

A. F. JOHNSTON.
CIRCULAR GLASS CUTTER.
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1,219,461.

Patented Mar. 20, 1917.

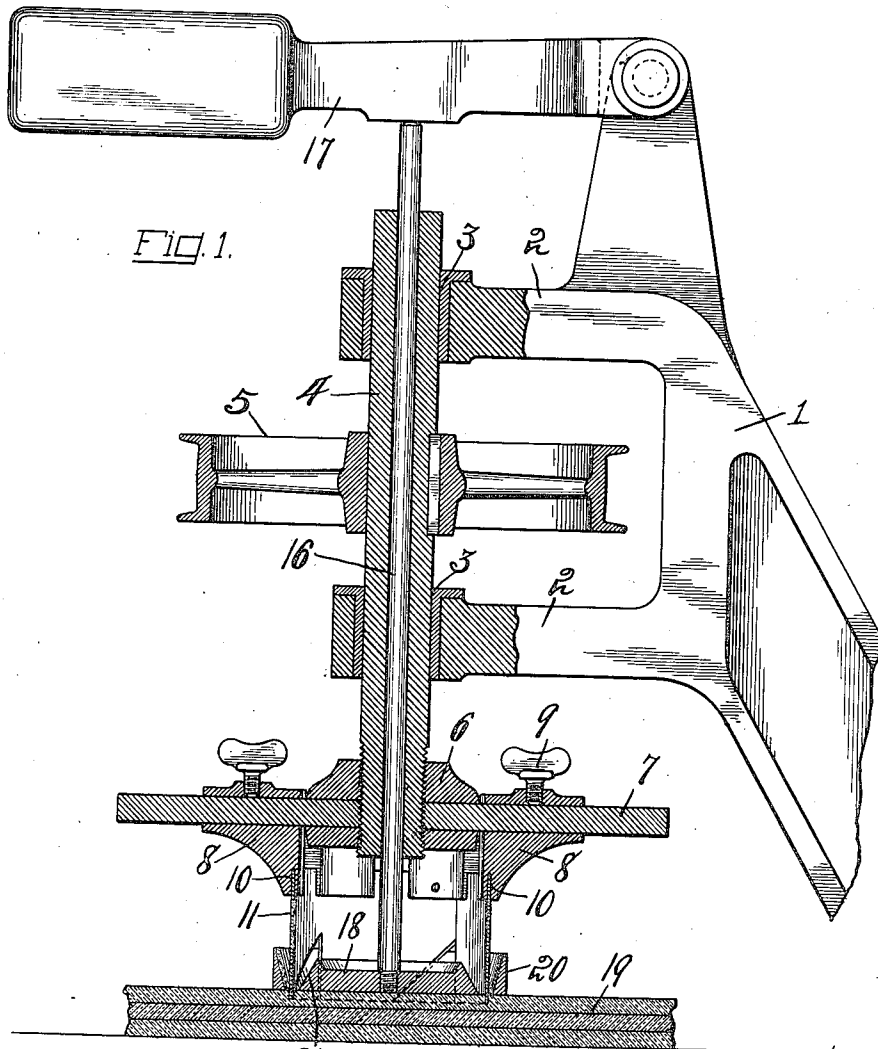


Fig. 2.

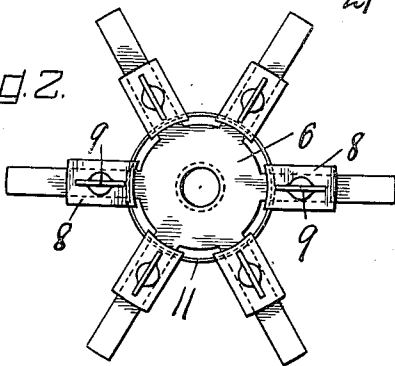
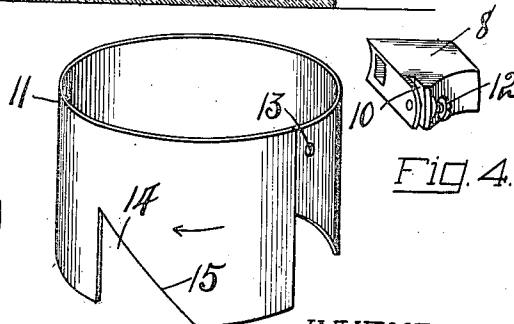


Fig. 4.

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CIRCULAR GLASS-CUTTER.

1,219,461.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALBERT F. JOHNSTON, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Circular Glass-Cutter; 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 the characters of reference marked thereon, which form a part of this specification.

This invention relates to a glass cutting apparatus of the circular cutting type, and has for its object the provision of a simple and improved apparatus of this class which is highly efficient in its operation and easily and quickly adjustable to receive cutters of different diameters to suit the size of the disks desired to be cut.

A further object of my invention is the provision in a machine of the class described, of means which is operable to hold the work internally of the cutter to prevent a relative turning of the glass disks when cut and the consequent scratching of the faces thereof by reason of the frictional driving coaction of the rapidly rotating cutter with the edges of the several disks.

A further object of my invention is the provision of means for banking emery or other abrasive material against the sides of the cutter at the top of the work to facilitate the cutting operation. Further objects and advantages of the invention will be apparent from the following detailed description thereof.

