

No. 729,037.

PATENTED MAY 26, 1903.

C. C. BOWEN, F. NEWNHAM & M. J. BARNETT.

CAR COUPLING.

APPLICATION FILED AUG. 16, 1900.

NO MODEL.

3 SHEETS—SHEET 1.

FIG I

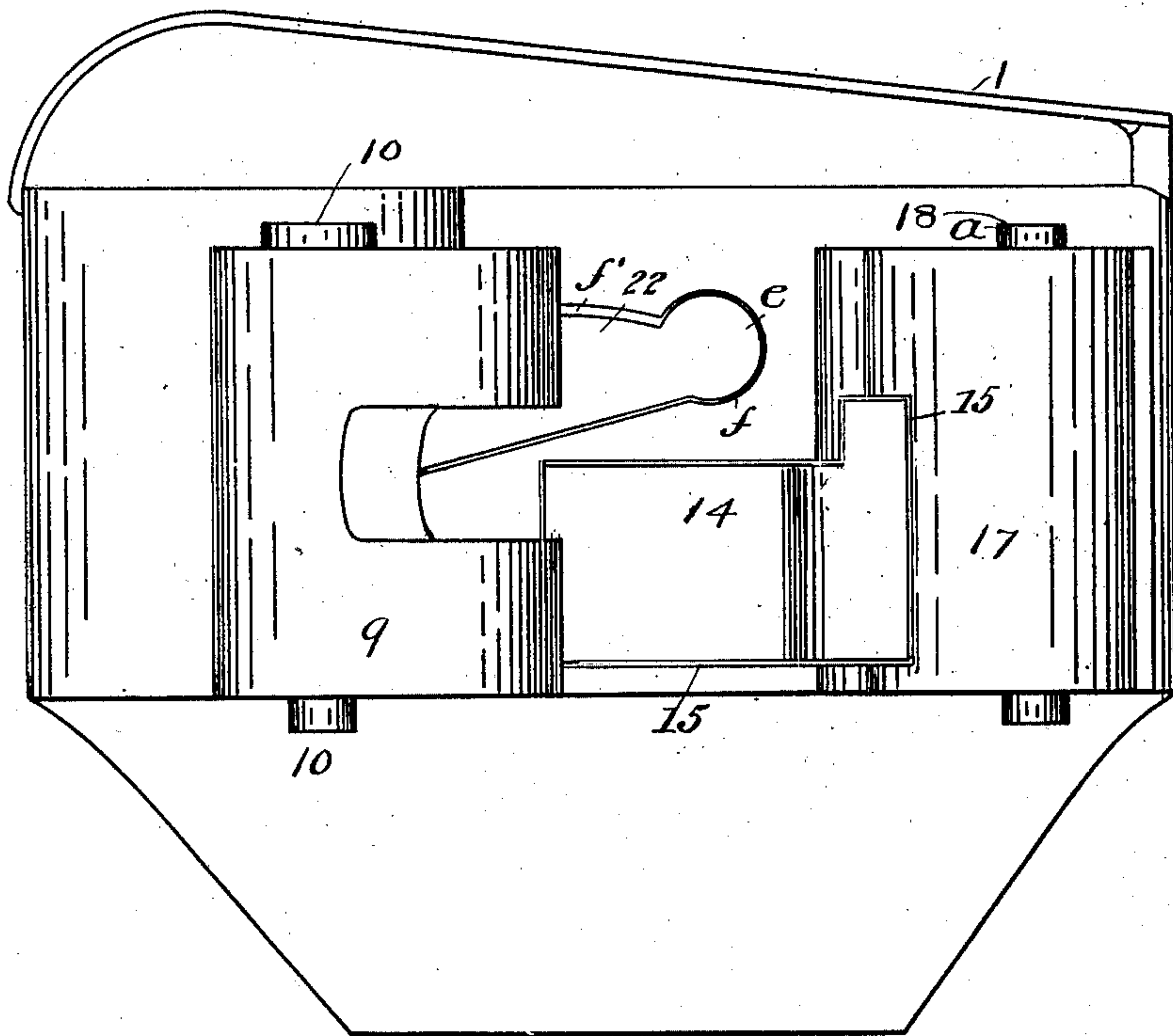
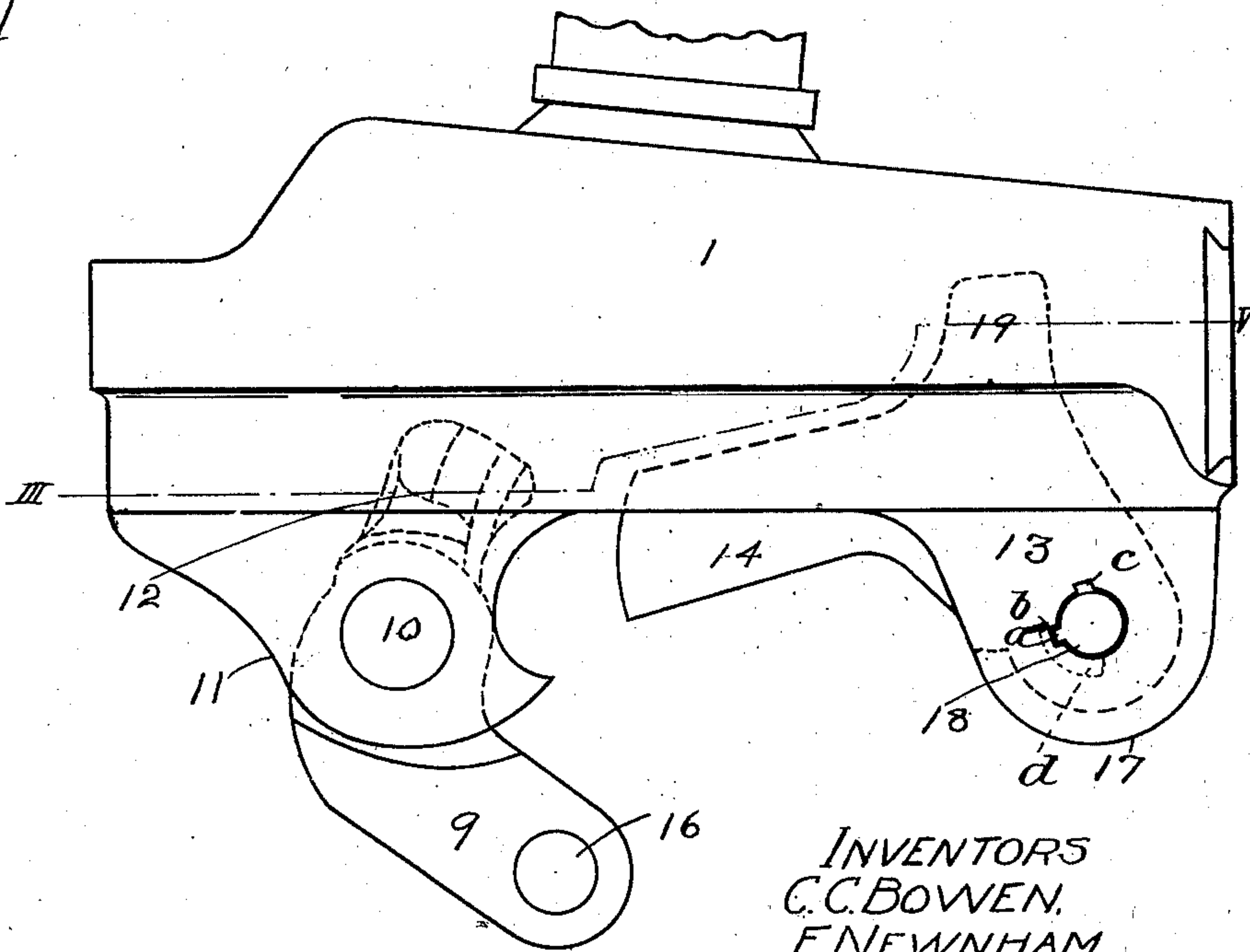


FIG II



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3 SHEETS—SHEET 2.

