

No. 658,466.

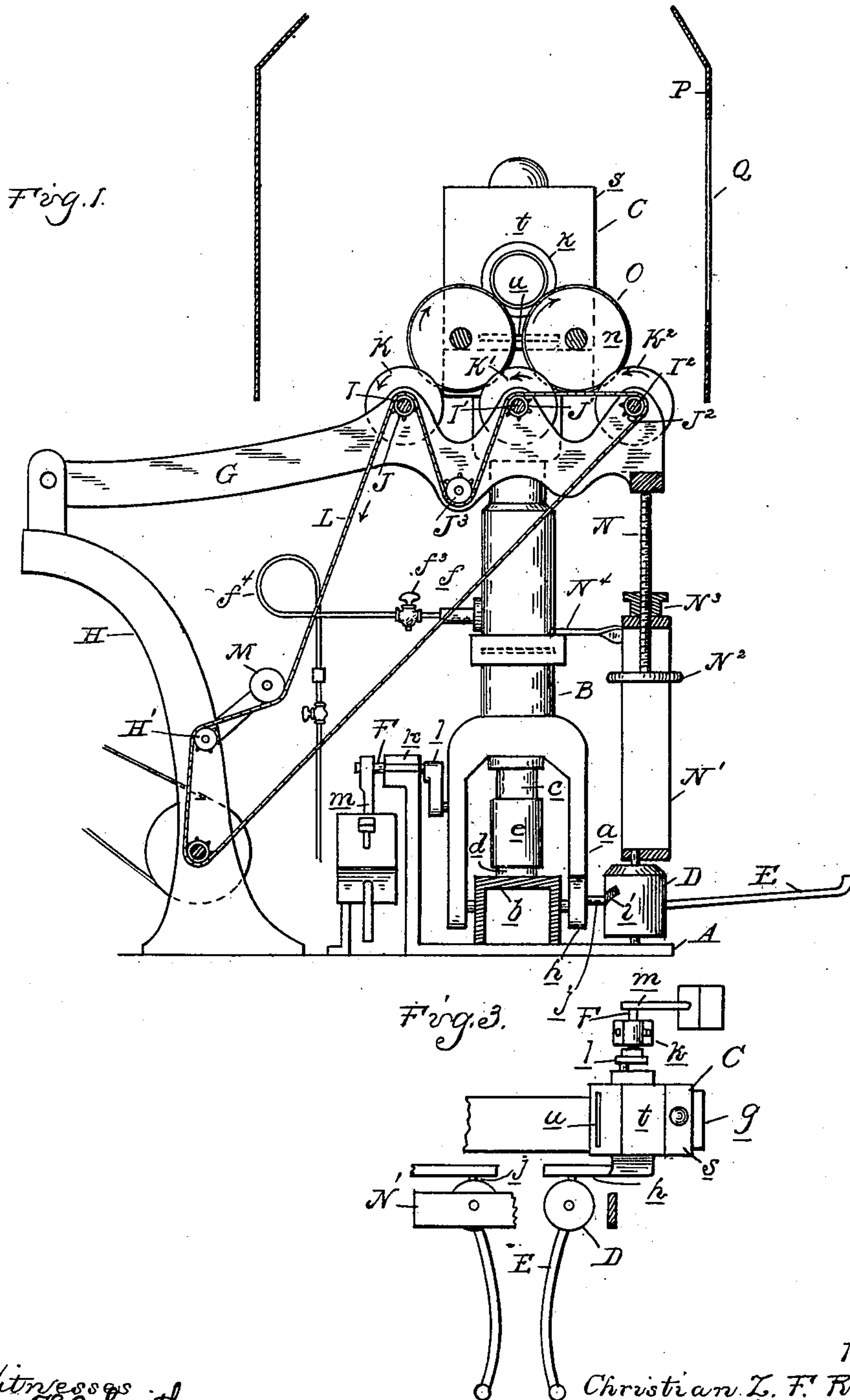
Patented Sept. 25, 1900.

C. Z. F. ROTT.
GLASS FINISHING MACHINE.

(Application filed Dec. 1, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 2.

