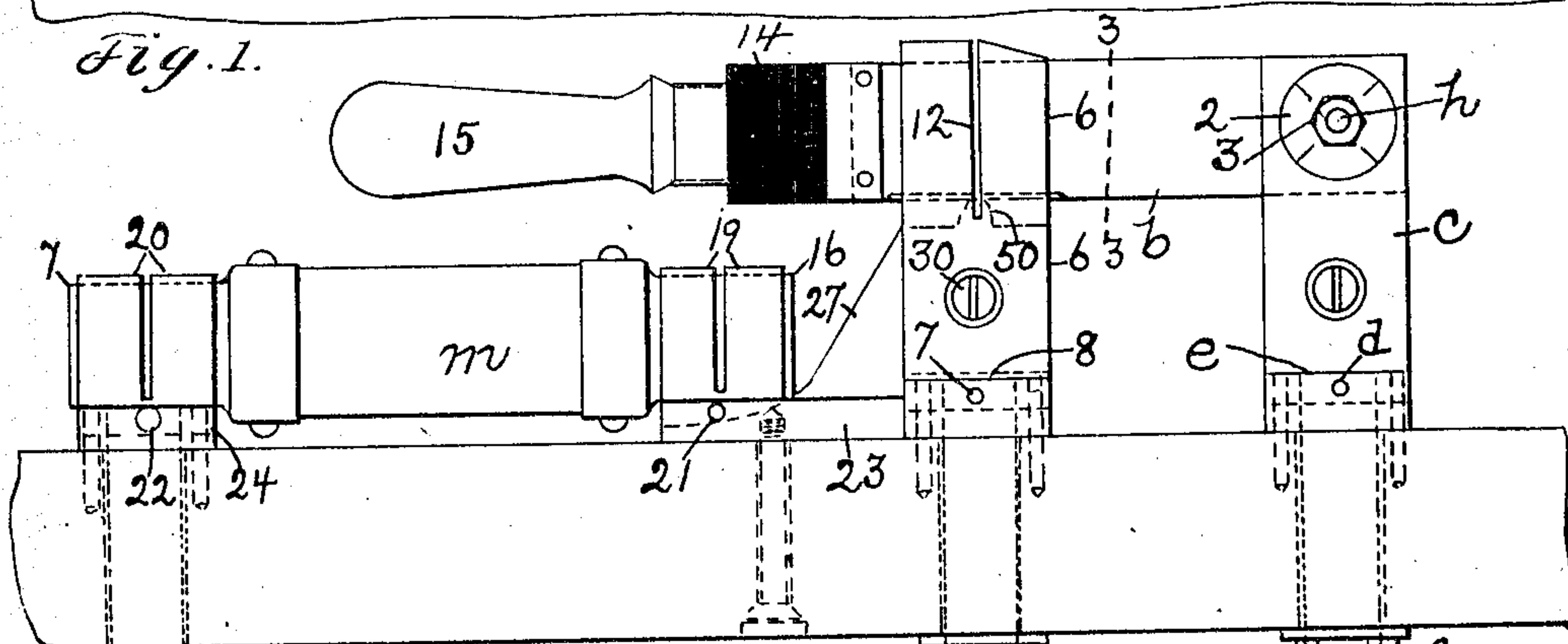


Fig. 2.

