

No. 780,413.

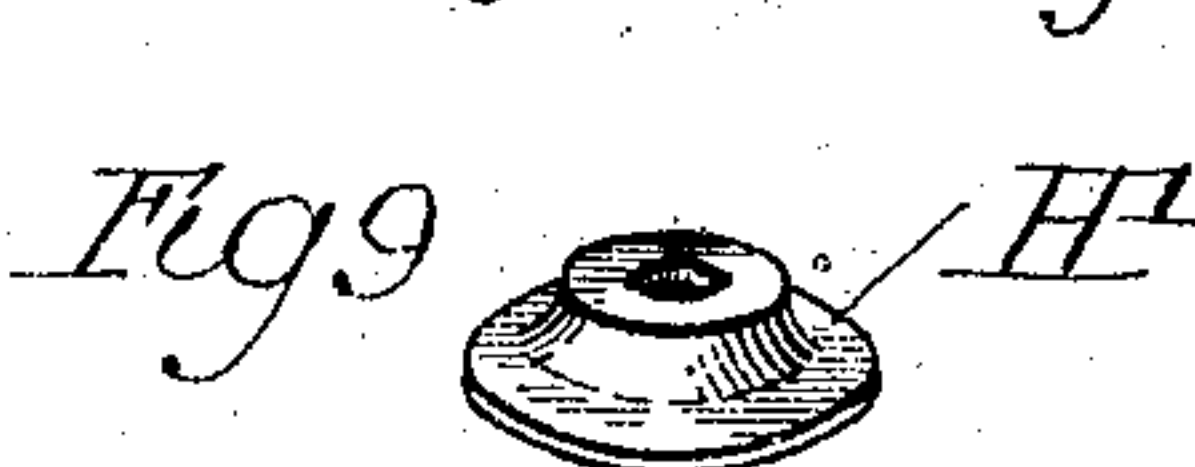
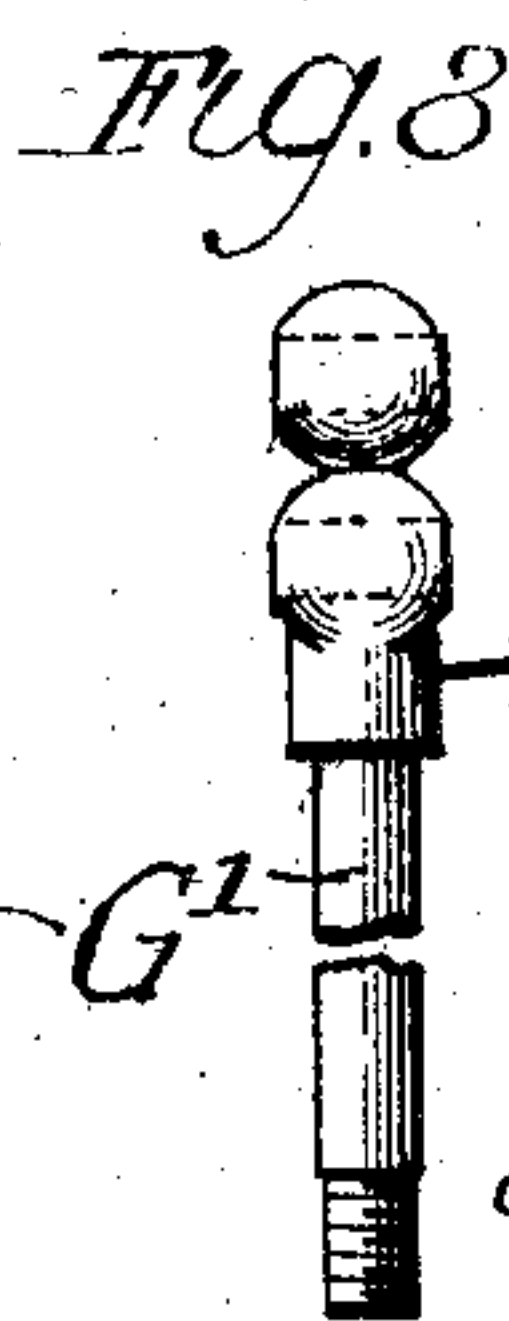
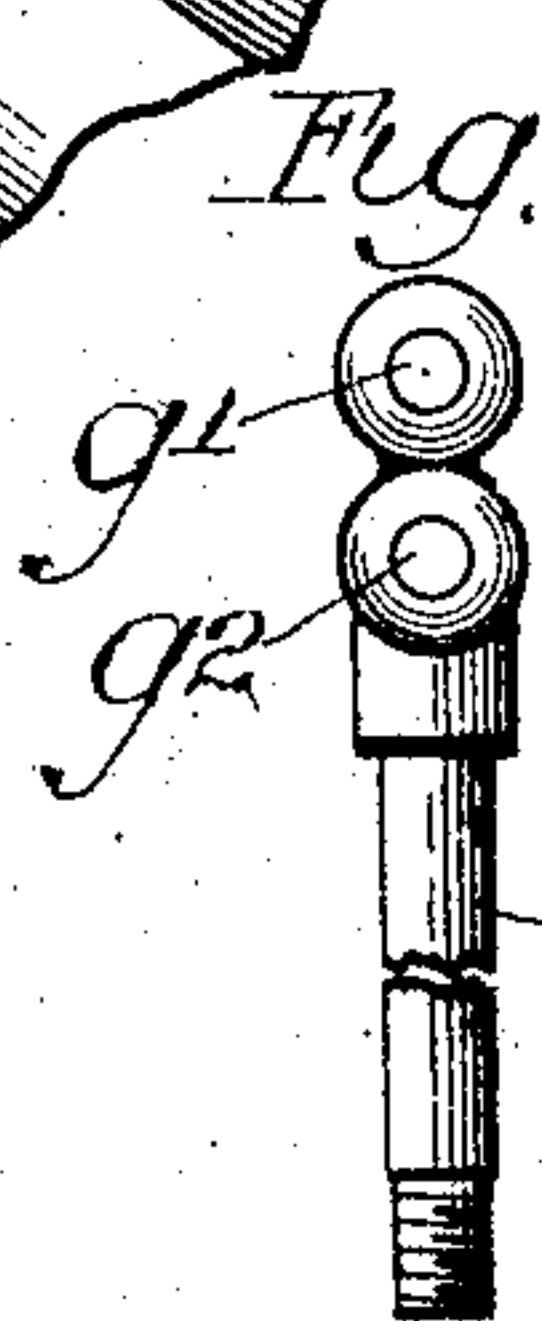
