

W. BECK.
Machine for Shaping and Finishing Glassware.
No. 214,276. Patented April 15, 1879.

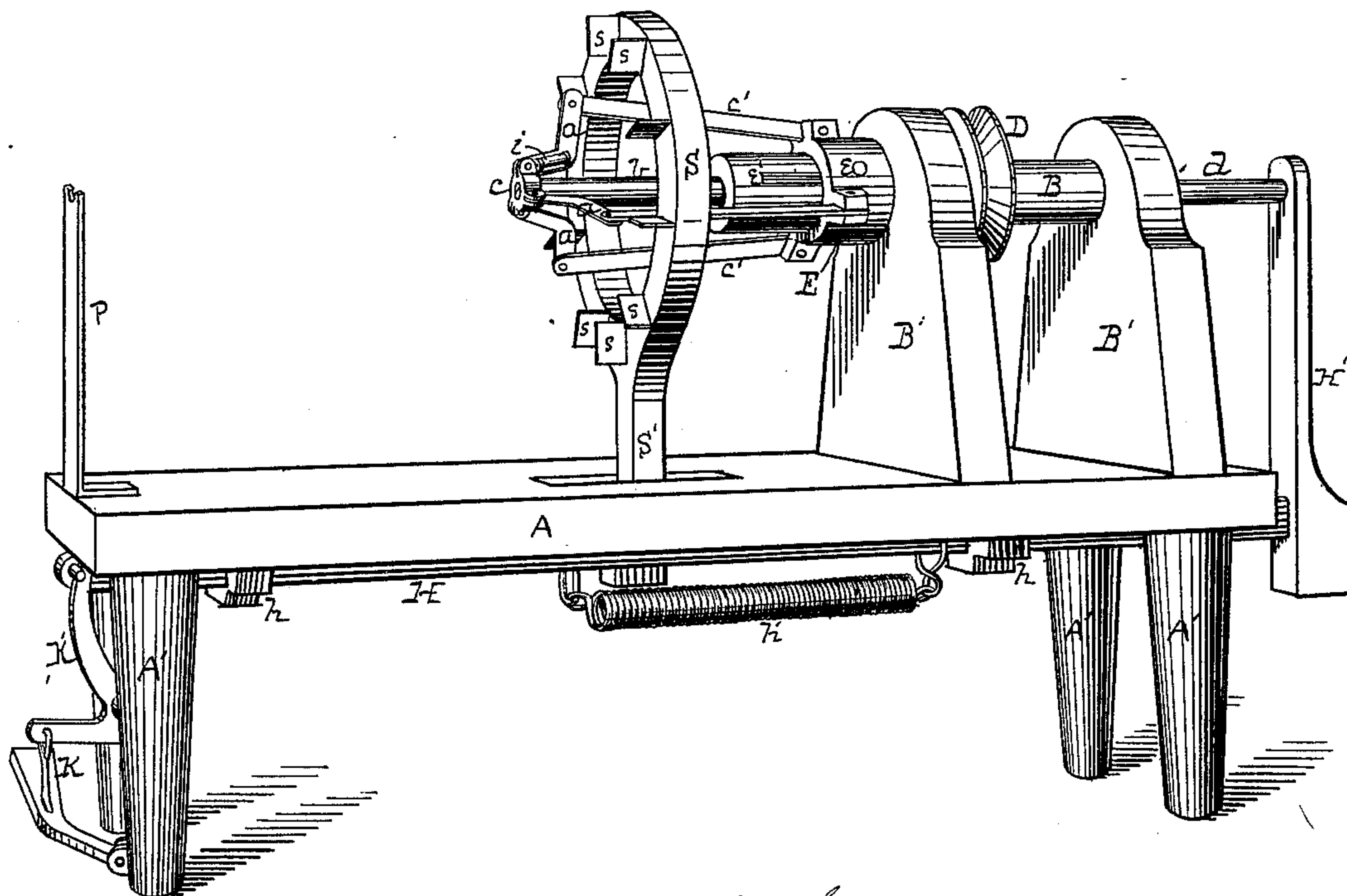


Fig. 1.

