

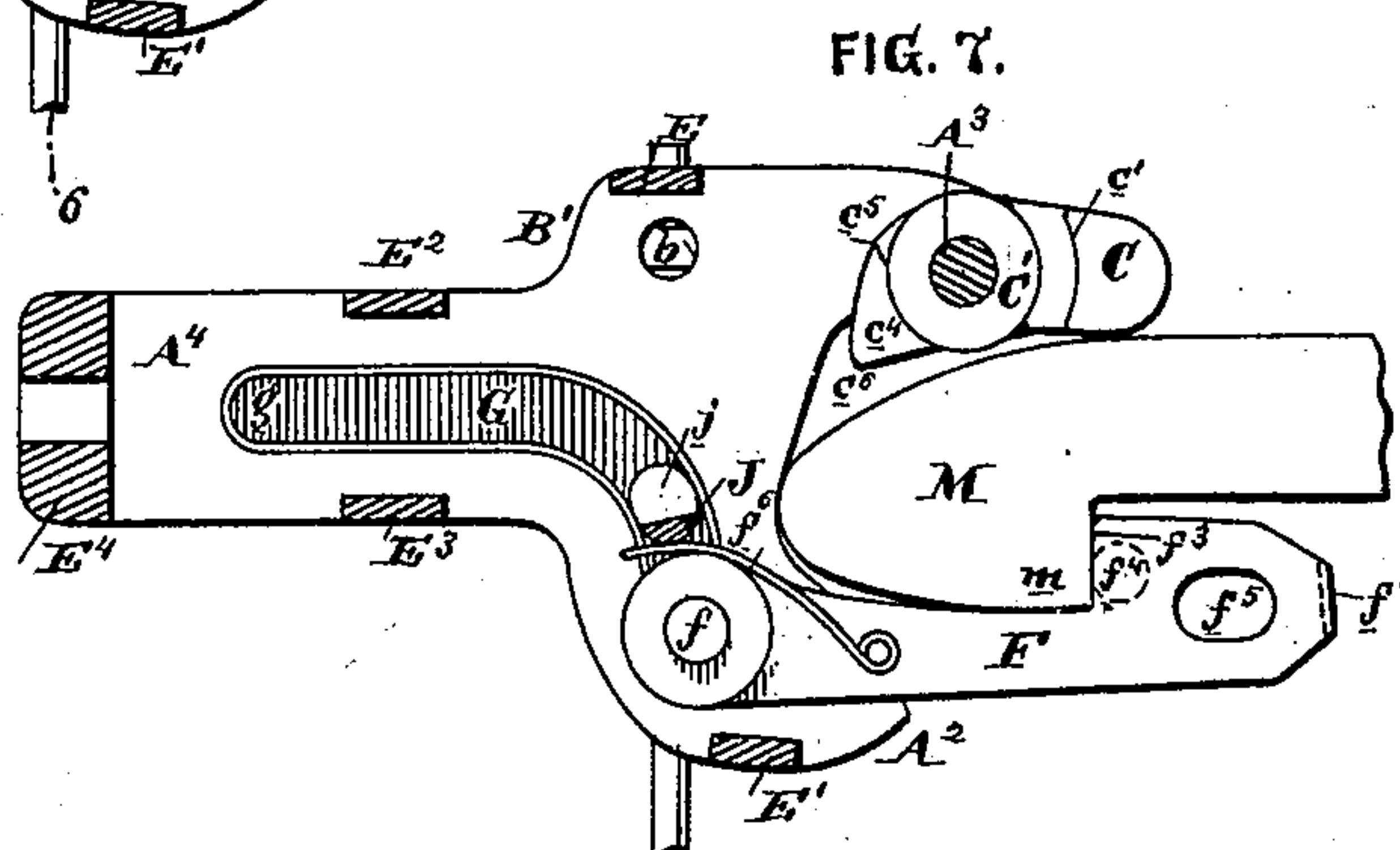
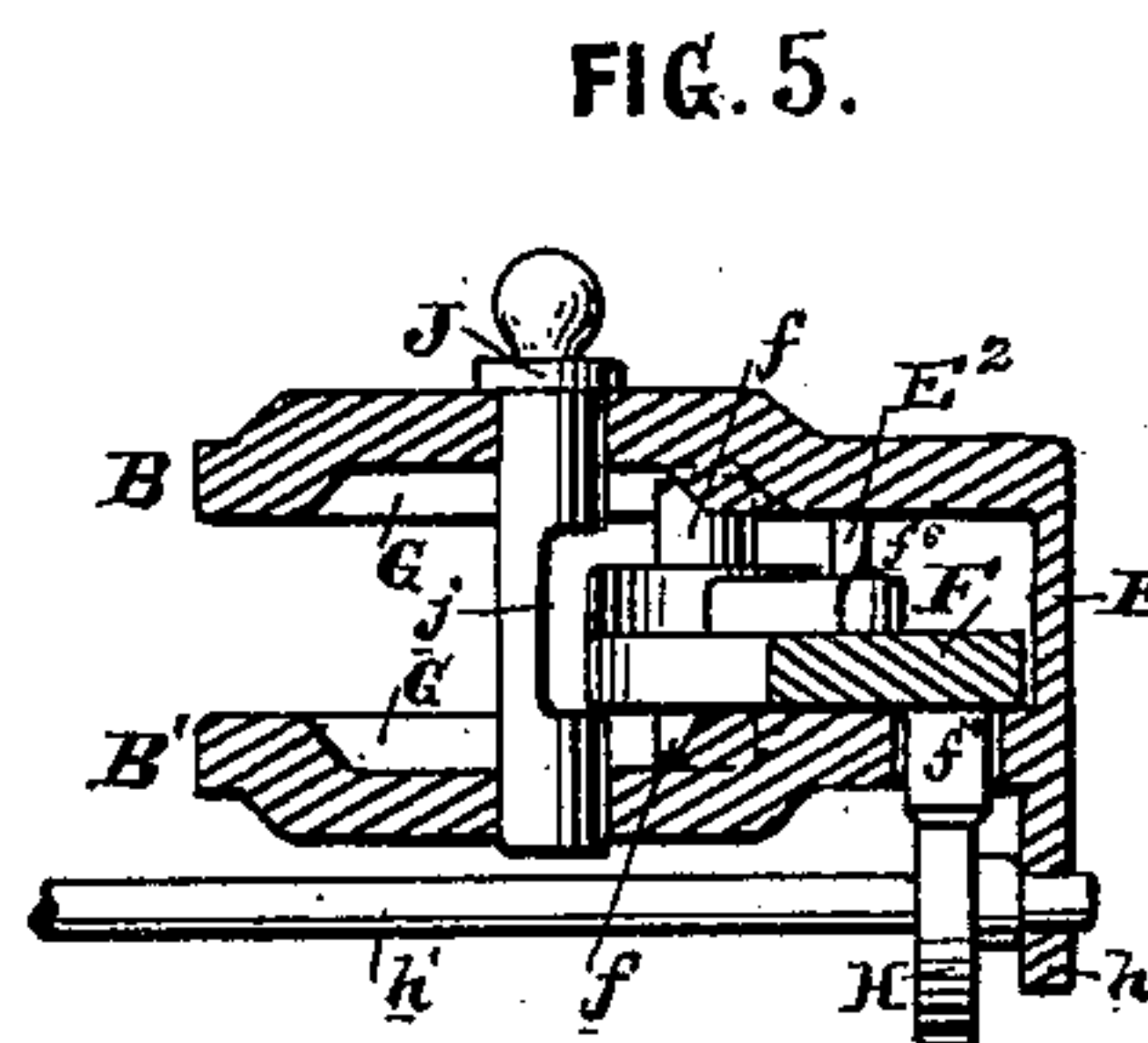
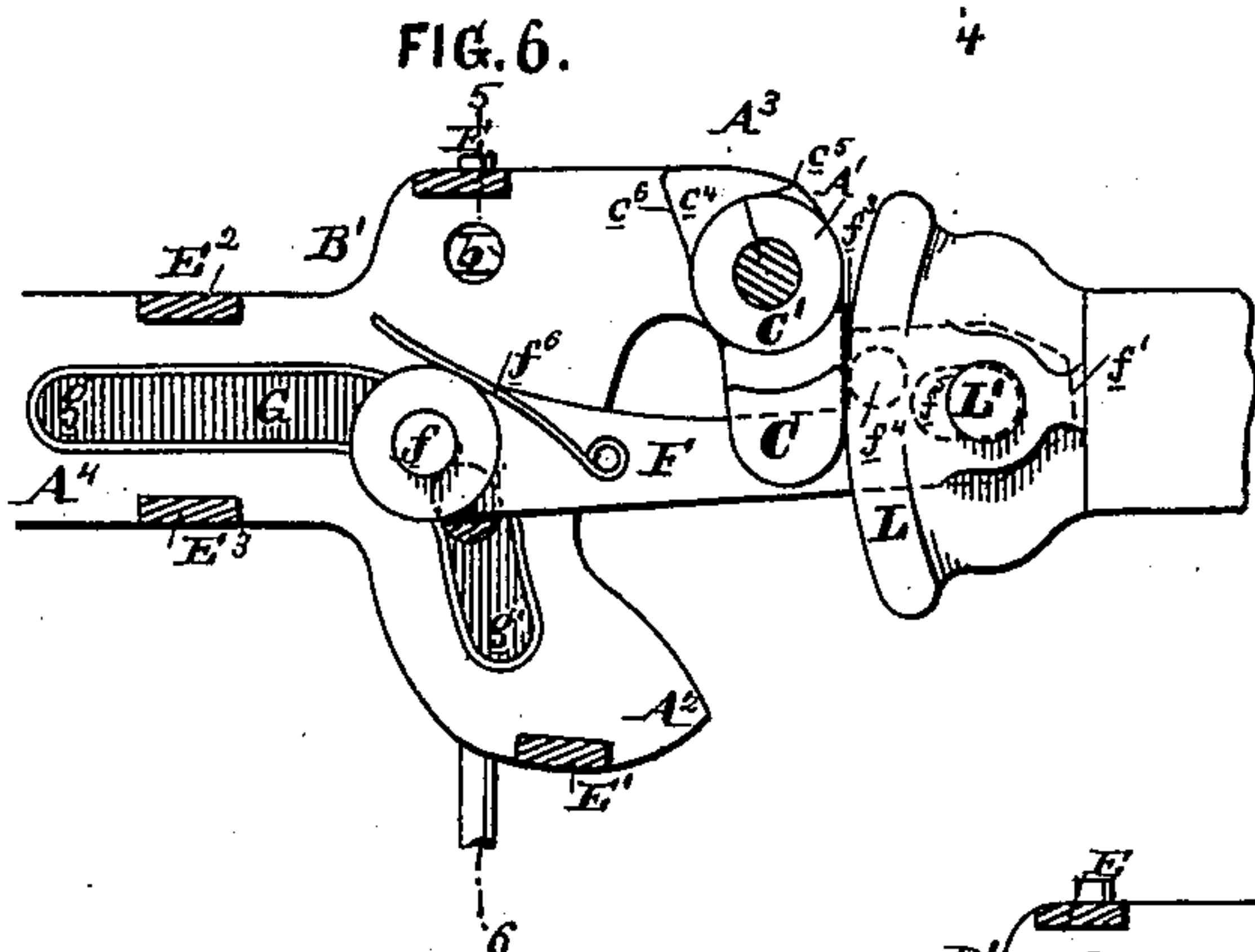
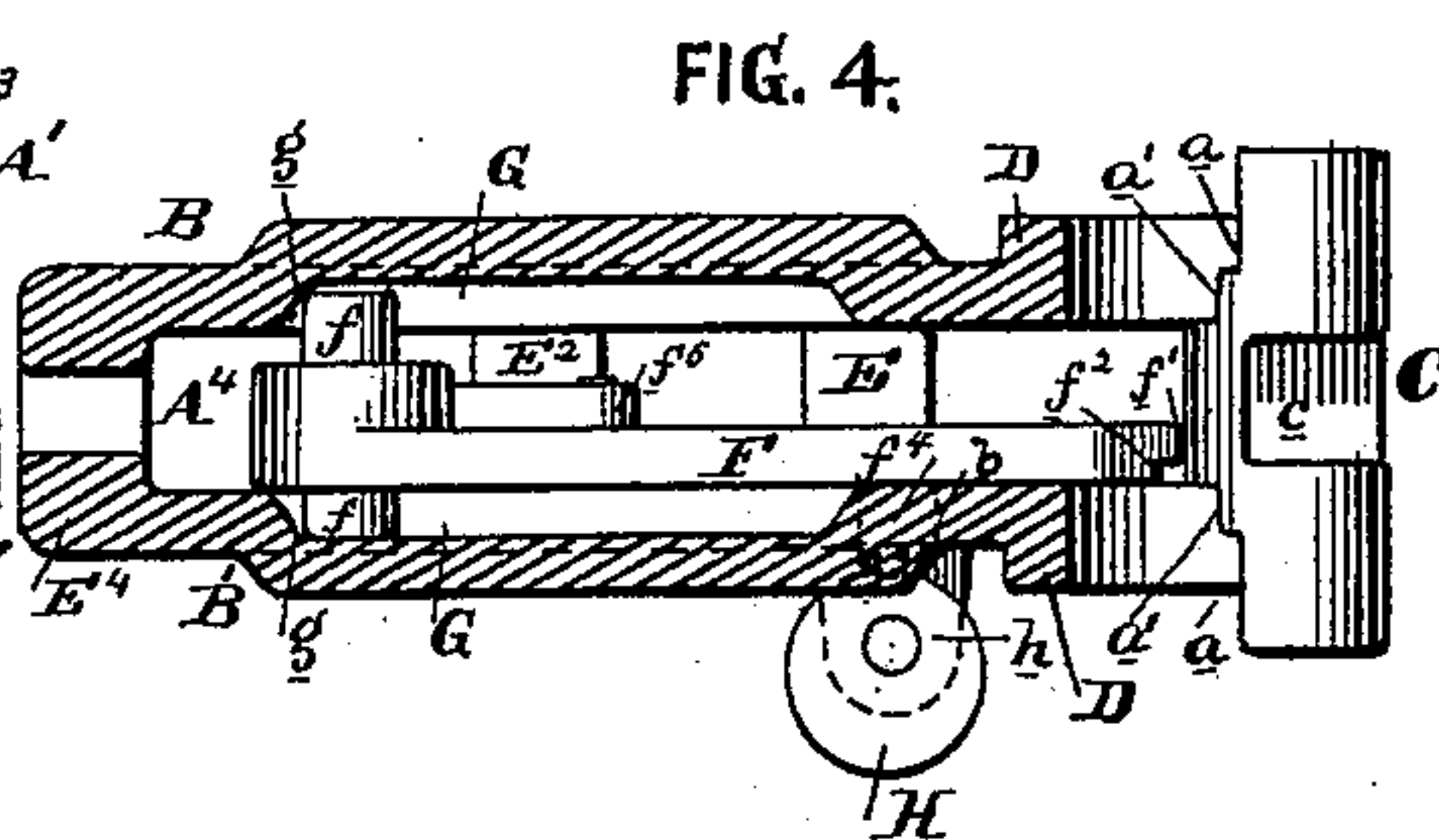
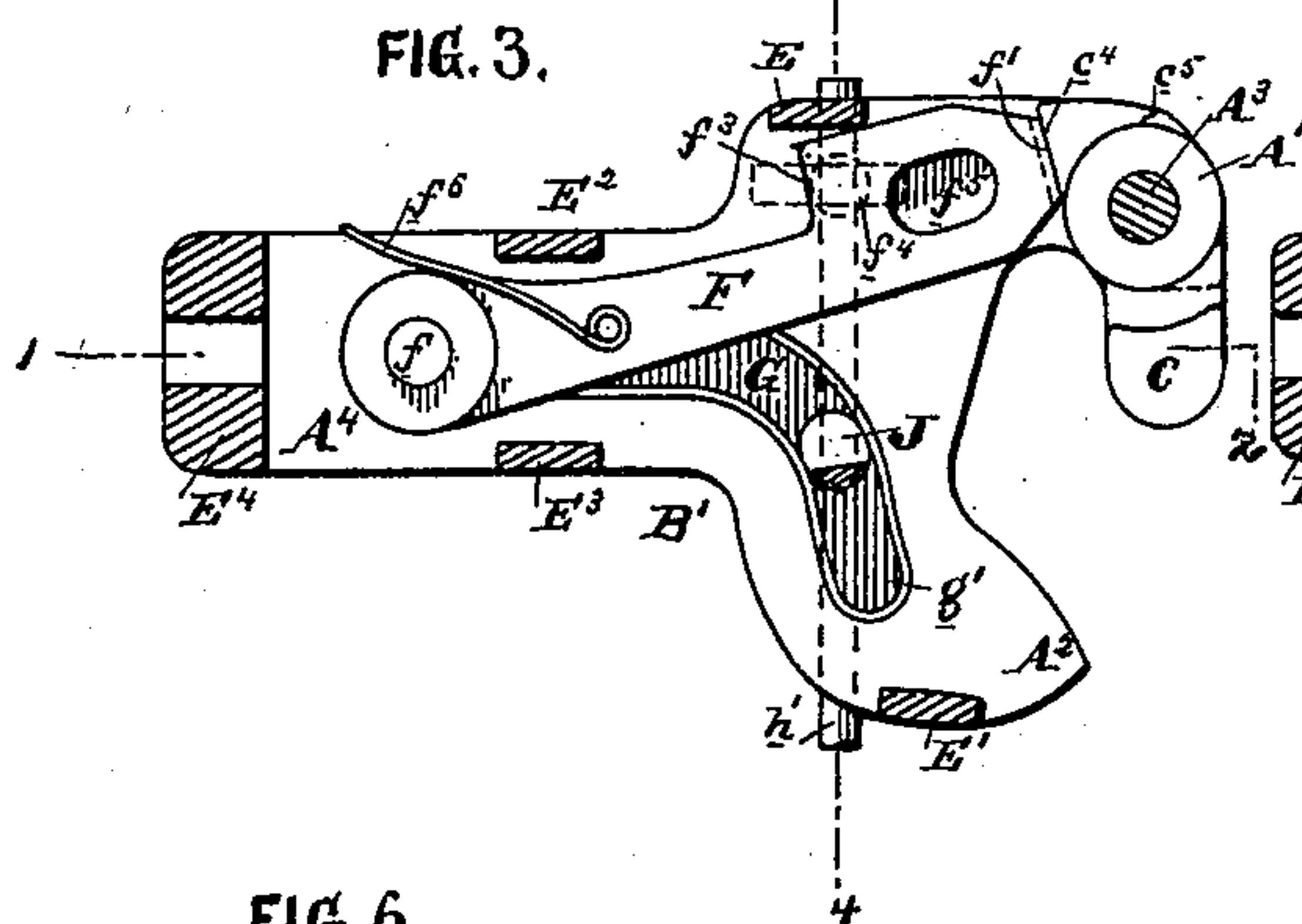
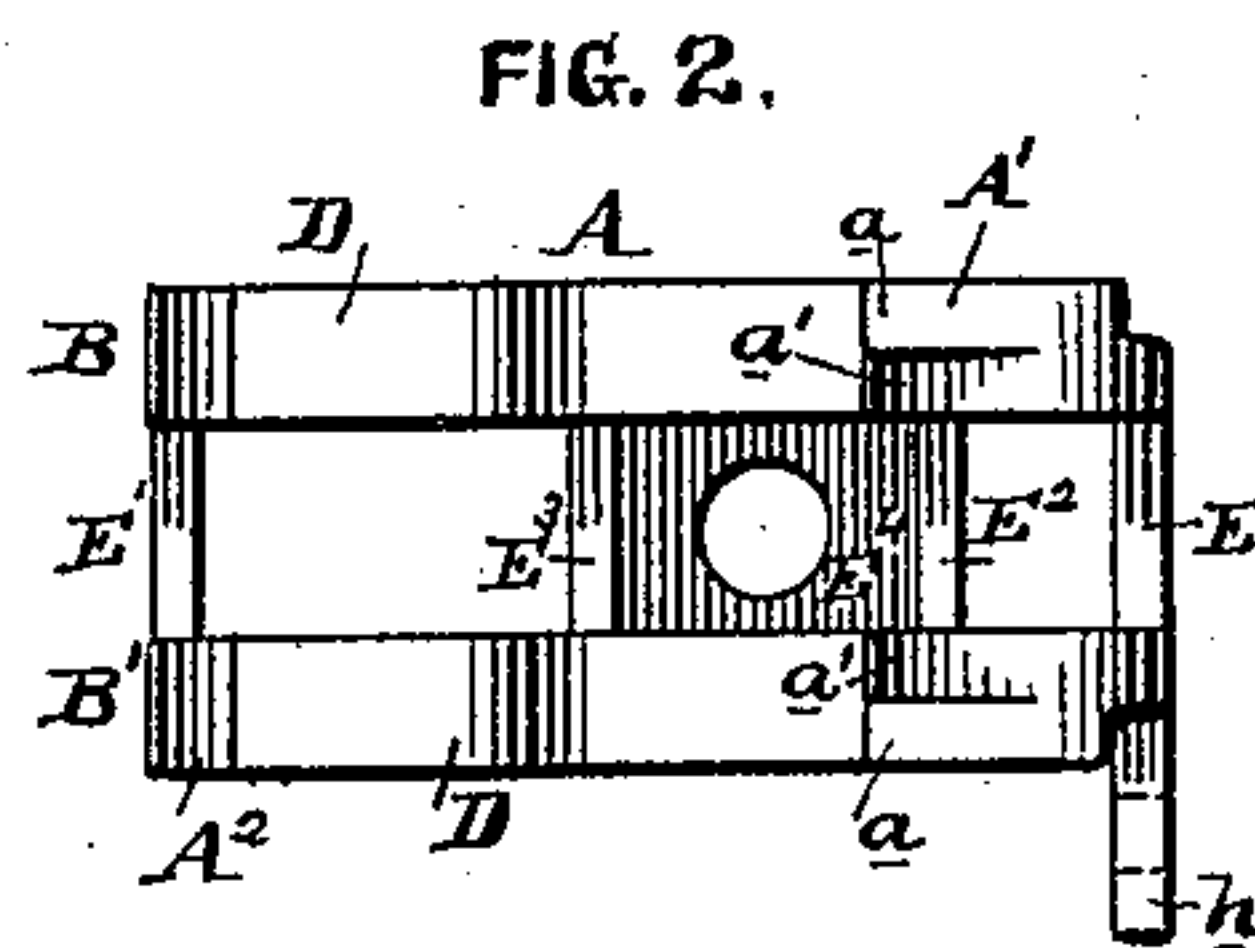
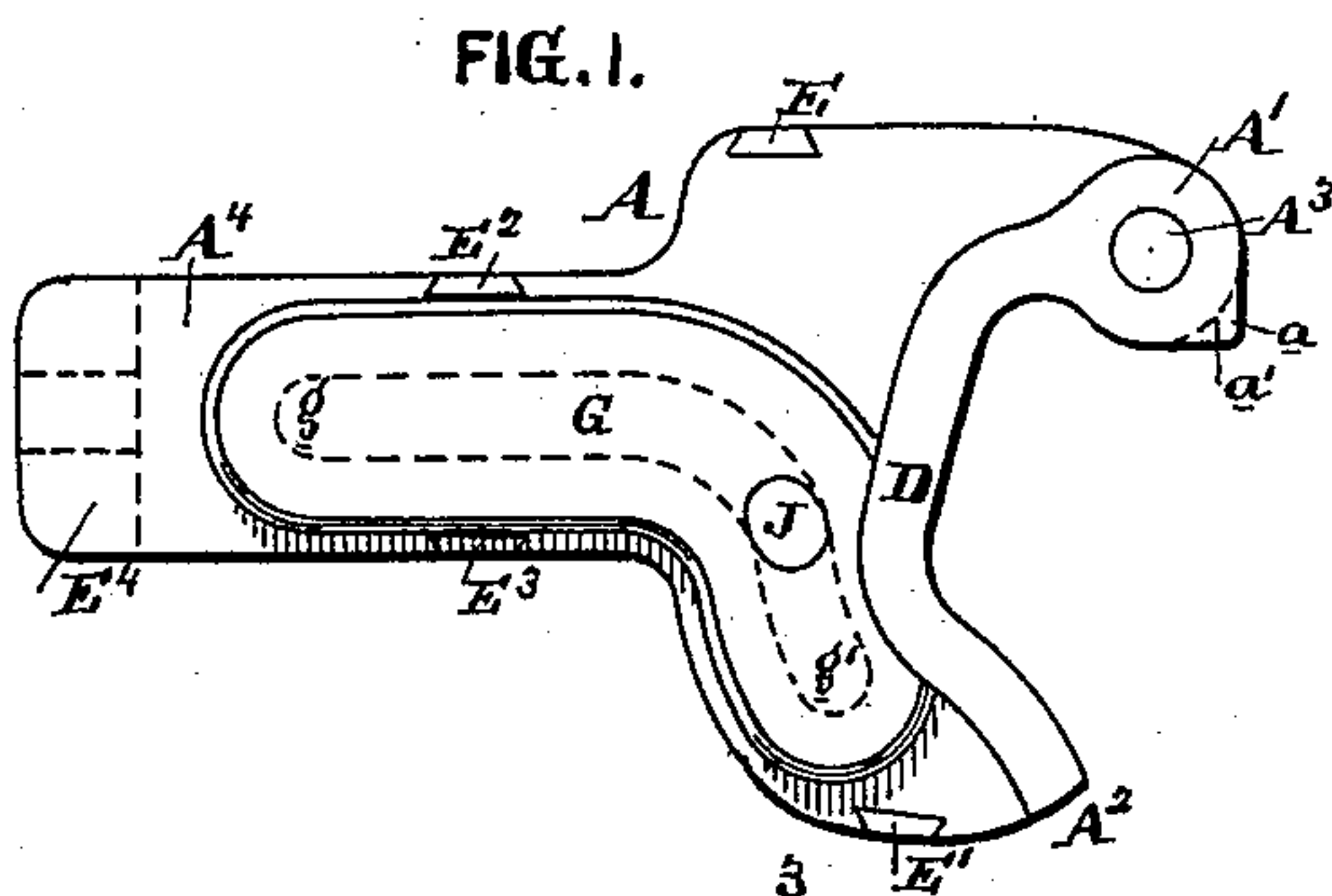
(No Model.)

