(No Model.) 2 Sheets—Sheet 1.

J. J. CHRISTIE.

GLASS GRINDING MACHINE.

No. 386,738. Patented July 24, 1888.

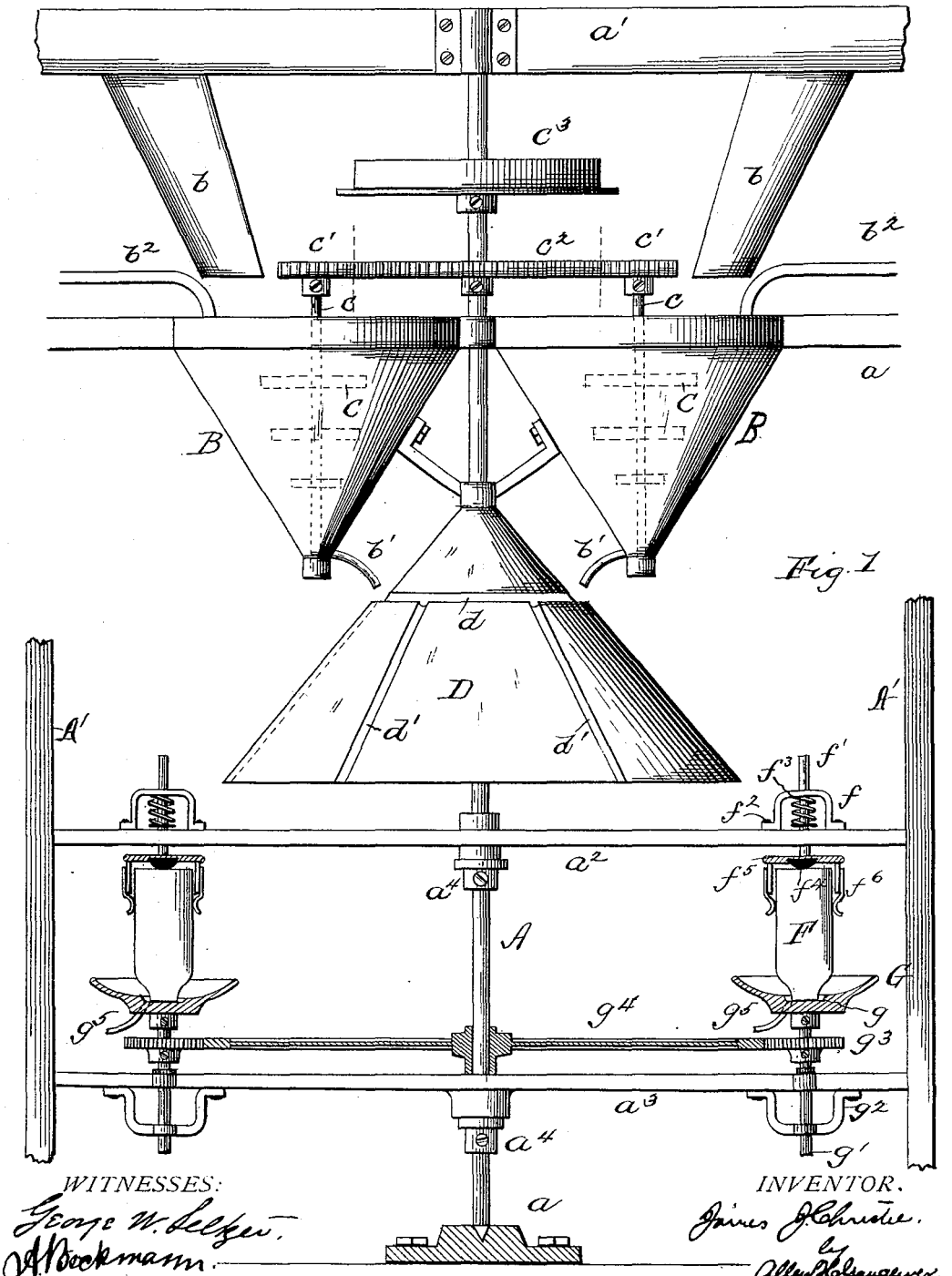

Fig. 1

WITNESSES:

George W. Selker.

A. Bockmann.

INVENTOR.

James J. Christie.

by Allen Robertson, his

ATTORNEY.

