Sept. 18, 1923. 1,467,992

F. C. BECKER

CLAMPING MECHANISM

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FIG. 1.

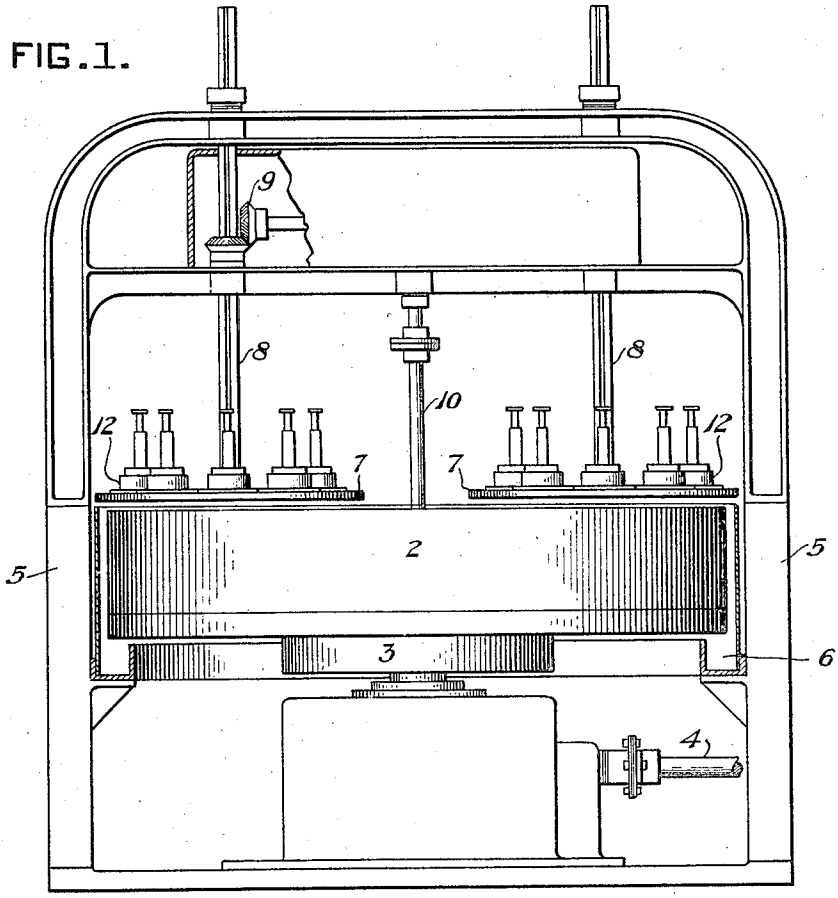


FIG. 3.

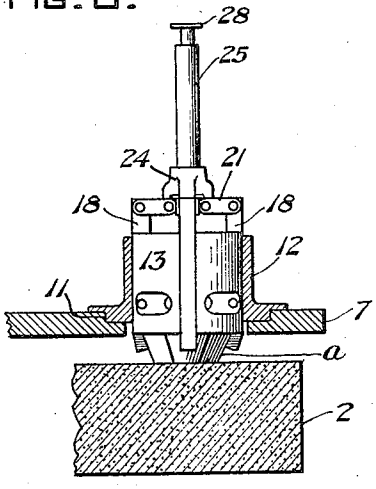
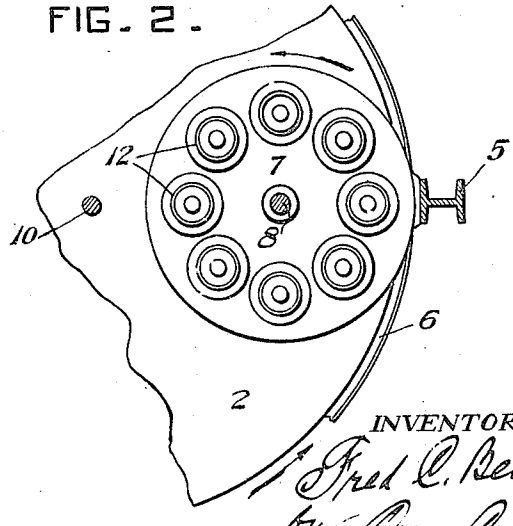


FIG. 2.



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FIG. 4.