FIG III

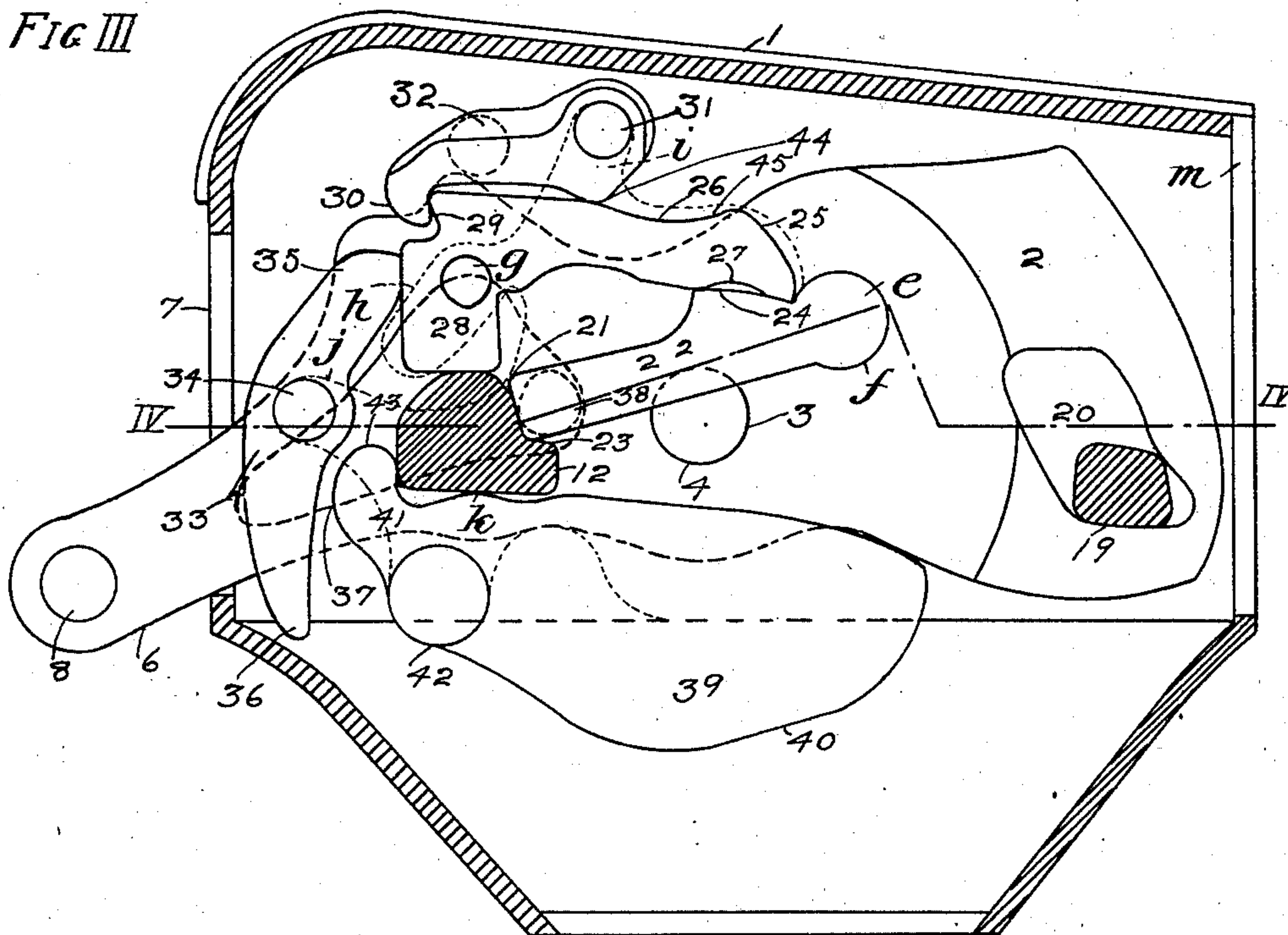
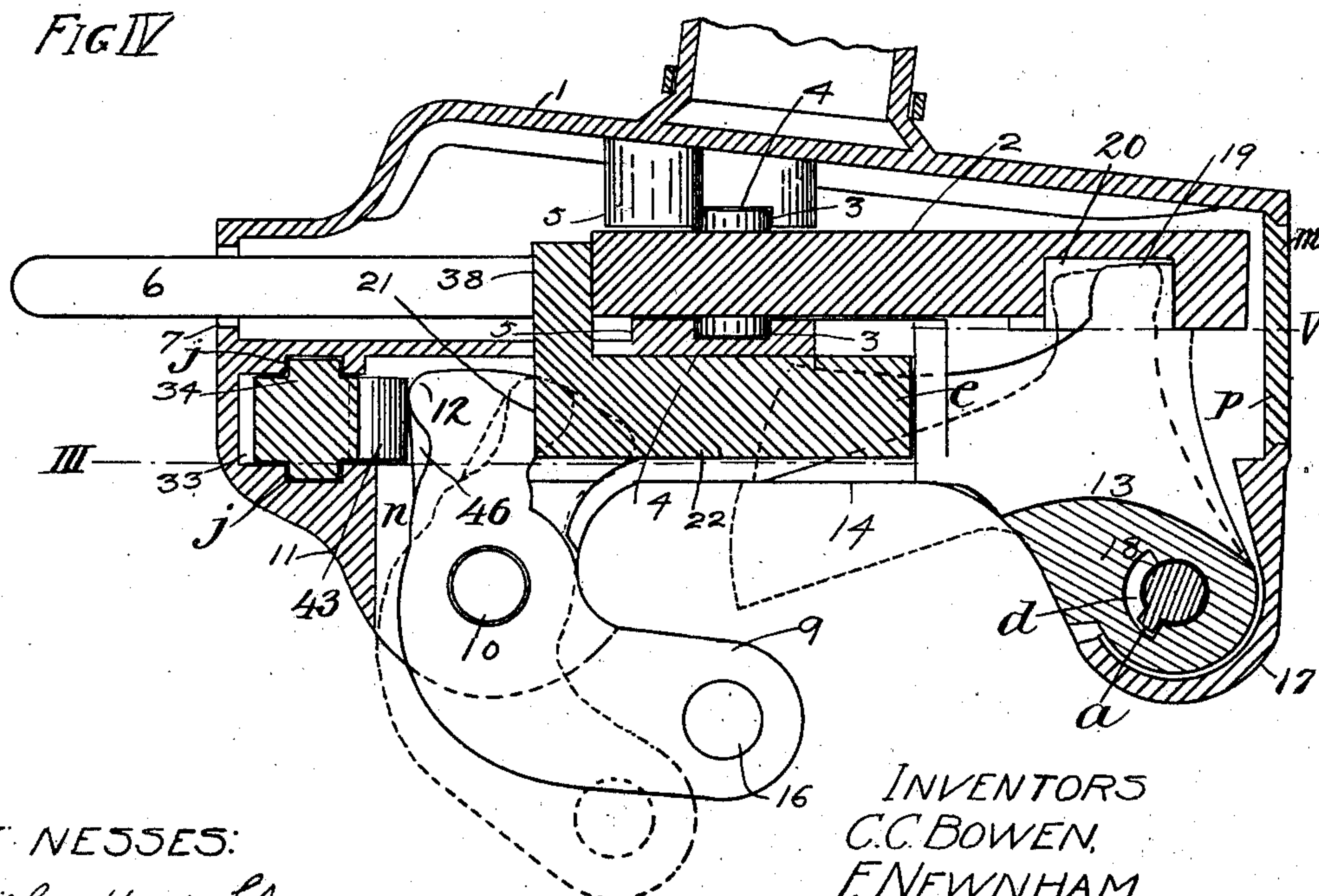


