

No. 847,542.

PATENTED MAR. 19, 1907

G. T. BARBER.

HINGE FOR SURGICAL AND OTHER INSTRUMENTS.

APPLICATION FILED JUNE 16, 1906.

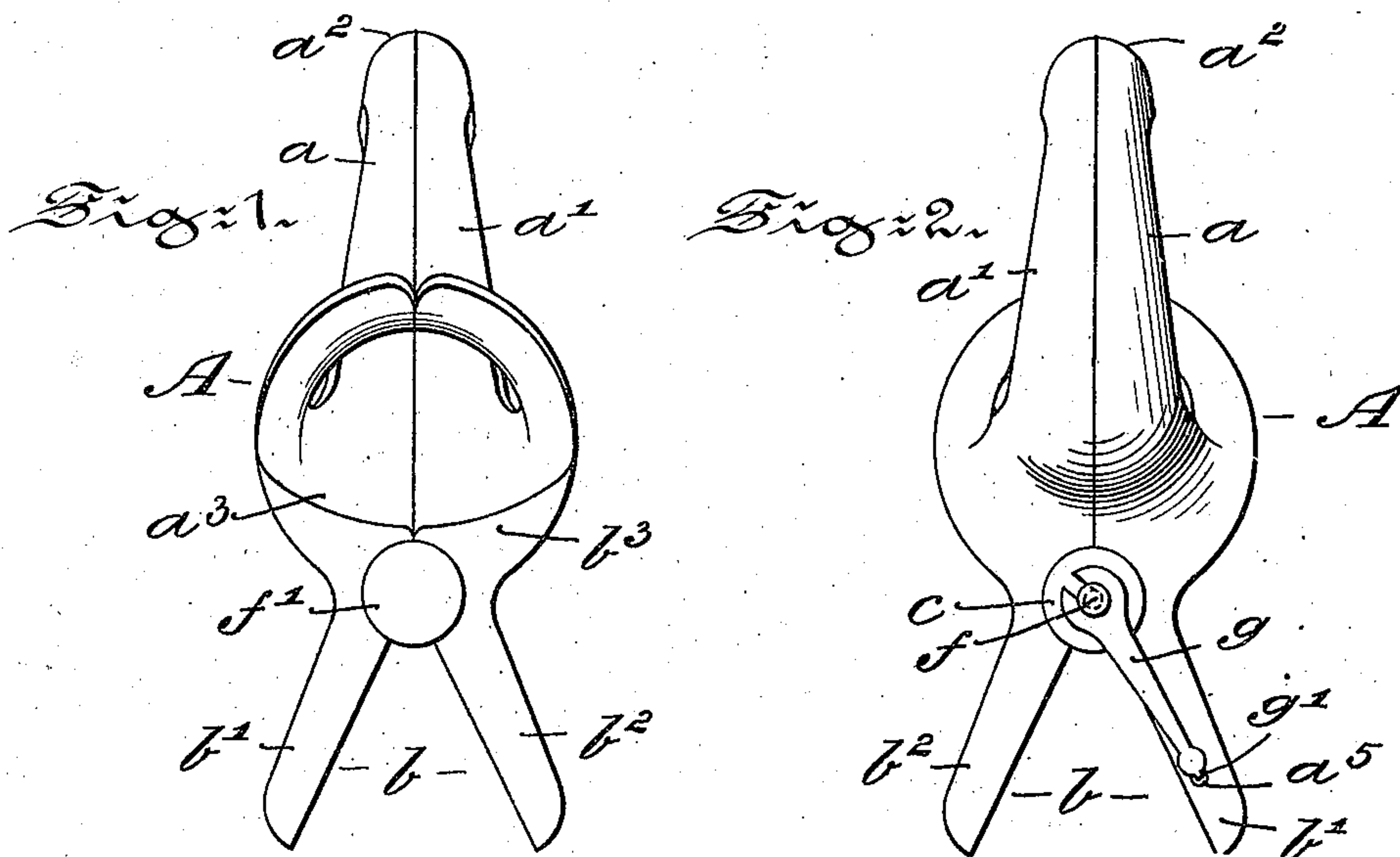
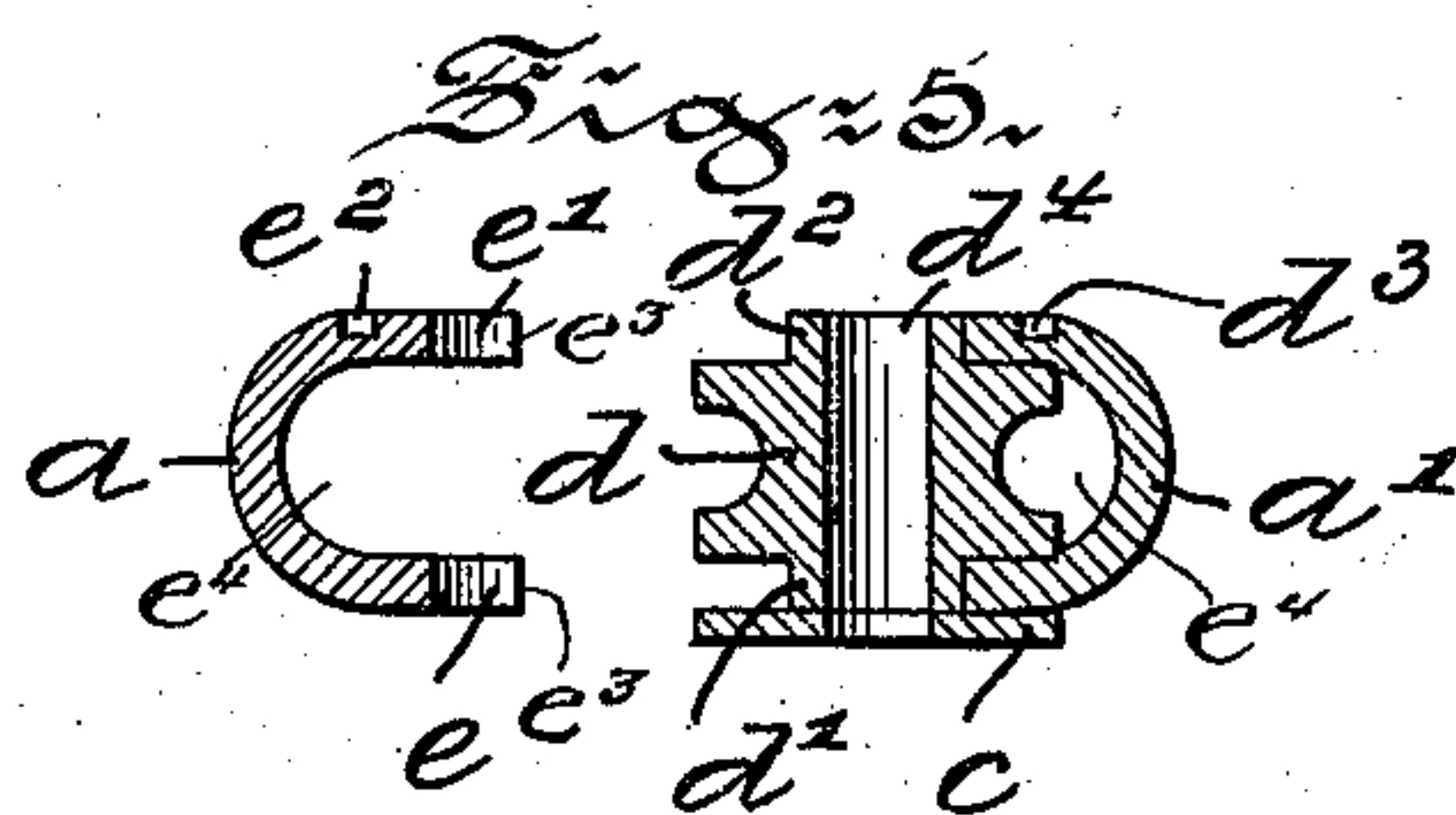
