

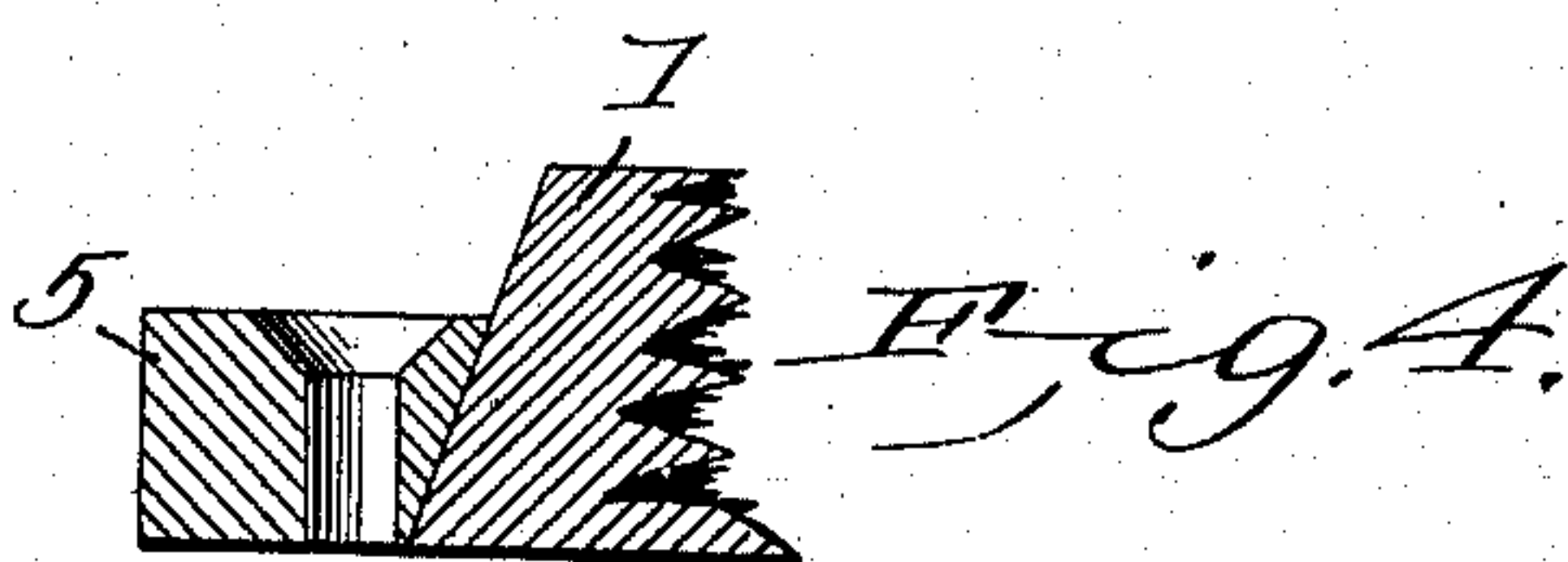
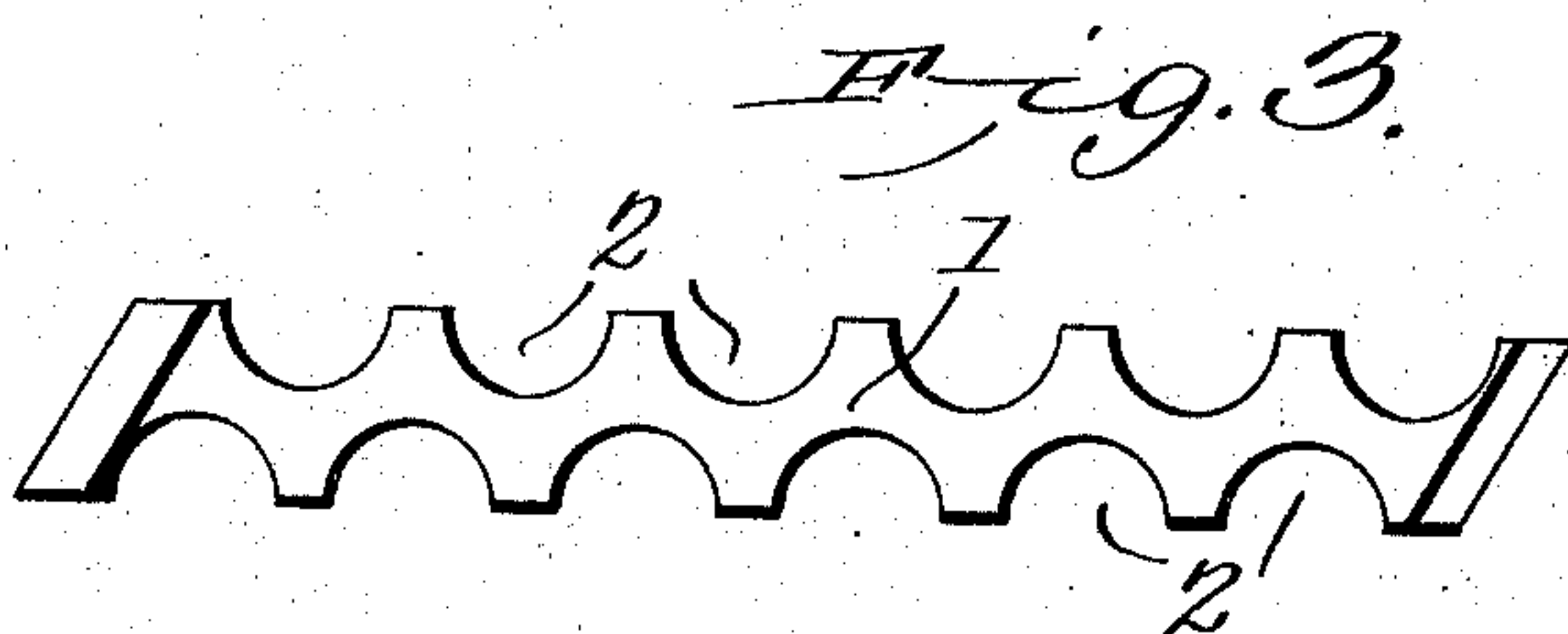