FIG IV



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3 SHEETS—SHEET 3.

Fig. V

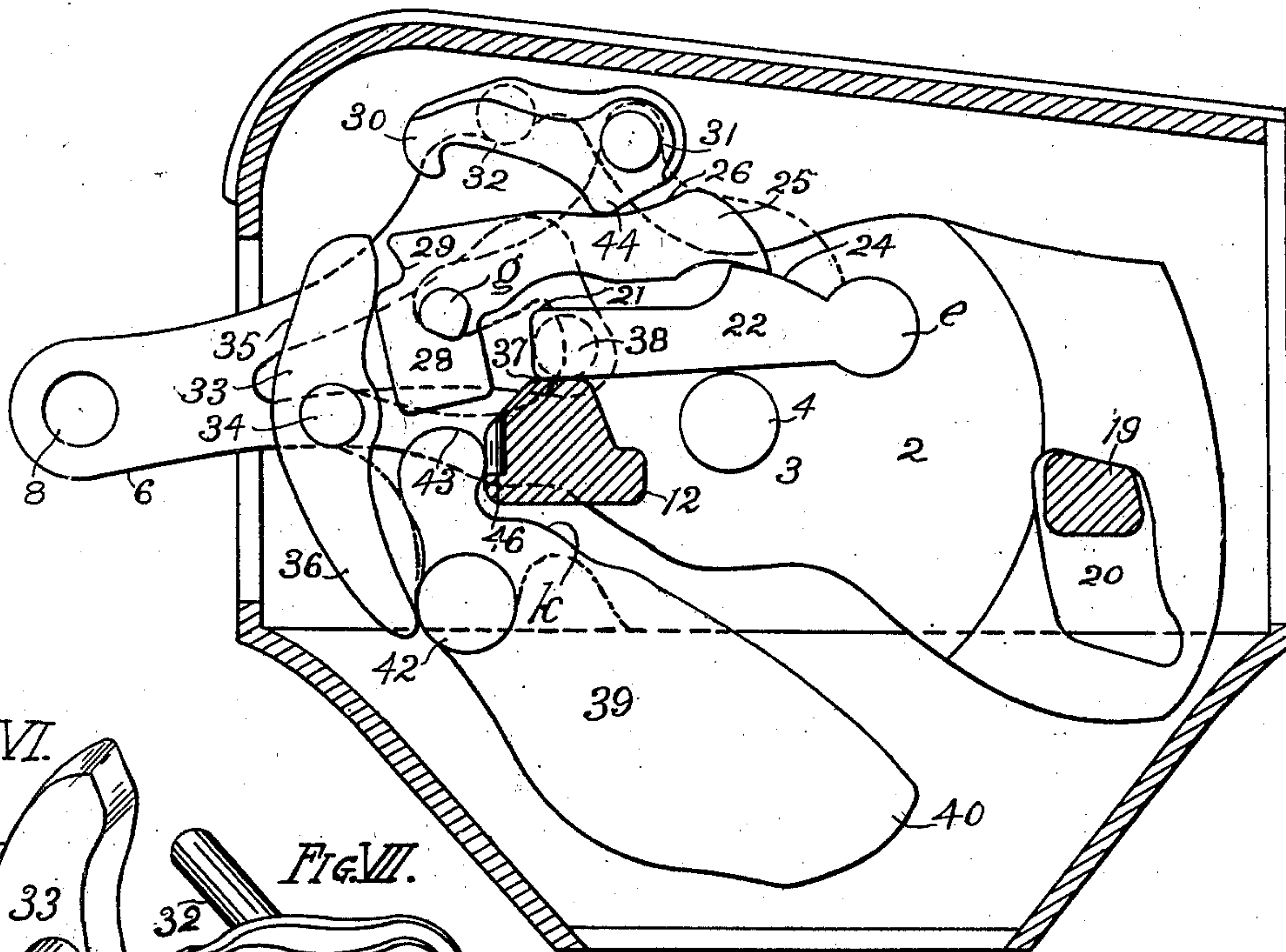


Fig. VI.

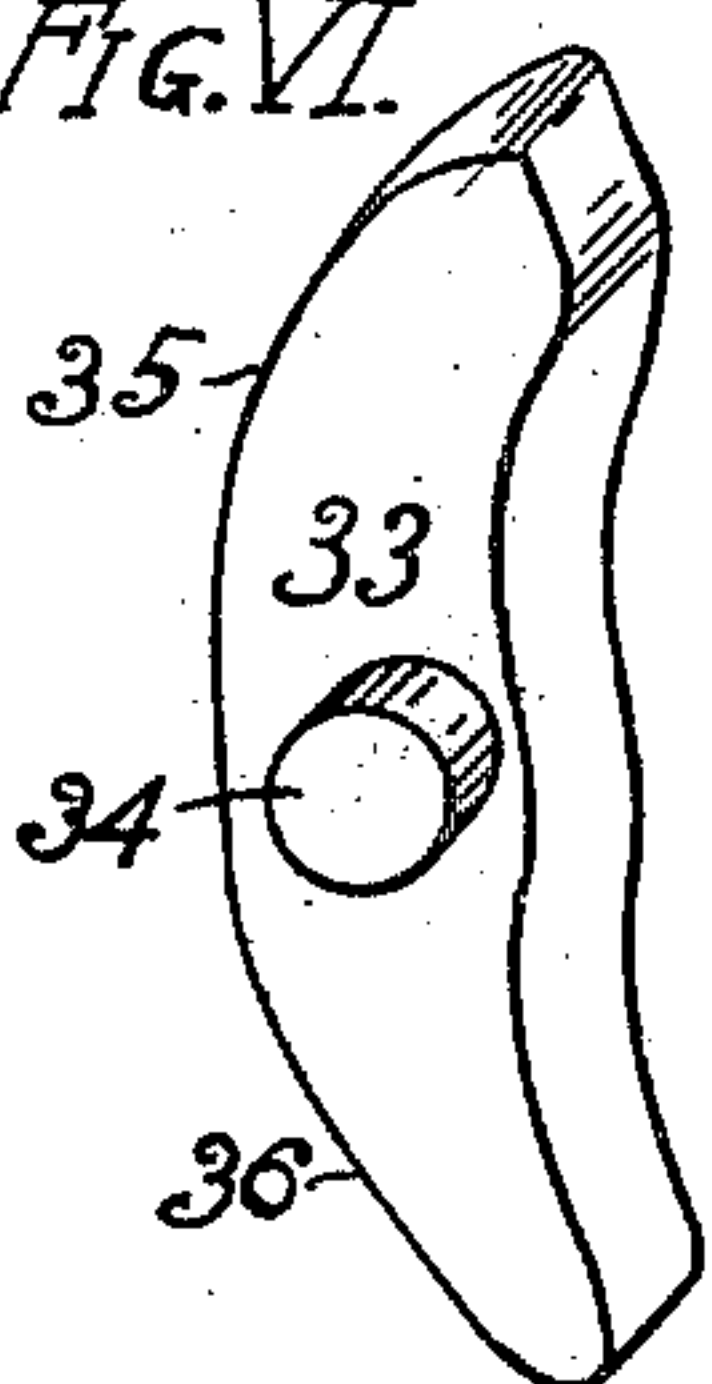


Fig. VII.

