No. 646,849. Patented Apr. 3, 1900.

P. LINDEMEYR.

TOOL FOR FORMING NECKS OF BOTTLES, &c.

(Application filed May 10, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

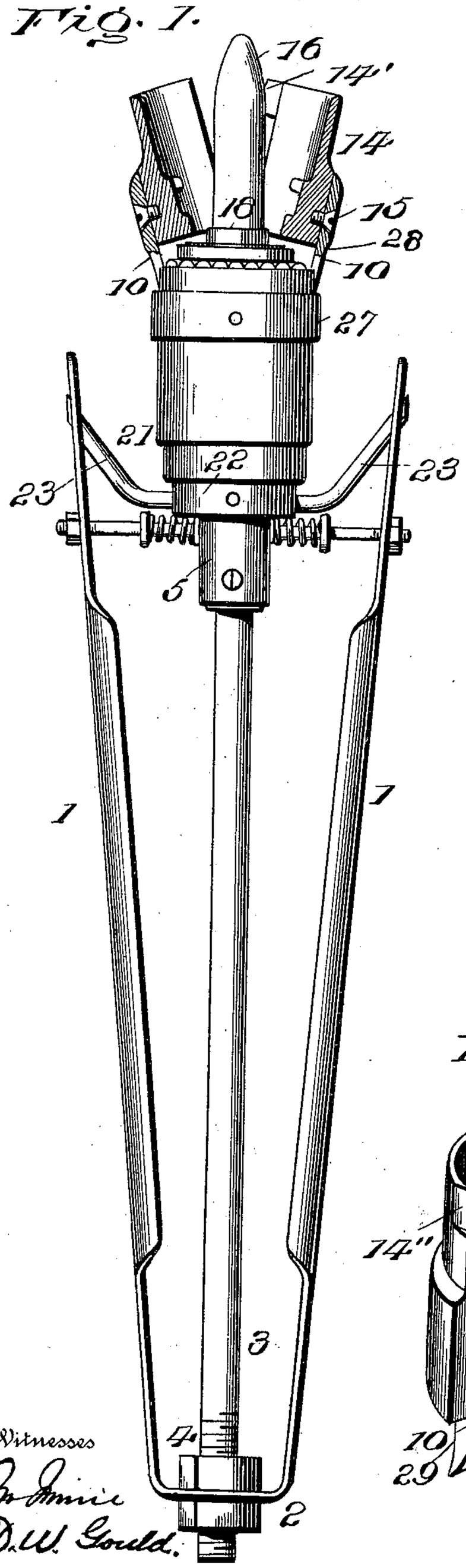


Fig. 2.

