

E. E. ROSE.  
ELECTRIC HEATING APPARATUS.  
APPLICATION FILED FEB. 19, 1914.

1,155,167.

Patented Sept. 28, 1915.

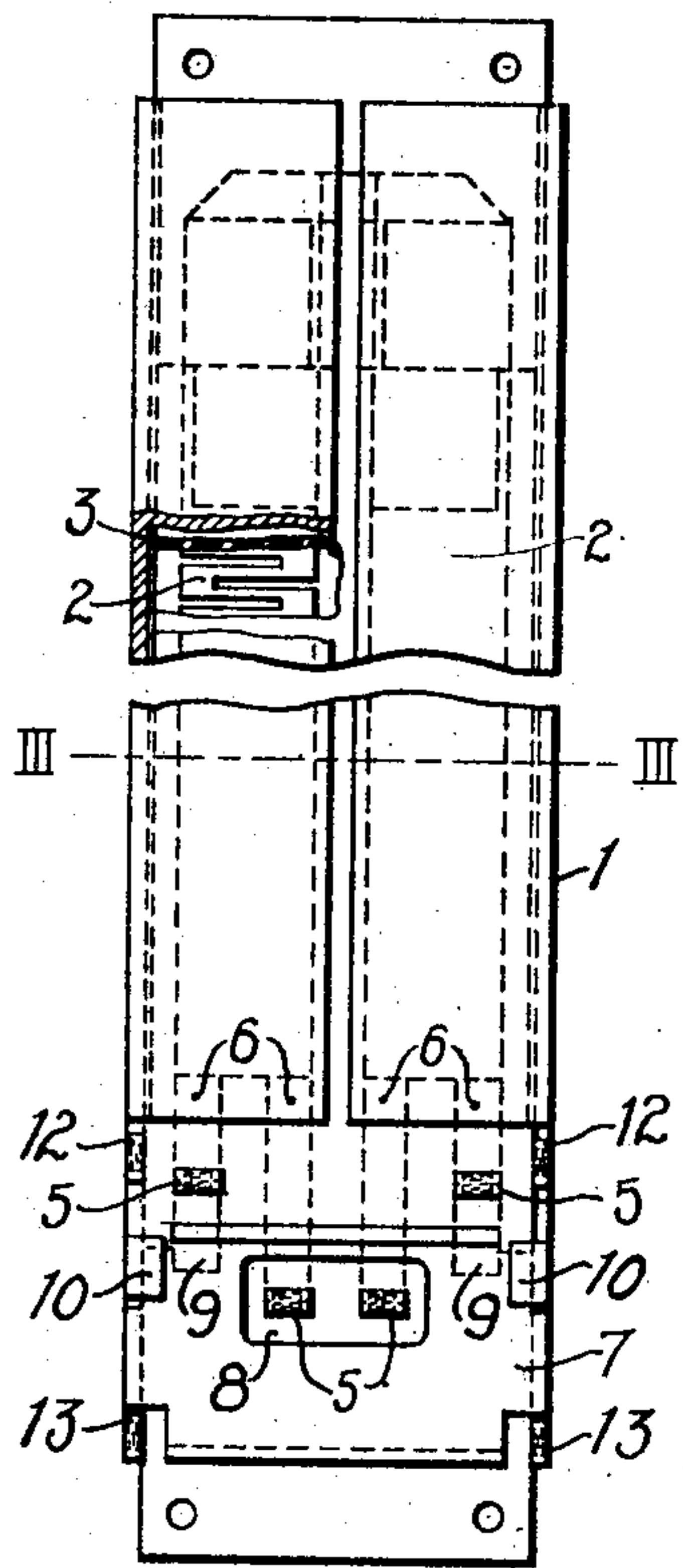


Fig. 1.

