

No. 886,464.

PATENTED MAY 5, 1908.

H. M. ASHBY.
FILTER PLATE.

APPLICATION FILED DEC. 24, 1906.

Fig. 4

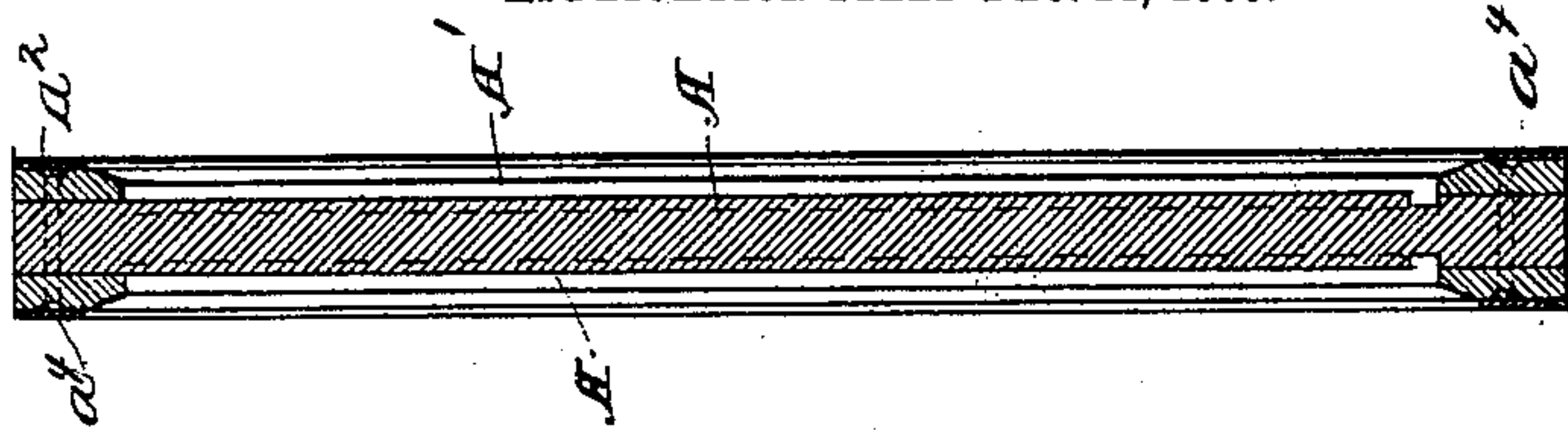