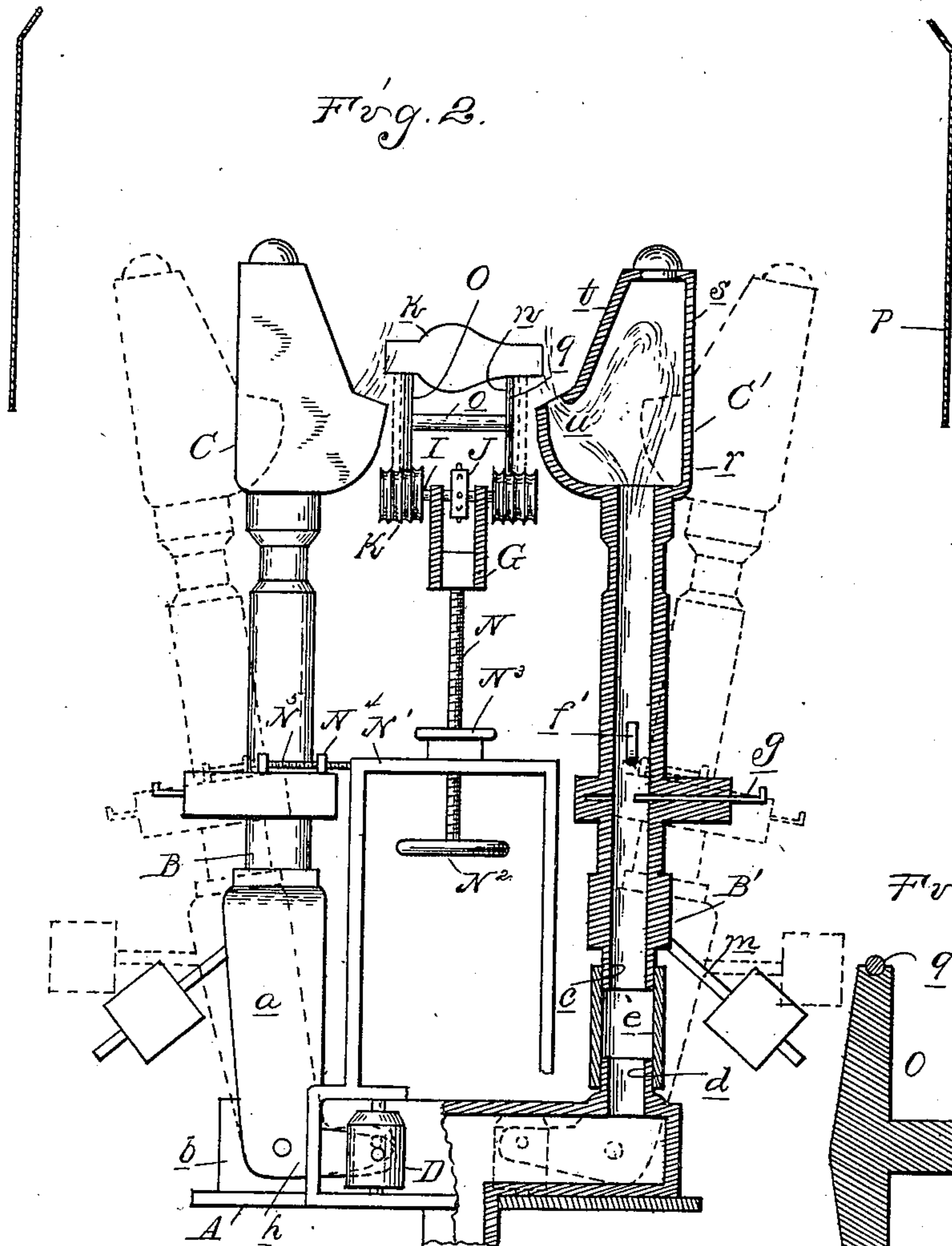


Fig. 5.

