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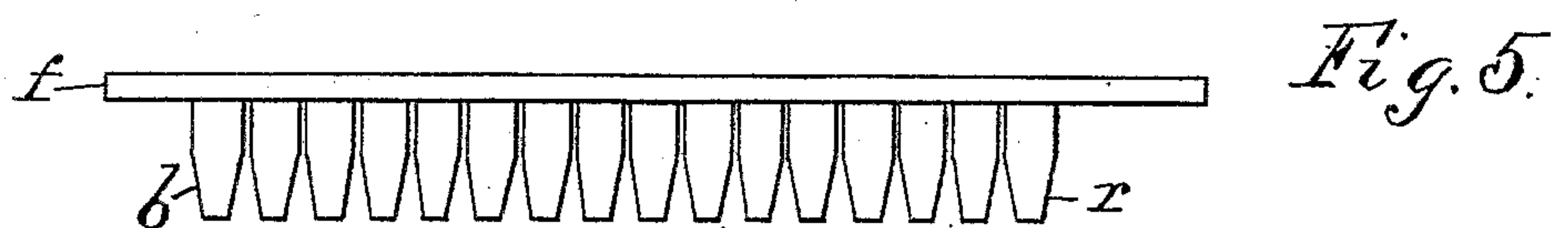
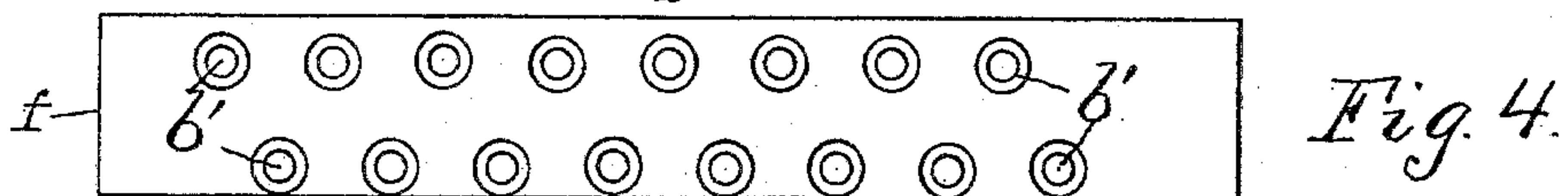
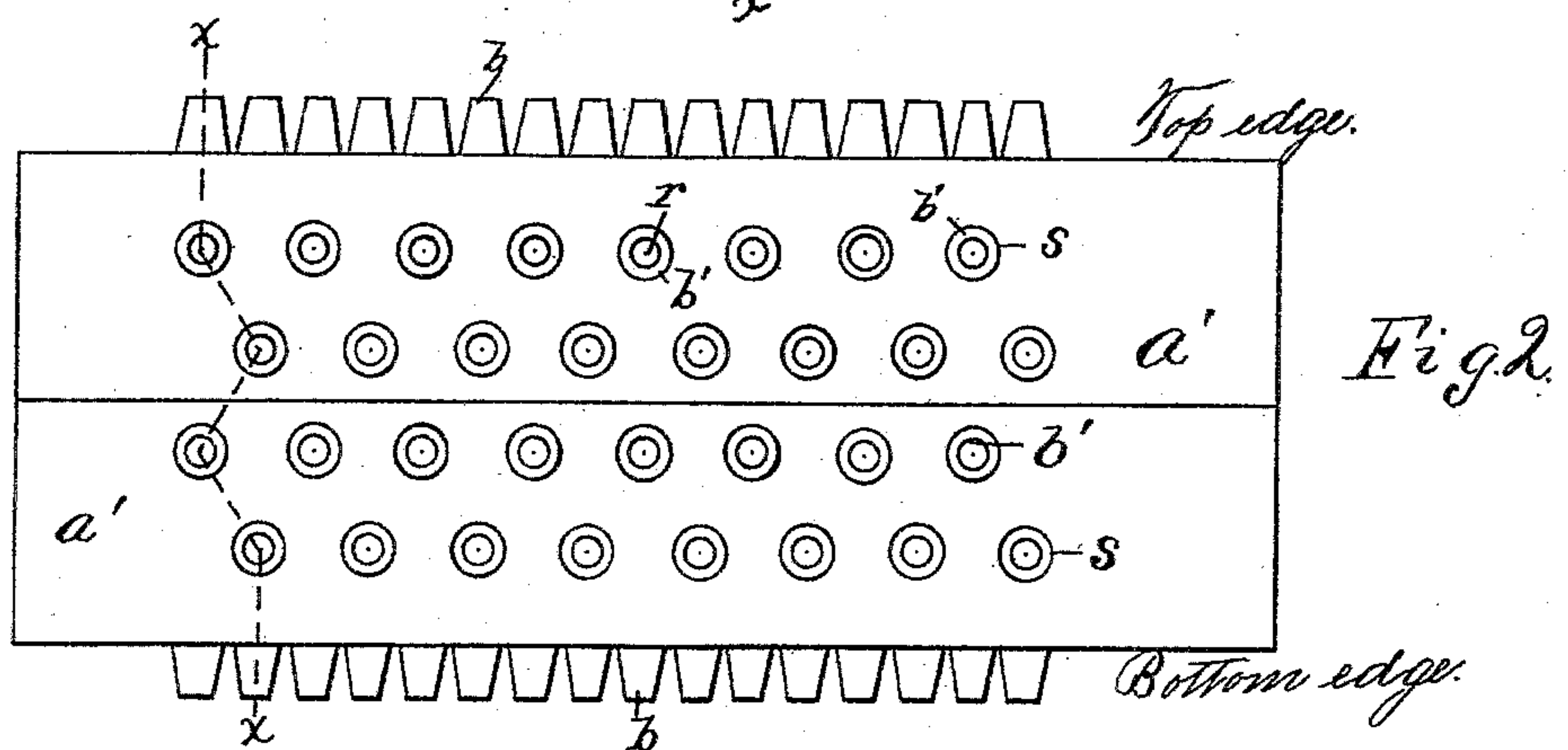