Fig. 3

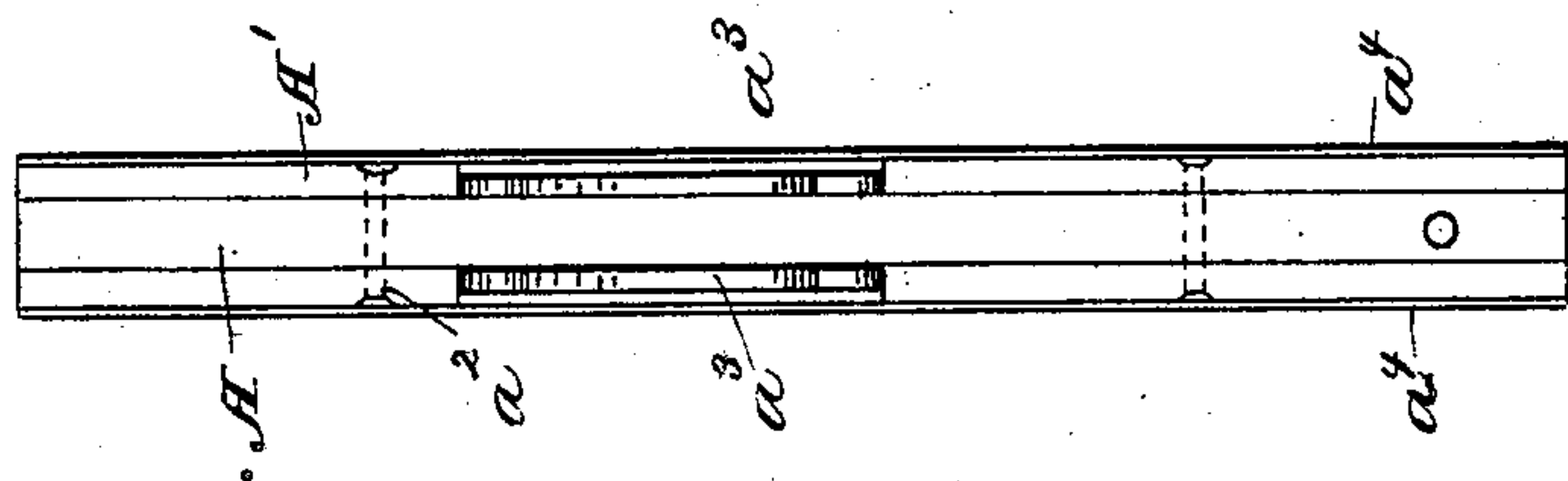


Fig. 1

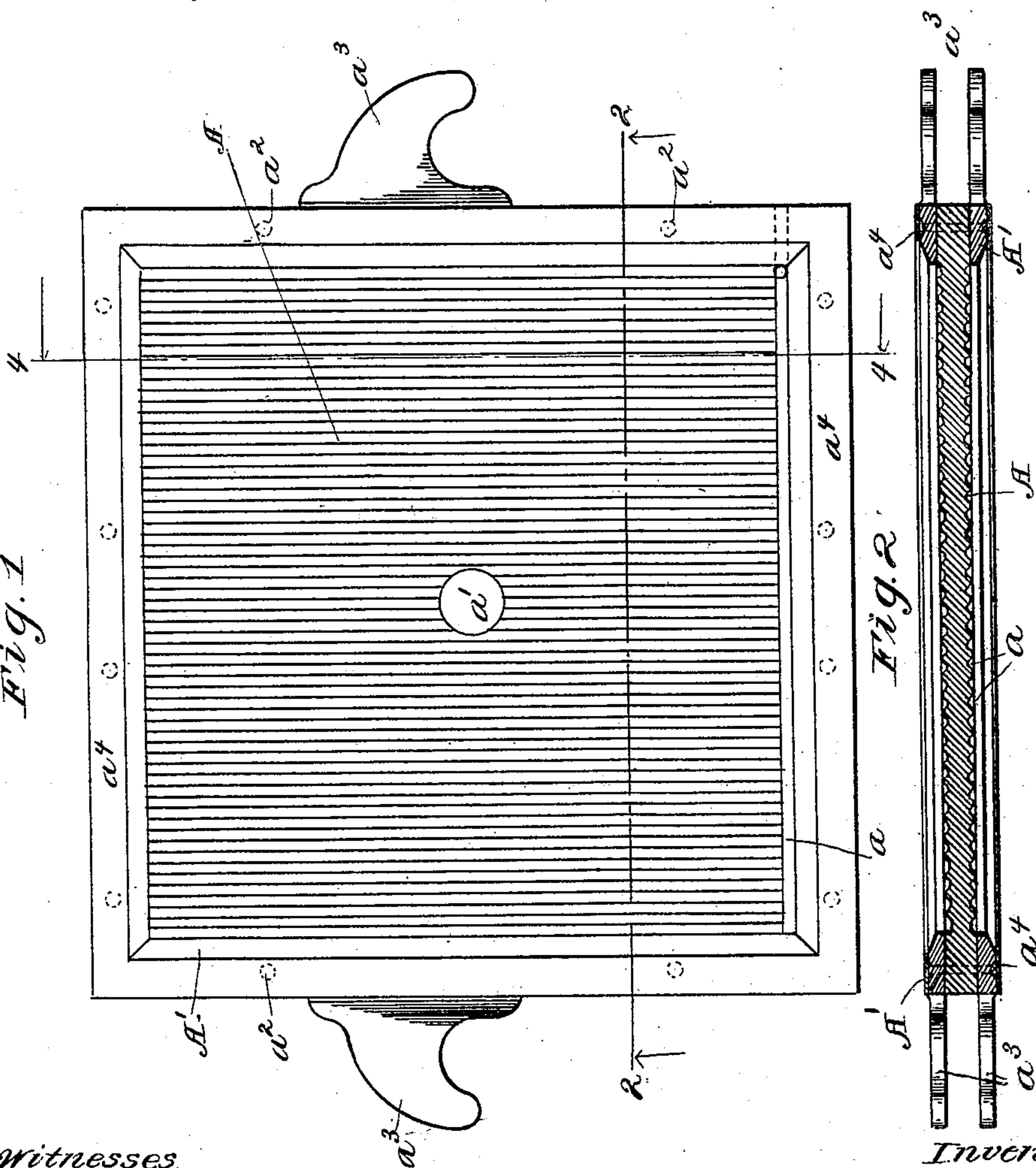
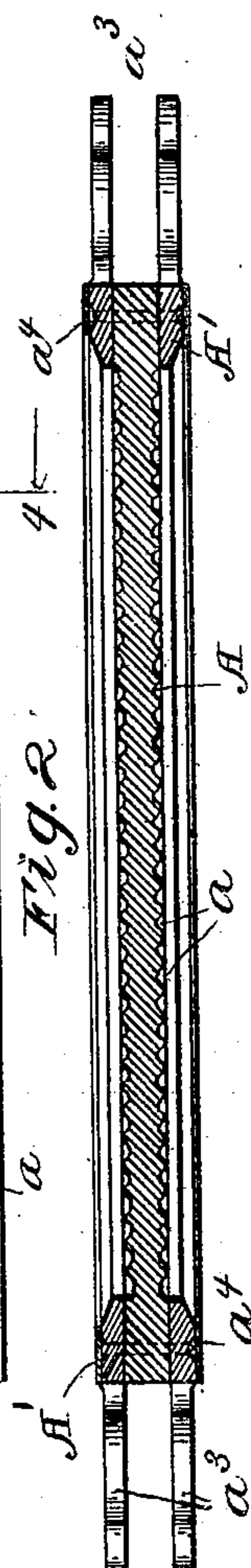


