

No. 608,340.

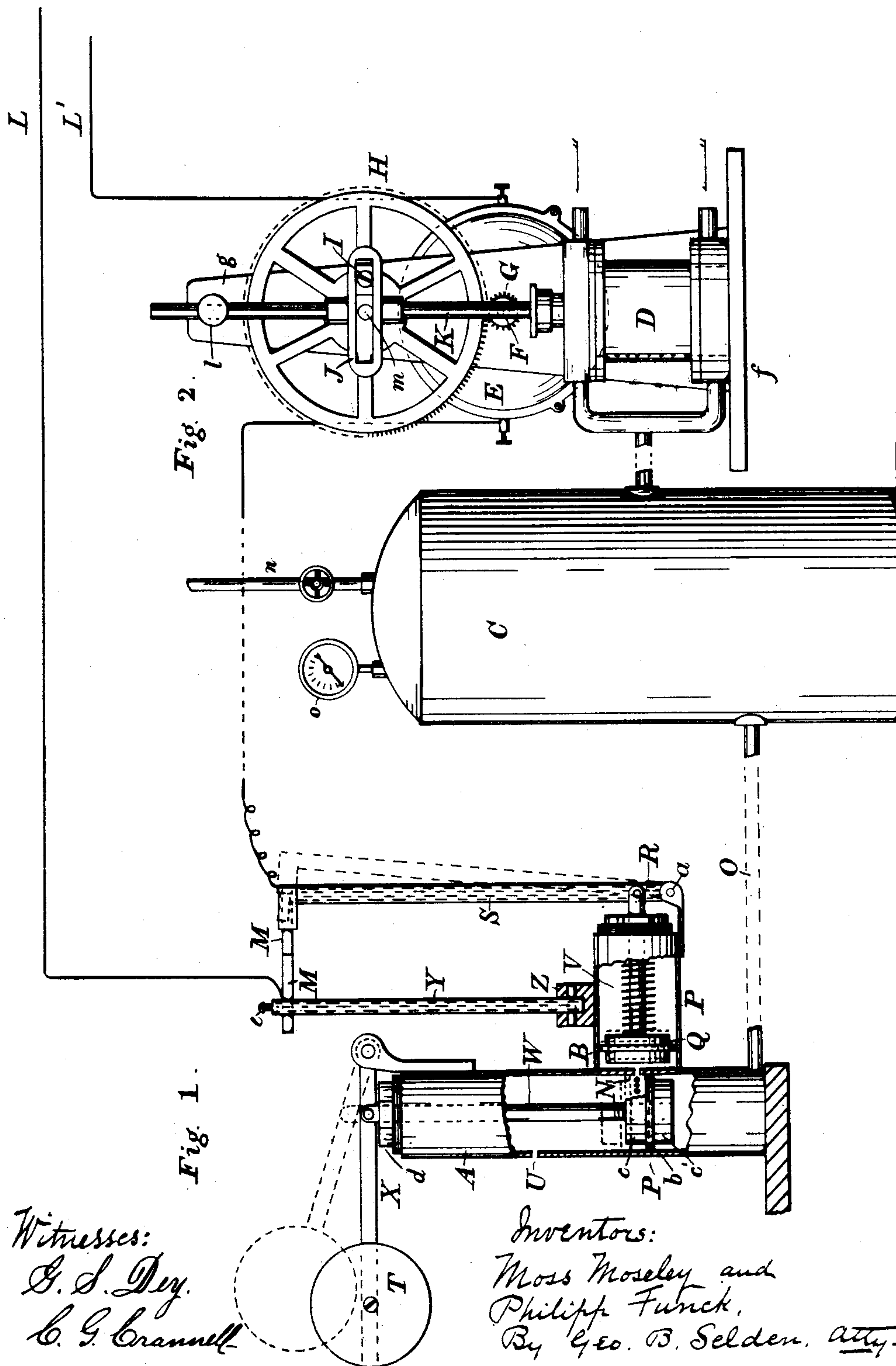
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M. MOSELEY & P. FUNCK.

AUTOMATIC SWITCH FOR REGULATING ELECTRIC AIR COMPRESSORS.

(Application filed Nov. 15, 1897.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

MOSS MOSELEY AND PHILIPP FUNCK, OF ROCHESTER, NEW YORK; SAID
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AUTOMATIC SWITCH FOR REGULATING ELECTRIC AIR-COMPRESSORS.

SPECIFICATION forming part of Letters Patent No. 608,340, dated August 2, 1898.

Application filed November 15, 1897. Serial No. 658,605. (No model.)

To all whom it may concern:

Be it known that we, MOSS MOSELEY and PHILIPP FUNCK, citizens of the United States, residing at Rochester, in the county of Monroe, in the State of New York, have invented an Improved Automatic Switch for Regulating Electric Air-Compressors, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to an improved switch for regulating the pressure in air-compressors operated by electric motors, whereby the motor is automatically started when the pressure falls below a certain predetermined pressure and stopped when such pressure has reached the desired limit.

Our improvement is fully described and illustrated in the following specification and the accompanying drawings, the novel features thereof being specified in the claims annexed to the said specification.