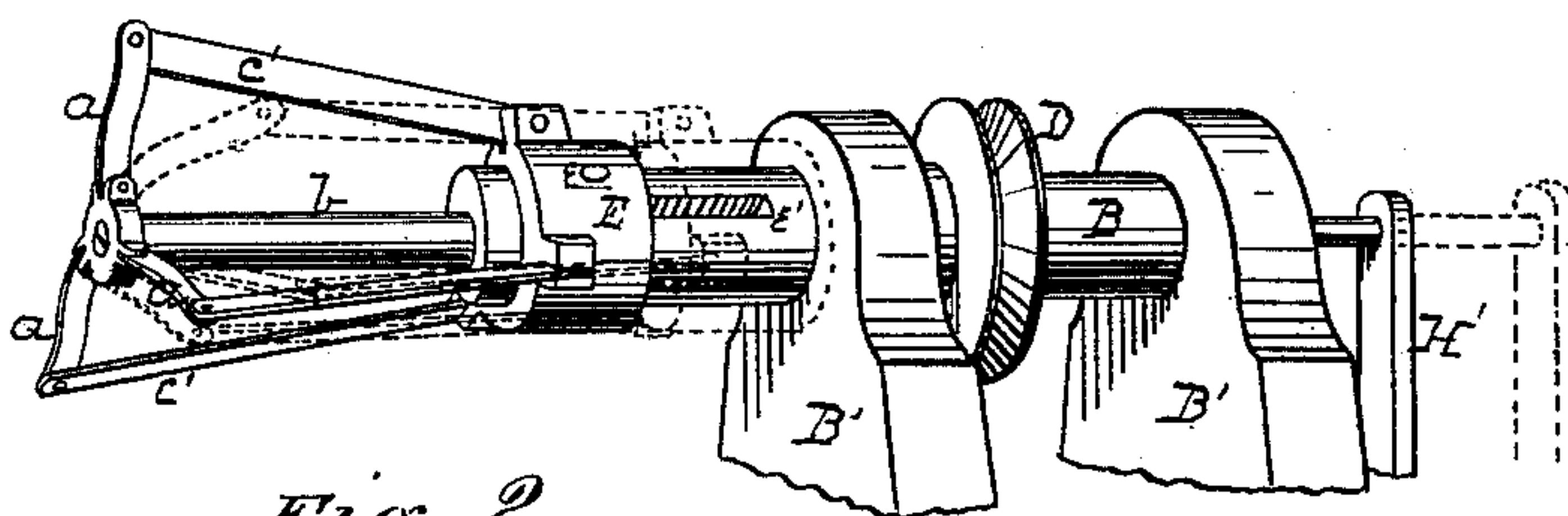


Fig. 2.