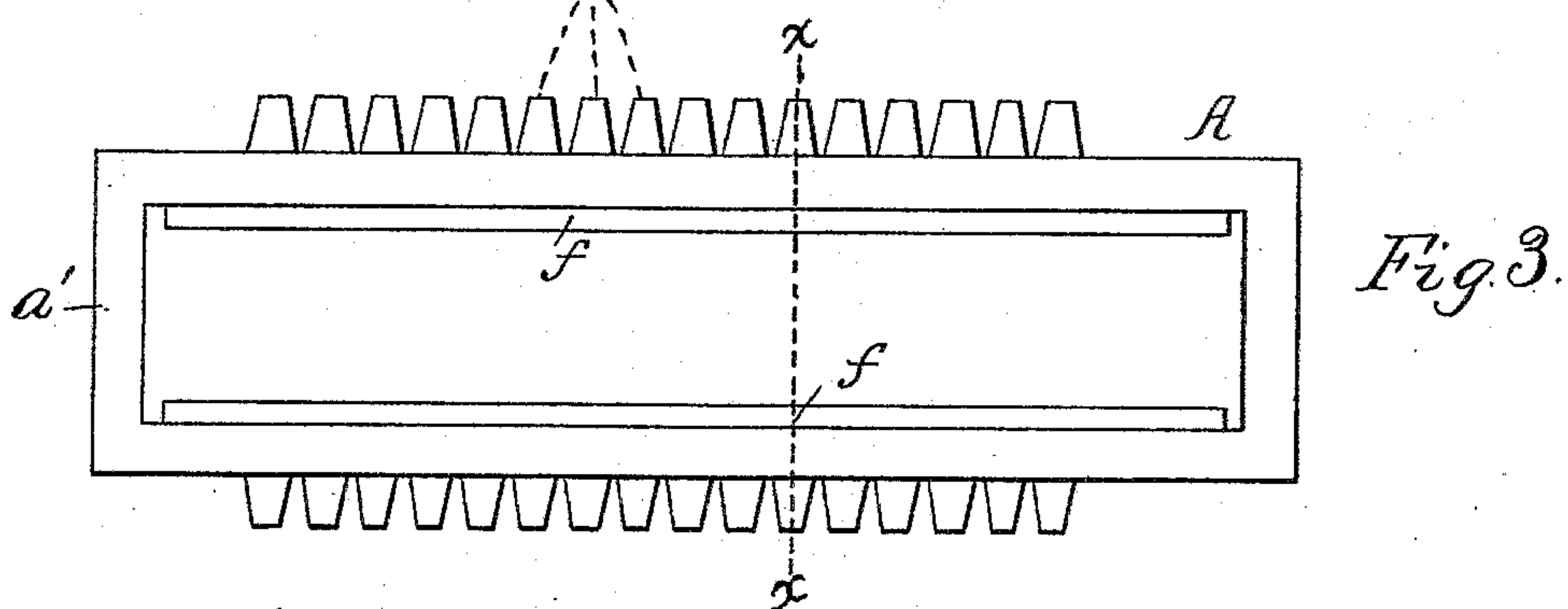
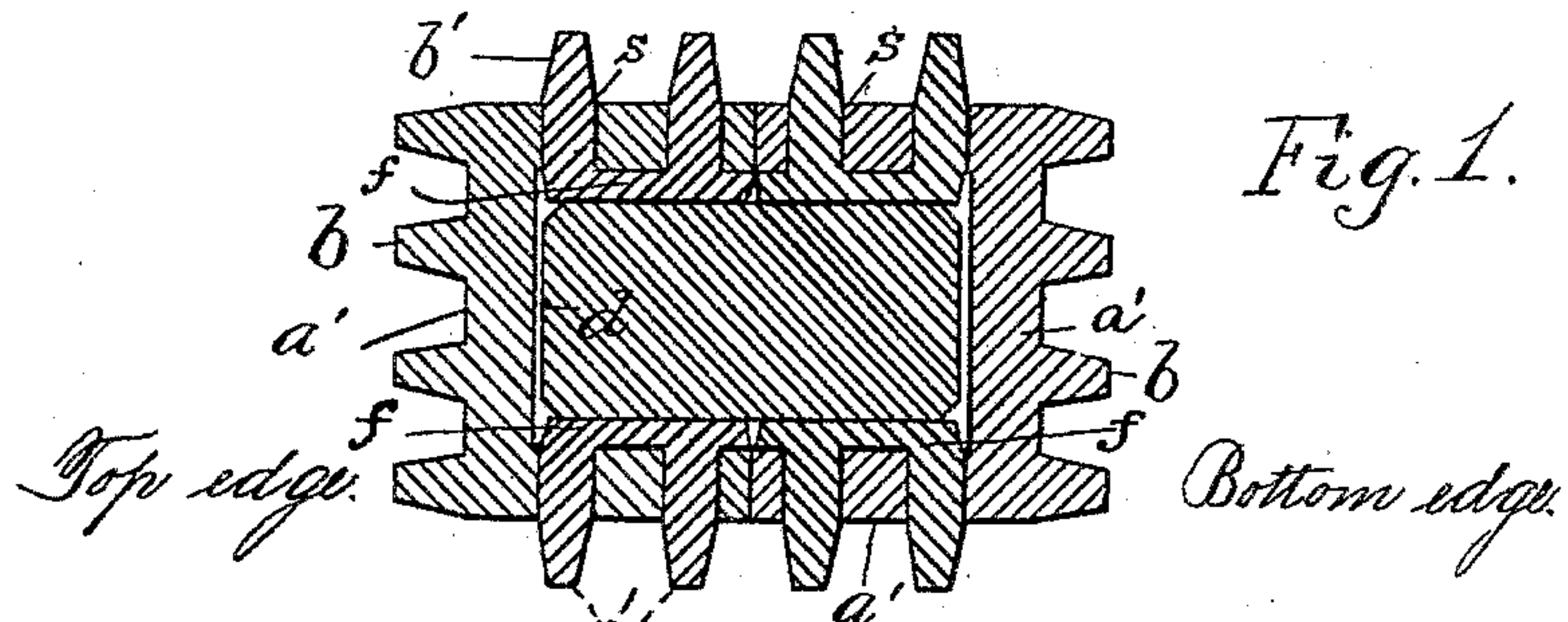
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J. J. HOGAN.

