

(No Model.)

8 Sheets—Sheet 1.

H. M. ALBEE & C. R. HEDDEN.
FLOOR PLANING MACHINE.

No. 414,275.

Patented Nov. 5, 1889.

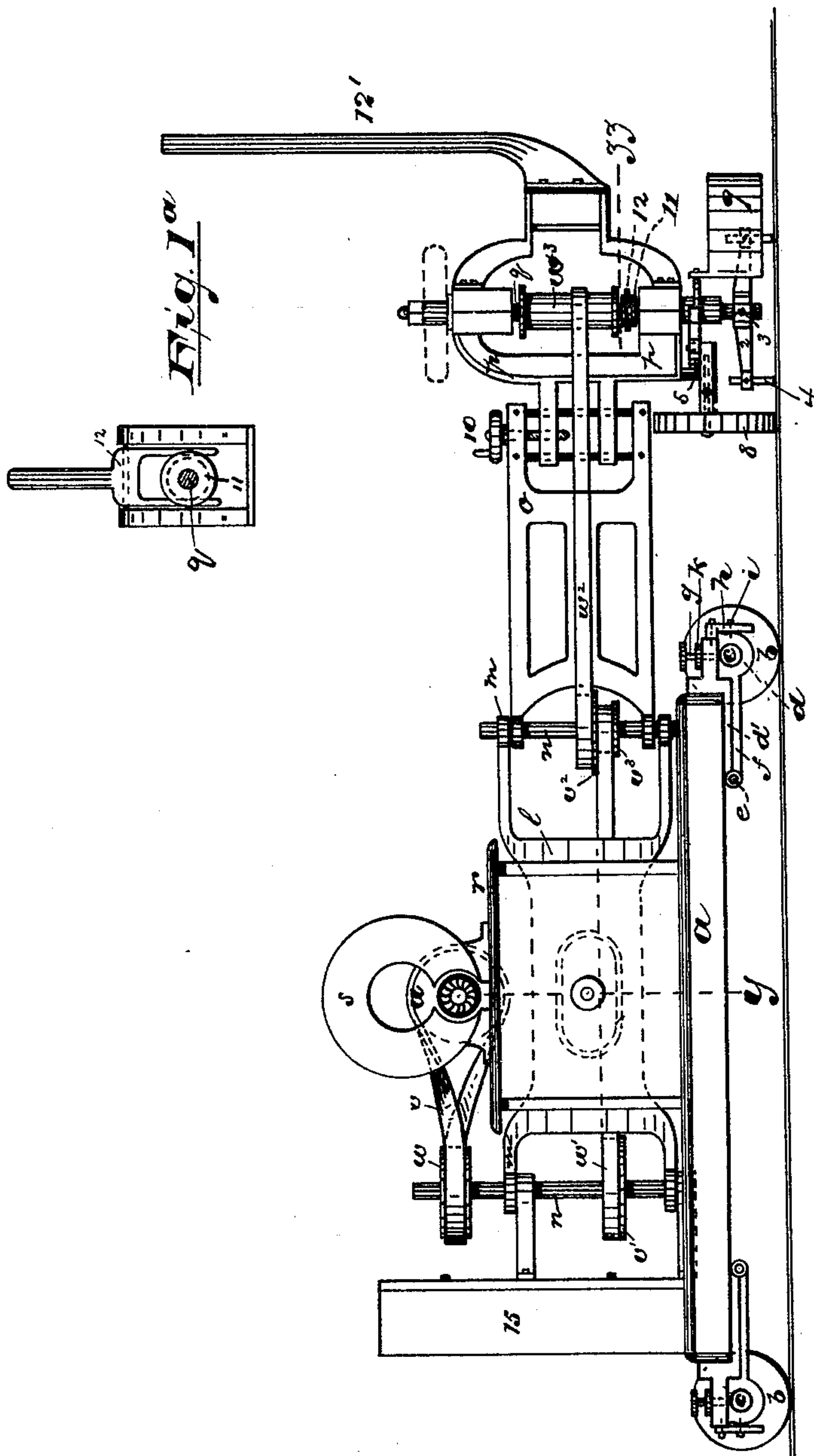


Fig. 1.

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E. L. Sherman

Honestus M. Albee,
Charles R. Hedden,

by *W. A. K. Co.* Attys

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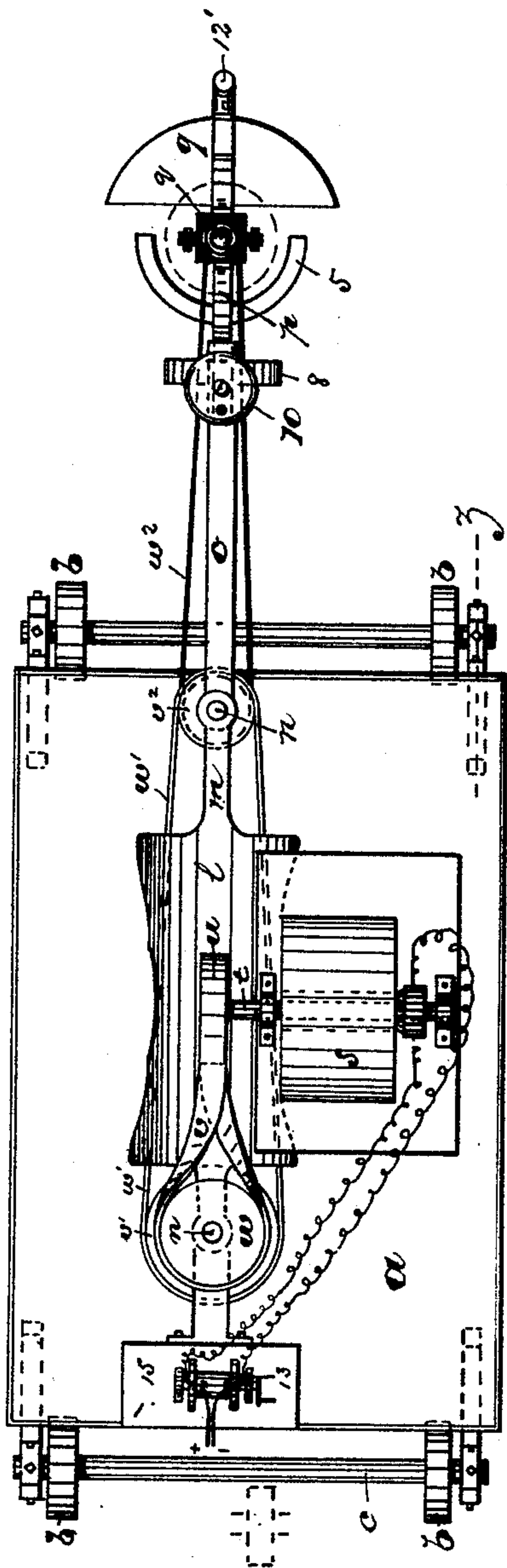


Fig. 2.

