

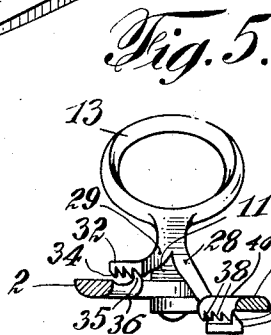
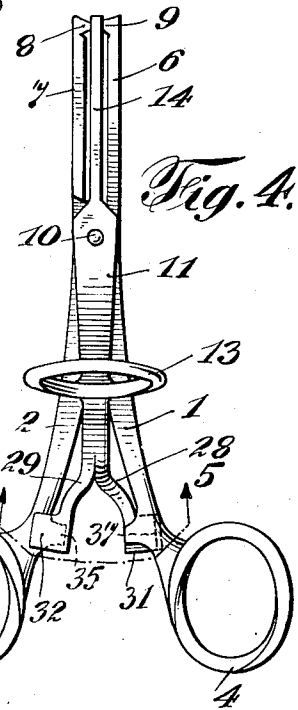
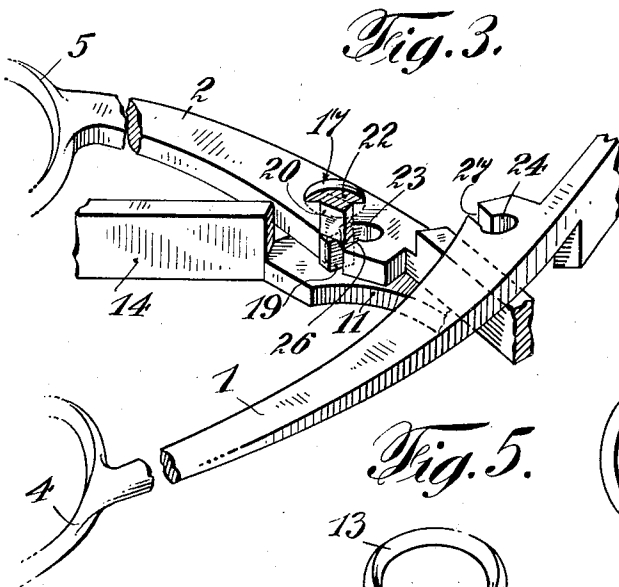
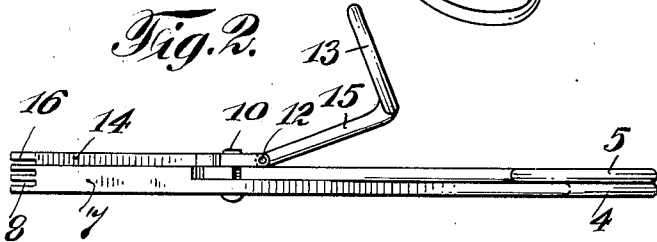
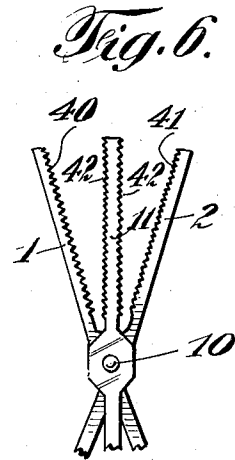
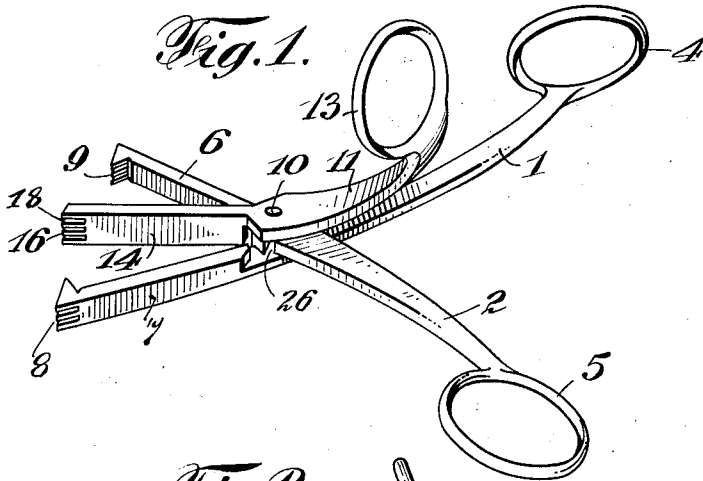
Sept. 17, 1940.

