

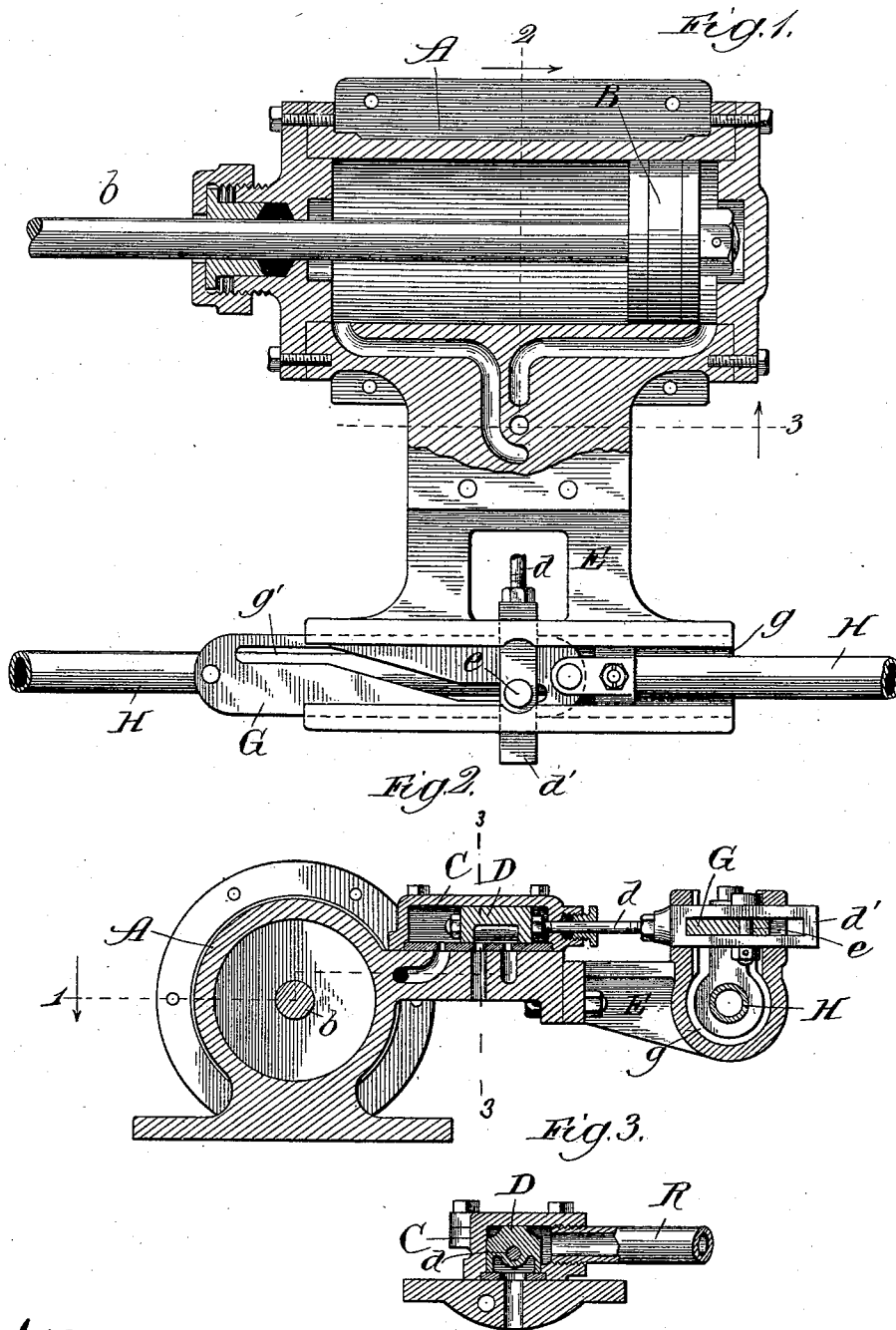
(No Model.)

2 Sheets—Sheet 1.

C. HANSEL.  
SWITCH.

No. 529,168.

Patented Nov. 13, 1894.