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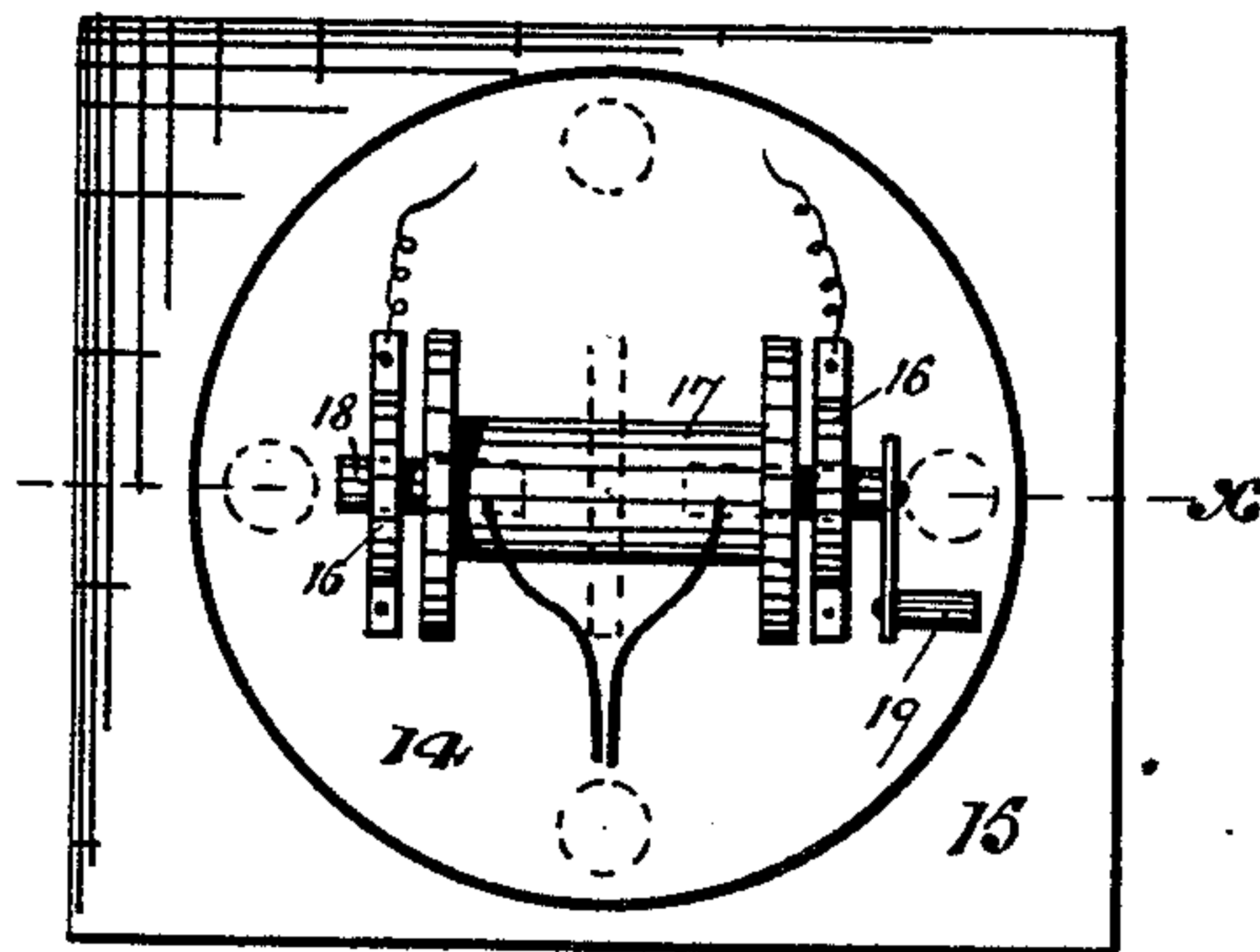


Fig. 3.

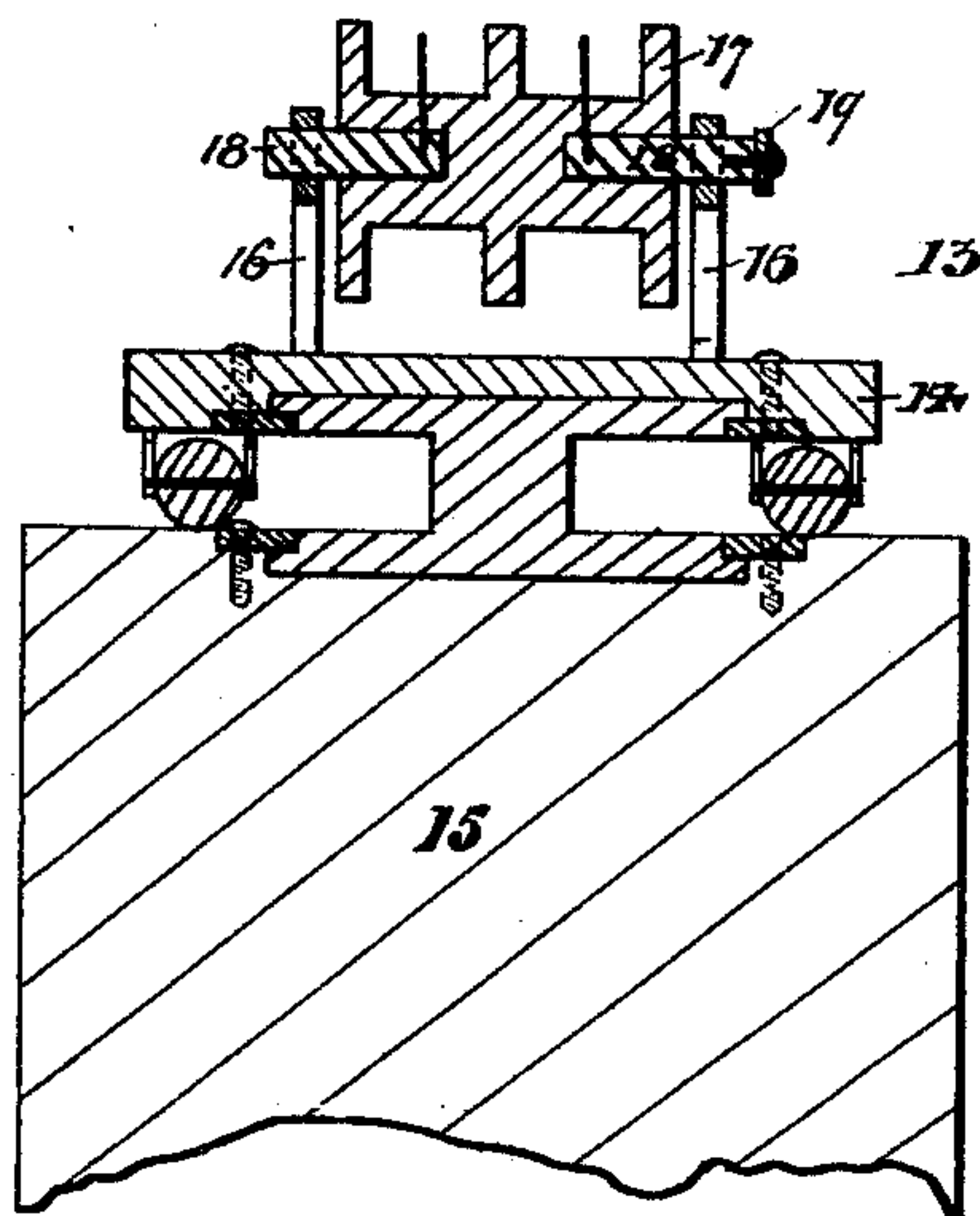


Fig. 4.