H. BACHMANN

2,214,985

FORCEPS

Filed April 30, 1938



INVENTOR
Henry Bachmann
BY
Ronnie G. Gieseler
ATTORNEY

UNITED STATES PATENT OFFICE

2,214,985

FORCEPS

Henry Bachmann, McConnelsville, Ohio

Application April 30, 1938, Serial No. 205,189

1 Claim. (Cl. 128—321)

The present invention relates generally to forceps of the scissors type used to grasp, hold firmly or exert traction upon objects that would be difficult or impracticable to hold with the fingers. The invention is directed more particularly to an improved construction for grasping and holding more than a single object at the same time.

Forceps are used extensively by such persons as surgeons, dentists, watchmakers and the like, for performing various delicate operations. These uses may be in connection with selecting and inserting or assembling small parts, picking up instruments, holding portions of tendons, veins and the like in surgical operations and many other similar uses. In many cases, it would be very helpful to the user if the forceps could be utilized to grasp and hold more than a single object at one time and also to separately release objects so held. The present invention is more particularly directed to an improved construction for achieving this advantageous feature and aims to provide a relatively simple, inexpensive and practical device for holding either a single or a plurality of objects and for releasing them separately or simultaneously. The present invention also contemplates the provision of means for quickly and easily assembling and disassembling the parts of the device and further contemplates the provision of a locking means for effectively retaining the parts of the device in closed relation.

An object of the present invention is to provide improved, inexpensive forceps adapted to grasp or hold either a single or a plurality of objects.

Another object of the invention is to provide a pair of forceps adapted to release objects held therewith either singly or simultaneously.

Another object of the invention is to provide an improved means for securely assembling the parts of the device into operative relation.

Another object of the invention is to provide means for securely holding the parts of the forceps in closed relation.

Another object of the invention is to provide a pair of forceps of the above type which may be operated with minimum effort and skill on the part of the user.

A further object of the invention is to provide a multiple type of forceps which may be operated with only one hand.

A further object of the invention is to provide a pair of forceps of the above type which is both practical and inexpensive to manufacture.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawing, forming a part of the specification, wherein

Fig. 1 is a perspective view of a preferred embodiment of the forceps;

Fig. 2 is a side elevational view of a modification of the forceps illustrated in Fig. 1;

Fig. 3 is a fragmentary sectional view, in perspective, of a means for holding the parts in assembled relation;

Fig. 4 is a plan view of a form of locking means for the forceps;

Fig. 5 is a view taken along the line 5—5 of Fig. 4; and

Fig. 6 is a plan view illustrating a modified form of gripping portion.

Referring again to the drawing and more particularly to Fig. 1, forceps are shown comprising two members 1 and 2 pivoted together at a point 10 intermediate their ends. The members 1 and 2 preferably having gripping means or corrugations 8 and 9 at one end and may also have enlarged holding surfaces 6 and 7 thereon. Finger portions or apertures 4 and 5, commonly referred to in the trade as "ring handles," at the other ends of the forceps facilitate opening and closing of the gripping parts 8 and 9.

Also secured at the pivot point 10 and adapted to turn thereabout so as to close or open with respect to either of the side members 1 and 2, is a third or intermediate member 11. Preferably, the third member is slightly shorter than the side members and is provided with an inclined ring handle 13 to facilitate operations of the forceps as will be hereinafter described. An enlarged portion 14 on the intermediate member similar to the enlarged portions 6 and 7 on the side members, preferably has a gripping portion adjacent its free end comprising alternate projections 16 and recesses 18 adapted to cooperate with the corrugations 8 and 9 on the side members to hold articles.

The thumb and second finger of a user's hand are preferably inserted through the finger portions 5 and 4 respectively of the side members 2 and 1. The index finger of the same hand may

then be inserted within the inclined finger portion 13 adjacent the end of the middle member 11. The comparatively shorter length of the intermediate member and the inclination of the finger portion 13 thereon permit easier insertion of the index finger and a more natural position of the hand than would be true if this member were constructed the same as the side members. Movement of the different fingers together or apart causes the corresponding forceps members to close or open with respect to each other, and thus to grasp, hold and release articles between the working surfaces or the ends thereof. Either of the side members may be closed with respect to the intermediate member. If desired, both of the side members may be closed against the intermediate member to simultaneously grasp and hold a plurality of objects. Instruments, tools or other objects may be grasped and held between the enlarged faces 6, 7 and 14 of the forceps or by the cooperating corrugations 8, 9 and 16 adjacent to the free ends of the forceps.

The addition of the intermediate member 11, in effect, doubles the usefulness and effectiveness of the ordinary type of forceps. Two pairs of forceps are provided within the compass of the ordinary single type of forceps. In addition to holding a single or a plurality of objects, as above described, the device will be very useful to such persons as surgeons during operations where it is necessary to hold a tendon, vein or the like and then also to grasp and hold an adjacent part. When a plurality of such parts are so held by a surgeon, they may be released separately or simultaneously. The surgeon, in effect, is provided with an extra hand and thus may work more quickly and efficiently since he is not obliged to depend to so great an extent upon the services of an assistant.

