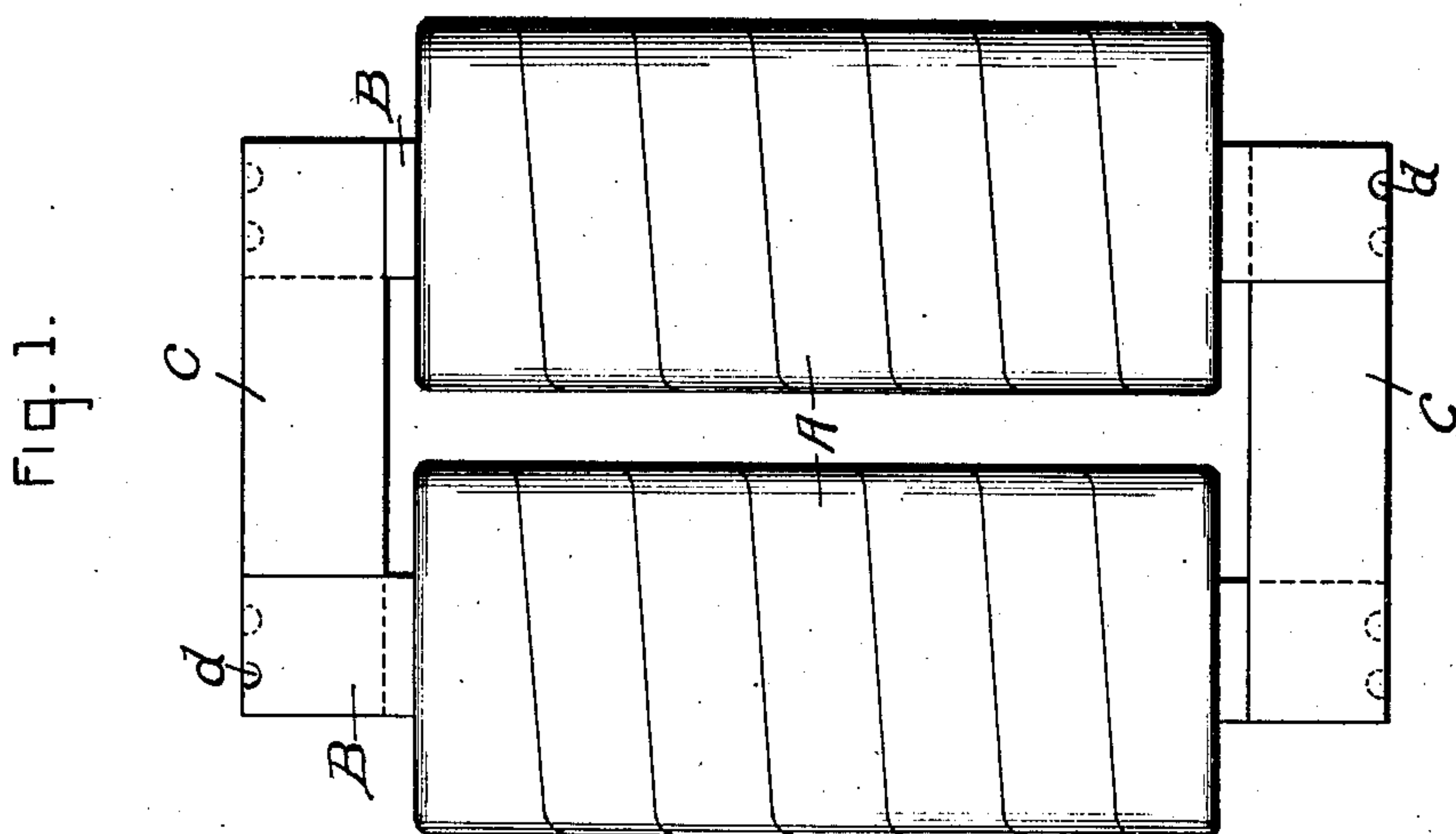