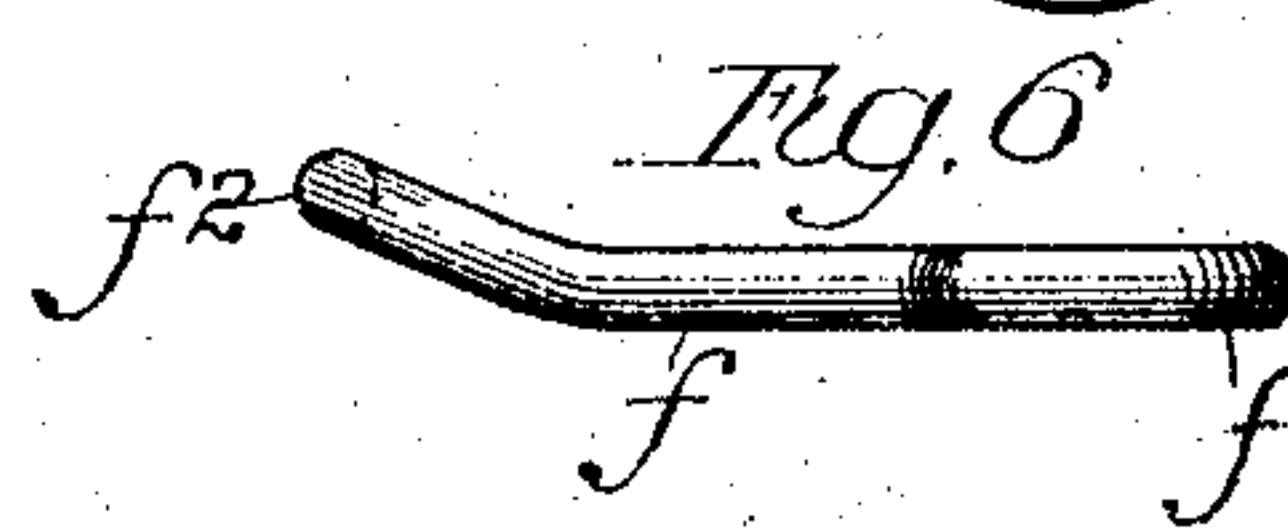
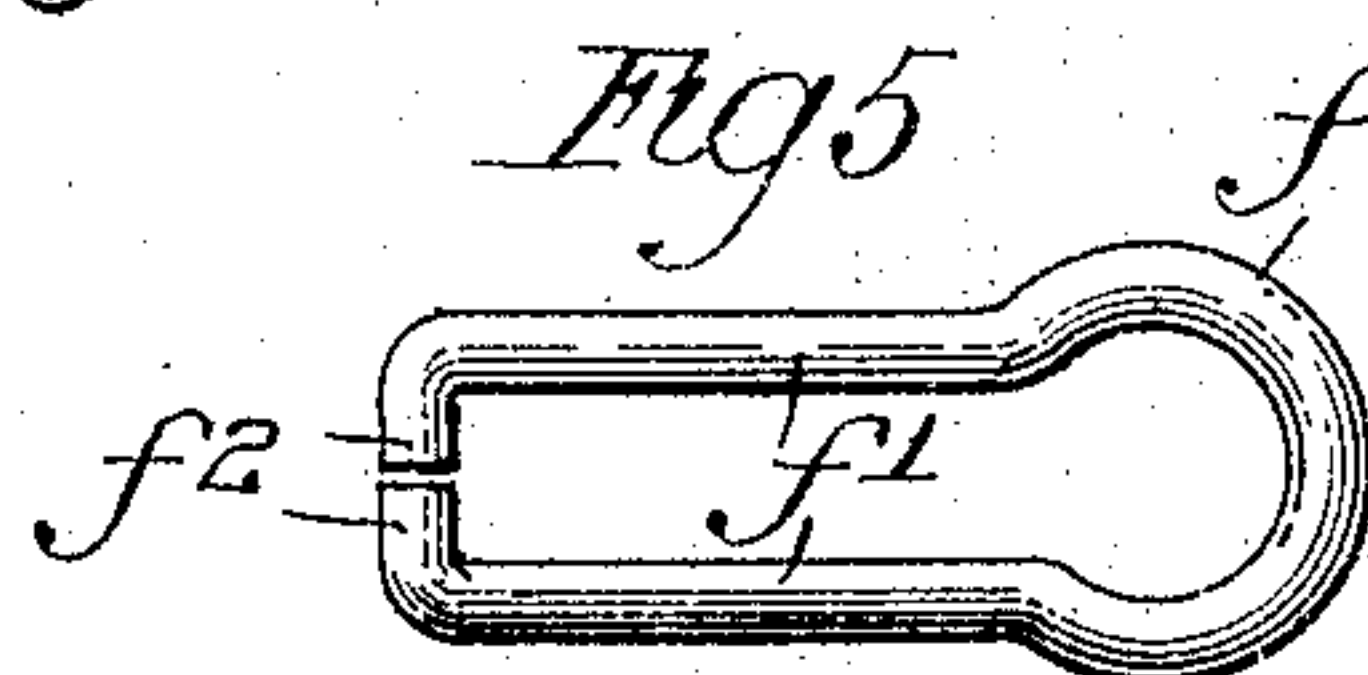
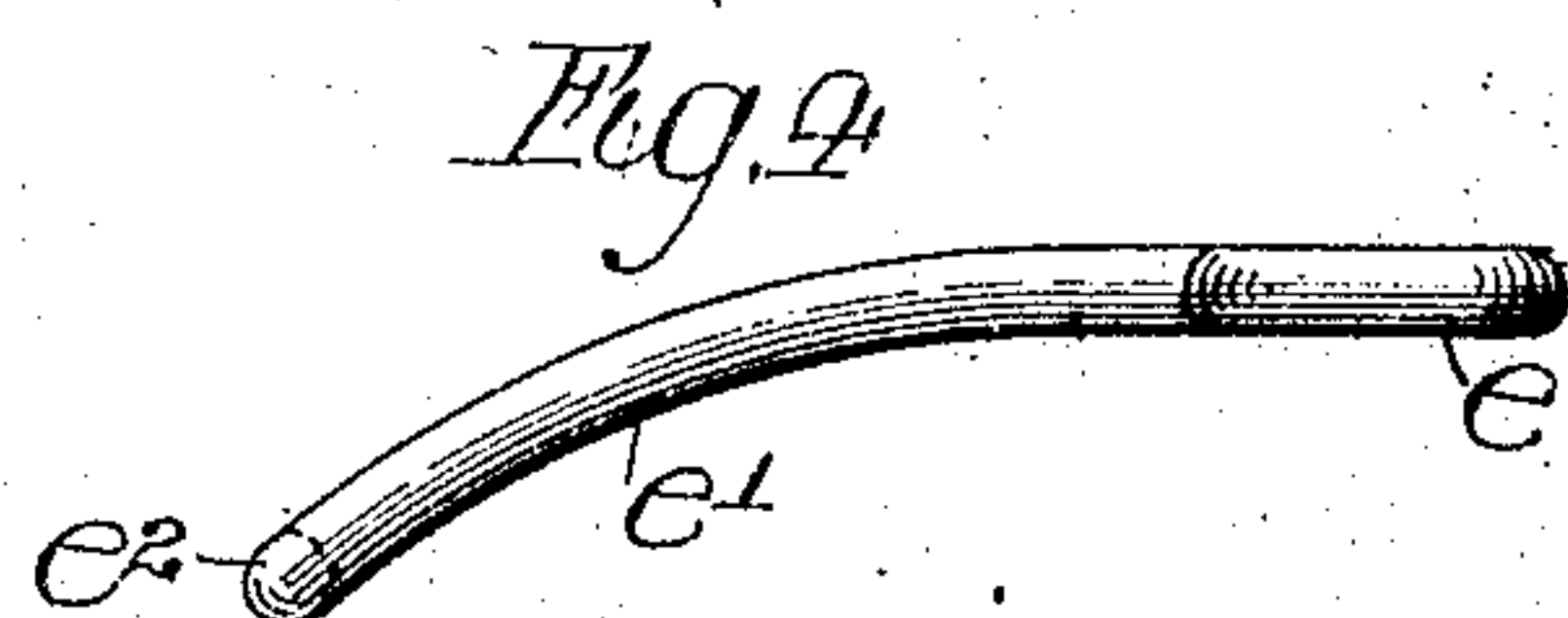
