

No. 667,996.

Patented Feb. 12, 1901.

F. SCHWEDTMANN & W. A. LAYMAN.  
TRANSFORMER.

(Application filed June 1, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

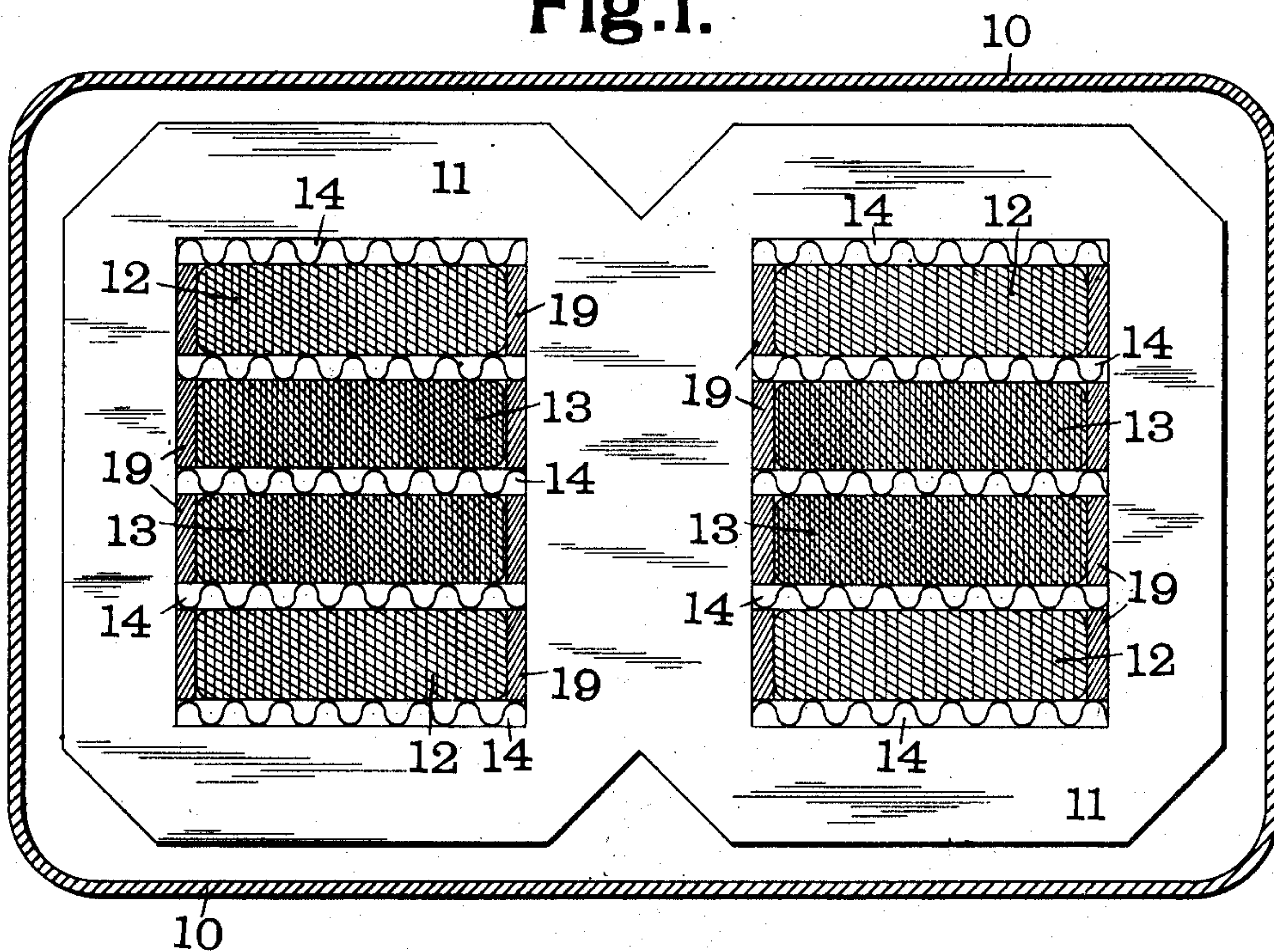


Fig. 2.

