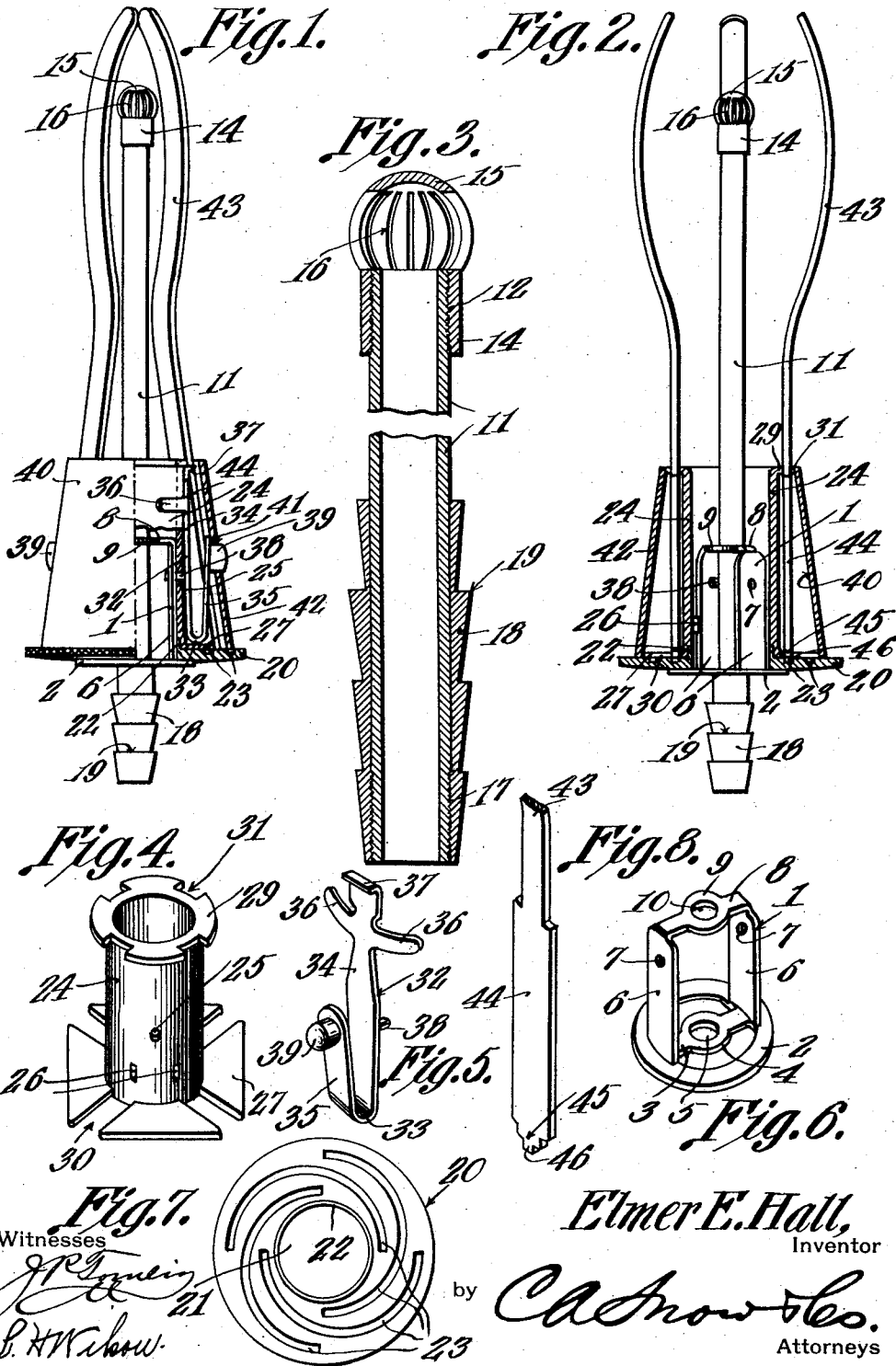


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 SYRINGE.

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UNITED STATES PATENT OFFICE,

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SYRINGE.

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To all whom it may concern:

Be it known that I, ELMER E. HALL, a citizen of the United States, residing at Wausau, in the county of Marathon and State of Wisconsin, have invented a new and useful Syringe, of which the following is a specification.

