

No. 749,344.

PATENTED JAN. 12, 1904.

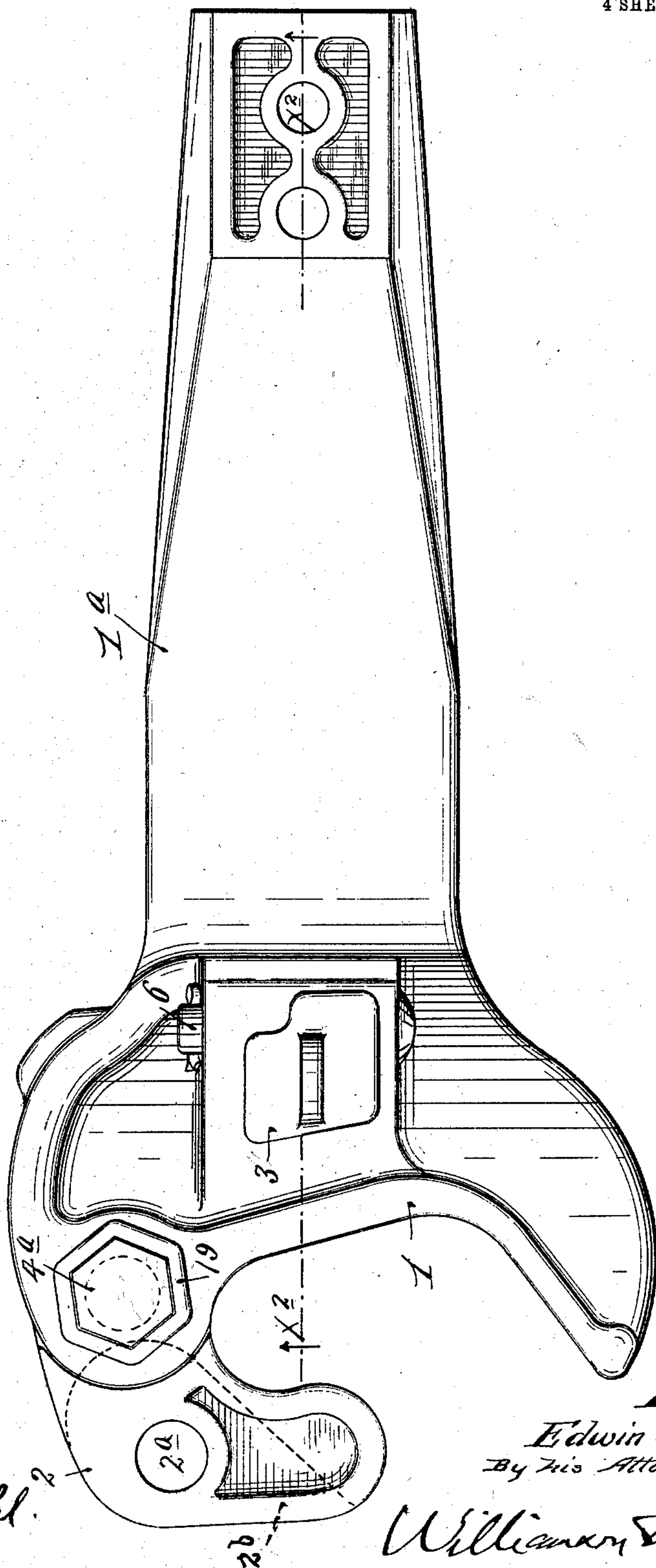
E. C. WASHBURN.
CAR COUPLING.

APPLICATION FILED SEPT. 8, 1902.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

