

(No Model.)

J. B. LYON.  
ELECTRICAL SWITCH BOARD.

No. 452,921.

Patented May 26, 1891.

Fig 1

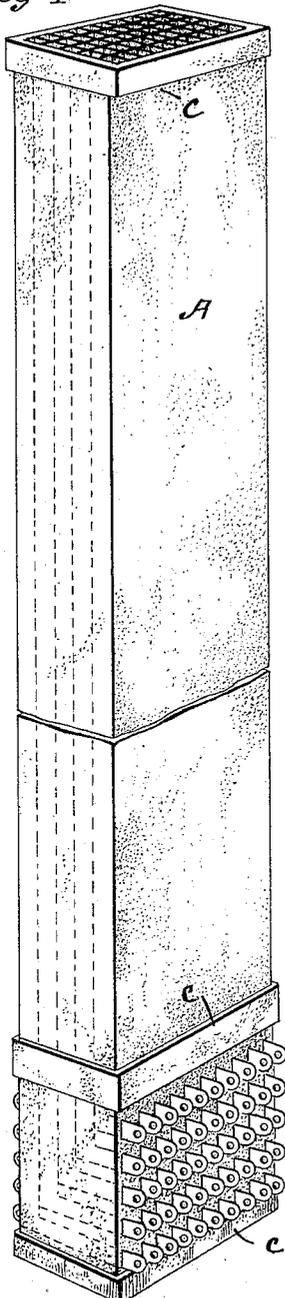


Fig. 2.

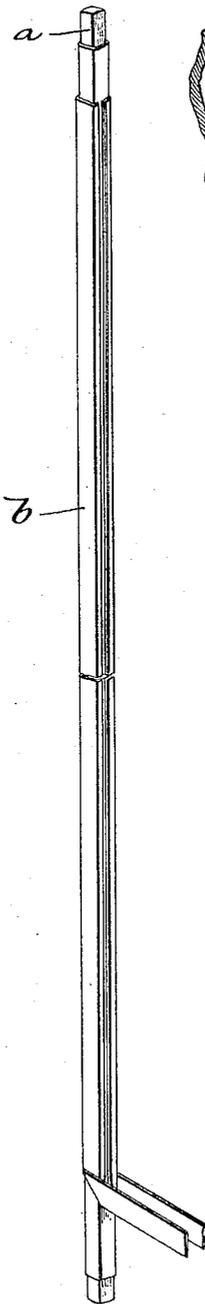


Fig. 3.

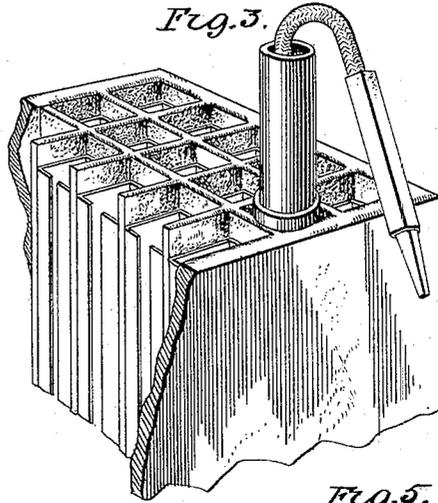


Fig. 5.

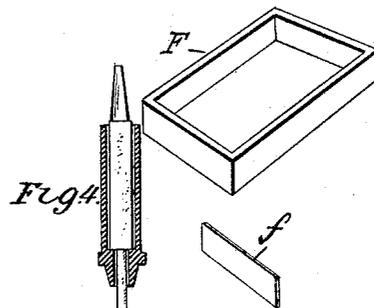


Fig. 4.

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# UNITED STATES PATENT OFFICE.

JOHN B. LYON, OF BROOKLYN, NEW YORK.

## ELECTRICAL SWITCH-BOARD.

SPECIFICATION forming part of Letters Patent No. 452,921, dated May 26, 1891.

Application filed January 19, 1891. Serial No. 378,222. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN B. LYON, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Electrical Switch-Boards, of which the following is a specification.