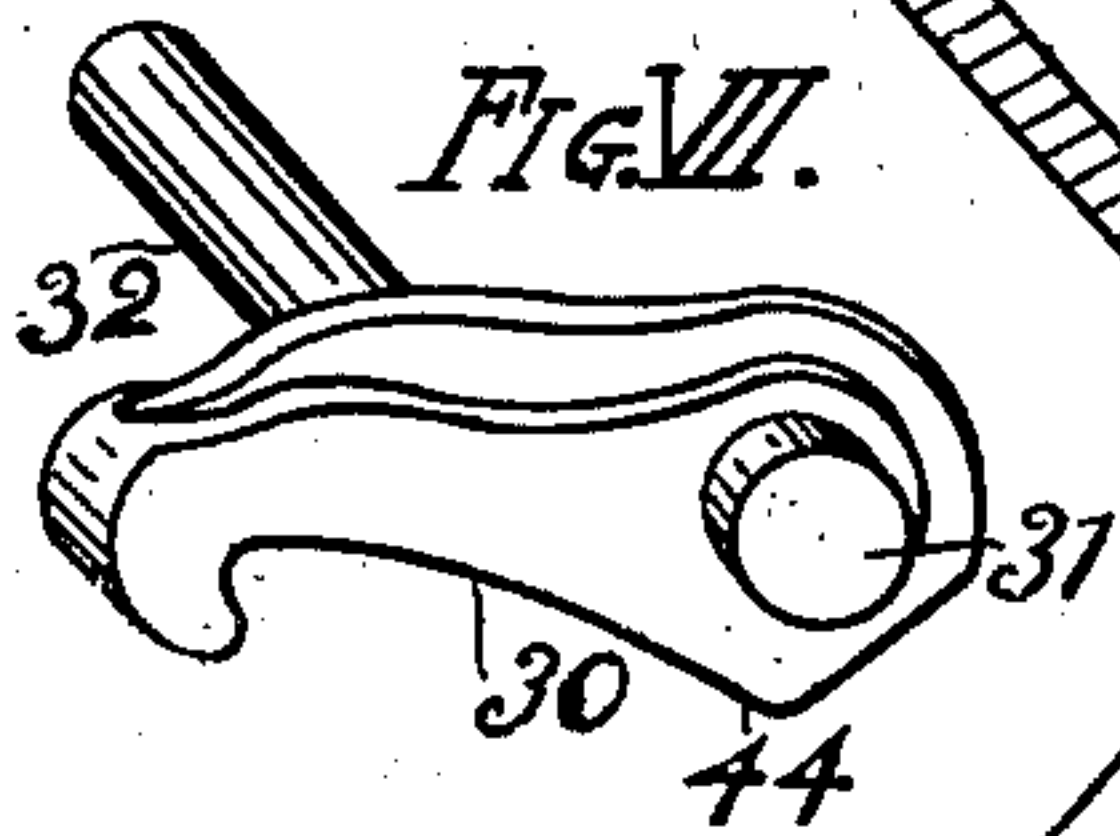


Fig. VIII.

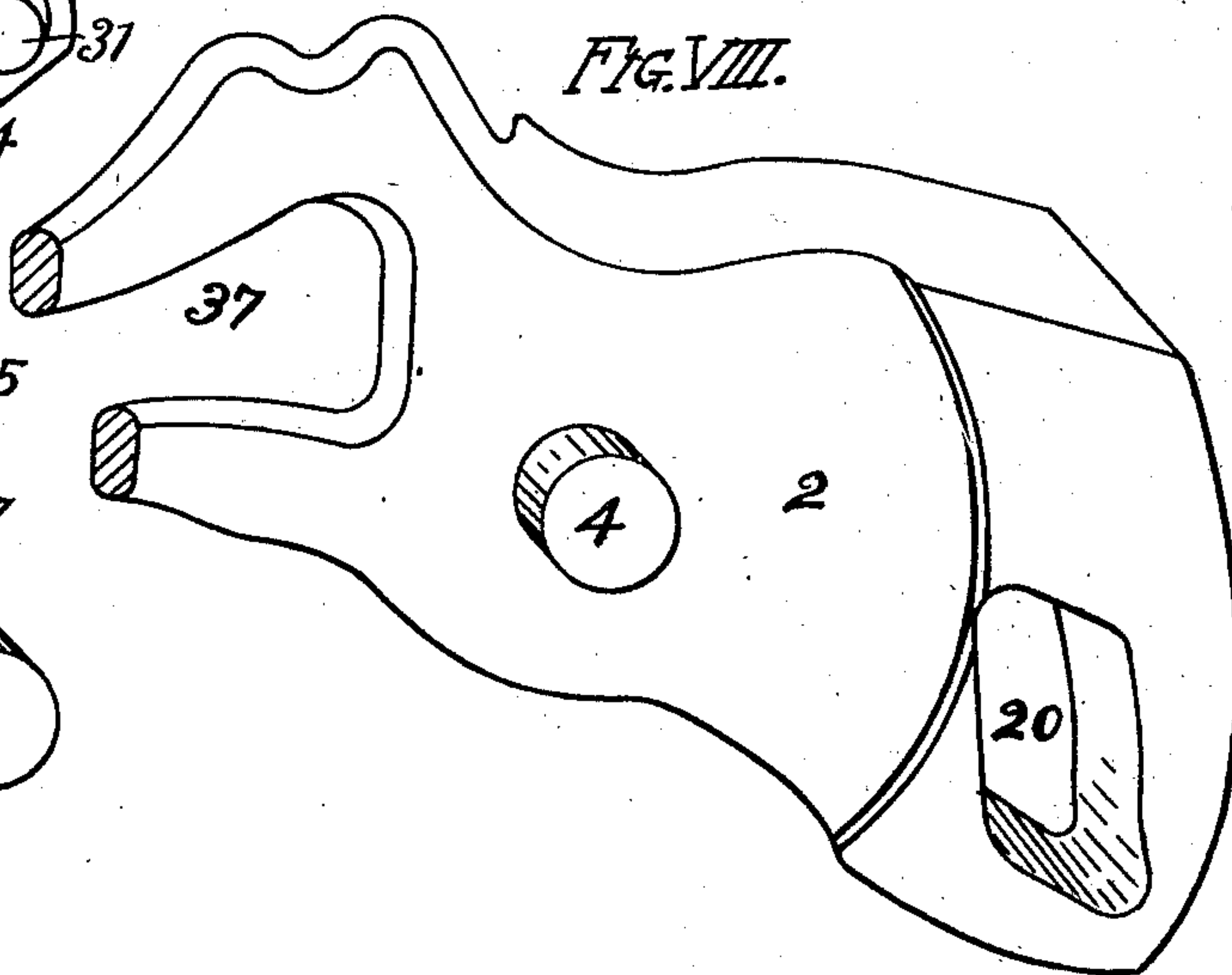


Fig. IX.

