

W. FOX.

MANUFACTURE OF GLASSWARE.

No. 189,351.

Patented April 10, 1877.

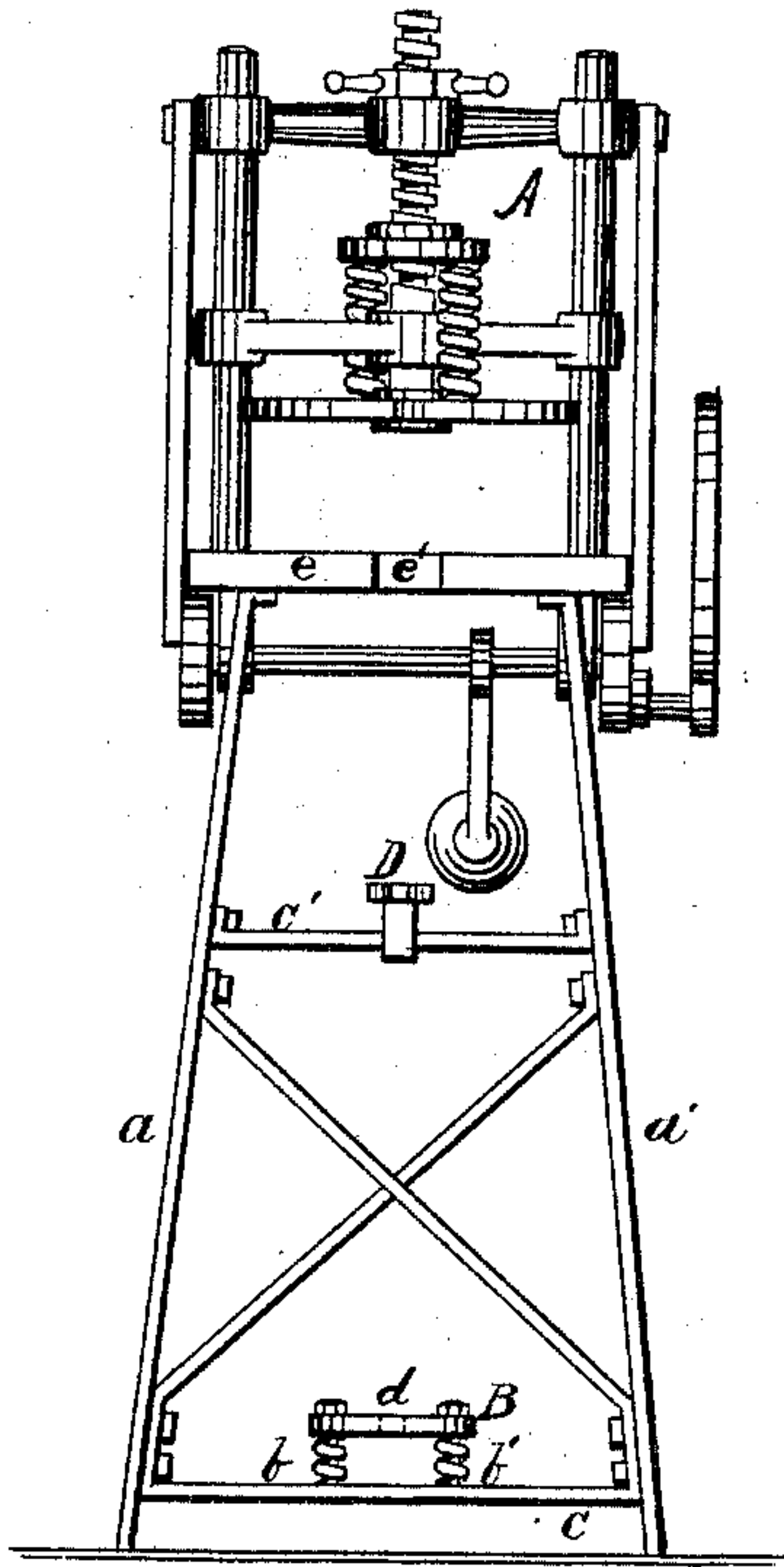


FIG. 1.