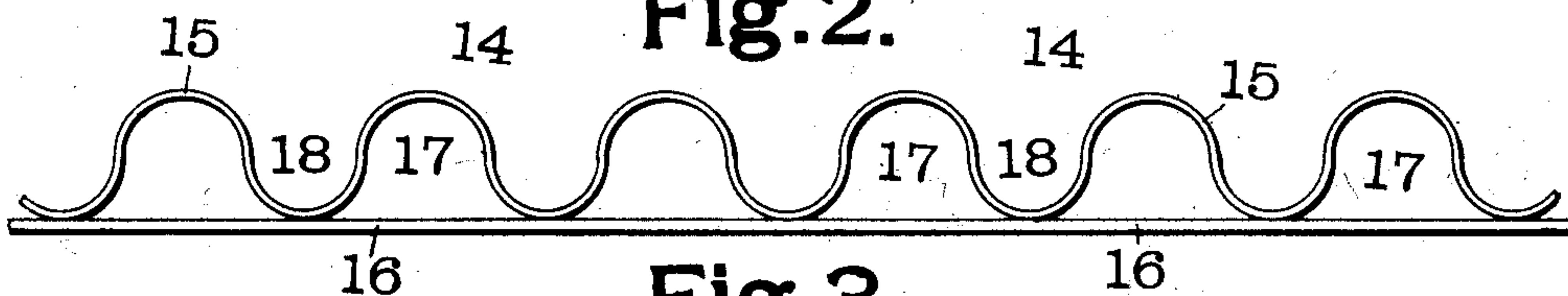
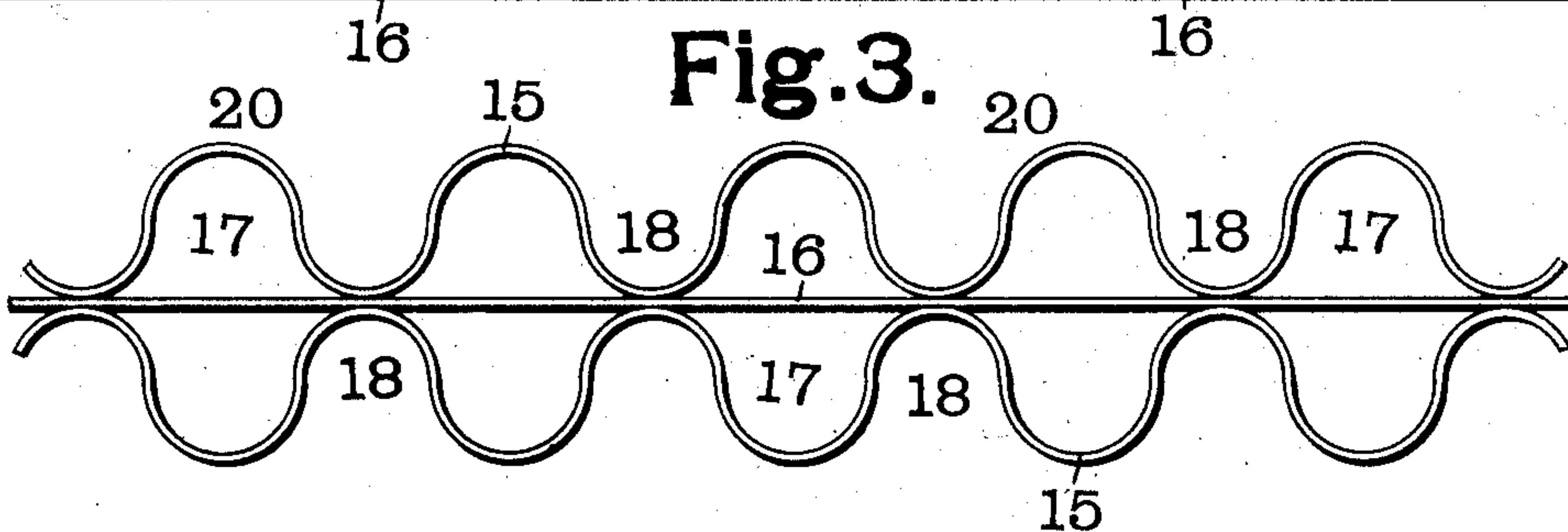


Fig. 3.