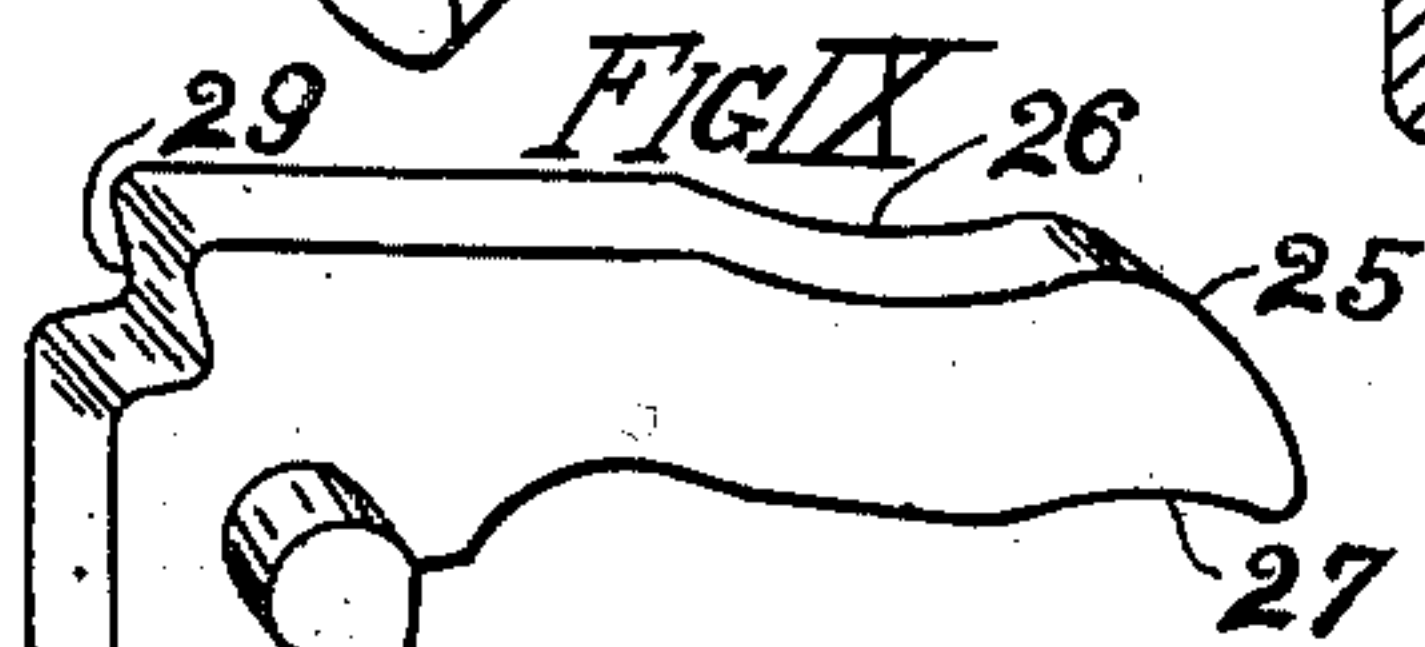
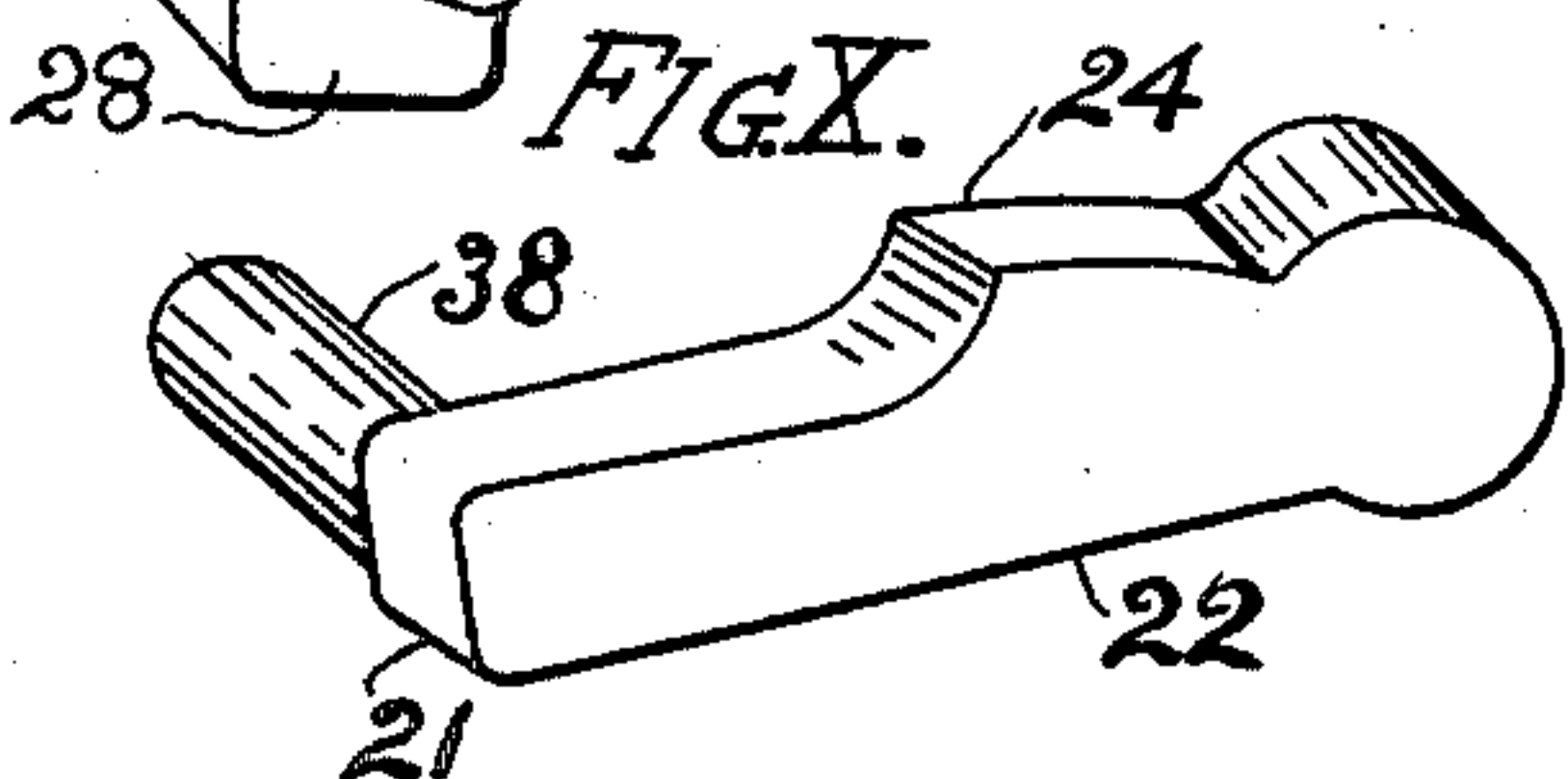


Fig. X.