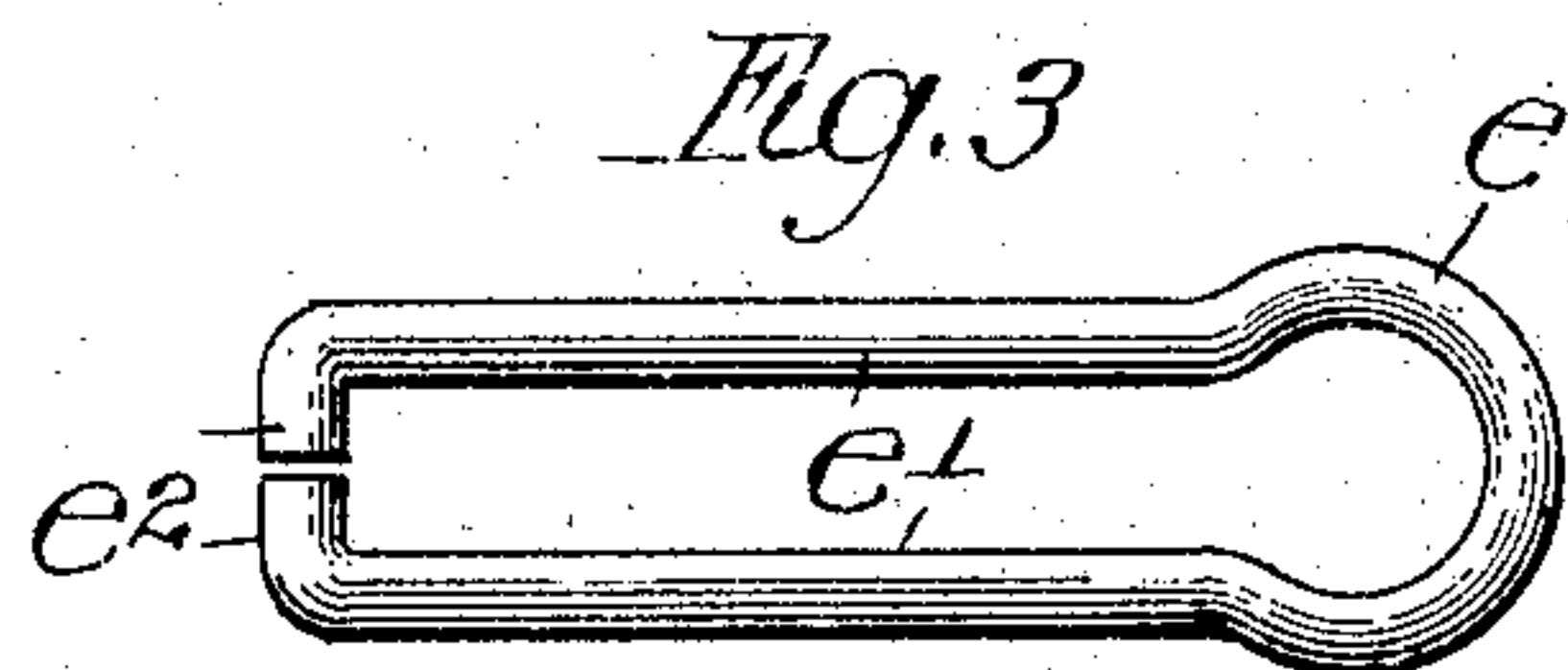
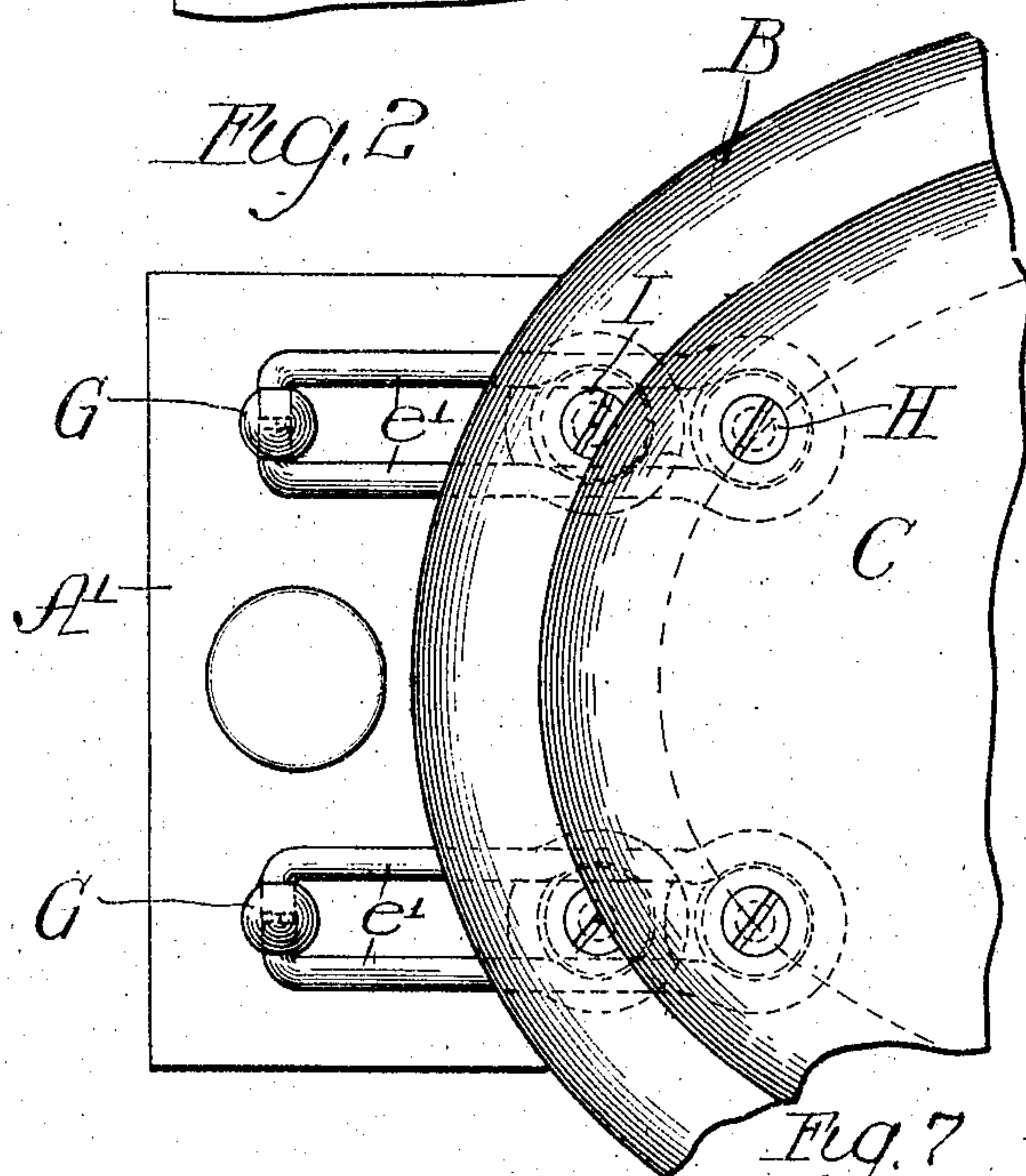
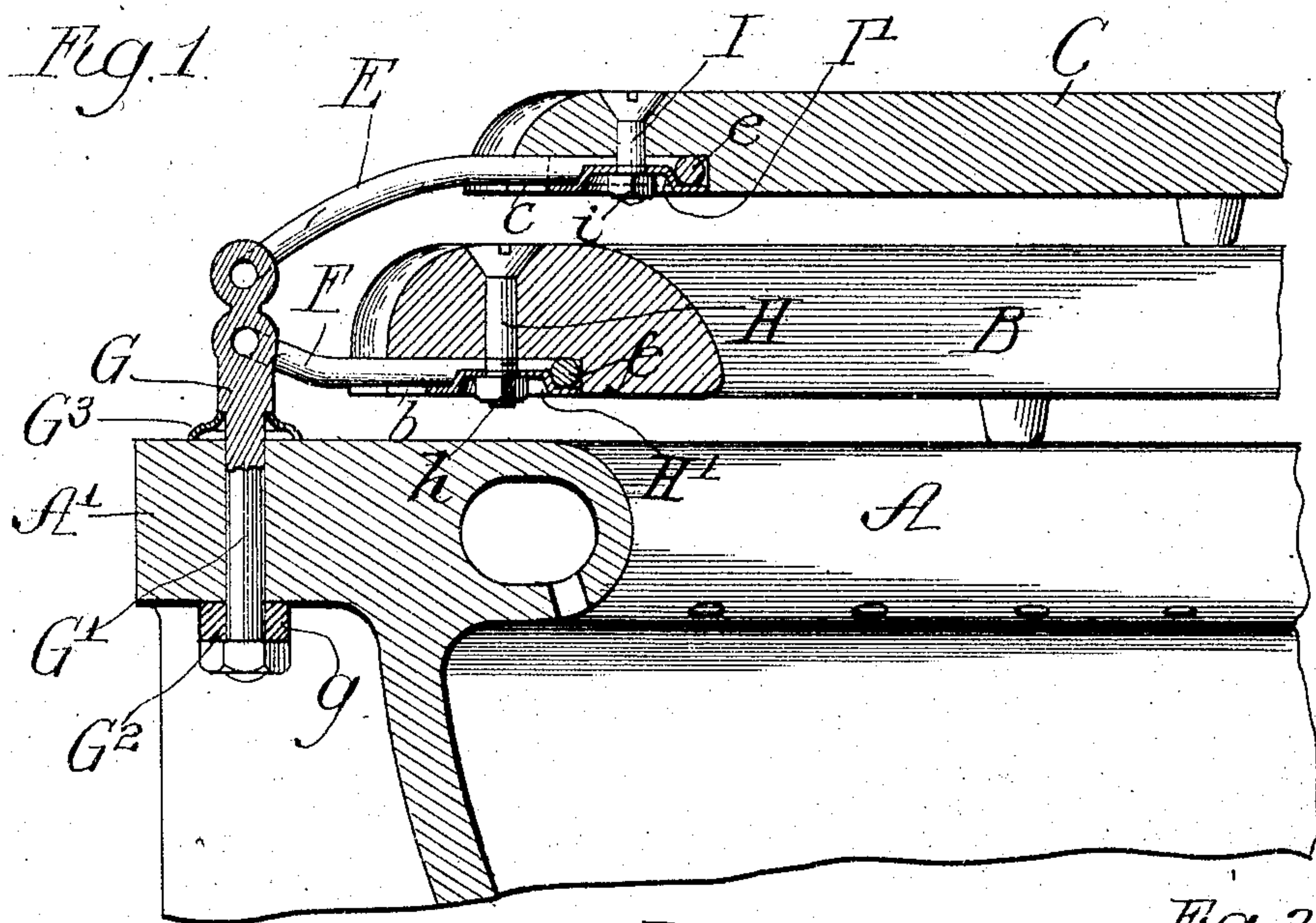
PATENTED JAN. 17, 1905.