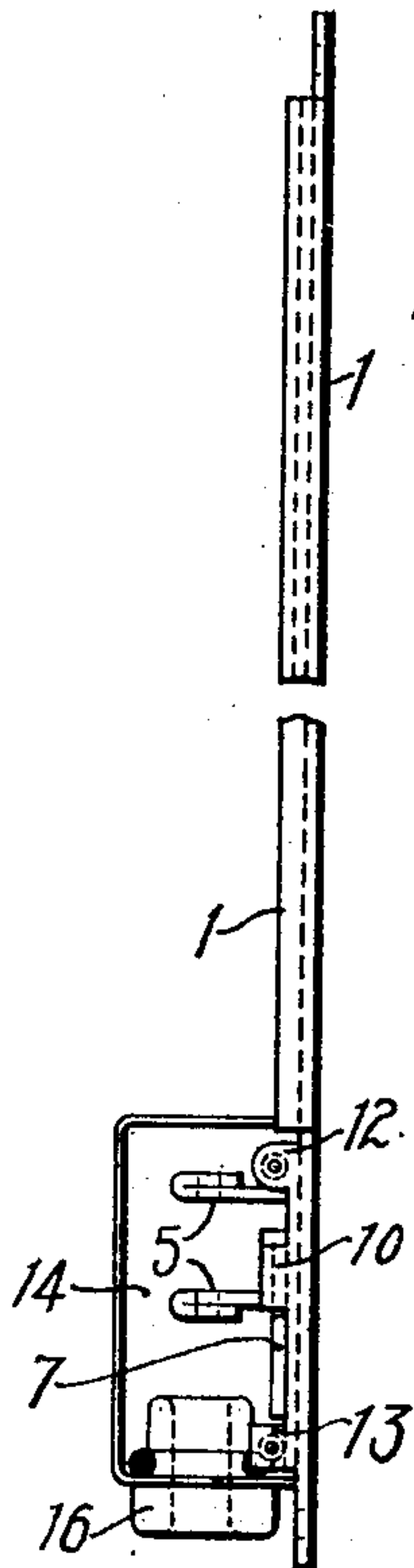


Fig. 2.

