

No. 673,298.

Patented Apr. 30, 1901.

C. H. SMITH.
GLASS BEVELING MACHINE.

(No Model.)

(Application filed Jan. 16, 1900.)

3 Sheets—Sheet 1.

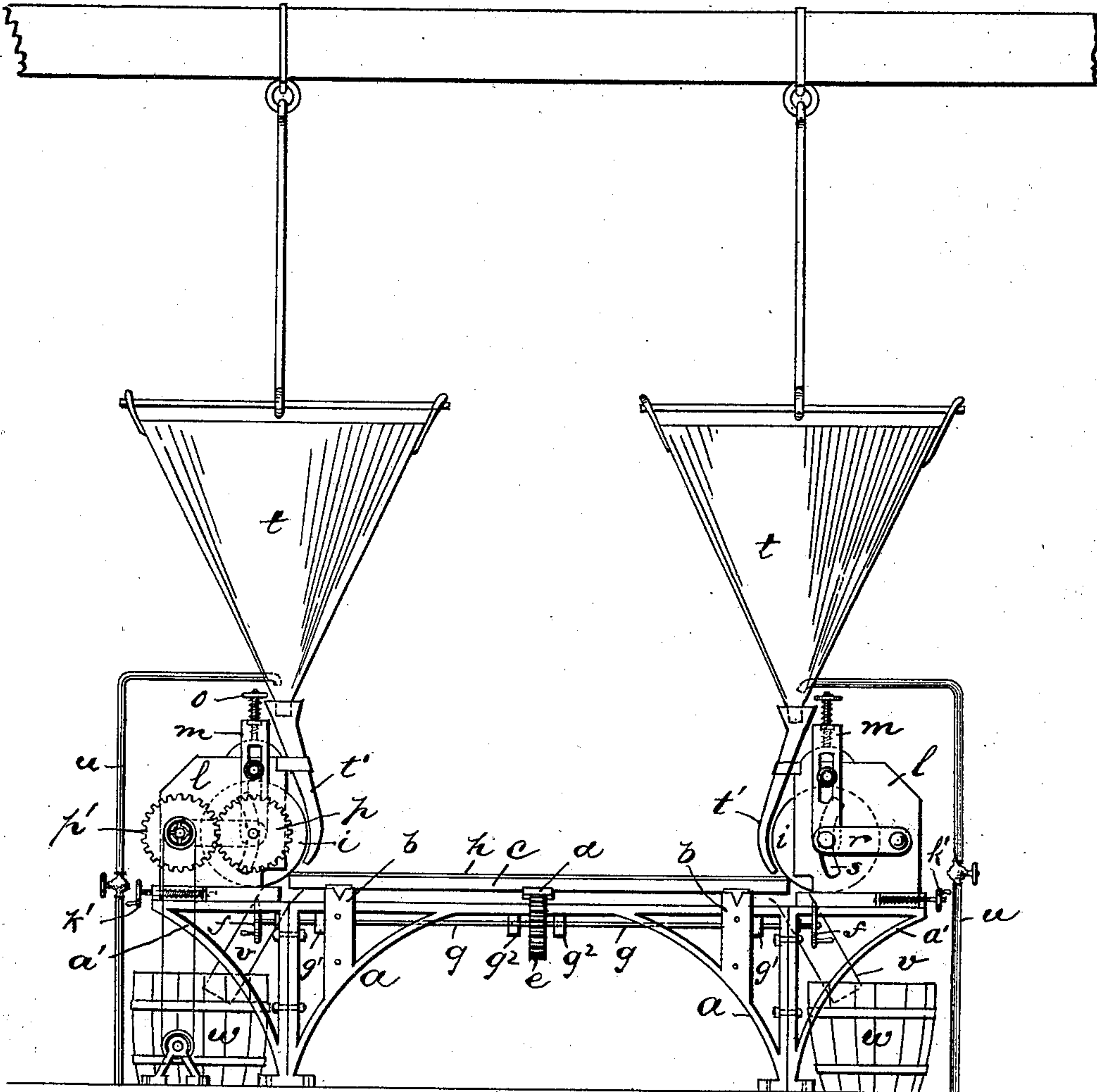


Fig. 1.

