

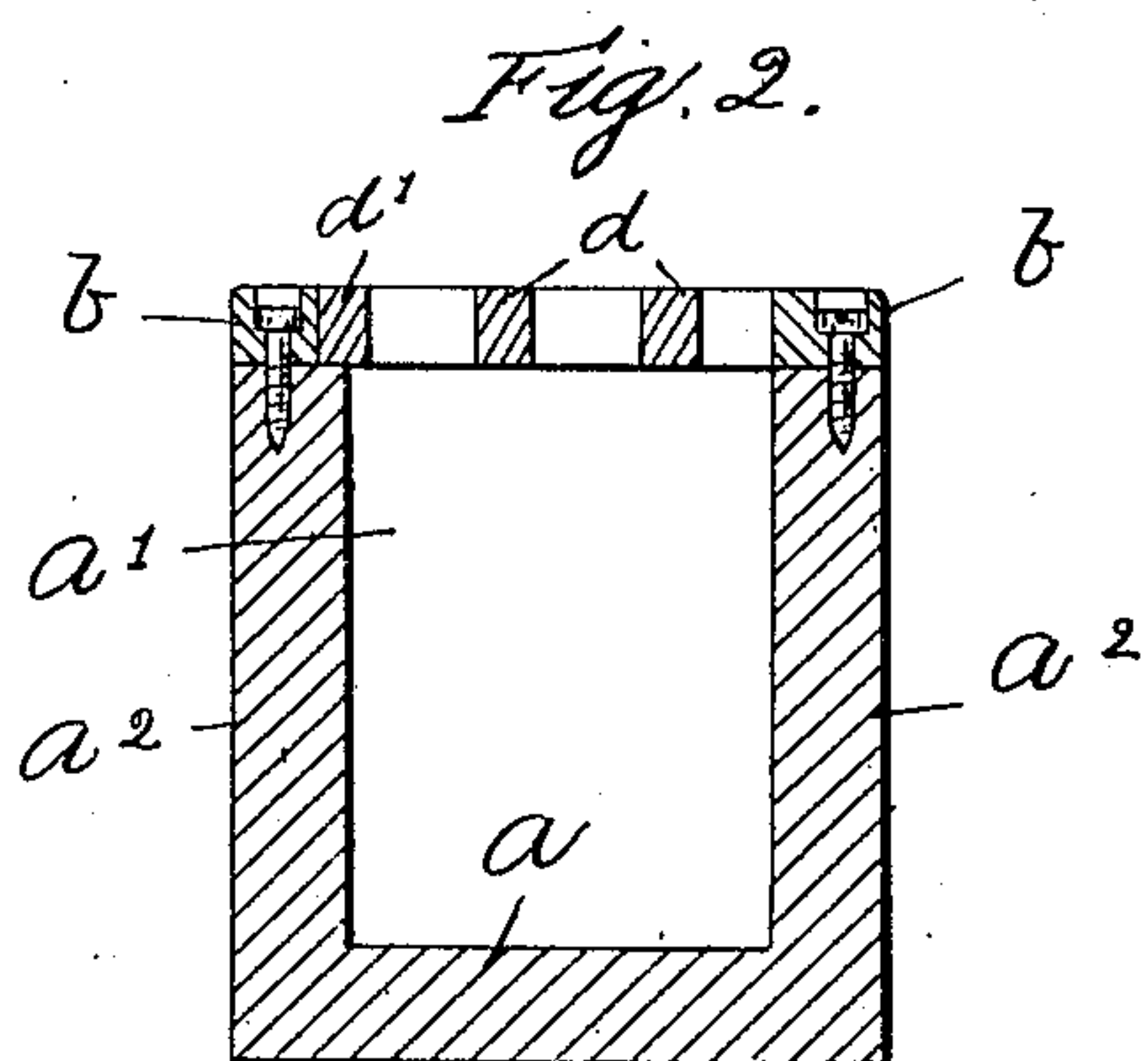
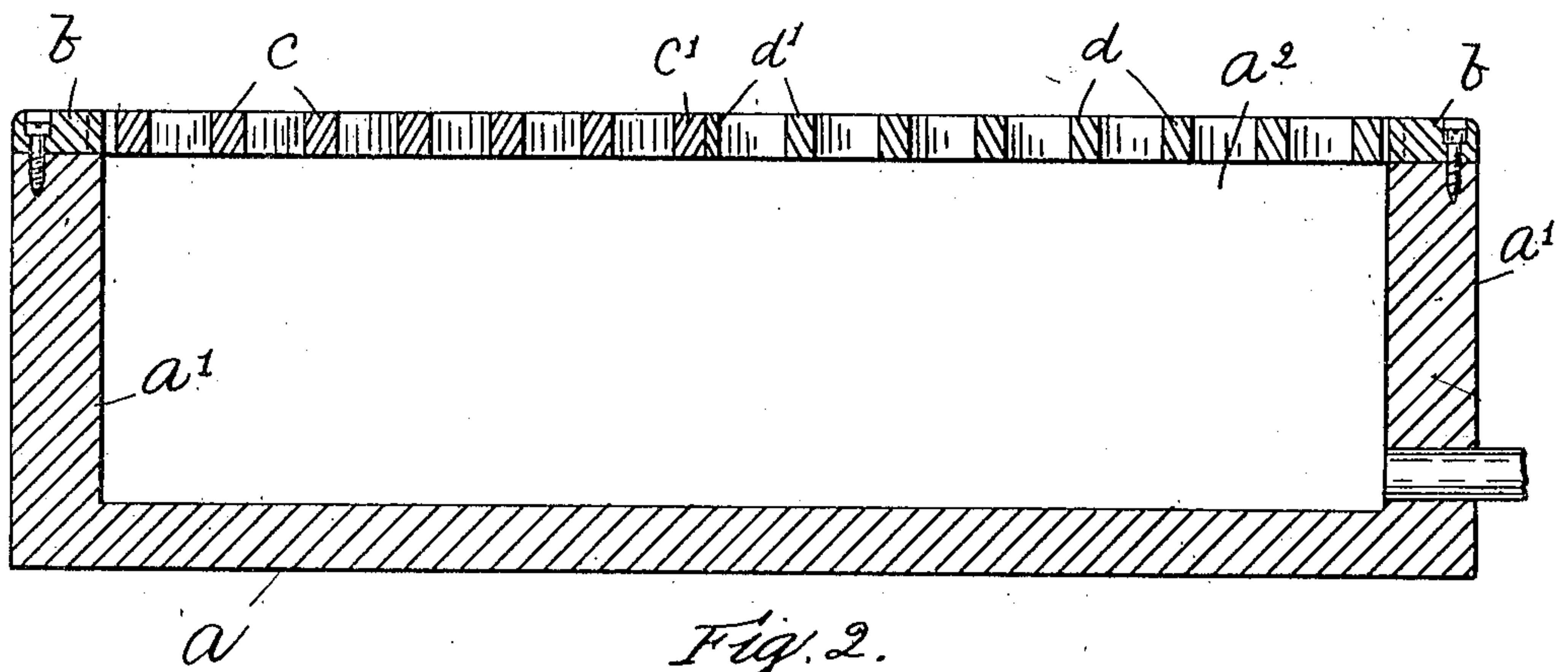