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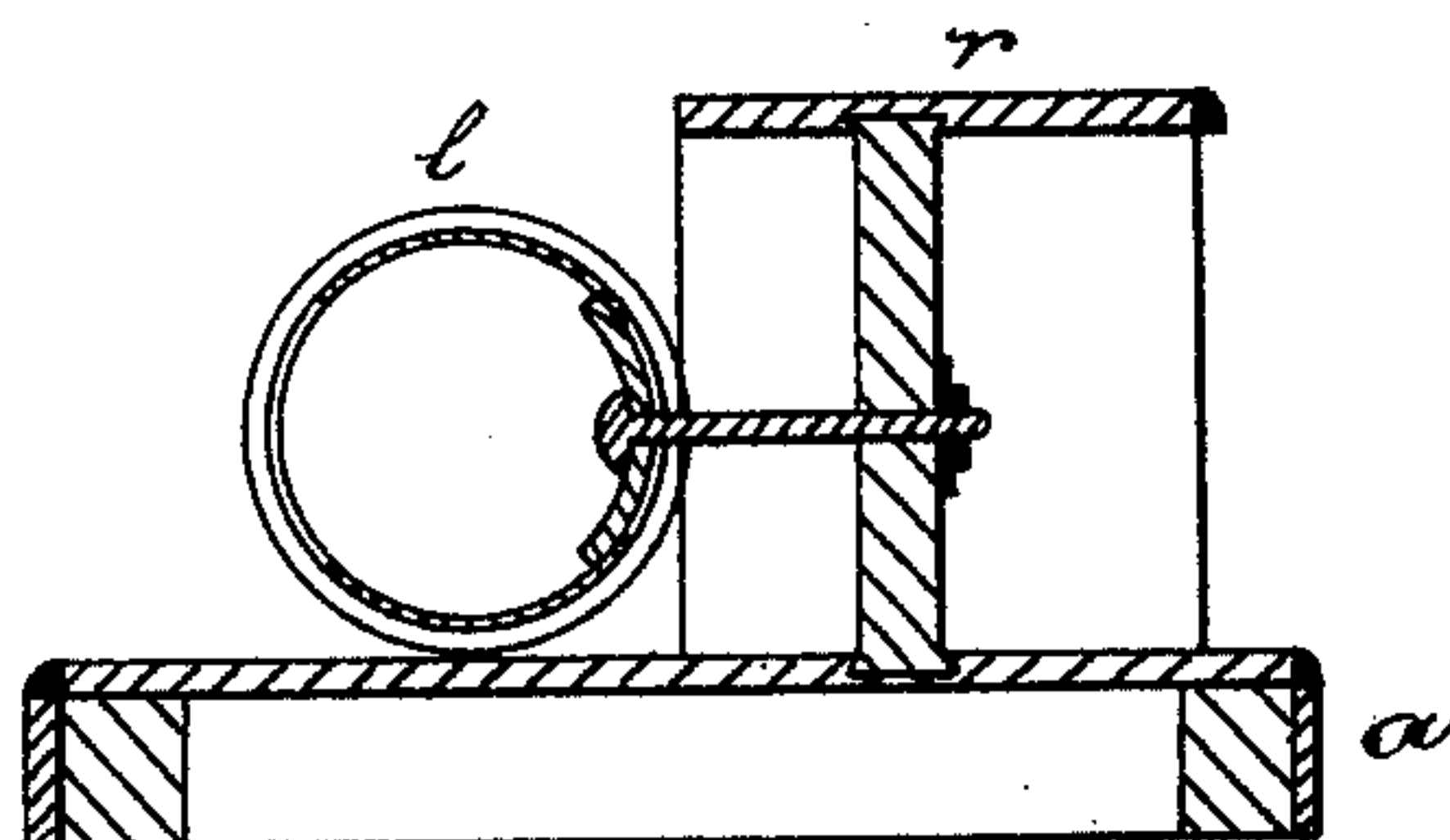


Fig. 5.

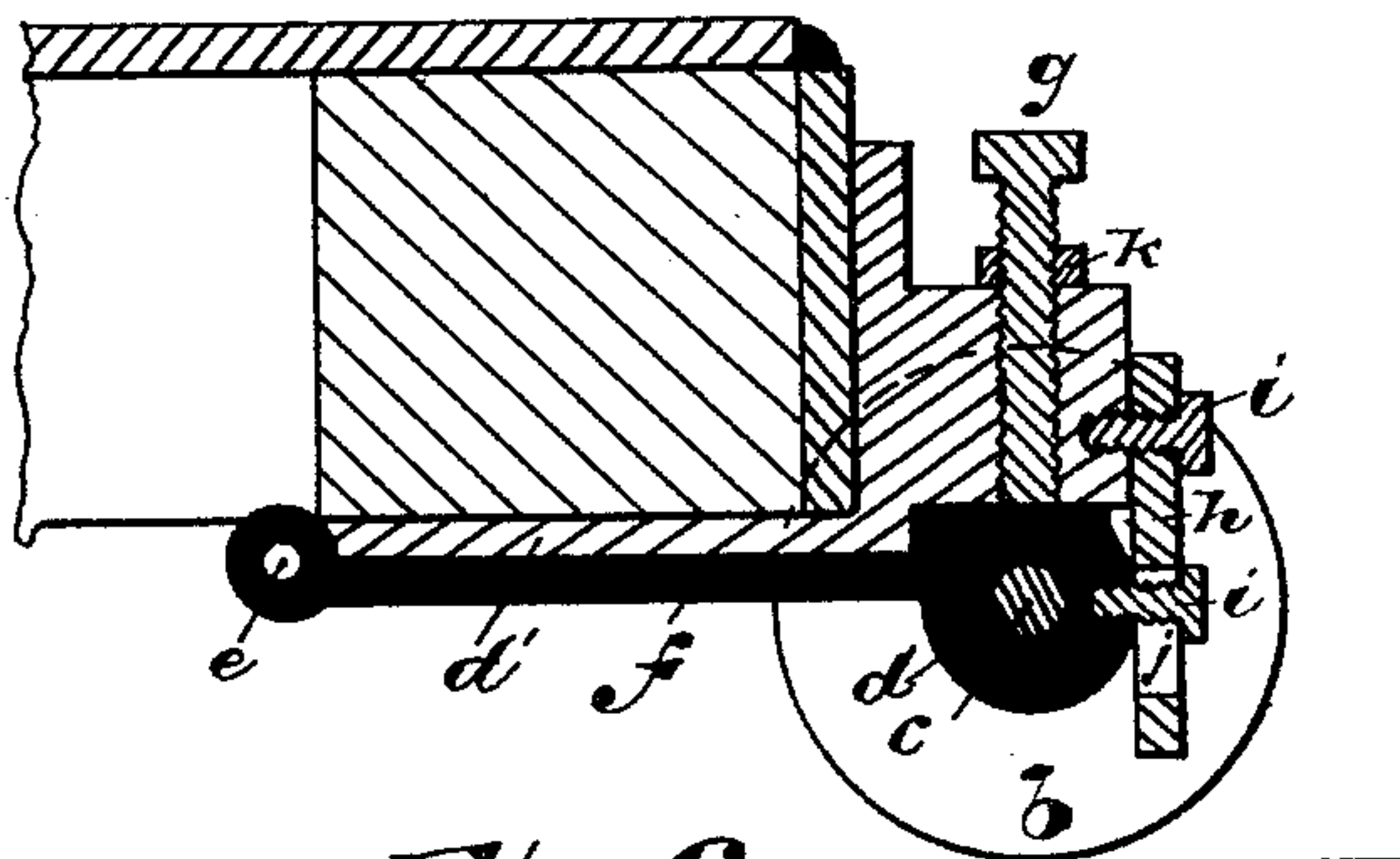


Fig. 6.



Fig. 7.

