

(No Model.)

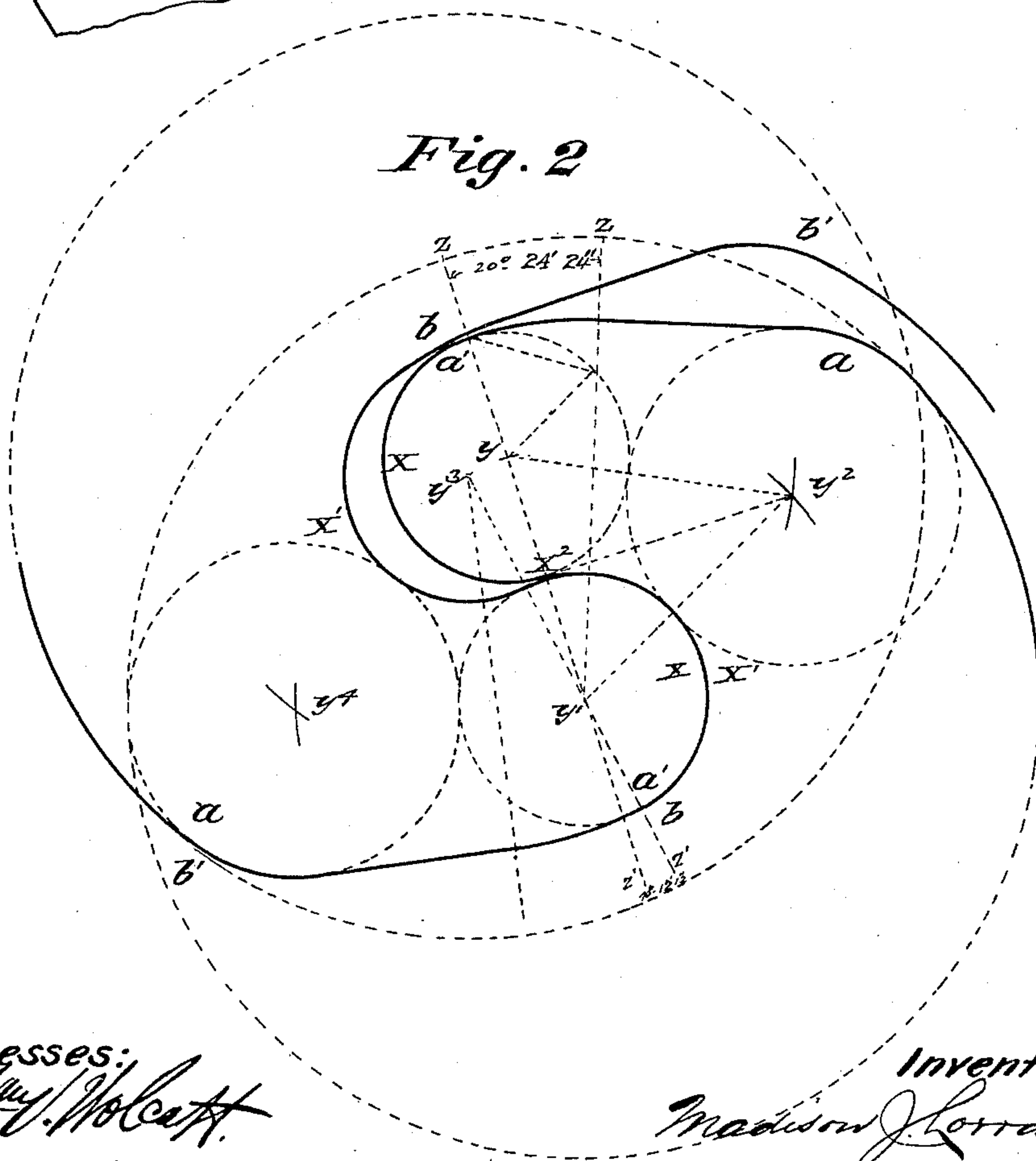
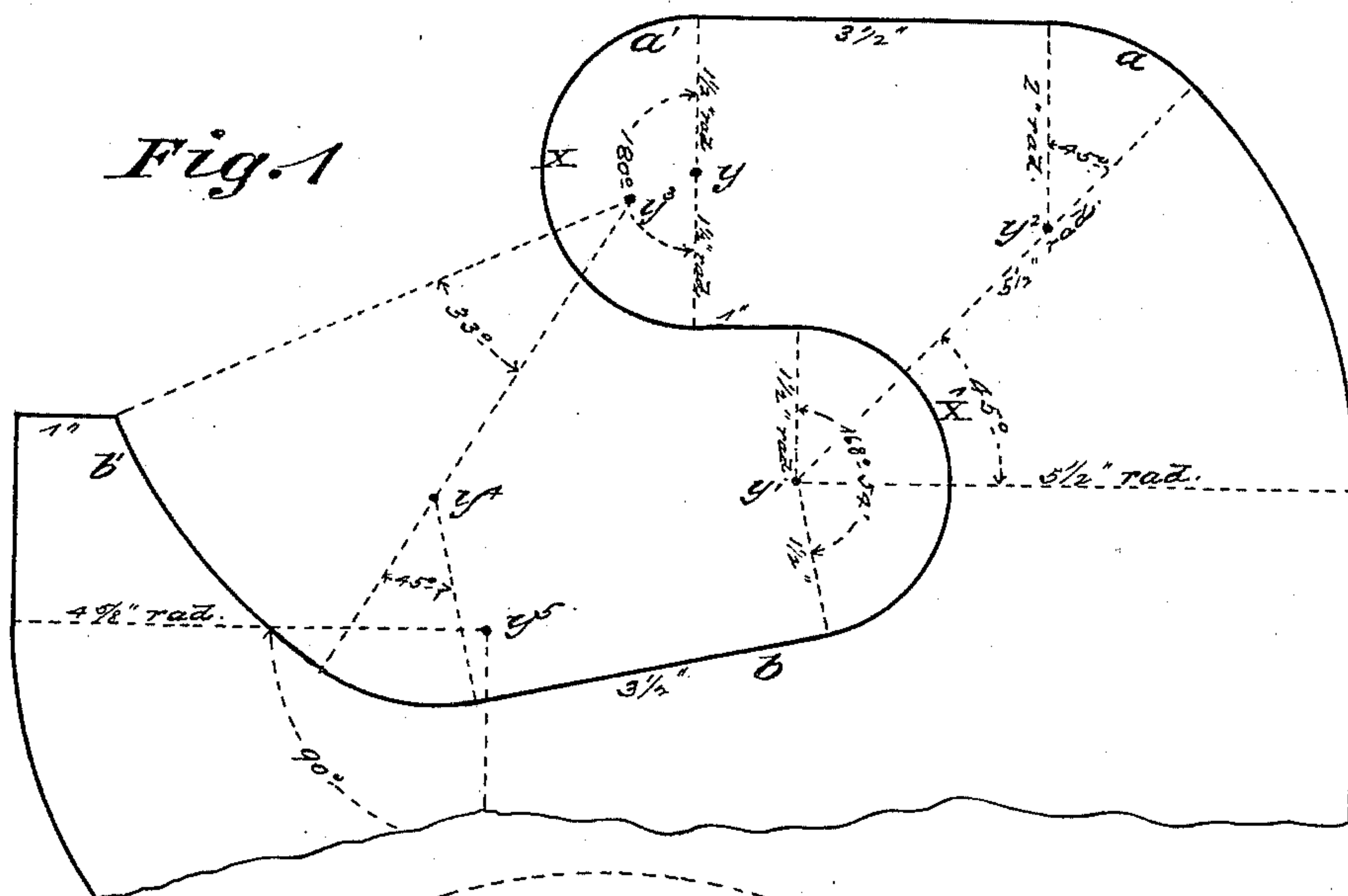
2 Sheets—Sheet 1.