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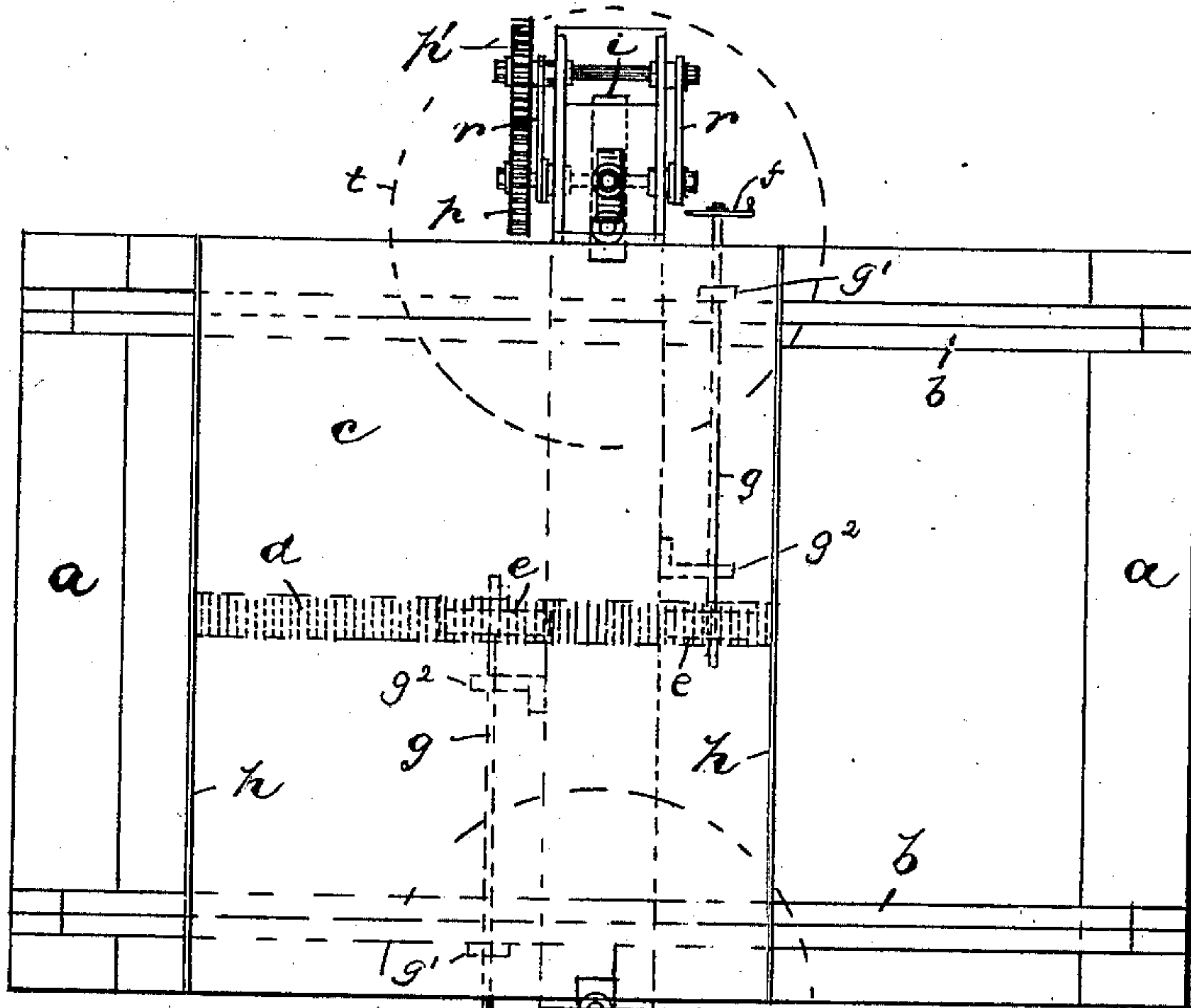


Fig. 2.