4 Sheets—Sheet 1.

S. H. HARRINGTON.
CAR COUPLING.

No. 405,255.

Patented June 18, 1889.



Attest:

Joshua Matlack, Jr.
New Hanover,

Inventor:

Samuel H. Harrington
by his attorney
Francis T. Chambers

(No Model.)

4 Sheets—Sheet 2.

S. H. HARRINGTON.
CAR COUPLING.

No. 405,255.

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FIG. 8.

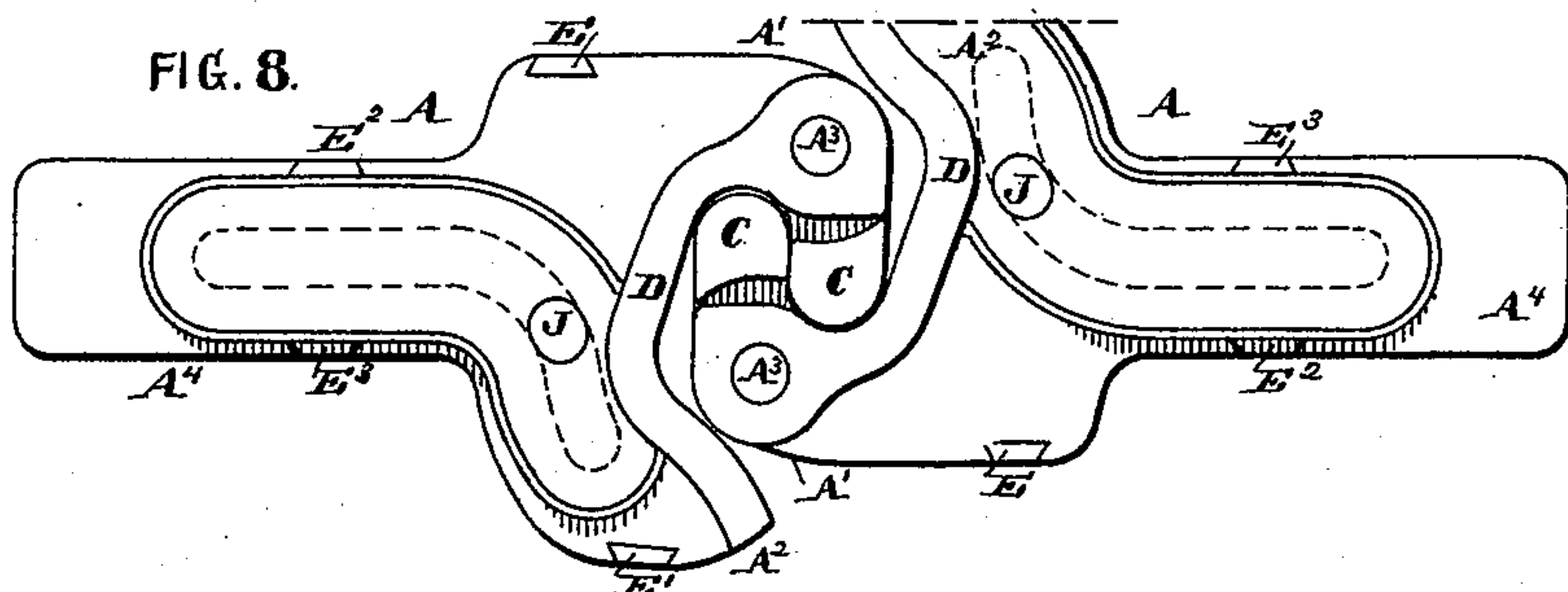


FIG. 9.