M. J. LORRAIN.

CAR COUPLING.

No. 392,044.

Patented Oct. 30, 1888.



Witnesses:

Wm. V. Holcott

Frank Haggerty

Inventor:

Madison J. Lorrain

(No Model.)

2 Sheets—Sheet 2.

M. J. LORRAIN.

CAR COUPLING.

No. 392,044.

Patented Oct. 30, 1888.

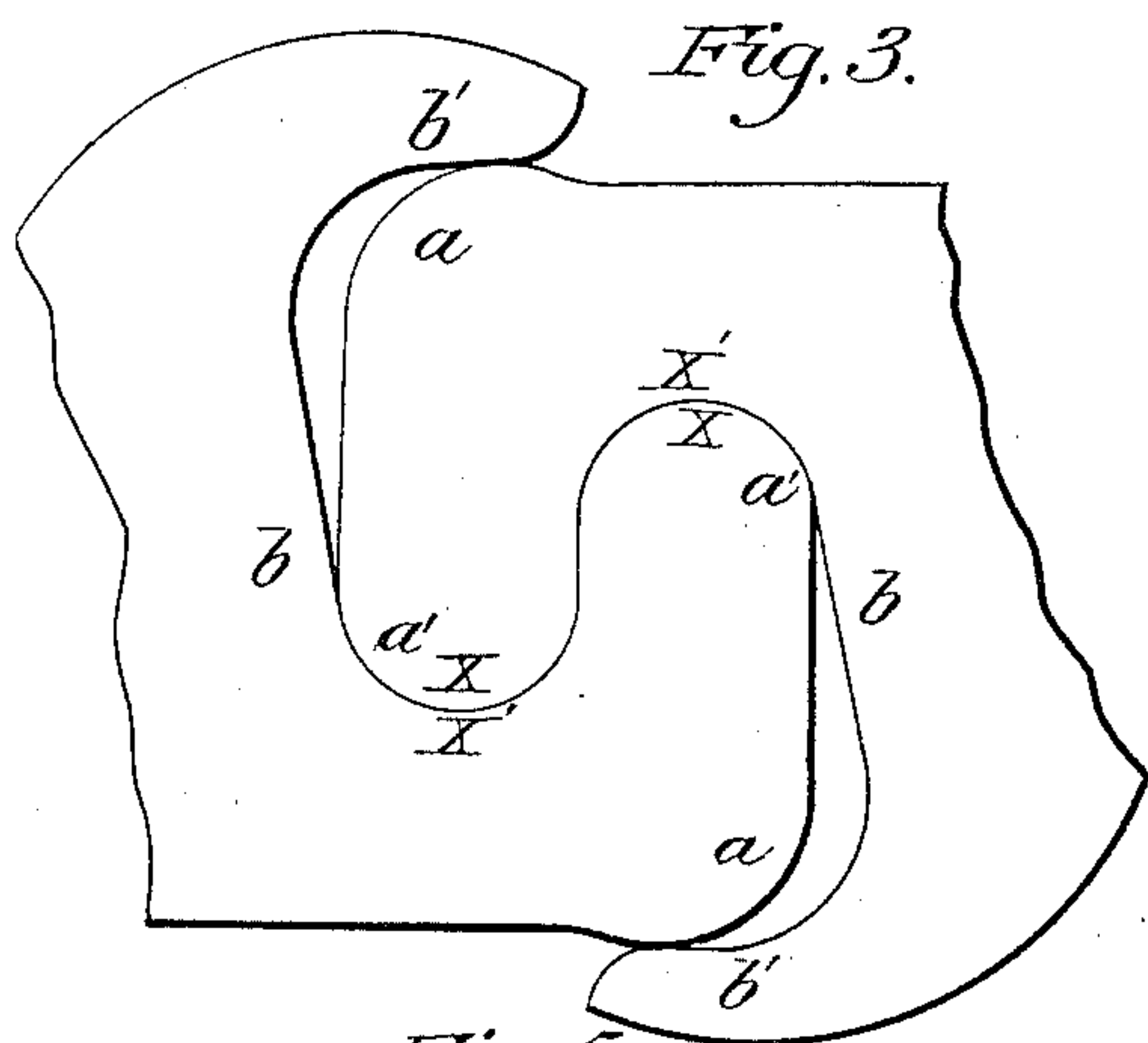


Fig. 3.

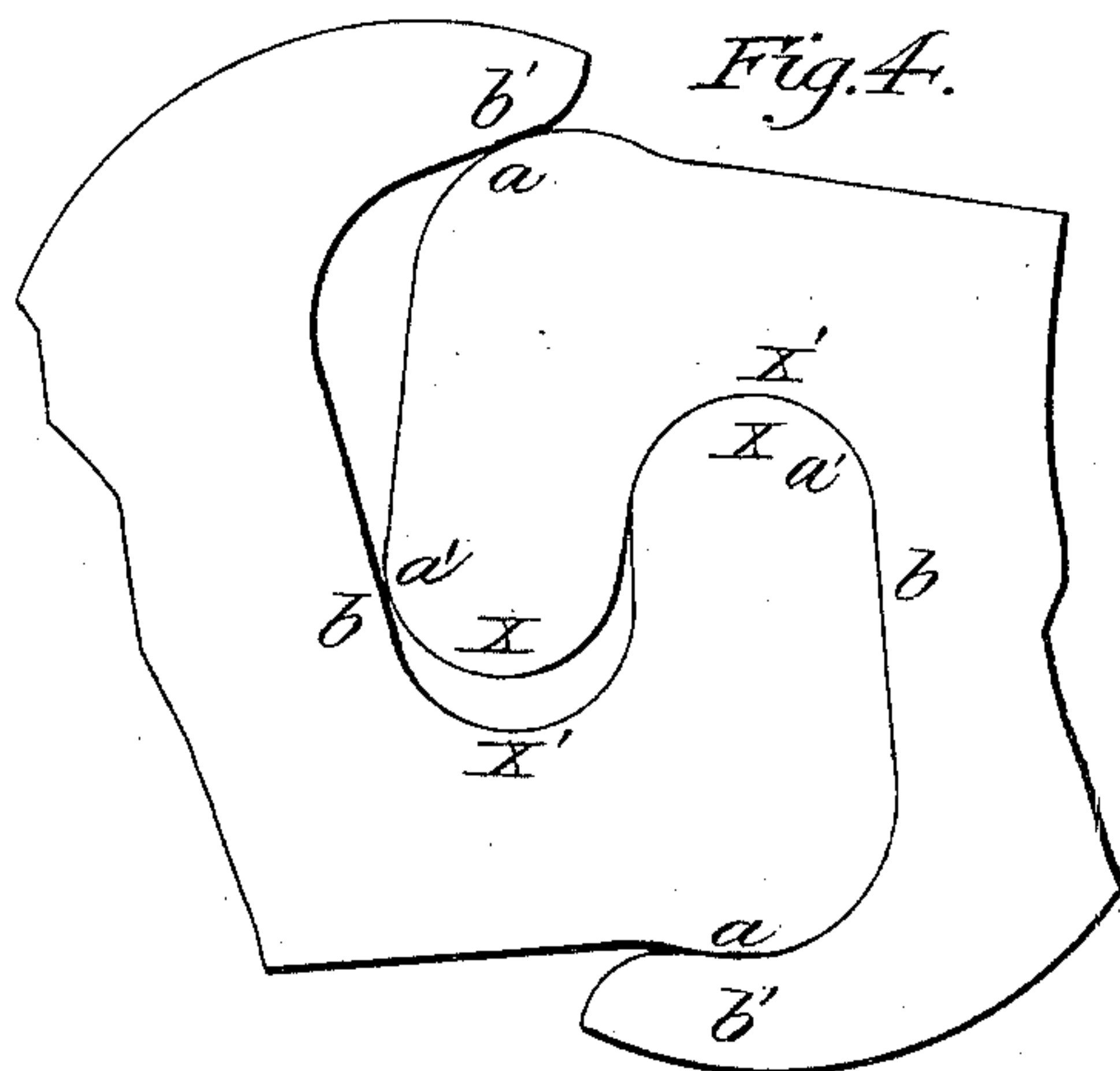


Fig. 4.

Fig. 5.