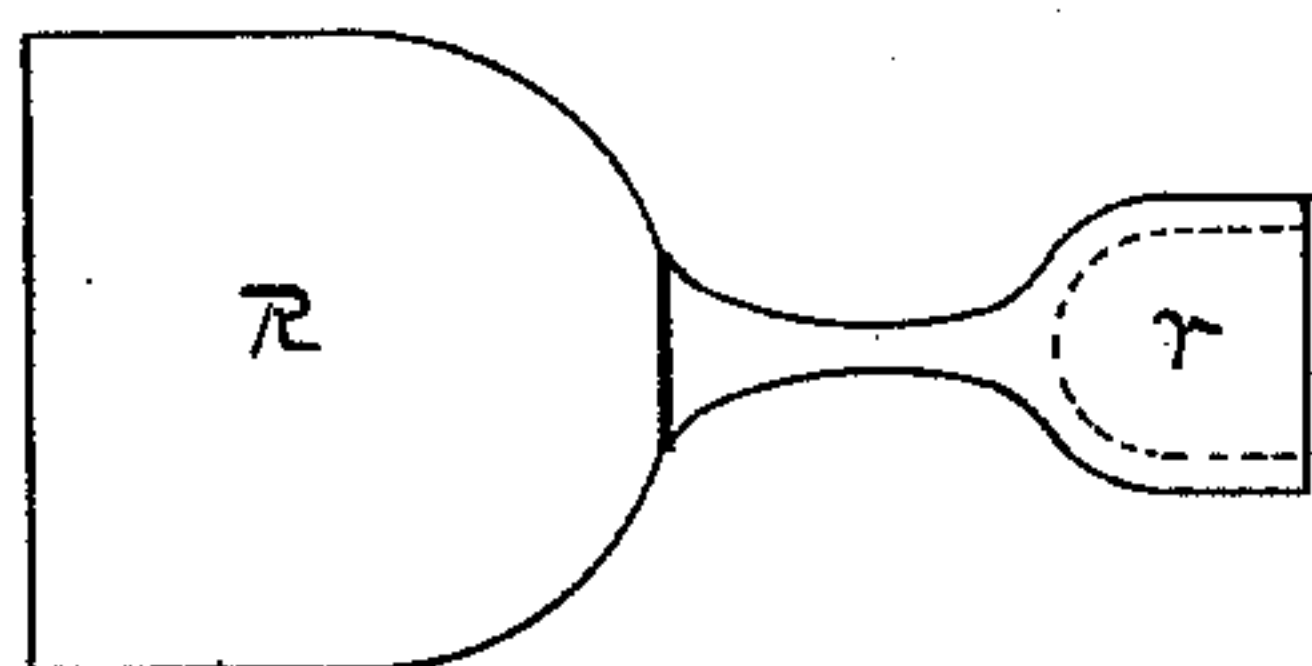


Fig. 3.

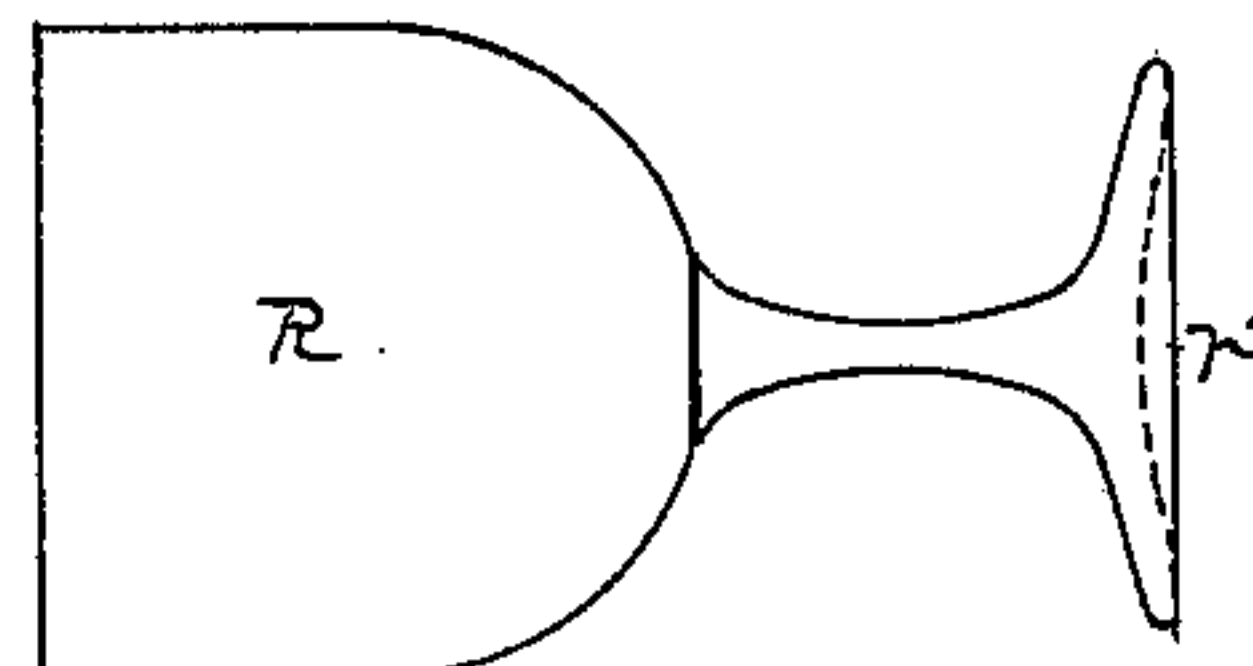


Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

WASHINGTON BECK, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR SHAPING AND FINISHING GLASSWARE.

Specification forming part of Letters Patent No. **214,276**, dated April 15, 1879; application filed March 22, 1879.

To all whom it may concern:

Be it known that I, WASHINGTON BECK, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Machines for Shaping and Finishing Glassware; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a perspective view of my improved machine as arranged and adapted for flaring and crimping tubular or open-ended articles of glassware. Fig. 2 is a like view of a detached portion of the device as arranged for opening out and finishing the foot of a goblet or other like article; and Figs. 3 and 4 are outline views of goblets illustrative of the work performed by the machine when arranged as in Fig. 2.