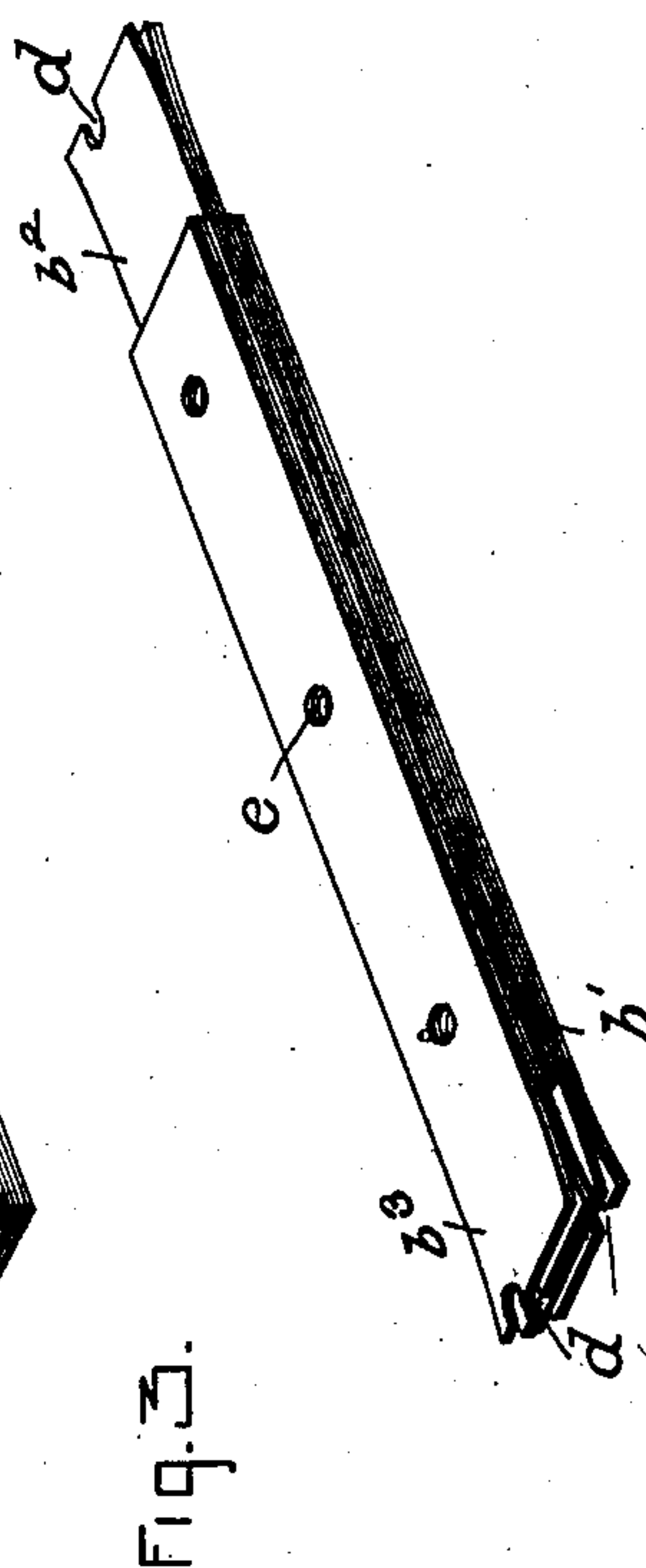