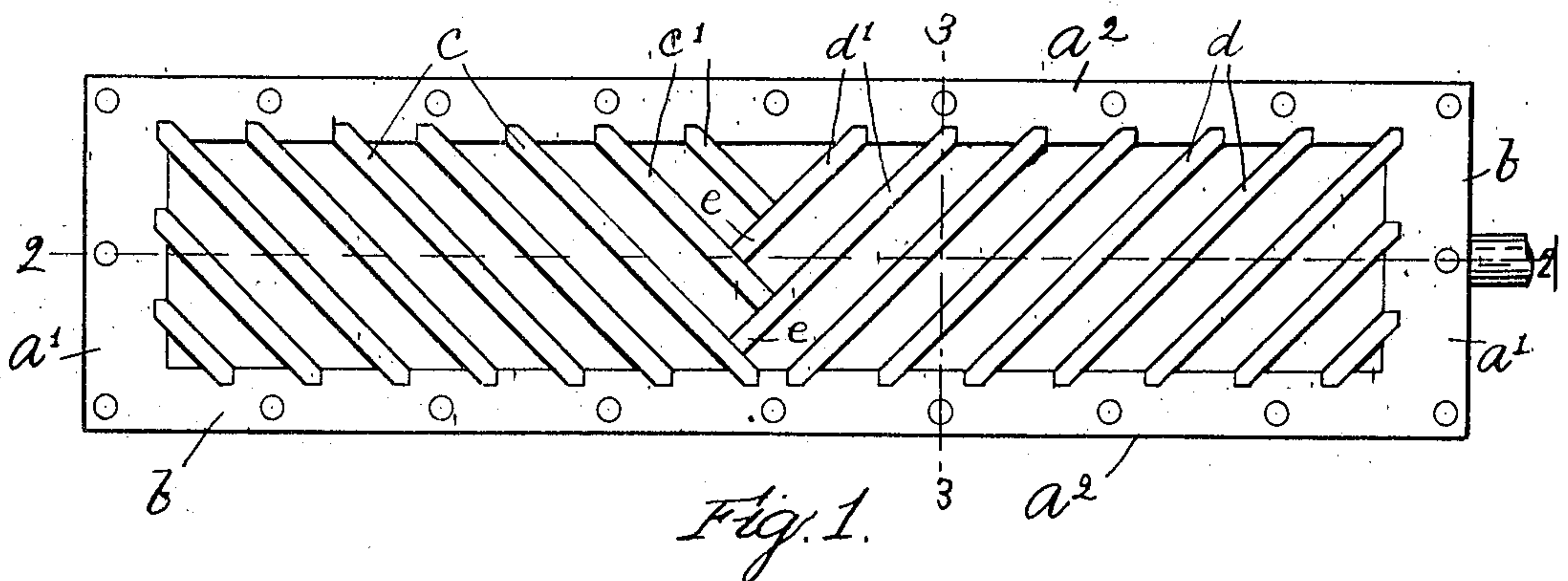
J. WHISNER.