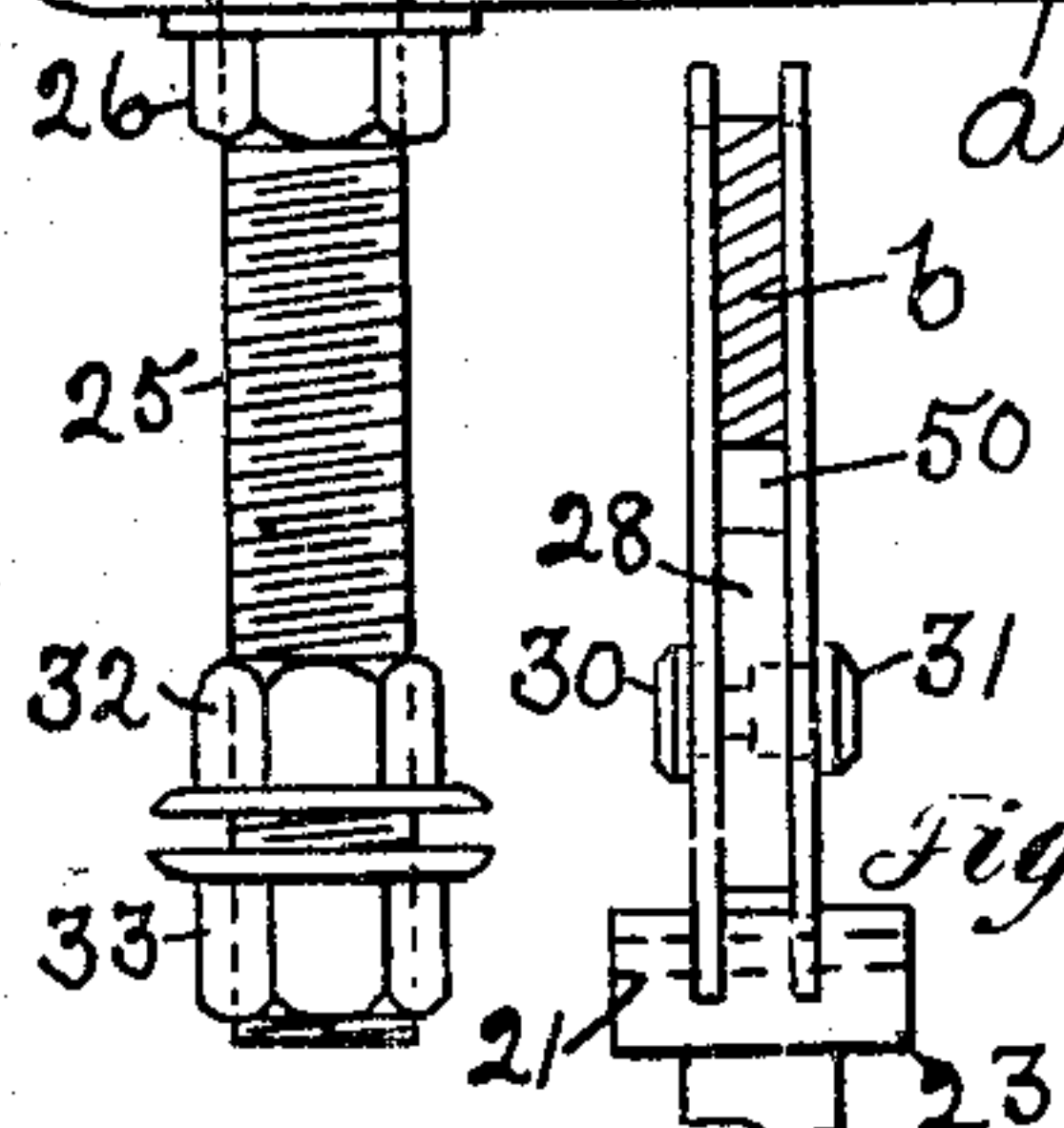


Fig. 3.