Witnesses  
*Edw. C. Gaylord,*  
*Lucas S. Hiltner*

Inventor:  
*Charles Hansel,*

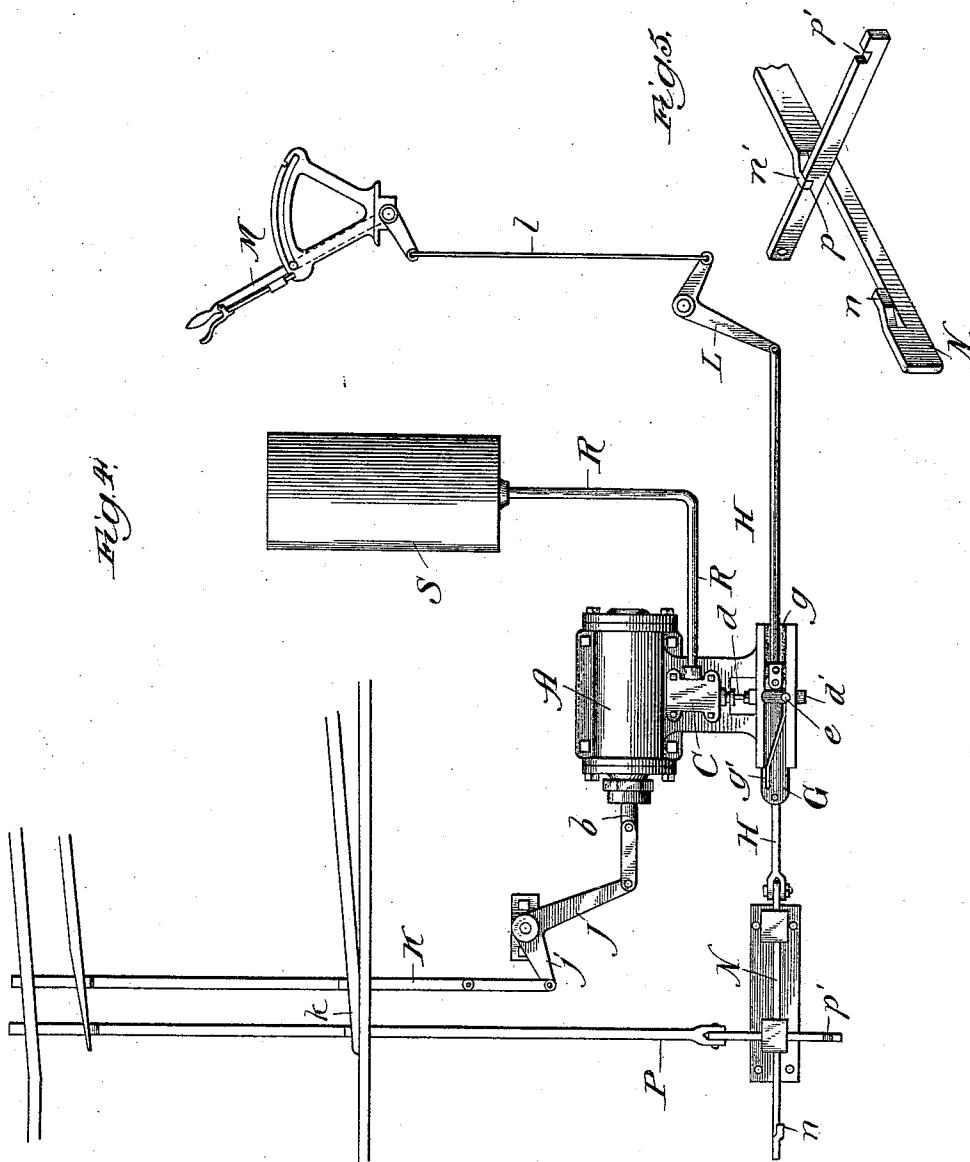
(No Model.)

2 Sheets—Sheet 2.

C. HANSEL.  
SWITCH.

No. 529,168.

Patented Nov. 13, 1894.



Witnesses:  
*Edw. J. Gaylord,*  
*Lucas S. Allen*

Inventor:  
*Charles Hansel,*

# UNITED STATES PATENT OFFICE.

CHARLES HANSEL, OF CHICAGO, ILLINOIS.

## SWITCH.

SPECIFICATION forming part of Letters Patent No. 529,168, dated November 13, 1894.

Application filed February 21, 1894. Serial No. 501,061. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES HANSEL, of Chicago, Illinois, have invented certain new and useful Improvements in Switches, of

5 which the following is a specification.

My invention relates particularly to that class of switches known as interlocking switches and especially to that portion of the mechanism for operating or actuating the

10 valves on the operating cylinder.

In the accompanying drawings Figure 1 is a plan view of my improvement partly in section, taken on the line 1 of Fig. 2; Fig. 2, a transverse section taken on line 2 of Fig. 1; 15 Fig. 3, a sectional detail taken on line 3 of Fig. 1 looking in the direction of the arrow; Fig. 4, a diagrammatic view showing an operating system in which my improvement is used; and Fig. 5 a perspective view of the locking

20 bolts, hereinafter described.

In the system now in use, where electricity is the prime mover, a great number of wires are necessary for each individual switch requiring an intricate and expensive machine, 25 for making and taking care of the connections in the interlocking tower, which means not only considerable expense, but entails the services of an expert electrician and mechanic. In the other systems where manual 30 force is used entirely for operating and actuating the switch from the interlocking tower, it means an immense amount of labor, and waste of time, thus delaying traffic, when the connections between the switch and the actu- 35 ating levers are spread over a great area.

The object of my invention is to avoid the above objections, and to provide a simple, economical and efficient means, for actuating switches; and to that end it consists in the 40 features, combinations and details of construction, hereinafter described and claimed.

