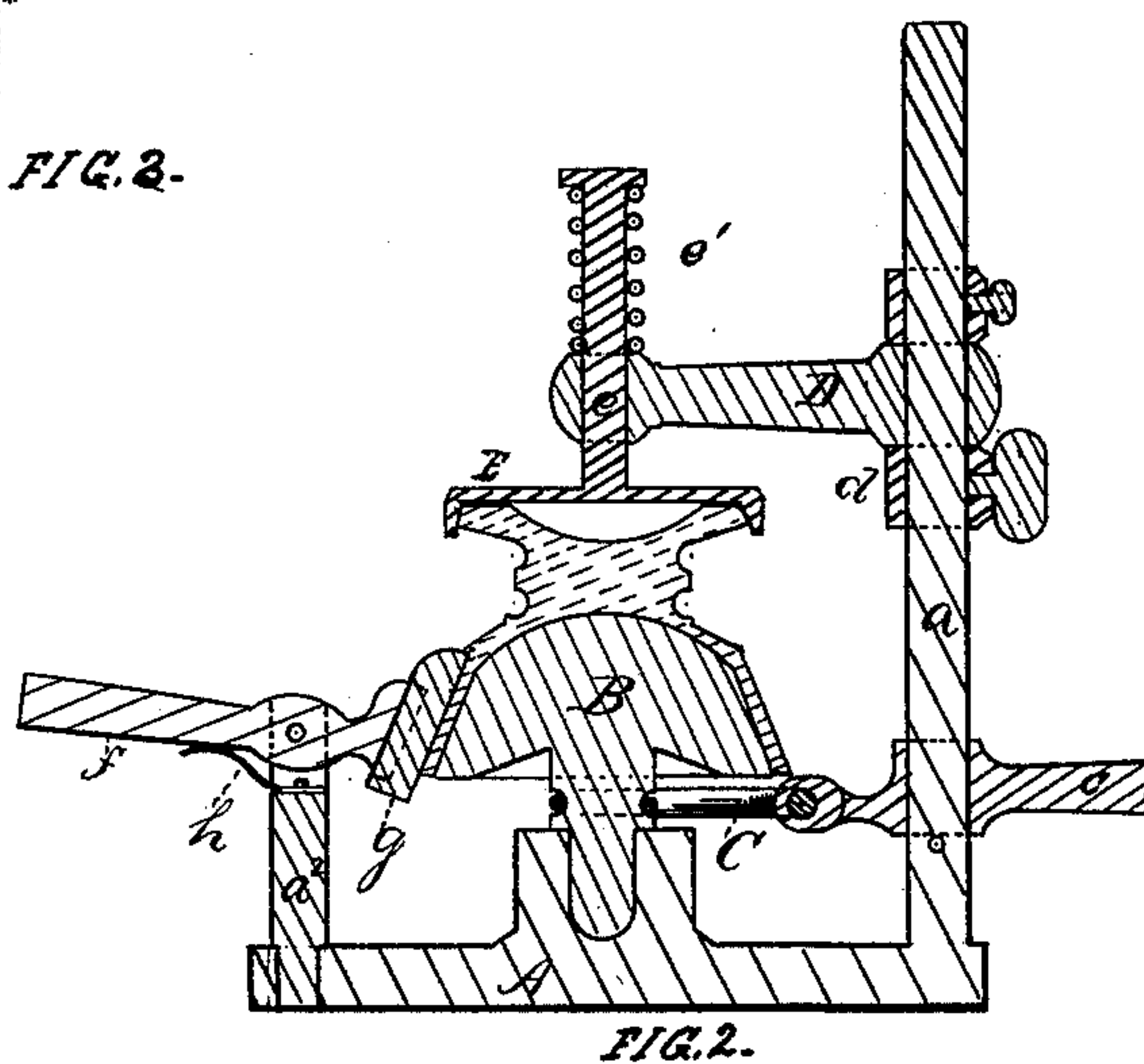
