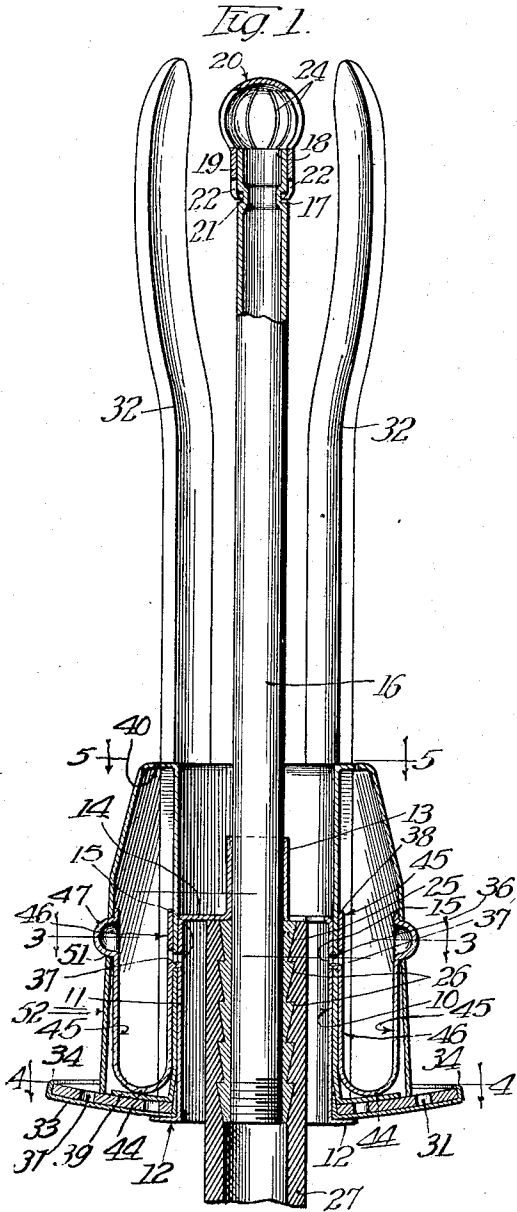
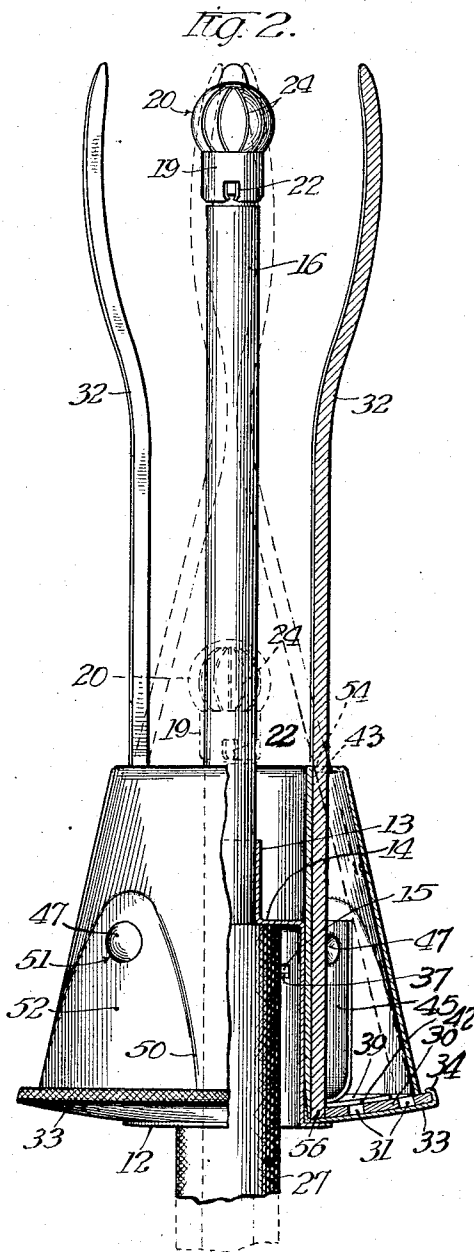


L. R. KRUGER.
SURGICAL INSTRUMENT.
APPLICATION FILED DEC. 11, 1915.

1,202,193.

Patented Oct. 24, 1916.