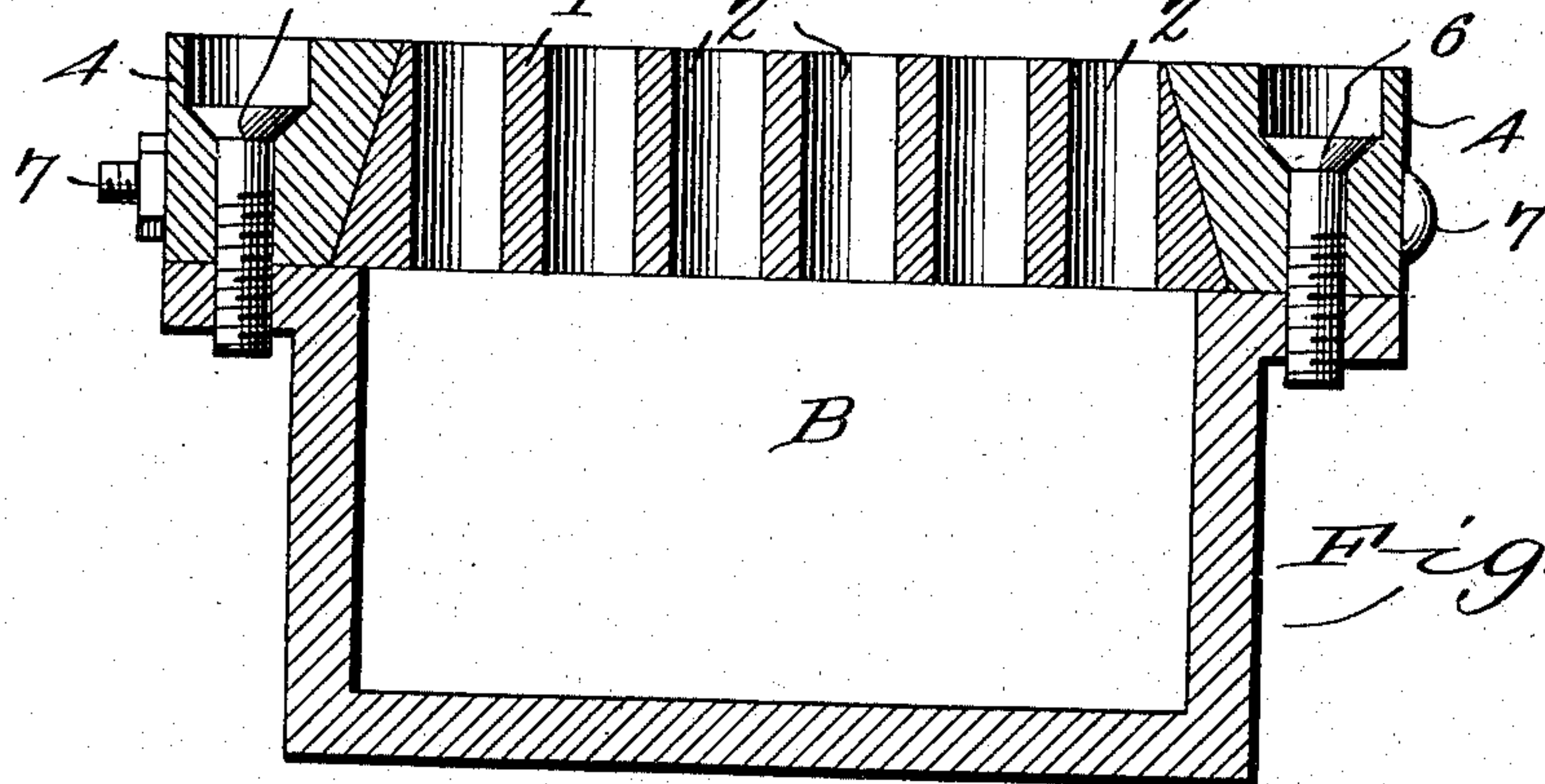
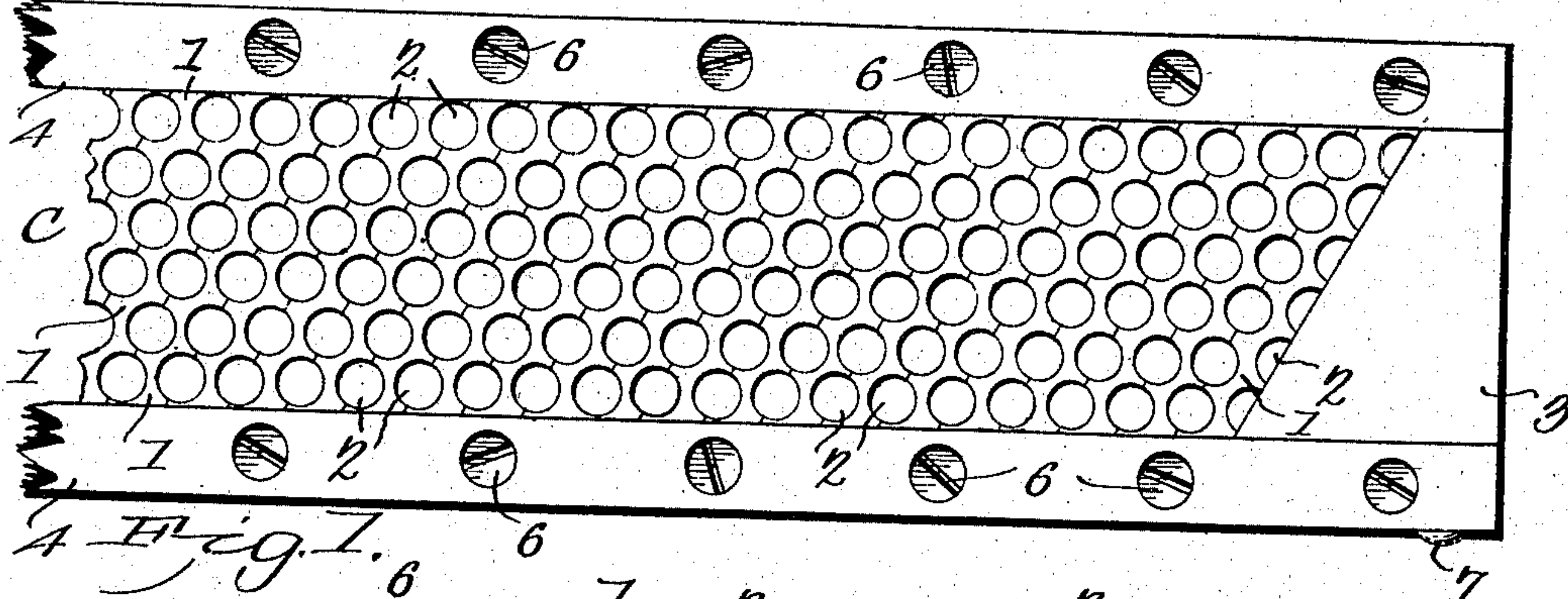
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SUCTION BOX COVER FOR PAPER MAKING MACHINES.