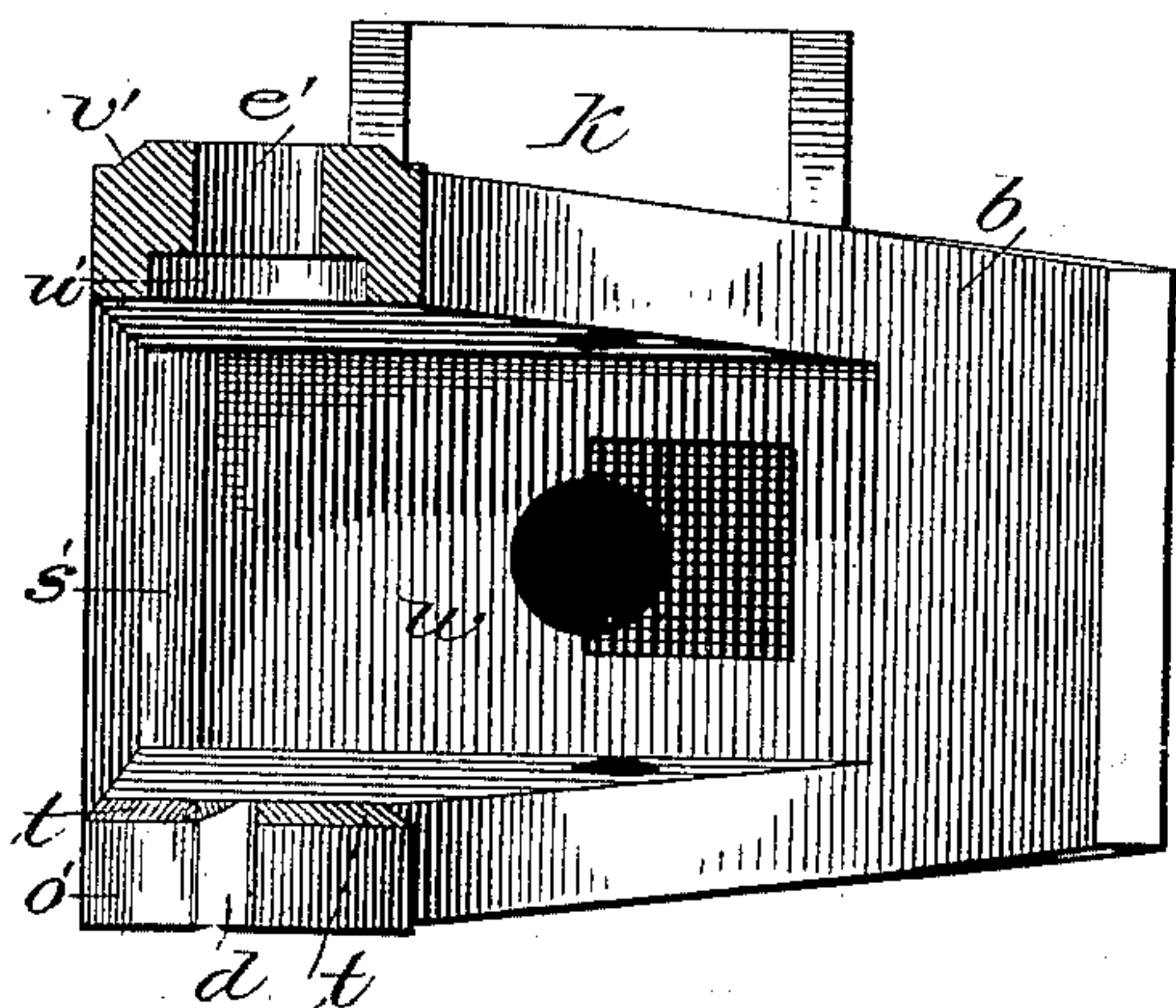


Fig. 6.