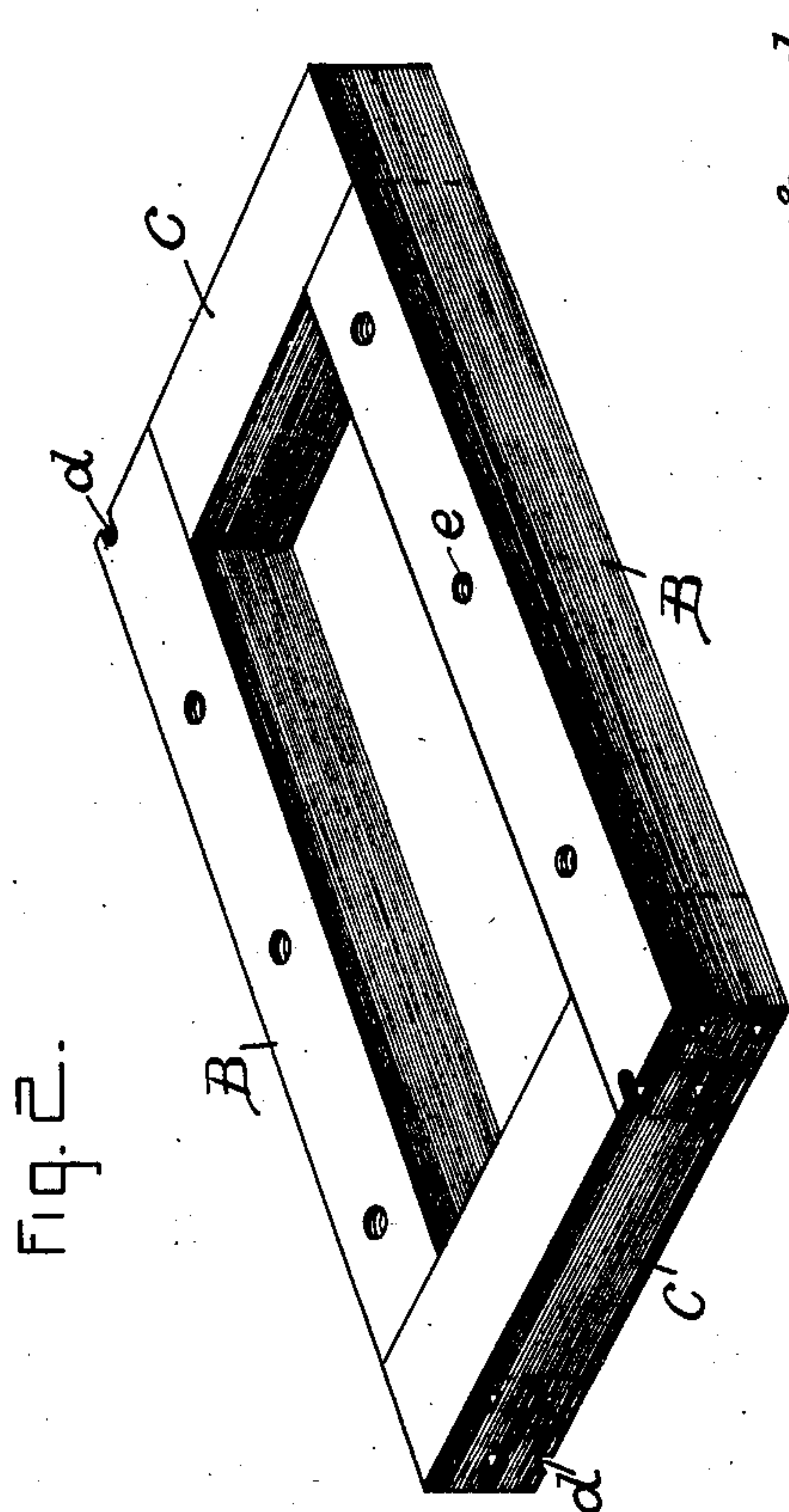