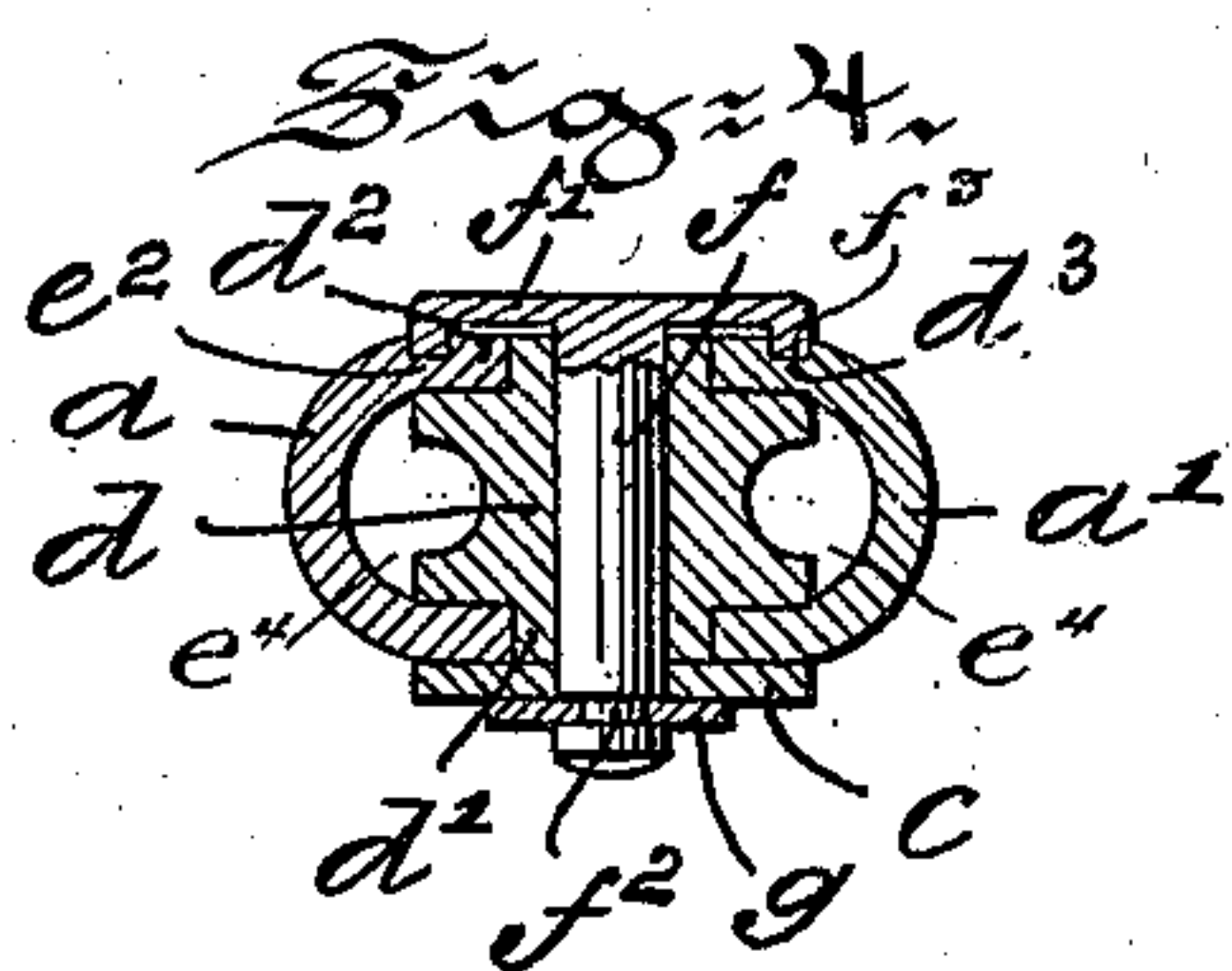
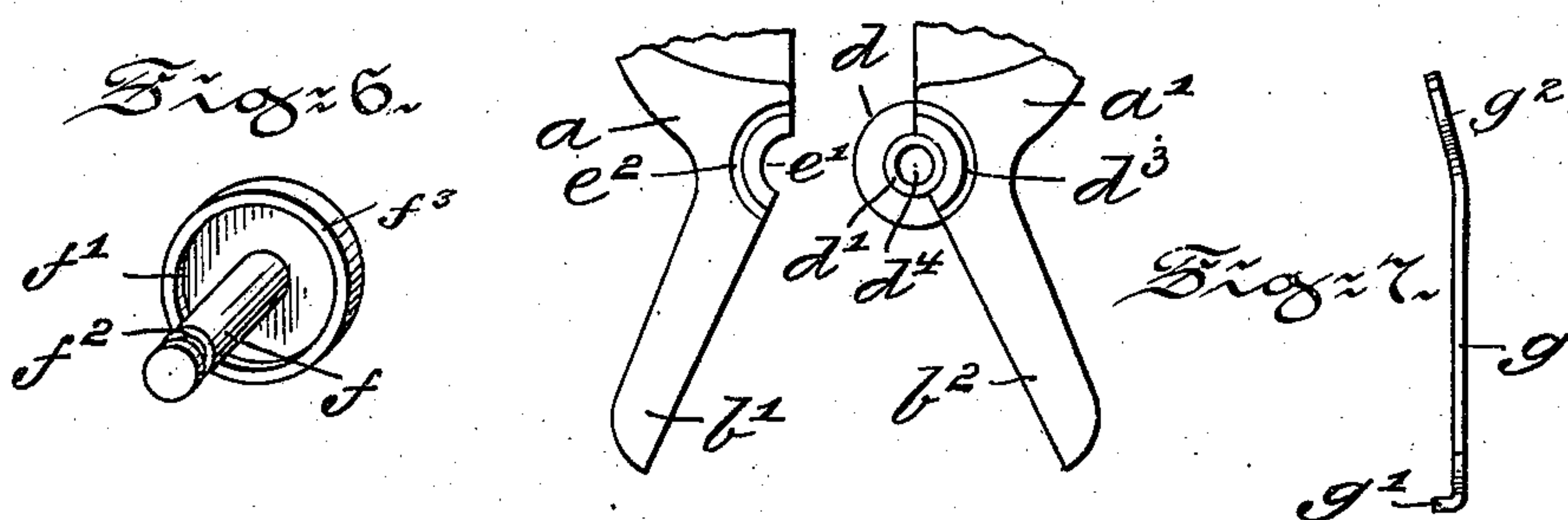