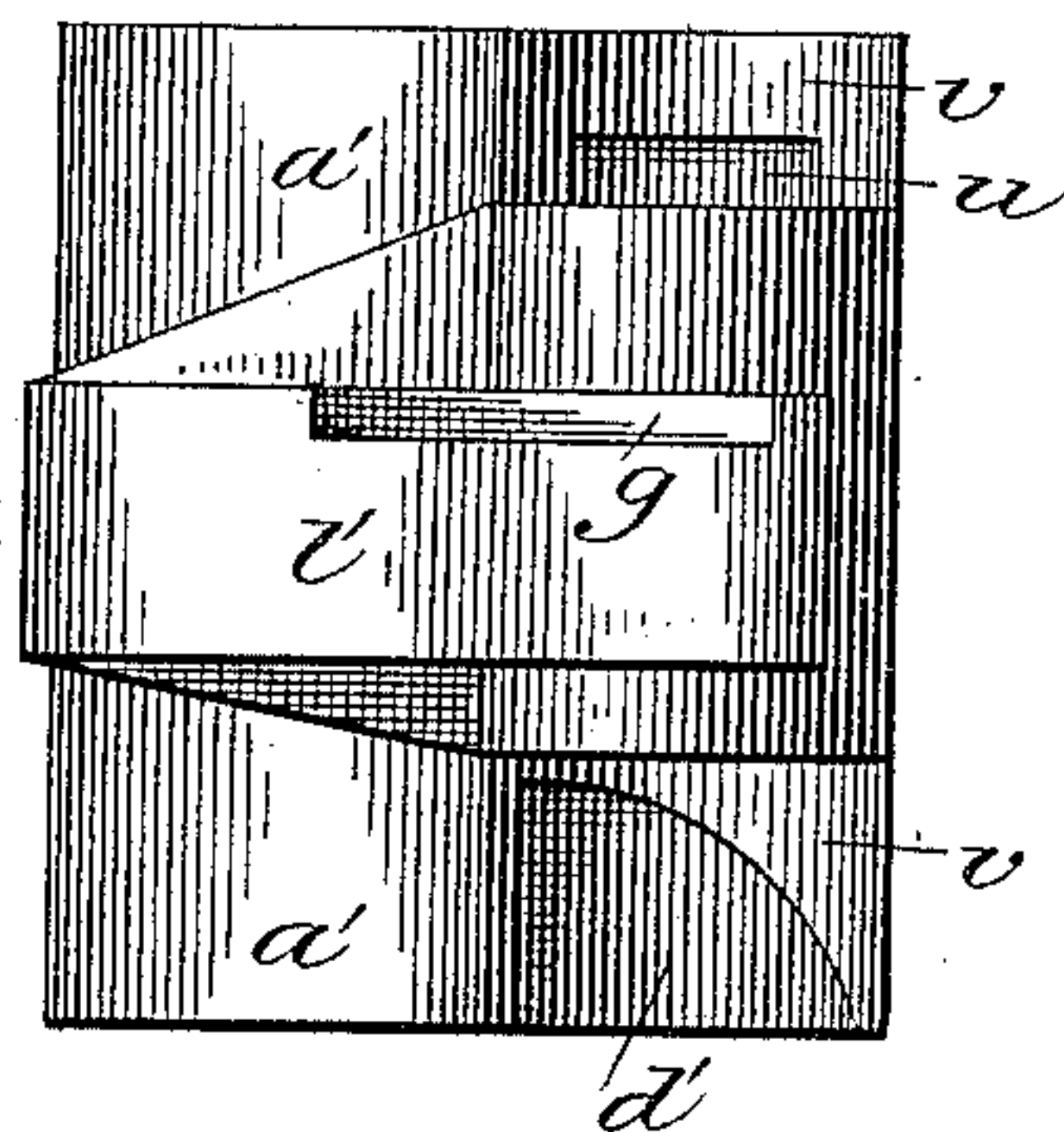


Fig. 8.

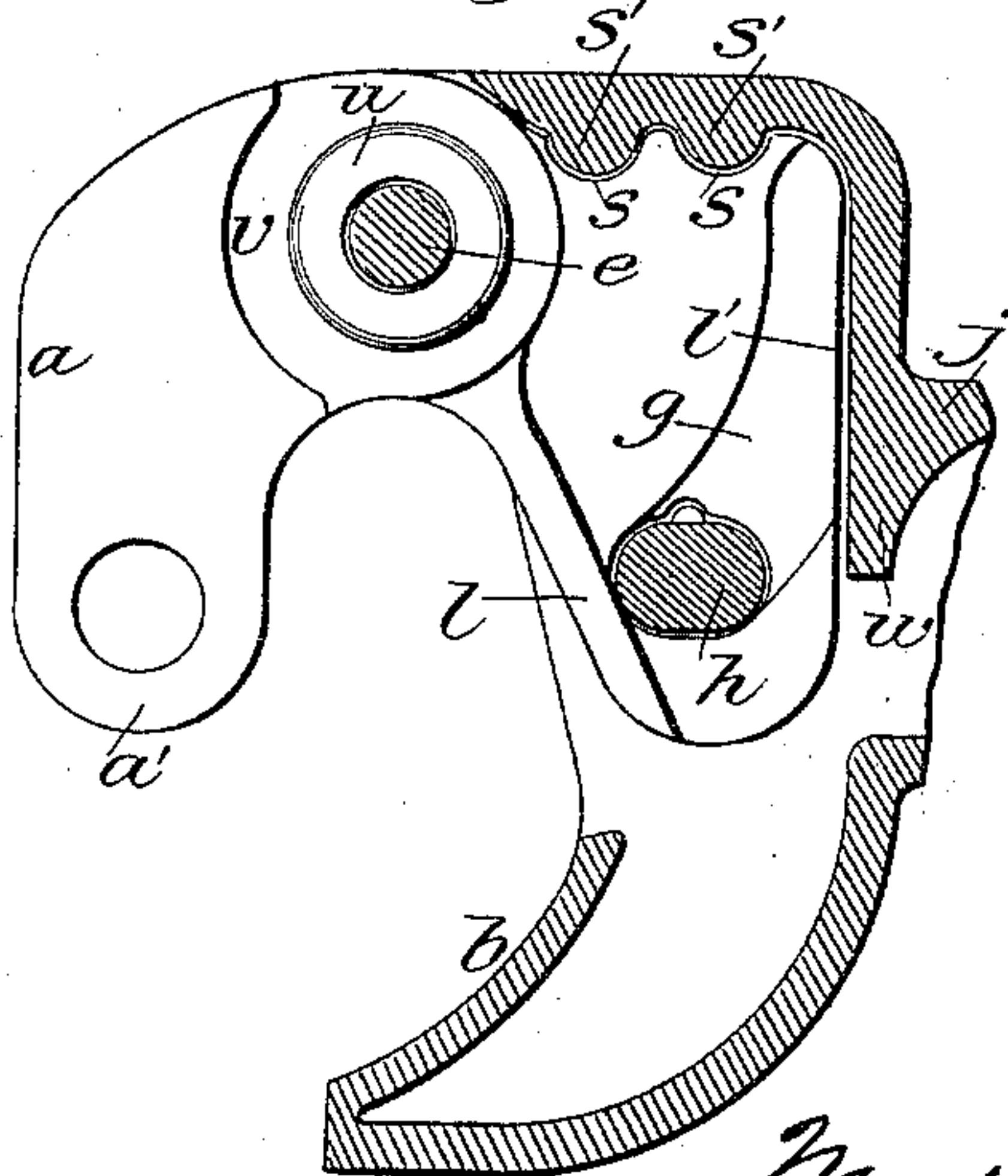


Fig. 7.