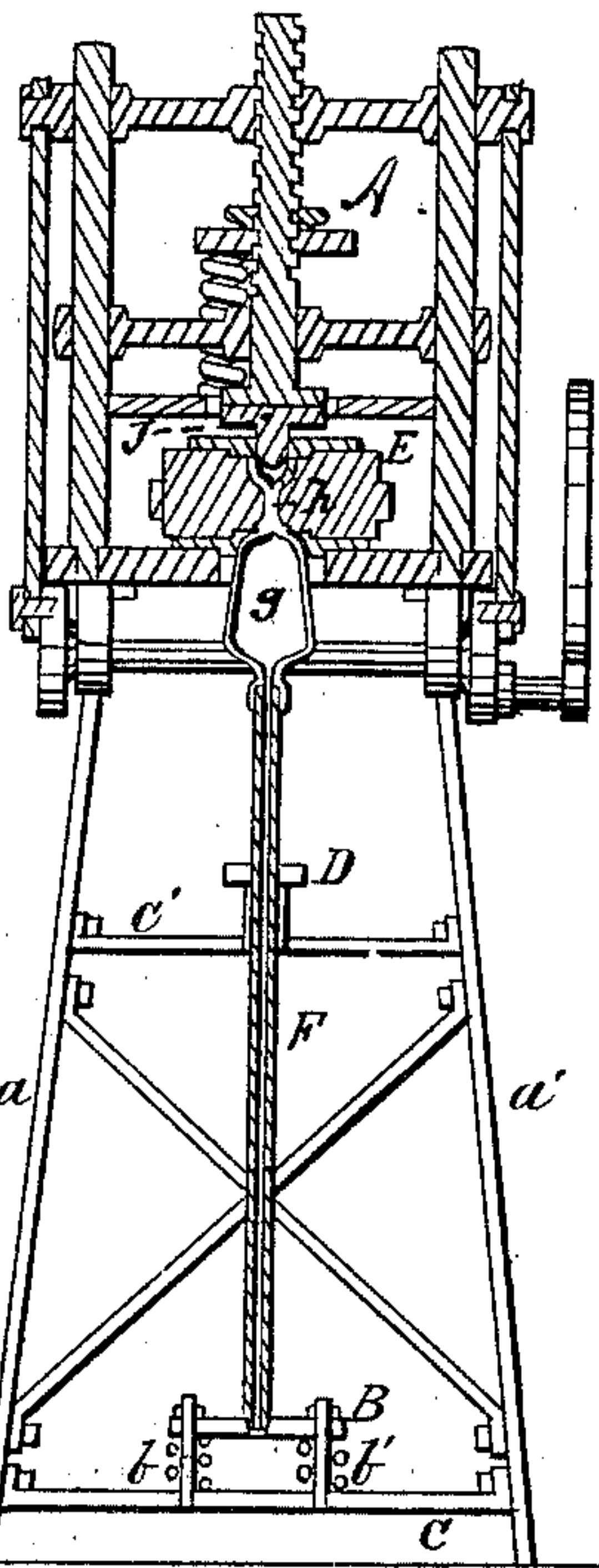


FIG. 3.