My invention relates to mechanism for flaring, or flaring and crimping, opening out, shaping, and finishing the ends of hollow, tubular, or footed articles of glassware, whether blown or pressed, and it is constructed as follows: On a table or base, A, having any suitable supports A', are erected plumber or bearing blocks B' B', in which is journaled a hollow driving-shaft, B, driven by band-wheel D, or in other convenient way. An endwise-movable stem, d, passes lengthwise through the bore of the shaft B. A sleeve or hub, E, is fitted loosely on the forward-extended end of the shaft, and the sleeve, shaft, and stem are keyed together by a pin, e, passing through stem and sleeve, and through slots e' in the shaft, so that all three will rotate together; yet the stem and sleeve may be moved endwise, back and forth, within and upon the shaft, the slots e' being made of sufficient length to allow the desired range of motion. This endwise motion is communicated to the stem and sleeve by a sliding bar or frame, H, connected with the rear end of the stem by a vertical arm or bar, H'. The bar H is held and guided by keepers h, and it is moved in one direction, as forward, by treadle K, connected to the bar by lever K'; and it may be moved in the opposite direction by a similar lever and treadle properly arranged for the

purpose, or by spring h'. Any suitable stop or stops may be arranged on these movable devices to limit the range of motion, as desired.

The forward end, b, of the main shaft is, by preference, reduced in size, as shown; or a smaller rod may be secured to the end of the shaft, and be extended forward in the axial line of the shaft. To the front end of this part b is secured, in any convenient way, a small disk or head, c, to the periphery of which are hinged or pivoted one or more arms or tools, a. I have shown three such tools or arms in the drawings, and their outer ends are connected, by pivoted rods or bars c', to the movable sleeve E, so that upon the forward or backward movement of this sleeve the outer ends of the arms or tools a will also be carried forward or backward; and such arms or tools will thereby be moved or turned on their respective pivots toward or from the axial line of the shaft, and at the same time receive rotary motion with the shaft.

The shape or form of the arms or tools a may be varied at pleasure, to suit the work to be done.

In Fig. 1 I have shown an angular or elbow form, which may be used for giving a particular form of flare to the end of a lamp-chimney, or for opening out the foot of a goblet, as presently described.

Other forms of flare may be obtained, however, by varying the form of these tools—as, for example, by making the working-face of curved instead of angular form.

In flaring the ends of chimneys with this machine, the open end of the chimney is passed onto or over the end of the part b and the forward end of the tools, the tools being drawn back, as shown. The operator then presses upon the treadle K, which causes the sleeve E to advance. The outer ends of the tools a are carried forward, and the lower parts of the tools, below the angle or curve, are given a rapid upward and forward movement on their pivots away from the axial line of the shaft. In so doing the tools or arms press upon the interior edge of the chimney, expanding and directing it upward toward the outer ends of the tools. By feeding the chimney forward simultaneously with this flaring

operation, or by passing the chimney onto or over the tools a sufficient distance in the first instance, the rim or lip of the chimney may be carried out to or beyond the outer ends of the tools, thus giving the chimney a flaring or bell-mouthed form of any desired contour depending upon the form of the working faces of the tools, and to the amount of movement on their pivots and the amount of feed given the article. During this operation the tools are also rotated with more or less rapidity, as desired.

If the heated glass bears directly against the working-faces of the tool, they will be worn away rapidly. I prefer, therefore, to arrange rollers *i* along the working face or edge, which will not only lessen the friction of the glass upon the tools, and better direct the glass in the desired direction without folding or crushing it out of shape, but also relieve the body of the tool from wear; and, as relates to the latter advantage, auxiliary blades of any desired material may be substituted for the rollers, and, being made removable, they can readily be replaced with others as they become worn, without necessarily changing the tool or tools, which in such case become frames or supports for the rollers or their equivalent blades.

The rollers may be journaled or mounted on the tools in any convenient way, and, by preference, so as to be removable, so that others of different form or contour may be substituted. These rollers or blades may be used on one or all of the tools or arms, as desired.

I have also arranged a crimper, *S*, to operate in connection with this flaring device. This crimper encircles the tools *a* or operates outside of them, and it is carried by a standard, *S'*, extending up from the bar *H*, and therefore takes a forward and backward movement with such bar. Blades *s* on the front face of the crimper indent the plastic rim of the flared article as the crimper is carried forward, and give to such article the usual crimped form.