T. I. DUFFY.

HINGE.

APPLICATION FILED APR. 5, 1904.

2 SHEETS—SHEET 1.



Witnesses:  
H. G. Barnett  
W. H. Hall

-G Inventor:  
Thomas J. Duffy  
by Vole & Brown  
Tus. Attys



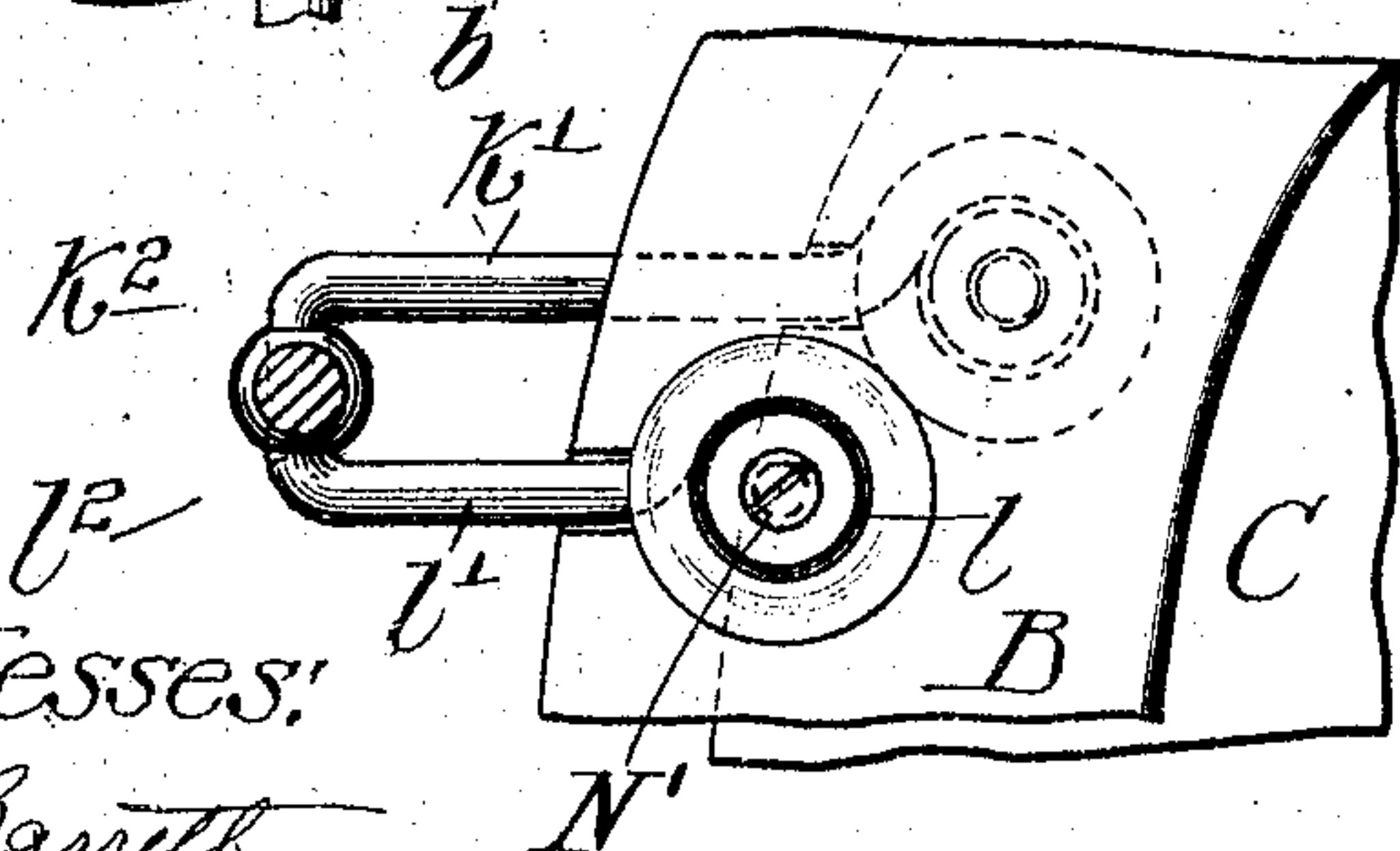
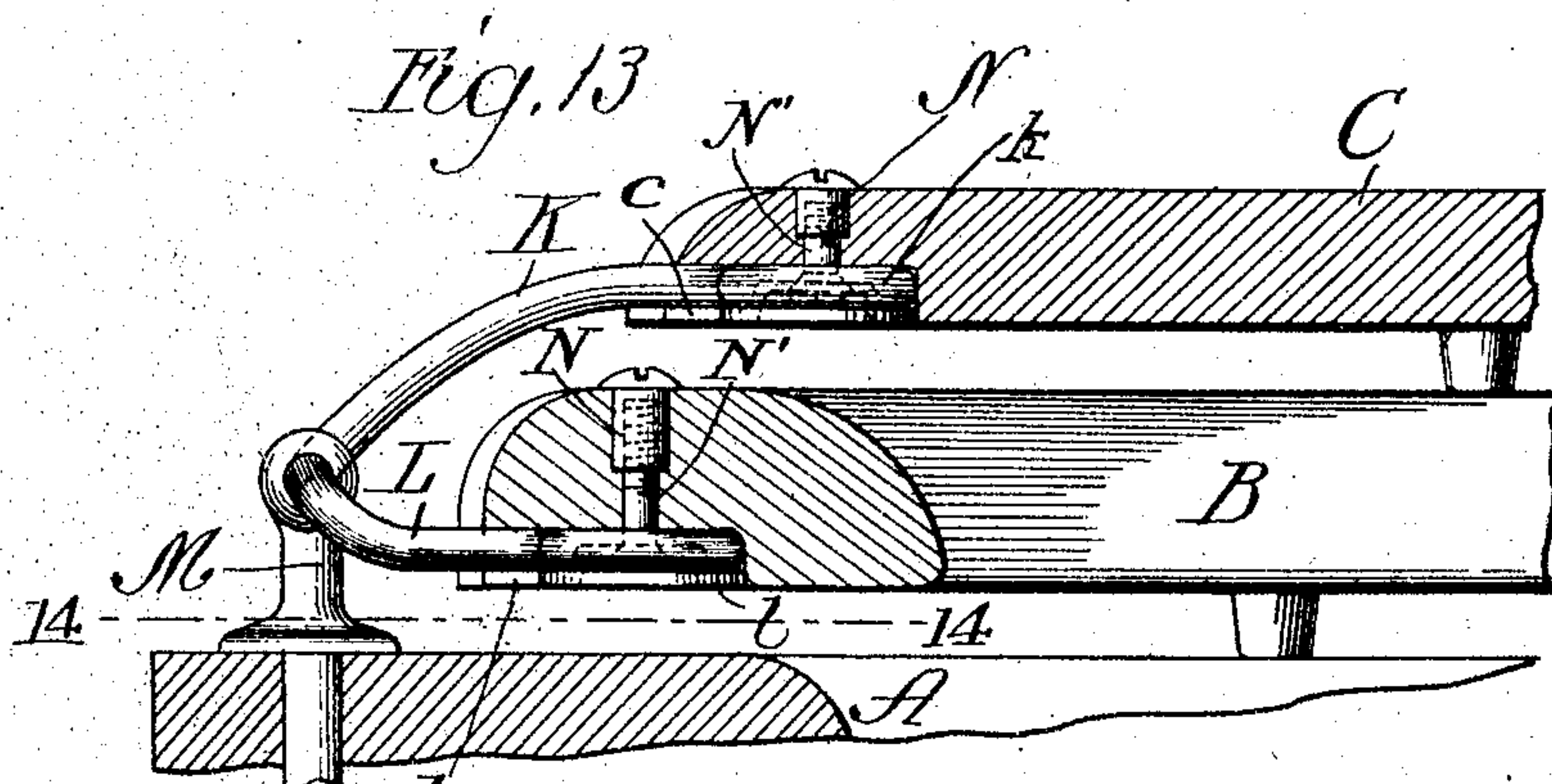
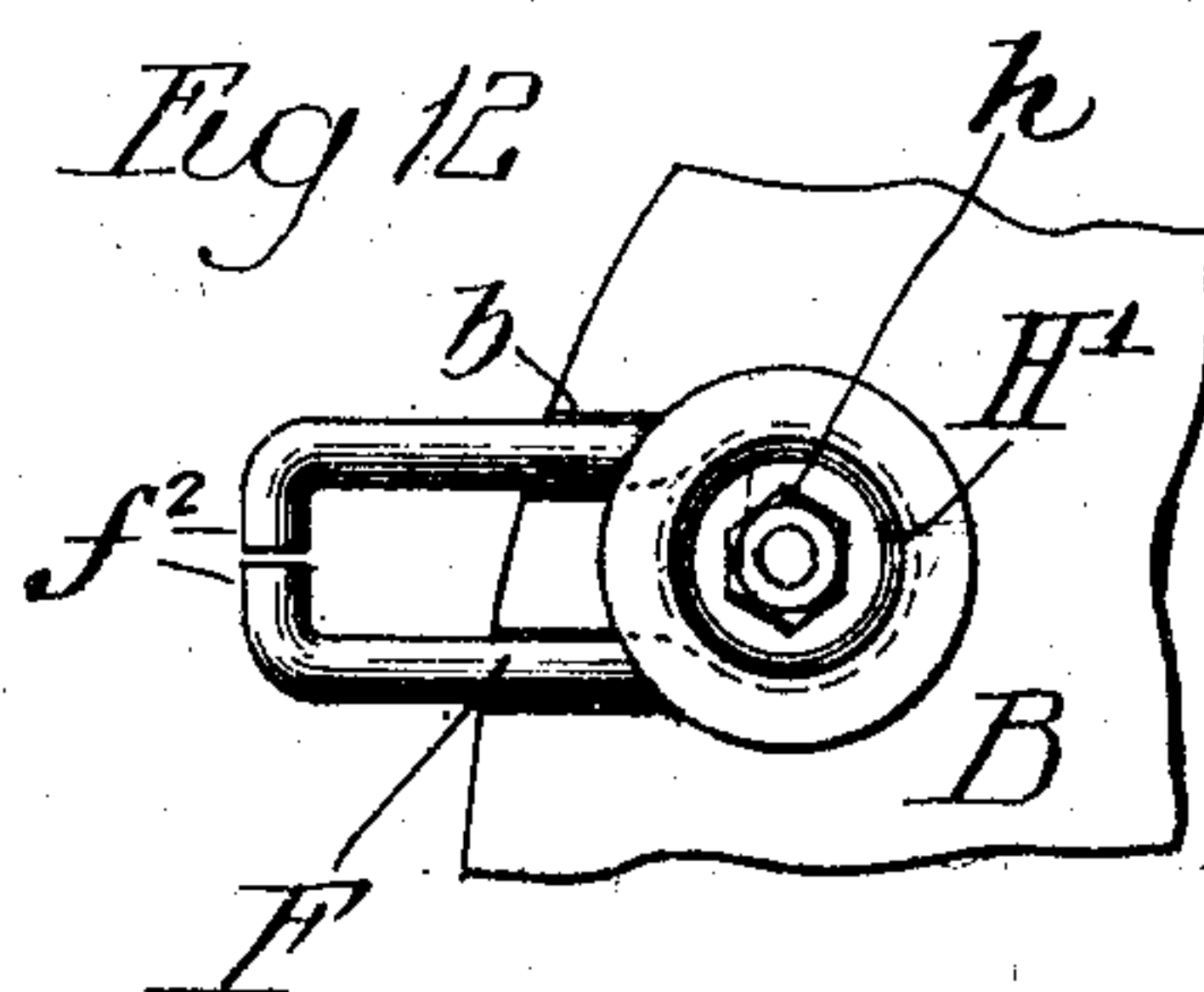
