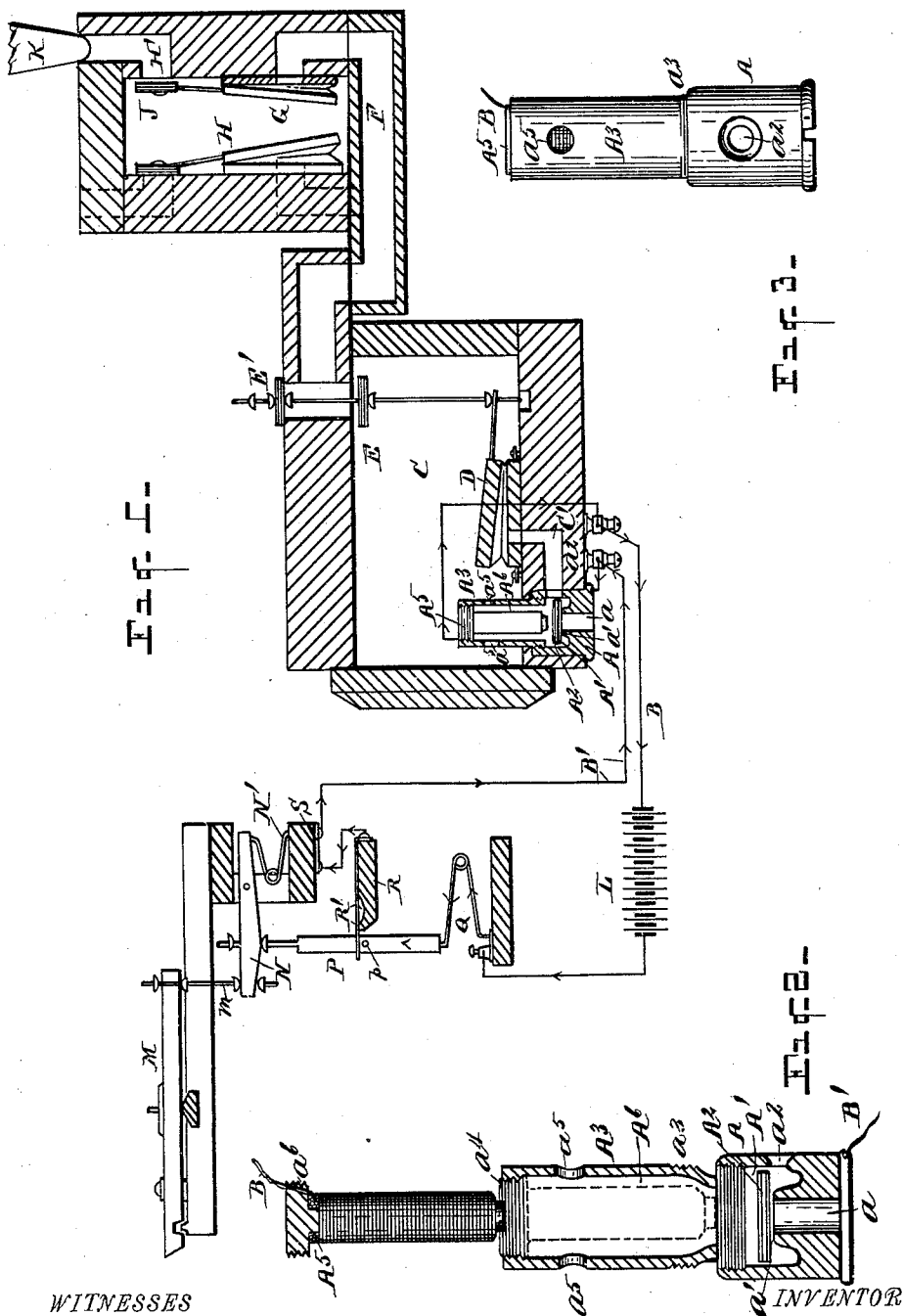


(No Model.)

E. S. VOTEY.
ELECTROMAGNET FOR PIPE ORGANS.

No. 546,834.

Patented Sept. 24, 1895.



WITNESSES

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EDWIN S. VOTEY, OF DETROIT, MICHIGAN, ASSIGNOR TO THE FARRAND & VOTEY ORGAN COMPANY, OF SAME PLACE.

ELECTROMAGNET FOR PIPE-ORGANS.

SPECIFICATION forming part of Letters Patent No. 546,834, dated September 24, 1895.

Application filed January 21, 1895. Serial No. 535,595. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. VOTEY, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Electrical Magnets for Pipe-Organs; and I 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, reference being had to the accompanying drawings, which form a part of this specification.

My invention has reference to an improved magnet, more particularly designed for use in pipe-organs in connection with an electric action; and it consists of the construction, combination, and arrangement of devices and appliances hereinafter described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a diagram view showing parts in section. Fig. 2 is a vertical section showing the parts of the magnet in position for engagement one with another. Fig. 3 is an exterior view of the magnet in elevation.

I have shown in Fig. 1 a diagram of the various parts of an organ provided with an electric action in order to more fully disclose the purpose and operation of my improved magnet; but I would have it understood that I do not confine the use of my invention to any particular electric action, nor to the specific arrangement or combination of the parts shown in Fig. 1, the diagram view being supplied simply as an illustration of the use of my invention.

The magnet itself consists of a base A, made tubular at its upper end and interiorly threaded, as shown, forming an inner chamber A' at the upper extremity of the base, the lower end of the base being provided with an orifice a, at the top of which is a valve-seat a'. The inner chamber A' preferably extends beneath the valve-seat. At one side the base is formed with an orifice a², opening into the chamber A'.