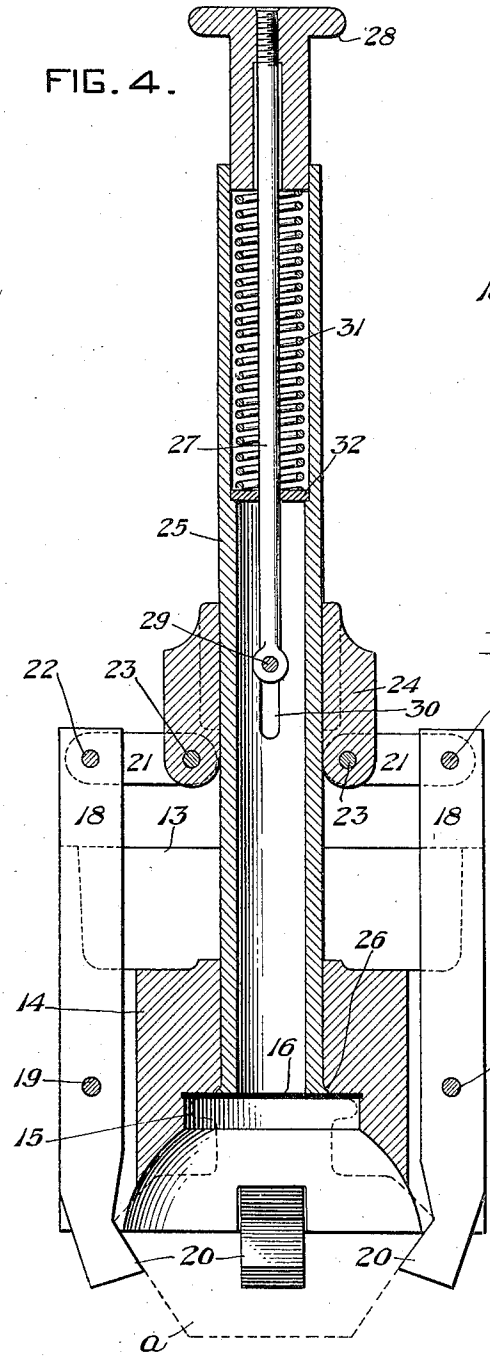


FIG. 6.

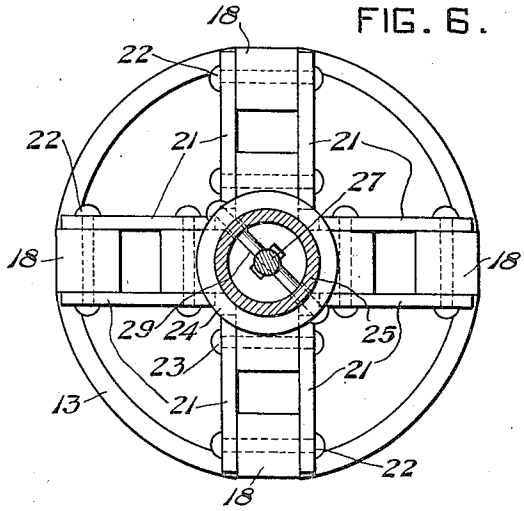
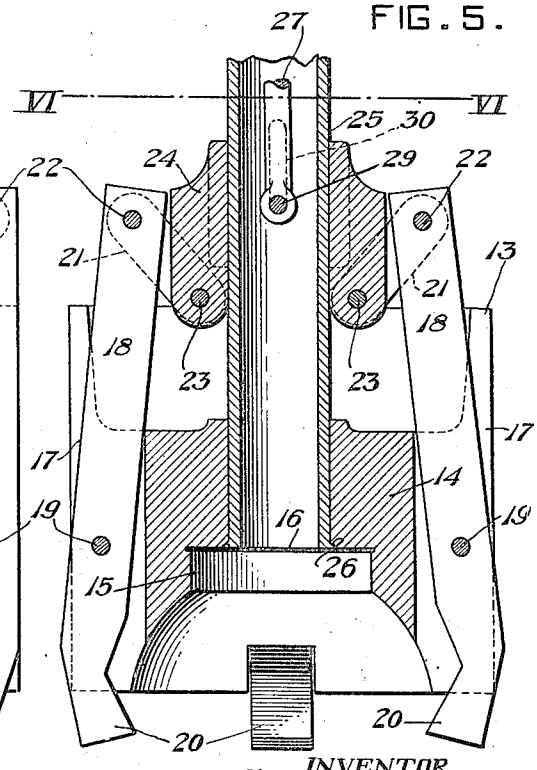


FIG. 5.