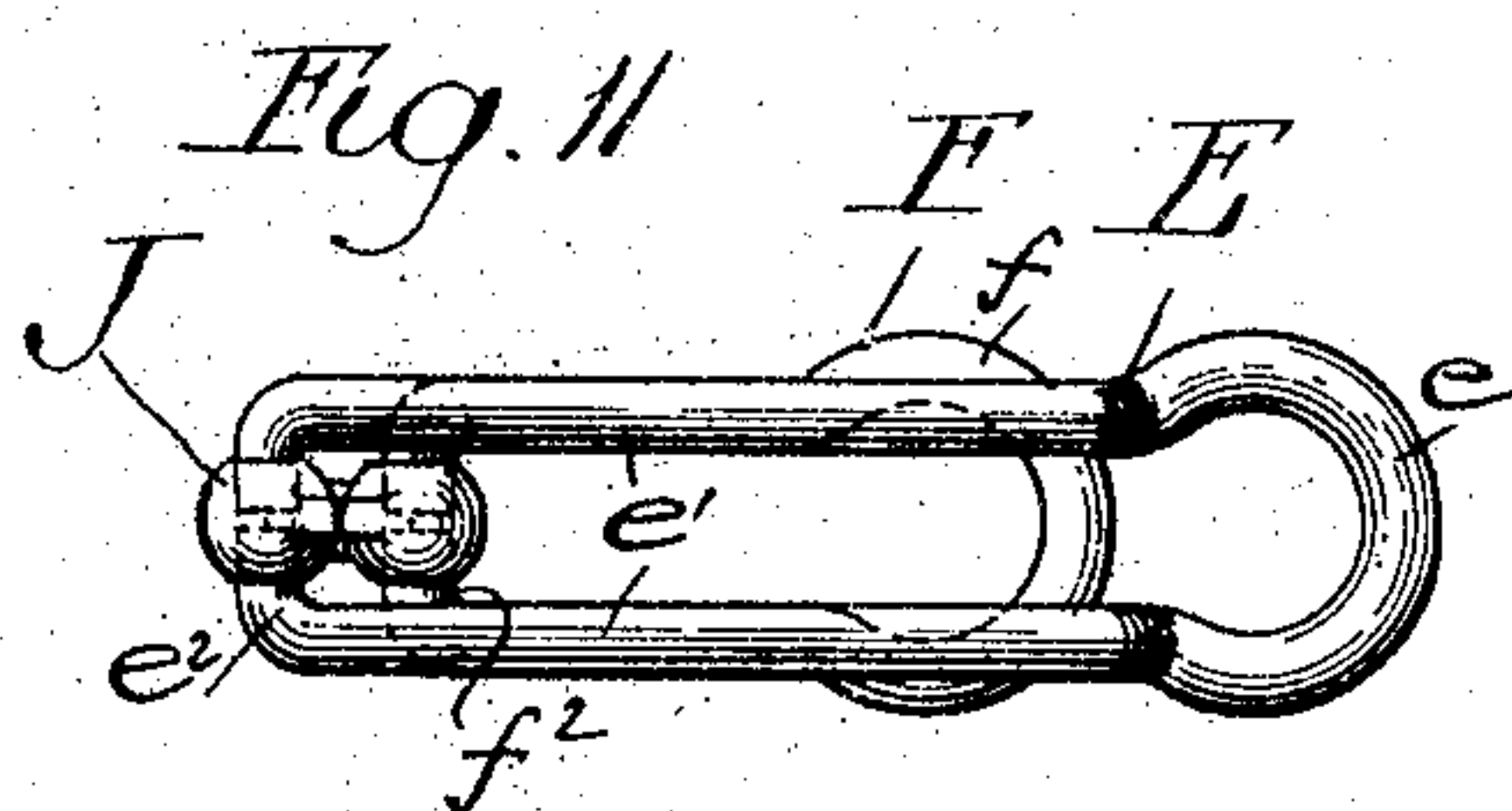
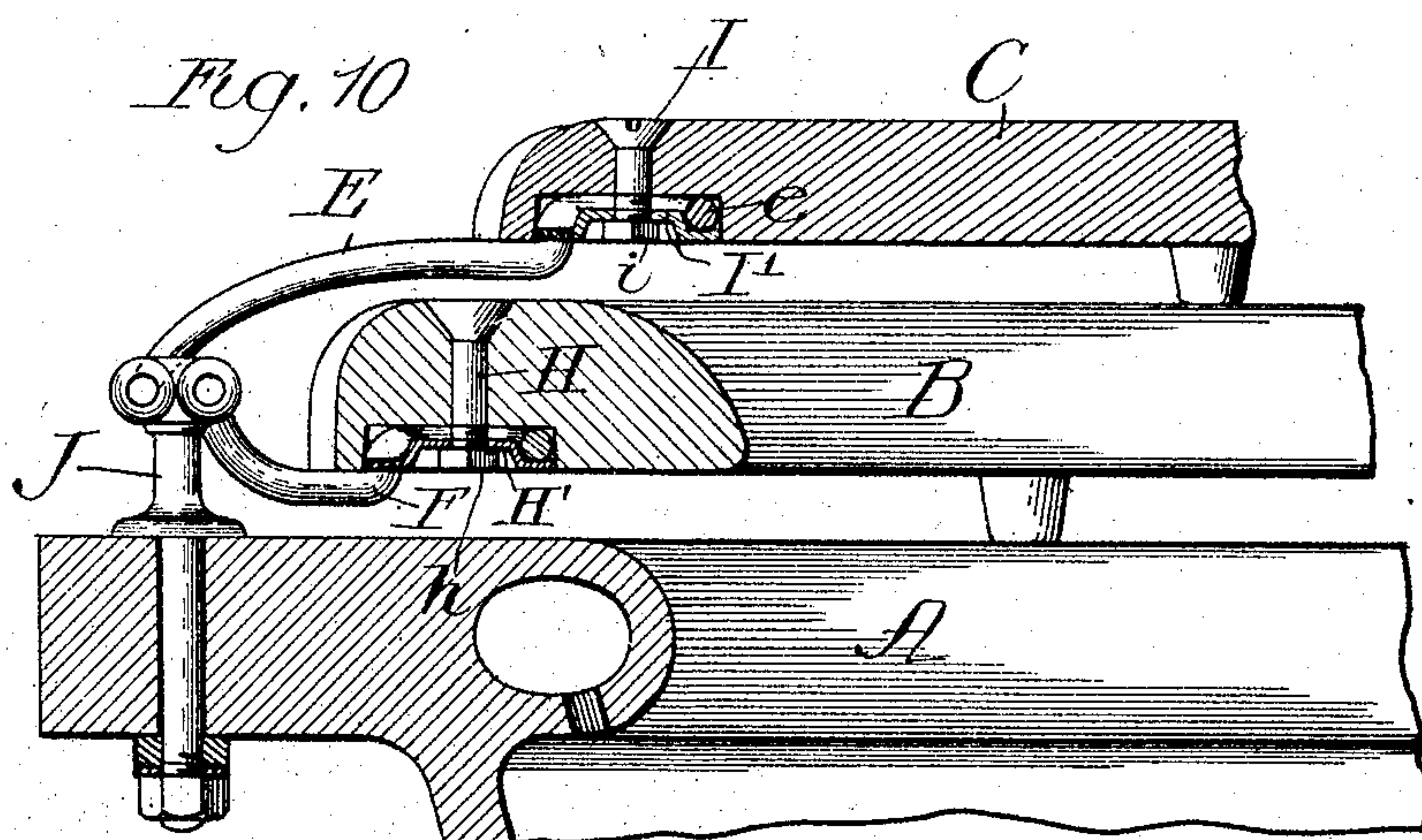
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2 SHEETS—SHEET 2.