2 SHEETS—SHEET 1.



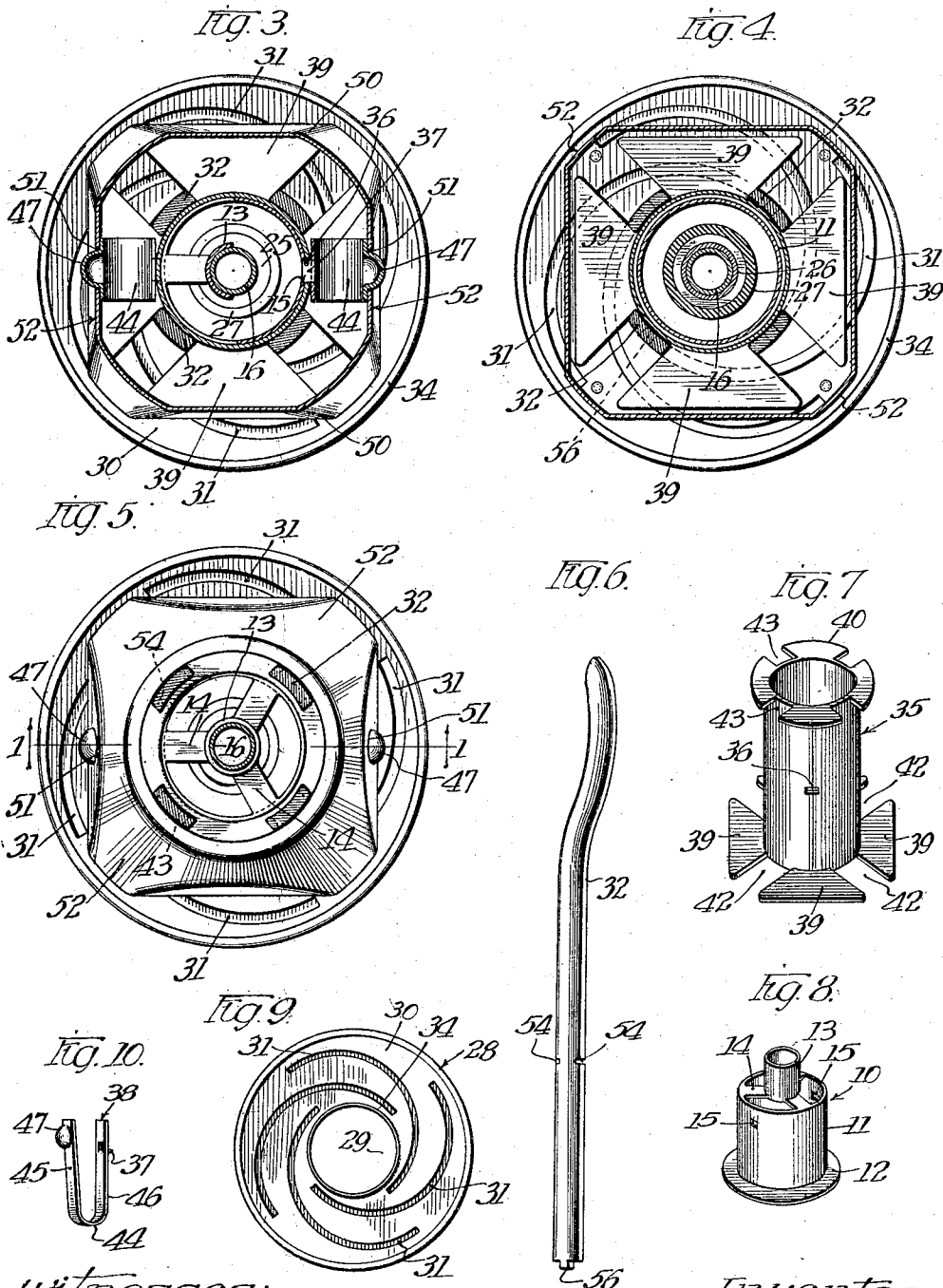
Witnesses:
Robert H. Weir
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Witnesses:
Robert H. Weir
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UNITED STATES PATENT OFFICE.

LOUIS R. KRUGER, OF CHICAGO, ILLINOIS.

SURGICAL INSTRUMENT.

1,202,193.

Specification of Letters Patent.

Patented Oct. 24, 1916.

Application filed December 11, 1915. Serial No. 66,231.

To all whom it may concern:

Be it known that I, LOUIS R. KRUGER, a citizen of the Republic of Switzerland, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Surgical Instruments, of which the following is a specification.

My invention relates to surgical instruments and has especial reference to expandible douche points for use in official surgery for expanding orifices of the human body and for directing suitable liquid thereinto.

One of the objects of my invention is to generally improve devices of this character and especially to improve and cheapen the structure disclosed in United States Letters Patent No. 1,048,069, granted to Elmer E. Hall, December 24, 1912.