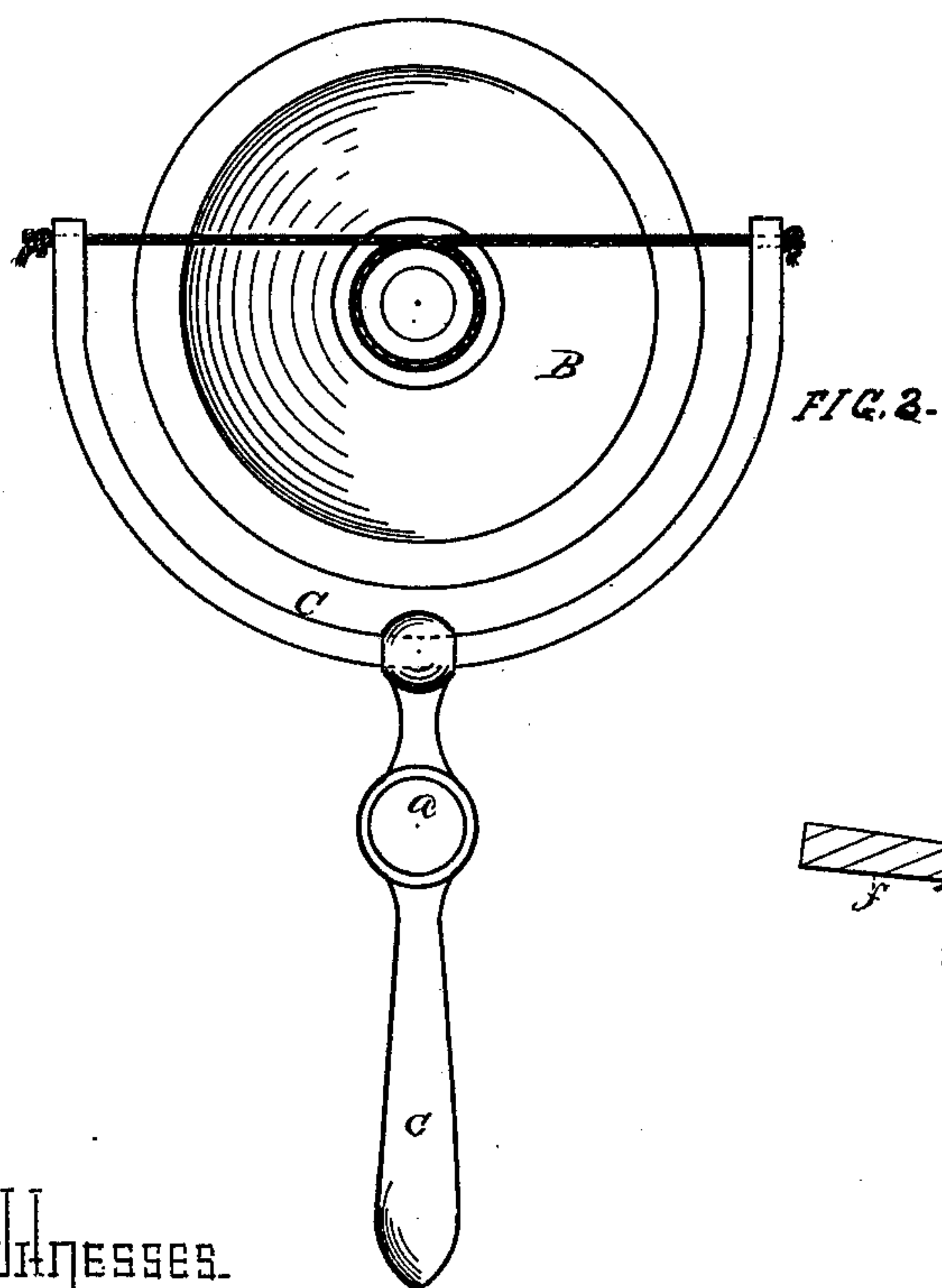