In constructing my improvement I use a cylinder A of the desired shape and size and provide with the usual ports and exhaust. 45 This cylinder is provided with the usual reciprocating piston B, having its rod b, connected by means of a system of levers, hereinafter described, with the switch proper. The cylinder is provided with an air chest C, 50 which has in turn a reciprocating slide valve D contained therein.

I will not enter into detail description of

the numerous parts of construction, in either the cylinder, air chest, or slide valve, as these may be varied to suit the desire of the maker 55 and embody the usual forms of construction.

To actuate the slide valve and thus govern the movements of the reciprocating piston, I provide the slide valve with an actuating rod d. The valve rod is provided at its outer 60 end with a cross head d' which moves in suitable ways in the bracket E, which may be bolted or secured in any convenient manner to the air chest. The cross head is provided with a cylindrical bolt e adapted to be con- 65 tacted by and actuated by a motioning plate G as it moves in the ways g of the bracket. The motioning plate is provided with an irregular slotted opening g' so arranged that its different motions will through the bolt e 70 impart the desired throw to the slide valve to actuate the reciprocating piston. I prefer to use a hollow tubular rod H, which has one end connected in any suitable manner to the motioning plate, and its opposite end through 75 a suitable system of levers, with the actuating lever in the tower. While I prefer to use this hollow tubular rod, it may be dispensed with and a wire, cable, or other suitable means used in its stead. The rod may be continued 80 along under the motioning plate and have its end H' connected with a suitable locking bolt, hereinafter described.

In using my improvement with a switch system as shown in Fig. 4, I place the operat- 85 ing cylinder A in any convenient position adjacent to the switch and connecting its piston rod b with a lever j which in turn has its opposite arm j' connected with the switch rod K so that the motions of the reciprocating 90 piston are used to open and close the switch points K. The motioning plate G through its rod H, bell crank lever L and rod l is connected with the actuating lever M so that the movements of this actuating lever are im- 95 imparted through the motioning plate as hereinbefore described to the slide valve.

To lock the switch in its different positions, I provide a locking bolt N which is provided with projections n n' arranged in zig-zag re- 100 lation to each other, so that these projections cannot enter the same recess in the locking rod. I provide a locking rod P having recesses p p' for the reception of the projec-

tions on the locking bolt. The air chest is connected by means of the pipe R with a suitable source of air pressure S. The first act in moving the lever in the interlocking tower is to actuate the motioning plate and withdraw the locking bolt. The continued movement of the lever actuates the slide valve through the slot of the motioning plate admitting air to the cylinder and operating the switch, and carrying it to its reverse position. The final movement of the lever carries the locking bolt with its projections, so that the opposite projection *n* engages in the locking rod, and thereby the switch is locked in its reversed position.

It will thus be seen that all the manual force that is necessary to be expended in using my mechanism, is that which would be necessary to operate the motioning plate, while the air pressure in the cylinder is used to operate the heavy switch.

While I have described my invention with more or less minuteness as regards the details, I do not desire to be limited there unduly, any more than is pointed out in the claims. On the contrary I contemplate all proper changes in form, construction and arrangement, the omission of parts and the use of equivalents as circumstances may suggest, or necessity render expedient.

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

1. In switches, the combination of a cylinder provided with a reciprocating piston therein adapted to be operated by fluid pressure, a bell crank lever connected with the switch points and piston, a slide valve upon such cylinder to govern the admission of fluid pressure to the same and provided with a valve rod, a recessed cam plate to actuate said valve rod, and a system of rods and levers to

operate the cam plate, substantially as described.

2. In combination with a switch, an operating cylinder provided with a reciprocating piston, for operating the switch, and with an air chest, a slide valve in such chest, a valve rod connected with such slide valve, a cross head on such rod, a cam plate for contacting and operating such cross head and valve and a system of rods and levers for actuating said plate, substantially as described.

3. A switch system comprising, a switch rod for moving the switch points, an operating cylinder adjacent to such rod, and having a reciprocating piston, mechanism connecting the piston with such rod, a chest on such cylinder having a slide valve and valve-rod, a cam plate contacting and operating such valve rod, an actuating lever, and a system of rods and levers connecting the cam plate and actuating lever together for imparting its movements to such plate, substantially as described.

4. A switch system comprising a switch rod for moving switch points, an operating cylinder adjacent to such rod and having a reciprocating piston, mechanism connecting the piston with such rod, an air chest on such cylinder having a slide valve and a valve rod, a cam plate contacting and operating such valve rod, and actuating lever, a system of rods and levers connecting the cam plate and actuating lever together for imparting its movements to such plate, a locking bolt connected with the actuating lever for holding the locking rod in its position, and a locking rod connected with the switch points, substantially as described.

CHARLES HANSEL.

Witnesses:

LOUIS SPAHN,  
F. A. PECKHAM.