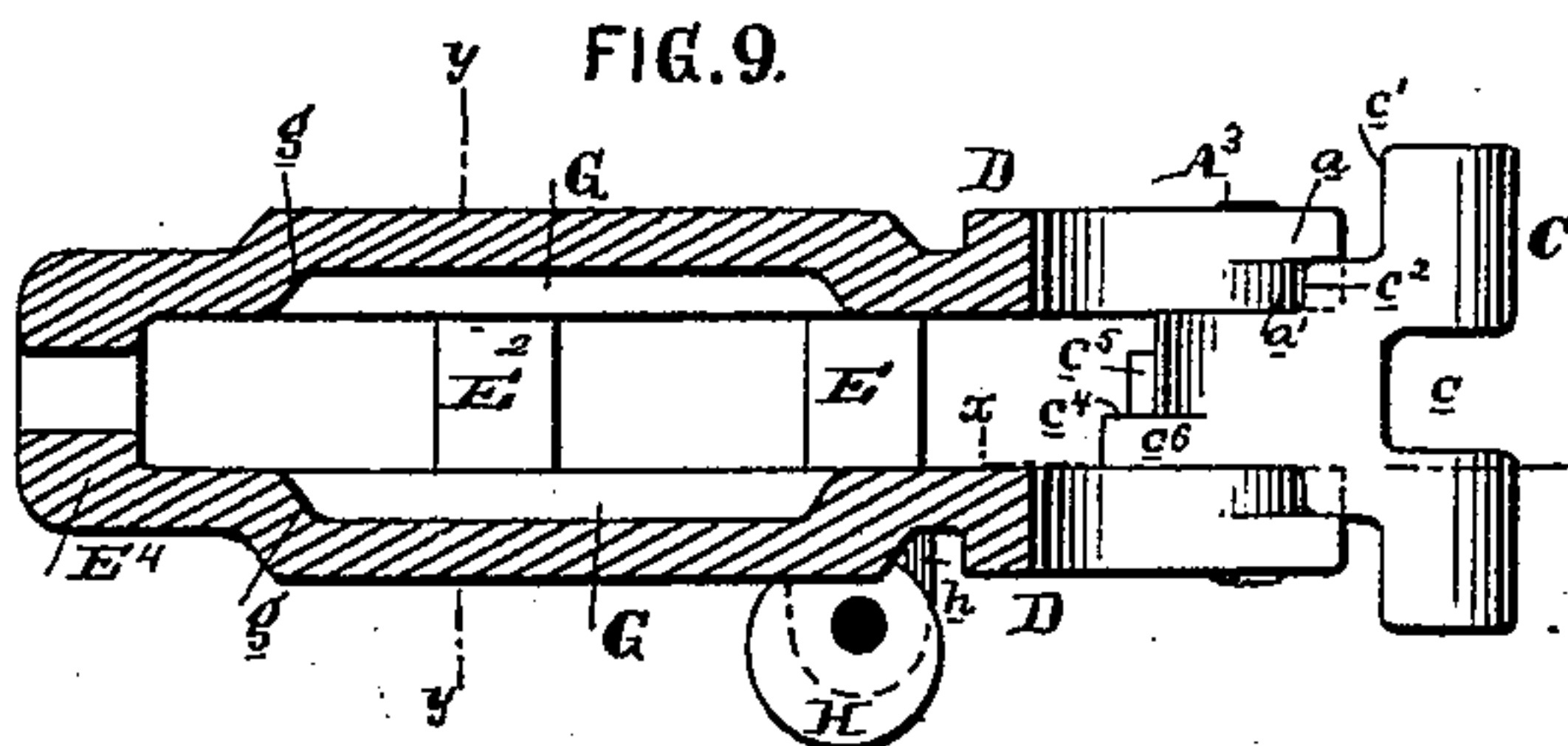


FIG. 10.

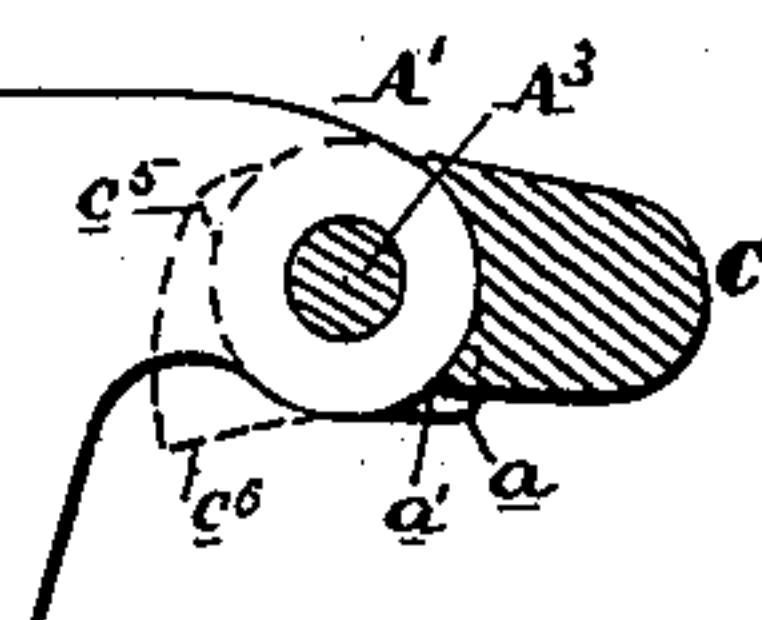


FIG. 11.

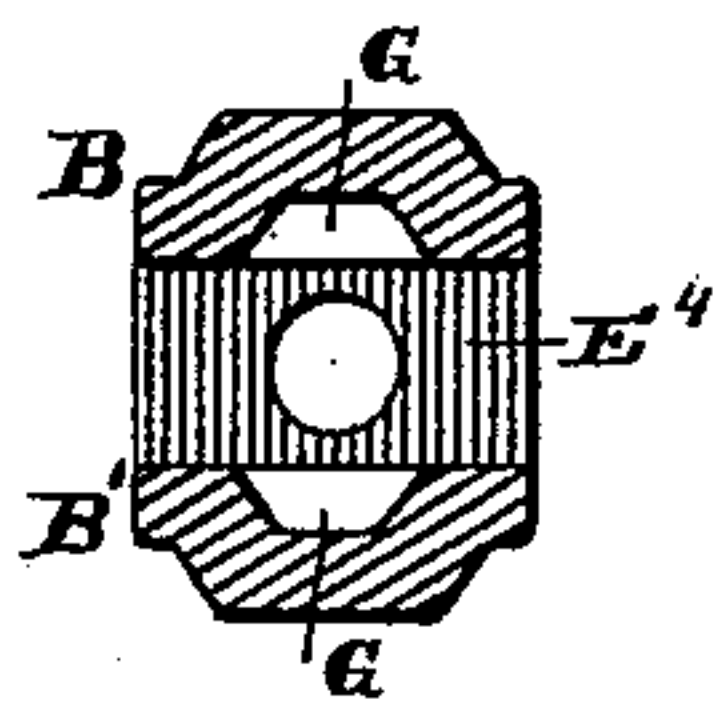


FIG. 12.

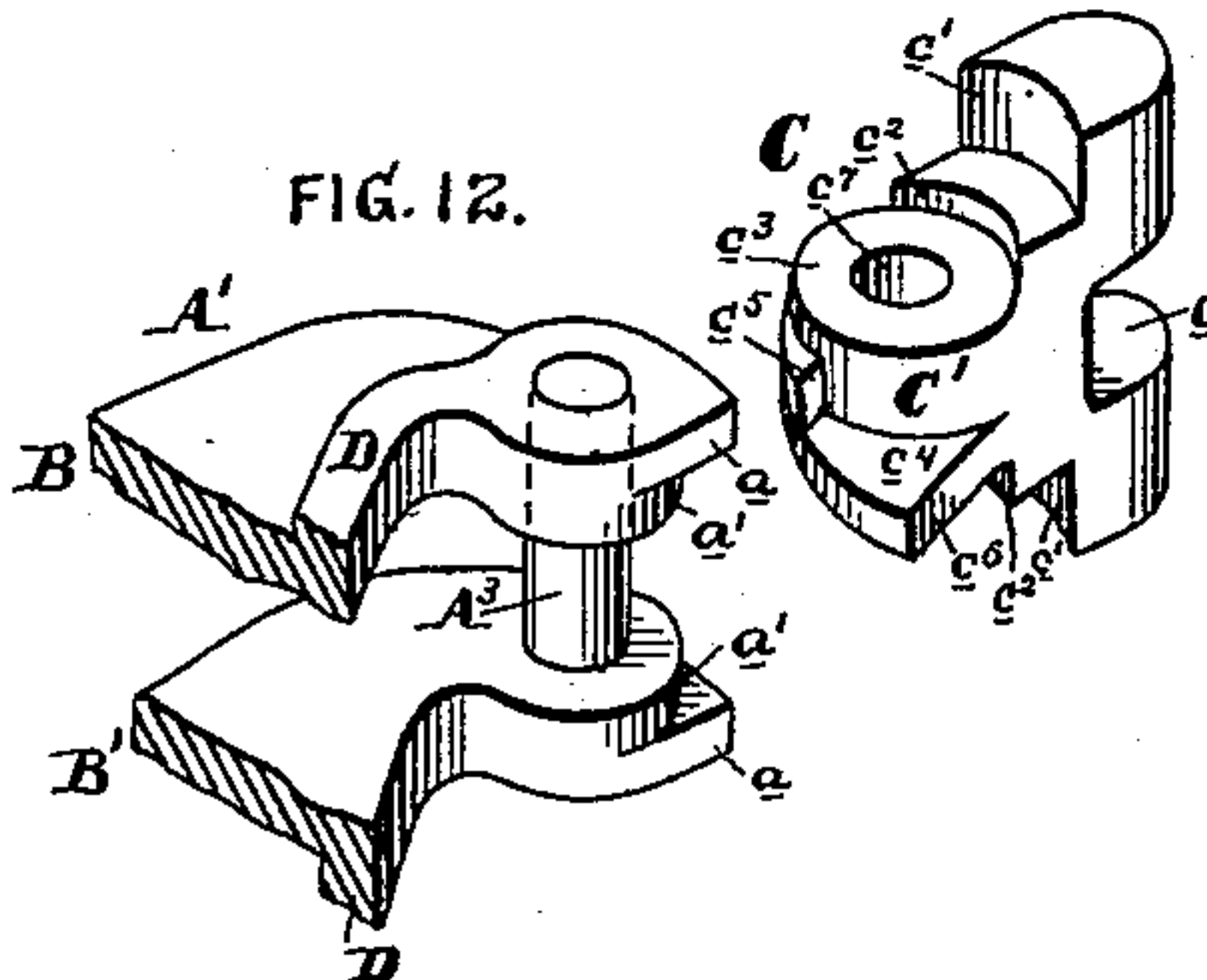


FIG. 13.

FIG. 14.

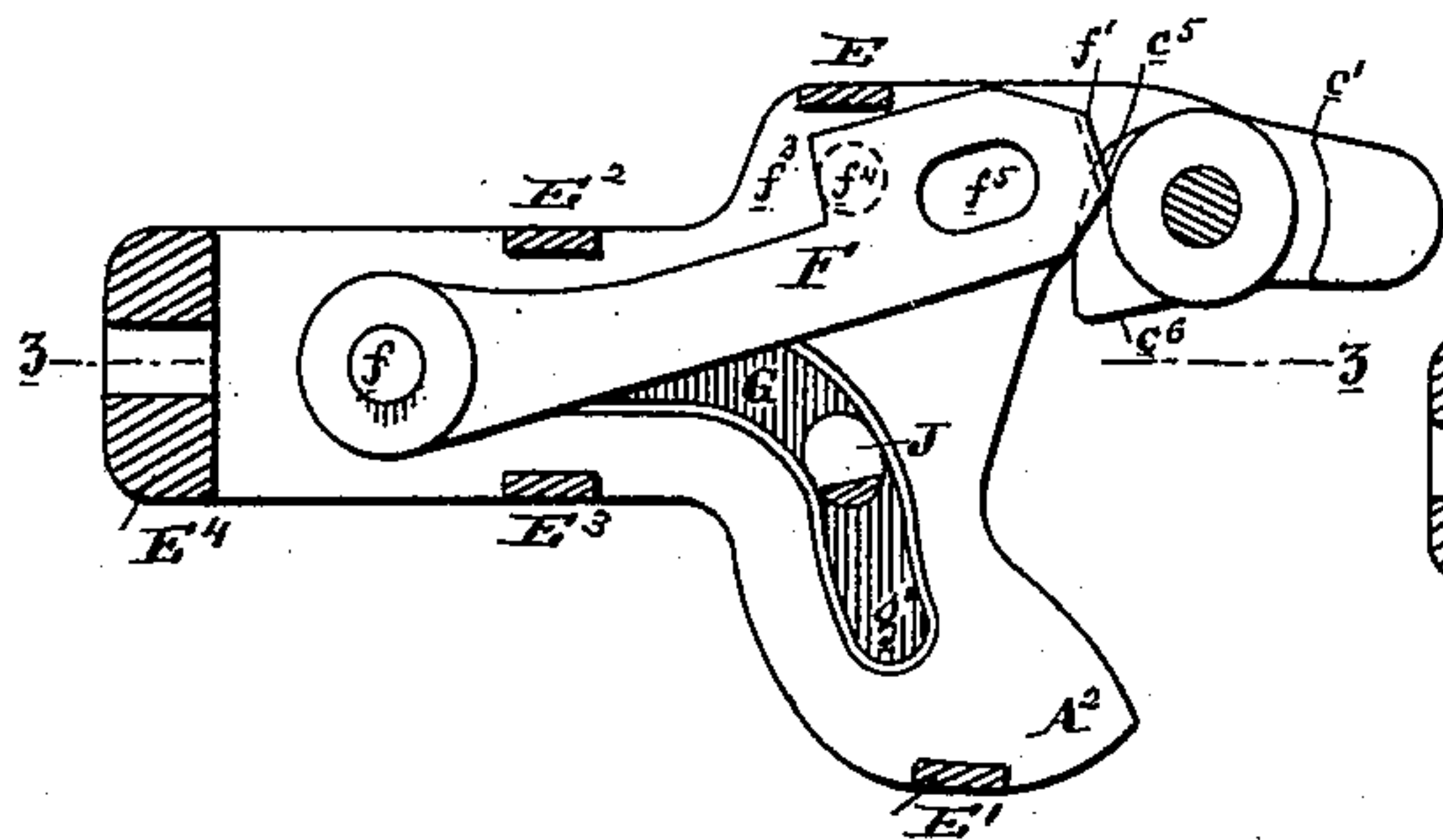


FIG. 15.