SUCTION BOX.

APPLICATION FILED MAR. 11, 1907.

920,100.

Patented Apr. 27, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN WHISNER, OF APPLETON, WISCONSIN.

SUCTION-BOX.

No. 920,100.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed March 11, 1907. Serial No. 361,849.

To all whom it may concern:

Be it known that I, JOHN WHISNER, of Appleton, county of Outagamie, State of Wisconsin, have invented an Improvement in Suction-Boxes, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to suction boxes for Fourdrinier machines, and other forms of paper-making machines, and pulp drying machines, and particularly to suction boxes over which a felt or wire passes, which carries the sheet of pulp.

The object of the invention is to construct a suction box, which, while adapted to perform its regular function of removing the water from the sheet of pulp, also acts to spread and thereby flatten the felt which passes over it. Spreading the felt operates to separate its compactly arranged strands in order that the water may pass more freely through it, and flattening the felt enables it to be presented in the best possible form to the press rolls.

Another object of my invention is to so construct the suction box that the wear on the felt will be materially reduced, thereby prolonging its life.

Another object of my invention is to so construct the suction box that it may be readily repaired.

Figure 1 shows in plan view a suction box embodying this invention. Fig. 2 is a longitudinal vertical section of the suction box, shown in Fig. 1, taken on the dotted line 2—2. Fig. 3 is a cross section of the suction box shown in Fig. 1, taken on the dotted line 3—3.

The box comprises the bottom *a*, end walls *a'*, *a'*, side walls *a''*, *a''*, and a cover, and my invention is embodied in the cover.

The cover comprises a rectangular open frame *b*, of suitable shape and dimensions to conform to the shape and dimensions of the box, and is adapted to be placed on the box, and to be secured thereto. The side bars and end bars constituting said open frame are formed on their inner sides with vertical grooves extending from top to bottom or thereabout. Bars *c*, *c'*, *d*, *d'* are fitted into the said grooves, in such manner as to be held therein, the ends of said bars being preferably shaped to correspond to the shape of the grooves, so as to be slid therein.