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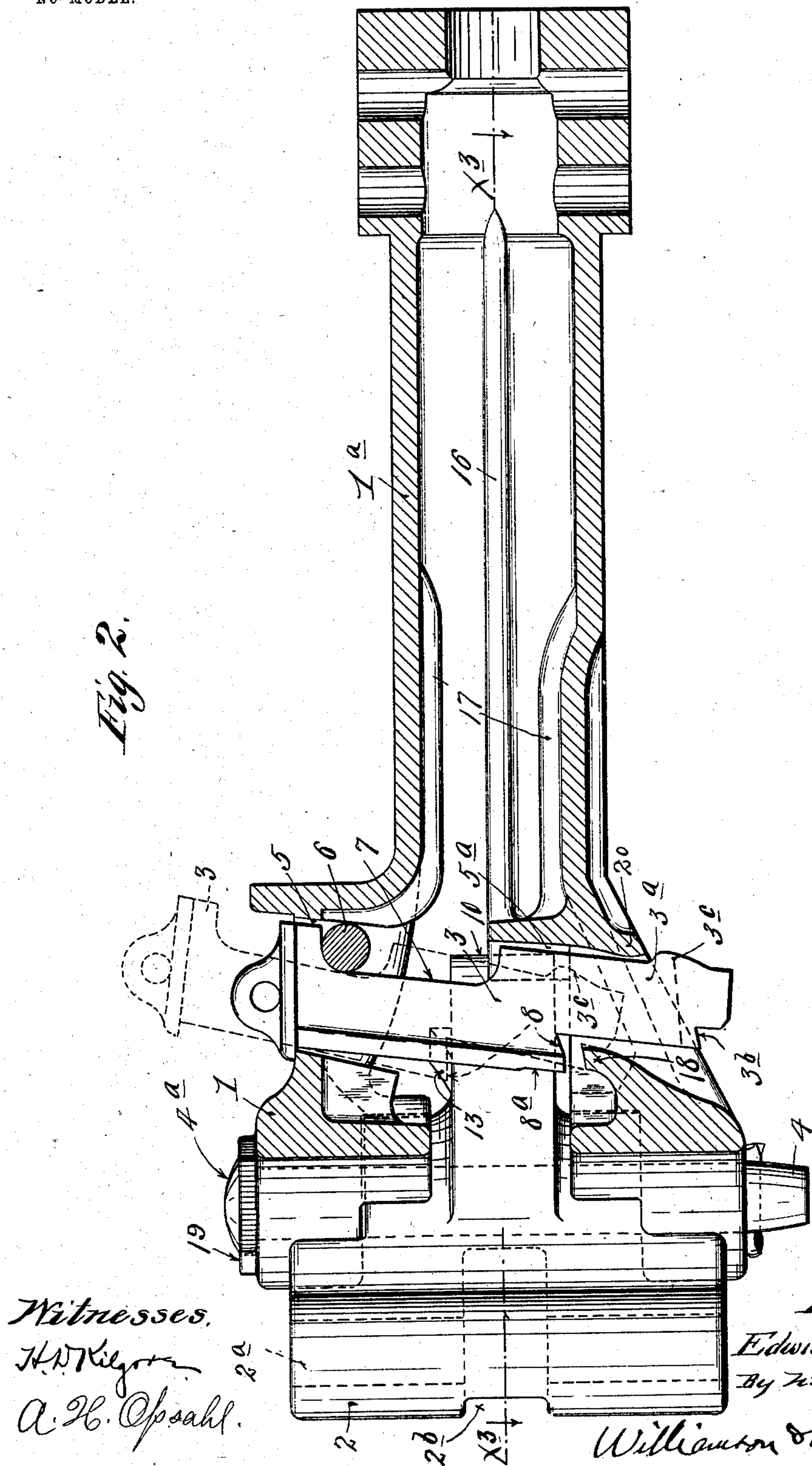
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4 SHEETS—SHEET 2.



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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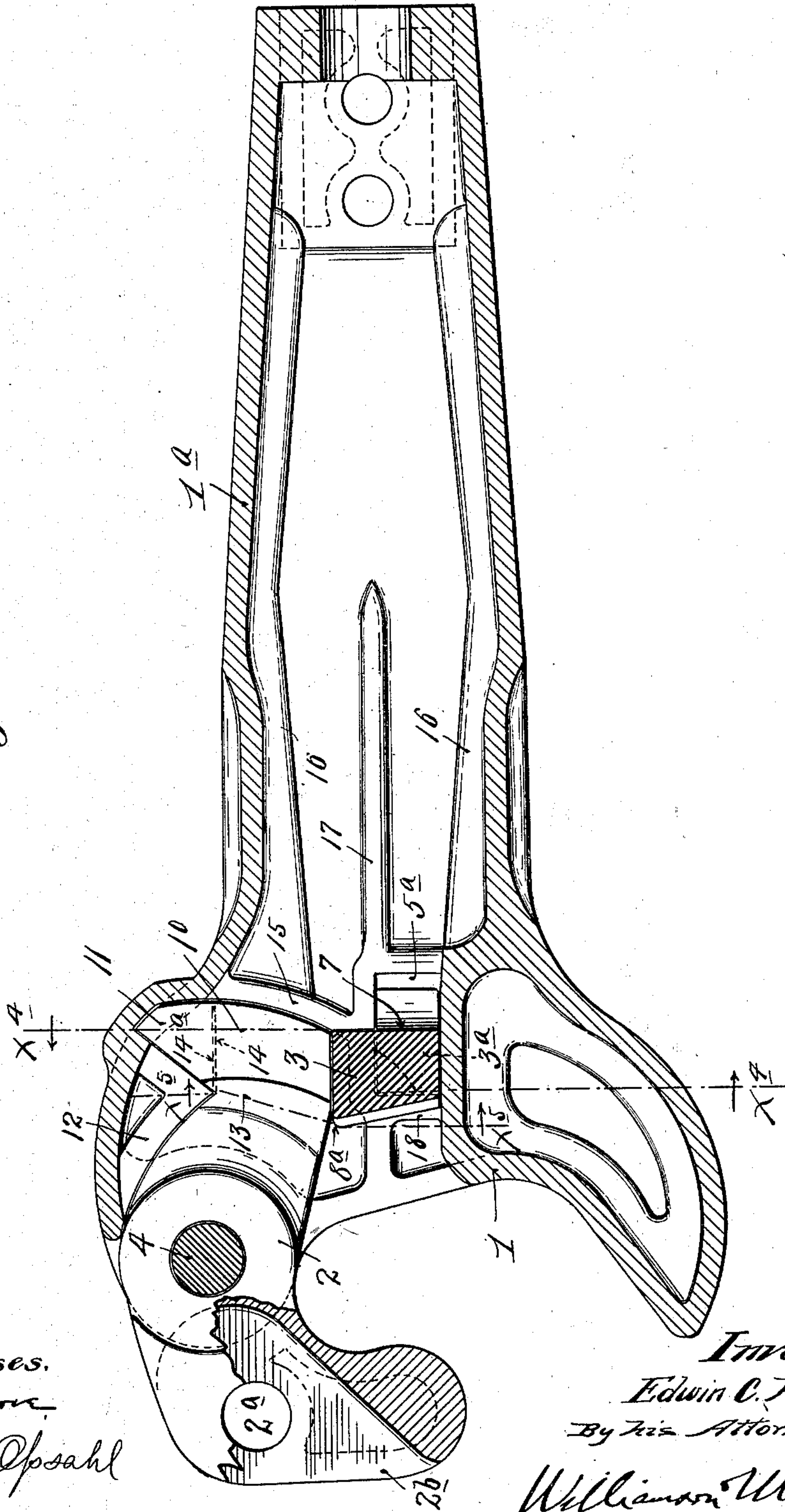
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NO MODEL.