Fig. 3.



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## HINGE FOR SURGICAL AND OTHER INSTRUMENTS.

No. 847,542.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed June 16, 1906. Serial No. 321,964.

*To all whom it may concern:*

Be it known that I, GEORGE T. BARBER, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hinges for Surgical and other Instruments, of which the following is a specification.

My invention relates to surgical or other instruments, and consists of an improved hinge connection therefor constructed and arranged in substantially the manner herein-after described and claimed.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a perspective view of the hinge connection of my invention in its application to a funnel-shaped slotted vaginal speculum provided with extensible or flaring fingers, forming when closed against each other a handhold. Fig. 2 is a similar view of the hinge connection in application to an instrument of the type defined, showing the rear thereof and also the flanged-stud lock-pin and the detachable key for holding the stud lock-pin of the hinge in connection with both members of the instrument. Fig. 3 is a top or plan view, in broken section, of the two members of the instrument parted to show the detail arrangement of the hinge members of the instrument with the stud lock-pin removed therefrom to part the hinge connection of the respective members of said instrument. Fig. 4 is a central sectional view, enlarged, through the hinge connection of the instrument and, partly in elevation, the stud lock-pin, showing the detail arrangement of the same when assembled and in an operative position. Fig. 5 is a similar view of two of the parts of the hinge connected with the members of the instrument parted from each other and with the stud lock-pin and key removed. Fig. 6 is a perspective view, enlarged, of the stud lock-pin, showing the detail structural arrangement thereof; and Fig. 7 is a side elevational view, enlarged, of the removable key adapted to engage the groove in the lower end of the stud lock-pin and in one of the fingers of the instrument to

prevent disengagement of the stud lock-pin from the hinge connection of the instrument. 55

Referring to the drawings, A, as shown in Figs. 1 and 2, represents a vaginal speculum, which consists of the two members  $a$  and  $a'$ , which when brought into contact with each other form as to shape a funnel-shaped 60 slotted tube which is closed at the forward end  $a^2$  thereof and at the opposite end  $a^3$  is enlarged into an overhanging lip or projection  $b^3$ , each terminating in an extension forming the two members  $b'$  and  $b^2$  of a hand- 65 hold  $b$ , which members when closed rest with their side portions  $e^3$  flat against each other.

Each of the parts  $b'$  and  $b^2$  of the handhold  $b$  is of substantially semicircular shape in cross-section and is provided in their abutting flat side portions  $e^3$  with depressions  $e$  and  $e'$ , while between the same, due to the sectional outline of the members, are formed depressions  $e^4$ , adapted to receive and to conceal when the speculum is assembled a spool-like bearing  $d$ . The bearing  $d$  at each end is provided with a centrally-arranged projection  $d'$  and  $d^2$ , respectively, which when the members  $b'$  and  $b^2$  of the handhold  $b$  abut with their flat sides  $e^3$  against each other 80 enter into the depressions  $e$  and  $e'$  thereof, while the bearing  $d$  enters into the grooves  $e^4$  of the handhold, and thus holds the parts  $b'$  and  $b^2$  thereof in alinement with each other, as shown in Fig. 4. To the handhold member  $b^2$  and projection  $d'$  of the bearing  $d$  is secured a perforated disk  $c$ , so as to be permanently connected with the same. This is preferably, also, the case with the bearing  $d$ , which in the present instance is connected to 90 the handhold member  $b^2$ .