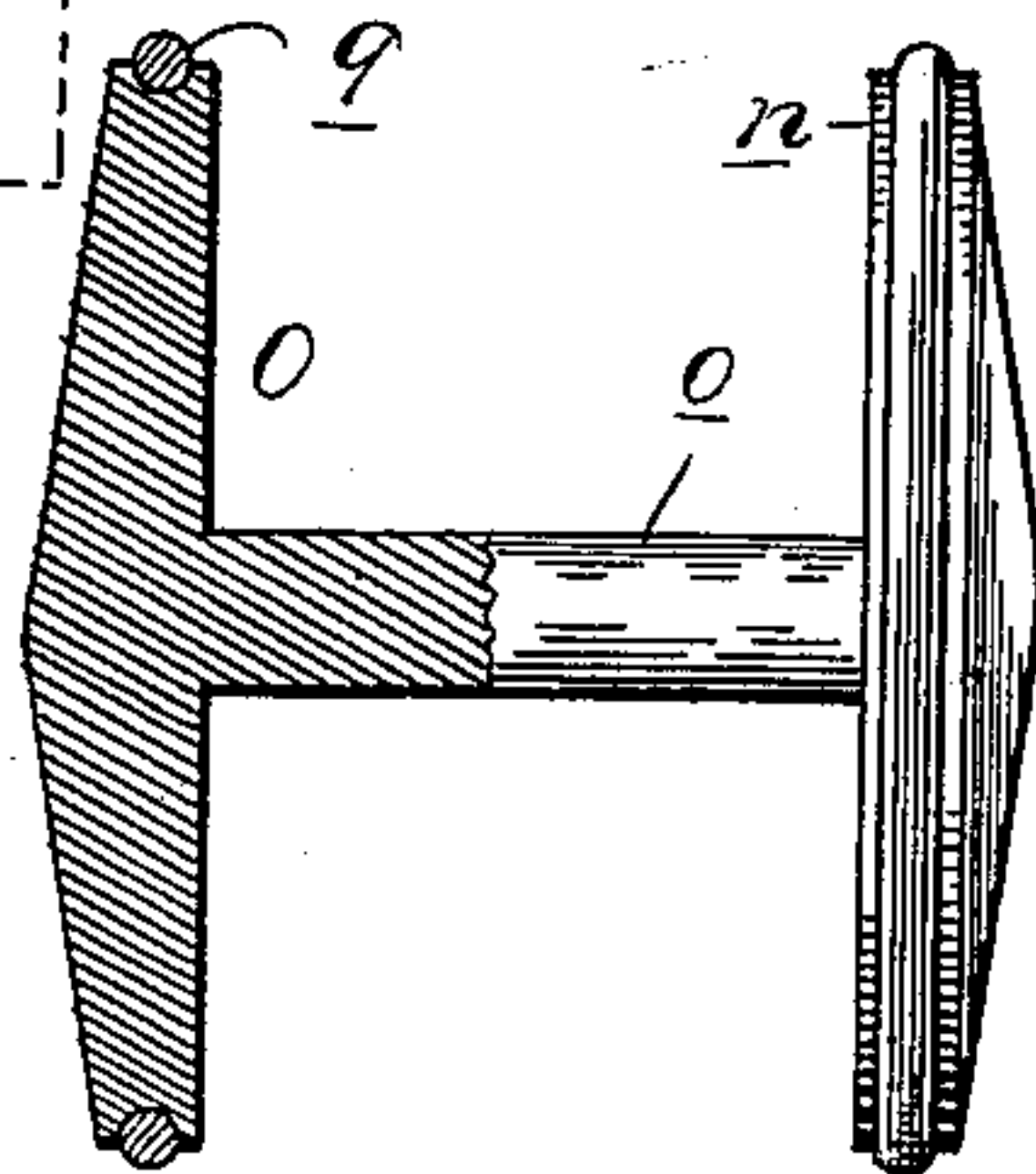