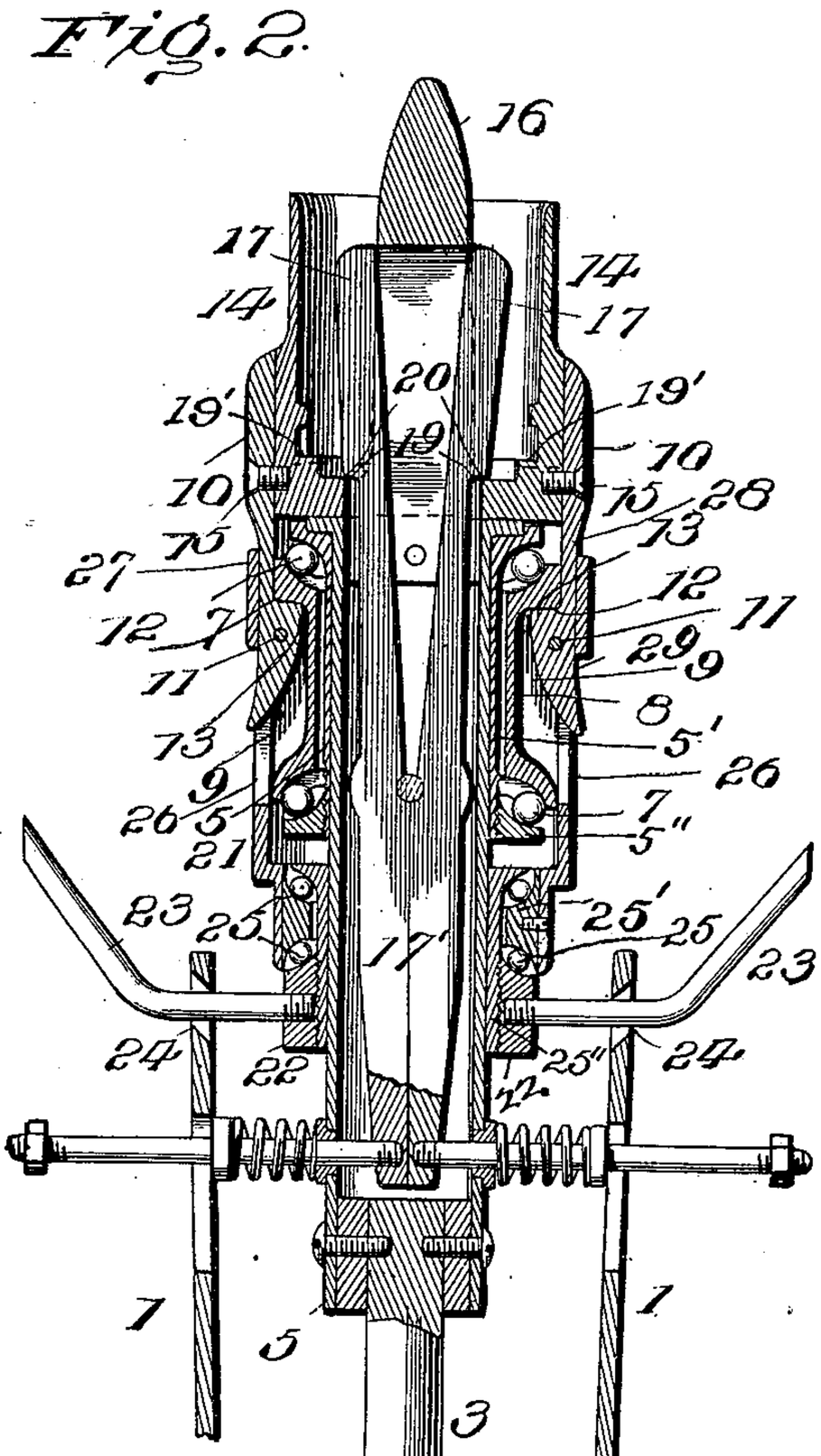


Fig. 3.

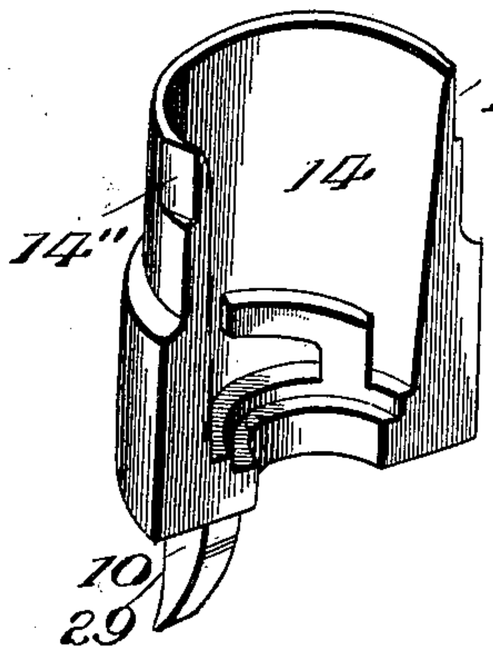
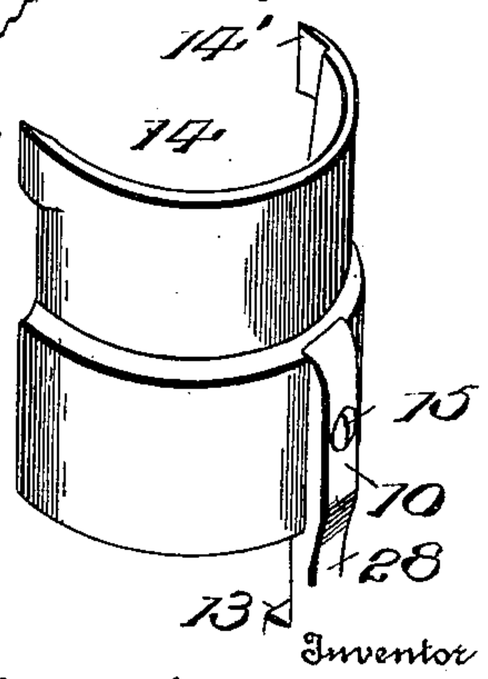


Fig. 4.