Fig. 2



Witnesses,

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UNITED STATES PATENT OFFICE.

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FILTER-PLATE.

No. 886,464.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed December 24, 1906. Serial No. 349,258.

To all whom it may concern:

Be it known that I, HOLDON M. ASHBY, a citizen of the United States, resident of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Filter-Plates, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

My invention relates to an improvement in filter presses and has particular regard to the construction of filter plates for use therein. The object of such invention is to provide a filter press plate that will combine in itself the desirable qualities of durability efficiency and inexpensiveness.

To this end said invention consists of means hereinafter fully described and particularly set forth in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means, however, constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing: Figure 1 is a plan view of a filter plate embodying my several improvements; Fig. 2 is a transverse cross-section of the same on the line 2—2, Fig. 1; Fig. 3 is an end elevation of such plate; and Fig. 4 is a transverse cross-section at right angles to that appearing in Fig. 2, being taken on the line 4—4, Fig. 1.

At present there are two types of filter plates on the market, the recessed filter plate and the flat plate which in use is alternated with hollow rings. It should be stated that it is to the former of these two types that my present invention pertains. Such recessed style of plate has heretofore been made in two styles, either of cast iron or of wood. An objection to the use of the former material in the construction of the plates arises from the fact that it is apt to prove brittle, especially where the corrugations cut into it, as they must, quite deeply, and, furthermore, in handling certain materials, the iron is inclined to rust whereby the thin sheet forming the plate proper is quickly destroyed and the plate so rendered useless. The objection to the wooden plate is that, being constructed wholly of wood, it is apt to prove weak at the joints and, hence, will give way under any except a relatively low pressure.

In fact, numerous trials have demonstrated that it cannot be safely used to stand over twenty pounds pressure.

The plate which I have devised as a substitute for both the preceding structures comprises as its base the filter plate, proper, A, which, in the particular structure chosen for the sake of illustrating my invention, is of rectangular or substantially square form. It will, of course, be understood that any variation in this form is immaterial, since the latter depends wholly upon the form of the machine in which the plates are being used. This filter plate proper consists of an integral wooden sheet A of the proper thickness, and with the usual water channels *a* grooved into its faces, giving the board in cross-section the corrugated appearance shown in Fig. 2. This wooden sheet A is then clamped between two complementary rigid frames A'. Frame A' I preferably make in the form of an iron or steel casting, and these castings are riveted together so as to tightly clamp the wood sheet therebetween by means of rivets *a*² or equivalent devices. In order to insure a tight joint between the wooden sheet A and the frames, a layer of cement or like material is used. The outer faces of the frames are furthermore provided with a felt gasket *a*⁴ cemented thereon by means of rubber cement, or the like, whereby the joints between successive plates, when mounted in the press, are made tight. The wooden sheet A is, of course, provided with suitable holes, as *a*¹, for the escape of the expressed liquid.