In order to hold the member  $b'$  securely in engagement with the member  $b^2$  and with the bearing  $d$ , each of the handhold members  $b'$  and  $b^2$  is provided with substantially semicircular grooves  $e^2$  and  $d^3$ . These grooves, in conjunction with the flanged head  $f'$  of a pin  $f$ , passing through the bearing  $d$ , serve to connect the part  $b'$  to the part  $b^2$  of the handhold  $b$  in the following manner: The flange 100  $f^3$  of the head  $f'$  by engaging the grooves  $e^2$  and  $d^3$  will hold the depression  $e$  and  $e'$  of the handhold member  $b^2$  in engagement with the projections  $d'$  and  $d^2$  of the bearing  $d$ , and thus the inner contiguous faces  $e^3$  of the 105 same flat against each other. The projec-



tions  $d'$  and  $d^2$  of the bearing  $d$  will thus serve as pivots on which the handhold member  $b'$  is permitted to oscillate. Any tendency of the handhold members  $b'$  and  $b^2$  to  
 5 separate at the side adjacent to the plate  $c$  is effectually resisted by the flange  $f^3$  of the head  $f'$  of the pin  $f$ , while the disk  $c$  by contacting with the handhold members  $b'$  and  $b^2$  will serve as an auxiliary bearing for the same.  
 10 When it becomes necessary to separate the members of the speculum, this is readily accomplished by lifting the flange  $f^3$  of the head  $f'$  out of the grooves  $e^2$  and  $d^3$  of the handhold members  $b'$  and  $b^2$ , after which by a  
 15 slight side pressure the member  $a^2$  will be brought out of engagement with the bearing  $d$  and the plate  $c$ , as shown in Fig. 5. In order to hold the flange  $f^3$  of the head  $f'$  of the pin  $f$  in the grooves  $e^2$  and  $d^3$ , the free end is  
 20 provided with a groove  $f^2$ , which by being engaged by the forked end  $g^2$  of the key  $g$ , resting on the plate  $c$ , is securely locked to the same. The key  $g$  is provided with a depending pintle  $g'$  for entering a slot  $a^5$ , provided  
 25 in the handhold member  $a$  of the instrument in application, as clearly shown in Fig. 2. When it becomes necessary to disengage the key  $g$  from the pin  $f$ , the end  $g'$  thereof is first lifted out of the slot  $a^5$  of the handhold mem-  
 30 ber  $b'$ , after which the forked end  $g^2$  of the key  $g$  can be removed from the groove  $f^2$  of the pin  $g$ . The hinge connection, as described, is reliable in action, maintaining the respective members of the instrument in  
 35 truism in use, and at the same time is readily parted or separated as occasion requires for the cleansing of the members of the instrument or for the substituting of a new member for an old should occasion require and  
 40 also without, due to the constructive arrangement of the hinge connection wabbling or binding of the members with respect

to each other in the operation of the instrument. It will be manifestly obvious that the hinge connection of this invention as herein- 45 before described is not of necessity limited in its application to the particular instrument as hereinbefore explained and illustrated, but that it is equally applicable to many other forms or types of instruments provided 50 with extensible or separable members.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

A surgical instrument, consisting of two 55 members having handholds, each provided with a substantially semicircular groove and with depressions, a spool-like bearing adapted to hold the handholds in alinement with each other by engaging certain depressions 60 thereof and having a projection at each end, said projections adapted to engage certain other depressions of the handholds and to serve as pivots on which said handholds are adapted to oscillate, a plate adapted to form 65 an auxiliary bearing for said handholds by holding the same in engagement with said bearing, a pin having a flanged head passing through the bearing, the head of which by engaging the groove of each of said handhold 70 members is adapted to lock the same to each other and to the projection of said bearing at one end and to hold the same in engagement with said projection at the end adjacent to said plate, and means for engaging the free 75 end of said pin.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

GEORGE T. BARBER.

Witnesses:

J. WALTER DOUGLASS,  
 THOMAS M. SMITH.