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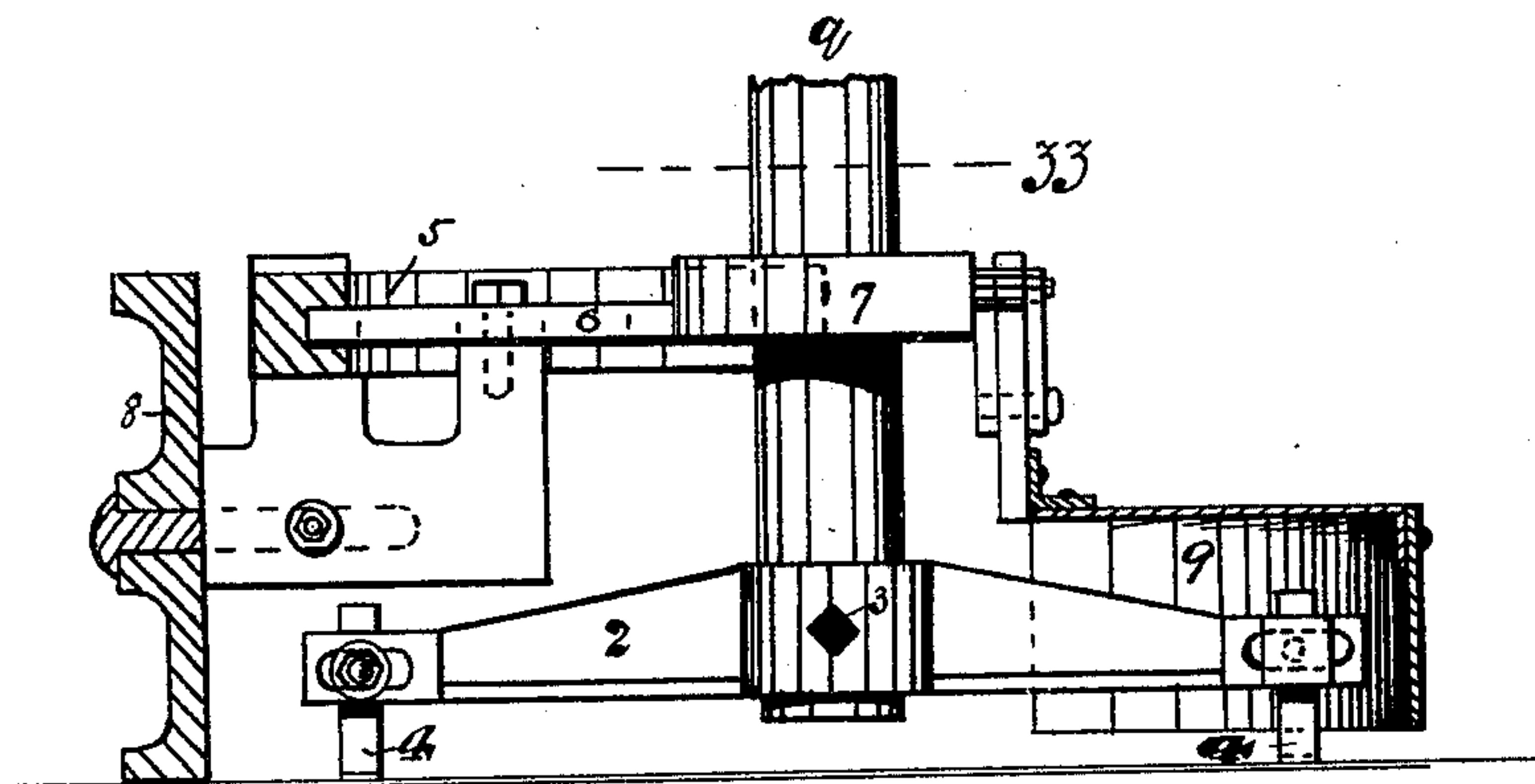


Fig. 9.

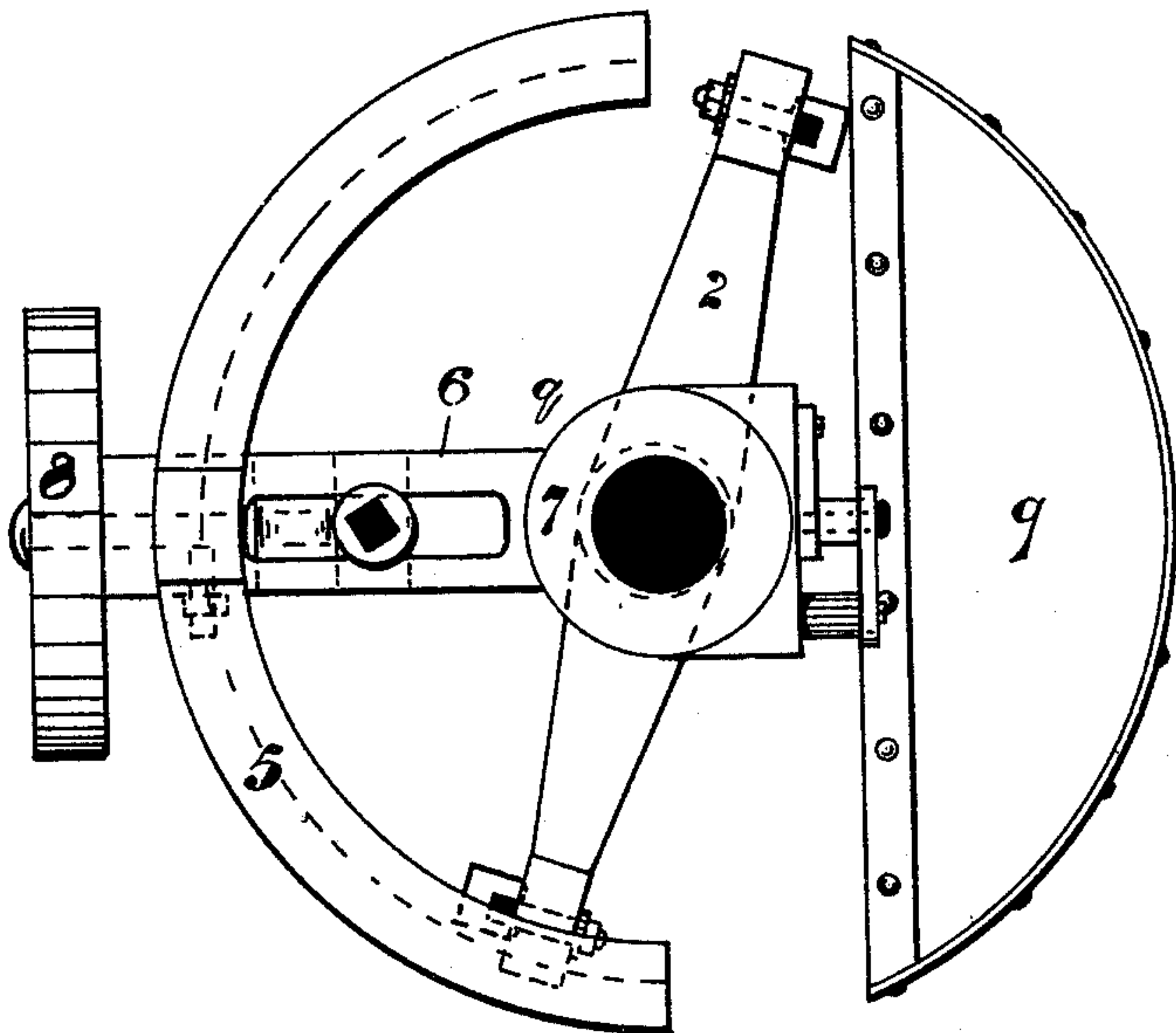


Fig. 8.