One object of the present invention is to provide, in a structure of the sort above referred to, a nozzle which is longitudinally adjustable in a line substantially at right angles to the direction of movement of the dilating mechanism.

A further object is to provide novel means for mounting the nozzle for longitudinal sliding movement, and to provide novel means for limiting the movement of the nozzle.

The invention further aims to provide a novel means for connecting the covering with the casing, and for connecting the casing with the bridge in which the nozzle is slidably mounted.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings,—Figure 1 shows the invention in side elevation, parts being broken away; Fig. 2 is a longitudinal section, wherein sundry parts appear in elevation; Fig. 3 is a longitudinal section of the nozzle; Fig. 4 is a detail perspective of the casing; Fig. 5 is a perspective of the spring whereby the casing is connected with the cover; Fig. 6 is a perspective of the bridge; Fig. 7 is a plan of the actuating disk; and Fig. 8 is a fragmental perspective of one of the dilating arms.

In carrying out the invention there is provided a bridge 1 including a flange 2 having a central opening across which extends a brace 3; provided intermediate its ends with an enlarged hub 4 in which there is an opening 5. Arms 6 upstand from the flange 2, at right angles thereto, there being openings 7 in the arms. The arms are connected by means of a cross bar 8, in the intermediate portion of which a hub 9 is

formed, the same having a central opening 10, alined with the opening 5 in the brace 3.

The invention further includes a tubular nozzle 11, mounted for longitudinal sliding movement in the openings 10 and 5. The outer end of the tubular nozzle 11 is threaded as shown at 12 to receive the collar 14 of a tip 15, having discharge slits 16 extended in the direction of the length of the nozzle 11. The opposite end of the tubular discharge nozzle 11 is threaded as shown at 17 to receive a sleeve 18, having a series of tapered shoulders 19, adapted to receive and to hold a supply tube.

In Fig. 7 there is shown in detail, an actuating disk 20 having a central opening 21, surrounded by an upstanding flange 22. The arms 6 of the bridge 1 extend through the opening 21, the disk 20 rotating upon the flange 2 of the bridge 1, and the flange 22 constituting a means whereby the actuating disk is journaled for rotation on the arms 6 of the bridge 1. In the upper face of the actuating disk 20 there is a series of cam slots 23.

In Fig. 4, a tubular casing 24 is shown. The casing 24 incloses the arms 6 of the bridge 1, and is provided in its side wall with openings 25, adapted to be alined with the openings 7 in the arms 6 of the bridge 1. The side wall of the tubular casing 24 is equipped with longitudinally extended ribs 26, between which the arms 6 of the bridge 1 are adapted to fit, thereby to aline the openings 25 and 7 in the tubular casing 24 and in the arms 6 of the bridge, respectively. Projecting from the lower end of the tubular casing 24 is a flange 27, preferably square in peripheral outline. Projecting from the upper end of the tubular casing 24 is an upper flange 29, preferably of circular peripheral outline. In the flange 27 there are slots 30, and in the flange 29 there are slots 31, the slots 31 and 30 being alined.

The invention further includes a pair of arched springs, one of which is shown in Fig. 5 and denoted specifically by the numeral 32. Each spring 32 is bent as shown at 33, to form a long arm 34 and a short arm 35, the long arm 34 being equipped adjacent its free end, with laterally projecting fingers 36. Upon the free end of the long arm 34 there is a shoulder 37 which extends toward the short arm 35. Projecting outwardly from the long arm 34 is a boss 38, and pro-

jecting outwardly from the short arm 35 is a knob 39.

The spring 32 is placed against the tubular casing 24, the bend 33 of the spring resting against the flange 27, and the fingers 36 extending circumferentially of the casing. The boss 38 registers in the alined openings 25 and 7 of the casing 24 and of the bridge 1, respectively, so as to hold the parts together.

About the springs 32 is placed a frusto conical cover 40, having openings 41 in its slanting side wall 42. The knobs 39 of the arched springs 32 are adapted to register in the openings 41.

A dilating mechanism is provided, the same comprising a plurality of arms 43, surrounding the nozzle 11 and located between the cover 40 and the tubular casing 24. The arms 43 are fulcrumed in the notches 31 of the flange 29 of the casing 24, the arms being provided with enlarged heads 44, registering between the flanges 29 and 27, and preventing a longitudinal movement of the arms, without interfering with the transverse movement of the arms upon the flange 29 as a fulcrum. The enlarged heads 44 have reduced ends 45, adapted to move in the slots 30 of the flange 27, the ends 45 terminating in reduced tips 46, registering in the cam slots 23 of the actuating disk 20.