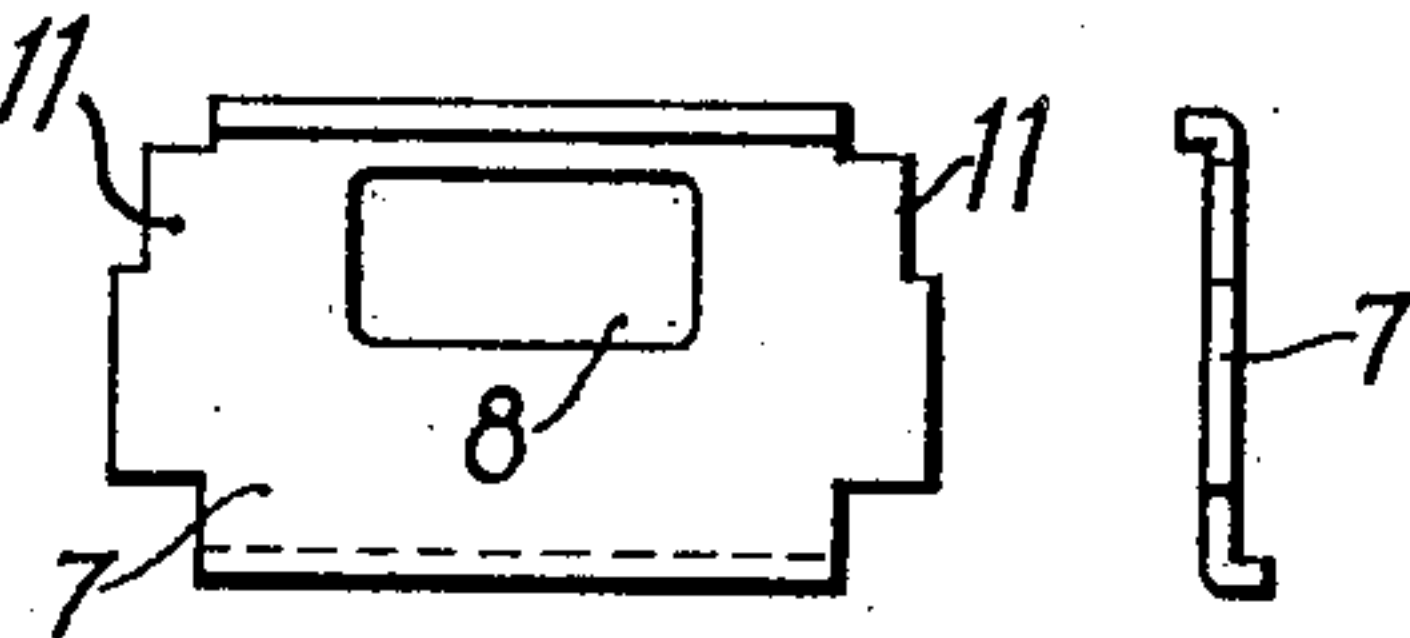


Fig. 3.

Fig. 4.