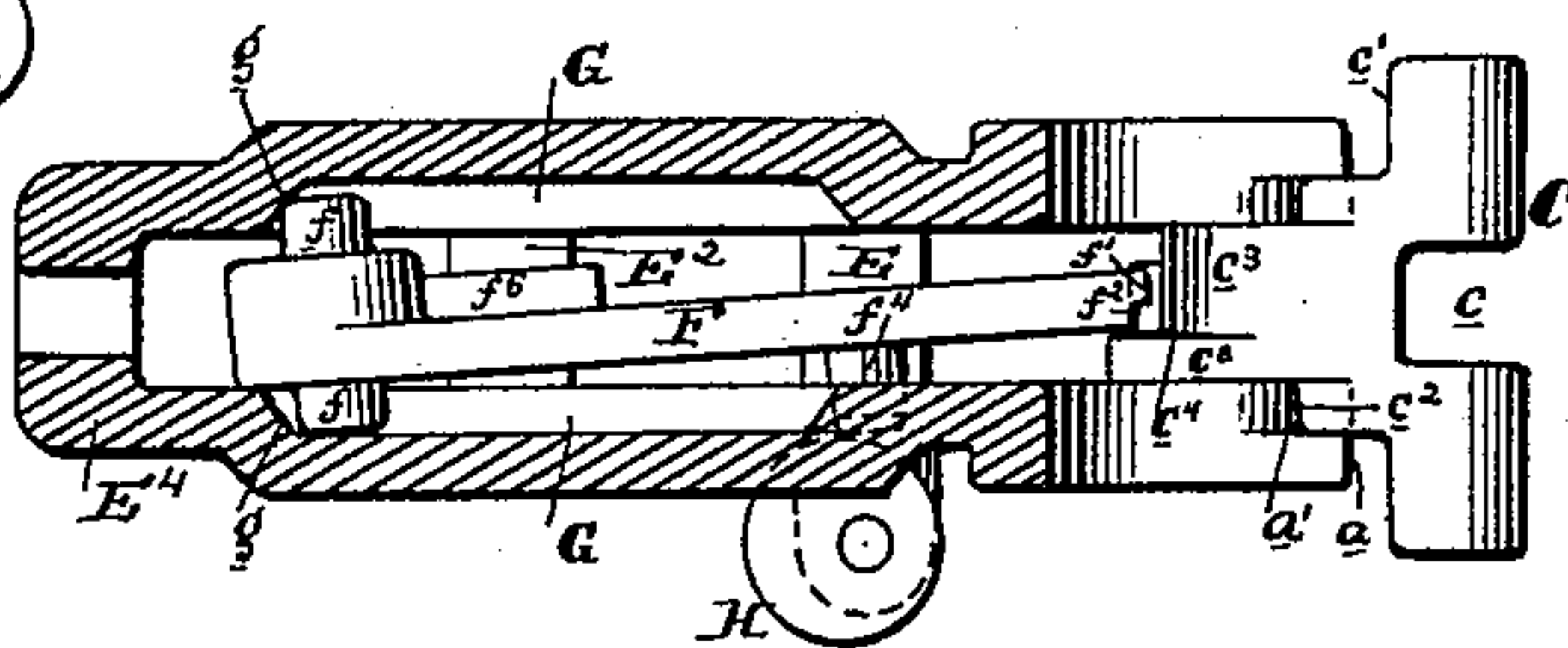
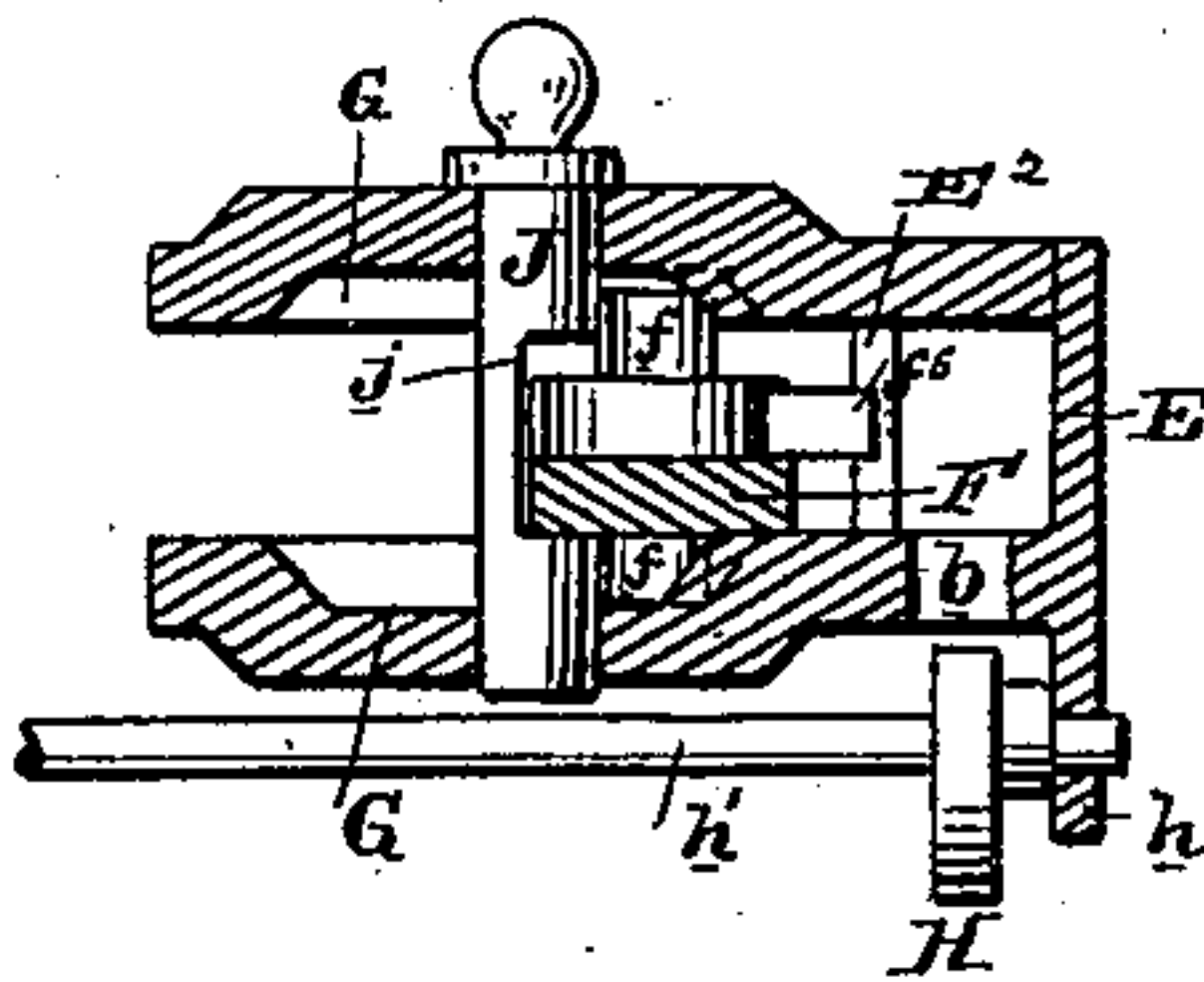


FIG. 16.



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4 Sheets—Sheet 3.

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FIG. 17.

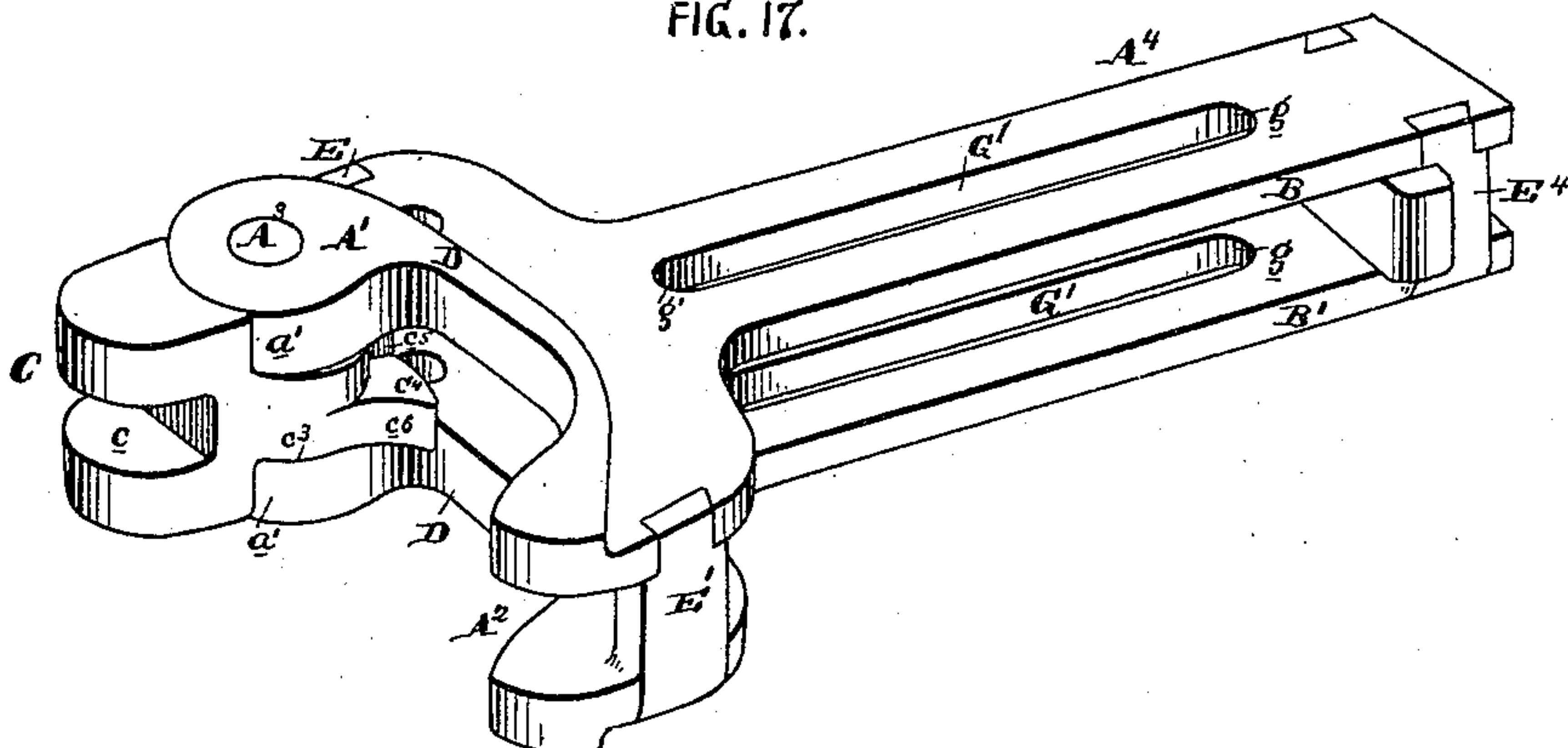


FIG. 18.

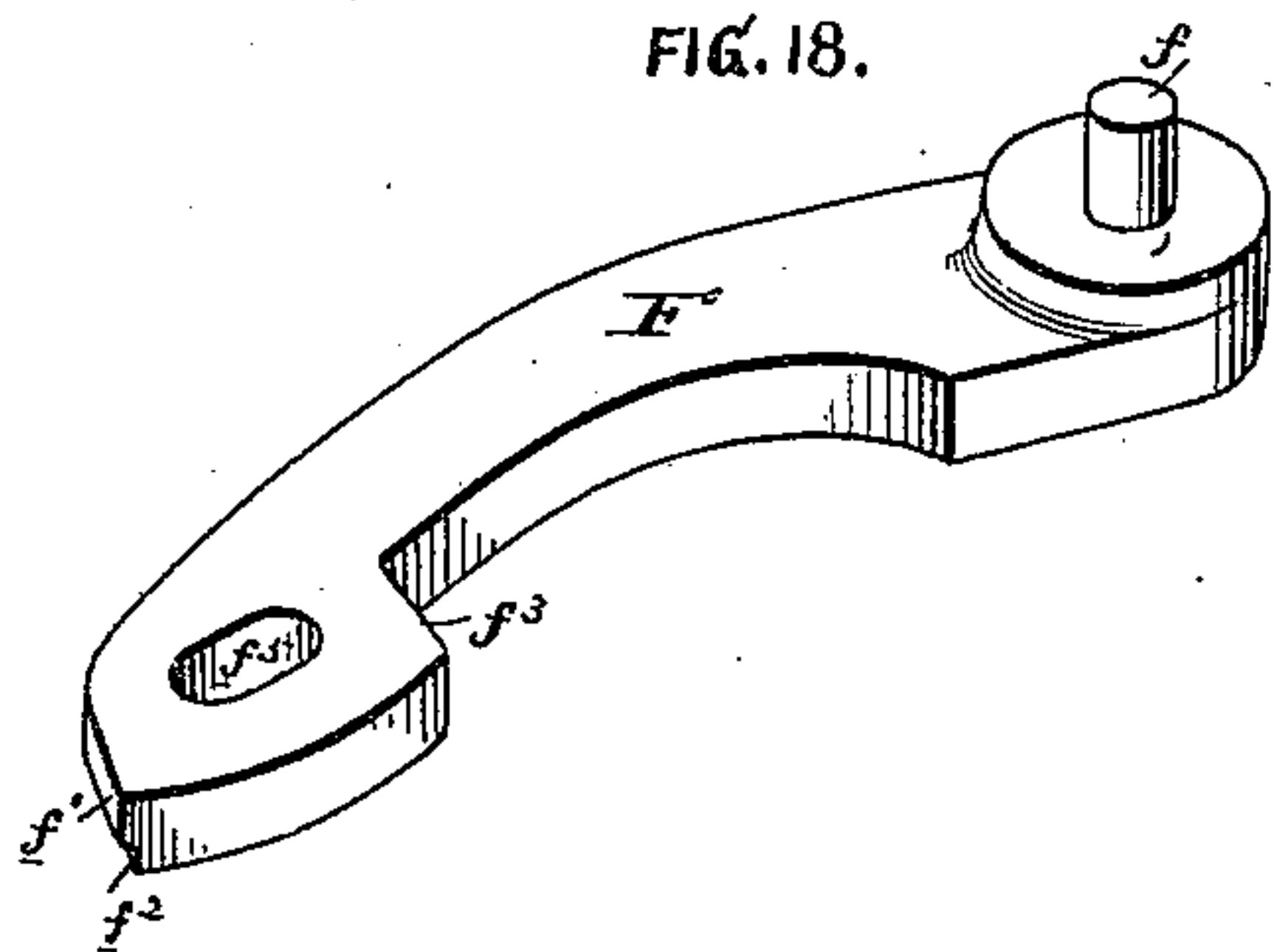


FIG. 19.