PATTERN FOR CASTING RIBBED ARTICLES.

No. 414,705.

Patented Nov. 12, 1889.



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F. C. Fischer.

Inventor.

John J. Hogan, per
Charles Miller, Atty.

(No Model.)

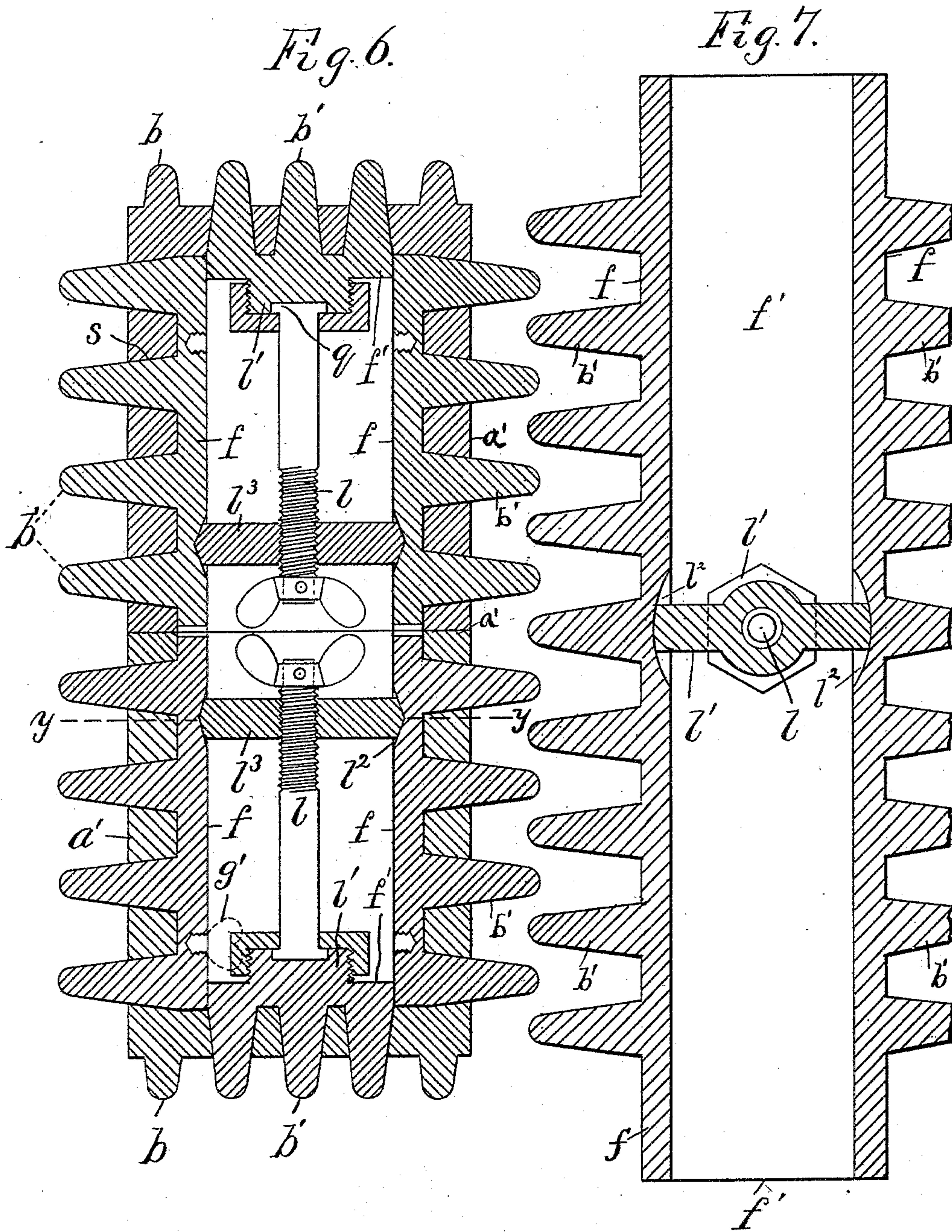
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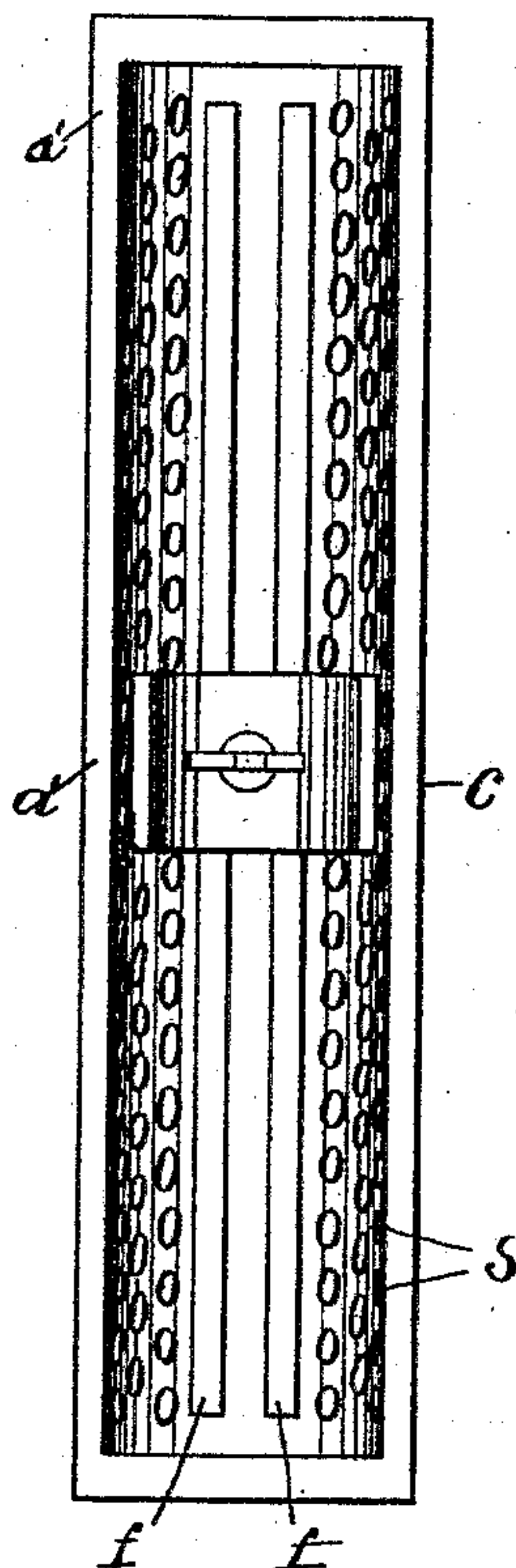