4 SHEETS—SHEET 3.

Fig. 3.



Witnesses.
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4 SHEETS—SHEET 4.

Fig. 7.

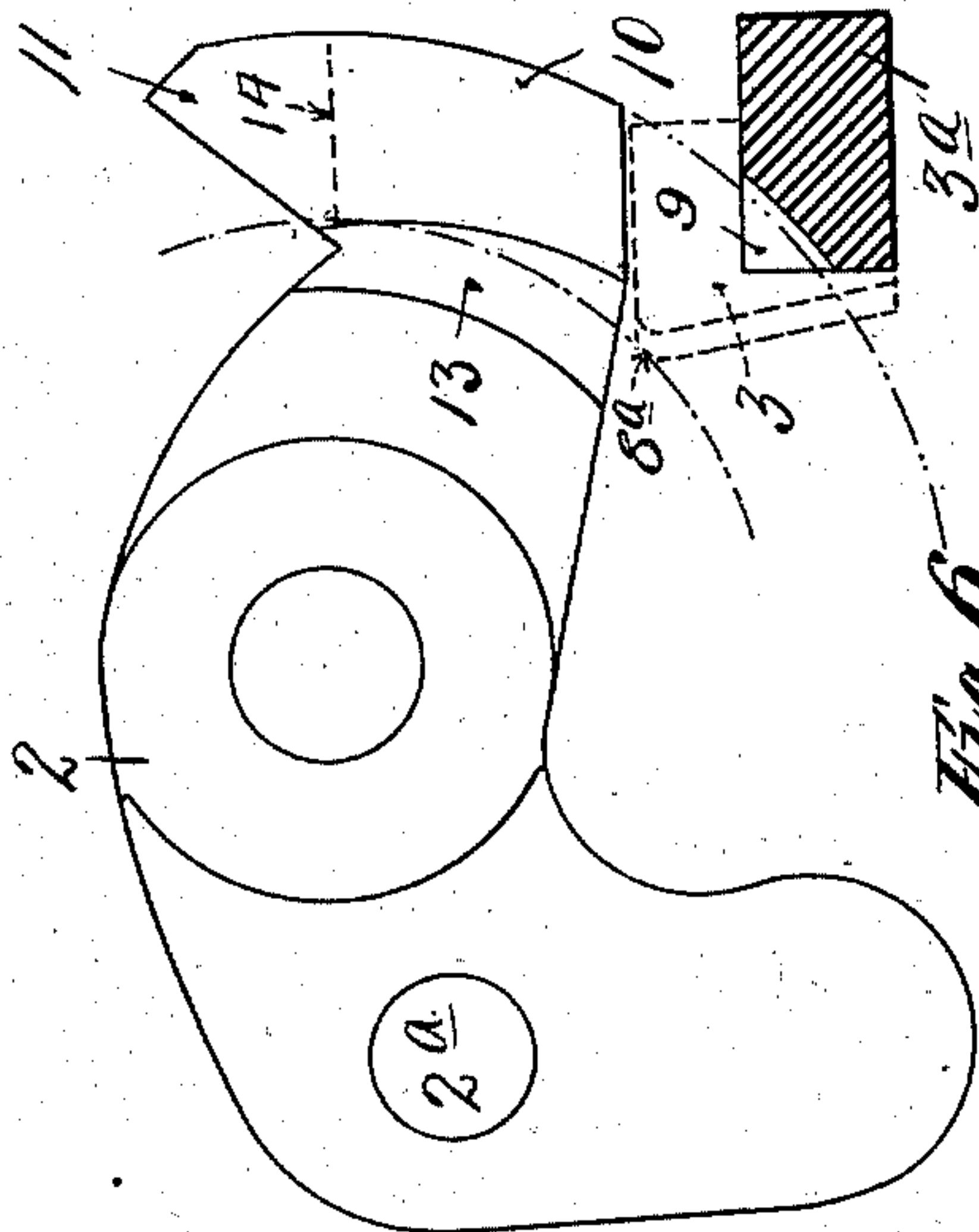


Fig. 6.

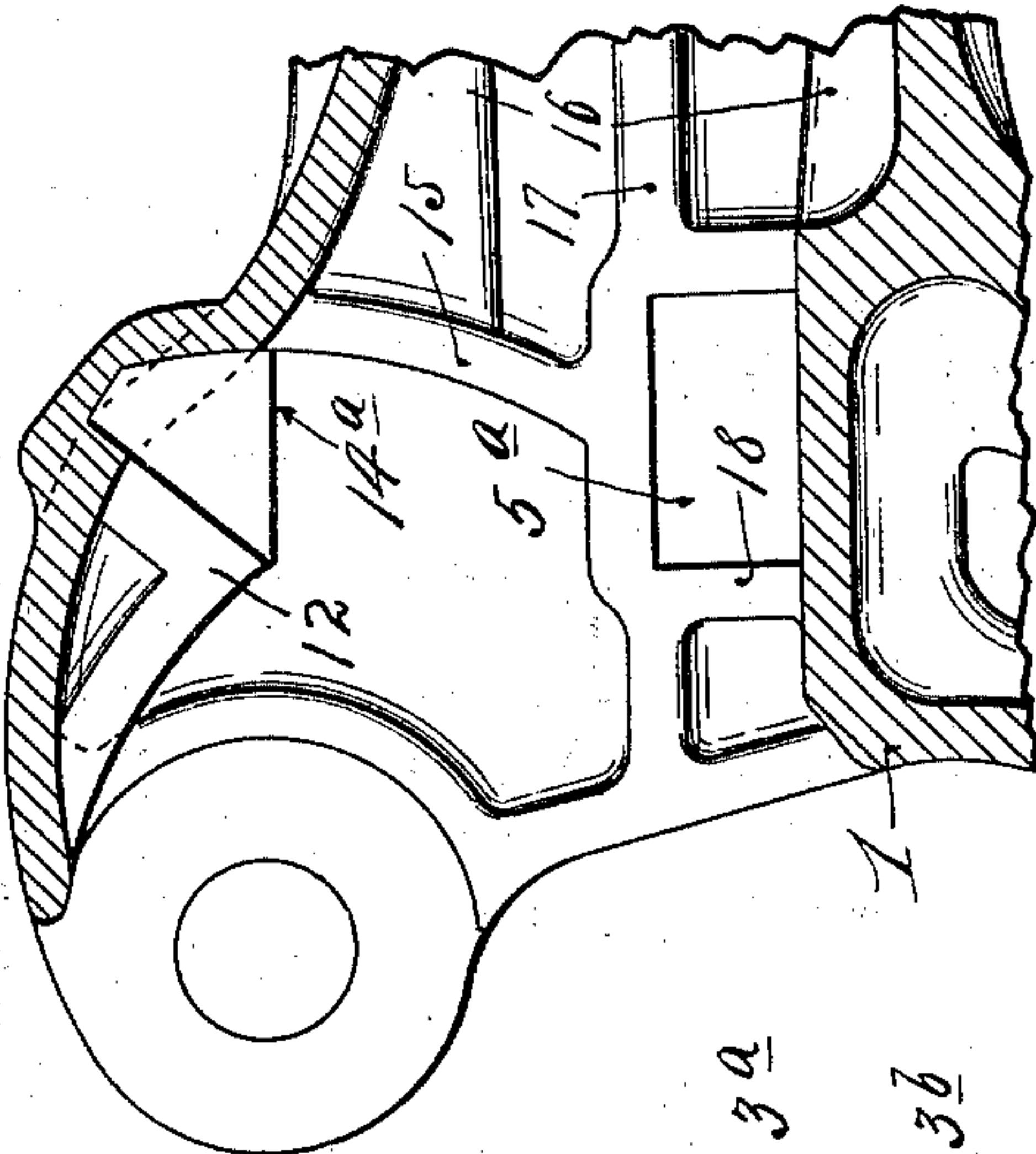


Fig. 5.