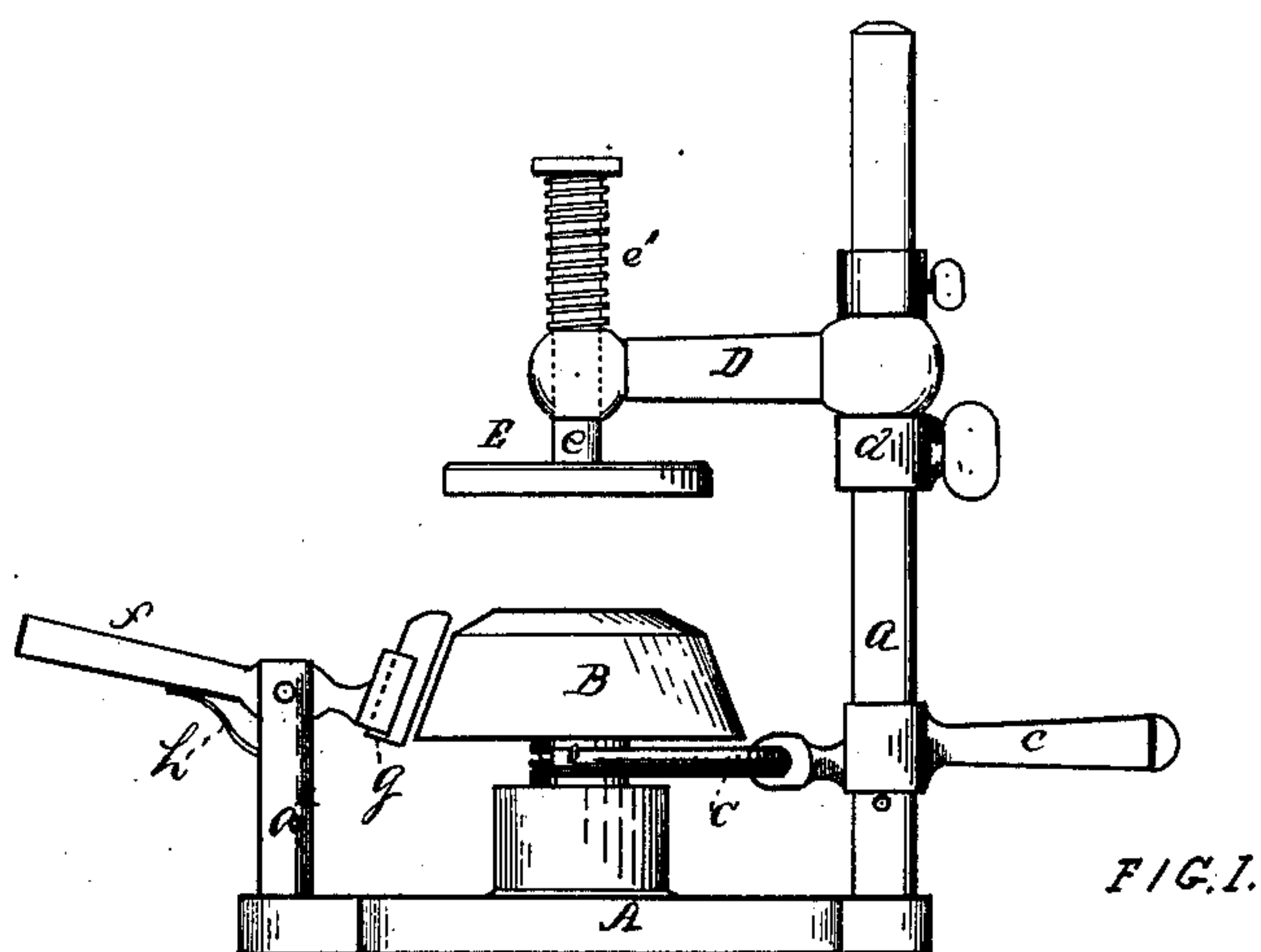