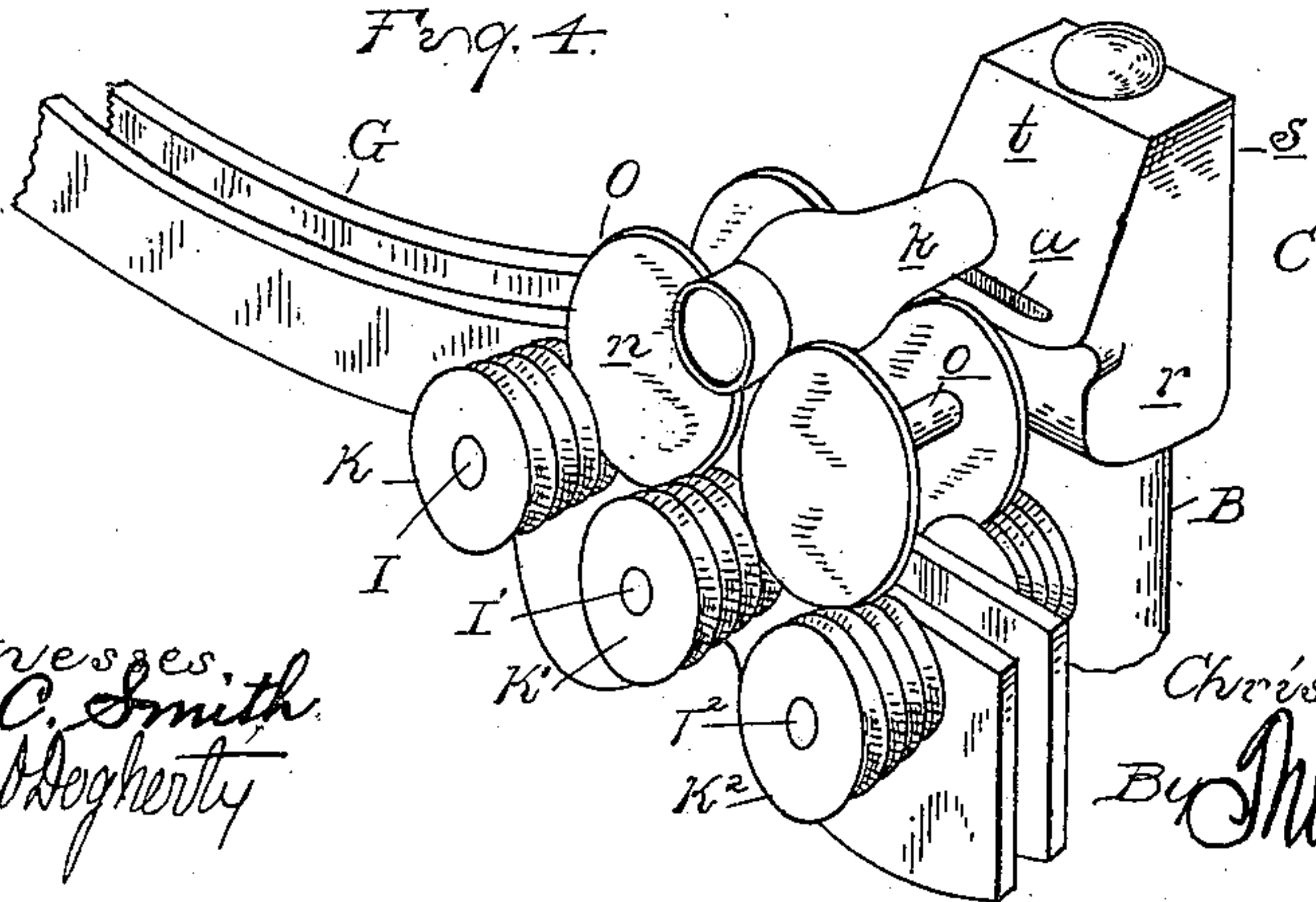