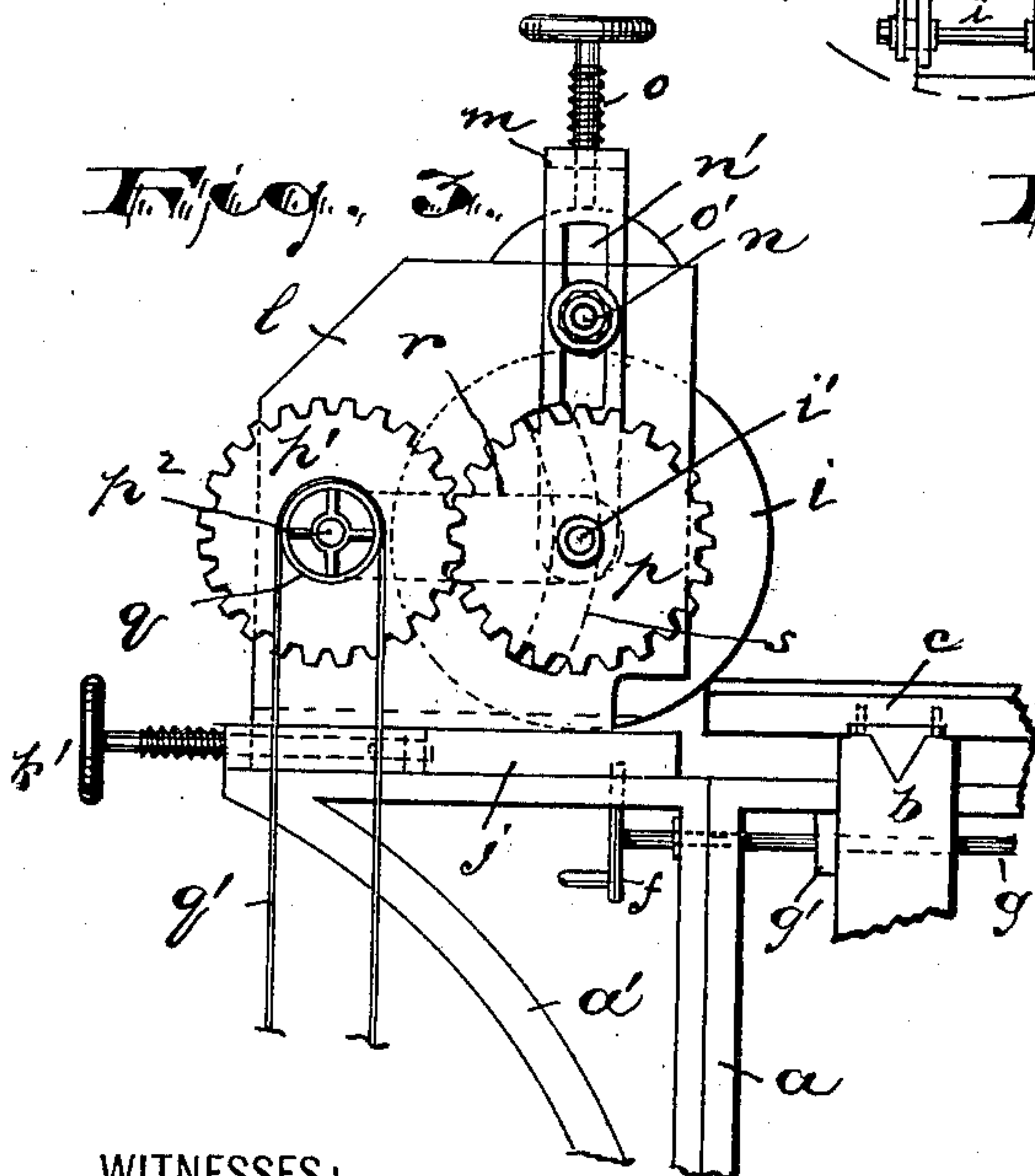


Fig. 3.