My invention relates to electrical switch-boards, and has special reference to what is known as the "weight-guides" now used in the telephone and telegraph switch-boards having extensible terminals.

In the "Law" system the weight-guides and the extensible terminals are located along the middle of each section of the horizontal board. The guides formerly consisted of a series of brass tubes, each carrying a weight and a contact spring or springs making connection with the sides of the tube and suspended by a flexible cord, which carries a plug or wedge adapted to be inserted into the sockets of the switch-boards when connections are made between the subscribers.

The object of this invention is the production of these weight-guides or tubes in an economical manner and in compact form, so that a large number of them may be put into a comparatively small space.

The invention consists in the article of manufacture hereinafter described and claimed.

Referring to the accompanying drawings, Figure 1 represents a perspective view of one section or group of the tubes as constructed by my invention. Fig. 2 represents the mandrel and the electrodes upon which the tubes are formed. Fig. 3 represents an enlarged transverse section of several tubes. Fig. 4 represents the weight, contacts, cord, and plug used in connection with each tube; and Fig. 5 represents the end clamp or frame.

The section or group A consists of fifty square tubes bound together. The tubes are made of vulcanized rubber and two of their inner walls are covered by metal strips or electrodes. The tubes are placed together in five rows of ten each and are secured in the form shown in Fig. 1 by vulcanizing and by a binding of vulcanized rubber. At one end of the section A the electrodes of each tube are bent laterally and extend to the outside of the section, where connections with the wires

of the system are made. The individual tubes are first made upon mandrels *a*, one of which is represented in Fig. 2. These mandrels are of steel and of square cross-section about a half-inch in diameter. The mandrels are first covered with a sheet of tin-foil and then two brass strips having short bent-up edges are adjusted to the opposite sides of the mandrels. These extend nearly, but not quite, the full length of the mandrel and at one end are bent over at right angles, the ends projecting several inches. The strips *b* maintain their connection temporarily with the mandrel by friction. The mandrel is then wrapped or covered with a thin sheet or strip of soft rubber. Fifty of these mandrels are prepared in the same manner and put together in a group of ten rows, with five in each row, and the whole thing wrapped up in a large sheet of soft rubber, which helps to bind them all together. Additional binders *c c c* are also applied at the ends and intermediate points to give additional strength. When the fifty mandrels are assembled, the ends at which the extensions of the electrodes are located are all placed together. Those connected with every alternate row of mandrels extend out and beyond one side of the group, and those connected with the other rows extend out and beyond the opposite side of the group. These extensions serve as means for connecting the electrodes with the wires, and for this purpose the holes are formed in them, as shown. After the outer wrapping of sheet-rubber and the binders have been applied the ends of the group are confined in frames *F*, a metal strip *f* being inserted between every two rows. This maintains the tubes in their proper relative position when the rubber softens. The whole thing is then placed in the vulcanizer and the rubber vulcanized. The mandrels are then withdrawn, leaving the foil and the electrodes inside of each tube. To remove the foil, a scraping-tool is used. After squaring the ends the section is finished.

In Fig. 4 I show the weight, spring-contacts, flexible conductors, and plug used in each tube. These are familiar to those skilled in the art and need no description.

Having thus described my invention, I claim—

1. A section of weight-guide tubes for electrical switch-boards, consisting of a plurality or group of rubber tubes, each provided with electrical contacts or electrodes, and all the tubes secured together by vulcanizing the rubber, substantially as described.

2. A section of weight-guide tubes for electrical switch-boards, consisting of a plurality or group of rubber tubes, each provided inside with electrical contacts or electrodes, which are provided with lugs extending outside the group, and all the tubes secured together by vulcanizing the rubber, substantially as described.

3. A section of weight-guide tubes for electrical switch-boards, consisting of a plurality or group of tubes, each provided with contacts or electrodes, said contacts having lateral extensions or lugs, which project outside the group for purposes of electrical connection.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN B. LYON.

Witnesses:

FRANK S. OBER,  
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