D. C. RIPLEY.  
Method and Apparatus for Forming and Finishing  
Glassware.

No. 214,053.

Patented April 8, 1879.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

DANIEL C. RIPLEY, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN METHODS AND APPARATUS FOR FORMING AND FINISHING GLASSWARE.

Specification forming part of Letters Patent No. 214,053, dated April 8, 1879; application filed March 18, 1879.

*To all whom it may concern:*

Be it known that I, DANIEL C. RIPLEY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Methods and Apparatus for Forming and Finishing Glassware; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of devices embodying my invention. Fig. 2 is a section of the same, showing the position of an article of glassware during the forming and finishing process. Fig. 3 is a horizontal section.

Like letters refer to like parts wherever they occur.

My invention relates to a method and means for forming and finishing glassware; and consists, first, in causing the heated article to rotate with a suitable former or mandrel on which it is placed, or causing the buffer to rotate around the article while the same is held on a fixed mandrel, so that the exterior surface of the article shall come in contact with a buffer, whereby the article can be rapidly and accurately formed without liability of scratching the surface or disfiguring the same by forcing cinder, &c., into the glass; secondly, in the combination of a rotating mandrel or former adapted to carry the article to be formed with a buffer so arranged with relation to the rotating former that it shall act upon the exterior surface of the article which rotates with the former or mandrel; thirdly, the combination, with a rotating former or mandrel, of a disk-cup adapted to straighten and center the foot of any article which may be on the mandrel, and also to hold the article on the mandrel; finally, in details of construction, hereinafter more definitely set forth.

In the manufacture of hollow glassware, whether pressed or blown, the article, after having its preliminary form given to it in a mold or otherwise, as the case may be, has almost invariably been reheated in part, and finally formed, shaped, and finished by a "buffer" or like tool in the hands of the workman, the article being held on a "punty" or in a "snap," and rotated back and forth on the arms of the workman's chair. This manner of finishing glassware consumed considerable

time, and demanded high-priced skilled labor, in order to obtain any useful or uniform result.

Several classes of mechanism have already been devised for finishing various articles of glassware by machinery, and thus obtaining rapidity and accuracy in finish, and at the same time dispensing with skilled labor. First, a wire or ribbed former, in combination with surrounding rollers or buffers, the whole mounted on a shaft, so as to be capable of revolving, has been devised, and employed as follows: The article to be finished—as, for instance, a chimney—having been reheated, is passed over the wire former, which, revolving within the same, forced out the glass, while the action of the rolls or buffers upon the outer surface of the article shaped and finished the same. A second set of devices dispensed with the external rolls or buffers, so that the stretch of the plastic glass over the inner forming-edges might be unhampered. A third series of devices employed were a mandrel or former of the same shape as the article to be finished and a buffer, one or both mounted on a disk, which, if desired, could be revolved.

In each and all of the cases specified, either the former or mandrel rotates within the article to be formed and finished, or the article rotates on the mandrel or former, while in some an external tool or buffer is used, and in all the object is to secure accuracy of finish by working on fixed centers.

In reheating the article of glassware for the purpose of finishing the same it is liable to become smoked, and fine cinder will frequently accumulate on its surface, which, if not free to escape, will be ground in by the revolving mandrel or former, and thus mar and scratch the glass. This is markedly the case where the former is solid and the article has a large opening or mouth, and less so in the case of chimneys and like articles where there is a comparatively small orifice for the introduction of the former.

Another objection to that class of machines wherein the mandrel rotates or revolves within the articles, or the article rotates on the mandrel, is that if the former or mandrel is solid or continuous there will be an excessive friction, which increases the power required to run the machine.

The object of the present invention is, therefore, to rapidly and uniformly finish and form



various articles of hollow glassware by a method and machinery capable of utilizing unskilled labor, and which is not liable to mar or disfigure the surface of the glass.

I will now proceed to describe my invention, so that others skilled in the art to which it appertains may apply the same.