In the accompanying drawings, representing our invention, Figure 1 is a side elevation of the switch and its operating mechanism, partly in section. Fig. 2 represents the electric motor and air-pump.

In the construction of our improvement we employ two cylinders A and B, with pistons in each, so arranged and connected that excess of pressure in A admits air to B and actuates the piston therein, so as to quickly break the electric circuit of the motor. On the contrary, when the pressure runs down, the air in the cylinder B is discharged and the circuit closed, so as to start the motor. The cylinder A is connected with the piping or reservoir, which receives the compressed air from the pump. The motor or pump may be of any suitable or preferred construction.

C is the reservoir, D the pump, and E the motor.

In the arrangement shown the armature-shaft F drives the pump by the pinion G, gear H, crank-pin I, and yoke J.

K is the piston-rod of the pump, which may be either single or double acting and provided with any suitable inlet and outlet valves.

L L' are the line-wires, one of which is connected with the motor and the other runs to the stationary contact-point M, the movable

contact M' being connected to the other binding-post of the motor.

The pump and motor may be separate or mounted on the same base.

The cylinders A and B are connected together at right angles with each other, the only communication between the two being a series of holes N, arranged in a row in the cylinder-wall opposite the cylinder B.

O is the pipe by which the pressure is supplied to the cylinder A.

P is the piston in the cylinder A, which is forced upward by the excess of pressure, so as to open the ports N and to allow the air to enter the cylinder B, by which the piston Q is forced outward, and this motion is transmitted by the rod R and the lever S, so as to move the contact M' away from M, thereby breaking the circuit and arresting the motor.

When the pressure is reduced, the piston P, under the influence of a spring or the weight T, moves past the ports N and the air in the cylinder B escapes through the ports N into the cylinder A and thence outward through the opening U into the atmosphere, a spring V on the rod R serving to close the contact, and thus to restart the motor. The pistons are made in any suitable way. As shown, they consist of disks of leather or other suitable material clamped between collars.

W is the rod of the piston P, which is connected to the pivoted lever X, carrying the weight T, which is preferably made adjustable on the lever; or a spring may be employed to secure the return movement of the piston P. The contact M is carried by a bar Y of any suitable insulating material. Its lower end is secured in a socket Z, attached to one of the cylinders, and at its outer end the contact M is adjustably secured in any suitable manner, as by the clamp-screw shown. The lever S is also made of any suitable insulating material, being pivoted at a to a suitable support and provided at its free end with a socket adapted to hold the contact M'. The contacts may be arranged in any suitable way. In the construction shown they are rods of hard carbon, which I have found very durable in practical use, the separating movement being made very quickly, so that sparking is obviated; but it

will be understood that any suitable form of contact devices may be employed, such as the ordinary "jackknife" or any kind of sliding contacts. I have also employed mercury and have observed that by using aluminium for the cup to hold the mercury the oxidation of the mercury is avoided. In this case I also use an aluminium rod or point to make contact with the mercury. The apparatus can be easily arranged so that the movable contact is presented downward to the mercury in the cup.

The piston P consists of a washer *b*, of leather or other suitable slightly elastic material, clamped between the collars *c c'*.

A screw-plug *d* closes the upper end of the cylinder A and serves as a guide for the piston-rod W.

The arm Y, which supports the stationary contact M, consists of any suitable insulating material, being provided at its upper end with the clamp-screw *e* and inserted at its lower end in the socket Z, attached to the cylinder B.

It will of course be understood that our improved switch may be arranged to break the circuit on each side the motor, the contacts being duplicated.

f is the base of the motor and pump, and *g* an upright which supports the shaft *m* of the gear H and the guide *l* for the rod K.

o is a pressure-gage, and *n* a pipe through which the compressed air is delivered to any device or locality where it is desired to utilize it.

We claim--

1. The combination with an electric motor and compression-pump of the automatic switch for controlling the motor-circuit, consisting of two communicating cylinders provided with pistons, suitable insulated contacts, one of which is movable, and operated

by the movement of one piston produced by the admission of air to its cylinder by the movement of the other piston, substantially as described.

2. The combination with the cylinder A having piston P of the cylinder B and its piston Q, the passage N between the cylinders, the contact M and its insulating-support Y, the movable contact M' and its insulating-lever S, substantially as described.

3. The combination with the cylinder A having piston P, of the cylinder B abutting against the side of cylinder A and provided with piston Q, the passage N between the cylinders, and insulated electric contacts, one of which is movable, and suitable connections whereby the movement of one piston admits air under pressure to the other, and thereby opens the electric circuit, substantially as described.

4. The combination with the cylinder A having piston P consisting of a washer of suitable elastic material clamped between collars, of the cylinder B provided with a suitable piston, and the passage N between the cylinders, consisting of a row of perforations through the side wall of cylinder A opening into cylinder B, substantially as described.

5. The combination of the cylinder A having piston P, the cylinder B arranged at an angle with cylinder A and provided with piston Q, the passage N communicating between the cylinders, weight T and lever X, the contact M and insulating-support Y, movable contact M', lever S, rod R and spring V, substantially as described.

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