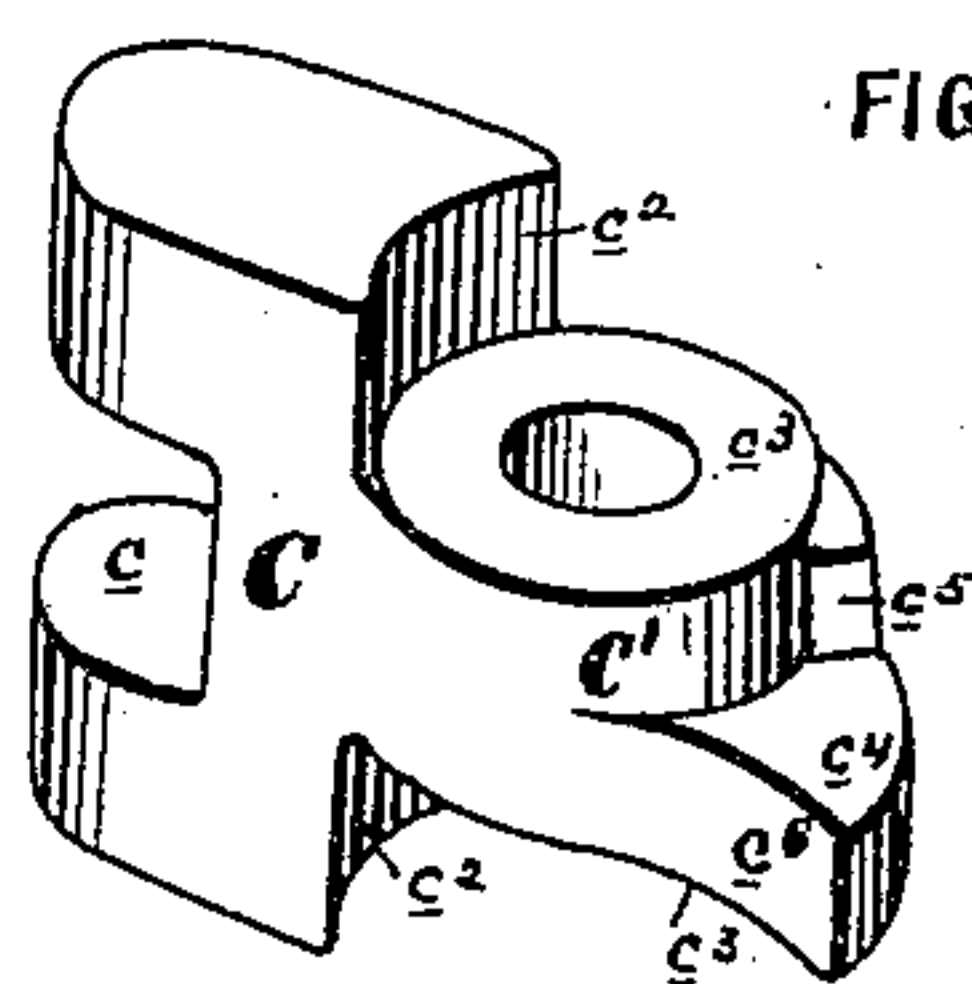


FIG. 20.

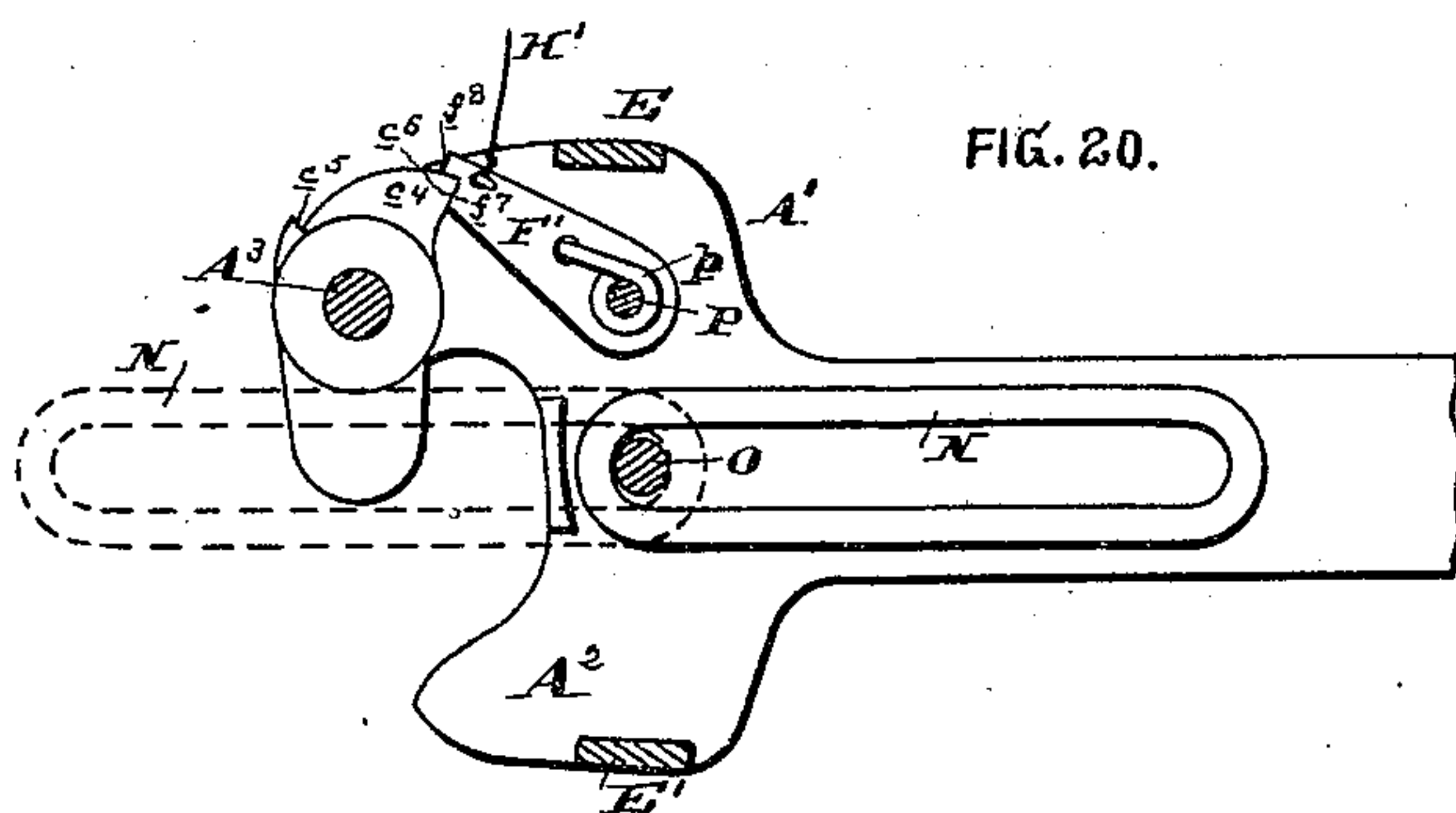
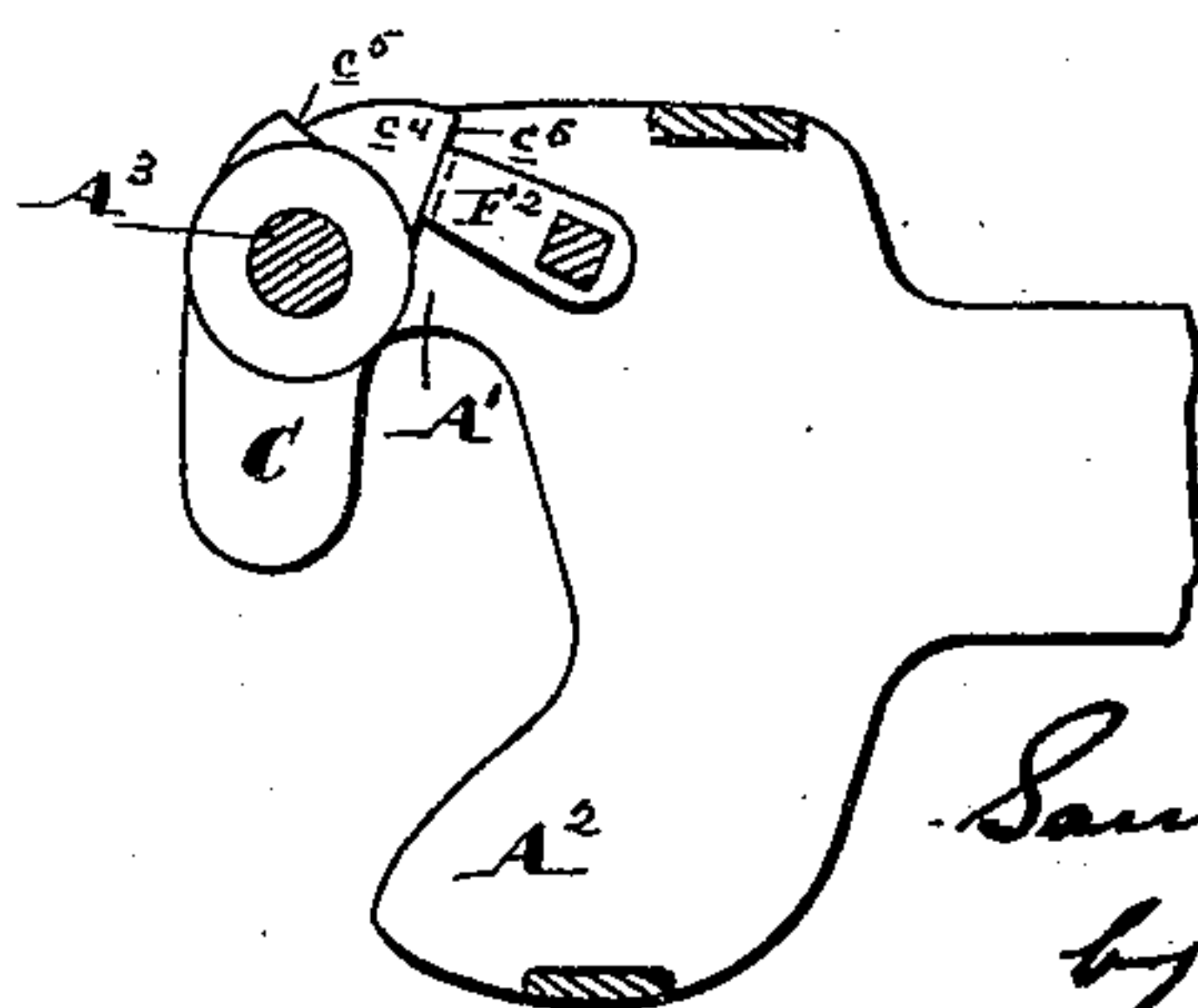


FIG. 21.