Other, further and more specific objects of my invention will become readily apparent, to persons skilled in the art, from a consideration of the following description when taken in conjunction with the drawings wherein:—

Figure 1 is a vertical central section of the device taken on line 1—1 of Fig. 5. Fig. 2 is an elevation showing parts in section. Fig. 3 is a transverse section taken on line 3—3 of Fig. 1. Fig. 4 is a transverse section taken on line 4—4 of Fig. 1. Fig. 5 is a transverse section taken on line 5—5 of Fig. 1. Fig. 6 is a side elevation of one of the fingers. Fig. 7 is a perspective view of the casing to which the fingers are pivoted and by which they are guided in their movements. Fig. 8 is a perspective view of a nozzle bearing and support. Fig. 9 is a plan view of the finger actuating cam. Fig. 10 is a perspective view of the spring latch for holding the assembled parts together.

In all the views the same reference characters are employed to indicate similar parts. My invention is particularly concerned with certain details of construction of the device herein illustrated, whereby to contribute to the reduction of cost of construction; ease of assembling the parts; rigidity and stability of the structure; and other features of enhanced value more fully hereinafter described.

The general character of the device is similar in many of its parts to that disclosed in the aforesaid Hall patent.

The nozzle bearing support 10 consists of

a tube of cylinder 11, expanded at one end into a laterally extending flange 12 and formed into a tubular or cylindrical, integral bearing 13 joined to the cylinder 11 by arms 14 leaving spaces therebetween. In the wall of the cylinder portion 11 there are oppositely disposed openings 15—15 to receive the tongue of the spring latch which holds the parts in assembled position. The cylinder 11 is hollow up to the bearing thimble 13 to permit shortening of the nozzle tube and the thimble is hollow to provide a bearing for the tube or nozzle 16 which is mounted to be longitudinally slid within and up to the bearing 13.

The outer free end of the nozzle tube 16 is provided with a groove 17 which is made, preferably by indenting the tube near its end 18 to receive the collar 19 of the nozzle tip 20. The inner edge of the collar 19 is inturned, as at 21, and is also axially slotted, as at 22, to permit expansion when slipped onto the tube 16. The end 18 of the tube 16 is then forced into the collar 19 which will expand slightly when the inturned edge 21 will snap into the annular groove 17 provided upon the tube, after which the tip cannot be removed. This prevents accidental removal of the tip and provides a very cheap and efficient means for joining the two parts together. The tip 20 is provided with a suitable number of discharge slits or openings 24 which are extended in the direction of the axis of the nozzle tube 16. The outer end of the nozzle tube 16 is threaded to receive a sleeve 25 which has a series of tapered shoulders 26 adapted to receive and hold a flexible supply tube 27.

The finger-actuating cam or disk 28 shown in Fig. 9 is provided with a central opening 29. The structure is comprised of two parts consisting of the cam plate 30 having elongated arcuate slots 31 extending entirely through said plate to engage the inner ends of the fingers 32. It is also provided with a cover plate 33 which is inturned at its peripheral edge, as at 34, to cover the edge of the cam plate 30 and to provide a suitable surface for nurling. By making this structure of two parts and by perforating the cam plate 30, to provide the cam openings or slots 31, a better, cheaper and stronger cam is thus provided than when grooves are cut into or only part way through a single plate, and a more ornamental appearance can be given to the cam struc-

ture, as a whole. In assembling, the cam 28, it is placed over the cylinder 11 of the nozzle bearing structure 10 upon which it has rotatable support, the outer plate 33 being
 5 intumed to provide a bearing flange 34 thereby enlarging the bearing surface of the cam disk and providing a smooth continuous cylinder upon which it is adapted to be rotated.

10 The nozzle bearing structure 10 is adapted snugly to fit in the cylindrical portion of the tubular casing 35. Said casing is provided in its side walls with diametrically opposite openings 36—36 adapted to be aligned with
 15 the openings 15—15 in the tubular portion 11 of the structure 10. When the structure 10 is placed within the structure 35 the former may be rotated until the openings 15 come into register with the openings 36 in
 20 the latter structure when a tongue or projection 37 from each of the spring latches 38, will snap into the respective openings, as clearly shown in Fig. 1.

25 Projecting from the lower end of the tubular casing 35 is a four-part flange 39, preferably square in peripheral outline. Projecting laterally from the upper end of the said casing is an upper four-part flange 40,
 30 preferably circular in peripheral outline. In the flange 39 there are four finger guiding slots 42. These slots serve as means for guiding the inner ends of the fingers 32, and in the upper flange 40 there are corresponding registering or alining slots 43 in which
 35 the fingers 32 are pivoted.