Fig. 9.

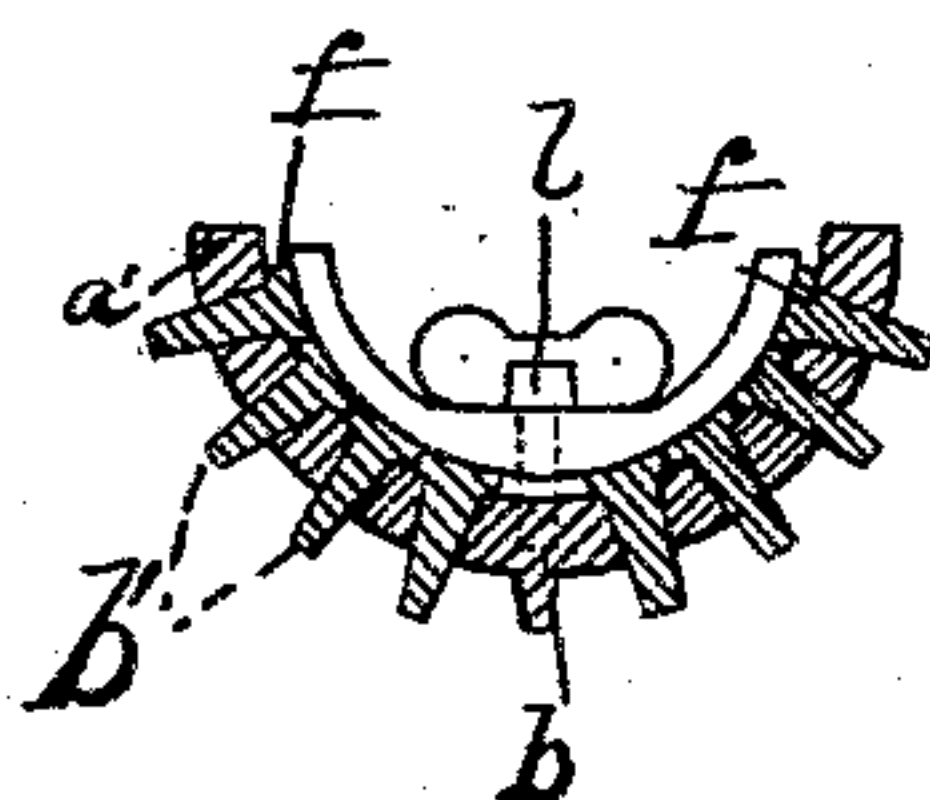


Fig. 8.

