

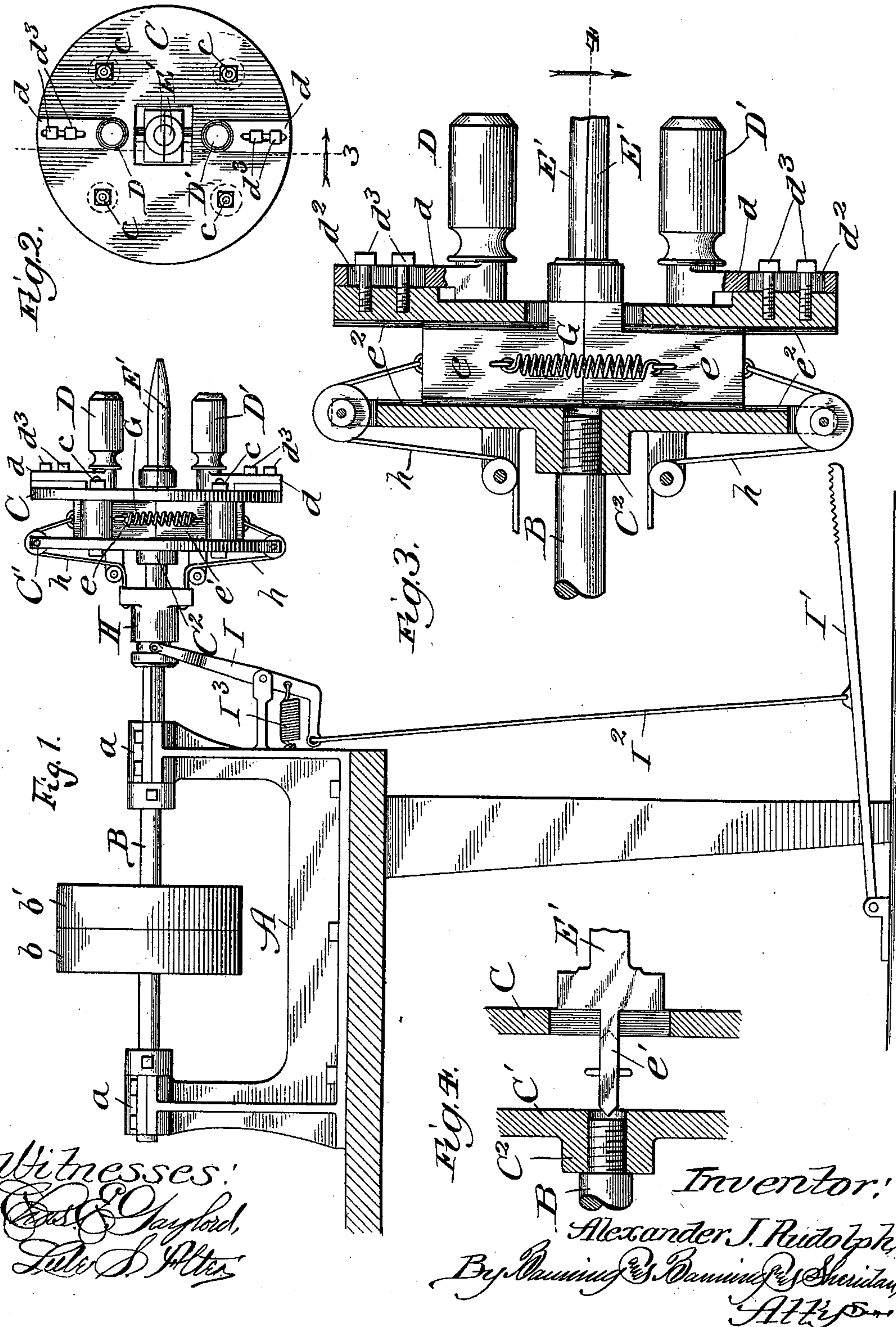
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Patented Aug. 22, 1899.

A. J. RUDOLPH.
MACHINE FOR FORMING BOTTLE NECKS.

(Application filed Dec. 19, 1898.)

(No Model.)



Witnesses:
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Fig. 4.

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UNITED STATES PATENT OFFICE.

ALEXANDER J. RUDOLPH, OF CHICAGO, ILLINOIS.

MACHINE FOR FORMING BOTTLE-NECKS.

SPECIFICATION forming part of Letters Patent No. 631,582, dated August 22, 1899.