INVENTOR

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Patented Sept. 18, 1923. 1,467,992

UNITED STATES PATENT OFFICE.

FRED C. BECKER, OF JEANNETTE, PENNSYLVANIA, ASSIGNOR TO WESTMORELAND SPECIALTY COMPANY, OF GRAPEVILLE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

CLAMPING MECHANISM.

Application filed January 5, 1922. Serial No. 527,191.

To all whom it may concern:

Be it known that I, FRED C. BECKER, a citizen of the United States, residing at Jeannette, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Clamping Mechanism, of which the following is a specification.

My invention relates to the art of grinding glass articles or other pressed or molded elements for the purpose of rapidly and economically reducing the faces thereof to a smooth surface. The invention consists of a machine or apparatus designed to be utilized in connection with a grinding wheel, whereby to hold the article being operated or in fixed relation to the face of the wheel during an operative period. The invention is particularly adapted to the grinding of the face of pressed glass knobs or the like.

In the drawings,

Fig. 1 is a view in sectional elevation, showing a grinding wheel utilizing the invention;

Fig. 2 is a partial plan view thereof;

Fig. 3 is an enlarged sectional detail view showing the operative relation between the holding mechanism and the grinding wheel;

Fig. 4 is an enlarged sectional detail view showing the clamping mechanism for the knob, with the latter in position;

Fig. 5 is a similar view showing the clamping jaws open; and

Fig. 6 is a cross section on the line VI—VI of Fig. 5.

The invention consists in providing an improved clamp device, and guiding means therefor, adapted to fixedly hold and press by gravitation the unit being operated upon, as a glass knob *a*, against the upper face of a rotatable grinding wheel 2. The latter is suitably mounted at its central portion 3 in rotative operative engagement with actuating gearing receiving its driving power by shaft 4 from an engine or other prime mover of well known construction. The grinding wheel 2 is mounted within a supporting frame 5 with a suitable water supply and surplus collecting trough 6, while above the wheel are one or more rotatably mounted ware-holding wheels 7. The latter are suitably geared by their shafts 8 and intervening gearing 9 with an upwardly extending shaft 10 of wheel 2, whereby to positively rotate wheels 7 during operation of the grinding wheel, as indicated by arrows, Fig. 2, for most efficient cutting.

Each wheel 7 is provided with a series of annularly arranged openings 11 into which fits the flanged guide sleeve 12 for the ware holding clamp. The sleeve 12 is smooth around its interior surface adapted to snugly embrace the clamp with just sufficient clearness to permit of easy vertical movement. whereby to allow the weight of the clamp to press the ware unit *a* against the upper surface of wheel 2.

The clamp for holding the unit, shown in detail on the second sheet of the drawings, is composed of a holding frame in the form of a ring or cylinder 13 having a transverse integral middle web portion 14, the lower central portion of which is open or socketed for clearance of the inner crown portion of the unit. It is also centrally apertured as at 15, and a rubber disk 16 is inserted as shown, providing a resilient or cushioned bearing for the inwardly extending middle portion of the knob.

Cylinder 13 is radially slotted at four equi-distant locations, as indicated at 17, and a series of four clamping arms 18 are pivotally mounted at 19 in such slots, for the purpose of providing opening and closing action for the arm terminals. The outer terminals of arms 18 are provided with gripping end portions 20 adapted to tightly embrace the annular edges of the knob *a* when tightened thereon, depending on the strength of the spring 31, as in Fig. 4. The inner faces of the gripping terminals 20 are abruptly inclined so as to embrace the ware *a* and wedge it backwardly against the cushioning disk 16. The resiliency of the cushion tends to compensate for inequalities in the ware units, and thus co-operates with the wedging action of the gripping terminals. The outer portions of the arms are brought together for such tightening, or opened for release, as in Fig. 5, by the action of toggle arms 21. The latter are pivoted at 22 to the upper ends of arms 18 and at their inner ends, at 23, to lateral lugs on the inner end of a ring 24.