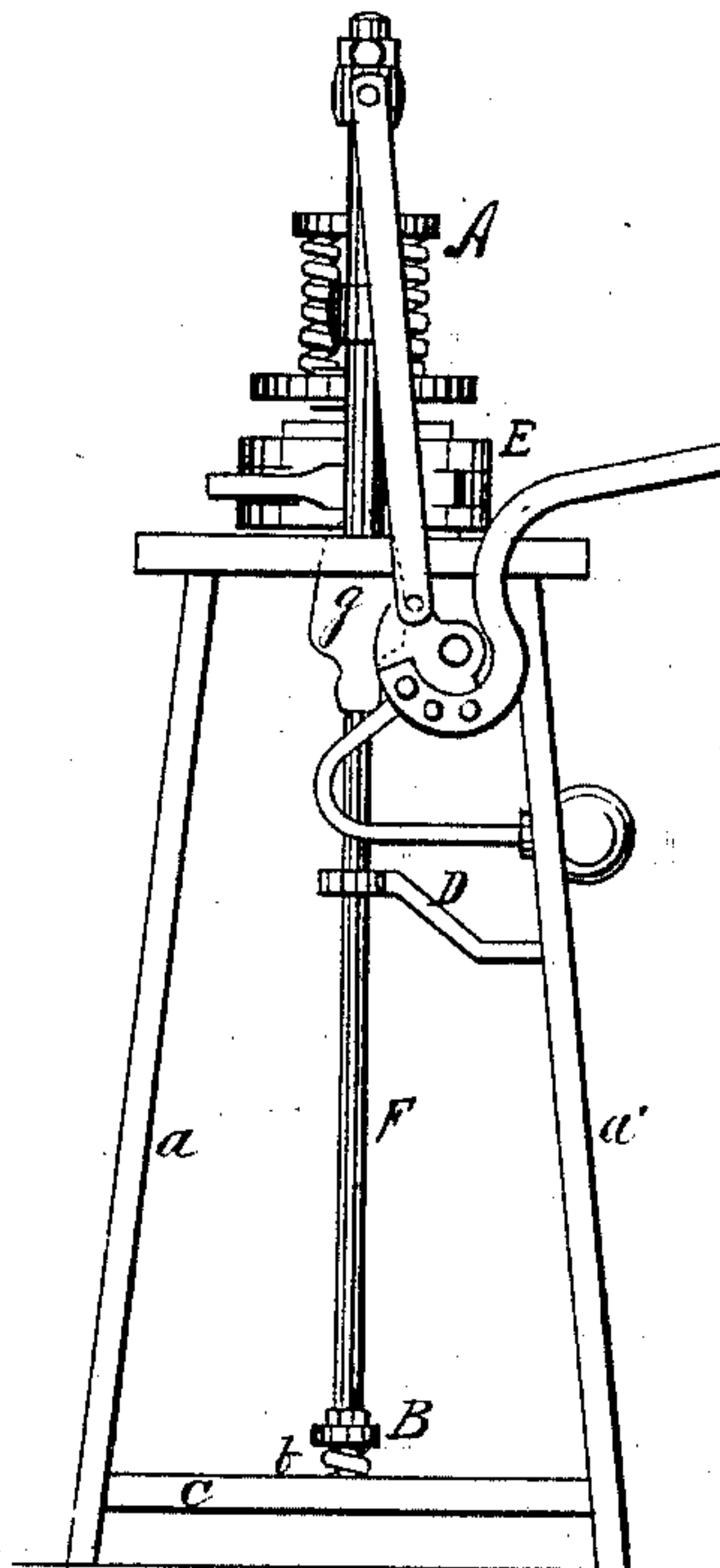


FIG. 2.