In the drawings, A indicates a suitable base or bed-block, on which is stepped or pivoted so as to be capable of revolution a mandrel or former, B, of shape corresponding to the interior of the article to be formed and finished. In order to rotate the mandrel or former B alternately in opposite directions, a bow, C, is provided, and for convenience is provided with a handle, c, pivoted on the standard a.

a indicates a standard or upright, provided with a detachable sliding arm or bracket, D, whose position on the standard can be regulated at will by means of a sliding ring and set-screw, d. Journaled in the outer end of bracket D so as to be capable of rotation is a disk-cup, E, provided with a stem, e, and spiral or equivalent spring e', which permits a yielding end motion of the disk on its axis of rotation. The length of the bracket D should be such as to permit the adjustment of disk-cup E over the mandrel or former B; and the function of disk E is to straighten and center the foot or base of the article being finished, and cause it to preserve its proper relation to the bowl or body of the article, and also to keep the article on the mandrel.

Pivoted in a short standard, a<sup>2</sup>, on bed A is a lever, f, one end or arm of which is constructed to receive a "buffer," g, of wood or other suitable material, and the other arm of said lever is controlled by a spring, h, which forces the buffer toward the mandrel or former B, and holds the buffer against the outer surface of any article on the former.

In order to turn the buffer out of position when not in use, the standard a<sup>2</sup> should be stepped on bed A, as shown.

Devices such as or the equivalent of those described will be employed, as follows: In carrying out my method of forming and finishing, the article to be formed and finished, having been first shaped either by blowing or pressing, as the case may be, is then reheated in the "glory-hole," and, being brought to the machine, is dropped upon the mandrel or former B, and if the article be footed or have a base, as shown in the drawings, the disk-cup E is adjusted to rest on the foot. The bow C may then be operated to cause the revolution of the mandrel B, which carries with it the article to be formed and finished, bringing the outer surface of the article in contact with the buffer g, which has been swung into proper position to impinge on the article. As the article moves with the mandrel or former, the whole operation will be somewhat similar to forming and burnishing as in lathe-work; and as there is no movement of the mandrel independent of the article, any dust or foreign matter will not be dragged over the inner surface

of the article, so as to mar or disfigure the same, while the motion of the article, together with the small point of continuous contact between the buffer and outer surface, will permit the escape of foreign substances, and prevent injury to the outer surface of the article.

It is evident that the buffer g may be secured to the end of a spring-slide arranged on standard a<sup>2</sup>, if preferred; or it may be a single pivoted arm or lever, adapted to be turned back out of the way when in use; and it is also evident that the mandrel or former B may be rotated by gearing or other means than that shown, all of which changes are within the province of the skilled mechanic, and are simply equivalents for the devices shown.

The mandrel B is, by preference, made of stone or other material not liable to scale or oxidize.

The buffer g may be dispensed with, and an ordinary hand-tool held by the workman may take its place in carrying out my process.

It will be evident that the mandrel or former B and article thereon may remain stationary, while the buffer is caused by suitable mechanism to rotate around the mandrel and in contact with the outer surface of the article, and the process of forming and finishing will be the same. This I consider within the scope of my invention, but have not shown machinery for carrying the same into effect, because it is more complicated and less desirable than what I have shown, and also because any skilled mechanic can readily devise such machinery.

Having thus described the nature and advantages of my invention, what I claim, and desire to secure by Letters Patent, is—

1. The method herein described for forming and finishing glassware, the same consisting in causing the heated article to rotate with a suitably shaped former or mandrel, or a buffer to rotate around a stationary former, so that the exterior surface of the article shall come in contact with a buffer or forming-tool, substantially as and for the purpose specified.

2. In a machine for forming and finishing glassware, the combination of a rotating former or mandrel, adapted to carry the article to be formed, with a buffer arranged, substantially as described, so that it shall act upon the exterior surface of an article placed on the mandrel or former, substantially as and for the purpose specified.

3. In a machine for forming and finishing glassware, the combination of a rotating mandrel or former with a disk-cup for correcting, controlling, and centering the position of the base of any article of glassware while the same is being finished on the mandrel, substantially as specified.

In testimony whereof I, the said DANIEL C. RIPLEY, have hereunto set my hand.

DANIEL C. RIPLEY.

Witnesses:

JAMES H. PORTE,  
F. W. RITTER, Jr.