N. PETERS. Photo-Lithographer, Washington, D. C.

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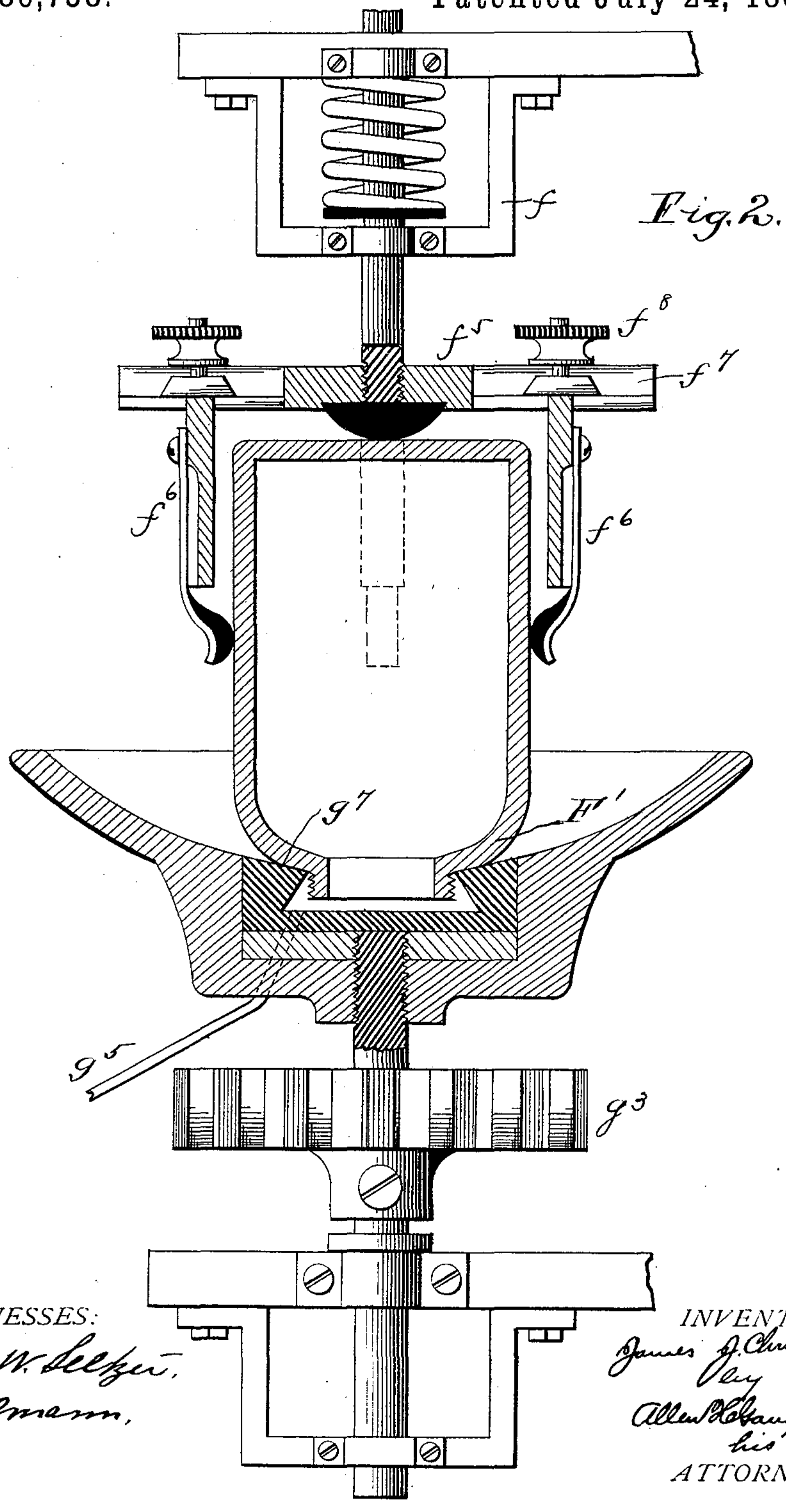

WITNESSES:
George W. Seltzer.
A. Beckmann.

INVENTOR,
James J. Christie,
by
Allen B. Gangewer,
his
ATTORNEY.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JAMES J. CHRISTIE, OF RIVERSIDE, NEW JERSEY.

GLASS-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 386,738, dated July 24, 1888.

Application filed February 23, 1887. Serial No. 228,529. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. CHRISTIE, of Riverside, in the county of Burlington and State of New Jersey, have invented a new and valuable Improvement in Glass Grinding, Stoppering, and Finishing Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 is an elevation, partly sectional, of a power-machine for grinding the outside of a fruit-jar or other analogous glass vessel, embodying my improvements; and Fig. 2 is an enlarged sectional elevation of the grinding-die and appliances for holding the vessel to the die during grinding.

My invention has relation to power-machines for grinding surfaces or joints of glassware, having reference particularly to grinding a slot upon fruit-jars, glass jars, or analogous vessels for the rubber packing-ring or gasket interposed between said slot and lid to form a perfect air-tight joint for the jar or vessel, said ground slot being preferably upon the outside surface of the shoulder of the jar, whereby an outside true or ground surface is obtained the same as in a valve-slot.

It is well known that fruit-jars or similar glassware when molded warp or get out of true when the bodies of the jars in their plastic state are relieved or removed from the sides of the mold, and the constant closing of the mold in forming a glass jar produces a ridge on the mouth of the jar, so that the gasket or rubber packing fitted or clamped to the slot does not entirely or evenly close or seal the slot, and more or less air gains access to the interior of the jar through this imperfect slotting to sour the contents in the jar. By grinding a slot on the jar an even or true surface is obtained to produce an air-tight joint to perfectly preserve the contents of the jars, and by my improvements this grinding can be effected without much additional cost of manufacturing.

My invention accordingly consists of the novel combination, construction, and arrangement of parts, as hereinafter described and claimed.