No. 896,983.

PATENTED AUG. 25, 1908.

J. J. FRANK.  
TRANSFORMER CORE CONSTRUCTION.  
APPLICATION FILED MAY 1, 1907.



WITNESSES  
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ATTY



# UNITED STATES PATENT OFFICE.

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## TRANSFORMER-CORE CONSTRUCTION.

No. 896,983.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed May 1, 1907. Serial No. 371,285.

*To all whom it may concern:*

Be it known that I, JOHN J. FRANK, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Transformer - Core Construction, of which the following is a specification.

My invention relates to the construction of jointed and laminated magnetic cores and its object is to provide a novel core construction which decreases materially the cost of manufacture.

While my invention is applicable to any jointed and laminated magnetic core it is particularly advantageous when applied to the construction of cores for "core-type" transformers. These transformers are ordinarily assembled by first assembling the legs of the core, then placing the transformer coils on the legs, and then interleaving the laminæ forming the ends of the core with the ends of the laminæ forming the legs so as to close the magnetic circuit of the core. The lower end laminations may be assembled before the coils are placed on the legs, but the upper end laminations cannot be assembled until after the coils are in place.

In order to permit the interleaving of the laminæ at the joints between the legs and end pieces, the legs are ordinarily made up of small bundles of laminæ, alternate bundles being oppositely displaced longitudinally, so that spaces are left between the ends of the bundles displaced in the same direction, for receiving the bundles of the end laminæ.

In practice it has been found that after the legs are assembled and before the end laminæ are placed in position the outer laminæ of each bundle comprising the legs, spread out at their ends to meet the outer laminæ of adjacent bundles and to close the ends of the spaces left for the reception of the end laminæ.

In order to enable the workman to separate the ends of the bundles so as to insert the end laminæ it has been customary to cut off a corner of the laminæ and to reverse the adjacent bundles that are similarly displaced in assembling the legs of the core, so that the notches formed by cutting off the corners of the laminæ mark off each bundle from those on each side of it. Cutting off the corners of the laminæ, as above described, requires an extra operation or an expensive die and

materially increases the cost of manufacture.

The object of my invention is to secure the same result with a cheaper construction. I accomplish this by cutting a notch in one end of each lamina between its side edges, the notch being located dissymmetrically or in other words off center. This notch may be stamped out at the same time the lamina as a whole is stamped out, so that the cost of the separate operation which has been required heretofore to cut off the corners or the cost of the expensive die required for this purpose are saved.

My invention will best be understood by reference to the accompanying drawings in which

Figure 1 shows a transformer provided with a core constructed in accordance with my invention; Fig. 2 shows a perspective view of the core with the coils removed; and Fig. 3 shows a portion of one of the legs of the core illustrating the method of forming the leg.

In the drawings, A represents the transformer coils which are mounted on a closed jointed magnetic core, formed of the legs B B, carrying the coils, and end pieces C C joining the ends of the legs. The sections of which the core is thus formed are interleaved at the joints, as is clearly shown in Fig. 2. Each lamina in each leg is provided with a notch  $d$  which is cut out at one end of the lamina between its side edges but on one side of the center line of the lamina.

In assembling the legs of the core small bundles of similarly arranged superposed laminæ are assembled as shown in Fig. 3. Alternate bundles, such as  $b^1 b^2$  are displaced longitudinally in opposite directions. To facilitate this displacement holes  $e$  may be punched in the laminæ when they are stamped out so that the laminæ may be assembled in the usual manner on bolts or guide-rods, and by turning alternate bundles end for end the desired longitudinal displacement is secured. Adjacent bundles  $b^1 b^3$ , which are similarly displaced, are relatively reversed so that their notches  $b$  are relatively laterally displaced. With this arrangement if the upper lamina of bundle  $b^1$  and the lower lamina of  $b^3$  spread out so as to meet and close the space between them at the end, as shown in the figure, the bundles may be readily separated by inserting a suit-



able tool in one of the notches *d*, thereby opening the space between the bundles for the insertion of the end laminæ.

For the purpose of clear illustration the laminæ and bundles are shown much thicker and the total number of bundles much less than would be the case in practice, so it will be understood that the drawings are largely diagrammatic.

What I claim as new, and desire to secure by Letters Patent of the United States, is,—

1. A jointed and laminated magnetic core, the laminæ being interleaved at the joints and a portion of said laminæ having notches located dissymmetrically at the interleaving ends of the laminæ between their side edges.

2. A jointed and laminated magnetic core, the laminæ being interleaved at the joints and having square corners, with notches lo-

cated dissymmetrically at the interleaving ends of a portion of the laminæ.

3. A closed, jointed, magnetic core composed of laminated sections interleaved with each other at the joints, a portion of said sections being each composed of bundles of laminæ provided with notches dissymmetrically located at their ends between their side edges, alternate bundles being oppositely displaced longitudinally and adjacent bundles displaced in the same direction being relatively reversed so as relatively to displace their notches laterally.

In witness whereof, I have hereunto set my hand this 30th day of April, 1907.

JOHN J. FRANK.

Witnesses:

BENJAMIN B. HULL,  
HELEN ORFORD.