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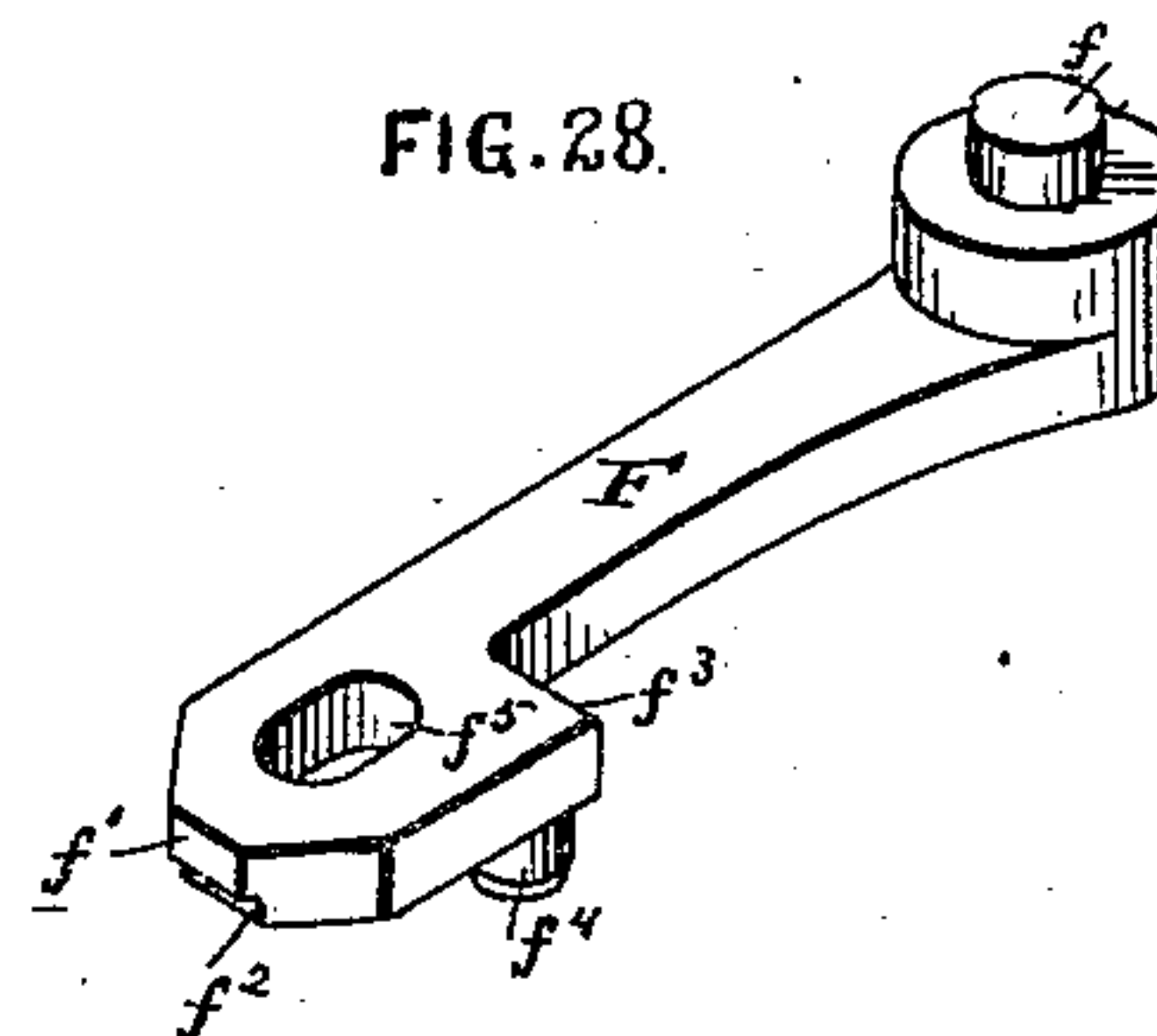
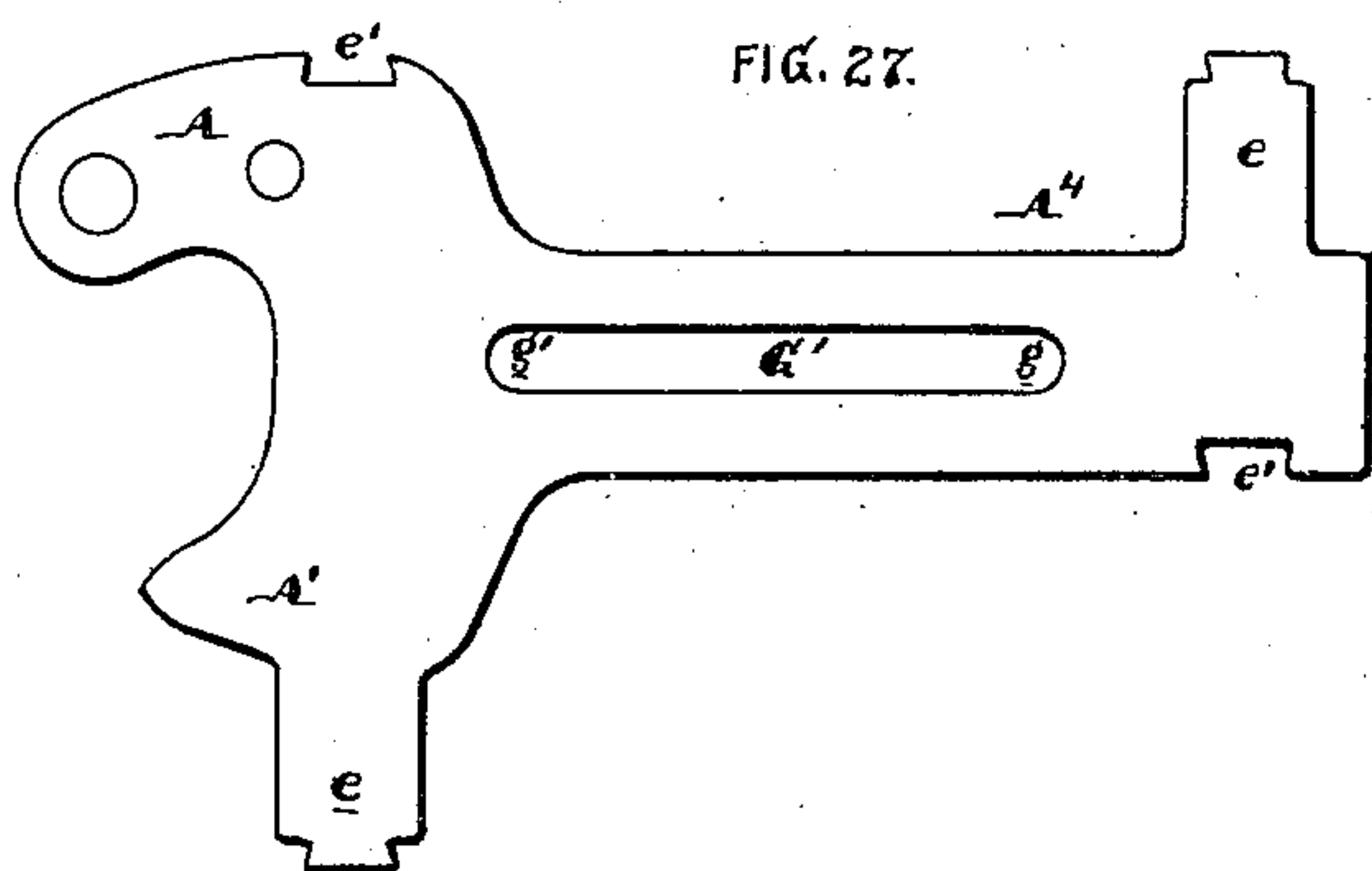
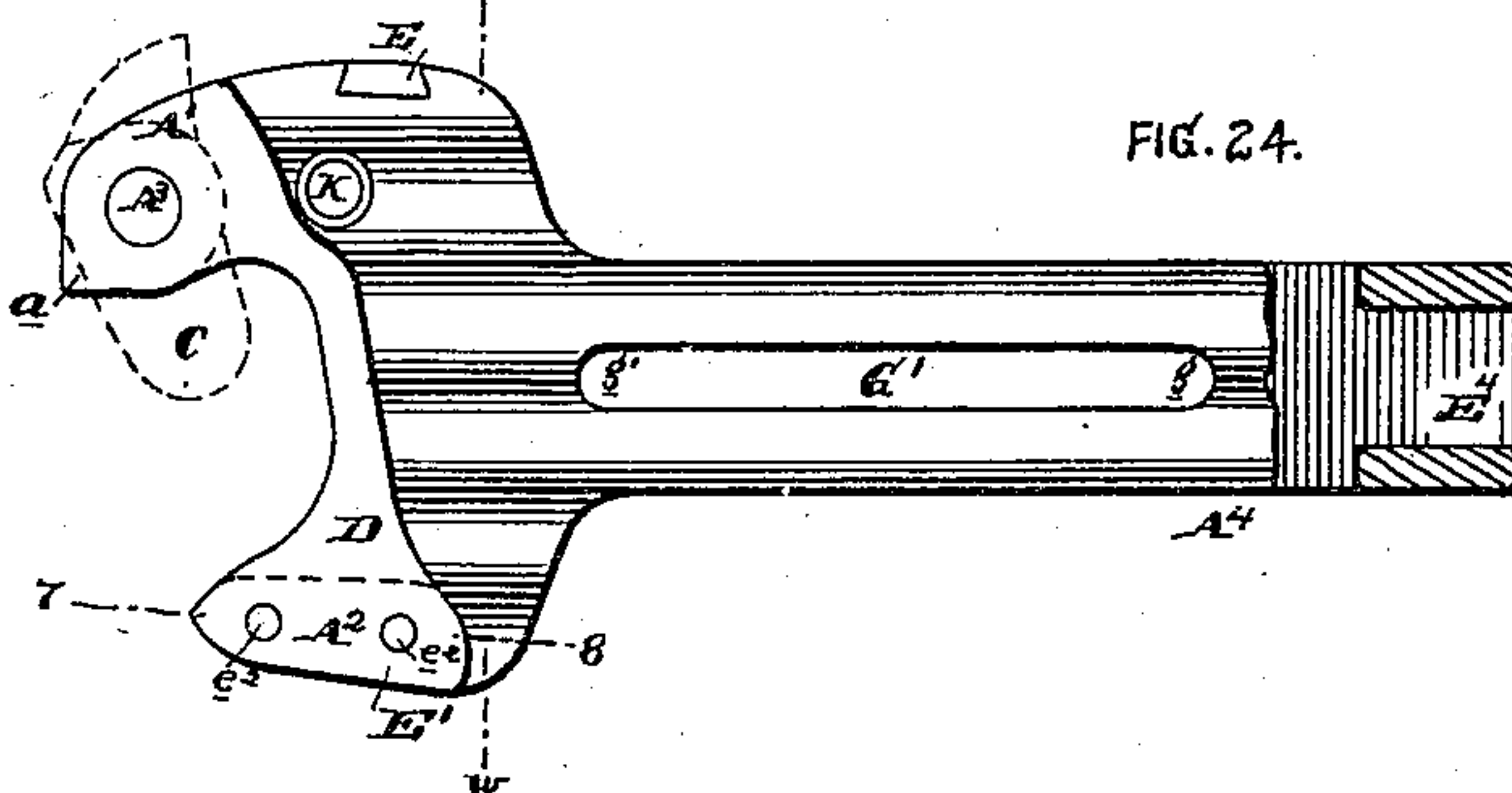
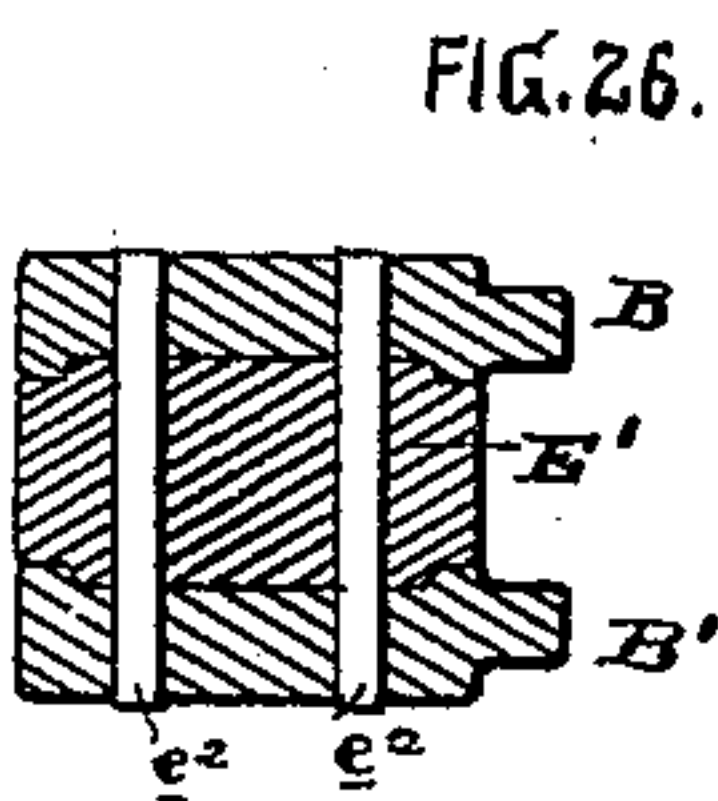
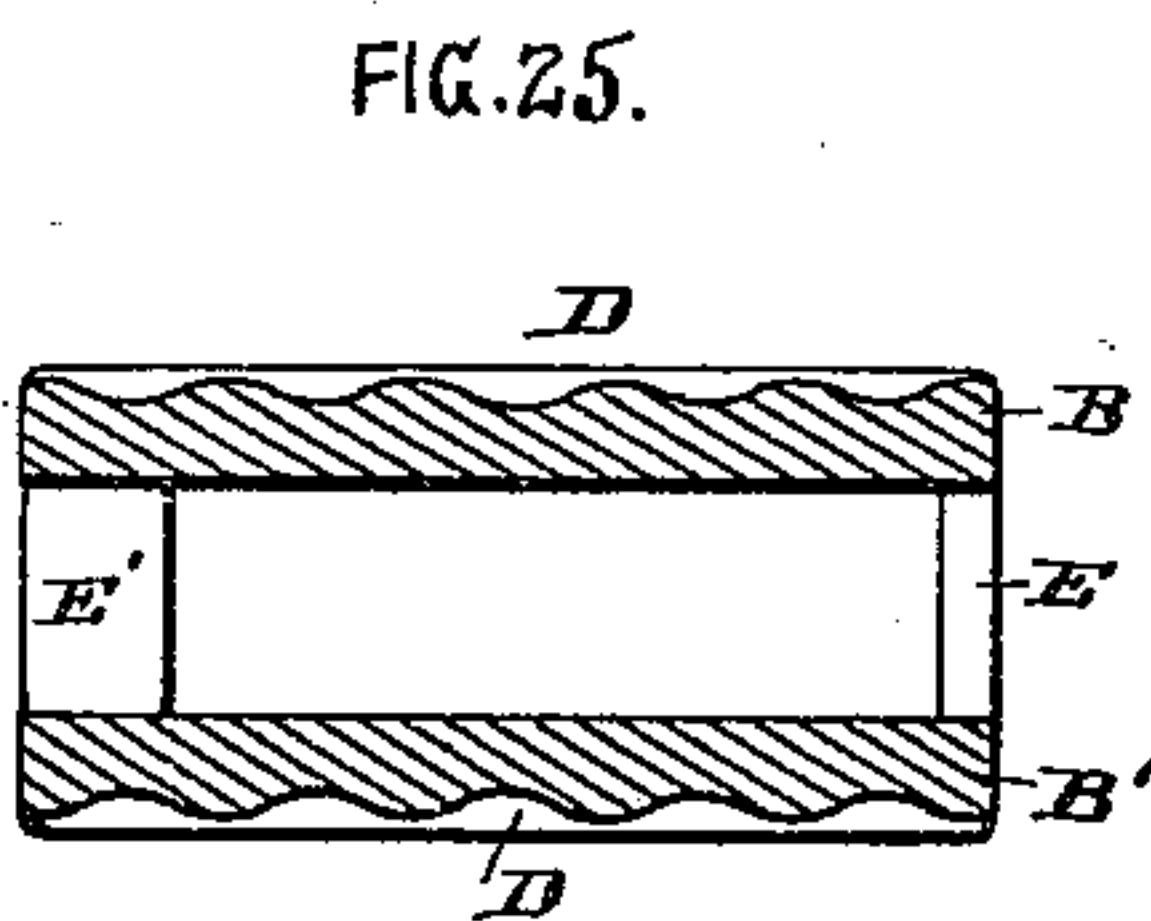
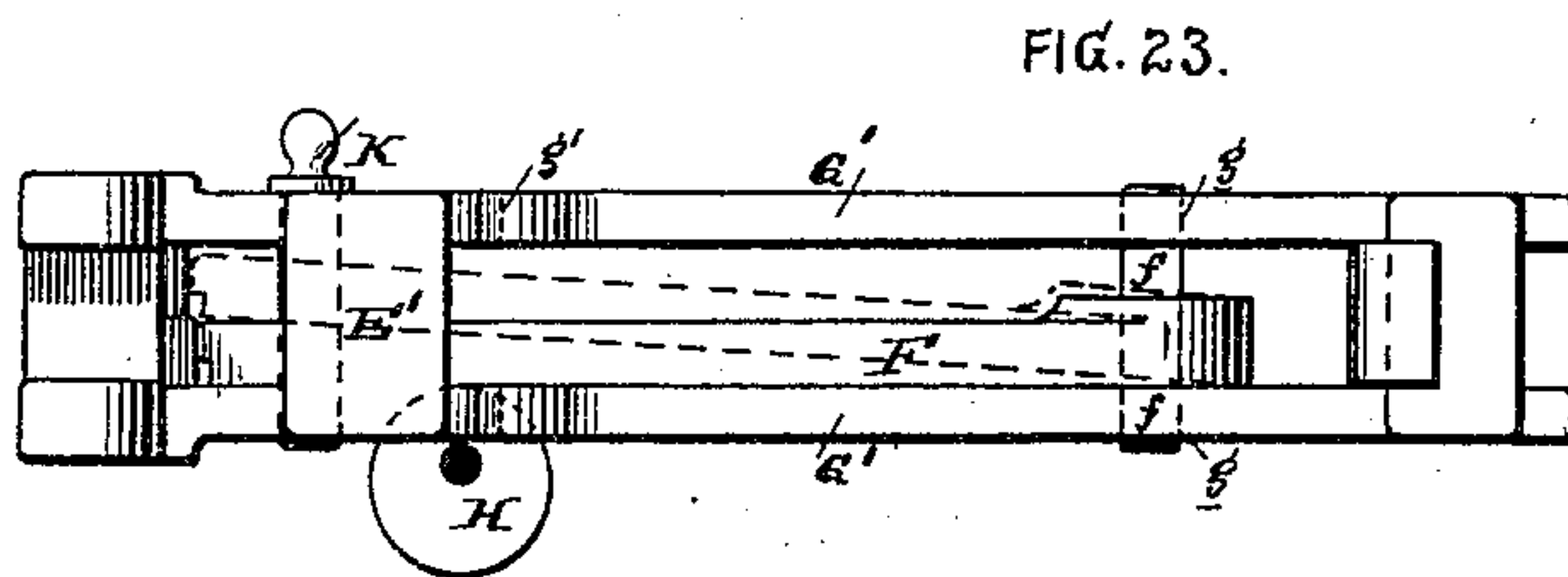
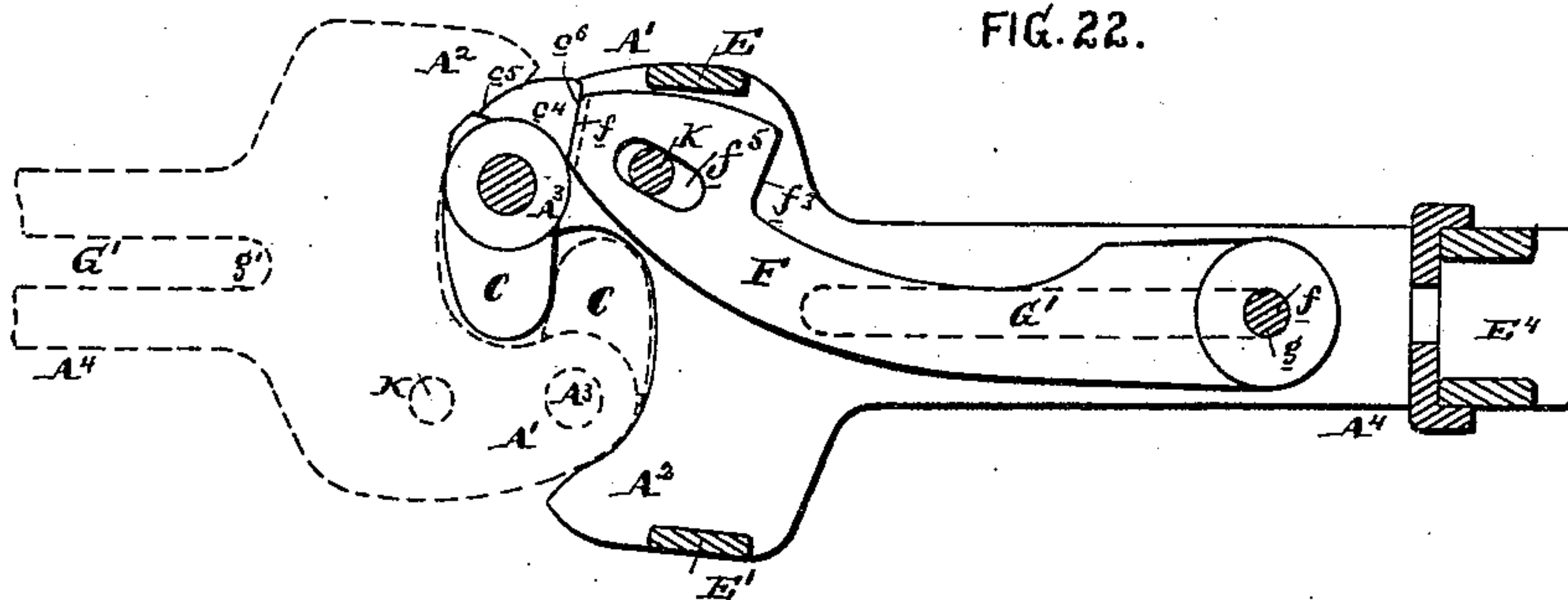
(No Model.)