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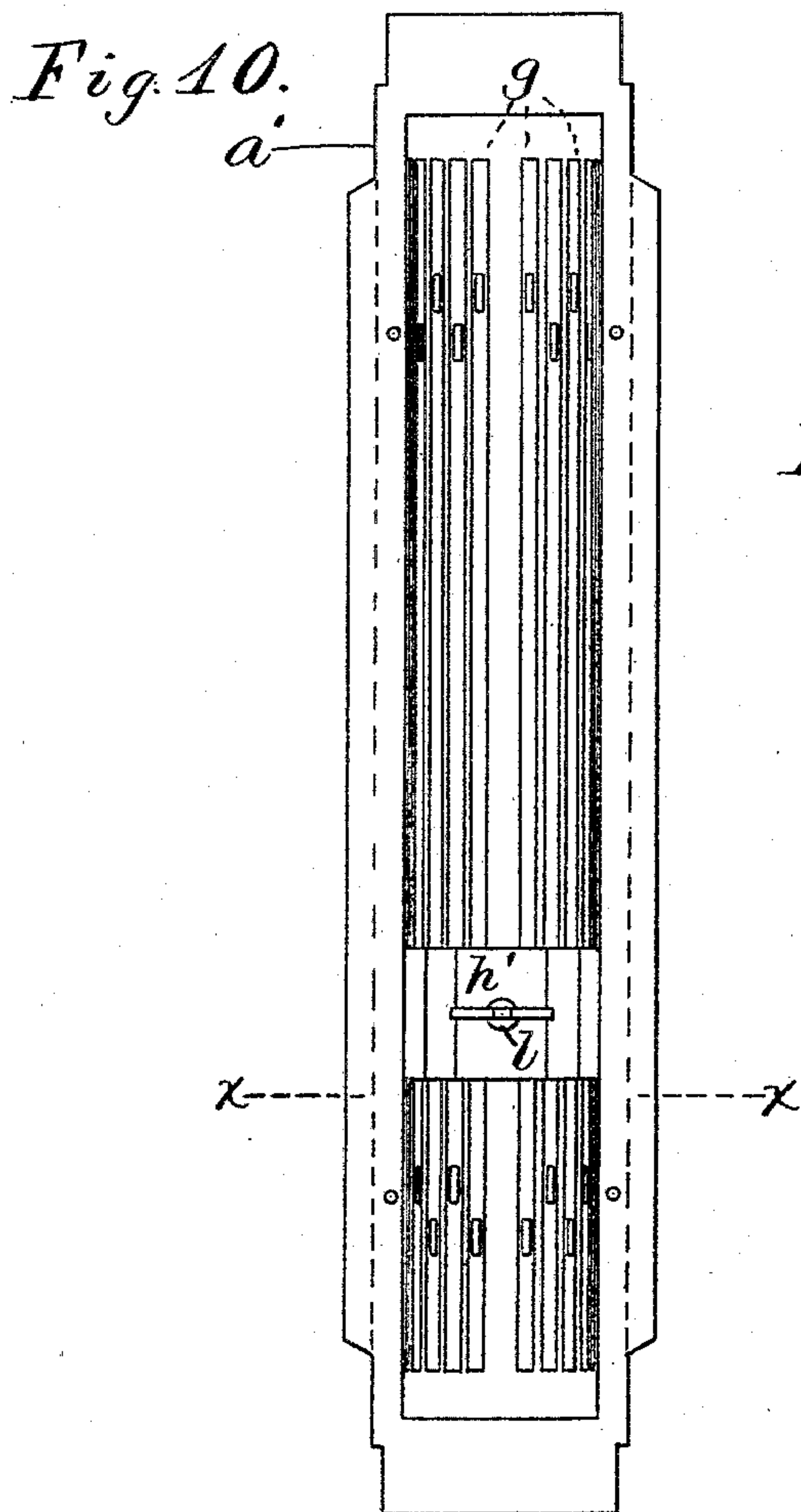


Fig. 13.

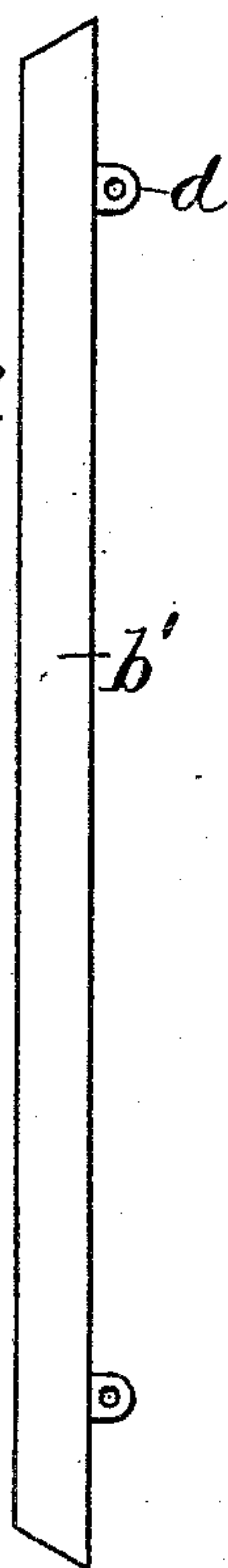


Fig. 14.