The latch spring 38, two of which are used to hold the assembled parts together, is provided with an integral tongue or projection 37 which takes through the openings 15
 40 and 36 in the structures 10 and 35, respectively, and is bent upon itself, as at 44, to form two arms 45 and 46 of substantially equal length. The arm 46 is pierced and a tongue 37 is pressed outwardly therefrom
 45 being an integral part of the said arm. Projecting outwardly from the arm 45 is a boss or thumb button 47. In assembling the parts the spring latch 38 is placed against the tubular casing 35, the lower end 44 resting
 50 upon a flange 39, of the casing with the tongues 37—37 projecting into the registering openings 15 and 36 so as to hold the parts together. Over and about the latch spring 38 is placed a frusto-conical cover 50
 55 having openings 51, in its opposite walls 52, into which the knobs or thumb buttons 47 of the latch spring 38 are adapted to snap to hold the cover in place.

A plurality of fingers 32,—the drawings
 60 showing four in this case but of which any desired number may be employed, other parts of the structure being varied for this purpose,—are located between the cover 50 and the tubular casing 35. The fingers 32
 65 are fulcrumed in the notches 43 of the later-

ally extending upper flange 40 provided in the casing 35. The fingers are provided with notches 54 which fit the wall of the flange 40 on either side of the notches 43. The
 70 lower ends of the fingers 32 are guided in their radial movements in the notches 42 between the respective members of the flange 39. The notches 43 prevent any longitudinal movement of the fingers and the guides 42 prevent any lateral movement thereof.
 75 The fingers 32 are of substantially uniform width so that they may be made of strips of sheet metal of uniform width without loss of material. The inner ends of the fingers terminate in tenons, or tips 56, which enter
 80 the cam slots 31 of the finger actuating cam 28.

When the cam disk 28 is rotated, the cam slots 31 thereof will engage tenons 56 of the fingers 32 and cause the free outer ends
 85 of the fingers to be brought together, or to be expanded or extended, depending upon the direction of rotation of the actuating disk 28. Fig. 2 shows in full lines the open position of the fingers 32 and in dotted lines
 90 the closed position thereof.

The latch spring 38 serves as a means for holding the tubular casing 35, the nozzle bearing 10 and the cover 50 in their proper
 95 relative positions. These parts may easily be separated, thereby permitting the instrument to be taken down for cleaning, by simply pressing the two thumb buttons 47 into the respective perforations 51 provided in
 100 said cover and simultaneously moving the cover toward the operative or outer end of the instrument.

As the result of the taper in the walls 52 of the cover 50 the latch spring 38 will
 105 thereby be compressed when the cover is slid to place and the thumb buttons 47, when they are brought opposite the openings 51 provided in the cover 50, will snap into said openings thereby holding the cover in place.

The use and operation of the device is
 110 similar to that described in the aforesaid Hall patent.

The device is intended to be made of the best 18 per cent. German silver metal, which
 115 is not, to an objectionable extent, subject to corrosion or oxidation, with all of the sharp edges removed, as by tumbling, so as not to cut or injure any of the tissue with which the instrument may be brought in contact.

Having described my invention, what I
 120 claim is:

1. In a device of the character described, a casing; a nozzle-bearing support therein, comprising two coaxially arranged integral,
 125 prolonged, cylinders of different diameters, said cylinders joined by radially extending arms, at one end, the larger cylinder being open at the other end; a cover, inclosing the casing and nozzle bearing support and a one-piece spring-latch having integral parts 130

connecting said casing, nozzle bearing support and cover to hold them in assembled position.

2. In a device of the character described, a
5 casing; a cylindrical nozzle-bearing support therein; a cover inclosing the casing and nozzle bearing support; a one-piece spring-latch having integral parts connecting said
10 casing, nozzle bearing support and cover to hold them in assembled position; an axially perforated cam-disk in axial juxtaposition to the cylinder of said nozzle support comprising a plate having a series of arcuate
15 slots extending through said plate and from near its central perforation toward its edge

and an overlying cover plate turned at its peripheral edge over said plate and intumed through the axial perforation thereof to provide an axially extending bearing flange and a series of fingers pivoted on one end of said casing and having their inner ends extending through said respective slots.

In testimony whereof I hereunto set my hand in the presence of two subscribing witnesses.

LOUIS R. KRUGER.

In the presence of—

FORÉE BAIN,

MARY F. ALLEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

It is hereby certified that Letters Patent No. 1,202,193, granted October 24, 1916, upon the application of Louis R. Kruger, of Chicago, Illinois, for an improvement in "Surgical Instruments," were erroneously issued to the inventor, whereas said Letters Patent should have been issued to *the inventor, said Kruger, and John W. Morsbach and Carl Haberkorn, as assignees, jointly*, each being owner of *one-third* interest in said invention as shown by the record of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of November, A. D., 1916.

[SEAL]

Cl. 128—45.

F. W. H. CLAY,
Acting Commissioner of Patents.