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHRISTIAN Z. F. ROTT, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
MACBETH-EVANS GLASS COMPANY, OF SAME PLACE.

GLASS-FINISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 658,466, dated September 25, 1900.

Application filed December 1, 1899. Serial No. 738,811. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN Z. F. ROTT, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Glass-Finishing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to machines for fire-finishing articles of glass, and more particularly to that class of machines which are employed for finishing the trimmed edges of blown articles, such as lamp-chimneys.

It is one object of the invention to obtain a machine which is adapted to be employed for finishing a large variety of articles and which may be quickly adjusted to suit the shape of the particular article operated upon.

It is a further object to obtain a machine capable of performing its work satisfactorily and expeditiously and which requires in its manipulation but little skill on the part of the attendant.

My invention therefore consists, first, in the peculiar construction of the machine provided with a detachable rotatory support for the article operated upon, whereby said support may be quickly adjusted in position or exchanged for one of a different size, according to the requirements of the work; further, in the peculiar construction of the furnaces and the manner of supporting the same; further, in the means by which these furnaces are adjusted and moved toward or from the work in the operation of the machine, and, further, in the peculiar construction, arrangement, and combination of parts, as more fully hereinafter described and claimed.

In the drawings, Figure 1 is a front elevation, partly in section, of my machine. Fig. 2 is a longitudinal section therethrough. Fig. 3 is a plan view illustrating the mechanism for moving the furnace in relation to the work. Fig. 4 is a perspective view of the rotatory holder or support for the work; and Fig. 5 is a horizontal section, partly in elevation, through one of the detachable rolls of said holder.

Upon a suitable base A are secured upwardly-extending standards B and B', carry-

ing at their upper ends the furnaces or burners C and C'. The standards B and B' are pivotally secured to the base, so as to be capable of being rocked in the same plane, and are preferably provided with a bifurcated lower portion *a*, embracing the hollow portion *b* of the base. That portion of each standard above the bifurcated portion is preferably hollow and forms the conduit through which the mixed air and gas is introduced into the furnace. The lower end of this hollow portion preferably terminates in a nipple *c* in a line with the corresponding nipple *d*, formed on the portion *b* of the base and communicating with the chamber therein. This portion *b* forms an air-conduit and is connected to a suitable source of supply. The nipples *c* and *d* are connected to each other by a flexible sleeve *e*, formed of rubber or other elastic material.

f is a pipe extending into the hollow standard and provided therein with an upturned portion *f'*, this pipe forming the gas-inlet. Below the pipe *f* is arranged a valve in the hollow standard, which I have shown as consisting of a slide *g*, but which may be of any suitable construction, by means of which the quantity of air passing through the standard may be regulated. Each of the standards is provided at its lower end with a laterally-projecting arm *h*, adapted to be operated by a foot-lever to rock the standards toward or from each other.

In the drawings I have shown the mechanism for operating these arms as consisting of pivotal heads D, provided with cam-slots *i*, adapted to engage with pins *j*, projecting from the free ends of the arms *h*. These heads D are provided with laterally-extending foot-levers E, which are in a position to be under the control of the operator. The standards are also preferably counterbalanced, so that they will remain in any position of adjustment. To accomplish this, I have shown standards *k* upon the base, in which are journaled rock-shafts F, having at one end rock-arms *l* in engagement with the standards B and at their opposite ends provided with a counterweighted arm *m*.

Between the furnaces C C' at the upper ends of the standards is arranged the holder

or supports for the work, which is of the following construction:

G is an arm extending laterally between the furnaces and pivotally secured at its rear end to a suitable standard H. The forward portion of this arm is preferably bifurcated and has journaled therein a series of transverse shafts I, I', and I². Upon these shafts are secured a series of sprocket-wheels J, J', and J², preferably arranged between the bifurcations of the arm. The shafts I, I', and I² have secured thereto on opposite sides of the arms the rolls K K' K².

L is a sprocket-chain passing over the sprockets J J' J² and an idler-sprocket J³ upon the arm G and around a drive-sprocket H' on the standard H, the latter being driven from any suitable source of power. To permit of vertical adjustment of the arm G, a tightener M is provided for the chain L, which is adapted to take up the slack in different positions of adjustment. The forward end of the arm G is vertically and adjustably supported, preferably, by means of the screw N, secured to a standard N' and bearing against the arm G, said screw being provided with an operating hand-wheel N² and a lock-nut N³ for holding it in any position of adjustment.

N⁴ shows arms secured to the standards B and B', projecting forwardly therefrom, and N⁵ shows adjusting-screws engaging said arms and adapted to bear against the frame N' to form adjustable stops for limiting the inward movement of the rock-arms B and B'.

The rolls K K' K² constitute a driven-roller bearing, upon which is supported a detachable rotary holder or support for the work. This detachable rotary support comprises a pair of rolls O, which are supported in parallel adjacence upon said roller-bearing and respectively between the rolls K K' and K' and K². Each of the rolls O preferably consists of two disks or flanges *n*, connected by a shank *o* of smaller diameter, so as to form a bearing for the work at two points. The rolls O are held from endwise movement upon the roller-bearing preferably by providing the rolls K, K', and K² with a series of grooves in which the flanges *n* are adapted to engage.