In the drawings, A represents a vertically-arranged driving-shaft suitably mounted in a frame-work, *a a'*, of any desired construction, to the upper beam or cross-bars, *a'*, of which are secured spouts or chutes *b* for directing a supply of dry sand or analogous abrading material to stationary mixing-chambers B, suitably arranged about shaft A. These mixing-chambers B have suitably journaled within them agitators C, the shafts *c* for which have at their upper ends gear-wheels *c'*, which mesh with a large gear-wheel, c^2, secured to shaft A, and above wheel c^2 is a driving-pulley, c^3, for said shaft.

The outlet-spouts *b'* of the mixing-chambers are directed to an annular gutter, *d*, formed upon the outside of a stationary cone-shaped distributer, D, suitably mounted upon the frame-work of the machine, as desired. From the annular gutter *d* proceed longitudinal gutters *d'*, for conveying the mixed sand and water from gutter *d* to the grinding-dies, located about the driving-shaft below the cone D, as hereinafter described. As the sand is fed into the mixing-chambers B from spouts or chutes *b*, water is also admitted to said chambers by suitably-arranged pipes, b^2, leading to said chambers, and the rotation of the agitators C in the chamber B mix the sand and water and force the same out through the spouts or nozzles *b'* to cone D.

a^2 a^3 represent two parallel circular stationary frames loose on shaft A, and held in position by collars a^4 on said shaft, as shown, and secured to the stationary uprights A', which form part of the frame of the whole device.

Upon the upper side of frame a^2 near its outside edge and at suitable intervals around the frame, are secured inverted-U shaped lugs or bracket *f*, each forming an upper bearing for a loose or sliding vertical bar, *f'*, which has its lower bearing in the frame a^2, and is provided with a collar, f^2, located above frame a^2, and a spring, f^3, between said collar and bracket *f*, as shown in Fig. 1. At the lower end of each bar *f* is a rubber or other elastic pad or cushion, f^4, which bears against the bottom of a jar, F, when in position for grinding. Above the cushion f^4 and fitted to bar *f* is a frame or series of radial bars, f^5, having downwardly-projecting spring-fingers f^6, for clamping the sides of the jar, and act in co-

operation with the cushion f^4 to hold the jar firmly in position or to the grinding-die during the operation of grinding the slot on the jar for the rubber packing for its lid-joint.

In a machine built for grinding only one size or diameter of jars the spring-fingers f^6 are rigidly or permanently secured to bars f^5, as shown in Fig. 1; but in machines adapted for different diameters of jars the spring-fingers slide in grooves f^7 in bars f^5, and have set-screws f^8 to clamp them in position when adjusted to suit jars of different diameters, as shown in Fig. 2, which also indicates that the lugs f may be located upon the under side of frame a.

G represents a cup having a central depression, g, to receive the mouth of a jar, F, as shown in Fig. 1. This depression g forms a die for grinding the jar-mouth even and true. Cup G is secured to vertical shaft g' in alignment with bar f, and it has bearings in lower frame, a^3, and brackets g^2, attached to the under side of said frame, and it is also provided with a gear-wheel, g^3, meshing with a larger gear-wheel, g^4, secured to shaft A, whereby the shaft and cup G are rotated to effecting the grinding of the glassware. As the cup G is rotated, the sand and water is conducted to the cup from a channel, d', upon cone D, such sand dropping from the lower edge of the cone onto the cup G. As many cups G and rotating mechanism therefor are employed as there are bars f' and spring-holders f on the upper frame, a. The surplus sand and water dropping onto cups G is conducted away by means of outlet-pipes or openings g^5.

Instead of making the die integral with cup G, the same may be separate therefrom, as shown in Fig. 2, and differently-configured dies are used, according to the location of the slot upon the glassware. As shown in Fig. 2, the die has an inclined or tapering top surface, g^7, to grind the slot upon the outside surface of the shoulder F'.

I do not limit myself to any particular frame-work for the machine, nor to the number of the grinding devices rotated by the driving-shaft A, as it is obvious that the number depends upon the capacity desired for the machine.

What I claim is—

1. In a glassware-grinding machine, the combination of a driving-shaft, stationary mixing-chambers B, cone D, having annular channel d, and longitudinal channels d' around said cone, a stationary frame located below said cone, and having spring-acting bars provided at their lower ends with a cushion and spring-fingers, a second stationary frame below the former, having shafts in alignment with said spring-acting bars, cups provided with grinding-dies secured to said shafts, and mechanism between the latter and the driving-shaft for rotating said cups and grinding-dies, substantially as set forth.

2. In combination with shaft A, the stationary frames a^2 a^3, spring-acting rods f' having cushion f^4 and spring-fingers f^6, on one of said frames, cups G, having grinding-dies g and shafts g', and mechanisms between shafts g' and shaft A, for rotating said cups and grinding-dies, substantially as set forth.

3. In a grinding-machine, the combination of the stationary frames a^2 a^3, spring-acting bars f', having adjustable spring-fingers f^6, rotating cups G, having grinding-dies g with inclined grinding edge or surface g^7, and outlet g^5 from said die, substantially as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JAMES J. CHRISTIE.

Witnesses:
ALLEN H. GANGEWER,
OTIS EGAN.