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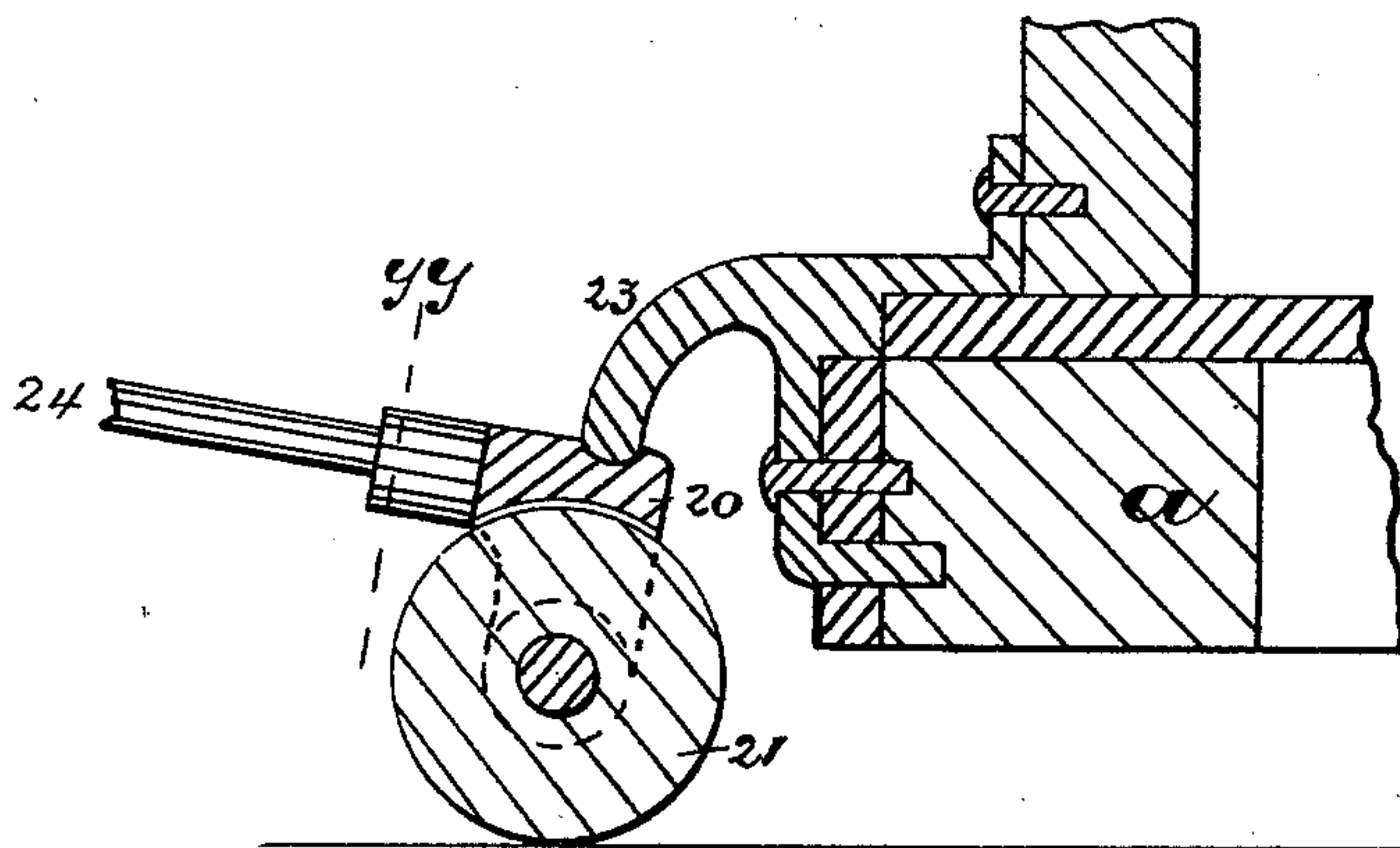


Fig. 11.

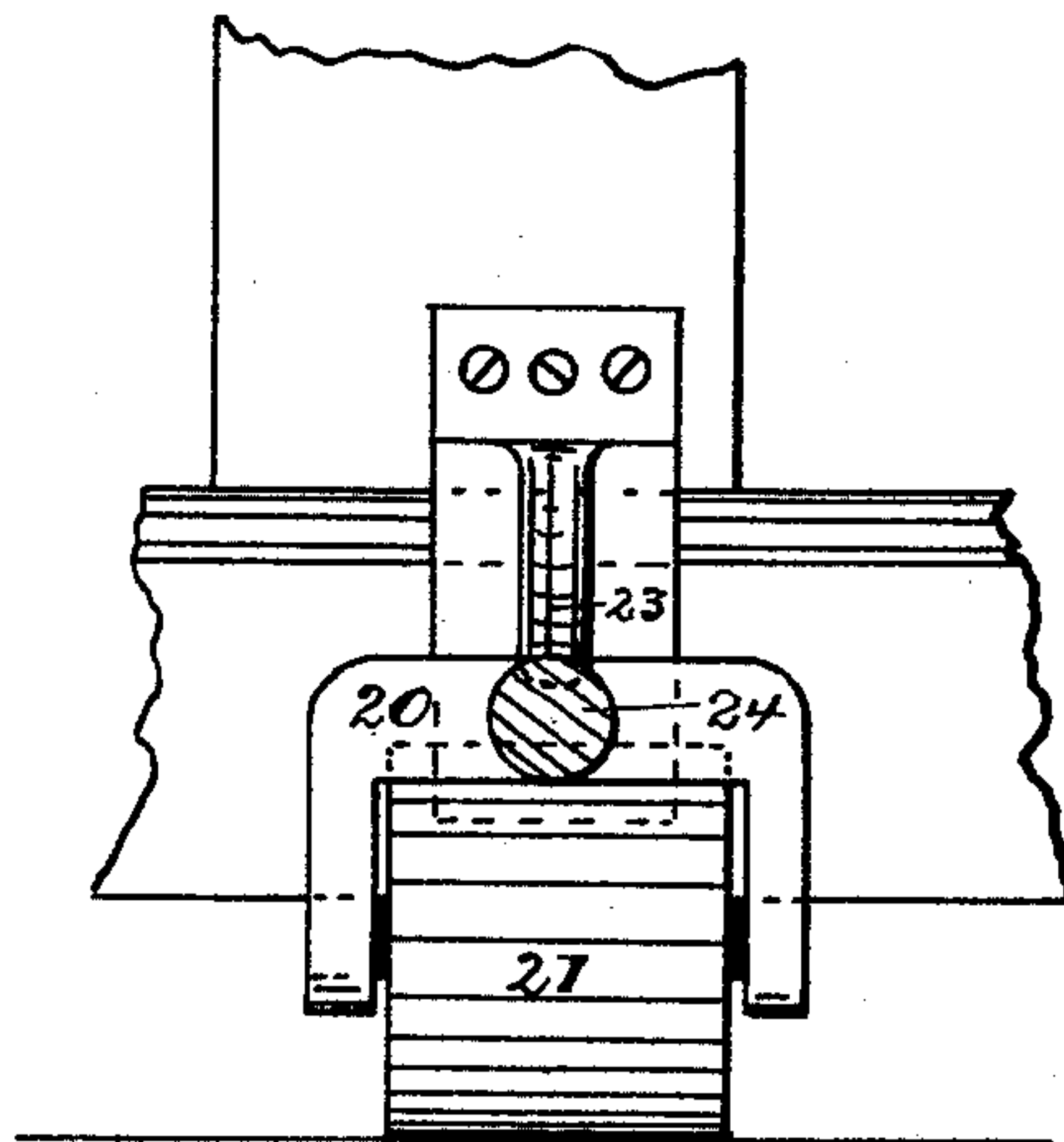


Fig. 10.