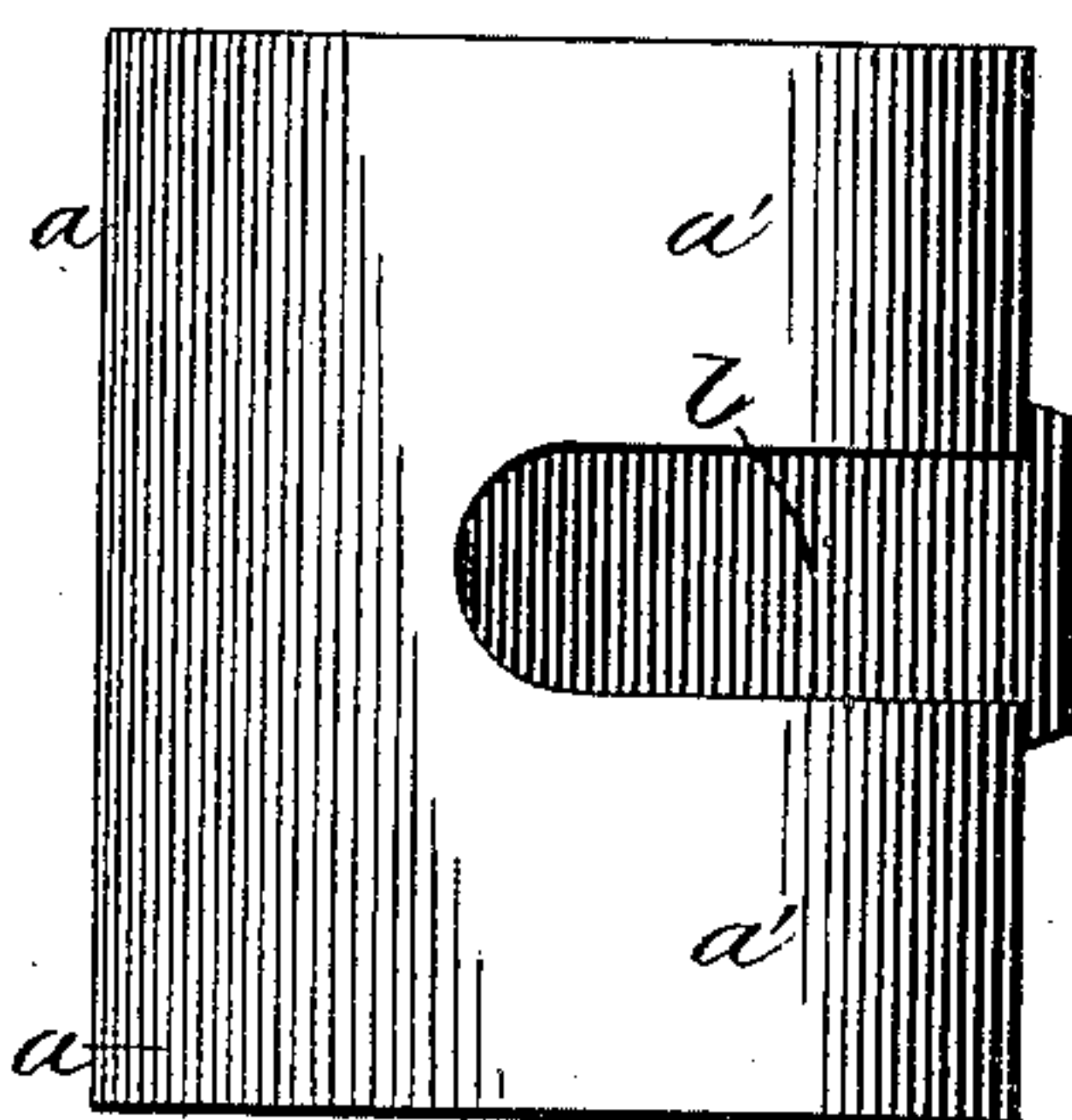
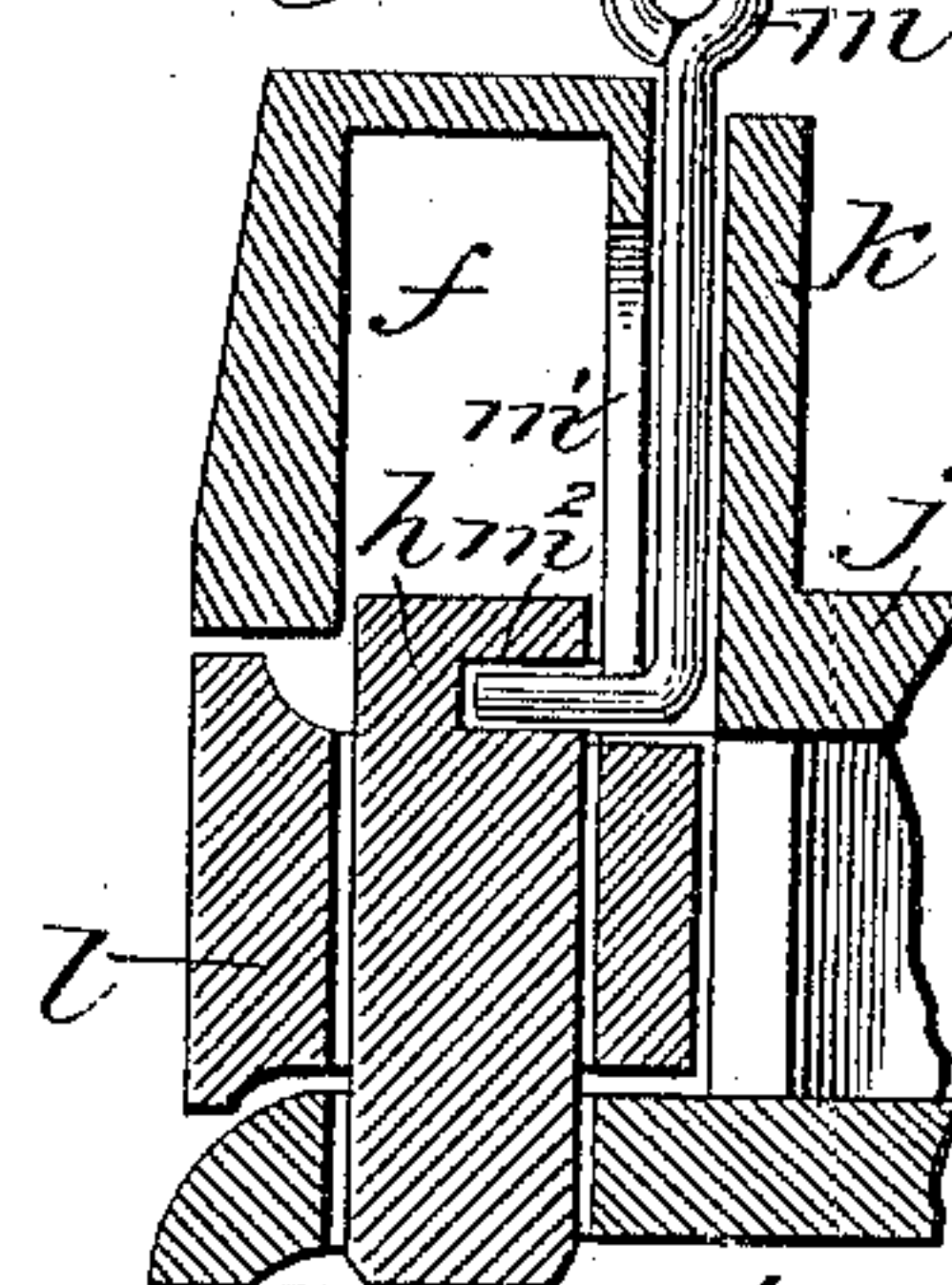