It will be understood that the length and shape of the intermediate member 11 and the inclination of the finger portion 13 thereon, may be varied to more closely fit the hand of the person using the forceps. To permit the adjustment to more comfortable positions and to accommodate the hands of different users of the device, there is shown in Fig. 2 a modified form of intermediate member. In this modification, a suitable hinge or pivot 12 is provided at some convenient point along the intermediate member to allow the rearward part 15 and finger portion 13 to be moved upwardly from the normal horizontal position. Preferably, the hinge furnishes a relatively tight fit between the parts so that once the after part is moved to a certain position, it will be so retained until sufficient force is applied to cause it to move to a new position. The finger of a user may thus rest comfortably against the rearward part 15 and the forceps closed and opened in the manner previously described.

While an ordinary pin or rivet may be utilized to secure the members together, there is shown in Fig. 3 a type of pivot adapted to permit ready assembly and disassembly of the members. In this modification, the intermediate member has secured thereto a pin 17 having substantially flat portions 19 and 20 positioned at an angle to each other and an enlarged head 22 at the end thereof. To cooperate with the pin, the side members 1 and 2 are each provided with apertures 23 and 24 connected with the sides of the respective members by slots 25 and 27. The slots are slightly wider than the flattened portions of the pin 17 so as to pass freely thereover. To assemble the side member 2 with the intermediate member 11, the

slot in the former is brought into alignment with the narrow side of the flattened part 19 of the pivot and passed over it so as to admit the pivot within the aperture 23. The member may then be turned so as to move the slot 26 and narrow flattened portion 19 out of registry with each other. The slot is so positioned that when the side and intermediate members are in operative relation, the slot and narrow side of the pin will not be in registry. In this relation, the members are effectively joined together and cannot be separated since the wide side of the flattened portion 19 will not pass through the slot 26. The other side member 1 may be assembled and operated in a similar manner. The enlarged head 22 at the upper part of the pin extends over the adjacent member 1 to prevent substantial movement of the side members 1 and 2 axially of the pin 17.

In connection with surgical operations and also in other instances, it is sometimes desired to lock either or both sides of the forceps in closed relation and means is shown in Figs. 4 and 5 for achieving this result. Extending outwardly from a point adjacent the finger portion 13 on the intermediate member 11, are a pair of projections 28 and 29 each provided with enlarged portions 31 and 32. One of these enlarged portions is preferably provided with a plurality of downwardly extending projections 34 (Fig. 5) adapted to cooperate with an upwardly extending projection 35 on a protuberance 36 extending inwardly from the side member 2. The other enlarged portion 31 has a single upwardly extending projection 37 adapted to cooperate with one of a plurality of projections 38 on the protuberance 40 extending inwardly from the side member 1. The single projection on one member adapted to cooperate with one of the series of projections on another member, permits locking the forceps at various positions to hold articles of different sizes. Independent unlocking of the sides of the forceps is facilitated by having the projections on the side members 1 and 2 face and lock in opposite directions. When the forceps members are in locked relation, they may be easily and quickly released. Pressure applied downwardly with respect to the intermediate member against one of the side members moves the locking projections out of engagement so that one side of the forceps may be opened. Upward pressure applied to the other side member causes that side of the forceps to open.

It will be understood that the gripping means adjacent the ends of the side and intermediate member may take various forms other than that shown in the preferred embodiment, depending upon the particular field of use. For example, the working surfaces of the side members 1 and 2 may have a series of transverse corrugations 40 and 41 (Fig. 6) adapted to cooperate with similar corrugations 42 on the intermediate member 11 or, if desired, the working surfaces may be made without any corrugations or teeth whatever.

It will be seen that the present invention provides a new and improved forceps, which may be used to pick up and release a plurality of articles either consecutively or simultaneously. The members are held in operative relation by an improved type of pivot and also may be locked at various positions to hold articles of different sizes. In addition, the instrument is adjustable to fit the hand of the user, may be operated easily and quickly with only a single hand and requires a minimum of skill and practice on the part of the user.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter
5 herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

10 In a forceps of the class described, the combination of three members pivoted about a common axis, said members having finger rings at adjacent ends on one side of the pivot and having object holding portions adjacent the ends on the other side of the pivot, the holding portion of one of

said members being intermediate the holding portions of the other two members and being adapted to cooperate with either of said other two members for gripping objects and a hinge on said member having the intermediate gripping portion, the said hinge being on the finger ring end thereof and being adapted to permit said finger ring to be moved in a plane perpendicular to the plane of movement of the other two members whereby the finger ring end thereof may be
5 moved upwardly to any desired angle with respect to the other two members.

HENRY BACHMANN.