The actuating disk 20 is journaled for rotation between the flange 27 of the casing 24 upon the one hand, and the flange 2 of the bridge 1 upon the other hand. When the actuating disk 20 is rotated, the cam slots 23 thereof will engage the tips 46 of the arms 43 and cause the free ends of the arms to be brought together, or to be expanded, depending upon the direction of rotation of the actuating disk 20.

Owing to the fact that the cover 40, the tubular casing 24 and the bridge 1 are held against relative movement by the springs 32, these elements may be separated readily, permitting the instrument to be taken down for cleaning, the knobs 39 of the springs 32 being removed readily from the openings 41 in the cover 40, by pushing the knobs inward from the outside of the cover.

Owing to the fact that the side walls 42 of the cover slant, the springs 32 will be compressed when the cover is slid to place, and when the knobs 39 are opposite the openings 41, the springs 32 will expand, causing the knobs to register in the openings, and thereby holding the cover 40 in place. Obviously, the bosses 38, registering in the openings 25 and 7 of the casing 24 and of the bridge 1, respectively, serve to hold these elements against relative movement. The shoulder 37 of each spring 32 engages beneath the flange 29 of the casing 24. Moreover, the bend 33 of the spring engages resiliently with the flange 27 of the casing 24,

the bosses 38 being thus maintained, prior to the application of the cover 40, in the alined openings 25 and 7.

The fingers 36 of the springs 32 extend beneath the arms 43, and when the arms 43 are swung inwardly at their lower ends, the fingers 36 exert an outward pressure against the arms, thereby preventing the arms from rattling about, and from working too loosely.

Attention is directed to the fact that the nozzle 11 is longitudinally slidable with respect to the arms 43, it being thereby possible to position the tip 15 at any desired point along the distended vagina. A thorough cleansing of any part of the canal may be effected by adjusting the nozzle longitudinally, and since the nozzle is not only longitudinally slidable, but rotatable as well, in the bridge 1, the jets projecting from the slits 16 may be given a rotary motion with respect to the distended or dilated surface of the canal. The nozzle 11 is held in the bridge 1 against complete withdrawal, by means of the tip 15 and the sleeve 18, either of which elements may be removed, thereby permitting the nozzle 11 to be withdrawn from the bridge 1.

The improvements herein disclosed and hereinafter claimed, permit the entire device to be taken down, without the use of tools, thereby rendering the structure thoroughly sanitary.

Having thus described the invention, what is claimed is:—

1. In a device of the class described, a casing; a bridge in the casing; a nozzle carried by the bridge; dilating means fulcrumed upon the casing; a cover surrounding the dilating means; and an arched spring having oppositely extended projections upon its arms, one of which projections is engaged with the casing and with the bridge, the other of which projections is engaged with the cover.

2. In a device of the class described, a casing; a bridge in the casing; a nozzle carried by the bridge; dilating means fulcrumed upon the casing; a cover surrounding the dilating means; an arched spring located between the cover and the casing, the spring having oppositely extended projections upon its arms, one of which projections is engaged with the casing and with the bridge, the other of which projections is engaged with the cover, the spring being provided with a lateral finger extended between the dilating means and the casing.

3. In a device of the class described, a casing; a bridge in the casing; a nozzle carried by the bridge; dilating means fulcrumed upon the casing; and an arched spring having one of its arms engaged with the casing and with the bridge; and a cover for the dilating means, with which cover the other arm of the spring is engaged, the

cover being of tapered construction, to effect a compression of the last mentioned arm of the spring, when the cover is moved longitudinally.

- 5 4. In a device of the class described, a tubular casing having guides in its interior and provided with an opening; a bridge located between the guides and having an opening alined with the opening in the casing; a nozzle carried by the bridge; dilating
10 means fulcrumed upon the casing; a cover

for the dilating means; and a spring removably engaged with the cover and engaged with the alined openings.

In testimony that I claim the foregoing as 15 my own, I have hereto affixed my signature in the presence of two witnesses.

ELMER E. HALL.

Witnesses:

JACOB J. GRAEBEL,

LEONARD O. ANDERSEN.

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