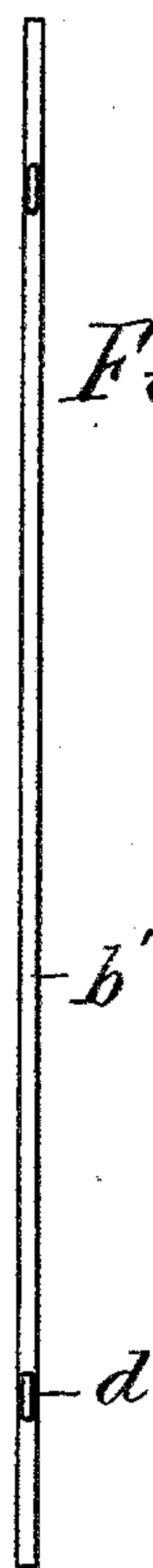
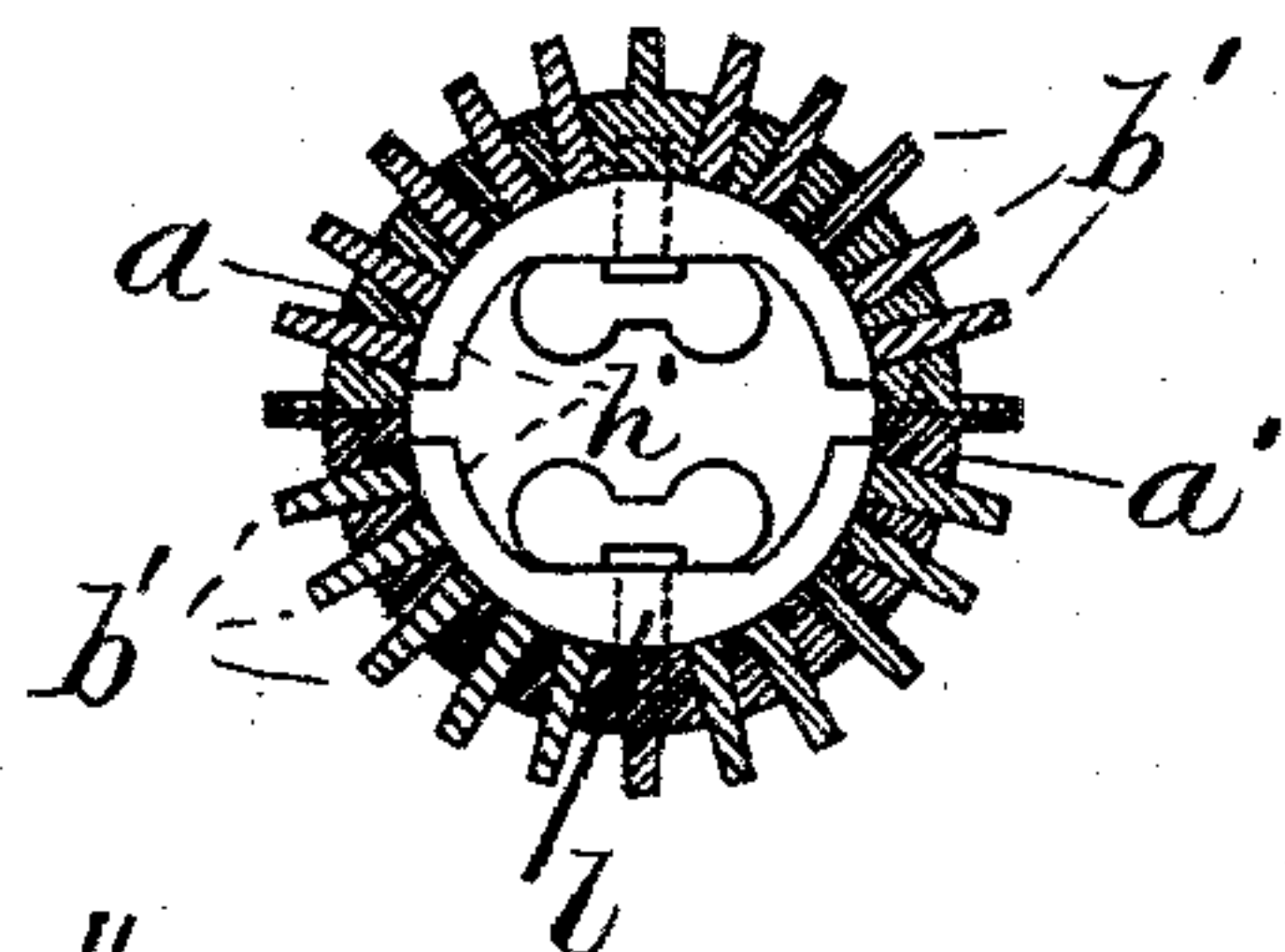
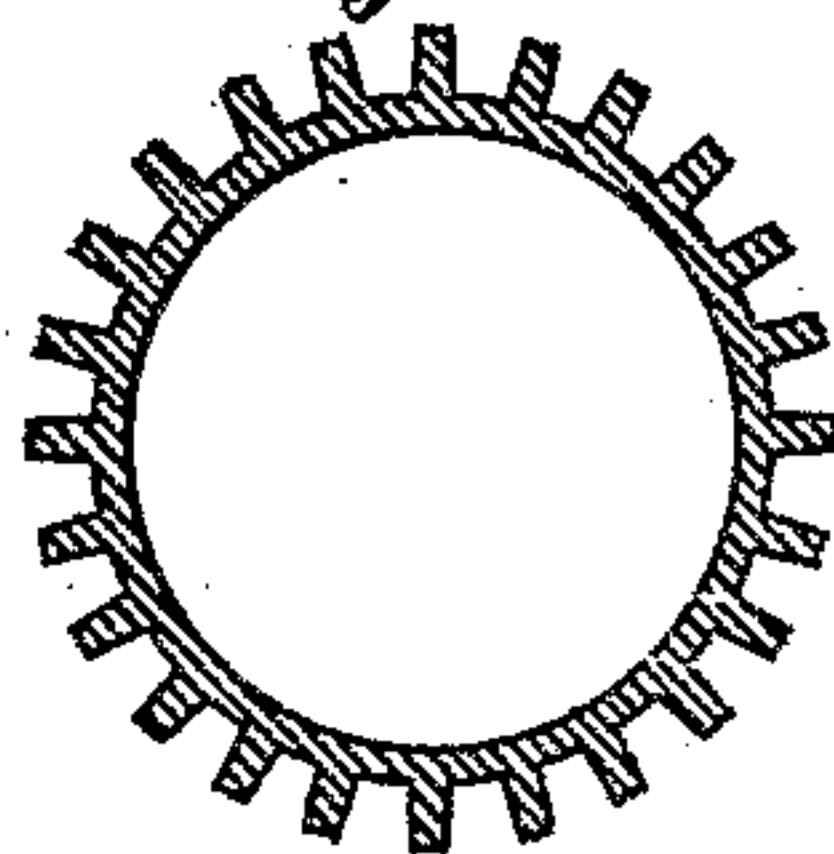


Fig. 11.



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Fig. 12.



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UNITED STATES PATENT OFFICE.

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PATTERN FOR CASTING RIBBED ARTICLES.

SPECIFICATION forming part of Letters Patent No. 414,705, dated November 12, 1889.

Application filed June 6, 1888. Serial No. 276,202. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. HOGAN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Patterns for Forming Projections on Castings, of which the following is a specification.

The object of this invention is to provide a cheap and simple means for retracting a series of pins from the sand when molding radiator-patterns which are covered more or less with projecting pins.