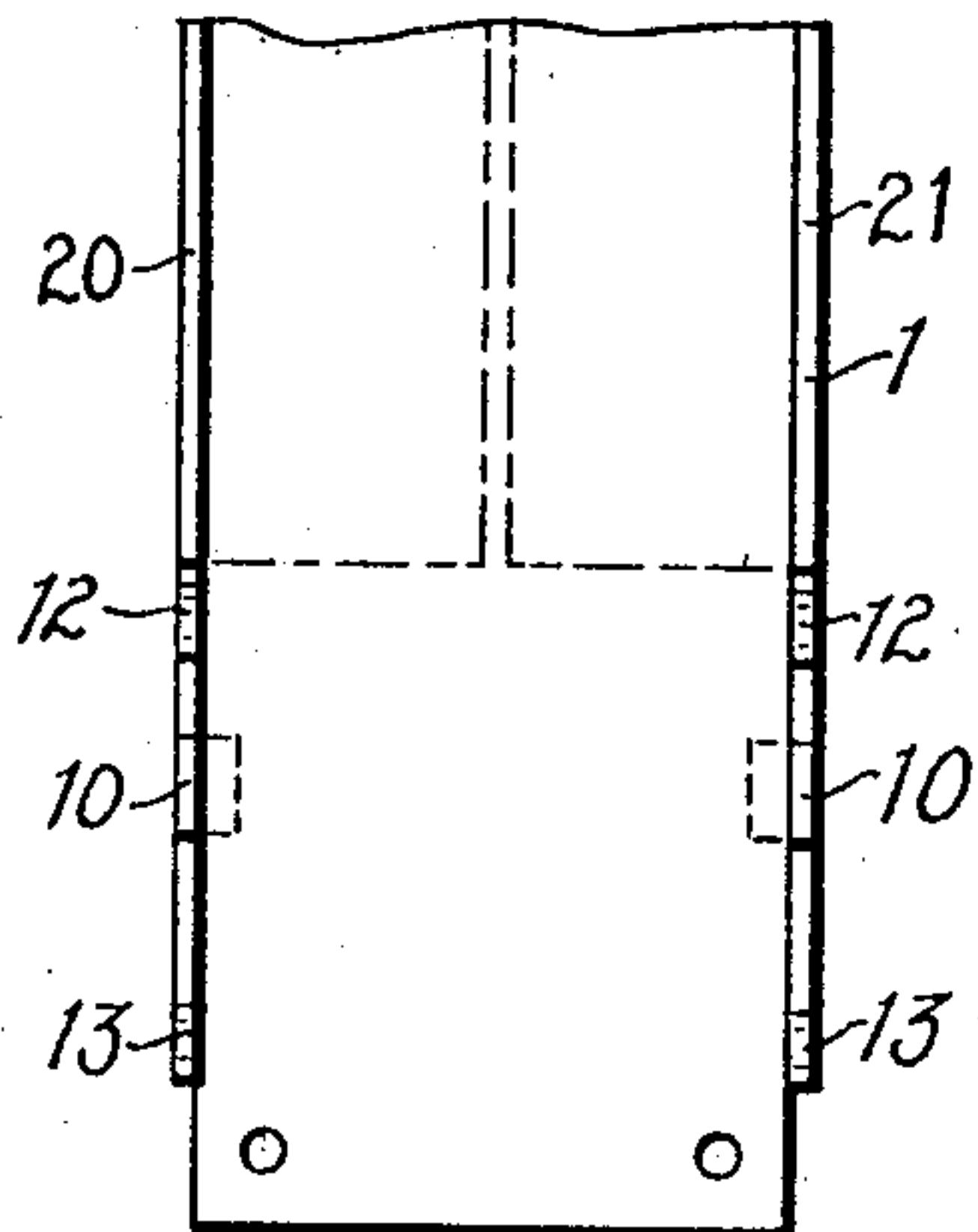
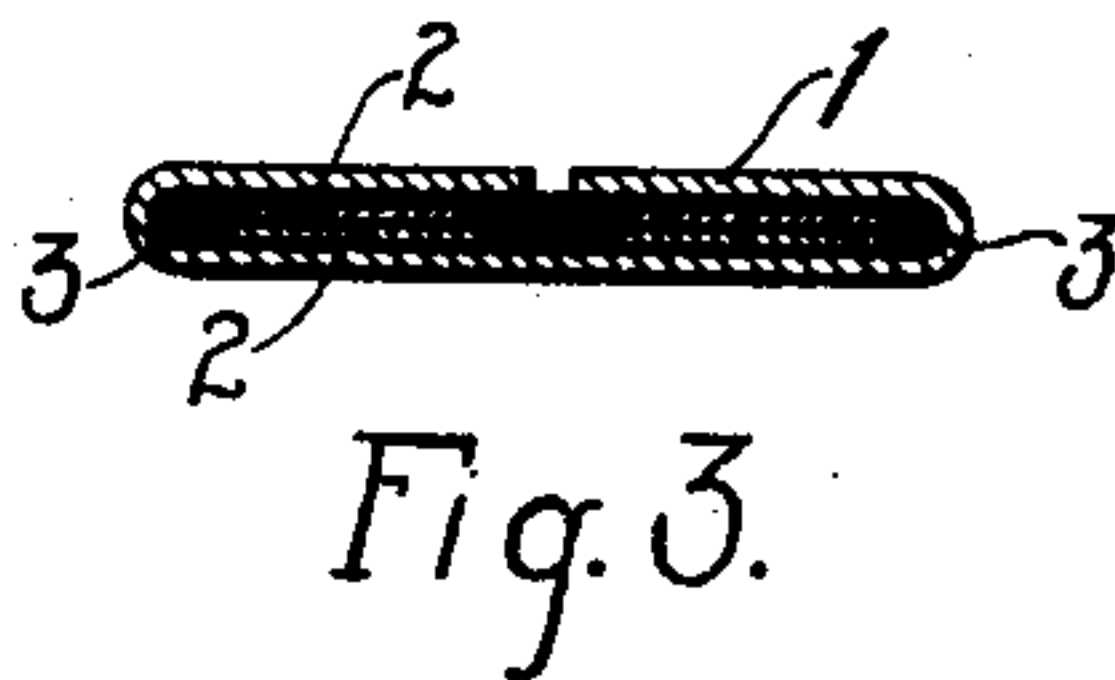


Fig. 6.