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UNITED STATES PATENT OFFICE.

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CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 729,037, dated May 26, 1903.

Application filed August 16, 1900. Serial No. 27,081. (No model.)

To all whom it may concern:

Be it known that we, CALVIN C. BOWEN, FRANK NEWNHAM, and MORRISON JESSE BARNETT, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Car-Couplers, of which the following is a full, complete, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

Our invention relates to improvements in car-couplers; and it consists in certain features of novelty hereinafter described and claimed.

The object of this invention is to produce a car-coupler distinguished by all the following advantageous characteristics, viz: First, this is a positive automatic car-coupler; second, in form and construction it will fit and work automatically with any and all car-couplers of the Janney type; third, it is arranged to connect with any link-and-pin coupler; fourth, it is a positive automatic force-lock coupling, and it is therefore not affected with ice, snow, or sleet; fifth, when coupled the parts are positively locked, so as to absolutely prevent the possibility of any "creeping" of the parts by reason of the vibratory and other movements of the couplers or from any other cause; sixth, it has a positive automatic attachment to unlock and swing open the coupler-latch when not connected to opposite car-coupler; seventh, the coupler-latch will not remain in any other position than open when cars are apart except when specially set for that purpose; eighth, its working parts are completely incased from effects of weather and other interferences; ninth, it is furnished with means for locking the self-opening arrangement at will of operator for use with any car using the link-and-pin coupler; tenth, it is so constructed that when desired it can be held so as not to lock during any back-up switching or bumping of cars; eleventh, all the working parts carry their own journals; twelfth, the coupler and all its parts can be made and put together without any machine-work, drilling, grinding,

or fitting; thirteenth, it is constructed without bolts, nuts, screws, rivets, &c., or any springs, rubber cushions, or resilient parts; fourteenth, all the parts can be made of solid steel castings, strong and substantial, to stand a safe margin above the greatest crushing strain possible to put upon them; fifteenth, each part interchangeably fits in any of the couplers; sixteenth, the coupling is so designed that each individual piece is held securely in its relative working position and works automatically by means of outside force, with no possibility of its parts moving from their appropriate relative positions; seventeenth, the working parts, which are inside the case, are held in the case by the coupling-clutch and are readily removable and are only removable upon the removal of said clutch.

Referring to the drawings, Figure I represents a front elevation of our improved coupler. Fig. II is a top view. Fig. III is a vertical section taken on line III V, Figs. II and IV, showing the position of parts when the coupling is closed. Portions of the casing are omitted. Fig. IV is a horizontal section taken on line IV IV, Figs. I and III. Fig. V is a vertical section taken on line III V, Figs. II and IV, showing the position of parts when the coupling is open. Fig. VI is a perspective view of the shift-lever for shifting the latch locking member shown in Fig. IX. Fig. VII is a perspective view of the cam-latch for locking the latch locking member. Fig. VIII is a fragmental perspective view of the weighted unlocking and unlatching member or lever. Fig. IX is a perspective view of the latch locking member. Fig. X is a perspective view of the latch.

In the drawings the head is shown in a conventional manner without any attempt toward structural strength, which is to be supplied by the constructor in any appropriate way.

1 indicates the case or head, in which the operative parts are mounted on trunnions which seat in suitable recesses provided in the case for said trunnions. From the nature of the several views some of these recesses

are obscured by intervening parts. Said recesses are respectively open at some appropriate point to allow the trunnions to be inserted into and withdrawn from their respective seats. This will be understood by reference to Fig. IV, in which the weighted unlocking and unlatching member or lever 2 is shown with trunnions 4 resting in seats 3, which are formed in brackets 5 in the walls of the case.

The unlocking-lever 2 is weighted at its inner end to hold it normally in its unlocking position and is furnished at its outer end with a handle 6, extending through a slot 7 in the case and by which it can be forcibly brought into its unlocking position and can also be temporarily held against coming into locking position.

8 indicates a hole in the handle for attaching thereto suitable means—such, for instance, as a chain (not shown)—for operation from the side or top of the car, whereby to operate the lever for uncoupling and to temporarily hold the lever out of locking position for backing and bumping of uncoupled cars without danger to the trainman.

9 indicates the coupler-clutch, pivoted by a coupling-pin 10 in the lips 11 of the casing 1 and furnished on its inner end with a stem 12, which extends inside the casing, to be locked and unlocked by appropriate working parts in the acts of coupling and uncoupling.

It is to be understood that for automatic coupling this coupler and another coupler of the Janney type are to be brought together.

13 indicates a coupler-operated bent cam-lever having a clutch-receiving arm 14 to play through an opening 15 in the case to be forced inward by the clutch of the opposing coupler (not shown) in the act of coupling.

19 indicates the cam of said lever 13. The unlocking-lever 2 is furnished with an oblique camway 20, the wall of which is engaged by the cam 19 to throw the unlocking-lever out of its unlocking position, at the same time lifting the inner weighted end and lowering the handle 6 of said lever. This operation is performed whenever the arm 14 is forced in, as it will be by the clutch of the opposing coupler in the act of coupling. When coupled, the arm 14 is positively held in this position by the clutch of the opposing coupler until the arm 6 is forcibly lifted to bring the working parts into unlocking position and the other coupler is withdrawn.

Whenever the opposing clutch (not shown) is released and withdrawn, the weight of the unlocking-lever 2 operates through the camway 20 and the cam 19 therein to throw the arm 14 of the bent cam-lever 13 out into its normal uncoupled position, and by this movement the unlocking-lever 2 comes again into its unlocking position (shown in Fig. V) for releasing the clutch and allowing it to come into its open position. (Indicated by dotted lines in Fig. IV.)

16 indicates a hole in the clutch 9 to receive

a coupling-pin (not shown) for coupling with a link-and-pin coupler. The bent cam-lever is pivoted to the lips 17 of the case by a feather-pin 18, which is furnished with a feather *a* to seat in and to extend down through either of two feather-ways *b c* (see Fig. II) as occasion requires and into a feather seat or chamber *d*, formed in the upper part of the bent cam-lever 13. Said feather-way *c* is designed to hold the feather *a* when it is desired to lock the bent cam-lever in its innermost position, which position is shown in solid lines in Fig. IV, and in which position it holds the weighted unlocking-lever 2 in its locking position, (shown in Fig. III,) thereby to lock the clutch 9 in closed position, (shown in solid lines in Fig. IV,) thus to hold the coupling-pin hole 16 in line with the draft when required for making a link-and-pin coupling.

Referring now to Figs. III and IV, which show the parts in the positions they assume when the coupling is formed, 22 indicates the clutch-latch, which is formed in a knuckle *e* at one end to seat in a rounded recess *f* in the case, in which said knuckle turns to allow the other end 21 of the latch to fall and rise to come into and out of locking position. In Fig. I the shape of the seat *f* is shown; but it is to be understood that the opening *f'* in the case, (seen in Fig. I,) through which the latch 22 is inserted, is preferably not larger than is necessary for inserting the latch into its seat and that the chamber wherein the latch 22 operates is behind the front wall of the case and does not appear in Fig. I; but it is to be understood from Figs. III and V, which show the latch in its locking and unlocking positions, respectively.