Witnesses:

H. W. Barrett  
W. H. Hall

Fig. 14

Inventor:  
Thomas I. Duffy.  
By Robert Brown  
his Attys



# UNITED STATES PATENT OFFICE.

THOMAS I. DUFFY, OF CHICAGO, ILLINOIS.

## HINGE.

SPECIFICATION forming part of Letters Patent No. 780,413, dated January 17, 1905.

Application filed April 5, 1904. Serial No. 201,695.

*To all whom it may concern:*

Be it known that I, THOMAS I. DUFFY, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hinges; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in hinges; and among the objects of the invention is to produce a hinge which is simple in construction, neat and attractive in appearance, and which is strong and durable, not only in itself, but with respect to its connection to the swinging part to which the hinge is attached.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

My improved hinge is herein shown as adapted and applied to connect the swinging seat and lid of a water-closet apparatus to the bowl thereof; but it will be understood that a hinge having the peculiar and novel attributes which characterize my improvements may be applied wherever it is desired to swingingly connect one part with another. Inasmuch, however, as the construction of said hinge lends itself with peculiar adaptability to the connection between the water-closet seat and lid and the bowl, claims are herein made for this adaptation.

In the drawings, Figure 1 is a fragmentary vertical section taken through a water-closet bowl, seat, and lid, showing my improved hinge applied thereto. Fig. 2 is a top plan view of the parts shown in Fig. 1. Figs. 3 and 4 are a plan view and a side elevation, respectively, of the hinge for the lid. Figs. 5 and 6 are similar views of the hinge for the seat. Figs. 7 and 8 are two side elevations of an improved form of post to which the hinges are pivoted. Fig. 9 is a perspective view of a washer which constitutes part of the means for fastening the hinge in place. Fig. 10 is a view similar to Fig. 1, showing a slightly-modified form of post. Fig. 11 illustrates the

relative positions of the companion upper and lower lid and seat hinges when connected with the post shown in Fig. 10. Fig. 12 is a fragmentary bottom plan view of the seat shown in Fig. 1 and one of the hinges applied thereto. Fig. 13 is a view similar to Fig. 1, showing a still further modification. Fig. 14 is a horizontal section taken on line 14 14 of Fig. 13 looking upwardly.

As shown in the drawings, A designates a closet-bowl of conventional form, B a seat, and C the lid thereof. E F, Figs. 1, 2, 3, 4, 5, 6, 10, 11, and 12, designate the hinge members for the lid and seat, respectively, which are hinged to suitably-shaped posts G, Figs. 1, 2, 7, and 8, the lower ends of which are extended to form bolts G', which extend through openings in the usual flange A' at the rear of the bowl, one post being located at each side of the center of the flange, as shown in Fig. 2. The posts are fastened in place by nuts G<sup>2</sup>, having screw-threaded engagement with the lower screw-threaded ends of the posts, and yielding washers g are interposed between said nuts and the lower faces of said flange. A stamped metal washer G<sup>3</sup> surrounds the post above the flange A' and is interposed between the flange and an annular shoulder on the post. The form of post thus described may be conveniently turned from a rectangular cross-section bar. The posts are provided at their upper ends with heads, each having two sockets g' g<sup>2</sup>, located one vertically over the other.

The hinge members E F are of peculiar construction, each being made of a single piece of wrought-metal rod or wire of the necessary diameter to give the required strength thereto and bent upon itself to constitute at one end a closed eye e f, two shanks e' f', and lugs e<sup>2</sup> f<sup>2</sup>, the lugs of each hinge member being directed inwardly toward each other, Figs. 3 to 6, inclusive. The sockets g' of the posts G are adapted to receive the lugs e<sup>2</sup> of the upper hinge members E, the lugs of each hinge member entering its associated socket from the opposite sides thereof, as clearly indicated in Fig. 2. The lower sockets g<sup>2</sup> of said posts G receive in like manner lugs f<sup>2</sup> of the lower hinge members attached to the seat B. In-



asmuch as the lid C is located at a greater distance from said seat-lugs than the seat B, the upper hinge members E are made somewhat longer than the lower hinge members F, as is clearly shown in Fig. 1, and the shanks of said hinge members are curved downwardly and upwardly from the planes of the lower faces of the lid and seat, respectively, to bring the lugs  $e^2 f^2$  in line with the sockets  $g' g^2$ .

Next referring to the manner of attaching the hinge members to the lid and seat, such attaching means are constructed as follows: The seat and lid are provided on their lower faces with counterbores or sockets, which are made of such size as to receive the eyes  $e f$  of the hinge members E F, and extending rearwardly from each of said counterbores or sockets are rearwardly-directed grooves  $c b$ , as more clearly indicated in Figs. 1 and 12, which receive the shanks of the hinge members. Said hinge members are fastened to the seat and lid by means of bolts H I, extending downwardly through the seat and lid, respectively, and centrally through the eyes  $e f$  of said hinges and extend at their lower ends through concave washers H' I', which are made of such size as to fit within the counterbores or sockets  $c b$ . Said washers overlap at their margins the ring parts of the eyes, and the concave parts of said washers enter the said eyes, as shown in Figs. 1 and 12. The bolts H I are provided with nuts  $h i$ , which fit in the concave parts of the washers H' I' and engage the screw-threaded ends of said bolts. Said bolts are turned downwardly into said nuts, being for this purpose provided with slots in their heads. Preferably the heads are countersunk in the upper faces of the lid and seat. The said eyes  $e f$  of the hinge members are thus clamped firmly in the counterbores or sockets of the lid and seat, and the shanks of the hinge members are by the same means secured in the grooves  $b c$  of the seat and lid. It will be furthermore observed that when the hinge members are fixed in place in the manner described the shanks thereof are prevented from separating, and therefore the hinge-lugs  $e^2 f^2$  are prevented from becoming detached from the sockets in the posts G.

In the construction shown in Figs. 10 and 11 the sockets of the posts J are located side by side or one in front of the other and in the same plane, and the rear ends of the hinge-shanks are correspondingly curved to adapt themselves to such form of sockets. The shanks of the hinge members shown in Fig. 10 are offset downwardly at their connections with the eyes and do not enter grooves in the under faces of the seat and lid, as in the previously-described construction. The washers H' I' are therefore correspondingly varied or modified in form.