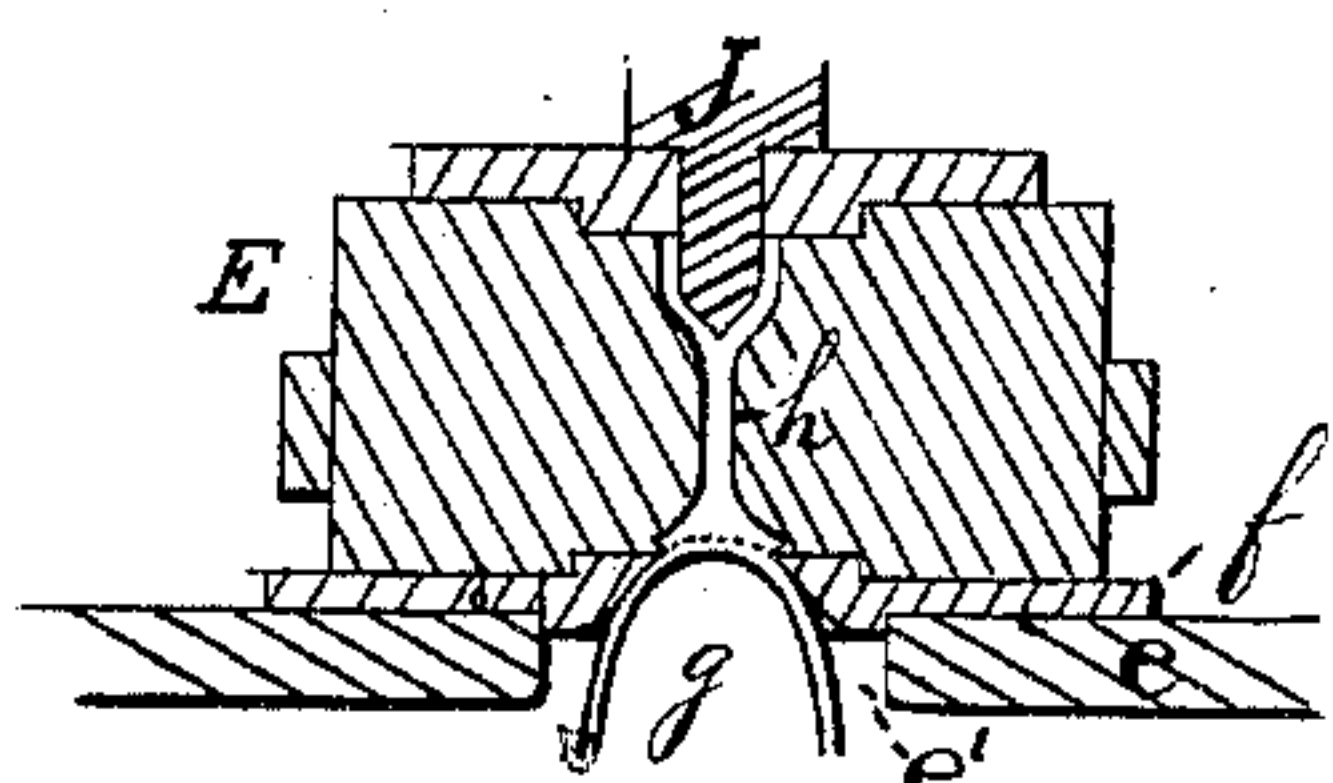


FIG. 4.