Witnesses
Jno. Ormie
D. W. Gould.

Inventor
Philip Lindemeyr
by
Benj. R. Catlin
Attorney

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Fig. 5.

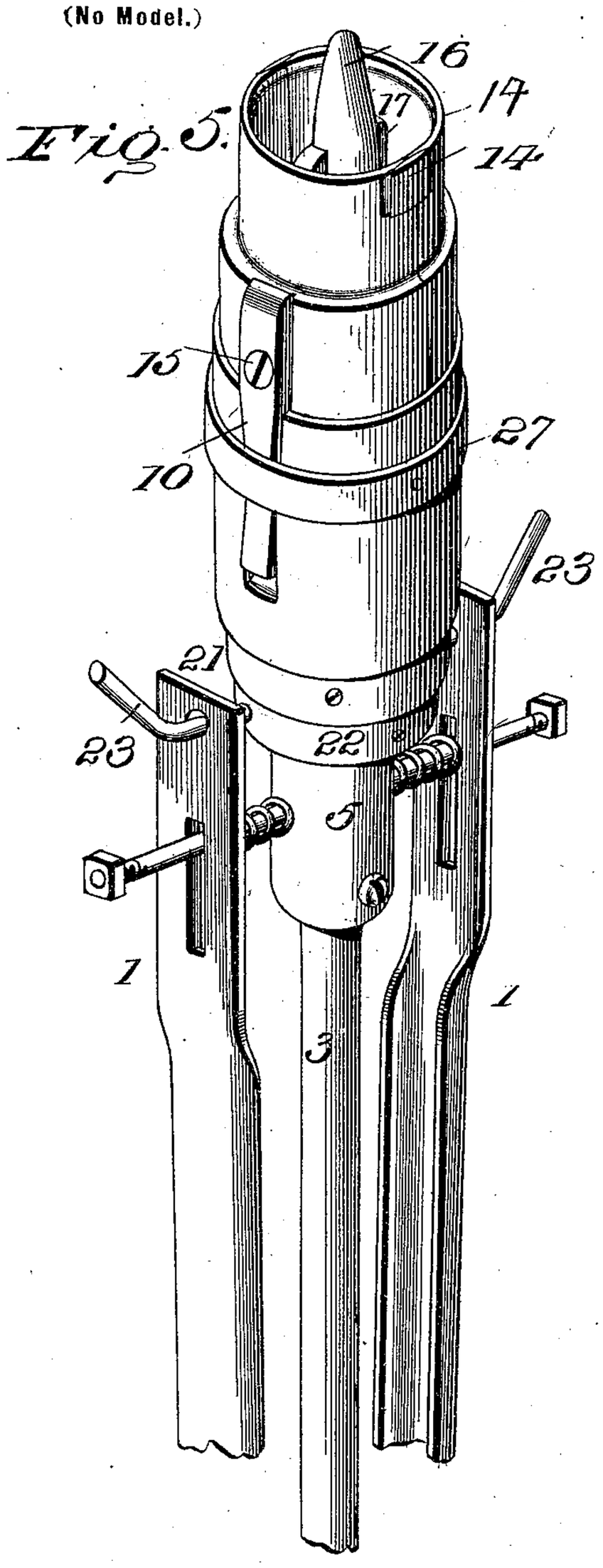
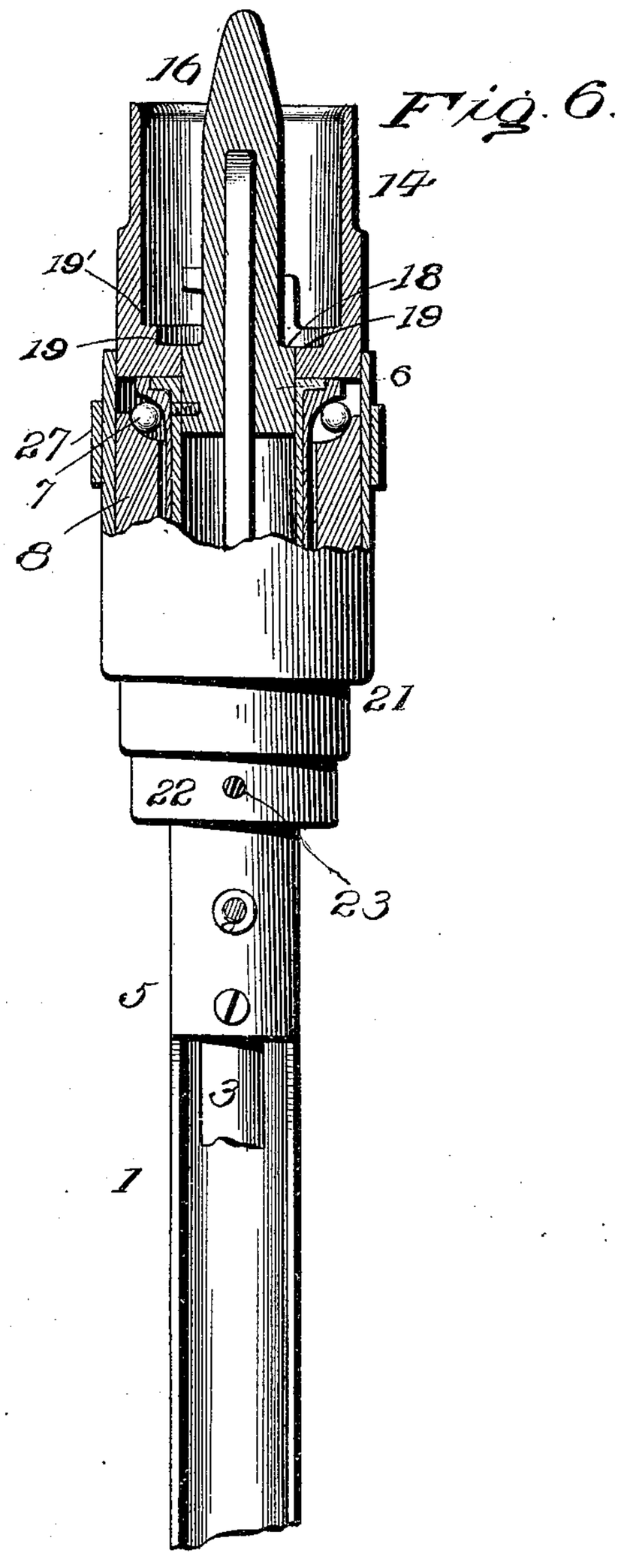