A² denotes an electrically-controlled valve normally seated upon the seat a'.

A³ denotes a tubular shell screw-threaded on the exterior toward its lower end, as shown at a³, to form a screw-threaded engagement

with the base A. This shell is also interiorly threaded at its upper end, as shown at a⁴, and is provided with one or more lateral orifices a⁵.

A⁵ is a core suitably wound with an electrical conductor B. The upper end of the core is formed with a head threaded on its exterior, as shown at a⁶, to engage the threads a⁴ at the upper end of the shell A³. The core is indicated in its position within the shell in dotted lines, Fig. 2, and in full lines in Fig. 1. The other conductor of the electrical circuit is shown at B' connected with the base A. Around the core A⁵, between it and the shell, is formed an interior air-chamber A⁶, communicable with the chamber A' in the base, said chamber A⁶ also communicating with the exterior of the shell through the ports a⁵. The valve A², when the electrical circuit is completed, is attracted to the base of the core A⁵, and is thereby seated against the lower edge of the shell A³, closing the communication between the chambers A' and A⁶. When the electrical circuit is open, the valve drops upon its seat a', opening the communication between the chambers.

In Fig. 1 I have shown my improved magnets located in the case of a fresh-wind box C, the orifice a of the base opening to the exterior of said box and the orifices or ports a⁵ opening into said box. Within the box is located a pneumatic D. The case of the box C is constructed with a channel C', communicating with the interior of said pneumatic and through the orifice a² in the base A of the magnet with the interior chamber A' of said magnet. It will thus be observed that the air-chamber or windway A⁶ between the core and the shell of the magnet communicates with the fresh-wind box C. This construction of the magnet gives a large wind area about the core of the magnet. It will be seen that when the electrical circuit is completed the valve A² is lifted against the seat on the lower edge of the channel A³, permitting the pneumatic D to exhaust through the channel C' and orifice a² into the chamber A' and through the orifice a. On the other hand, when the electrical circuit is open, the valve A² will drop upon its seat a', closing the exhaust-passage a and permitting air from the fresh-wind box C to pass through the ports a⁵ into the wind-

chamber A⁶, and thence into the chamber A', and through the channel C' into the pneumatic. In this manner the pneumatic may be efficiently and readily operated. In the instance shown in Fig. 1 the pneumatic is connected to operated valves E E', controlling a windway F into a pneumatic G within a wind-chamber H, said pneumatic G controlling a valve J, which in turn governs a windway H', leading to a pipe K.

In the device illustrated in Fig. 1, L denotes a battery, M denotes a key, and N denotes a lever connected with the rear end of the key by a connecting-rod m. N' is a spring to restore lever N to its normal position. P is a plunger-rod connected with the lever N, and O is a spring at the base of said rod. S denotes a connection-plate provided with a metallic finger R' to form contact with a pin p on the bar P when the bar is lifted. S is a junction-plate, whereby the conductor B' is connected with the finger R'. It will thus be seen that when the key has been manipulated contact is made between the pin p and the finger R', closing the circuit and operating the magnet. This construction of the magnet is simple and economical and also of superior efficiency.

The valve, it will be apparent, is in the nature of an armature, and the shell is made to inclose the core. The base is made of metal and acts as an electrical conductor. As so constructed, the inner core forms one pole and the shell forms the other pole of the magnet.

What I claim as my invention is—

1. An electrical magnet having in combination a base formed with an interior chamber and with passages a and a^2 communicable with said chamber, a tubular shell having a screw threaded engagement therewith, a core located in the shell and space therefrom forming a wind-way about the core, a valve located within the chamber of the base seating against the lower edge of the shell when the electrical circuit is closed and seating upon the upper end of the passage a when the electrical circuit is open, the wind-way within the shell opening through the shell above its lower end, substantially as set forth.

2. An electrical magnet having in combination a base formed with an interior chamber, an exhaust passage a having a valve seat at its upper end, and an orifice a^2 at the side of the base opening into said chamber, a tubular shell having a screw threaded connection with

the upper end of said base provided with a valve seat at its lower edge and with ports a^5 thereabove, a core having a screw threaded engagement at its upper end within the upper end of the shell, the lower end of said core spaced from the shell forming a wind-way therebetween, and a valve within the chamber of the base to seat upon the upper end of the passage a when the circuit is open and to seat against the lower end of the shell when the circuit is closed, substantially as specified.

3. An electrical magnet having in combination a metal base provided with an inner chamber and with orifices a a^2 , a core, a shell inclosing the core forming a wind-way therebetween having ports a^5 through said shell, a valve closing the communication between the chamber in said base and said wind-way, and to control the communication of the orifices in the base, and electrical conductors the one connected with said base and the other wound upon said core, substantially as set forth.

4. In combination, an electrical magnet constructed with a metal base provided with an inner chamber and with orifices a a^2 communicable with said chamber, a core wound with an electrical conductor, and a shell inclosing said core provided with ports a^5 and forming a wind-way between said shell and said core, a valve to control the communication of said orifices a a^2 , and to control the communication of the chamber in the base with the wind-way in the shell and means connected with the key board for throwing said magnet into and out of electrical circuit.

5. In combination, a wind-box C, a pneumatic in said wind-box, an electrical magnet provided with a base forming an interior chamber communicating with the pneumatic and with an exhaust passage, a shell, a core provided with electrical conductors inclosed in said shell forming a wind way therebetween communicable with the chamber in the case and with said wind box, and an electrically controlled valve in the chamber of the base to control the communications, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

EDWIN S. VOTEY.

Witnesses:

JAS. A. LEONARD,
WM. R. FAWARD.