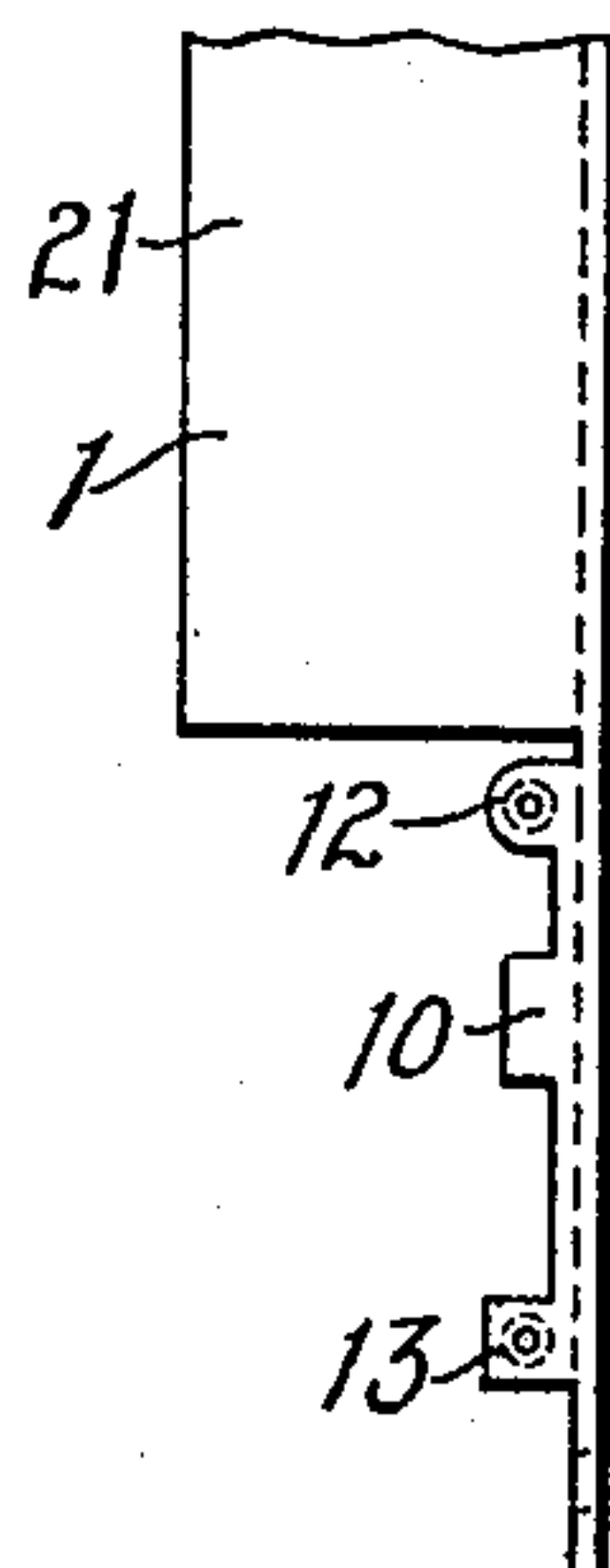


Fig. 7.

WITNESSES:

*Q. J. Fitzgerald*  
*H. D. Brown*

INVENTOR

*Edward E. Rose*

BY

*Wesley E. Rose*

ATTORNEY

# UNITED STATES PATENT OFFICE.

EDWARD E. ROSE, OF SWISSVALE, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE  
ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

## ELECTRIC HEATING APPARATUS.

1,155,167.

Specification of Letters Patent.

Patented Sept. 28, 1915.

Application filed February 19, 1914. Serial No. 819,680.

*To all whom it may concern:*

Be it known that I, EDWARD E. ROSE, a citizen of the United States, and a resident of Swissvale, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Electric Heating Apparatus, of which the following is a specification.

My invention relates to electric heating apparatus and particularly to heaters of the type known as "bayonet heaters".

My invention has for its object the provision of a thin flat heater which will be efficient, durable and accessible, and which will have greater simplicity than the heaters of this general type that are now in use.