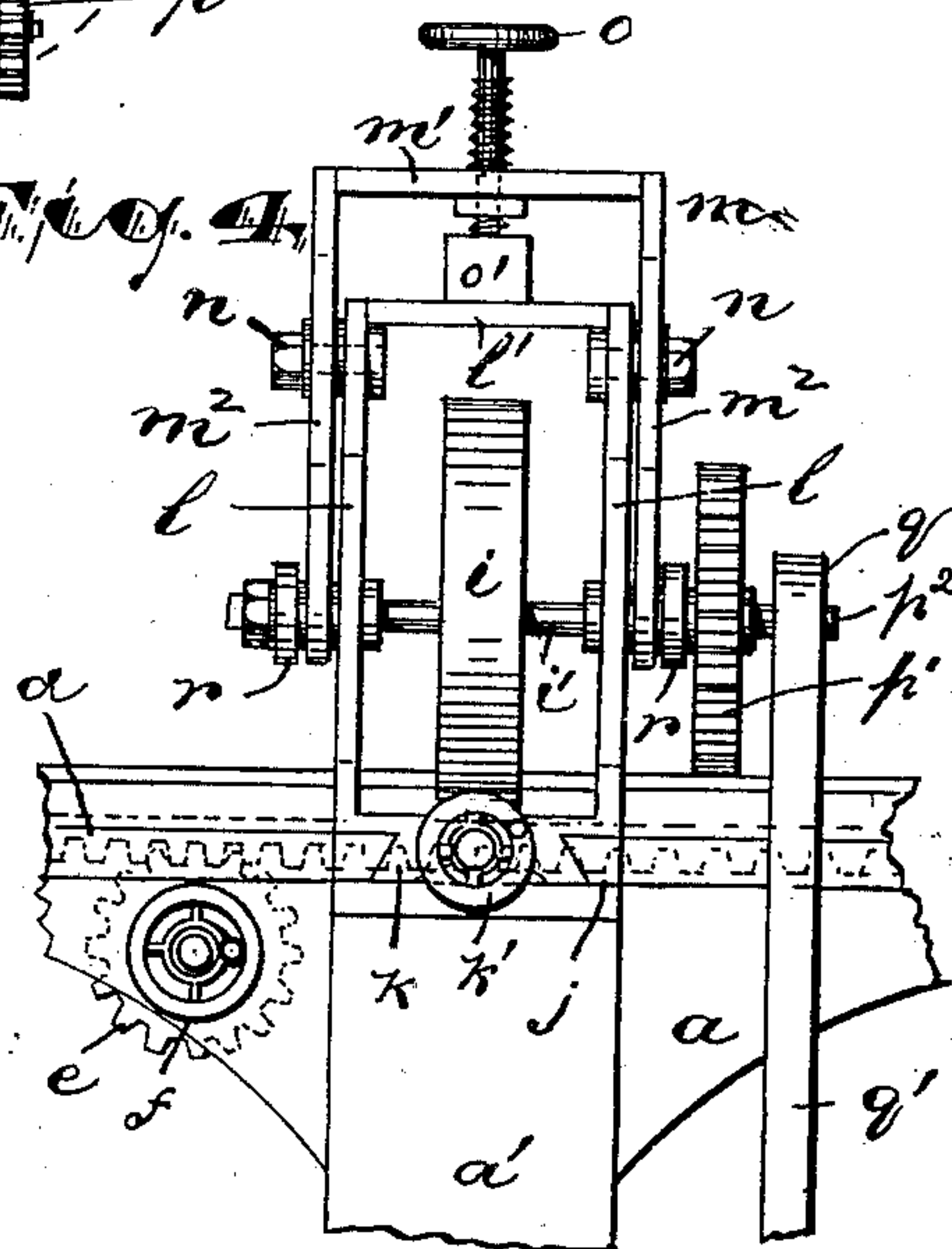


Fig. 4.