The said bars are extended across the cover and are arranged in two sets, to form a grated covering for the box, one set covering the right hand side of the top of the box and the other covering the left hand side. The bars of the right hand set are arranged in parallelism and extend diagonally toward the right and the bars of the left hand set are arranged in parallelism and extend diagonally toward the left, and the box is so disposed that the two sets of bars diverge from each other in the direction of movement of the felt or wire passing over them. To carry out this arrangement at the middle of the top of the box one or more pairs of short bars *c'*, *d'* are used and these should preferably be inserted in the grooves of the frame only at the rear end of the box and joined together at the meeting point in some appropriate manner. It is desirable to provide some support for them at the meeting point and accordingly I have shown the short bars *d'* with an extension *e* to meet and be attached to the next bar *c'*, or *c*, as the case may be. These parts *e*, however, are only for supporting the frail end of the short bars *c'*, *d'* and do not assist the process of smoothing the felt, accordingly if desired they may be cut away so as not to come in contact with the felt, but I find this unnecessary. Other forms of support, equally good for this purpose may readily be devised. The bars are made quite narrow and of a thickness to correspond with the thickness of the frame, so that when they are fitted or slid into the grooves therein, they will bear upon the top of the side and end walls of the box, yet, at the same time, will be flush with the top of the cover. The spaces between the bars serve as the openings to the interior of the box, and as they extend entirely across the box they are of large area.

By providing the frame with grooves and sliding the bars *c* into said grooves, it will be seen that any one or all of the bars may be readily removed whenever desired, and new bars substituted; but I do not desire to limit my invention to this manner of holding the bars. By extending the bars entirely across the box, but few openings are employed, and the wear on the felt is materially reduced, as compared with a cover filled with circular holes or other form of cover having a large number of holes with vertical walls against the edges of which the felt rubs, as it moves along. By extending

the bars diagonally across the box, and arranging them in two sets, which extend from the middle of the box or thereabout toward the right and left ends thereof, respectively, and disposing them with respect to the movement of the felt so that the two sets diverge, it will be seen that as the felt passes over them it will be spread from the middle toward the sides, by said diverging sets of parallel bars, and thereby cause to flatten, and all tendency to curl or wrinkle is thereby obviated, and the more or less compactly arranged strands are separated, in order that the water may pass freely through it, and the felt thus flattened is in good form, to be presented to the press rolls. Special means which have heretofore been employed for straightening or flattening the felt are not required.

So far as providing the box with two diverging sets of parallel bars extending from the middle of the box or thereabout to the ends thereof, is concerned, I do not desire to limit my invention to the particular construction of the box or to the cover, as it is obvious that both the box and cover may be otherwise formed and still provide this important feature of my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A suction box cover for paper making machines having two diverging sets of parallel bars, the bars of each set being separated to provide spaces between them in open communication with the interior of the box, substantially as described.

2. A suction box cover for paper making machines comprising a frame and two diverging sets of parallel bars within said frame, the bars of each set being separated to provide spaces between them in open communication with the interior of the box, substantially as described.

3. A suction box cover for paper making machines, having two diverging sets of parallel bars, the bars of each set being separated to provide spaces between them and extending across the top of the box in open communication with the interior of the box, substantially as described.

4. A suction box for paper making machines having a grated cover consisting of a

plurality of bars arranged in two sets across it, the bars of the right hand set extending diagonally toward the right and the bars of the left hand set extending diagonally toward the left, the said two sets of bars diverging in the direction of movement of the felt which passes over them, the bars of each set being arranged with spaces between them in open communication with the interior of the box, substantially as described.

5. A suction box for paper-making machines having a cover provided with a plurality of bars extending transversely across it and arranged with two sets which extend respectively from about the middle of the box to the opposite ends thereof, the bars of one set extending in a diagonal direction toward the right and the bars of the other set extending in a diagonal direction toward the left, and said two sets of bars diverging in the direction of movement of the felt which passes over the box, and the bars of each set being arranged with spaces between them in open communication with the interior of the box, substantially as described.

6. A suction box for paper making machines having a cover provided with a plurality of bars arranged in two sets which extend respectively from about the middle of the box to the opposite ends thereof, the bars of one set extending in a diagonal direction toward the right, and the bars of the other set extending in a diagonal direction toward the left and said two sets of bars diverging in the direction of movement of the felt which passes over the box, the bars of each set being arranged with spaces between them in open communication with the interior of the box, and a frame having vertical grooves which receive the rear ends of all of said bars and the front ends of the endmost bars of the two sets, and means for supporting the front ends of the middle bars of the two sets, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOHN WHISNER.

Witnesses:

PAUL BROWNE,
FRANK ZETTEL.