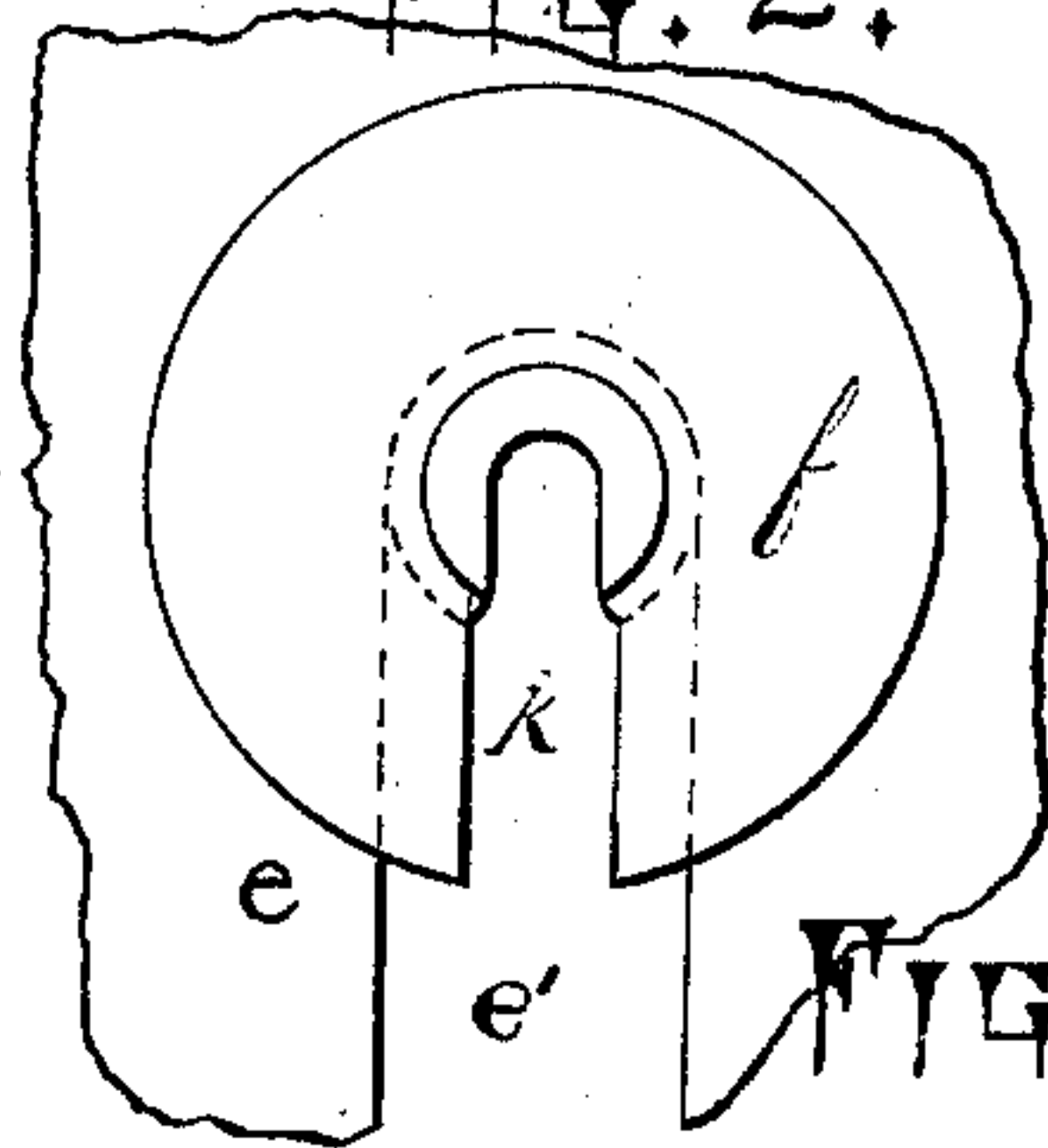


FIG. 5.

Witnesses

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# UNITED STATES PATENT OFFICE

WILLIAM FOX, OF WHEELING, WEST VIRGINIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO ANDREW H. BAGGS, OF BRIDGEPORT, OHIO.

## IMPROVEMENT IN THE MANUFACTURE OF GLASSWARE.

Specification forming part of Letters Patent No. 189,351, dated April 10, 1877; application filed February 15, 1877.

*To all whom it may concern:*

Be it known that I, WILLIAM FOX, of the city of Wheeling, county of Ohio, State of West Virginia, have invented a certain new and useful Improvement in the Manufacture of Glassware, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing.

My invention relates to a new and useful process and apparatus for manufacturing footed, stemmed, and other forms of glassware; and it consists in forming the bowl or body by blowing it upon the blow-iron without the use of molds, and then affixing the base, foot, stem, or other finishing part, by means of molten glass pressed in a mold thereon, substantially as hereinafter more fully and at large will appear.

To enable those who are skilled in the art to which my invention appertains to fully understand its nature and make and use the same, I will briefly describe the present state of the art wherein I claim my process to be an improvement.

It is considered impracticable to press glassware as thin as can be done by blowing; consequently all the finer articles of ware are blown, and have a foot or foot and stem formed by hand, which is necessarily round from the rotary motion required in working. An additional "gathering" of glass is added to the blown vessel to form the foot or stem. Heretofore footed and stemmed glassware, wherein a pressed foot or stem is united to a blown article or bowl, has been made by blowing the bowl against a pressed foot or stem with the mold and foot stationary, or by blowing the bowl against a pressed foot or stem placed on a rotary table; but all of these methods are objectionable in a greater or less degree, on account of imperfect joints at the point of contact of the blown bowl with the pressed foot, and other mechanical difficulties well known to the trade, and are very expensive, requiring skilled labor, tedious, and laborious. To overcome these difficulties and accomplish the same result—viz., of producing a blown article of glassware with a pressed glass foot, stem, or knob in a speedy, perfect, and economical manner—is the object of my invention.