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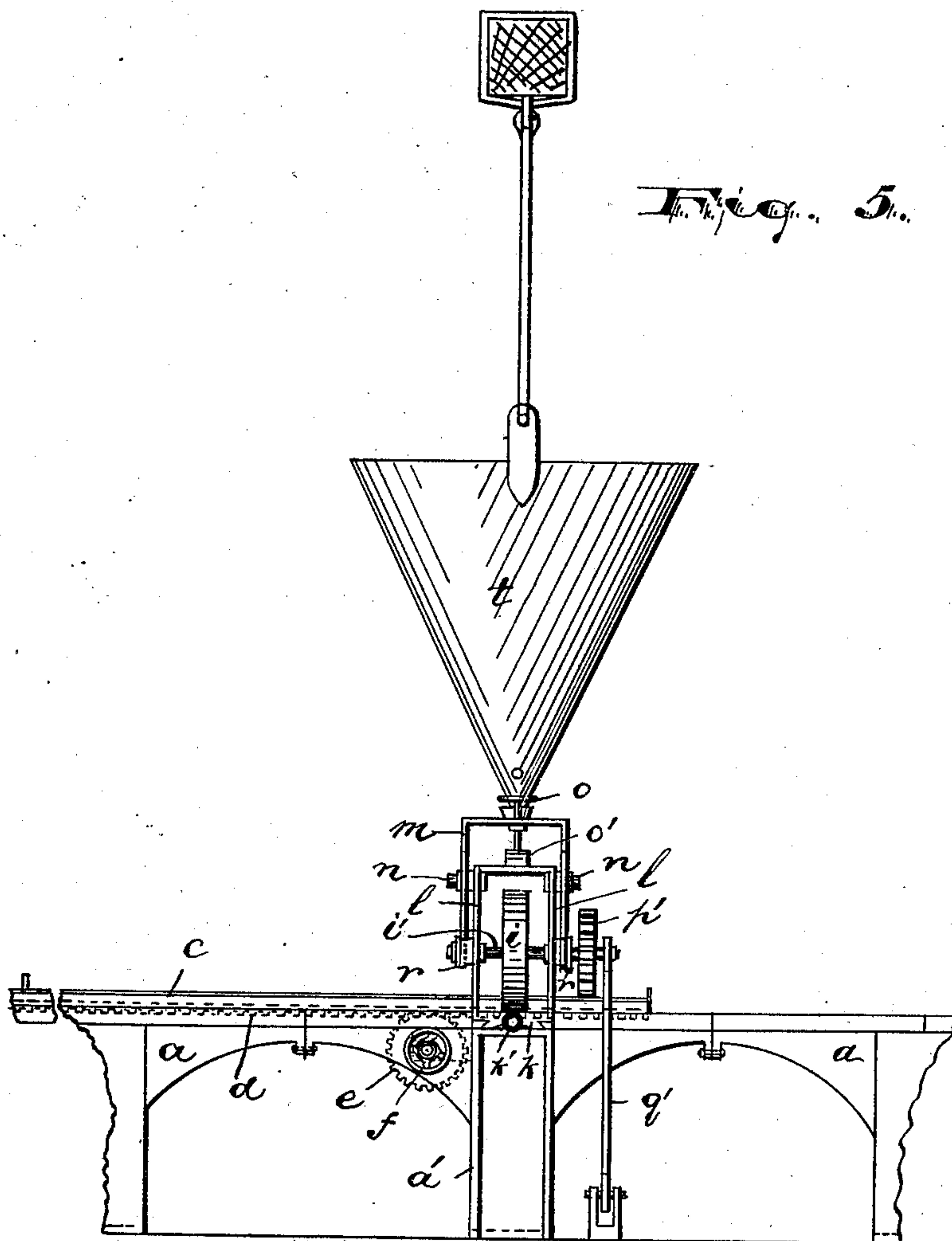
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(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

CHARLES H. SMITH, OF NEWARK, NEW JERSEY.