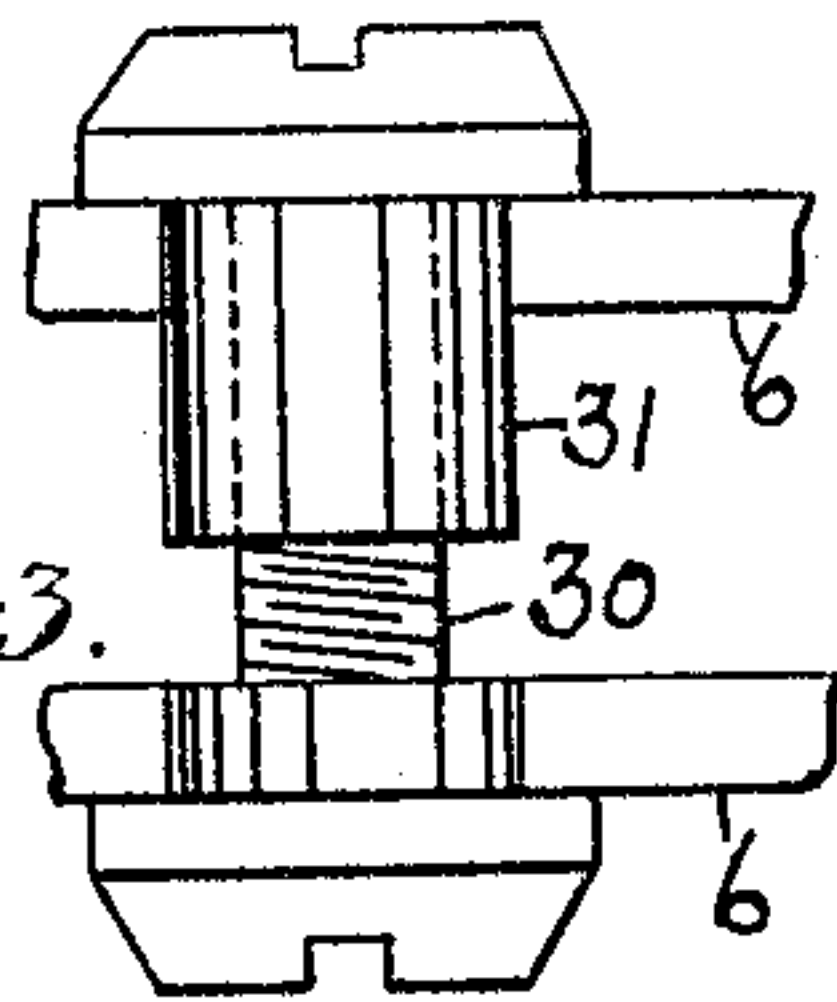


Fig. 4.