In the accompanying drawing, Figure 1 is a plan view, with parts broken away, of my complete heater; Fig. 2 is a side elevation of the same; Fig. 3 is a transverse section, taken on the line III—III of Fig. 1; Fig. 4 is a plan view of the outer casing of my heater; Fig. 5 is a side elevation of the same; Fig. 6 is a detail view showing the plate which secures the terminals in place, and Fig. 7 is a transverse central sectional view of the plate shown in Fig. 6.

All of the parts of my heater are secured to an outer casing 1 which is stamped from a single sheet of metal in the form shown in Figs. 4 and 5. The casing is provided with two longitudinal side leaves 20 and 21 which are adapted to be folded upon the body portion to inclose resistance ribbons 2, and layers 3 of insulating material, such as mica, are interposed between the resistance ribbons and the casing, as shown in Fig. 3. I find it convenient to provide two or more resistance ribbons placed one upon the other and insulated from each other, the ribbons being inclosed in a single sheath of insulating material.

The ends of the resistance ribbons are provided with terminals 5 which are welded, riveted or otherwise attached thereto at right angles to the ribbons and at points beyond the leaves 20 and 21. The part of the casing outside of the leaves is utilized as a support for the terminals 5, and it is to be particularly noted that this support is integral with the casing.

I provide means for securing the terminals with an insulated resistance element, of a plate 7 shown in detail in Figs. 6 and 7. The plate 7 is provided with an opening 8

through which two of the terminals project, and the plate rests upon the ends of the resistance ribbons to which the remaining two terminals are attached. The support is provided with upturned ears 10 which are adapted to be folded over the portions 11 of the plate 7 to hold the plate securely against the support. Other pairs of ears 12 and 13 are formed on the support, and are perforated to receive screws by which a suitable cover 14 may be fastened to the support.

The outer end of the cover 14 is provided with a bushing 16 through which suitable leads may be brought from the terminals 5.

It is obvious that many changes may be made in the structure of my heater without departing from the spirit and intent of my invention, and it is, therefore, to be understood that no limitations are to be imposed unless specified in the appended claims.

I claim as my invention:

1. In an electric heater, the combination with an insulated resistance element, of a casing for inclosing the resistance element and leaving one end thereof exposed, a supporting means for the exposed end of the resistance element that constitutes an integral part of the casing, and terminals attached to the said exposed portion of the resistance element and disposed substantially perpendicular to the said resistance element and to the said casing.

2. In an electric heater, the combination with an insulated resistance element, of a casing for inclosing the resistance element and leaving one end thereof exposed, and a supporting means for the exposed end of the resistance element, the said supporting means being an integral extension of the casing and having integral clamping ears, and means for securing the exposed end of the resistance element to the support, the said means being held in place by the clamping ears.

3. In an electric heater, the combination with an insulated resistance element, of a casing for inclosing the resistance element and leaving one end thereof exposed, and a supporting means for the exposed end of the resistance element, the said supporting means being an integral extension of the casing and having clamping ears integral therewith, and a single plate for securing the free ends of the resistance element to the



support, the said plate being held in place by the clamping ears.

4. In an electric heater, the combination with a plurality of flat resistance elements insulated from each other and inclosed in a single sheath of insulating material, a metal casing having a portion partly inclosing the resistance elements and another portion supporting the exposed ends thereof, terminals secured to the exposed ends of the resistance elements, and a single plate for securing said exposed ends to the casing, the said plate having an opening through which terminals project.

5. In an electric heater, a resistance element, terminals secured to one end of the

resistance element, and a support for the said terminal end comprising a base plate, a plurality of ears integral with the base plate, and a single holding plate cooperating with the base plate, the said holding plate being clamped in position by some of the said ears, and a cover secured to the support by the remaining ears.

In testimony whereof, I have hereunto subscribed my name this 13th day of Feb. 1914.

EDWARD E. ROSE.

Witnesses:

G. W. FARNSWORTH,  
B. B. HINES.