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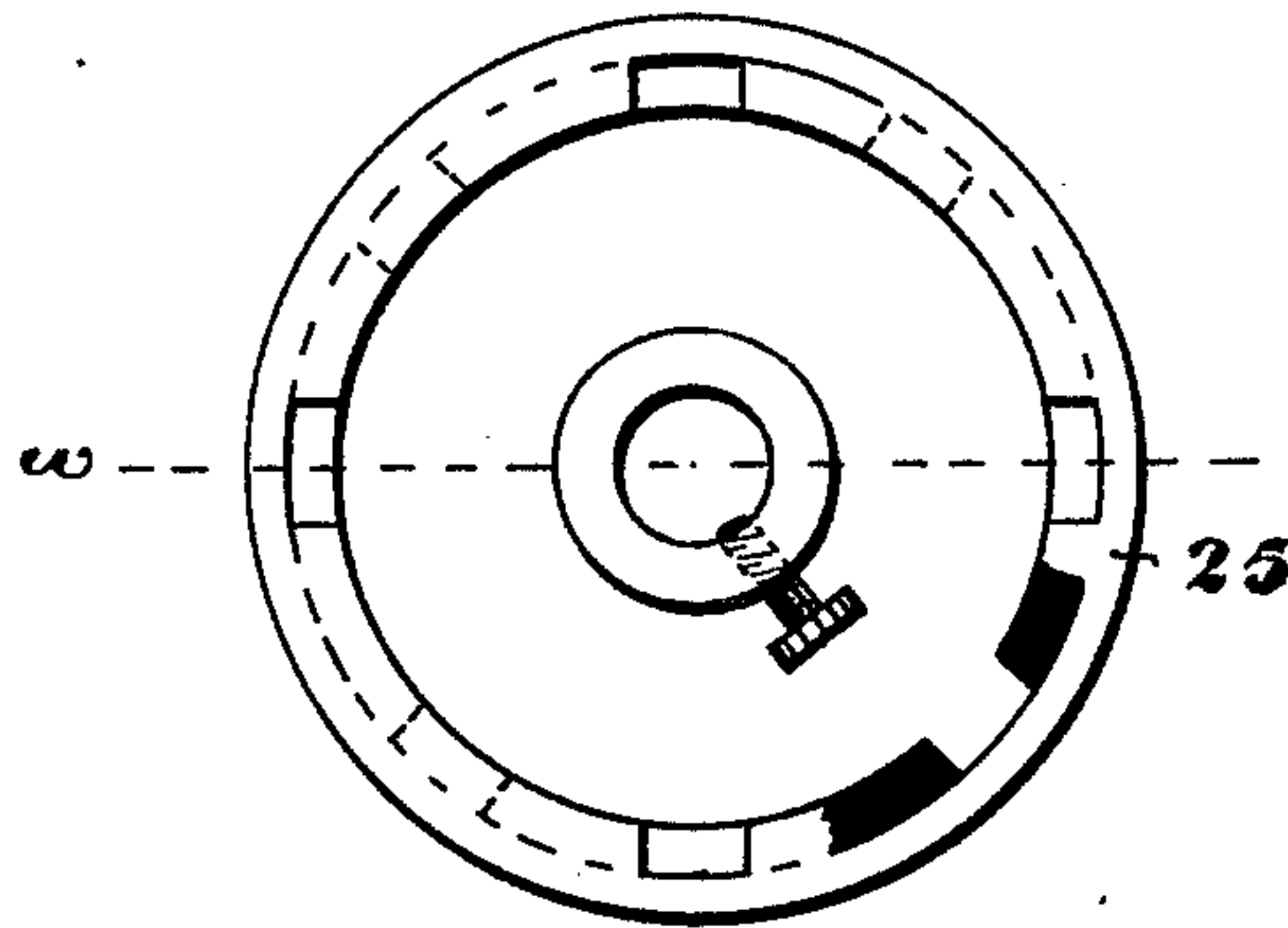


Fig. 12.

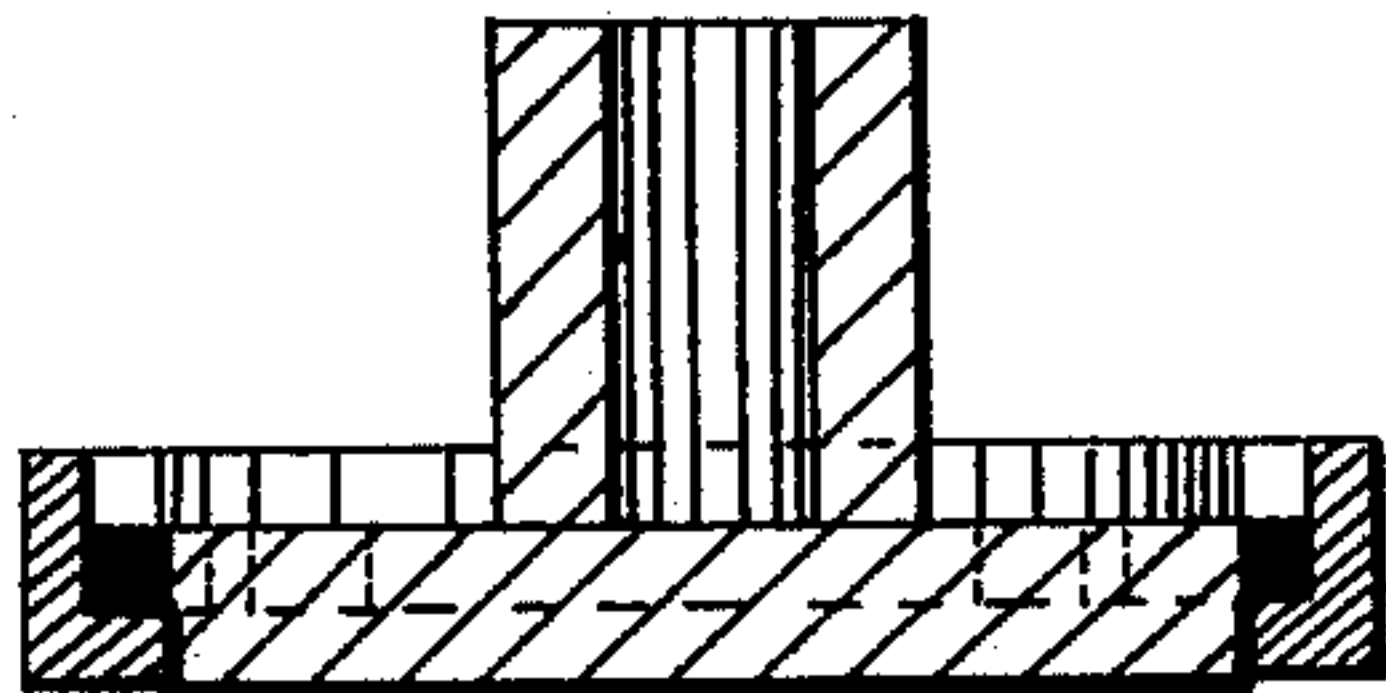


Fig. 13.

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Inventor:

(No Model.)