Having thus described the construction of my plate, it is not deemed necessary to set up in detail the manner of its use, such being well understood. I should, however, call attention to the superior qualities presented by such filter plate when in use over the older forms of plates to which reference has been made. The castings forming the frame between which the wooden sheet is clamped are made sufficiently strong to give rigidity to the latter and prevent all sidewise warping thereof. They also provide a rigid support to which the top and bottom of the plate are attached. As a result of this construction, the plate is put under tension, as it were, and the strain to which it is subjected in actual use affects only the tensile strength of the wood fibers. This is obviously not the case in the ordinary wooden plate, where the strength of the joints between the edges of the plate proper and the frame is the limit of

the strength of the whole plate. The plate is practically indestructible since wood, as is well known, is least affected of all ordinary materials by the liquids usually met with in the use of filter presses. The action of such liquids, while frequently causing the rapid corrosion of the thin metallic or iron plate has, as has been stated, only a relatively slow action on the heavy rim or frame, so that the latter is not particularly injured even where of iron. Furthermore, the plate can be produced at a much lower cost than can any of the other plates above described. This for the reason that, by using wood in combination with the metal, it is made possible to do away with any machining or finishing of the surface of the metal, the wood being sufficiently soft to take up any inequalities of the latter. Such inequalities, as far as a tight junction between adjoining plates in the assembled press is concerned, are, of course, taken care of by the felt gaskets. It will be understood that other material than wood, such, for instance, as hard rubber, papier-mâché, celluloid, or the like, may be substituted for the same in the construction of the plate, where for any reason these other materials may prove more desirable. Likewise the frame, instead of being in the form of a metallic casting, may be stamped out of sheet metal, a method of manufacture that will still further decrease the cost.

Having thus described my invention in detail, that which I particularly point out and distinctly claim, is:

1. In a device of the character described, the combination with a rigid inflexible metallic frame, of a non-metallic filter plate proper firmly secured to said frame so as to be maintained in a state of tension.

2. In a device of the character described, the combination with a rigid inflexible metallic frame, of a filter plate proper consisting of an integral sheet of fibrous material firmly secured to said frame whereby the fibers thereof are maintained in a state of tension.

3. In a device of the character described, the combination with a rigid inflexible frame, of a filter plate proper consisting of an integral sheet firmly secured about its entire periphery to said frame so as to be maintained in a state of tension.

4. In a device of the character described, the combination with a rigid inflexible me-

tallic frame, of a wooden sheet constituting the filter plate proper, said sheet being firmly secured at its edges to said frame, whereby the fibers of the sheet are maintained under tension.

5. In a device of the character described, the combination with a filter plate proper consisting of an integral sheet of fibrous material, of two rigid inflexible frames, the edges of said sheet being firmly clamped between said frames about said sheet's entire periphery, whereby the fibers thereof are maintained under tension.

6. In a device of the character described, the combination with a filter plate proper consisting of an integral wooden sheet, of two rigid metallic frames, the edges of said sheet being firmly clamped between said frames, whereby the fibers thereof are maintained under tension.

7. In a device of the character described, the combination with a filter plate proper consisting of an integral wooden sheet, of two rigid metallic frames, the edges of said sheet being clamped between said frames and the latter being firmly riveted together whereby a tight joint is formed and the fibers of said sheet maintained under tension.

8. In a device of the character described, the combination with a filter plate proper consisting of an integral wooden sheet having its faces channeled, of two cast iron frames, the edges of said sheet being firmly clamped between said frames whereby a tight joint is formed.

9. In a device of the character described, the combination of a filter plate proper consisting of an integral wooden sheet having its faces channeled and being provided with suitable apertures for the escape of the expressed liquid; two complementary cast-iron frames, the edges of said sheet being firmly clamped between said frames and a layer of cement being interposed between said sheet and said frames, respectively, whereby a tight joint is formed; and a felt gasket cemented on the outer face of each of said frames.

Signed by me, this 19th day of December 1906.

HOLDON M. ASHBY.

Attested by—

HENRY PETERSON,
J. L. MORRIS.