Witnesses

*W. A. Alexander*  
*Jessie R. Watkins*

Inventors

F. Schwedtmann  
W. A. Layman

By Attorneys

*Fowler & Fowler*

F. SCHWEDTMANN & W. A. LAYMAN.  
TRANSFORMER.

(Application filed June 1, 1900.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 4.

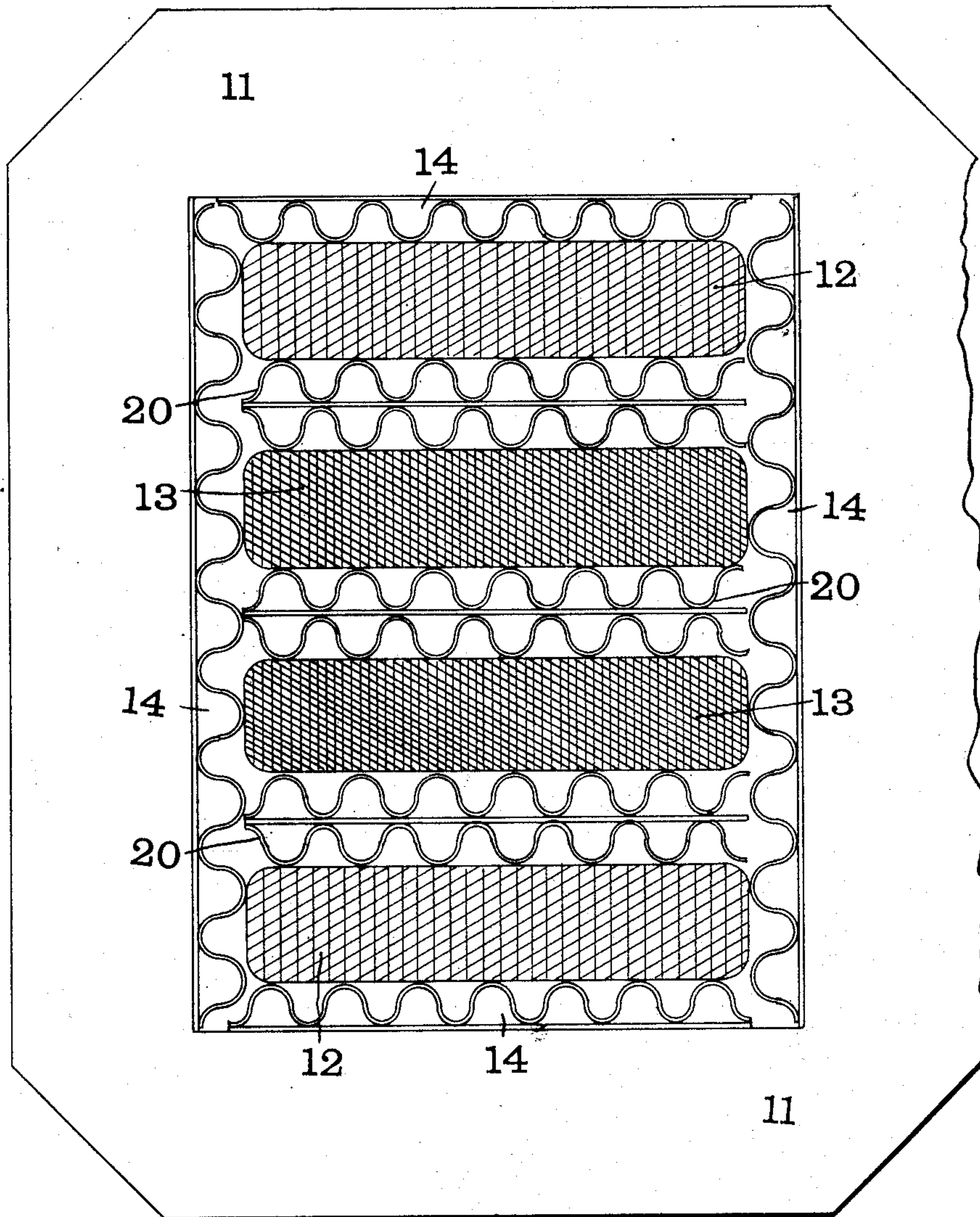
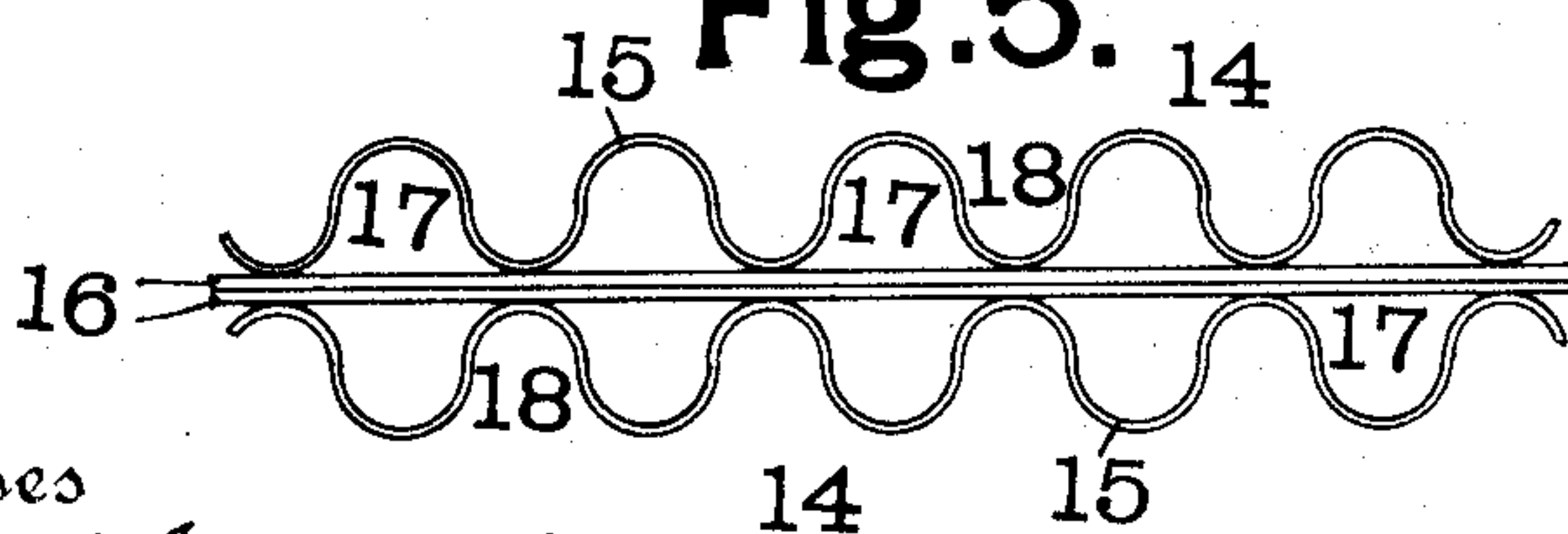


Fig. 5.



Witnesses

*W. A. Alexander*  
*Jessie R. Watkins*

Inventors

F. Schwedtmann  
W. A. Layman

By Attorneys

*Fowler & Fowler*



# UNITED STATES PATENT OFFICE.

FERDINAND SCHWEDTMANN AND WALDO ARNOLD LAYMAN, OF ST. LOUIS,  
MISSOURI.

## TRANSFORMER.

SPECIFICATION forming part of Letters Patent No. 667,996, dated February 12, 1901.

Application filed June 1, 1900. Serial No. 18,713. (No model.)