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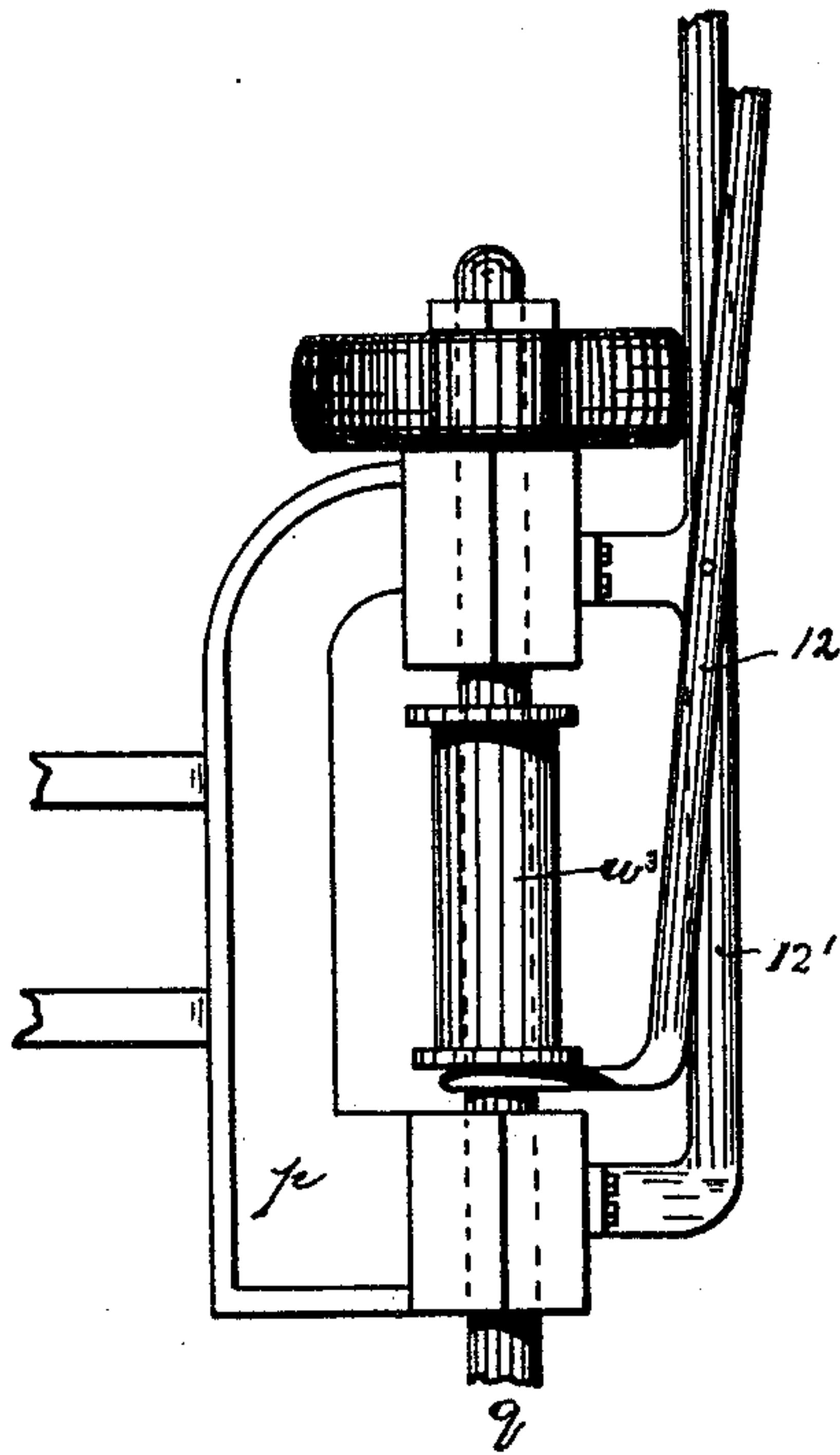


Fig. 14.

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UNITED STATES PATENT OFFICE.

HONESTUS M. ALBEE, OF NEWARK, AND CHARLES R. HEDDEN, OF EAST ORANGE, NEW JERSEY.

FLOOR-PLANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 414,275, dated November 5, 1889.

Application filed October 26, 1888. Serial No. 289,191. (No model.)

To all whom it may concern:

Be it known that we, HONESTUS M. ALBEE and CHARLES R. HEDDEN, citizens of the United States, residing, respectively, at Newark and East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Floor-Planing Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to facilitate the operation of smoothing wooden flooring, both by the operation of planing and sandpapering, and to reduce the amount of manual labor involved in such operations, and consequently the expense involved in the same.

The invention consists in the improved floor-planing machine, and in the arrangements and combinations of parts, substantially as will be hereinafter set forth, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, embraced in eight sheets, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a side elevation of our improved device. Fig. 1^a is a section thereof on line Z Z. Fig. 2 is a plan of the same. Fig. 3 is a plan of a reel employed when electricity is the motive force. Fig. 4 is a section of the same, taken on line X of Fig. 3. Fig. 5 is a section of the bed of the carriage, taken on line y of Fig. 1. Fig. 6 is a sectional view taken on line Z, Fig. 2, illustrating the construction of the carriage-wheels or anti-friction bearings. Fig. 7 is a face view of a piece employed in connection with said bearings. Fig. 8 is a plan of the bearings for the planing-irons or cutters, the cutter-carrying shaft being in section on line Z Z of Fig. 9. Fig. 9 is a side elevation of said bearings, certain parts being shown in section. Figs. 10 and 11 are views showing the rear of the carriage and a supplemental wheel adapted to raise the carriage and rear

wheels from the floor, so that the said carriage may be turned thereon without scraping the floor by sliding the wheels laterally, and Fig. 10 being a section taken on line Y Y of Fig. 11. Fig. 12 is a detail plan, and Fig. 13 a sectional view taken on line W, of a sandpapering-wheel which may be employed in connection with the carriage-shaft after the planing operation is finished; and Fig. 14 is a detail side elevation showing the preferred construction of a certain lever shown in connection with the guide-handle.

In said drawings, *a* indicates a low carriage-body, made of wood or iron, or both combined. Said carriage-body is supported by wheels *b b*, by means of which the carriage may be readily moved from one part of the flooring to another. Said wheels are adjustable in their relation to the body, as indicated in Fig. 6, whereby the body can be raised or lowered at either of its corners to provide for slight inequalities in the floor or to produce concave or convex planing, such as the deck of a ship.

The preferred manner of adjusting the wheels is shown, *c c* being the wheel axles or shafts; *d*, the boxes for the said axles, which are pivoted on the bed of the frame or upon a casting *d'*, fixed to said frame, as at *e*, the box being provided with an arm *f*, which extends to the pivot.

g is an adjusting-screw by means of which the box and the wheel are adjusted in their relation to the carriage-body, the said body being raised or lowered thereby, and *h* is a tie-piece adapted to hold the parts firmly together after the adjustment is effected, the said tie being secured to both the carriage-body or the said casting *d'* and box by set-screws or like fasteners *i i*. Said tie-piece is slotted, as at *j*, to allow the same to slide on one of said screws in effecting the adjustment. The adjusting-screw is provided with a lock-nut *k*.

Upon the carriage, or forming part of the same, is arranged a heavy tubular or hollow casting *l*, which provides bearings *m m* for pulley-shafts *n*. Said casting may be bolted to the body *a*, as indicated in Fig. 5, or may be fixed thereon in any suitable manner. By being tubular, as shown, it provides a partly-

closed passage for the belting and gives rigidity to the movable arm *o*, pivoted on the pulley-shaft. On the end of the movable arm *o* is arranged another vertically-adjustable arm *p*, which carries the cutter-shaft *q*. Said arm *p* is adjusted in its relation to the arm *o* by a hand-screw 10, which enables the cutters to be raised or lowered in their relation to the floor, so as to regulate the depth of cut at will.

Upon the carriage *a*, preferably upon an elevated table *r* thereon, is arranged a motor *s*. This latter is preferably an electric motor of any ordinary and suitable construction, although we may employ steam, compressed air, or any other motive force. The said motor actuates the driving-shaft *t* and pulley *u*, and the power is transmitted to the cutter-shaft *q* by means of the belts and pulleys *v w v' w' v² w² v³ w³*, the speed of the cutters being greatly facilitated by the reduction in the size of the pulleys as they approach the cutter-shaft.