The invention consists, primarily, in the combination, with a hollow shell divided to expose the interior and having a series of holes formed in the shell, of a series of movable pieces fitted through the holes and projected from the exterior of the shell, and held in place during the molding operation by a clamp held upon their inner ends. Such construction necessitates the opening of the mold and the division of the pattern to detach the clamp before the series of projecting pieces can be retracted through the shell or the pattern lifted from the mold.

It also consists in a pattern having a hollow shell with several series of holes in different sides, with several series of pins fitted thereto, and several carriers to sustain such pins, and clamped in position within the shell by pressing the carriers against the several sides during the molding operation. By a parallel arrangement of the pins and holes a single carrier is able to sustain a whole series of pins externally to the pattern during the molding operation, and the operator is enabled at the completion of such operation to open the pattern and draw the pins within the pattern, so that the latter may be lifted from the mold. By forming the carrier for a single series of pins as a single plate, and locking the same in its operative position by merely pressing it against the inner side of the shell, a very cheap construction is secured, and by dividing the shell of the pattern and operating the carrier from the interior of the same I avoid the use of any complicated mechanism to operate the carriers from the exterior of the shell, and do not employ any hand-shaft or other parts projected from the outside of the pattern. By my con-

struction a pattern having a series of longitudinal ribs projected from different sides may be molded and each rib retracted from the sand separately to permit the subsequent lifting of the body of the pattern. A whole series of pins may also be simultaneously removed from the sand by retracting a single carrier before the shell or body of the pattern is lifted from the mold, and the sand is thus held firmly and protected from breaking down between the several projections when the latter are withdrawn, and the interference of the pins with the lifting of the pattern is wholly prevented.

The invention consists, also, in certain details of construction, which will be fully understood by reference to the annexed drawings, in which—

Figure 1 is a transverse section of a pattern for a rectangular radiator on line *x x* in Fig. 3. Fig. 2 is an external view of one side of the pattern. Fig. 3 is a view of the interior of one-half of the same when opened. Fig. 4 is a front view, and Fig. 5 an edge view, of a carrier and its pins detached from the flat radiator. Fig. 6 is a section of a radiator with carriers and pins applied to all of its four sides, and Fig. 7 is a longitudinal section of the carriers and clamp on line *y y* in Fig. 6. Fig. 8 is a transverse section of half of a pattern for a cylindrical radiator with radiating pins, and Fig. 9 is an interior view of the same. Fig. 10 is an internal view of one-half of a hollow cylindrical shell provided with a series of longitudinal ribs and a clamp to hold the same in place. Fig. 11 is a transverse section of both halves of the said shell on line *x x* in Fig. 10. Fig. 12 is a transverse section of the ribbed cylindrical casting that could be formed by molding such pattern. Fig. 13 is a side view of one of the movable ribs, and Fig. 14 a view of the inner side of the same.

Figs. 10 and 11 show my invention in its simplest form, *a'* being the hollow shell, and *g* longitudinal radial slots formed in the same.

b' are the projections extended through the slots to form ribs upon the exterior of the pattern. One of such ribbed-shaped projections is shown in Figs. 13 and 14, with lugs *d* formed upon the inner side to grasp in retracting the rib or projection within the shell.

h' is a semi-cylindrical clamp fitted to the

inner ends of such projections, and l a screw adapted to hold the clamp in place. The slots are shown flared inwardly and the projections b' tapered outwardly to fit such slots, thus preventing the projections from extending through the shell beyond the desired limit.

In molding the pattern the ribs would all be projected through the slots d and the clamp secured in place, thus forming a pattern with projecting ribs, which would be molded the same as if the ribs were integral with the pattern.

When the pattern is molded, the flasks containing the mold would be separated, thus separating the two halves of the pattern and exposing the clamp inside. The clamp would then be detached, whereupon each of the ribs could be retracted separately within the pattern and the shell itself thus wholly freed from the sand, so as to lift therefrom without injury to the mold.

With a cylindrical construction, the slots g would necessarily be formed radial to the shell, and only one of the longitudinal ribs could be conveniently retracted at once; but when the projections consist in small pins they may be arranged in longitudinal rows upon such cylindrical shell, and an entire row retracted at once by attaching the whole series of pins in a row to a common carrier. Such construction is shown in Figs. 1 to 9, the shell of the pattern being divided in all cases to expose the interior when operating the clamp or the projections.

The holes s to receive the pins are made in sets or series, with the holes in each series parallel, and the carrier f is attached to all the pins in one series. The pins in each series are also parallel, so that an inward movement of the carrier may retract them all simultaneously.

In Fig. 1 the pattern is shown of rectangular form, divided longitudinally through its thickness, so as to be molded on edge, and as the pins b upon such edges would readily draw from the mold they are shown fixed rigidly to the pattern. Each half of the hollow shell is shown provided upon its opposite inner flat sides with a single carrier f , and a block d is shown inserted between such opposed carriers within the mold to clamp them against the shell a' during the molding operation. The bottom side or edge of the pattern is shown at the right-hand side of Fig. 1, and would be bedded in the lower half of the mold, with the joint in the pattern at the parting-line of the flask. While molding such lower half of the pattern, the carriers f belonging in such part of the pattern would be inserted, with the pins projecting from the holes in the shell, and the block d would be inserted between such carriers to hold them in their operative position. (Shown in Fig. 1.) When such half of the pattern was molded, the upper half of the pattern-shell, with its carriers inserted, as shown in Fig. 1, would be applied to

the lower half over the clamp-block d . The top flask of the mold would then be applied and the sand would be rammed about the upper part of the pattern, as usual. The same method of procedure would be had with any other form of pattern described herein.