In order to illustrate more fully my invention I will describe the apparatus employed and mode of operation, reference being had to the drawing, in which—

Figure 1 is a front elevation of an ordinary press; Fig. 2, side elevation; Fig. 3, vertical central section; Figs. 4, 5, detail views.

Like letters of reference refer to like parts.

In the drawing, A represents the body of a press, similar to those in general use, having legs *a a'* of suitable length to raise the press the requisite height from the floor to admit of a blow-iron, with an article thereon, being placed in a vertical position underneath the press. B is a guide-plate or iron-rest, made self-adjusting by means of spiral springs *b b'*, secured to cross-piece *c* of the standards, and is provided with a socket, *d*, for the receipt of the end of the blow-iron. D is a projecting guide-arm secured to cross-brace *c'*. E is a foot-mold placed on the press ready for operation. The mold is provided with a bottom plate, *f*, having a beveled slot or passage-way, *k*, extending from the center to the outer edge, to admit of the removal of the two articles when joined together. This plate sets immediately over and parallel with a similar passage-way, *e'*, in the bed-plate *e* of the press, and is removable in order to substitute other plates when different-shaped bowls are blown. Both plates are shown in detail at Figs. 4 and 5. F is a blow-iron with a bowl, *g*, thereon; *h*, a pressed foot. J is a plunger.

The mode of operation is as follows: An article of any desired shape or size is first blown on the end of the blow-iron without the aid of a mold, and, while still hot, the iron, with the bowl thereon, is placed on the spring guide-rest under the center of the mold, and forced down sufficient to permit the placing of the bowl in the cavity of the mold, where it is held by the pressure of the springs, it being guided into position by the inclined sides of the central opening in the bottom plate of the mold. At this stage of the operation molten glass is placed in the mold and the plunger forced down upon it, which forms the foot and presses it upon the blown vessel or bowl at one operation. The article is then ready to be finished in any manner desired, and is



readily removed from the press by simply opening the foot-mold; the slots or passage-ways in the bottom plate of the mold and press permitting the article being taken out side-wise.

By my process a knob, foot, or stem of any desired shape, such as an octagon, hexagon, square, round, or each or all combined, or of any design, can be united to a blown vessel or bowl in a very rapid, effective, and economical manner, thus substituting mechanical devices for skilled labor, and saving a large percentage in the cost of producing the finer classes of ware, with the additional advantage of variety in shape and design.

The bowl can be disconnected from the blow-iron and placed under the foot-mold to receive the foot; but as the cup-foot has usually to be formed or finished afterward, being reheated or "warmed in" for this purpose, I deem it best to retain the bowl on the blow-iron while pressing on the additional piece of glass.

I am aware that handles have been formed and affixed at one and the same operation upon pitchers, lamps, and such like handled articles, which articles (pitchers, &c.) had previously been formed by blowing into a mold, the same being commonly known as "blow-over" glassware. This, therefore, I lay no claim to, my invention relating to articles the body or bowl of which is formed entirely by blowing, and without the use of a mold.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for forming glassware, the press A, mounted upon the frame *a a*, and provided with the slotted bed-plate *e e'*, substantially as described, and for the purposes specified.

2. In a machine for forming glassware, in combination with the mold E, the removable plate *f*, having a beveled slot or passage-way, K, extending from center to circumference, substantially as described, and for the purposes specified.

3. In a machine for forming glassware, the self-adjusting rest B, substantially as described, and for the purposes specified.

4. In a machine for forming glassware, in combination with the guide-rest B, the guide-arm D, substantially as described, and for the purposes specified.

5. The process of forming glassware, consisting in forming the body or bowl by blowing it upon the blow-iron without the use of molds, and then affixing the base, foot, stem, or other finishing part, by means of molten glass pressed in a mold thereon, substantially as described.

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Witnesses:

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