The cutter-shaft and the said parts depending thereon are shown more clearly in Figs. 8 and 9. At the lower end of said shaft is arranged a transverse tool-holder 2, which is set on said shaft *q* by screw 3 or by any other suitable means, so that the said tool-holder will revolve in a horizontal plane with said shaft. At the ends of said holder are arranged the planing-irons or cutters 4 4, which extend downward to engage the floor. Said cutters are adjustably arranged in the holder, and may be of any construction adapted for the particular line of work for which they are intended.

Extending downward from the outer arm *p* is a segmental frame 5, which is grooved or recessed, as indicated in Fig. 9, to receive a steadying-arm 6, formed on a collar 7, carried by the tool-shaft *q*. To secure greater firmness, the steadying-arm may have, and preferably does have, a wheel 8 adjustable thereon, which engages the floor. By this construction the tool is given a very steady movement, and as a result the tool is effective in giving a very smooth finish to the floor. The collar 7 also carries a foot guard or shield 9, adapted to prevent the feet of the operator from coming in contact with the cutters.

To raise the cutters or planing-irons from the floor for the purpose of inspection, we have provided a lever 12, suitably fulcrumed on the arm *p* and engaging a grooved collar 11, fixed to the shaft, so that by depressing the lever the shaft will be raised and the cutters lifted from contact with the floor. Under certain conditions the said lever may be a small one projecting laterally from the arm *p*, as indicated in Fig. 1^a; but ordinarily, for purposes of convenience, we prefer the construction shown in Fig. 14, where the said lever extends vertically and parallel with or nearly parallel with the guiding-handle 12', so that the two may be readily grasped together, and by pressing the lever toward the

handle 12' the cutter will be raised. By this construction the necessity for stooping will be obviated.

The handle 12' is rigidly fixed to the arm *p* and extends upward therefrom, enabling the workman to guide the machine both to draw the carriage and to turn the arms pivotally at pleasure.

When electricity is the motive force, we arrange the battery or dynamo in any suitable position and connect the same with the motor on the carriage.

Inasmuch as the carriage in operation moves from one part of the room to another more distant from the battery, we have arranged on the carriage a reel 13, adapted to take up the fullness in the conducting-wire when the carriage is close to the battery and pay it out as the carriage travels therefrom, so that there will be no danger of the wire getting in the way and interfering with the planing operations. Said reel consists of a turn-table 14, suitably held upon the carriage, preferably in an elevated position, such as is provided by the post 15, so that the wires will not interfere with the other working parts. The wires to the motor are connected with the metallic bearings 16, while the wires to the battery pass through the reel-drum 17 and are connected to the reel-spindle 18. A suitable crank 19 may be employed to turn the reel-drum and wind the wires. By having the reel on a turn-table or swivel the same may be readily turned in the direction proper for taking up the slack wire.

The supplemental wheel for raising one end of the carriage is illustrated in Figs. 10 and 11, in which 20 is a lever fulcrumed on the wheel 21, which lever is inserted under the axle or shaft *c*, Fig. 2, or be placed under a pivotal projection 23, Figs. 10 and 11, specially provided at the rear of the carriage to receive said lever. By depressing the lever-handle 24 the carriage is raised and may easily be turned by pushing or pulling on the lever-handle in the desired direction.

After the floor is properly planed by the cutters or planing-irons we substitute for the holder 2 a sandpaper-holder 25. (Shown in Figs. 12 and 13.) This may be of any ordinary construction adapted to allow of a sheet of sandpaper being secured therein, so that it will present a broad surface to the floor.

In operating the device the motion of the motor is transmitted to the cutter-shaft *q* by means of the belts and pulleys shown and described, causing the same to rapidly revolve, and thus cause the plane-irons secured on the holder 2 to rotate, the path of one iron being a little in advance of the other, either in depth or in its nearness to or distance from the axial center, as will be understood. By moving the handle 12 the machine and cutters may be brought to the desired position on the floor.

We are aware that heretofore a frame provided with pivotal arms and a rotary cutter

arranged together have been employed in finishing boards, the said parts, however, not being so arranged as to finish the boards when the latter are down in the flooring over which the carriage is being wheeled. In our improvements the cutters extend down to the plane of the wheel-bearings, or, in other words, to the floor or surface over which the wheels or other supports for the portable carriage are moved, as will be understood. Thus the boards are planed or finished collectively after they are fastened down in their final positions on the beams or sleepers, and not individually by carrying the boards to the machine and passing them under the planing-iron, as will be understood.

Having thus described the invention, what we claim as new is—

1. The improved floor-planing machine combining therein a movable carriage having a pivotal arm provided with a rotating cutter extending down into engagement with the floor, over which said carriage is movable, substantially as and for the purposes set forth.

2. The improved floor-planing machine combining therein a wheeled carriage, a pivotal arm *o*, a vertically-adjustable arm *p*, a rotary planing-iron arranged to engage the floor, and a handle *h*, extending upward from said arm *p*, substantially as and for the purposes set forth.

3. The improved floor-planing machine combining therein a wheeled carriage, a motor arranged thereon, a revolving shaft extending vertically downward toward the horizontal plane or flooring on which the machine is to be wheeled or moved, and belts and pulleys connecting said motor with said shaft, and planing-irons carried by said shaft and operating in a horizontal plane on which the machine is supported, substantially as and for the purposes set forth.

4. The improved floor-planing machine combining a carriage-body having adjustable wheels adapted to admit of the said carriage-body being raised or lowered in its relation to the floor, a pivoted arm, and a revolving shaft carried thereby, and planing-irons, all arranged and combined substantially as and for the purposes set forth.

5. The improved floor-planing machine combining a carriage-body movable on the floor to be planed, an electric motor supported by said body, an arm vibrating in a horizontal plane and carrying a cutter-shaft, belts and pulleys transmitting power from said motor to said shaft, and a conducting-wire

for conducting the electric current to the motor, and planing-irons or cutters extending into engagement with the floor, all said parts being arranged and combined substantially as and for the purposes set forth.

6. The improved floor-planing machine combining therein a carriage-body having adjustable boxes *d*, wheels journaled in said boxes, and adjusting-screws whereby the said body may be adjusted to inequalities in the floor, and suitable planing-tools and means for operating the same, substantially as and for the purposes set forth.

7. The improved floor-planing machine combining with the body and wheels thereof and planing mechanism the boxes *d*, having arms *f*, pivoted at *e*, adjusting-screws *g*, and tie-pieces *h*, all arranged and adapted to operate substantially as and for the purposes set forth.

8. In combination with the carriage-body having a pivoted arm carrying a rotary cutter, a steadying-wheel secured to said pivoted arm and engaging the floor, substantially as and for the purposes set forth.

9. The improved floor-planing machine combining with the movable planing-carriage a lever fulcrumed on a supplemental wheel and adapted to raise one end of said carriage and turn the same, substantially as and for the purposes set forth.

10. In combination, a wheeled carriage adapted to be moved over the floor to be planed, a motor supported on said carriage, cutters or planing-irons extending into engagement with said floor and arranged on cutter-carriers operating under the influence of said motor, and a handle for moving the carriage from place to place on said floor by hand-power while said cutters are in operation, substantially as and for the purposes set forth.

11. In combination, in a floor-planing machine, the body *a*, wheels *b*, a casting providing bearings *m*, pulley-shafts *n*, arm *o*, arm *p*, cutter-shaft *q*, adjusting-screw *l*, a motor *s*, belts, pulleys, and cutters extending into engagement with the floor, substantially as and for the purposes set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 10th day of October, 1888.

H. M. ALBEE.
CHAS. R. HEDDEN.

Witnesses:

CHARLES H. PELL,
C. H. BALDWIN.