GLASS-BEVELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 673,298, dated April 30, 1901.

Application filed January 16, 1900. Serial No. 1,615. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SMITH, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Glass-Beveling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The objects of this invention are to reduce the cost of beveling the edges of glass plates, to secure a uniform and perfect bevel, and to secure other objects and results, some of which will be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved glass-beveling machine and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is an end view of my improved machine. Fig. 2 is a plan of the same, the sand-feeding hoppers being indicated in outline. Fig. 3 is a detail end view on an enlarged scale, showing the means employed for adjusting the bevel grinding or polishing wheels. Fig. 4 is a detail side view of the same, and Fig. 5 is a side view of the complete machine.

In said drawings, *a* indicates a bed-frame or rigid framework of any suitable construction adapted to stand up from the floor and support the working parts of the machine. Said bed-frame provides at its top horizontally-disposed parallel tracks or ways *b*, on which the table *c* slides under power transmitted thereto by means of a rack *d* and pinion *e* or by a screw shaft and worm or any other means commonly employed in connection with the moving tables of planers or the like. The said sliding table *c* is preferably constructed of wood and is of a sufficient area

to receive the largest glass plate manufactured—about sixteen feet by ten feet. This table is covered at the top with a layer of rubber adapted to serve as a cushion for the glass and to make a close contact with the glass plate, so that the latter will be held down in place by suction during the bevel-grinding operation. The table may be operated by hand-power from either side of the machine or by mechanical power applied in any suitable manner. I prefer, however, to provide at each side of the machine, adjacent to the grinding-wheel mechanism and where the operator stands in running the machine, a hand-wheel *f*, fast on a shaft *g*, which shaft has bearings *g'* *g''* on the frame and extends inward under the table *c* and parallel thereto for a little more than half the width of said table. At or near its inner end said shaft *g* carries the fixed pinion *e*, which intermeshes with the rack *d* on the under side of the table *c*, and thus the operator by turning the hand-wheel *f*, as he stands by the grinding-wheel, can move the table longitudinally to feed the glass under said grinding-tool. The table may be provided with low stays or stop projections *h*, which are preferably formed at the opposite ends of the table and against which the glass may be arranged to bear.

At the opposite sides of the table are the beveling or grinding wheels *i*, arranged upon shafts *i'*, parallel to the direction of movement of the table *c*, so that the peripheries of the wheels are presented to the edges of the glass which are parallel to the line of movement of the table. Said grinding-wheels are adjustable to and from the glass plate in both a horizontal and a substantially vertical direction, so that the grinding-surface can be brought against the edge of the glass plate in any manner desired, as will be hereinafter more fully described. When the grinding-wheel is brought into contact with the edge of the glass and the table moved longitudinally, it is evident that the glass will be given a uniform bevel along its entire edge.

The grinding-wheels *i* and their mechanism are arranged upon extensions *a'* of the bed-frame, said extensions providing a horizontal slideway *j* at right angles to the direction of movement of the table *c*. On this slideway is a sliding plate *k*, which carries the grind-

ing-wheel i and its connected parts. A screw k' controls the slide k , and by this screw horizontal adjustment of the grinding-wheel may be made to and from the plate of glass in varying the inclination of the bevel and the width of the beveled surface. The said slide k is provided at its sides with parallel upright cheek-plates l , connected at the top, as at l' . Upon said cheek-plates is a yoke m , having its closed middle portion m' lying above said cheek-plates and its two arms m^2 extending downward at the outer sides of the cheek-plates l and adjacent thereto. Said arms of the yoke are slotted for their middle portions, as at n , and ride upon headed bolts or studs n , projecting from the cheek-plates, whereby the yoke is connected to the cheek-plates, but is allowed to move pivotally and also longitudinally upon the studs n .