From the construction just described it will be understood that the rolls K' K² are driven at a uniform peripheral speed by means of the drive-chain L. Thus the rolls O will be given a similar rotary movement, as indicated by the arrows in Fig. 2, and if an article, such as the lamp-chimney *x*, be placed upon the rolls O it also will be revolved. In order to prevent danger of cracking the glass article supported by the rolls O, the flanges *n* thereof are provided with tires *q*, formed of a non-heat-conducting material, such as asbestos, and which are secured in any suitable manner to the periphery of each disk, as shown in Fig. 5.

The furnaces C and C' are of peculiar shape, as shown in Fig. 1 of the drawings, consisting of a body portion *r* and an upward-ex-

tending portion *s* of lesser diameter, forming at the inner side a laterally-projecting portion *t*, in which is formed the upwardly-extending slot or aperture *u*. The object of this peculiar shape is to secure a better mixing of the gases within the furnace-chamber before they are blown out through the aperture *u* and directed against the work. The latter is held in such relation to the furnace as to have its trimmed edge projecting into the path of the upwardly-directed flame, passing out through the aperture *u*, as shown in Fig. 1. The furnaces and holder are preferably inclosed in a suitable hood or casing P, provided with a suitable exhaust or chimney connection (not shown) and having in its forward side a window Q, through which the work may be introduced and taken out.

The parts being constructed as shown and described, the operation of the machine is as follows: The operator before beginning his work adjusts the furnaces and the rotary holder in proper relation to each other and to the work supported by the holder. This adjustment is, in the first place, secured by vertically adjusting the end of the arm G by means of the screw N to bring the rolls K, K', and K² at the proper elevation. A pair of detachable rolls O are then placed upon the rolls K K', &c., which are selected to suit the particular article which is to be operated upon. Thus if the article (such as a lamp-chimney) is of considerable length rolls are selected which have long shanks *o*, so as to obtain a greater separation of the disks *n*. If, on the other hand, the article is short, a pair of rolls having correspondingly-short shanks are selected. The diameter of the rolls may also be varied according to the character of the article supported thereon. The operator then adjusts the screws or adjustable stops N⁵, so as to limit the inward movement of the standards B and B' at that point where the ends of the article on the rotary support will be in the path of the upwardly-directed jets from the furnaces. The furnaces or burners are then lighted and the proper mixture of air and gas is obtained by adjusting the air shut-off valve *g* and the gas-valve *f*³ in the gas-pipe *f*, the latter being connected by a valved pipe *f*⁴ with a suitable source of supply. As the gas enters the hollow standards through the upturned nozzle *f*¹, said standards will form a Bunsen burner, in which the gas and air are thoroughly mixed and ignited and the mixture is blown up into the furnace-chamber. As before described, the furnace-chamber is of such shape that the ignited mixture entering therein is first directed into the upward extension *s* and must then turn in a downward course before passing through the aperture *u*. This secures more perfect combustion and intensifies the heat of the jet. The machine is now in condition to use, motion being imparted to the rollers K through the chain L and from said rollers to the detachable rolls O. The operator then places

an article to be finished upon the rolls O, which impart thereto a rotary movement, after which by means of the levers E he rocks the standards B and B', so as to move the furnaces inward until arrested by the stop N⁵. Here the ends of the rotating article will be subjected to the jet directed laterally thereacross, which in a very short time will be brought to a state of fusion. As, however, the two ends are seldom of uniform thickness, one is generally heated before the other, and to avoid damage thereto by continued heat the furnace must be moved back into the position shown in dotted lines, Fig. 1. The operator accomplishes this by pressing his foot against the lever E, and as the standards B and B' are counterweighted the furnaces will remain in whatever position they are moved to. When the opposite end of the article is sufficiently heated, its furnace is correspondingly moved back, after which the article may be removed and another one placed in position and the operation repeated. If at any time the operator desires to use the machine for articles of different size or shape, he may quickly remove the detachable rolls O and replace them by others of the proper size, this adjustment requiring much less time for its accomplishment than if the rolls O formed an integral part of the machine.