Fig. 9.



Witnesses.

Frank Haggerty's.

Ed. L. Leblanc.

Inventor.

Madison Lorrain.

UNITED STATES PATENT OFFICE.

MADISON J. LORRAIN, OF ST. LOUIS, MISSOURI.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 392,044, dated October 30, 1888.

Application filed January 21, 1888. Serial No. 261,548. (No model.)

To all whom it may concern:

Be it known that I, MADISON J. LORRAIN, of the city of St. Louis, Missouri, have invented a new and useful Improvement in Car-Couplings, of which the following is a full, clear, and exact description.

This invention is an improvement upon the coupling for which Letters Patent were granted to me November 30, 1886, and upon the coupling for which Letters Patent were granted myself jointly with Charles T. Aubin, August 30, 1887, and numbered, respectively, 353,320 and 369,195.

In the invention shown herewith certain outer forms of the construction of the coupler are shown, whereby it will act efficiently and meet all the demands of actual service; and certain improvements in details are made, whereby the coupling will be increased in strength, and also protected from the action of dirt or moisture.

In the annexed drawings, Figures 1, 2, 3, and 4 are plan views exhibiting the method of laying out the outward shape of the coupling, whereby its members will act efficiently with each other in the different positions they will be placed to each other in service. Fig. 5 is a front end elevation of the draw-head, showing section across the upper left-hand finger of same. Fig. 6 is a rear elevation of the clutch or coupling-head, and Fig. 7 is a front elevation of the same. Fig. 8 is a plan of one member of coupling—that is, the coupling-head and draw-head attached together for service—showing horizontal section of the draw-head. Fig. 9 is a vertical section of part of draw-head and lock, showing improved method of arranging the locking-pin so as to protect it from dirt and moisture.

The locking-pin is the same as claimed in Letters Patent No. 369,195, with the exception that the head and projecting knob are left off.

In the drawings similar letters denote the same parts.

a a represent the solid buffing-face of the coupling-head; *a' a'*, the forked arms of the same; *b b'*, the buffing-face of the right-hand finger of draw-head.

d is an improved form of projecting pin for the coupling-head to open automatically on. Said pin is cast on the draw-head.

d' is an improved form of slot, in which the pin *d* fits. Said slot is open at its bottom end, and can therefore be readily cast.

e is the hinge-pin.

e' is the hole in upper left-hand finger of draw-head, through which the pin *e* passes.

f is a chamber made for reception of locking-pin, and *g* is the groove in which the locking-pin travels.

j is the draw-bar.

k is a stop-block on top of draw-head.

l is the inner arm of the clutch-head. *l'* is the buffing-face of said inner arm.

m is a hook for raising the locking-pin.

m' is a slot in wall of chamber for the hook *m* to travel in.

m² is a hole in locking-pin to receive end of hook *m*.

s s are recesses.

s' s' are buttresses on side of draw-head.

t t are bevels on top side of lower left-hand finger of draw-head.

u is a raised ring or circular boss on top side of coupling-head, and which surrounds the hinge-pin hole.

u' is an upraise in upper finger, *v'*.

v is the inner buffing-face of the part *a* of the coupling-head.

v' v' are the left-hand fingers of the draw-head.

w is a wing in the mouth of draw-bar, designed to receive from *l'* the force of buffing blows.

By the construction given the outer form of the members of the coupling in their action on curves, when the members reach the limit of the sharpest curve on which they will couple, the outer face of the outer arm of the coupling-head will fit completely the outer face of the draw-head—that is, the face *a a' x* will fit the face *b' b x*, and at the same time the end of the arm *a'* of this last member will still be in contact with the opposing face *b*. This is shown in Figs. 2 and 4. Should this form of coupling not be properly made, in attempting to couple on curves either the end of the arm *a'* would bind with the opposing face *b*, or it would draw away from the same, and in this latter case the part *a'* would encounter nothing to push it inward, and thereby cause the inner arm of the coupling-head to engage with its locking mechanism. On a curve turning in a

reverse way from that shown in the figures the action of the members would be similar to that described, but reversed.