4 Sheets—Sheet 4.

S. H. HARRINGTON.
CAR COUPLING.

No. 405,255.

Patented June 18, 1889.



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Inventor:
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James T. Chambers

UNITED STATES PATENT OFFICE.

SAMUEL H. HARRINGTON, OF COLUMBUS, OHIO.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 405,255, dated June 18, 1889.

Application filed January 21, 1888. Serial No. 261,502. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. HARRINGTON, of Columbus, county of Franklin, State of Ohio, have invented a new and useful Improvement in Car-Couplings, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of car-coupling devices known generally as "vertical hook-couplings;" and its object is in the first place to simplify, strengthen, and cheapen couplings of this kind, and in the second place to construct my coupling in such a way that it will be capable of convenient and efficient use in connection with coupling devices of radically different natures.

Generally speaking, the main points of my invention consist in devices for strengthening a coupling-head made up of two parallel plates of metal secured together by stays and in such manner as to leave the space between the plates open and unobstructed in front, in the use of a coupling-knuckle of peculiar form, in uniting the coupling-nose to the head in such a way that it will not be exposed to destructive strains either in coupling or in buffing, in securing within the coupler a retractible supplemental coupling device which, while securely fastened to the coupling-head and ordinarily inclosed and held entirely within the same, can readily be extended to make connection with forms of coupler unadapted to couple with the head itself, in making this retractible coupling device of a form adapted to engage with the well-known Miller coupler, in so constructing the retractible coupling device that it will normally and usually serve as a latch to operate in connection with the regular coupling-nose, and in the various devices hereinafter fully described, and shown in the drawings, whereby my invention is perfected and adapted for use.

Reference being now had to the drawings which illustrate my invention, and in which Figures 1 to 16, inclusive, show my preferred construction, while the remaining figures are intended to illustrate modifications thereof, Fig. 1 is a top view of my improved coupling-head; Fig. 2, an end front view of the same; Fig. 3, a plan view of the coupling with

the upper or top plate removed to show the interior construction thereof. Fig. 4 shows a section on the line 1 2 of Fig. 3; Fig. 5, a section on the line 3 4 of Fig. 3. Fig. 6 shows my improved coupling as used in connection with an ordinary link-and-pin draw-head of another car. Fig. 7 shows the coupling as used in connection with the Miller coupling. Fig. 8 shows my coupling as used in connection with another coupling of the same construction, or as it would appear when used with a Janney coupler. Fig. 9 is a section similar to that shown in Fig. 4, except that the coupling-nose is open and the latch device omitted. Fig. 10 is a section through the coupling-nose and its supports on the line *x x* of Fig. 9. Fig. 11 is a section through the shank of the coupling-head on the line *y y* of Fig. 9. Fig. 12 is a perspective view of the arm of the coupling-head which sustains the coupling-nose. Fig. 13 is a perspective view of the coupling-nose. Fig. 14 is a plan view of the coupling device as it appears when the coupling-nose is open, the top plate being removed so as to show the nose and its latch in position. Fig. 15 is a sectional view of the coupling on the line *z z* of Fig. 14. Fig. 16 is a sectional view on the line 5 6 of Fig. 6. Fig. 17 is a perspective view of a modified form of my coupler, the jaw or coupling-nose being represented as open. Fig. 18 is a view of the modified combined coupling device and latch which is adapted for use with a coupling-head like that of Fig. 17. Fig. 19 is a perspective view of the coupling-nose shown in Fig. 17. Fig. 20 is a plan view of another modification of my invention, the upper plate being here removed to show the interior mechanism thereof. Fig. 21 shows in plan another simple latching device. Fig. 22 is a plan view of two of the couplers made in accordance with the modified form shown in Fig. 17, the upper plate of one being removed to show the interior mechanism. Fig. 23 is a side view of the coupling shown in Fig. 21, the upper plate being here restored. Fig. 24 is a top view of the modified coupler, showing the strengthening devices which are advisable in connection with it. Fig. 25 is a sectional view on the line *w w* of Fig. 24. Fig. 26 is a cross-section on the line 7 8 of Fig. 24.

Fig. 27 is a view of one of the plates making up the coupling-head as it leaves the forming-die; and Fig. 28 shows the latch of Fig. 3, &c., in perspective.

5 A represents my improved coupler-head, which is made up of two plates B and B', lying parallel to each other and secured together by stays, (shown at E, E', E², E³, and E⁴,) said stays being secured on the outer edges of
10 the plates B and B'. Where the head A is made of cast metal, these stays would form part of the same casting; but when the plates are made of wrought-iron, as I prefer they should be made, the stays may be formed with
15 the plate, as shown in Fig. 26, or may be made of separate pieces. By constructing the heads in this way the space between them opens freely in front, as is best shown in Fig. 2. Another advantage is incident to the use of
20 the stays between the coupling-head proper and the back end of its shank—to wit, the strengthening of the shank to resist buffing-shocks—the arrangement of the stays on the outer edges of the shank, as shown at E² E³,
25 effectually bracing it and preventing buckling.

D is a re-enforcing rim formed on the front outer edges of the plates B and B', so as to broaden and strengthen the front edges of
30 the coupling-head. In order to strengthen the back part of the head and its shank, I prefer to corrugate the metal in the direction of the length of the shank. These corrugations are shown in Figs. 23 and 24, and in
35 Figs. 1 to 16 a single corrugation is represented, which is made, also, to serve another important purpose, as will hereinafter be explained.

The general outline of my coupling-head
40 and the exterior part of its jaw are like those of the well-known Janney couplers, the coupling-nose C being pivoted in a projecting arm A' of the head and a guard-arm A² being provided opposite to this arm. The shank of
45 the coupler is indicated by the letter A⁴, while the letter A³ indicates the pin on which the jaw C rotates. This pin serves also as a stay to secure the plates B B' together near the outer extremity of the arm A'. I prefer to se-
50 cure it in place by inserting it in holes in the plates B B' while the said plate is heated and allowing the plate to cool afterward, when it will, of course, shrink tightly upon the pin A³.

While, as I have said, the general outline
55 of my coupler-head is identical with that of the Janney coupler, I will here call attention to the fact that the end of the arm A', instead of being rounded in form throughout, has a square-cornered projection *a* (see Figs. 1 and
60 2) formed on the outside of the two plates B B', the regular curved surfaces being preserved beneath these plates, as shown at *a'*. This change I have made in order to broaden the front end of the arm A' and give it
65 greater strength to resist violent blows.

C is my coupling knuckle or jaw, which is secured in the arm A' between the plates B

and B' by means of the pivoted pin A³. This knuckle has its outer face bifurcated, as shown at *c*, but by using the supplemental
70 coupling device hereinafter explained, I am enabled to do away with the pin-hole in the upper and lower flanges, which has heretofore been necessary to enable couplers of this general kind to be used with a link-coupler. 75

The construction of my improved knuckle is shown in Figs. 13 and 19, Fig. 13 representing its construction when used with an arm A' having the square corners *a*, and Fig. 19 representing the coupling-knuckle adapted
80 for use with a round-ended arm A'—such, for instance, as is shown in Fig. 17—the only difference being that where the square corners *a* are used it is necessary to cut away the upper and lower portions of the outer end of
85 the coupling-knuckle, so that they will not interfere with the corners *a*. This is shown at *c'*, Fig. 13.

*c*² are the surfaces which rest against the rounded surface *a'* of the arm A', while the
90 surfaces *c*³ *c*³ are those which fit between the plates B B'. Extending out from the boss of the coupling-nose (which is marked C') in a direction opposite to that in which the coupling-nose proper extends is the locking-arm
95 *c*⁶, the thickness of which, where a vertically-moving latch is used, as in my preferred form, must be considerably less than that of the boss C', from which it springs. The upper surface *c*⁴ of this locking-arm should be
100 flat, and a projecting lug *c*⁵ should be formed on the boss C' at the back end of the upper surface *c*⁴ of the arm *c*⁶, its position being such that it will strike the latch and prevent
105 the knuckle from turning too far back in opening. Simple forms of latches to be used with my improved coupling-jaw are shown in Figs. 20 and 21. In Fig. 20 the latch F' is pivoted in the arm A' of the head at P, a spring *p* tending to press its end against the
110 locking-arm of the coupler-jaw. As shown in this drawing, the surface *f*⁷ of latch F' is engaged with the arm *c*⁶ of the jaw, and the jaw is thus locked shut. When it is desired to open the jaw, the latch F' is pulled
115 backward by a connection H', thus releasing the arm *c*⁶ and permitting the jaw to open until the lug *c*⁵ comes in contact with the latch. In Fig. 21 a vertically-moving pin F² is shown, which, in its lowest position, en-
120 gages the arm *c*⁶ of the nose, but when raised above the surface *c*⁴ of the arm *c*⁶ permits the said arm to rotate under it until the lug *c*⁵ comes in contact with the pin. Neither of these latches is new in principle, and, as
125 will be seen, the latch of my preferred and more complicated structure is in principle identical with that shown in Fig. 21.

With the coupling-noses heretofore used in connection with similar coupling-heads it has
130 been usual to carry a locking-arm back from the boss in the direction of the shank of the coupling-head, a latch being provided in the back part of the arm A', this locking-arm re-

quiring either a great increase in the thickness and weight of the arm A' or else turning out into the opening between the arms A' and A^2 when the jaw was open—as, for instance, in the well-known Janney coupler. By forming my locking-arm c^6 so that it will extend out from the boss C' in the opposite direction to that of the coupling-nose proper and placing the latch with which it engages in the outer part of the arm A' , I at the same time secure a great economy of the metal, the weight of the jaw being of course much less than that of the older types mentioned, and I leave the space between the plates $B B'$ open and unencumbered. It will also be noticed that the coupling-nose C is free to turn inward, as shown in dotted lines in Fig. 24. This capacity for turning inward secures the nose from shocks, which are taken up on the end of the arm A' , which I provide with the square corners a to re-enforce it against such blows.

In order to enable my coupling to be used in connection with the ordinary link-coupling, I place within its hollow shank and head a retractible supplemental coupling device, which can be drawn out through the open space in the front of the coupling. This retractible device I secure to the coupling-head in such a way as to permit it longitudinal motion without permitting it to be entirely disconnected. This may be done either by providing grooves in the upper and lower plates of the coupling which will engage a pin upon the retractible device or by providing the retractible device with a slot and the coupling with a stationary pin, this latter plan being shown in Fig. 20, while the other drawings represent the one first mentioned. In Fig. 20 I have represented this device in its simplest form, the retractible supplemental coupling device (here simply a link N) being placed in the cavity between plates $B B'$ and a pin O passing from plate to plate and serving as a guide and stop to the link. Such a device would answer very well where it was only desired to make connection with link-and-pin draw-heads; but it is highly desirable that the coupling should also have the capacity of engaging with the well-known Miller coupler, and in that case a hook adapted to engage the Miller hook should be carried in the central cavity of the coupling-head instead of the link. By perforating the end of this hook it can be used also as a link to couple with a pin.