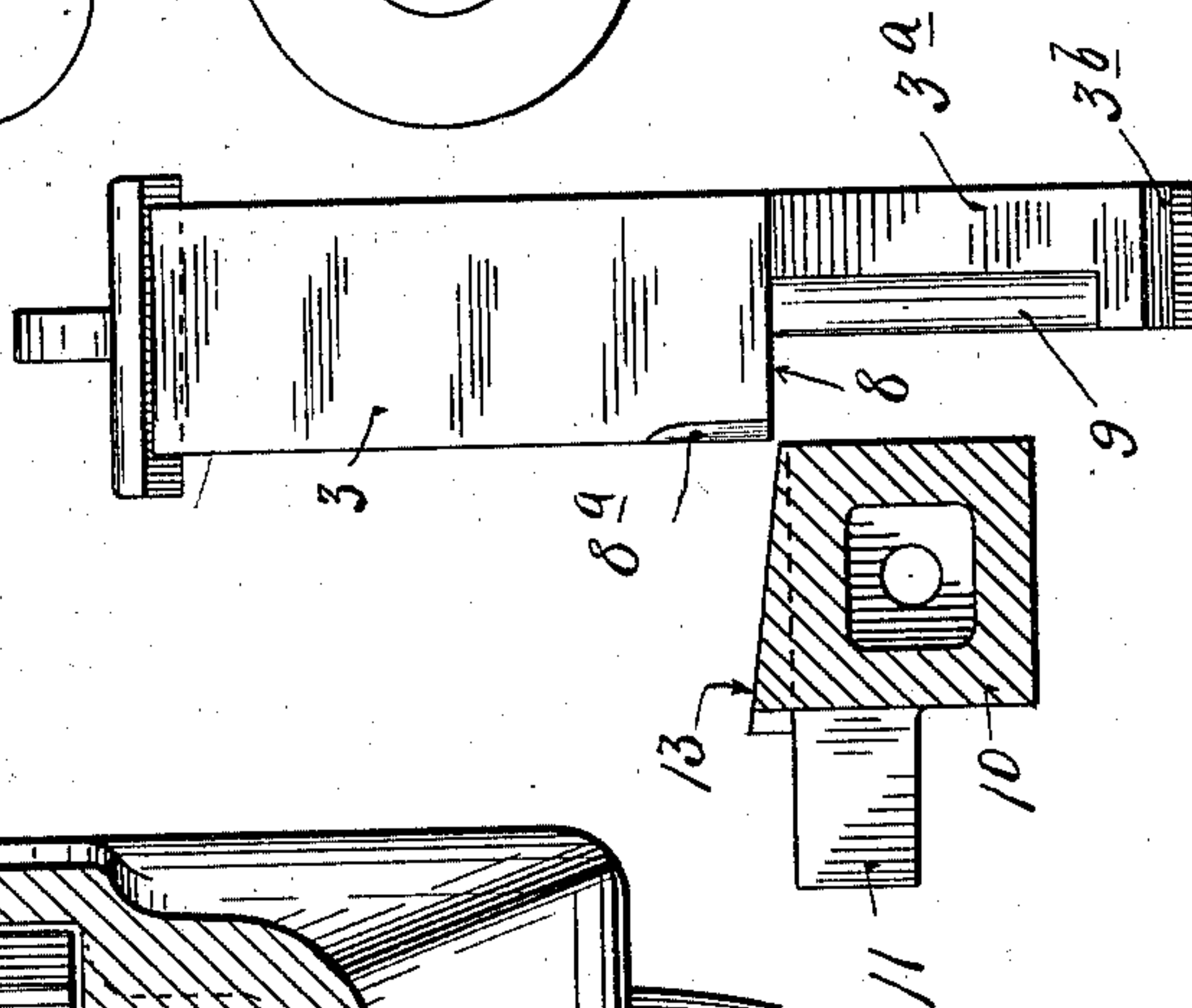
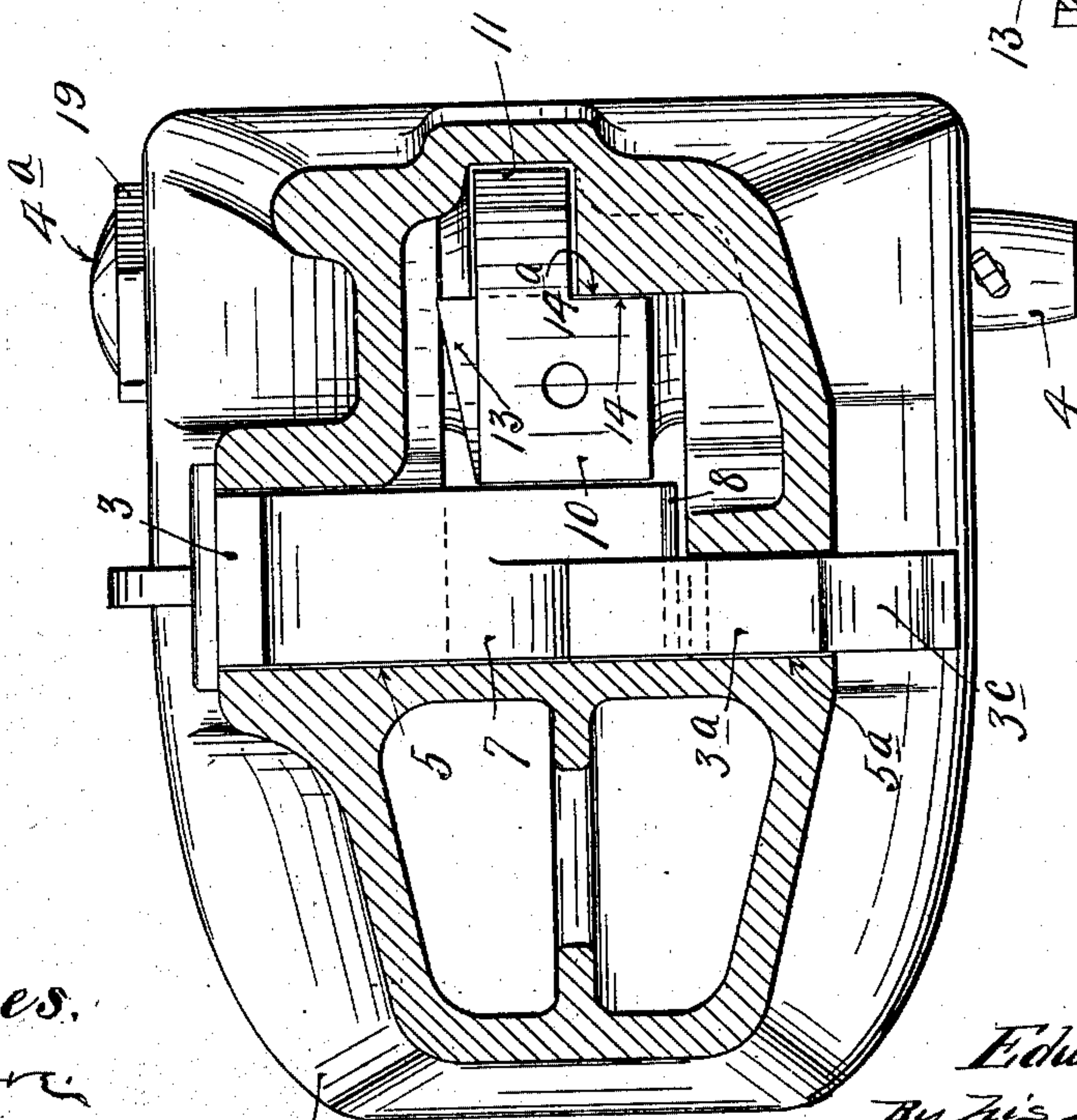