Fig. 6.



Witnesses
Jas. Dimmick
D. W. Gould.

Inventor
Philip Lindemeyr
by
Benj. R. Catlin
Attorney

No. 646,849. Patented Apr. 3, 1900.

P. LINDEMEYR.

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3 Sheets—Sheet 3.

Fig. 7.

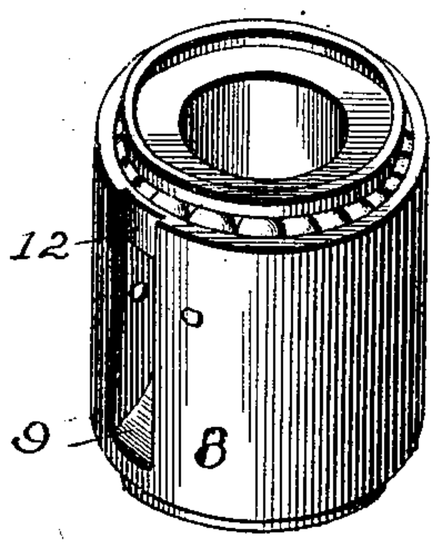


Fig. 8.

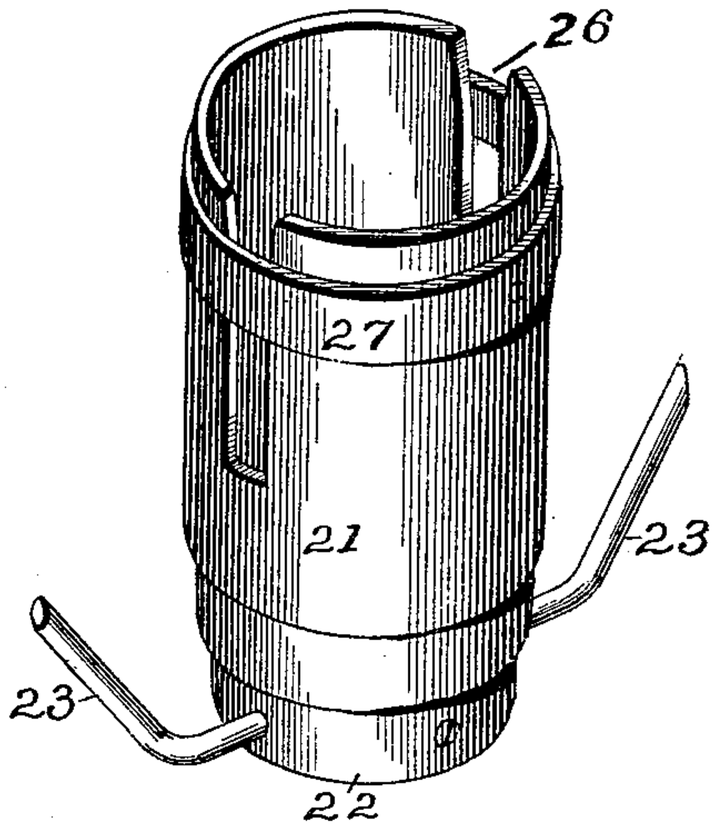
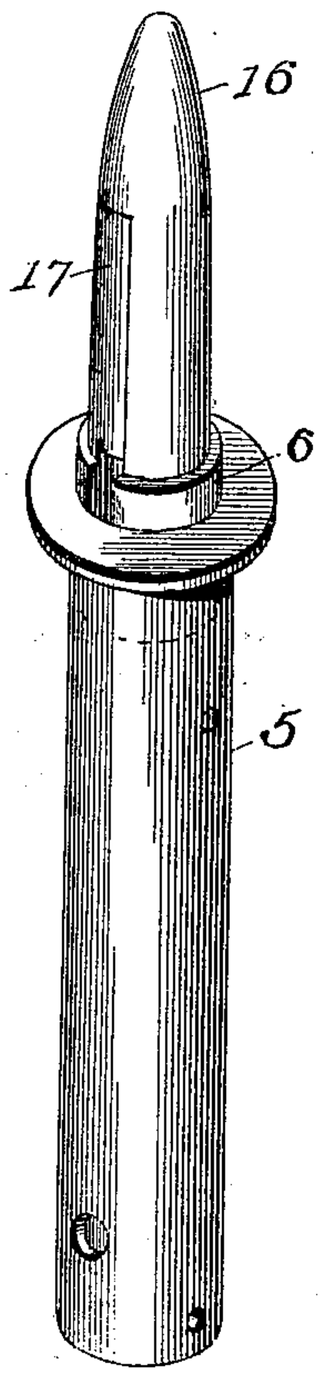


Fig. 9.



Witnesses
Jno. Imrie
A. L. Gould

Inventor
Philip Lindemeyr
by
Benj. R. Curtis
Attorney

UNITED STATES PATENT OFFICE.

PHILIP LINDEMEYR, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE AMERICAN STOPPER COMPANY, OF NEW YORK, N. Y.

TOOL FOR FORMING NECKS OF BOTTLES, &c.

SPECIFICATION forming part of Letters Patent No. 646,849, dated April 3, 1900.

Application filed May 10, 1899. Serial No. 716,207. (No model.)

To all whom it may concern:

Be it known that I, PHILIP LINDEMEYR, a resident of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Tools for Forming the Necks of Bottles and other Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to tools for molding and forming the necks of bottles and the like; and it has for its object to provide simple and efficient means for closing a sectional mold and locking the sections when closed, which means also permits the convenient substitution of various mold-sections when desired.