Each grinding-wheel i lies between its cheek-plates l , and the shaft i' , upon which it is fixed, passes through apertures in said cheek-plates and is journaled at its opposite ends in the yoke m . Said yoke is raised and lowered by means of a screw o , having threaded bearings in the closed top of the yoke and engaging at its lower end a fixed bearing o' at the top of the cheek-plates. Said bearing o' is preferably curved at its surface, so that the screw when the yoke is swung pivotally will slide upon the bearing and find a firm seat in line with the yoke, the said bearing being curved on a circle whose center coincides with the pivotal center of the yoke or the studs n .

The grinding-wheel is driven by means of a gear-wheel p , fast on the shaft i' , which projects beyond the yoke m at one side for this purpose, the said gear-wheel intermeshing with a second gear-wheel p' , having its shaft p^2 pivoted in stationary bearings in the cheek-plates and carrying also a belt-pulley q , receiving power from any suitable source by means of a belt q' .

To prevent the gear-wheel p from being moved out of engagement with the stationary gear-wheel p' as the yoke m is raised or lowered, the said yoke is pivotally linked at its lower end to the shaft of the driving-gear wheel p' , said links r being connected to the grinding-wheel shaft i' . These links r hold the lower ends of the yoke m at a fixed distance from the driving-shaft p^2 , as will be understood, so that the cogged gear-wheels p and p' are held in operative engagement, but vertical adjustment of the yoke permitted.

The slots or openings s in the cheek-plates l , through which the grinding-wheel shaft i' passes, are curved, as on a circle whose radius is equal to the length of the link r , to permit the grinding-wheel shaft when said grinding-wheel is raised or lowered to maintain its fixed distance from the driving-shaft.

By the horizontal adjustment of the slide and the vertical adjustment of the yoke or by a combination of the two it will be seen that I am able to regulate the pitch and the width

of the beveling given to the glass, so as to secure any kind of bevel desired. The diameter of the grinding-wheel is so large in comparison with the beveled surface upon the glass that said beveled surface is to all intents and purposes a flat surface.

The grinding-wheels employed in beveling the glass are, first, a metal (iron) wheel to be employed with sand in producing the rough cut; second, a stone, such as an ordinary grindstone; third, a wooden wheel employed with pumice-stone, and, finally, a wheel covered with felt and employed with rouge. These wheels may be interchangeable or may be employed in separate machines in a series.

In connection with the rough cutting-wheels of iron I employ hoppers t and water-supply pipes u , by means of which sand and water are fed to the wheel. These may be of any construction and arrangement and when the finishing or polishing wheels are employed may be dispensed with. The mingled sand and water is fed to the point of grinding by means of curved tubes t' , and the products of the grinding are received through hoppers v into receptacles w .

Various changes and modifications may be made in the detail construction of my machine without departing from the spirit and scope of the invention, and I do not wish to be limited by any of the positive descriptive terms employed, except as the state of the art may require.

Having thus described the invention, what I claim as new is—

1. In a glass-beveling machine, the combination of a sliding table adapted to receive a sheet of glass and hold the same against side-wise movement while permitting longitudinal movement, a frame supporting said table and having in a fixed extension at one side of the table a slide working on said extension at right angles to the direction of movement of the table, a grinding-wheel mounted on said slide and vertically adjustable, and means for rotating said wheel and for moving the slide and table in their respective directions, substantially as set forth.