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

EDWIN C. WASHBURN, OF MINNEAPOLIS, MINNESOTA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 749,344, dated January 12, 1904.

Application filed September 8, 1902. Serial No. 122,561. (No model.)

To all whom it may concern:

Be it known that I, EDWIN C. WASHBURN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Car-Couplers; and I 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.

My invention relates to car-couplers of the Master Car-Builders' type, and has for its object to improve the same in the several particulars hereinafter noted.

The invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

In the drawings like characters indicate like parts throughout the several views, and the preferred form of my invention is therein illustrated.

Figure 1 is a plan view of a car-coupler embodying the features of my invention. Fig. 2 is a vertical section taken approximately on the line $x^2 x^2$ of Fig. 1. Fig. 3 is a horizontal section on the line $x^3 x^3$ of Fig. 2. Fig. 4 is a transverse vertical section on the irregular line $x^4 x^4$ of Fig. 3. Fig. 5 shows the pin or lock-dog in front elevation and the tail of the knuckle sectioned on the line $x^5 x^5$ of Fig. 3. Fig. 6 is a horizontal section of a portion of the coupler-head, taken on the same line as Fig. 3, but with the knuckle and other parts removed; and Fig. 7 is a diagrammatic plan illustrating the relations of the tail of the knuckle to the lock-dog or pin.