It will be observed that the crimper and flaring tools receive a common impulse from the bar *H*, but that such impulse gives to the crimper a greater longitudinal motion than to the flaring-arms, owing to the fact that the crimper moves in the direct line of impulse, which is in or parallel with the axial line of rotation, while the arms or tools *a* move in arcs of circles, turning on their pivots, so that their operative action is inclined to the axial line of rotation and to the movement of the crimper. By properly arranging these parts I cause the crimper to advance relatively beyond the limit of forward motion of the arms, and secure thereby the desired depth of crimp without bringing the crimper in the way of the flaring operation.

In Fig. 2 I have illustrated my apparatus as adapted to opening out the foot of a goblet or similar glass article. This apparatus is the

same as before described, except that the crimper *S* is not used, and, if preferred, arms or tools *a* of different form may be used, approximating in face-outline the form desired in the foot of the article, which is usually more or less arched or concave on its under surface.

When goblets and other like footed articles leave the mold, that part from which the foot is formed is approximately the shape shown at *r*, Fig. 3, *R* being the bowl of the goblet. In opening out such cup-shaped end with my apparatus into the foot or base *r'*, Fig. 4, the arms or tools *a* are drawn down and back, as shown in dotted lines, Fig. 2. The cup *r* is then passed onto or over the ends of the tools, which are then carried to the position shown in full lines in said figure by pressing upon treadle *K*, the tools being rotated as before described, whereby this cup is opened out and given the desired form of foot. In this as well as in the previously-described flaring operation, any suitable rests *P* may be employed by which to support and direct the article as it is operated on, and the article should in each case be first properly heated.

If desired, rollers or blades *i* may also be used with the tools shown in Fig. 2, as described with reference to those shown in Fig. 1; and also, if desired, the tools *a* (shown in Fig. 1) may be used to open out the foot of a goblet or other like article. In such case the cup *r* is passed onto or over such tools not farther than the angle shown therein. The lower part of the tools will then operate on the glass cup, and open it out nearly at right angles to the stem, though by limiting the movement of the tools the opening operation may be sooner arrested.

I have shown three of these flaring or opening tools; but I do not limit my invention to this or to any definite number. One such tool may be made to do the work described; but I prefer to use two or more, as a better balance is thereby obtained in the machine.

Instead of making the tools *a* rotary, they may be made non-rotary, and the glass article rotated by any suitable means while it is operated on by the tools; but in such case the crimper *S*, when employed, should also be free to revolve with the article, as well as have motion back and forth in the axial line of rotation.

I am aware that arms or tools somewhat similar to those represented at *a*, Fig. 1, have been arranged in a crimping-tool for crimping purposes; but such construction cannot be used for flaring or opening, since these operations and the operation of crimping cannot be performed by such device at the same time.

I claim herein as my invention—

1. Flaring arms or tools *a* in any desired number, (one or more,) each pivoted at one end to the rod *b*, and at the other end to links or connections *c'*, and in combination therewith and with a sleeve, *E*, substantially as described, whereby, during the rotation of said devices or of the article to be operated on, each tool

may have a swinging motion outward and forward on its inner pivot, so as to flare or open out the article.

2. In a machine for finishing glassware, the combination of one or more flaring or opening tools, pivoted or hinged at one end in or near the axial line of rotation, and mechanism for turning such tools on their pivots as centers, whereby they are moved toward or from the axial line, and at the same time are given rotary motion, substantially as set forth.

3. The combination of a pivoted expansible flaring device and a separate movable crimper, one while operating being rotary and the other non-rotary, substantially as set forth.

4. In a machine for flaring and crimping glassware, in which either the flaring device or the article and crimping device are rotated, the combination of a flaring-tool having an

operative edge or edges inclined to the axial line of rotation, a separate crimping-tool arranged to move back and forth in such axial line and crimp the end of the article, and mechanism for imparting to the tools such rotary and axial line motions, substantially as set forth.

5. The combination of one or more pivoted expansible and rotary inside opening or flaring tools, *a*, and removable rollers *i*, or equivalent blades, arranged along the face or operative edges of such tools, substantially as set forth.

In testimony whereof I have hereunto set my hand.

WASHINGTON BECK.

Witnesses:

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