It will thus be understood that with my machine the work may be performed much more expeditiously than with machines heretofore employed and at the same time that the manipulation is so simple as to require but little skill on the part of the workman.

Although I have made use of the term "furnace" in the description of my invention and shall employ the same term in the claims, I do not intend to be limited thereby to the particular type of furnace shown; but beyond that the spirit of my invention includes any form of burner that is suitable for heating the work and for being employed in connection with the other elements described.

What I claim as my invention is—

1. In a glass-finishing machine, the combination with a drive mechanism of a rotatory supporting member for the work, detachably supported on and driven by said drive mechanism and adapted to revolve the work around a horizontal axis.

2. A rotatory work-holder comprising a driven-roller bearing, and a detachable supporting-roll for the work resting thereon and rotated thereby and adapted to impart a like rotary movement to the work.

3. A rotatory work-holder comprising a driven-roller bearing and a pair of detachable rolls supported in parallel adjacence upon said bearing and rotated thereby.

4. A rotatory work-holder comprising a series of parallel horizontally-arranged rolls, a pair of detachable work-supporting rolls resting thereon, and means for driving one or more of the rolls of said series to impart a like rotary movement to said detachable rolls.

5. In a glass-finishing machine, a rotatory work-holder comprising a driven-roller bearing, a pair of detachable work-supporting rolls resting in parallel adjacence upon said bearing and rotated thereby, and means for holding said detachable rolls from longitudinal movement in different positions of adjustment upon said roller-bearing.

6. In a glass-finishing machine, a rotatory work-holder comprising a driven-roller bearing having a series of parallel grooves and a pair of detachable work-supporting rolls each consisting of separated circular flanges and connecting-shanks, said detachable rolls resting upon said bearing with their flanges engaging the parallel grooves therein.

7. In a glass-finishing machine, the combination with a work-holder, of a furnace and a rocking support for said furnace adapted to move the same toward or from the work.

8. In a glass-finishing machine, the combination with a work-holder, of a furnace, a standard supporting said furnace, means for rocking said standard to move said furnace toward or from the work, and an adjustable stop for limiting the inward movement of said furnace.

9. In a glass-finishing machine, the combination with a work-holder, of a furnace, a hollow standard supporting said furnace and forming a conduit and mixer for the combustible gases and means for rocking said standard to move said furnace toward or from the work.

10. In a glass-finishing machine, the combination with a work-holder, of a furnace, a hollow standard supporting said furnace, a hollow base to which the lower end of said standard is pivotally connected, a flexible coupling between said hollow base and standard and means for rocking said standard to move said furnace toward or from the work.

11. In a glass-finishing machine, the combination with a work-holder, of a furnace, a supporting rocking standard therefor adapted to carry said furnace toward or from the work and a counterbalance for holding said standard in its different positions of adjustment.

12. In a glass-finishing machine, a standard, a laterally-projecting arm pivotally connected to said standard, a rotatory work-holder carried at the outer end of said arm, a furnace arranged upon opposite sides of said holder and a vertically-adjustable support for the free end of said arm whereby the position of said holder relative to said furnaces may be adjusted.

13. A glass-finishing machine comprising a standard, an arm extending laterally from said standard, a rotatory work-holder supported upon said arm, a pair of standards arranged upon opposite sides of said arm, furnaces supported upon said standards, foot-levers for rocking said standards to move said furnaces toward or from the work and means for vertically adjusting said laterally-extending arm.

14. In a glass-finishing machine, a rotatory support for the work comprising a pair of separated circular flanges or disks having a connecting-shank, and a tire of non-heat-conducting material secured to the periphery of each disk.

15. In a glass-finishing machine, a furnace comprising the hollow casing having main portion an upwardly-projecting portion of lesser width forming at one side a laterally-extending ledge or shelf, said ledge having a slot or aperture therein, substantially as described.

16. In a glass-finishing machine, a furnace comprising the body portion *r*, and the upwardly-extending portion *s* of lesser diameter forming at one side the laterally-projecting ledge or shelf *t*, said ledge having the slot or aperture *u* therein, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

CHRISTIAN Z. F. ROTT.

Witnesses:

JAMES I. KAY,
ROBERT C. TOTTEN.