The numeral 1 indicates the recessed coupler-head, the numeral 2 indicates the pivoted knuckle, and the numeral 3 indicates the vertically-movable lock-dog or pin. The knuckle 2 is pivotally connected to the head 3 in the ordinary way by pintle or pivoted bolt 4, and the dog 3 is mounted in a suitable seat 5 5^a in the upper and lower walls of the coupler-head with freedom for vertical movements and a limited forward and rearward oscillation at its lower end. The reduced lower end 3^a of the dog 3 works in the seat-section 5^a, and near its lower extremity it is provided with an undercut shoulder 3^b and with a bulge or

cam projection 3^c for purposes which will presently appear. The vertical movements of the dog 3 are limited by a transverse pin 6, which is supported by the coupler-head 1 and engages a notch 7, formed in the rear walls of the said pin. At its intermediate portion the dog 3 is formed with an undercut shoulder 8, which extends forward and to one side, affording an angular corner which projects in the direction of the pivot 4 of the knuckle 2. As shown, the depending tail or guide-section 3^a of the dog is beveled at one edge, as shown at 9, so as to afford clearance for the tail of the knuckle; but it will be noted that this bevel 9 does not extend completely to the lower end of said tail, but, on the contrary, leaves the lower end of said tail rectangular in cross-section. Also as shown, the body of the dog 3 at its corner just above the shoulder 8 is slightly beveled, as shown at 8^a, to afford a better wearing-surface, as will presently appear.

The tail of the knuckle 2 is formed with a segmental dog-supporting surface 10, the outer extremity of which projects to form a wedge or key-lug 11, which fits in a correspondingly-formed seat in the coupler-head. The outer edge of the tail of the knuckle is thus formed with the V-shaped indentation or outline, and this indentation when the knuckle is closed closely fits a correspondingly-formed thrust-lug 12, which projects inward from the adjacent side of the coupler-head, as best shown in Fig. 3. The tail of the knuckle is also formed with a segmental cam-flange 13, which rises in the direction in which the tail of the knuckle moves as the knuckle is swung open. The outer edge of this cam-flange 13 is eccentric to the axis of the pintle 4, as indicated by the dotted lines, which in Fig. 7 indicate arcs struck from the center of said pivot. The purpose of this eccentricity will be made clear in the description of the operation. The wedge extension 11 is thinner than the body of the free end or segmental supporting-surface 10 of the knuckle, so that a vertical shoulder or stop-surface 14 is formed on the tail of the knuckle, as best shown in Figs. 3 and 4. This stop-shoulder 14 strikes against a stop lug or surface 15, formed with-

in the head of the coupler. The surface 14 of the tail of the knuckle extends parallel to that surface of the lock-dog which holds the knuckle locked, so that under bumping and draft strains there will be no wedging action between these surfaces.

Within the head of the coupler, projecting upward from the lower wall thereof, is a segmental thrust-flange 15, against which in the bumping action the segmental tail end of the knuckle is thrust. This thrust-flange 15 is reinforced by ribs 16 and 17, the former of which projects from one side and the latter of which projects from the bottom plate of the coupler and both of which extend in the general direction of the thrust strains produced in the bumping action. The said flanges 16 and 17 run for a considerable distance into the bar or stem portion 1^a of the coupler-head 1. The flanges 16 in the shank of the coupler which extend approximately in line with the knuckle are heavier than the flanges on the other side of the shank, so as to give materially greater strength to the shank back of the knuckle. This is important for the reason that under bumping and draft strains, and especially under lateral or angular strains in turning curves, the shank on that side is subjected to very much greater strains than is the other side of the shank. Hitherto a large per cent. of the breakages have been due to the weakness of the shank on that side which is back of the knuckle.

When the dog or pin 3 is raised and its lower portion swung slightly forward, the shoulder 3^b of the tail 3^a will rest upon a supporting shelf or ledge 18, as shown, formed as a part of the lower plate or wall of the coupler-head 1 at the forward extremity of the seat-section 5^a.

The outer or hook end of the knuckle 2 is provided with an ordinary coupling-pin seat 2^a and is slotted or bifurcated at 2^b to admit the end of an ordinary coupling-link. This slot 2^b does not, however, cut backward through the hook of the knuckle, but leaves the inner surface of the hook unbroken or intact, and consequently does not reduce the wearing-surface at such points. This feature is important, since the greatest wear takes place between the inner surface of these parts.

The head 4^a of the bolt or pintle 4 is polygonal and fits in a countersunk seat formed on the upper hinge-lug of the coupler-head 1 by means of a flange 19, the inner surface of which closely fits the said head. Hitherto stop-flanges have been used which engage one side of the head of this pintle-bolt; but I have found in practice that with such construction the slight movements permitted to the bolt would gradually grind off the said lug. The flange or seat completely surrounding the polygonal head engages the same at many points, and thus not only provides a plurality of surfaces which would have to be worn away be-

fore the bolt-head could turn, but which also more closely engages the head and prevents even slight initial movements of the bolt or pintle. This device is especially adapted for the specific purpose illustrated.