The invention consists in the construction hereinafter described and pointed out.

In the accompanying drawings, Figure 1 is a side elevation of the improved tool, the mold-sections being open and each shown in section. Fig. 2 is a partial section showing the mold closed, the view being at right angles to that of Fig. 1. Figs. 3 and 4 are perspectives of the mold-sections. Fig. 5 is a partial perspective of the tool. Fig. 6 is a partial section at right angles to that shown in Fig. 2, the mold-sections being closed. Figs. 7, 8, and 9 are perspectives of ball-housing, mold-inclosing cylinder, and opener, respectively.

Numeral 1 is a bow comprising two members joined by a spring 2.

3 denotes a stem connected to the bow by nuts 4, as indicated.

5 is a hollow stem extension upon which is rotatably supported a housing for series of antifriction-balls 7.

A ball-housing is constructed as follows:

5′ denotes a ball-seat, shown in the present instance as a sleeve on the stem extension 5. It is provided with a removable ring 5″, and these parts, in coöperation with an exterior ring 8, sloped substantially as represented, house the balls 7, which obviate friction between the rotating mold and said sleeve. The housing-ring 8 is slotted at 9 to receive mold-section stems 10, which are supported by pivots 11, fixed in the walls of the slots. At the outer end of each slot is a bridge 12, which stops the inward movement of the outer end of the stems.

13 are shoulders formed on the stems and adapted to engage the bridges 12 when the stems and mold-sections are thrown outwardly. The entire ball-bearing housing, with the housed balls, is removable. The mold-section stems are separable from the housing and the sections are separable from the stems. By this construction mold-sections and their stems are made separately removable and provision is made for substituting molds of different form.

The mold-sections are denoted by 14, and 15 are screws for connecting them with their stems. For certain purposes of this invention and its description each mold-section and its stem, instead of being considered as separate elements, may be one and the same element, and particularly in respect to the operation of the band or ring 27, which cooperates with the mold-sections through the medium of the stems. Obviously also this coöperation is independent of the detachability of the mold-sections. The latter feature is deemed important in many cases, for the reason that it provides for the substitution of fresh molds whether of the same or different design. Said sections each comprise parts 19 and 19′, which together constitute the mold-bottom and coöperate to form the bottle-mouth and a shoulder on the bottle-neck near the bottle-mouth.

A shoulder 18, having a surface approximately continuous with the adjacent bottom part 19 of the mold, is provided on the part 6 of the opener, which part is fixed to the stem extension 5.

16 denotes a neck-opener fixed to the stem extension 5 and slotted to receive expander-fingers 17. The expander-fingers are recessed at 20 to permit the shoulder 19 to rotate therein when the expanding and finishing fingers are open and operative. They have extensions 17′, whereby they are opened and closed. The opener 16 and the expanding-fingers 17 are supported through the medium of the stem extension 5, to which they are detachably connected. These parts are separable together from the tool, and they are also separable from each other. In practice the com-

bined opener, expander, and stem extension may be kept in stock and fresh ones substituted for those having openers injured by repeated contacts with hot metal or otherwise or whenever it is desired to renew the parts for any reason. It is also practicable to renew either of the single parts of this combination in like manner.

The mold-sections and their pivoted stems, as well as the ring 8 of the ball-bearing housing, rotate freely about the stem extension 5, opener 16, and expander 17.

21 denotes a cylinder rotatably mounted contiguous a ring 22, which has horns 23 operatively connected with the bow by means of the holes 24, whereby the compression and expansion of the bow move said ring and the cylinder 21 lengthwise the tool.

A second ball-housing is constructed as follows:

25″ is a sleeve on the stem extension and movable lengthwise thereof, which sleeve, in coöperation with the ring 22, screwed thereon, and with the ring 25′, houses the balls 25. These balls and their housing, consisting of said rings and sleeve and cylinder 21, which is rigidly secured to the ring 25′, move lengthwise on the sleeve extension 5. The cylinder 21 is slotted at 26, adjacent the slots 9 of the ring 8, and the stems 10 play in said slots 9 and 26.