Ring 24 is slidably mounted around a tubular stem 25 which is fixedly connected at its inner end with the middle hub portion 14 of cylinder 13, as by riveting at 26. A central stem 27 having an outer knob or disk terminal 28 telescopically interfits

within tubular stem 25, and stem 27 is connected with sleeve 24 by a cross pin 29 extending through slot 30 of stem 25. Terminal 28 is adjustably threaded on the end of stem 27.

A spring 31 is inserted between the inner end of terminal 28 and a washer 32 shouldered in tube 25, the spring tending to normally thrust stem 27 outwardly to hold the clamping arms in operative engagement with the unit *a*, as in Fig. 4. Inward pressure of stem 27 against the spring acts to thrust ring 24 inwardly and to draw the upper ends of arms 18 inwardly by links 21, throwing the clamping terminals outwardly for release or insertion of the unit, as in Fig. 5.

The construction and operation of the invention will be readily understood and appreciated from the foregoing description. It provides for easy and rapid placing and removal of the units to be ground in operative relation to the grinding wheel, it being understood that a large number of the clamps are to be used at the same time, with a corresponding number of receiving thimbles 12 and openings therefor in one or more of the rotatable guide wheels 7. Thus, upon removing a finished unit from any one of the thimbles, another one with its clamp is replaced therein and operated upon by the grinding wheel 2, during such time as the other clamps are being removed and replaced.

The construction of the invention is comparatively simple and it is capable of use without requiring skilled labor or attention, and will continuously operate in the manner intended with the highest efficiency as to regularity and uniformity of grinding. It will be understood that the device may be variously changed or modified in detail construction as to size, dimensions, adaptation to design of unit, or otherwise by the skilled mechanic, but that all such changes are to be considered as within the scope of the following claims.

What I claim is:

1. A clamp of the class described consisting of a cylindrical body portion having a centrally recessed bottom for reception of a ware unit and a series of longitudinal radial slots, a plurality of grasping arms pivotally mounted in said slots and having inwardly sloping terminals adapted to engage a ware unit to hold it in the recessed bottom, a tubular stem extending centrally above the cylindrical body, a sleeve slidably mounted thereon, toggle links connecting the arms with said sleeve, and a stem centrally mounted within the tubular stem connected with the sleeve and provided with an operating terminal.

2. A clamp of the class described consisting of a cylindrical body portion having a centrally recessed bottom for reception of a ware unit and a series of longitudinal radial slots, a plurality of grasping arms pivotally mounted in said slots and having inwardly sloping terminals adapted to engage a ware unit to hold it in the recessed bottom, a tubular stem extending centrally above the cylindrical body and having a longitudinal slot through opposite sides, a sleeve slidably mounted on the tubular stem having toggle links connecting the sleeve with the upper ends of the grasping arms, an actuating stem within the tubular stem having a cross pin extending through the slots therein and engaging the sleeve and provided with a terminal member, and a retracting spring for the actuating stem.

3. In a ware holding clamp for a grinding machine, the combination with a cylindrical guide bushing, of a cylindrical ware holding clamp reciprocably mounted therein having a centrally recessed bottom for reception of a ware unit, a central slotted tube extending upwardly therefrom, a sleeve slidably mounted thereon, an actuating stem within the tube connected with the sleeve through the slotted tube and provided with a threaded terminal, an outer knob threaded thereon, an abutment within the tube, a spring between said abutment and the knob, a plurality of longitudinal pivoted gripping arms arranged in receiving slots in the outer peripheral portion of the clamp provided with inner inclined wedging and gripping terminals, and links connecting the other ends of said arms with the sleeve.

4. In a ware holding clamp for a grinding machine, the combination with a cylindrical guide bushing, of a cylindrical ware holding clamp reciprocably mounted therein having a centrally recessed bottom for reception of a ware unit, a central slotted tube extending upward therefrom, a sleeve slidably mounted thereon, an actuating stem within the tube connected with the sleeve through the slotted tube and provided with a threaded terminal, an outer knob threaded thereon, an abutment within the tube, a spring between said abutment and the knob, a plurality of longitudinal pivoted gripping arms arranged in receiving slots in the outer peripheral portion of the clamp provided with inner inclined wedging and gripping terminals, links connecting the other ends of said arms with the sleeve, and a resilient disk of cushioning material inserted in the centrally recessed bottom.

In testimony whereof I hereunto affix my signature.

FRED C. BECKER.