When the knuckle is locked, as shown by full lines in the drawings, the flaring or wedge-like end 10 11 thereof is wedged or held like a dovetailed flange between the inner face of the dog 3 and the rear face of the thrust-lug 12. Hence even if the pivot-pin 4 should be broken or removed the knuckle will be securely held in place. To set the lock dog or pin so that the knuckle may be freely opened, it is raised and its lower end rocked forward so that the undercut shoulder 3^b rests upon the shelf or ledge 18, as indicated by dotted lines in Fig. 2. In this position of the dog its shoulder 8 is raised slightly above the segmental tail end 10 of the knuckle, but is thrown forward into the path of movement of the forward portion of the cam-flange 13. Hence when the knuckle is swung open the cam 13, acting on the shoulder 8, will raise the dog 3 with almost a straight lift, so that very slight friction between the dog and its seat has to be overcome. When the knuckle closely approaches the limit of its upward movement, the cam-flange 13 in view of the eccentricity of its outer surface passes from under the shoulder 8 and permits the dog to drop until its shoulder 8 rests upon the retaining-surface 10 or the extension 11 thereof. When the knuckle is again closed, the eccentric outer surface of the flange 13 engages the corner 8^a of the dog and forces the dog backward into alignment with its seat, so that it will be dropped back to normal position and lock the knuckle as soon as the supporting-surface 10 of said knuckle passes back out of engagement with the shoulder 8 of said dog. In this way the dog is raised and again forced back into alignment with its seat under very slight frictional resistance. There is a tendency for the dog to gradually work upward under the constant jars and vibrations imparted to the coupler when a train is in motion. To prevent this climbing or rising of the dog within its seat, I provide the dog with the cam-lug or surface c³ which when the pin starts to climb engages with the co-operating surface 20 at the lower portion of the seat-section 5^a. When the surfaces 3^c and 20 come into contact, they interrupt the upward movement of the dog and impart a lateral movement thereto which tends to release the same and cause the same to drop back to normal or locked position.

It will of course be understood that the device above described is capable of considerable modification within the scope of my invention as herein set forth and claimed.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. In a coupler of the Master Car-Builders' type, a knuckle having a tail arranged to lift

the lock under the opening movement, to support the same while open, and to force said lock back into alinement with its seat, under the closing movement thereof.

2. In a car-coupler of the Master Car-Builders' type, a shelf or ledge for supporting the lock in a slightly-elevated position, and a knuckle having a tail operating to lift the said lock from said ledge or shelf and to support the same under the opening movement thereof.

3. In a coupler of the Master Car-Builders' type, the combination with a lock-dog mounted for vertical and a limited lateral movement, of co-operating surfaces on said dog and the head of the coupler engageable, when said dog is raised and moved laterally, and a cam-flange in the tail of the knuckle engageable with a shoulder on said dog to raise said dog when the knuckle is swung open, and to force the same back into alinement with its seat when the knuckle is closed.

4. In a coupler of the Master Car-Builders' type, a sliding lock having a limited lateral movement and having a projecting guide-surface that stands out of the path of the tail of the knuckle, in all positions of the parts.

5. In a coupler of the Master Car-Builders' type, a lock arranged to be set for automatic uncoupling and provided with a projecting guide-surface that stands out of the path of the tail of the knuckle, in all positions of the parts.

6. In a car-coupler, a head having a supporting ledge or shelf for the lock, and a knuckle having an inclined tail portion serving to lift the lock from said shelf or ledge and support the same under the opening movement, and to force the same back into alinement with its seat under the closing movement thereof.

7. In a car-coupler, a knuckle having a surface on its tail portion, which surface operates to raise the lock under the opening movement of the knuckle, the tail of said knuckle further having a shoulder that serves to force the lock back into alinement with its seat, under the closing movement of the knuckle.

8. In a coupler, a coupler-head having a pin-

seat, and a lock having a shoulder which, under the initial unlocking movement of said lock, engages a surface on the said head to prevent the lock from being jarred upward.

9. In a coupler, a vertically-movable lock having a limited lateral movement in its seat, said lock having a cam-shoulder at one side which must be forced into said seat before said lock can be raised.

10. A coupler of the Master Car-Builders' type having a pivoted knuckle formed in its elbow or angle with a vertical pin-seat and having a link-receiving seat or notch intersecting said pin-seat from the outer surface of the knuckle, but leaving the projecting rounded inner wearing-surface of the knuckle intact or unbroken, substantially as described.

11. In a coupler of the Master Car-Builders' type, the combination with a pintle or pivot bolt having a polygonal head, of a seat in the coupler-head closely fitting the polygonal head of said pintle for preventing the rotation thereof, substantially as described.

12. In a coupler of the Master Car-Builders' type, the combination with a pintle or pivot bolt having an equilateral polygonal head, of a seat in a coupler-head closely fitting the head of said pintle for preventing rotation thereof but permitting the pintle to be set in various positions, substantially as described.

13. In a car-coupler of the Master Car-Builders' type, the combination with a coupler-head having a seat and a supporting ledge or shelf, of a lock-dog mounted in said seat and having a depending guide-leg engageable with said ledge or shelf to support said dog in an elevated position, and a knuckle having a tail portion constructed and arranged to lift said dog from said ledge or shelf, and to support the same, under the opening movement of said knuckle.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN C. WASHBURN.

Witnesses:

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F. D. MERCHANT.