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NO MODEL.



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UNITED STATES PATENT OFFICE.

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SUCTION-BOX COVER FOR PAPER-MAKING MACHINES.

SPECIFICATION forming part of Letters Patent No. 751,095, dated February 2, 1904.

Application filed June 29, 1903. Serial No. 163,642. (No model.)

To all whom it may concern:

Be it known that we, THOMAS D. McANULTY, EUGENE O'BRIEN, and WARREN FRENCH, citizens of the United States, residing at Eau Claire, in the county of Eau Claire and State of Wisconsin, have invented a new and useful Suction-Box Cover for Paper-Making Machines, of which the following is a specification.

10 This invention relates to suction-box covers for paper-making machines.

The principal object of the invention is to provide a suction-box cover for paper-making machines which will have a maximum of durability in service and upon which the wear will take place uniformly over the exposed surface, so as to present at all times a smooth surface over which the Fourdrinier wire travels.

20 A further object of the invention is to produce a suction-box cover of simple construction which may be placed in position with little difficulty and in a very short time.

25 A further object of the invention is to improve suction-box covers by providing a cover which by wearing uniformly will reduce to a maximum the injury to the Fourdrinier wire from passage over the suction-box.

30 A further object of the invention is to provide a suction-box cover which will insure the uniform removal of water from the sheet of moist pulp passing over the suction-box, and consequently insure a full impression of the dandy-roll.

35 A further object of the invention is to provide a suction-box cover the openings of which will always remain open, and so prevent the necessity of stopping the machine for removing and cleaning the suction-box cover.

40 A further object of the invention is to provide an improved form of attaching means for a suction-box cover which will be durable and which may be easily removed or put in place.

45 A further object of the invention is to provide a suction-box cover whose surface is adapted to become smoother with use, and consequently to lessen the friction of contact of the Fourdrinier wire therewith.

A final object of the invention is to provide 50 a form of suction-box cover which may be manufactured cheaply from wood from which it is impossible to obtain large pieces free from knots.

In the attainment of all the objects above 55 stated we make use of the construction and combination of parts of a suction-box cover hereinafter described and claimed, and illustrated in the accompanying drawings, forming a part of this specification, in which corresponding parts are designated by the same 60 characters of reference throughout the several views, it being understood that changes in the form and proportions of the elements may be made without departing from the spirit of the 65 invention or sacrificing its advantages.

In the drawings, Figure 1 is a plan view of a portion of a suction-box cover constructed in accord with our invention. Fig. 2 is a transverse sectional view through a suction- 70 box provided with our improved cover. Fig. 3 is a plan view of one of the strips used in forming the suction-box cover. Fig. 4 is a detail view showing a modified form of securing means for the suction-box cover. 75

Referring to the drawings, C designates generally a suction-box cover composed of a plurality of strips 1, of wood cut across the grain, as shown, so that when the strips are in position at the top of a suction-box the upper surface of the cover formed thereby will be disposed transversely of the grain of the wood in each of the strips, so that the Fourdrinier wire of the machine, which passes over the top of the suction-box cover, will rest upon 85 the ends of the fibers of which the wood is composed. Each of the strips 1 is disposed obliquely across the top of the suction-box, as shown, and the ends are disposed at oblique angles to the sides of the strips and are also 90 inclined outward and downward, so that the base of each strip is longer than the top of it, as best seen in Fig. 2. Each strip is provided upon both sides with a plurality of semicircular grooves 2, extending from the top to the 95 bottom of the strip, and hence running longitudinally of the grain of the wood. The grooves 2 are preferably formed upon a ra-

dius of three-eighths of an inch, and the grooves upon the opposite sides of each strip are so arranged that when the strips are in the position shown in Fig. 1 the grooves upon the opposite sides of one strip register with the grooves upon adjacent sides of adjoining strips to form circular openings extending from the top to the bottom of the suction-box cover. At each end of the suction-box there is provided an end piece 3 of trapezoidal form, one of which is shown in Fig. 1. The side rails of the suction-box may be bars of wood 4, as shown in Fig. 2, in which case the upper surface of the side rails will lie flush with the top of the suction-box cover, or the side rails may be formed of metal bars 5, as seen in Fig. 4, in which case the upper surface of the side rails will lie below the top of the suction-box cover in order that the unequal rates of wear of the metal side rails and wooden strips forming the cover of the suction-box may not have an injurious effect upon the Fourdrinier wire of the machine. Whether the side rails of the cover be formed of wooden bars 4 or metal bars 5, the side rails will be undercut, as shown in Figs. 2 and 4, to cooperate with the outwardly and downwardly inclined ends of the strips 1 to secure the strips in position. The rails at the sides of the cover will be secured in position by screws 6, passing through openings in the rails and through the flanges projecting laterally from the top of each side of the suction-box B, and the end pieces 3 will be secured in position by bolts 7, passing through said end pieces and through the rails 4 or 5, as the case may be.