In the construction shown in Figs. 13 and 14 the upper and lower hinge members K L

differ from the prior construction in that said hinge members each comprises an eye  $k l$  and a single shank  $k' l'$ . In this construction each of the posts M with which said hinge members are connected is provided with a single socket, and the lugs  $k^2 l^2$  of the companion upper and lower hinge members K L for the seat and lid, respectively, at each side enter said sockets from opposite sides of the post. The lugs of the pair of single-shank hinge members of the lid are indicated as directed inwardly toward each other and enter the sockets of the posts M from the outer sides, while the similar lugs of the hinge members L are directed in opposite directions and enter the sockets of the posts from the inner sides thereof, so that when the hinge members are in place they are prevented from becoming detached from the lugs by reason of their rigid connection with the lid and seat, respectively. The hinge members shown in Figs. 13 and 14 are fastened in place by bolts each consisting of two parts N N', the upper part being provided with a head and with an interiorly-screw-threaded socket and the lower part with a head and exterior screw-threads to engage the interior screw-threaded socket of the other part. Both of said heads are slotted to receive an implement by which the bolt is turned in place.

As before stated, my improved hinge is capable of adaptation to other uses and when otherwise employed will be varied in its form to conform to such varied uses. The hinge being composed principally of wrought or drawn metal may be made of ample strength and at the same time light and of attractive proportions.

I claim as my invention—

1. A hinge comprising a part provided with a socket and a member made of a single piece of wire folded to form at one end an eye, at its intermediate portion a shank and at the end of the shank with a lug adapted to enter said socket.

2. A hinge comprising a part provided with a socket which opens in opposite directions, and a member made of a single piece of wire folded upon itself to form at one end an eye, at its intermediate portion a two-part shank and at the ends of the shank members with two lugs directed toward each other and adapted to enter said socket.

3. In a hinge, the combination with a hinge member made of a single piece of wire folded to form at one end an eye, at its intermediate portion a shank and at the end of the shank a laterally-directed lug, of a concave washer adapted to fit at its margin upon the ring portion of the eye, with its concave portion located within the eye, said washer being provided with a central bolt-opening.

4. The combination with a swinging part and a part to which it is adapted to be hinged, the latter part being provided with a socket,



of a hinge member provided at one end with an eye adapted to enter a recess in the swinging part and at its other end with a laterally-directed lug adapted to enter said socket, and means for clamping said eye in said recess of the hinged part.

5. The combination with a swinging part and a part to which it is adapted to be hinged, the latter being provided with a socket, of a hinged member provided at one end with an eye adapted to enter a recess in the face of the swinging part, and at its other end with a lug adapted to enter said socket, and means for clamping said member to the swinging part comprising a concave washer adapted to enter said recess and to overlap at its margin the ring portion of the eye and a clamping-bolt extending through said swinging part and through said washer.

6. The combination with a swinging part and a part to which it is adapted to be hinged, the latter being provided with a socket, of a hinged member provided at one end with an eye adapted to enter a recess in the face of the swinging part, and provided at its other end with a laterally-directed lug adapted to enter said socket, said swinging part being provided with a groove extending outwardly from the recess and the shank of the hinge member fitting in said groove, and means for clamping said eye of the hinged member in said recess.

7. The combination with a swinging part and a part to which it is adapted to be hinged, the latter being provided with a socket which opens in an opposite direction, of a hinge member provided at one end with an eye, intermediate its ends with a two-part shank and at the ends of the shank members with lugs directed toward each other and adapted to enter said socket from opposite sides thereof, the said swinging part being provided in its face with a recess adapted to receive the eye, and with two grooves directed outwardly from said recess, and adapted to receive said shank members and means for clamping the eye in said recess.

8. The combination with a swinging part and a part to which it is adapted to be hinged, the latter being provided with a socket which opens in an opposite direction, of a hinge member provided at one end with an eye, intermediate its ends with a two-part shank, and at the ends of the shank members with lugs directed toward each other and adapted to enter said socket from opposite sides thereof, said swinging part being provided in its face with a recess adapted to receive said eye, and with two grooves directed outwardly from said recess adapted to receive the shank members, and means for clamping the eye in said recess, comprising a concave washer adapted to enter said recess and overlapping at its margin the ring portion of the eye, and means extending through the eye for fastening the

washer to the swinging part with the eye confined between the same and the washer.

9. In a hinge construction for the seat and lid of a water-closet bowl, the combination with two posts attached to said bowl, and each provided with two oppositely-opening sockets, two hinge members attached to the seat and two other hinge members attached to the lid, the shanks of said hinge members being made of two parts and extending rearwardly from the seat and lid, and the shanks of each hinge member being provided at its rear end with lugs directed toward each other and adapted to enter the sockets of the posts from the opposite sides thereof.

10. A hinge construction for the seat and lid of a water-closet bowl comprising, in combination with two posts attached to the closet-bowl and each provided with two oppositely-opening sockets, of two hinge members for the lid and two other hinge members for the seat, and provided at their forward ends with eyes adapted to enter recesses in the under faces of the parts to which they are attached and constructed with two-part shanks, the members of which are provided at their rear ends with lugs which enter the sockets of the posts, one of the sockets of each of the posts receiving the lugs of one of the seat-hinge member and the other socket of said post receiving the lugs of the corresponding lid-hinge member, and means for fastening said hinge members to the lid and seat comprising concave washers adapted to enter said recesses and overlapping at their margins the ring portions of the eyes, and means for fastening the washers to the seat and lid with the eye portions of the hinge members clamped between the same and the washers.

11. A hinge construction for the seat and lid of a water-closet bowl, comprising, in combination with two posts attached to the closet-bowl and each provided with two oppositely-opening lugs, of two hinge members for each the lid and seat, provided at their forward ends with eyes adapted to enter recesses in the under faces of the lid and seat and constructed with two-part shanks, the members of which are provided at their rear ends with lugs which enter the sockets of the posts, one of the sockets of each post receiving the lugs of one of the seat-hinge member, and the other socket of the post receiving the lugs of the corresponding lid-hinge member, and means for fastening said hinge members to the lid and seat comprising concave washers adapted to enter said recesses, and overlap at their margins the ring portions of the eyes and means for fastening the washers to the lid and seat, said seat and lid being provided with grooves extending rearwardly from said recesses which receive the two-part shanks of the hinge members.

12. A hinge construction for the seat and lid of a water-closet comprising, in combination



with two posts attached to the closet-bowl  
and provided at their upper ends with sockets,  
of hinge members extending rearwardly from  
the seat and lid, respectively, the shanks of  
5 which are provided with lugs adapted to enter  
said post-sockets, the forward ends of said  
hinge members being provided with eyes and  
the seat and lid being provided on their lower  
faces with recesses adapted to receive said eyes,  
10 and means for fastening said seat members to  
the lid and seat comprising concave washers  
adapted to enter at their depressed portions

said eyes and overlapping at their margins  
the ring portions of the eyes, and clamping-  
bolts extending through the seat and lid mem- 15  
bers and through said washers.

In testimony that I claim the foregoing as  
my invention I affix my signature, in presence  
of two witnesses, this 15th day of March, A. D.  
1904.

THOMAS I. DUFFY.

Witnesses:

WILLIAM L. HALL,  
GEORGE R. WILKINS.