When the latch is in locking position, (see Fig. III,) the end 21 thereof is forced, as hereinafter set forth, in front of the locking-arm 12 of the coupling-clutch to lock said clutch in its coupling position, as shown in solid lines in Fig. IV.

The clutch-stem 12 is furnished with a recess 23, in which the end 21 of the latch 22 seats when in locking position, as shown in Fig. III.

In assembling the coupler the latch 22 will be inserted into the case through hole *f'* before the coupling-clutch is inserted. When the clutch 9 is held in place by the pin 10, it prevents the latch 22 from being withdrawn.

The latch is furnished on its upper face with a projection 24. 26 indicates a shifting latch locking member or lever, one end 25 of which rests upon the projection 24 and is furnished with a transverse groove 27 to receive the projection 24 when the latch locking member 26 is passing from locking position (shown in Fig. III) to unlocking position. (Shown in Fig. V.) The walls of the groove slope to ride easily over said projection, so that the end 25 of the member 26 will be slightly lowered, and thus eased in its movement as it shifts from unlocking to locking position and from locking to unlocking. This arrangement causes

the shifting latch locking member to be bound when in locking position and to play freely during its movement. The opposite end of member 26 is furnished with a downwardly-
 5 extending leg 28, with which the upper face of the arm 12 of the coupling-clutch 9 engages to lift the shifting latch locking member 26 in the act of coupling and to hold it up in locking position while the coupling-clutch is
 10 in coupling position.

The shifting latch locking member 26 is furnished with trunnions *g*, which are preferably V shape on their lower sides and which play in oblique ways *h* in the walls of the case,
 15 and which ways slant upwardly over the arm 12 of the coupling-clutch to allow the shifting latch locking member 26, which acts as a lever, to be moved upwardly over said arm 12 as said arm moves under the leg 28 in the
 20 act of coupling. The V shape of the trunnions is designed to avoid friction of said trunnions on the walls of their ways *h*.

The shifting latch locking member 26 is furnished above the leg 28 with a detent 29 to
 25 interlock with a cam-latch 30, the heel of which is furnished with trunnions 31, by which said latch is pivoted in the case 1. *i* indicates the seats in the case for said cam-latch trunnions 31. The cam-latch 30 is fur-
 30 nished with an arm 32 to rest on the unlocking-lever 2 to be raised and lowered thereby in the acts of unlocking and locking, respectively.

The cam-latch 30 is furnished below its
 35 trunnions with a cam 44, which rests on the shifting latch locking-lever 26 to come into position between said trunnions and the shifting latch locking-lever 26 to hold said lever down to force and to hold the latch in latched
 40 position when the parts are in coupling and locking position. (Shown in Fig. III.)

33 indicates the shift-lever for shifting the latch locking-lever 26. It is furnished with trunnions 34, seated in seats *j* therefor in the
 45 case.

39 indicates a clutch-opening lever having a weighted arm 40 and a clutch-operating arm 41, which engages the arm 12 of the clutch 9 to throw said clutch open and to nor-
 50 mally hold it in open position. (Indicated by dotted lines in Fig. IV.) Said clutch-opening lever 39 is furnished with trunnions 42, by which it is pivoted in the case, and is furnished with a cam *k*, which lifts the clutch-
 55 arm 12 at the close of the coupling movement, so that the weight of the clutch-arm 12 will be applied to assist in starting the clutch-opening lever on its return to open position. (Shown in Fig. V.) This action will be un-
 60 derstood by comparison of the positions of the clutch 12 in the coupled position (shown in Fig. III) and the uncoupled position. (Shown in Fig. V.) These two views show that when the weighted clutch-opening lever
 65 39 is in the coupled position the clutch is lifted by the projection *k* to a higher position

than the clutch assumes when the lever 39 is in the uncoupled position. (Shown in Fig. V.)

The upper end 43 of the short arm 41 of the clutch-opening lever 39 is rounded to act upon
 70 the arm 12 of clutch 9 and on the arm 36 of the shift-lever 33 to throw the upper arm 35 of the shift-lever against the shifting latch locking-lever 26 to shift it into its latch lock-
 75 ing position as the clutch closes.

The clutch-locking latch 22 is furnished with a projection 38, which extends to be en-
 80 gaged by the unlatching member 2 when the arm 6 thereof rises. For convenience of construction the unlocking-lever is furnished with an opening 37, into which the projec-
 85 tion or arm 38 extends. In the drawings the opening 37 is shown considerably extended in order to lighten the arm 6 of the lever.

In practical operation when it is desired
 90 to use the coupler in connection with couplers of the Janney type the feather-pin will be set with its feather in the feather-way *b* in the upper lip 17 and in the feather-cham-
 95 ber *d* in the bent cam-lever 13. The feather-chamber *d* extends throughout such an arc as is necessary to allow the bent cam-lever 13 to move freely in and out while the feather
 100 *a* is in the way *b*.

When the coupler is to be used with a link
 95 and pin, the feather-pin will be readjusted to bring the feather into the feather-way *c*. Then the bent cam-lever 13 will be set with its arm 14 pushed in, as shown in solid lines in Fig. IV. When in this position, the inner
 100 end wall of the feather-chamber *d* registers with the inner wall of the feather-way *c*, and when the feather is in said chamber the bent cam-lever is held in its coupled or pushed-in
 105 position, (shown in Figs. III and IV,) and thus prevents the weighted end of the unlocking-lever from lowering into unlocking position. By this means the coupler-clutch
 110 9 is as positively locked in the closed or coupling position, as if the arm 14 were held in by the coupler-clutch of an opposing coupler. If it is desired to release the coupler-clutch and allow it to swing outward while the bent
 115 cam-lever arm 14 is in, this will be done by raising the arm 6 of the unlatching-lever 2, thus causing said lever to work as a lever of the second class, with the cam-arm 19 as a fulcrum, and to lift the cam-latch 30 into po-
 120 sition substantially shown in Fig. V. It is to be understood, however, that the weighted end of the unlocking-lever 2 remains upheld by the cam 19, as indicated in Fig. III.

The cam-latch 30 is operatively connected with the unlatching member 2 to be thereby
 125 forced into latch locking position when the unlatching member is out of unlatching po-
 130 sition.

The radius of the path of the detent 29, which carries the cam-latch 30, is greater than that of the seat 37 in the unlocking-le-
 130 ver on which the arm 38 of the locking-latch 22 rests, so that the cam-latch 30 will be

moved more rapidly than the locking-latch 22, thus to remove the cam 44 from its locking position ahead of the movement of the locking-latch 22.

- 5 When the unlocking-lever 2 is in the locking position, (shown in Fig. III,) the cam 44 is held down by its lever 30, acted on by the detent 29, and thus holds the shifting latch-locking lever 26 in position to positively lock
10 the latch 22 in its clutch-locking position. (Shown in Fig. III.) This precludes any possibility of creeping of any of the parts under the vibratory movement of the coupler or under any other influence or force.
15 The only way in which the locked parts can be unlocked is by the positive uplifting of the arm 6 of the unlocking-lever 2.