While the invention in its broader aspect is capable of embodiment in numerous forms, a preferred embodiment only thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a side elevation of a portion of a machine embodying the invention, with the operative parts and the work being acted on in vertical section. Fig. 2 is a top plan view of the cutter carrying head with cutter blade attached. Fig. 3 is a perspective view of a cutter blade bent into circular form as it appears in use, and Fig. 4 is a perspective view of one of the adjustable blade holding blocks.

Referring to the drawings, 1 designates a

portion of the frame of a machine embodying my invention, said frame portion having, in the present instance, a pair of horizontally projecting vertically spaced arms 2, 2, which are provided in their outer ends with axially registering bearings 3, 3. A hollow shaft 4 is provided in vertical position within the bearings 3, 3 for rotary and axial movements therein and carries a belt pulley 5 from which a belt may run to any suitable source of power. The lower end of the shaft 4 carries a cutter blade holding head, which, in the present instance, comprises a body part 6 that is removably screwed onto the shaft end and from which radially projects a plurality of arms 7, which, in the present instance, are six in number. A blade carrying block 8 is mounted on each arm 7 for longitudinal sliding movements thereon and is secured in adjusted relation thereto by a set-screw 9, or in any other suitable manner. The lower inner edges of the blocks 8 are provided with segmental recesses 10 for receiving the curved upper edge of a cutter blade 11.

The cutter blade 11 comprises a strip of sheet metal bent into circular form, the length of the strip being such that when the ends thereof are brought into abutting relation the cutter will be of predetermined size, strips of different lengths being provided for cutting disks of different sizes. The upper edge of the cutter blade is loosely inserted into the circularly registering recesses 10 of the set of holding blocks 8, being held therein by frictional action due to the outward springing tendency of the blade against the outer walls of the recesses. It is preferable, however, to provide a holding screw 12 in one block 8, which screw extends transversely through the recess of the block and a registering hole 13 in one end of the cutter blade strip. It is preferable to provide the lower or cutting edge of the blade with a plurality of notches 14, the rear walls of which, with respect to the direction of turning of the blade, are inclined or curved, as at 15, to permit emery or other abrasive material, which is used in connection with the cutting operation, to work under the lower cutting edge of the cutter blade.

Projecting axially through the shaft 4, which is made hollow for such purpose, is a stem 16, the upper end of which projects above the shaft and receives the downward

thrust of a weighted gravity lever 17. The lower end of the stem 16 is provided with a work holder 18, preferably of circular or disk form, and of a size which is less than the internal diameter of the cutting blade which is used. The work holder 18 is preferably removably attached to the lower end of the stem 16, by thread or otherwise, to adapt holders of different sizes to be attached to the stem as may be desired to suit the size of the cutting blade. In operation the holder 18 bears downward on the work 19 interiorly of the blade 11 and serves to prevent the relative turning of the disks severed from the glass sheets that would take place, due to the frictional driving coaction of the cutter blade with the disks, as the cutting progresses, and also prevents the consequent scratching or marring of the disk faces due to the relative turning of one on another. The work may comprise a single sheet of glass or several sheets placed one on top of another.

20 designates a banking ring, which is placed on the work 19 and coöperates with the periphery of the work holder 18 when resting on the work, to form a trough through which the blade 11 works. The adjacent faces of the ring and work holder are oppositely inclined to narrow the trough from the top to the bottom thereof, whereby emery or other abrasive material placed therein feeds toward the cutting blade.

It is found in practice that the best results are obtained by making the cutting blades 11 from galvanized sheet metal as a more rapid cutting is effected by the use of such material than with steel or other materials which have been used.

It is evident in the operation of my circular cutting apparatus that cutting blades of different diameters may be used to suit the size of the disks which it is desired to obtain; that the blade holders 8 are adjustable lengthwise of the arms 7, as the size of the blade employed may require; that the cutter feeds downward by gravity through the work in the cutting operation and that the work holder 18 bears downward with predetermined force against the work internally of the cutting blade to hold the same in rigid relation until the cutting is completed.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications without departing from the spirit of the claims.

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

1. In an apparatus of the class described, a rotatable head having a plurality of radial arms, and blade carrying blocks adjustably mounted on said arms, and a cutter blade of circular form carried at its upper edge by said blocks in concentric relation to the axis of rotation of the head.

2. In an apparatus of the class described, a rotatable head having radially adjustable blade carrying members, and a strip of sheet metal bent into circular form to form a circular cutter and being carried and retained by said members in the circular form in which bent.

3. In an apparatus of the class described, a rotary head having a plurality of radially adjustable blade carrying members, a strip of sheet metal bent into circular form to form a circular cutting blade and carried by said members in pendant relation with its ends substantially in abutment, and means carried by one of said members and engaging the blade to retain it to the members.

4. In an apparatus of the class described, a circular rotary blade, and a work-holding part disposed interiorly of the blade and forming a means for banking an abrasive material against the blade.

5. In an apparatus of the class described, a frame having a vertical bearing, a hollow shaft journaled in said bearing for rotary and vertical movements, a circular cutter carried by said shaft at its lower end, a means axially movable within said cutter for applying a downward pressure on the work being acted on by the cutter, a stem rising from said means and extending vertically through said shaft for free vertical and rotary movements relative thereto, and weighted means bearing on the upper end of said stem for exerting a downward thrust thereon.

In testimony whereof, I have hereunto signed my name to this specification.

ALBERT F. JOHNSTON.