*To all whom it may concern:*

Be it known that we, FERDINAND SCHWEDTMANN and WALDO ARNOLD LAYMAN, citizens of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Transformer, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The object of our invention is to so construct a transformer that the coils will be thoroughly insulated both from each other and from the core and at the same time to allow for the free circulation of a fluid—such as air, oil, or other insulating or cooling fluid—around and through the coils and core.

Our invention consists, primarily, in the combination, with a core, of primary and secondary coils and insulation therefor, said insulation, either in whole or in part, having conduits formed therein for the circulation of an insulating or cooling fluid.

In the accompanying drawings, which illustrate a transformer made in accordance with our invention, Figure 1 is a horizontal cross-section of the complete transformer. Figs. 2 and 3 are enlarged detailed views showing the insulation. Fig. 4 is an enlarged view of a portion of Fig. 1, but showing a slight modification in the construction; and Fig. 5 is an enlarged detailed view of the insulation.

Like marks of reference refer to similar parts in the several views of the drawings.

10 is the converter-casing; 11, the core; 12, the primary coils, and 13 the secondary coils. All of the above parts are of the ordinary construction.

The coils 12 and 13 are separated by insulating-plates 14. These plates 14 are formed by securing a corrugated sheet 15 to a flat sheet 16. These sheets are both preferably of leatheroid. The corrugated sheets 15 may be secured to a sheet 16 by gluing the same thereto in case the transformer is to be used as a dry transformer; but if oil is to be used in the transformer we prefer to secure the sheet 15 to the sheet 16 by sewing the same

thereto. The construction of the insulating-plate 14 is such as to form internal or completely-closed conduits 17 and open-sided conduits 18. Through these conduits the oil or other insulating fluid of the transformer can freely flow, and owing to the conduits 18 being open-sided the fluid is allowed to come in direct contact with the coils 12 and 13, thus preventing said coils from becoming unduly heated. The spaces at the edge of the coils 12 and 13 may be filled by blocks 19 of wood or similar material. In place of this, however, the insulating-plates at the sides of the coils may be cut short and insulating-plates 14 be placed at the edges of the coils, as shown in Fig. 4.

In the construction above described one side of each of the coils will rest against a flat plate 16, and thus be cut off from free circulation of the insulating fluid. When it is desired to prevent this, we form an insulating-plate 20, similar to the plate 14, except that two of the corrugated plates 15 are used when being secured to each side of the sheet 16, as shown in Fig. 3. This allows free access of the insulating fluid to all sides of the coils. In place of the plate 20, however, two of the plates 14 may be placed with the smooth sheets 16 together, as shown in Fig. 5, as this will answer the same purpose.

In the drawings the insulating-sheets 14 and 20 have been shown much larger in proportion than they would be in practice. This has been done in order to show more clearly the construction of the said insulating-sheets.

It will be seen that while our transformer is simple of construction the coils are thoroughly insulated from each other and from the core and at the same time allowance is made for free circulation of the insulating fluid around the primary and secondary coils and core.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a transformer, the combination with a core, of primary and secondary coils, and insulation for said coils, said insulation being formed of sheets of corrugated non-conducting material secured to sheets of smooth non-

conducting material, whereby conduits are formed for the free passage of an insulating or cooling fluid.

2. In a transformer, the combination with  
5 a core, of primary and secondary coils, and insulation for said coils, said insulation being formed of corrugated sheets of leatheroid secured to smooth sheets of the same material, whereby conduits are formed for the free pas-  
10 sage of an insulating or cooling fluid.

3. In a transformer, the combination with a core, of primary and secondary coils, and

insulation for said coils, said insulation consisting of sheets of smooth non-conducting material placed between sheets of corrugated  
15 non-conducting material and secured thereto.

In testimony whereof we have hereunto set our hands and affixed our seals in the presence of the two subscribing witnesses.

FERDINAND SCHWEDTMANN. [L. s.]

WALDO ARNOLD LAYMAN. [L. s.]

Witnesses:

W. A. ALEXANDER,  
JESSIE R. WATKINS.