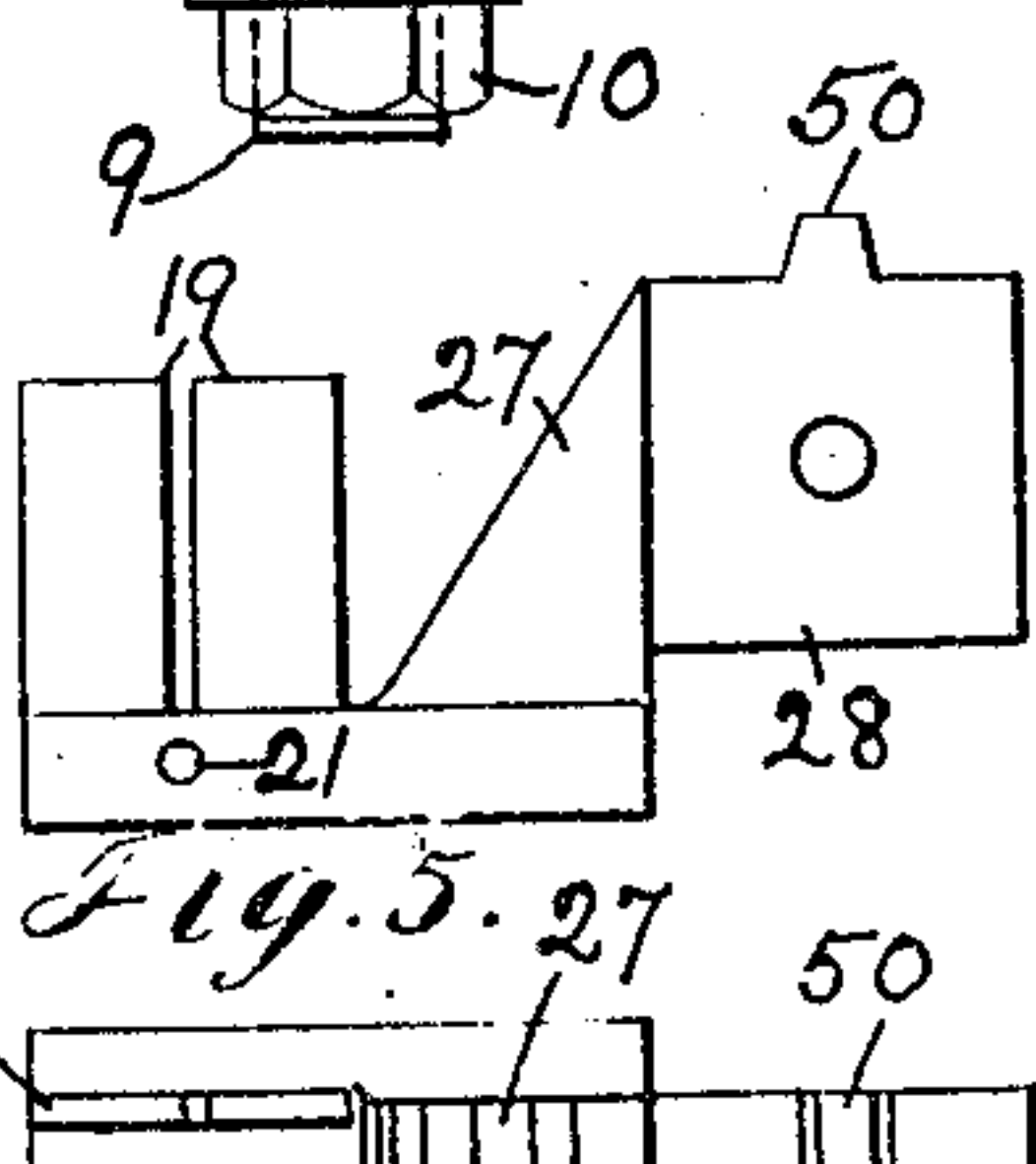


Fig. 5.

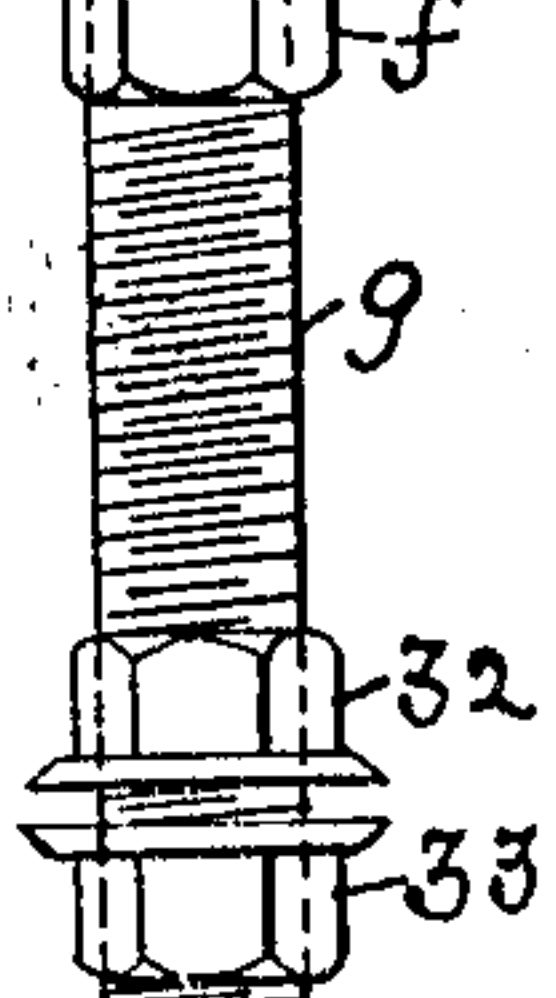


Fig. 6.

Witnesses.
L. H. Campbell
J. Murphy.

Inventor
Johann M. Andersen
By Jas. H. Churchill
Atty.

PATENTED JULY 16, 1907.
J. M. ANDERSEN.
ELECTRIC SWITCH.
APPLICATION FILED OCT. 13, 1905.