27 denotes a band or ring fixed to the cylinder and bearing on stems 10. These are provided with inclined faces 28 and 29 on opposite sides of the stem pivots or fulcrums 11 and in such relation to the cylinder and its band that when the cylinder is moved forward and its band carried over the inclines 28 the mold-sections are closed, and when the cylinder and band are oppositely moved the band passes onto the inclines 29 and opens the mold.

The cylinder 21 has an inside circumference as large as the proximate exterior part of the mold, and when advanced to close the mold-sections it embraces them, as indicated in Figs. 5 and 6, and at such time locks and holds the sections together firmly and independently of the bearing of the band 27 on the mold-section stems.

The mold-sections are guided to proper alinement in their closed situation by lugs 14′ on one section entering recesses 14″ on the other, the parts having inclined faces which fit and guide each other when brought together by the closing of the mold, as shown.

Having thus described my invention, what I claim is—

1. In a tool for forming the necks of bottles and the like, a bow, a stem, a sectional mold, a ball-bearing housing rotatable about the stem and comprising an exterior ring, and mold-section-supporting stems pivotally supported in said ring.

2. In a tool for forming the necks of bottles and the like, the fixed stem extension, the mold, the housing-ring 8 supporting the mold, the antifriction-balls 7 between said ring and fixed stem extension, the cylinder 21, the antifriction-balls 25, the housing-ring 25′, the sleeve 25″, and ring 22, said cylinder and said latter balls and rings being movable lengthwise said extension.

3. In a tool for forming the necks of bottles and the like a bow and stem, a lengthwise-movable cylinder operatively connected to the bow, a ball-housing, movable lengthwise the tool, and a sectional mold, said cylinder being adapted to embrace and lock the mold-sections when closed and secured to the housing.

4. In a tool for forming the necks of bottles and the like, a separate mold comprising mold-sections detachably connected to devices for closing the same, whereby other mold-sections may be substituted, said devices comprising pivoted detachable mold-section stems, two opposite inclines on each stem, and a band coöperating therewith, said band being movable over the inclines and positively opening and closing the sections.

5. In a tool for forming the necks of bottles and the like, a mold, a stem, a lengthwise-movable cylinder operatively connected to the bow, a ball-housing movable with said cylinder, and a sectional mold said cylinder being adapted to directly lock the mold-sections when closed.

6. In a tool for forming the necks of bottles and the like, a bow, a stem, a lengthwise-movable cylinder operatively connected to the bow and mold-sections having stems pivoted in a ball-housing, said cylinder overlapping the sections to positively lock them when closed.

7. In a tool for forming the necks of bottles, and the like, a bow, a stem, mold-sections, a cylinder adapted to lock the sections, and a ball-housing between the cylinder and stem both the housing and cylinder being movable lengthwise said stem.

8. In a tool for forming the necks of bottles and the like, a bow, a stem, a sectional mold, a ball-housing between the mold and stem, the sections of the mold being pivoted in said housing.

9. In a tool for forming the necks of bottles and the like, a bow, a stem, a sectional mold, a ball-housing between the mold and stem, the sections of the mold being pivoted in said housing, and a cylinder inclosing the housing and adapted in coöperation with the bow to close the mold-sections.

10. In a tool for forming the necks of bottles and the like, a bow, a stem, a sectional mold, a ball-housing between the mold and stem, the sections of the mold being pivoted in said housing, a cylinder inclosing the housing and adapted in coöperation with the bow to close the mold-sections, and a second ball-housing movable lengthwise with the cylinder.

11. In a tool for forming the necks of bottles and the like, the combination of the bow, the stem, the slotted cylinder moved lengthwise

by the bow, the band surrounding the cylinder, and the mold-sections having stems in the path of the band whereby the sections are opened and closed.

12. In a tool for forming the necks of bottles and the like, a mold comprising sections, means for closing the sections, and lugs with inclined faces on one section adapted to engage the inclines on the other to guide the sections and cause them to register, said lugs and inclines being situated at the free end of the mold-sections and the inclines extending to the outer surface of the sections.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

PHILIP LINDEMEYR.

Witnesses:
G. W. BALLOCH,
BENJ. R. CATLIN.