In order to avoid multiplicity of parts and to enable my improved coupling to be used advantageously not only in the mode in which it is especially adapted for use, but also to couple with link-and-pin coupler-heads, with Miller couplings, and the like, I have arranged the parts in the way shown best in Figs. 1 to 16.

Referring again to the lettered parts, F is a retractible supplemental coupling device, having both a hooked edge f^3 , adapted to fit the hook of a Miller coupler, and a hole f^5 in its head, by which a pin-coupling can be made.

The rear end of this device is provided with pins f , which fit in a groove G , formed in the plates $B B'$, which compose the coupling-head. Instead of striking up the metal to form the grooves G , which is advantageous, because it forms strengthening-corrugations as well as a guiding-groove, the metal can be cut out, as at $G' G'$, Fig. 17, or a slot may be formed in the supplemental coupling and a pin O used, as in Fig. 20. The advantages of striking up the guiding-grooves G are, however, so apparent that this plan will undoubtedly have the preference.

The outer end f' of the retractible coupling device F is shaped so as to fit against the locking-arm c^6 of the coupling-nose C when F is drawn back to its rearmost position and thrown over so that its end will rest in the arm A' , as shown in Fig. 3. The back end g of the slot G must be accurately formed to afford a firm bearing for F , and to hold it in such a position that when it engages the arm c^6 it will hold the nose in correct position for coupling. The depth or thickness of the arm F is much less than that of the space between plates $B B'$ forming the coupling-head, and its front end can thus be elevated above the top c^4 of the locking-arm c^6 , when the jaw or coupling will be free to turn outward until the lug c^5 comes in contact with the end of F . Figs. 14 and 15 illustrate the position of the bar F and the coupling-nose when the jaw is fully opened. It is of course necessary that the bar F should be properly aligned and held in position when it is used as a latch to lock the coupling-nose C . This may be done in any convenient way—as, for instance, as shown in Fig. 22, where a guide-pin K is dropped through the opening f^5 in the end of bar F . I prefer, however, to form or attach a pin f^4 to the lower side of the head of bar F , and in such a position that it will come flush with the hook f^3 . This pin f^4 is dropped into a hole b in the lower plate B' , and the bar F is thus properly aligned. The pin f^4 exceeds in length the thickness of the bar B , and therefore projects below the under side of the bar, and by pushing upon the end of this pin the end of bar F is elevated above the surface c^4 of the locking-arm c^6 , and the coupling jaw or nose thus released. A convenient way of acting on this pin is by means of a cam H , which, as shown, I have secured on a shaft h' , journaled in a lug or projection h of the coupler in such a position that when the shaft is drawn the cam will act upon and press the pin, and consequently the bar F , upward. My reason for placing the pin f^4 so that it will be flush with the edge f^3 of the hook is to increase the depth of the hook-face, and therefore render its engagement with a Miller hook, as in Fig. 7, more perfect.

When it is desired to use my improved coupling with a link-and-pin coupling-head, as in Fig. 6, the bar F is lifted up, so that its pin f^4 will be disengaged from the hole b . Its front end is then moved around until the

bar lies substantially in line with the shank of the coupler, and is then drawn forward through the bifurcated end of the jaw C until its pins f come in contact with a pin J, which is placed in the slot G in such a position that it will stop the forward motion of the bar F when it is of the right length to make a link-and-pin coupling. Of course this pin might be omitted and the forward motion of the bar F stopped only when it reaches the extreme forward end of its guiding-slot G; but as it is necessary to move the bar F farther out to make a coupling with a Miller hook than it is to make a link-coupling, I prefer to use this pin J, so that there will not be too much lost motion; and it also has another important function, which I will hereinafter explain.

When it is desired to use the bar F to make a coupling with a Miller hook, I have found it desirable to curve the groove G, as shown in Figs. 1 to 16, so that the front end g' of said slot shall be well over in the arm A^2 . The reason of this is obvious at a glance at Fig. 7, though, instead of curving the groove, I can make the bar F curved, as shown in Fig. 18, so as to leave room for the Miller head between the arms A' and A^2 of my coupling-head. f^6 (shown best in Figs. 3, 6, and 7) is a spring attached to the bar F. In moving the bar forward in the groove G the pin J is withdrawn to permit it to pass to the ends g' of the groove G, and can then be placed back in its holes and the spring f^6 made to rest against it. The compression of this spring will cause the head of bar F to press toward the arm A' , and thus the coupling with the Miller head M (see Fig. 7) is rendered more secure and also easier to make. The pin J is cut away in the center at j , so that it will not interfere with the bar F, but only engage the pins f , which guide and hold it in the groove G.

It is of course evident that many of the features of my improved coupling are capable of useful application apart from each other. I have in the drawings illustrated the coupling in what I believe to be its best form, and I have also shown some of many possible modifications. I do not wish, however, to be understood as limiting myself to the combination shown, except where the same is definitely and clearly referred to in the claims.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A coupling-head consisting of plates B B', of suitable form, in combination with stays situated on the outer edges of said plates and between the coupling-head proper and the end of its shank, substantially as and for the purpose specified.

2. A coupling-head consisting of plates B B' and of suitable form and provided with longitudinal corrugations, in combination with stays situated on the outer edges of said plates, securing them together and at a proper distance apart, so that the space between said

plates may open freely and without obstruction in front.

3. A coupling-head consisting of plates B B' of suitable form, provided with longitudinal corrugations and with their front edges thickened externally, in combination with stays situated on the outer edges of said plates, securing them together and at a proper distance apart, so that the space between said plates may open freely and without obstruction in front.

4. In combination with a coupling-head consisting of plates B B', united by stays securing them together and at a proper distance apart, while leaving the space between said plates open in front of said head, a coupling nose or knuckle pivoted in one arm of the head, a latch for locking said nose, and a retractible supplemental coupling device secured between the plates B B', as specified, so as to normally lie inside the head and be capable of being drawn forward to engage with another coupler.

5. In combination with a coupling-head consisting of plates B B', secured together and at a suitable distance apart by stays which leave the space between the plates unobstructed in the front, a bifurcated coupling-nose made without vertical perforation pivoted in one arm of the head, a latch for locking said nose, and a retractible supplemental coupling device secured between the plates B B', as specified, so as to normally lie inside the head and be capable of being drawn forward to engage with another coupler.

6. In combination with a coupling-head consisting of plates B B', secured together and at a suitable distance apart by stays which leave the space between the plates unobstructed in the front, a coupling-nose pivoted in one arm of the head, a latch for locking said nose, and a retractible supplemental coupling device having its end formed into a hook secured between the plates B B', as specified, so as to normally lie inside the head and be capable of being drawn forward to engage with another coupler.

7. In combination with a coupling-head consisting of plates B B', united by stays which secure them together at a proper distance apart, while leaving the said space between said plates open in front of the said head, a coupling nose or knuckle pivoted in one arm of the head, a latch for locking said nose, guiding-grooves formed in the plates B B', and a retractible supplemental coupling device having pins f at its rear end, which said pins are engaged and slide in the guiding-grooves, whereby the supplemental coupling device is permitted to move forward to engage with another coupler without becoming disengaged from the head.

8. In combination with a coupling-head consisting of plates B B', having guiding-grooves G formed in them by bending the metal of the plates outward, and united by stays which secure them together and at a

proper distance apart, while leaving the said space between said plates open in front of the said head, a coupling nose or knuckle pivoted in one arm of the head, a latch for locking said nose, and a retractible supplemental coupling device having pins f at its rear end, which said pins are engaged and slide in the grooves G, whereby the supplemental coupling device is permitted to move forward to engage with another coupler without becoming disengaged from the head.

9. In combination with a coupling-head consisting of plates B B', secured together and at a proper distance apart by stays which leave the space between the plates open in front, a coupling nose or knuckle pivoted in one arm of said coupling-head, a latch for locking said nose, a curved guiding-groove formed on the inside of the plates B B' along the center of their shanks and the center of the guard-arm of the coupler opposite to the arm holding the knuckle, and a retractible supplemental coupling device having a hooked end in front and its rear end provided with pins which engage with the guide-slots on the plates B B'.

10. In combination with a coupling-head consisting of plates B B', secured together and at a proper distance apart by stays which leave the space between the plates open in front, a coupling nose or knuckle pivoted in one arm of said coupling-head, a latch for locking said nose, a curved guiding-groove formed on the inside of the plates B B' along the center of their shanks and the center of the guard-arm of the coupler opposite to the arm holding the knuckle, a stop-pin J, adjustable in said guide-slot, and a retractible supplemental coupling device having a hooked and perforated end in front and its rear end provided with pins which engage with the guide-slots on the plates B B'.

11. In combination with a coupling-head consisting of plates B B', secured together and at a proper distance apart by stays which leave the space between the plates open in front, a bifurcated coupling nose or knuckle pivoted in one arm of said coupling-head, a latch for locking said nose, a curved guiding-groove formed on the inside of the plates B B' along the center of their shanks and the center of the guard-arm of the coupler opposite to the arm holding the knuckle, a stop-pin J, adjustable in said guide-slot, a retractible supplemental coupling device having a hooked and perforated end in front and its rear end provided with pins which engage with the guide-slots on the plates B B', and a spring f^6 , secured on the retractible coupling device so as to press against the stop-pin J when said device is drawn forward in the curved guiding-groove, substantially as and for the purpose specified.

12. In combination with a coupling-head A, having arms A' A², a coupling nose or knuckle C, pivoted in the arm A' and having a locking-arm extending from it in substantially

the opposite direction to that of the knuckle proper, and a latch arranged to engage said arm and lock the nose in its closed position.

13. In combination with a coupling-head A, having arms A' A², square projecting corners a , formed on the inside of the ends of the plates composing the arm A', a coupling nose or knuckle pivoted in arm A' and having a locking-arm extending from it in a direction substantially opposite to the knuckle proper, and a latch arranged to engage said arm and lock the knuckle in its closed position.

14. In combination with a coupling-head A, having arms A' A², a coupling nose or knuckle C, pivoted in the arm A' and having a locking-arm c^6 of less depth than the boss of the knuckle extending from it in substantially the opposite direction to that of the knuckle proper, a stop-lug c^5 , and a vertically-movable latch arranged when in its lowest position to engage said arm and lock the nose in its closed position and when elevated to allow arm c^6 to pass under it until said latch comes in contact with the stop-lug c^5 , all substantially as and for the purpose specified.

15. In combination with the coupling-head A, having arms A' A², said head being made up of plates B B', secured together and at a proper distance apart by stays uniting their outer edges, so as to leave the space between the plates an unobstructed front opening, a coupling-nose C, pivoted in arm A' and having a locking-arm extending from it in a direction opposite to that of the knuckle proper, a latch adapted to engage said locking-arm, and a retractible supplementary coupling device secured in and extensible from the coupling-head, substantially as and for the purpose specified.

16. In combination with the coupling-head A, having arms A' A², said head being made up of plates B B', secured together and at a proper distance apart by stays uniting their outer edges, so as to leave the space between the plates an unobstructed front opening, a bifurcated coupling-nose C, pivoted in arm A' and having a locking-arm extending from it in a direction opposite to that of the knuckle proper, a latch adapted to engage said locking-arm, and a retractible supplemental coupling device having a hooked and perforated outer end secured in and extensible from the coupling-head, substantially as and for the purpose specified.

17. In combination with the coupling-head A, constructed so as to permit the space between its upper and lower plates to open freely in front, a bifurcated coupling-nose C, pivoted in one arm of the coupler and having a locking-arm c^6 extending from it, a latch to engage and lock said arm, guiding-grooves formed on the upper and lower plates of the head, a retractible supplemental coupling device F, having a hooked and perforated end at its front, bearing-pins f engaged in the guide-slots at its rear, and a pin f^4 extending down from the lower edge of its hook.

18. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having locking-arm c^6 , extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, guiding-grooves formed in the upper and lower plates of the arm, and a retractible supplemental coupling device having pins f at its rear end engaged in the guiding-grooves and its length so proportioned that when in its rearmost position and with its head thrown into the arm of the coupler which carries the knuckle the said head will act as a latch in connection with the arm c^6 of the coupling-knuckle C, all substantially as and for the purpose specified.

19. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having locking-arm c^6 , extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, guiding-grooves formed in the upper and lower plates of the coupler, a retractible supplemental coupling device having pins f at its rear end engaged in the guiding-grooves, and a hooked and perforated head, its length so proportioned that when in its rearmost position and with its head thrown into the arm of the coupler which carries the knuckle the said head will act as a latch in connection with the arm c^6 of the coupling-knuckle C, all substantially as and for the purpose specified.

20. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having a locking-arm c^6 , extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, guiding-grooves formed in the upper and lower plates of the coupler, a retractible supplemental coupling device having pins f at its rear end engaged in the guiding-grooves, a hooked and perforated head, a pin f^4 , extending from its under side and flush with the edge f^3 of the hook, said pin being of sufficient length to extend through and below a hole b in the lower plate of the coupling-head and its length so proportioned that when in its rearmost position and with its head thrown into the arm of the coupler which carries the knuckle the said head will act as a latch in connection with the arm c^6 of the coupling-knuckle C, and a cam H, secured below the hole b , so that when turned it will press against the pin f^4 and elevate the head of the retractible coupling device to unlatch the arm c^6 , all substantially as and for the purpose specified.

21. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having a locking-arm c^6 , extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, curved guiding-grooves formed in the upper and lower plates of the coupler, so as to extend along the shank and into the guard-arm, a retractible supplemental coupling device having pins f at its rear end engaged in the guiding-grooves, and a hooked and perforated head, its length so proportioned that when in its rearmost position and with its head thrown into the arm of the coupler which carries the knuckle the said head will act as a latch in connection with the arm c^6 of the coupling-knuckle C, all substantially as and for the purpose specified.

22. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having a locking-arm c^6 , extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, guiding-grooves formed in the upper and lower plates of the coupler, a retractible supplemental coupling device having pins f at its rear end engaged in the guiding-grooves and its length so proportioned that when in its rearmost position and with its head thrown into the arm of the coupler which carries the knuckle the said head will act as a latch in connection with the arm c^6 of the coupling-knuckle C, and a stop-pin J, adjustable in the guiding-slots, all substantially as and for the purpose specified.

23. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having a locking-arm c^6 , extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, curved guiding-grooves formed in the upper and lower plates of the coupling, so as to extend along the shank and into the guard-arm thereof, a retractible supplemental coupling device having pins f at its rear end engaged in the curved guiding-grooves and hooked and perforated front end, and its length so proportioned that when in its rearmost position and with its head thrown into the arm which carries the coupling-nose said head will act as a latch in connection with the arm c^6 of the knuckle C, a spring f^6 , secured to the supplemental coupling device, and a stop-pin J, adjustable in the curved guiding-slot, all substantially as and for the purpose specified.

SAMUEL H. HARRINGTON.

Witnesses:

F. E. BLISS,
D. C. HOWARD.