2. In a glass-beveling machine, the combination of a supporting-frame a , having an extension a' , a sliding table c , on said frame, and a slide j , working on the extension a' , at right angles to the table, a grinding-wheel i , having a shaft i' , journaled transversely of the slide j , in vertically-adjustable bearings, an adjusting-screw for raising and lowering said bearings, and means for operating said table, slide and grinding-wheel, substantially as set forth.

3. In a glass-beveling machine, the combination of a sliding table adapted to carry the glass, and a slide working at right angles to said table, a single supporting-frame for both said table and slide, a driving-shaft having fixed bearings in the slide, a grinding-wheel shaft having adjustable bearings in said slide, links connecting said shafts, and gear-

wheels transmitting motion from one to the other, and means for shifting the adjustable bearings of said grinding-wheel shaft, substantially as set forth.

5 4. In a glass-beveling machine, the combination with a movable table adapted to carry the sheet of glass, of a slide movable at right angles to said table, a yoke supported upon said slide and movable in an up-and-down
10 direction, and a grinding-wheel pivoted in said yoke with its shaft parallel to the direction of movement of the tables, substantially as set forth.

5 5. In a glass-beveling machine, the combination with a movable table adapted to carry the sheet of glass, of a slide movable at right angles to the direction of movement of said
15 table, a yoke movable up and down upon said slide, a grinding-wheel having its shaft pivoted in said yoke, a driving-shaft having bearings upon the slide, guides holding said grinding-wheel shaft at a fixed distance from the driving-shaft, and means for transmitting
20 power from said driving-shaft to the grinding-wheel shaft, substantially as set forth.

25 6. In a glass-beveling machine, the combination of a table for the glass and means for positively moving said table longitudinally, a slide movable in the plane of said table at right angles to the direction of movement of
30 the table, a yoke bestriding said slide, a controlling-screw for moving said yoke either up or down, a transverse shaft pivoted between the arms of said yoke, a grinding-wheel and
35 a gear-wheel upon said shaft, a power-shaft having bearings in the slide, a belt-pulley and a second gear-wheel upon said power-shaft, and links extending between the power-shaft and grinding-wheel shaft and holding
40 said gear-wheels in engagement, substantially as set forth.

45 7. In a machine for beveling the edges of glass sheets, the combination of a bed-frame having ways or tracks, a horizontal table upon said ways and means for positively moving said table, an extension-frame providing a slideway, and a slide working in said way at

right angles to the direction of movement of the table and having upright cheek-plates, a yoke upon said slide and having its arms
50 extending downward parallel to the cheek-plates, the said arms being slotted and working upon studs entering said slots, a screw for raising and lowering said yoke, a grinding-wheel shaft having bearings in the arms
55 of said yoke, a grinding-wheel and a gear-wheel upon said shaft, a driving-shaft journaled in the said cheek-plates, a driving-pulley and second gear-wheel upon said driving-shaft, said second gear-wheel intermesh-
60 ing with the first-mentioned gear-wheel to transmit power to the grinding-wheel, and links holding said driving-shaft and grinding-wheel shaft at a fixed distance apart, substantially as set forth. 65

8. In a glass-beveling machine, the combination of a movable table having a rubber-covered top, a slide working at right angles to the direction of movement of the table and having upright cheek-plates, a driving-shaft
70 journaled in said cheek-plates, a yoke having its closed end lying across the top of said cheek-plates and its arms depending at the sides of said cheek-plates, said arms being slotted back from their extremities and receiving studs on the cheek-plates, a grinding-wheel shaft journaled in the ends of said
75 arms of the yoke, links pivotally connecting said grinding-wheel shaft to the driving-shaft, an adjusting-screw working in correspondingly-threaded bearings in the closed end of the yoke, a curved seat supported by the cheek-plates for the lower end of said adjusting-screw, a grinding-wheel upon said
80 grinding-wheel shaft, and means for transmitting motion thereto from the said driving-shaft, substantially as set forth. 85

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of December, 1899.

CHARLES H. SMITH.

Witnesses:

CHARLES H. PELL,
GEO. M. WARD.