C. W. Larnett
J. Murphy

Inventor:
Johan M. Andersen.
By Jas. F. Churchill
att'y.

UNITED STATES PATENT OFFICE.

JOHAN M. ANDERSEN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO ALBERT AND J. M. ANDERSON MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

ELECTRIC SWITCH.

No. 860,432.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed October 13, 1905. Serial No. 222,534.

To all whom it may concern:

Be it known that I, JOHAN M. ANDERSEN, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an
5 Improvement in Electric Switches, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to electric switches or circuit
10 controllers and has for its object to provide a switch of novel construction as will be described in which the different parts are standardized, so that different forms of switches may be made from the same parts at a
15 minimum cost and without decreasing the efficiency of the switches; may be used with or without fuses, and may be electrically connected in circuit either at the front or at the back of the switch board. These and other features of this invention will be pointed out in the claims at the end of this specification.

20 Figure 1 is a plan view of one form of switch embodying this invention. Fig. 2, a side elevation of the switch shown in Fig. 1. Fig. 3, a detail in section on the line 3-3, Fig. 2. Figs. 4, 5 and 6, details to be referred to. Fig. 7, a plan of another form of switch, and Fig. 8,
25 a side elevation of the switch shown in Fig. 7.

In Figs. 1 and 2, I have shown the invention as embodied in a three pole switch, which is electrically connected at the back or rear of the switch board or supporting base *a*. The three pole switch shown in
30 Fig. 1 is provided with three blades or movable members *b* of like construction, which are pivoted at one end to fixed uprights or arms *c* fastened as by a pin *d* to a terminal block or piece *e*, which is secured to the base or board *a* by nuts *f* engaging a threaded rod or screw *g*
35 secured to or forming part of the terminal piece *e*. The blade *b* is mounted to turn on the pivot pin or shaft *h*, and is held in frictional engagement with the arms *c* by washers 2 and nuts 3. Each blade *b* coöperates with contact arms 6 fastened as by a pin 7 to a block or piece
40 8 provided with the threaded rod or screw 9 which extends through the base *a* and is engaged by the nut 10. The contact arms 6 are made substantially long to permit the blade *b* to make full contact with said arms and leave a substantial space between the blade in its closed
45 position and the base *a*, for a purpose as will be described. The upper ends of the arms 6 may be provided with longitudinally extended slots 12 to impart spring action to the said arms. In the present instance, the three blades *b* have their free ends joined by
50 a tie or cross bar 14 of insulating material, which has attached to it a handle 15. Switches or circuit controllers of the character above described, frequently have co-operating with them suitable fuses *m*, which may be of any suitable construction and which are detachably

secured to the base *a*. The use *m*, herein shown as 55 the inclosed type, is provided at its opposite ends with terminals 16, 17, which coöperate with contact arms 19, 20 secured as by pins 21, 22 to terminal pieces or blocks 23, 24. The terminal 24 is provided with a threaded rod or stud 25 extended through the base *a* and 60 secured by the nut 26, and the terminal 23 is provided with an upright arm 27 from which extends a finger 28, which latter extends between the contact arms 6 of the terminal 8 and engages with the inner sides of said arms to make a substantially extended contact with 65 the same and thereby effect an efficient connection with said contact arms to carry a substantially large current in the proper manner. The finger 28 may and preferably will be detachably secured to the arms 6 by a screw 30 and nut 31 extended through said arms 6 70 as represented in Fig. 4, the said screw and nut permitting adjustment of the arms to compensate for fingers 28 of different or varying thicknesses. It will thus be seen, that the finger 28 of the terminal piece or block 23 is firmly clamped between the arms 6 and makes a sub- 75 stantially extended contact with both. The finger 28 of the terminal block or piece 23 practically form a filling block for the lower portion of the space between the contact arms 6 and acts as a stop to limit the movement of the blade *b* into the space between said arms, 80 the said finger having a nub or projection 50, which is engaged by the blade *b*.