Owing to the fact that the ends of the wood fibers wear more slowly and more uniformly than the sides thereof a suction-box cover formed with the wearing-surface transverse to the wood fibers wears slowly and with almost complete uniformity, whereas when the wood of which the suction-box cover is made is laid so as to present the sides of the fibers on the wearing-surface the wood tends to wear into ridges and grooves, owing to the unequal hardness of the different parts of the exposed surface. The production of inequalities in the wearing-surface of a suction-box cover is extremely detrimental to the Fourdrinier wire of paper-making machines because the friction of contact is not uniformly distributed over the under surface of the wire, but is localized in streaks, which tends to wear out the Fourdrinier wire much more rapidly than when the friction is uniformly distributed. A further disadvantage resulting from unequal wear of the upper surface of a suction-box cover is found in the effect upon the output of the machine when the suction-box cover has been worn on its upper surface into ridges and grooves. The paper formed by a machine in which the suction-box cover has become so worn is not of uniform quality, but is thicker than it should be in some parts and thinner in

others, often causing the paper to break in the machine, which necessitates stopping the machine and connecting the broken ends of the web of paper, or if the web of paper does not break in the machine the finished product is not serviceable in use and gives rise to many complaints from the users thereof. By making the suction-box cover with the grain of the wood disposed substantially at right angles to the wearing-surface a cover is obtained which with use wears exceedingly smooth on the upper surface, and hence actually diminishes the friction of the Fourdrinier wire on the upper surface thereof after the cover has become somewhat worn.

The advantage resulting from providing the cover of the suction-box with openings having a radius of three-eighths of an inch is that openings of such large size will not clog with the particles of paper-pulp drawn through the meshes of the Fourdrinier wire and into the openings in the cover of a suction-box. This prevention of clogging in the openings of the suction-box insures a uniform effect over all parts of the sheet of paper-pulp passing over the suction-box, and the pulp passes from the suction-box to the dandy-roll uniformly free from water throughout. The dandy-roll therefore contacts uniformly with the paper-pulp and insures a degree of uniformity of texture otherwise unattainable.

By forming the suction-box cover of narrow strips of wood it is possible to use wood from which it is impossible to obtain large pieces entirely free from knots, as by judicious cutting it is possible to obtain many strips of wood free from knots and of a degree of hardness and smoothness of grain suitable for the purpose when pieces large enough to make an entire suction-box cover are unattainable. Moreover, it is possible by using strips of wood to sort out the strips into classes according to their hardness and fineness of grain, and so obtain covers composed throughout of wood of almost perfect uniformity of texture, whereas it is a matter of extreme difficulty when a suction-box cover is made from a single piece of wood to secure a uniform degree of hardness and fineness of grain throughout.

The formation of the strips of the suction-box cover with outwardly and downwardly inclined ends adapted for use with undercut rails makes the application of the suction-box cover to the suction-box a matter of very little difficulty, as no close fitting of tenons into mortises is necessary and no fastening means other than the screws for attaching the side rails and the bolts for securing the end pieces is required.

When the suction-box cover is in use upon a paper-making machine, the Fourdrinier wire travels over the upper surface thereof in the usual manner, carrying with it the paper-pulp in a sheet of loose texture, from which moisture is withdrawn by suction in the usual man-

ner, and the sheet then passes on without stopping in its course to the dandy-roll and other elements of the machine by which it is converted into a finished product.

5 Having thus described the construction and use of our invention, what we claim as new, and desire to secure by Letters Patent, is—

10 1. A suction-box cover of wood in which the grain is disposed substantially perpendicular to the exposed surface of the suction-box cover.

2. A suction-box cover for paper-making machines composed of strips of wood in which the grain is disposed substantially perpendicular to the exposed surface.

15 3. A suction-box cover for paper-making

machines composed of strips of wood having the grain disposed substantially perpendicular to the exposed surface and each having a plurality of grooves disposed longitudinally 20 of the grain of the wood.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of witnesses.

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EUGENE O'BRIEN.
WARREN FRENCH.

Witnesses:

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