The change from a link-and-pin coupler to a Janney-type coupler is made by simply
20 lifting the feather-pin 18 to withdraw the feather from the feather-way *c* and then reinserting the pin, with the feather *a*, in the feather-way *b*, thus allowing the bent cam-lever 13 to move freely, whereupon the
25 weighted end of the unlocking-lever will act upon the cam 19 and throw the arm 14 out into its clutch-receiving position. (Indicated by dotted lines in Fig. IV.)

When the arm 6 of the unlocking-lever 2 is
30 raised sufficiently, the arm or projection 38 and its locking-latch 22 will be thereby lifted, so that the latch 22 will be above the arm 12 of the coupler-clutch 9, thus allowing the coupler-clutch to swing into uncoupled position.
35 The weighted lever 39, assisted by the weight of arm 12 on cam *k*, starts and swings the clutch into its uncoupled position, where it is yieldingly held by said weighted lever 39.

m indicates an opening at one side of the
40 frame or case 1 through which to insert the unlocking-lever 2 and the clutch-opening lever 39.

To assemble the coupler, the clutch-opening lever 39 will first be inserted through the
45 opening *m* and its trunnions 42 be brought into their seats. The unlocking-lever 2 will then be inserted and its trunnions 4 brought into their seats. Then the shift-lever 33 will be inserted through the opening *n* for the
50 clutch-arm 12, and its trunnions 34 are seated in their seats *j*. Then the cam-latch 30 is inserted through opening *n*, and its trunnions 31 are passed up into their seats *i*, which are open downwardly, as indicated in Figs. III
55 and V. Then the shifting latch locking-lever 26 is inserted through opening *n* and passed up into position, with its trunnions *g* in their oblique ways *h*. Then the clutch-locking latch 22 is inserted through the hole
60 *f'* therefor and is brought into position below the shifting lever 26, with its knuckle *e* in the bearing *f* therefor. Then the bent cam-lever is inserted into the opening *o* therefor and its cam 19 is brought into the way 20
65 therefor in the unlocking-lever 2. Then the feather-pin 18 is appropriately inserted to pivot the bent cam-lever in place. Then the

clutch 9 is brought into position between the lips 11, and the arm 12 is brought into position shown in Figs. III, IV, and V. Then
70 the pin 10 is inserted to pivot the clutch in place and the coupler is ready for use.

p indicates a slide to close the opening *m*, through which the unlocking-lever has been inserted.

Now, having described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. A car-coupler comprising a head; a coupler-clutch pivoted to the head; a latch to engage with and lock said coupler-clutch in coupling position; an unlatching member to hold said latch unlatched; and coupler-operated means for holding the unlatching member normally out of unlatching position while
80 the coupler is coupled.

2. A car-coupler comprising a head; a coupler-clutch pivoted to the head; a latch to lock said coupler-clutch in coupling position; an unlatching member to hold said latch unlatched; coupler-operated means for holding the unlatching member normally out of unlatching position while the coupler is coupled; and latch locking means to hold the latch in latched position while the unlatching member is out of unlatching position.

3. A car-coupler comprising a head; a coupler-clutch pivoted to the head; a latch to lock said coupler-clutch in coupling position; an unlatching member to hold said latch unlatched; coupler-operated means for holding the unlatching member normally out of unlatching position while the coupler is coupled; a latch locking member to hold the latch in latched position, arranged to be engaged by the coupler-clutch when coupled; a cam-latch to hold the latch locking member in latch locking position, the same being operatively connected with the unlatching member to be thereby forced into latch locking
100 position when the unlatching member is out of unlatching position; and clutch-operated means for shifting the latch locking member into latch locking position when the clutch is in coupled position.

4. A car-coupler comprising a head; a coupler-clutch pivoted to the head; a latch to lock said coupler-clutch in coupling position; an unlatching member to hold said latch unlatched; coupler-operated means for holding the unlatching member normally out of unlatching position while the coupler is coupled; a latch locking member to force and to hold the latch in latched position, and arranged to be engaged by the coupler-clutch when
120 coupled; a cam-latch to hold the latch locking member in latch locking position; the same being operatively connected with the unlatching member to be thereby forced into locking position when the unlatching member is out of unlatching position; a weighted lever to engage the clutch and to be operated thereby against the force of gravity in the act of coupling, and to return the released
125

clutch to open position; and a shift-lever to be operated by said weighted lever to shift the latch locking member into latch locking position when said weighted lever is operated by the closing of the clutch.

5 5. A car-coupler comprising a head; a coupler-clutch pivoted to the head; a latch to latch said coupler-clutch in coupling position; an unlatching member to hold said latch unlatched; coupler-operated means for holding the unlatching member normally out of unlatching position while the coupler is coupled; a latch-locking member to force and to hold the latch in latched position, and arranged to be engaged by the coupler-clutch when coupled; a cam-latch to hold the latch locking member in latched position, the same being operatively connected with the unlatching member to be thereby forced into locking position when the unlatching member is out of unlatching position; a weighted lever to engage the clutch and to be operated thereby against the force of gravity in the act of coupling to return the released clutch to open position; a shift-lever to be operated by said weighted lever to shift the latch locking member into latch locking position when said weighted lever is operated by the closing of the clutch; and a coupler-operated lever to throw the unlatching member out of its unlatching position.

6. In a car-coupler, the combination with an unlatching member for normally holding the coupler unlatched; of a coupler-operated member to throw and hold the unlatching member out of unlatching position when the coupler is coupled with another coupler.

7. In a car-coupler, the combination with an unlatching member which is furnished at one end with an oblique cam-face; of a clutch-operated member furnished with a cam to engage said cam-face to throw said unlatching member out of unlatching position when the coupler is coupled with another coupler, said cam being adapted to serve for a fulcrum for said unlatching member.

8. In a car-coupler, the combination with a coupling-clutch; of a latch to engage with and lock said clutch in coupling position; means for locking said latch in latching position; and a shift-lever to be thrown by the clutch to operate said latch locking means to lock the latch when the clutch is in clutching position.

9. In a car-coupler, the combination with a coupler-clutch; of means for latching said clutch to lock the same in coupled position; means for normally holding said clutch-latching means in unlatching position; and coupler-operated means for normally holding the unlatching means out of unlatching position when the coupler is coupled with another coupler.

10. In a car-coupler, the combination of the head; a coupler-clutch pivoted to the head; and a clutch-opening weighted lever arranged to lift the clutch when the clutch is in coupling position, whereby the weight of the clutch assists in swinging the clutch open.

11. In a car-coupler, the combination with a pivoted coupler-clutch furnished with an arm; a head to which said clutch is pivoted; a latch formed in a knuckle at one end and seated in a seat in the head to engage said arm when the coupler-clutch is in coupling position; said latch being furnished with a projection; and a weighted unlatching-lever furnished with a seat for said projection and arranged to normally hold the latch unlatched.

12. In a car-coupler, the combination of the head; a coupler-clutch pivoted to the head; means for latching the coupler-clutch in coupling position; unlatching means for normally holding the latch unlatched; a lever for holding the unlatching means out of unlatching position; and means for temporarily holding the lever in its position for holding the unlatching means out of unlatching position.

13. In a car-coupler, the combination with a head; of a coupler-clutch; a latch for holding the coupler-clutch in coupling position; means for normally holding the latch unlatched; a lever for normally holding the unlatching means out of unlatching position; and a feather-pin pivoting said lever to said head; said head being furnished with seats to hold said feather in position for holding the lever in position to hold the unlatching means out of unlatching position.

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