As represented in Figs. 1 and 2, the circuit connections are made at the back or rear of the base or switch board *a* and for this purpose the studs or threaded rods 85 *g*, 25 are provided with the nuts 32, 33.

In Figs. 7 and 8, the circuit connections are made at the front of the base or board *a*, and for this purpose, the fuse terminal 35 has secured to it as by the screw 36 a line terminal 37, and the pivot-supporting arms *c* 90 have secured to them a terminal block or piece 38, which is like the terminal block or piece 23, and has secured to it a line terminal 40 instead of the contact fingers 19, the terminal 38 having a finger 28 which is extended between the pivot supporting arms *c* and 95 secured thereto by the screw 30 and nut 31. It will thus be seen, that in the front-connected switch represented in Figs. 7 and 8, the circuit wires, not shown, are connected at the front of the board or base *a* to the terminals 37, 40, and in the back-connected switch 100 represented in Figs. 1 and 2, the circuit wires (not shown) are connected to the screw-rods *g*, 25 of the terminals *e*, 24.

In both forms of switches, the terminal block or piece 23 serves as a front stop for the switch blades, 105 so that the handle 15 in both forms of switches is separated from the board *a* the same distance, which permits the same blade or knife-contact arms 6 to be used

in switches having the form of fuse *m* herein shown or having other forms, or in switches in which the fuse is omitted, thereby standardizing the said blade contact arms.

5 It will be seen that the blocks or pieces *e*, 8, and 24 having the threaded rods or stems *g*, 9, 25 are of like construction, and therefore the block or piece *e* having the rod *g*, is a standard piece for both forms of switches and may be used in connection with the pivot-supporting arms *c* and with the blade contact arms 6 of both switches and with the fuse terminal arms 20 of the back-connected switch, the threaded rod *g* being made of a standard length, represented by the length employed for making connection with the circuit wires, 15 which standard length is shortened to adapt the block or piece for use with the blade contact arms 6 of both forms of switches and with the pivot-supporting arms *c* of both forms of switches.

The pivot-supporting arms *c* are the same in both 20 forms of switches and are a standard therefor, as are also the blade contact arms 6. The detachable terminal block or piece 23 is a standard for both forms of switches, being used with the blade contact arms 6 of the back-connected switch and with the pivot-supporting arms *c* of the front-connected switch. The 25 switch blades are a standard for both forms of switches. The terminal blocks 35 for the front connected switch are a standard therefor. When the standard terminal block 23 is used with the pivot-supporting arms *c*, the 30 nub 50 is removed, and the finger 28 thereby shortened to permit the blade *b* to turn on its pivot.

It will thus be seen that with five standard parts, to wit—the block or piece *e* provided with the threaded

rod *g*, the pivot-supporting arms *c*, the blade contact arms 6, the filling block or terminal 23, and the line 35 terminal 35, a large variety of switches may be made at a minimum cost and each of a maximum efficiency. The standard parts referred to may be used in front or back-connected single, double or triple pole switches, with or without fuses, and enables the fuses when employed, to be placed at either end of the switch, that is, the fuse contact arms 19 may be attached to the block or piece 23 and the latter connected with the blade contact arms 6 or with the pivot-supporting arms *c*.

Claims.

1. In a switch or circuit controller, in combination, blade supporting arms, a blade pivoted thereto, contact arms with which the free end of said blade coöperates, a block to which said contact arms are attached, a terminal block separate from the block to which the said contact arms are secured and provided with a finger extended between the said blade-contact arms to make contact therewith, and means to detachably secure said finger to the blade-contact arms, substantially as described. 45

2. In a switch or circuit controller, in combination, a movable member, contact arms coöperating therewith, and a terminal piece having an upright arm and a finger extended from said upright arm substantially at right angles thereto, said finger extending between said contact arms and making electrical connection therewith, substantially as described. 50

3. In a switch or circuit controller, a terminal piece having an upright arm and a finger extended from said upright arm substantially at right angles thereto, substantially as and for the purpose specified. 55

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses. JOHAN M. ANDERSEN.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.