In coupling on tangents the members would stand as shown in Fig. 3, and in their action on all curves up to the limit of their effective working the end of the arm a' and the face b will always be in contact.

Fig. 2 differs from Fig. 1 in that the end of the arm a' is formed of two, or a compound curve, and its continuation on its inner side is a reversed compound curve similar to the first, except that the arcs covered by these curves are less by ten degrees, twelve minutes, and twelve seconds. From the end of the last arc a tangent to the curve is thrown out, which gives the proper inclination to the face of the draw-head.

In Fig. 1 the end of the arm a' is a complete semicircle, and its continuation on the inner face is a short tangent followed by a curve less than a semicircle by eleven degrees six minutes.

In Figs. 3 and 4 the members are similar in form to Fig. 1, except that the parts $a a$ and $b' b'$ are slightly altered in contour and adapted to always fit each other, whatever the movement of the members, and consequently there can be little or no lateral play between these members. In the other forms shown considerable lateral play exists.

The action of the coupling in locking and unlocking and the automatic action of the coupling-head are the same as described in Letters Patent No. 369,165—that is, the inner arm of the coupling-head is locked by a common automatic gravity-pin, which passes through openings in the top and bottom of the draw-head and through a similar opening in said inner arm. When the coupling is unlocked, the locking-pin rests on the inner arm of the coupling-head. The unlocking is accomplished by raising the locking-pin sufficiently to come out of the opening in the inner arm of the coupling-head, which releases said head. The coupling-head opens automatically by gravity by reason of the top of the slot d' resting on top of the pin d , and because of the top of the slot d' being curved. When the coupling-head is unlocked, its weight causes it to move downward and outward, and thus opens it. The reverse movement raises and closes the coupling-head. The object of the parts u and u' in this improvement is that when the coupling-head rises in closing, the ring or circular boss u will rise into the upraise u' , and consequently said ring is entirely surrounded by a solid bearing-surface, and no matter in what way a strain should come on the coupling-head—whether tensile, buffing, or lateral—it is received on the part u' , and therefore saves the hinge-pin e from the strain that might otherwise come upon it.

The object of the present construction of the parts d and d' , as shown, is that they are stronger and easily cast, and by placing them at the under side of the coupling-head they are

protected from moisture and dirt. The bevels $t t$ surround the lower hinge-pin hole and end on each side of the pin d , and carry off any dirt and moisture that might otherwise lodge and impede the action of the hinge-pin and pin d .

The coupling-head is constructed solid at $a a$, and not cut down in front to receive the fingers $v' v'$; but back of this solid face it is cut down, and therefore forms a solid protecting-guard to the fingers, and in bumping the direct force of blows is received on the metal interposed in front of the fingers and prevents their being injured. The object of the wing w is to act as a buffer and transmit the force of any blows it may receive from the part l' directly to and over the stem of the draw-bar.

The succession of recesses $s s$ and buttresses or columns $s' s'$ is to aid in receiving tensile and buffing strains and interlocking the coupling-head and draw-head firmly together, giving greater security and greater strength than my previous constructions.

In the form of lock shown in Fig. 9 the pin h is without a head and is provided with the opening m^2 . A chamber or housing, f , with the slot m' in one side, is formed on top of the draw-head. The locking-pin is inserted in the opening in the lower side of draw-head into the chamber, and the hook m is let down and entered into the opening m^2 , and thus prevents the locking-pin from dropping out, and when it is necessary to unlock the coupling the hook m is raised by any suitable mechanism, and as it is raised it draws up the locking-pin and releases the coupling.

Having thus described my invention, what I claim is—

1. In a reciprocating car-coupling in which the coupling-head at a' of one member is adapted to act with and bear upon the buffer at b of an opposing member in the different positions they assume with each other in action, as shown in Figs. 2 and 4, the combination of two similarly-constructed draw-heads provided with attached rotary coupling-heads, and having bearings u' and circular bosses u , and the automatic locking-pins for retaining the coupling-heads in closed position, for the purposes set forth.

2. The combination of the coupling-head with the raised ring u with the draw-head having the upraise u' , for the purpose set forth.

3. The combination of the coupling-head with the slot d' with the draw-head having the projecting pin d , substantially as shown and described.

4. The combination of the coupling-head with the faces $v v$ and l' , the ring u , and recesses $s s$, and the draw-head, with the fingers $v' v'$, the upraise u' , wing w , and columns $s' s'$, for receiving buffing strains.

5. The combination of the coupling-head with the ring u and recesses $s s$, and the draw-head having the upraise u' and columns $s' s'$, for taking tensile strains.

6. The combination of the series of recesses $s s$ and buttresses or columns $s' s'$, for the pur-

pose of more securely interlocking the coupling-head with the draw-head and giving greater strength to the wall of the draw-head, substantially as set forth.

- 5 7. The series of recesses $s s$ and buttresses or columns $s' s'$, in combination with the locking-pin, whereby the coupling-head, when closed, is securely interlocked and made one with the draw-head, and by these parts held
10 against any tensile strain independent of any

other retaining agency, the columns $s' s'$ also acting unitedly as braces to strengthen the wall of draw-head against fracture from blows given it by the rearward arm of the coupling-head when closing.

MADISON J. LORRAIN.

Witnesses:

WM. V. WOLCOTT,
FRANK HAGGENYOS.