Application filed December 19, 1898. Serial No. 699,732. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER J. RUDOLPH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Machines for Forming Bottle-Necks, of which the following is a specification.

This invention relates to that class of machines which are provided with a forming-plug and rotatable rolls for the purpose of forming the interior and exterior surfaces of a bottle-neck, and particularly to the means by which the forming-plug is expanded and contracted.

The object of the invention is to provide a simple, economical, and efficient machine for forming the interior and exterior surface of a bottle-neck.

Further objects of the invention will appear from an examination of the drawings and from the specification and claims.

The invention consists principally in the combination of relatively stationary forming-rolls and a forming-plug adapted to be expanded and contracted laterally, so as to press the material between it and the forming-rolls to finish the neck.

The invention consists, further and finally, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a machine constructed in accordance with my improvements; Fig. 2, an end view of the forming mechanism shown in Fig. 1; Fig. 3, an enlarged sectional elevation taken on line 3 of Fig. 2, looking in the direction of the arrow; and Fig. 4, a sectional view of a portion of the mechanism, taken in line 4 of Fig. 3.

In constructing a machine in accordance with my improvements a frame A of the desired size, shape, and strength is provided to hold and sustain the parts in their operative position and which is also provided with boxes a, in which the rotatable mandrel B has its bearings. Tight and loose pulleys b and b' are provided, by which power and motion are transmitted to the rotatable mandrel.

To size, shape, and finish a bottle-neck, a head portion is provided which is formed of

two disks C and C', connected together by means of the bolts c, and which is mounted upon the mandrel by means of a threaded hub C². (Shown particularly in Fig. 3.) To this head are secured forming-rolls D and D', which are rotatably mounted upon blocks d and d', slotted at d² to receive the set-screw d³, by which they are adjustably secured to the heads. These forming-rolls are intended to be secured to the head, so that during the operation of forming they are stationary and do not move toward or from the forming-plug, but may be adjusted to form different-sized bottle-necks by means of the mechanism above described. The rolls, as can be seen from an examination of the drawings, are intended to form the exterior of the bottle-neck and the lip in any shape or configuration which it is desired to give to the exterior of the bottle-neck.

To form the interior of the bottle-neck and assist in forming the exterior, an expansible forming-plug is provided, which is made in two pieces E and E', slidingly mounted upon blocks e and e', which are located between the disks, and which slide in grooves e². These blocks, with their plug parts, are held normally in their contracted position by means of helical springs G, (shown in Figs. 1 and 3,) which are secured to the blocks at each end thereof.

To expand the forming-plug, an operating-sleeve H is provided and slidingly mounted on the mandrel so as to rotate with it. A cord, cable, or wire h is secured to each block and passed over pulleys and connected with the operating-sleeve, so that as the sleeve is moved backwardly and forwardly by means of the lever I, treadle I', connecting-rod I², and spring I³ the forming-plug is expanded or contracted.

In operation a bottle in a heated ductile condition is placed with its neck around the forming-plug. The mechanism is then started and the operator presses down on the treadle I', so that the forming-plug is expanded to force the material against the forming-rolls and acted upon by both mechanisms until the neck and lip are sized and shaped. The releasing of the treadle permits the spring mechanism to operate the other parts so as

to contract the forming-plug and permit the bottle to be removed therefrom, which can be easily done by first moving the bottle laterally before withdrawing it.

5 I claim—

1. In a machine of the class described, the combination of a rotatable mandrel, a head or disk mounted on such mandrel, and a set of stationary rolls for forming the exterior of
10 a bottle-neck adjustably secured to the head or disk portion, substantially as described.

2. In mechanisms of the class described, the combination of a rotatable mandrel, a head mounted on such rotatable mandrel, a set of
15 stationary forming-rolls adjustably secured to the head portion, a forming-plug mounted in such head portion, means for expanding the plug so as to force a bottle-neck into contact with the forming-rolls, and spring mechanism for normally holding and returning
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the expansible plug in and to its contracted position, substantially as described.

3. In mechanisms of the class described, the combination of a rotatable mandrel, a head mounted on such mandrel, a set of station- 25 ary forming-rolls adjustably secured to the mandrel, a forming-plug made in two or more parts longitudinally and slidingly mounted in the head part so as to be expanded and force the bottle-neck into contact with the 30 rolls, spring mechanism for normally holding the parts of the forming-plug in their contracted position, and an operating-sleeve slidingly mounted on the mandrel and connected with the parts of the expansible plug to 35 expand the same, substantially as described.

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Witnesses:

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