When the pattern is molded, the halves would be separated by the opening of the mold and the block d removed. The carriers or plates f may then be separately drawn inward to retract the pins within the holes s , and the carriers, with their attached pins, may also be removed from each half of the pattern to lighten it before drawing the halves of the pattern from the opposite parts of the mold. The projecting pins b' upon the sides of the pattern being thus wholly removed from the sand, the pattern may be readily lifted from the mold. The sand between the recesses of the mold is obviously sustained by the shell a' when the pins b' are retracted, and is thus protected from disturbance at such time.

Many indirect pin-radiators are of large dimensions, and when the pattern is made of metal it is so heavy as to present great difficulties in lifting it from the mold without breaking the sand between the pins. For this reason it has been common to mold such radiators upon the flat side and to project no pins from the edge. By my construction pins can be formed upon the edge of the pattern as well as on the sides, and the heating-surface is thus largely increased.

In molding large flat pin-radiators it has been common to make the pins integral with the pattern and to loosen the same from the sand by rapping before removing the pattern from the mold; but such a construction necessitates great care, and such mode of molding consumes a great deal of time, while it causes great damage to the mold by the jarring of the sand between the pins in rapping and the contact of the pins with the sand in lifting the pattern. To mold such a pattern, having pins upon adjacent sides, I preferably mold the pattern on edge and construct a carrier f' (see Fig. 6) of suitable width to fit between the lateral carriers applied to the opposite sides, and insert such carrier within the pattern after the two lateral carriers are in place. The carrier f' thus helps to hold the lateral carriers f in place, and is itself held in place during the molding operation by a suitable clamp fitted to the opposite walls of the lateral carriers. The clamp is shown as a screw l , swiveled in the bottom carrier, and a nut l^2 , formed as a bar, with its ends inserted in notches l^2 in the inner walls of the lateral carriers. The screw has a collar-head q , held to the bottom carrier by socket l' , provided with screw-cap. By properly turning the screw when the nut is engaged in the notches l^2 the carriers are jammed firmly in their respective positions, while the turning of the nut from the notches instantly releases them all, and the bottom carrier can

then be removed and afterward the lateral ones. A thumb-screw g' may be used to draw out the lateral carriers.

In Figs. 8 and 9 a cylindrical half-pattern is shown provided with longitudinal rows of radial and parallel pins and with a separate carrier for each row of pins. These parallel pins make parallel holes in the sand of the mold, from which all the pins of each series can be simultaneously withdrawn. The pins are projected radially from the center of the pattern, and the pattern could not therefore be lifted from the mold without retracting such pins within its shell. The section is taken through the centers of the pins, as in Fig. 6, and one row of pins is shown upon the pattern attached rigidly thereto at the bottom, as such pins are lifted readily from the mold without retraction.

All the carriers (eight in number) are shown in place in Fig. 8, but all the pins and carriers are shown removed from the pattern in Fig. 9, except the two carriers adjacent to the row of fixed pins, such carriers in Fig. 9 being shown extended the whole length of the row of pins. The carriers are in both figures held in place by a semi-cylindrical clamp c , placed upon the inner sides of the same and pressed thereto by a clamp-screw l .

Where it is necessary for the construction, as in Figs. 7 and 8, to diminish the weight of the parts, as in all metallic patterns, the total number of pins to be retracted may be divided into any number of series; but the pins in each series would be connected with a single carrier to remove them with rapidity and ease.

I am aware that it is old to make projecting parts of a pattern loose and to retract them by means of a crank or cam within the pattern actuated by a handle or shaft extending outside of the pattern without opening the pattern; but I am not aware that any pattern has ever been provided with a divided hollow shell having a series of projections attached to a common carrier within the shell, and the carrier exposed by opening the shell, to retract the pins before lifting the body of the pattern from the sand.

I am also aware that it is common in machines for making sand molds to attach a series of distinct patterns (by one side of each) to a carrier for drawing them from the sand, and I therefore disclaim any such construction, or the drawing of an entire pattern from the mold by any mechanism whatever; but I am not aware that any pattern having pins upon several sides has ever been constructed with several internal carriers, each of which

operates to sustain a whole series of pins upon one side of the pattern, and all of which are exposed by the opening of the pattern, to secure the carriers in their operative position or to withdraw the pins from the sand.

My generic claim herein is adapted to cover a pattern consisting of a hollow shell composed of separable parts, each part having a series of openings provided with a series of movable pieces, whether the pieces be attached to a common carrier or not, and the pieces being held in place when in use by a clamp contained within the hollow shell. I have, however, made claim herein to a hollow shell formed in separable parts, with a series of parallel holes extended through the shell, and a series of pieces projected through the holes outside the shell, a common carrier within the shell attached to the series of pieces, and a clamp inclosed within the shell to lock the carrier in its operative position. I have also filed a separate application, Serial No. 292,640 $\frac{1}{2}$, for the construction shown in Figs. 10 to 14, inclusive, in which a common carrier cannot be used, as each series is circumferential, and as the several projections or pieces of each circumferential series are extended through radial slots they are not parallel and cannot be retracted simultaneously within the pattern. Two or more series of pins connected each with a common carrier may be used in the same pattern by forming the holes in the shell parallel for each series of pins.

Having thus set forth the nature and objects of my invention, what I claim is—

1. A pattern consisting of a hollow shell composed of separable parts, and having a series of holes extended through the shell and provided with a series of movable pieces fitted into such holes and projecting from the exterior of the shell, and a clamp for holding such pieces in place, as and for the purpose set forth.

2. In a pattern, the combination, with the hollow shell a' , formed in separable parts and having a series of parallel holes extended through the shell, of a series of pieces fitted through the holes and projected outside the shell, a common carrier within the shell attached to the series of pieces to retract them simultaneously, and a clamp, exposed by the division of the pattern, to lock the carrier in its operative position, substantially as herein set forth.

JOHN J. HOGAN.

Witnesses:

THOS. S. CRANE,
A. O. KITTREDGE.