No. 898,023. PATENTED SEPT. 8, 1908.

J. T. YOUNG.

GLASS CUTTING GRINDER.

APPLICATION FILED JUNE 24, 1907.

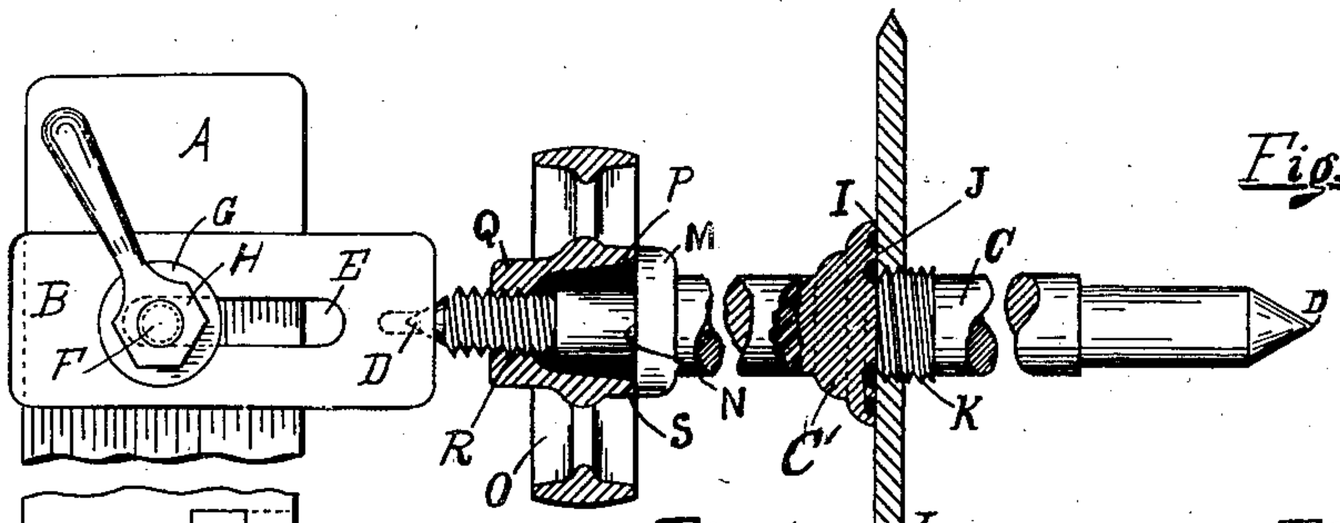


Fig. 1

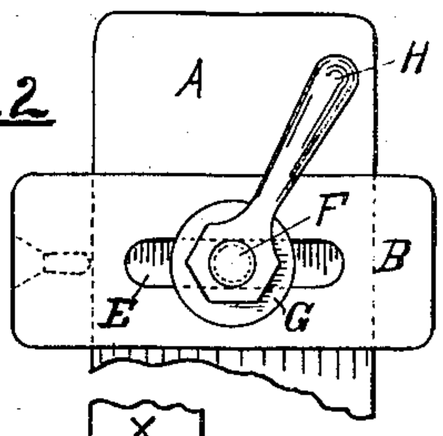


Fig. 2

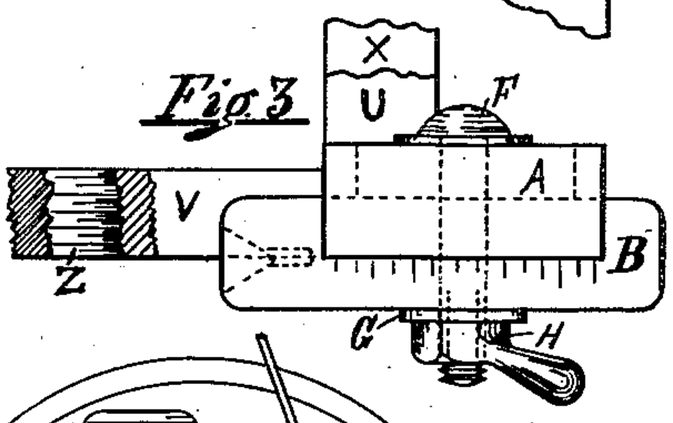
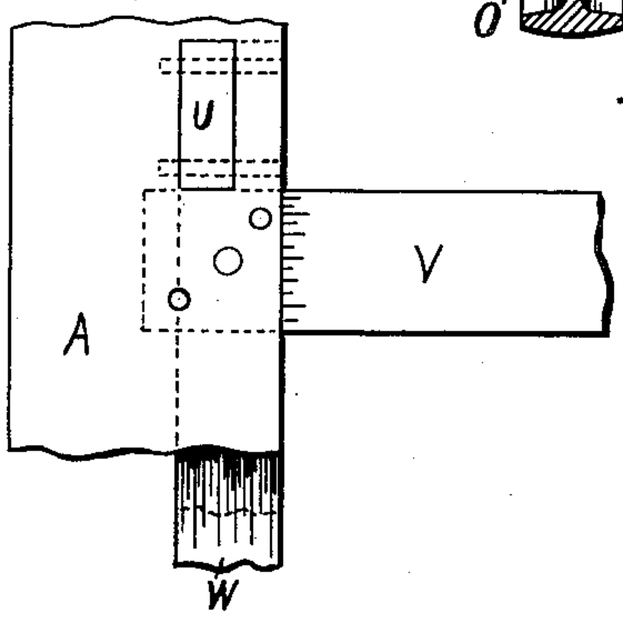


Fig. 3



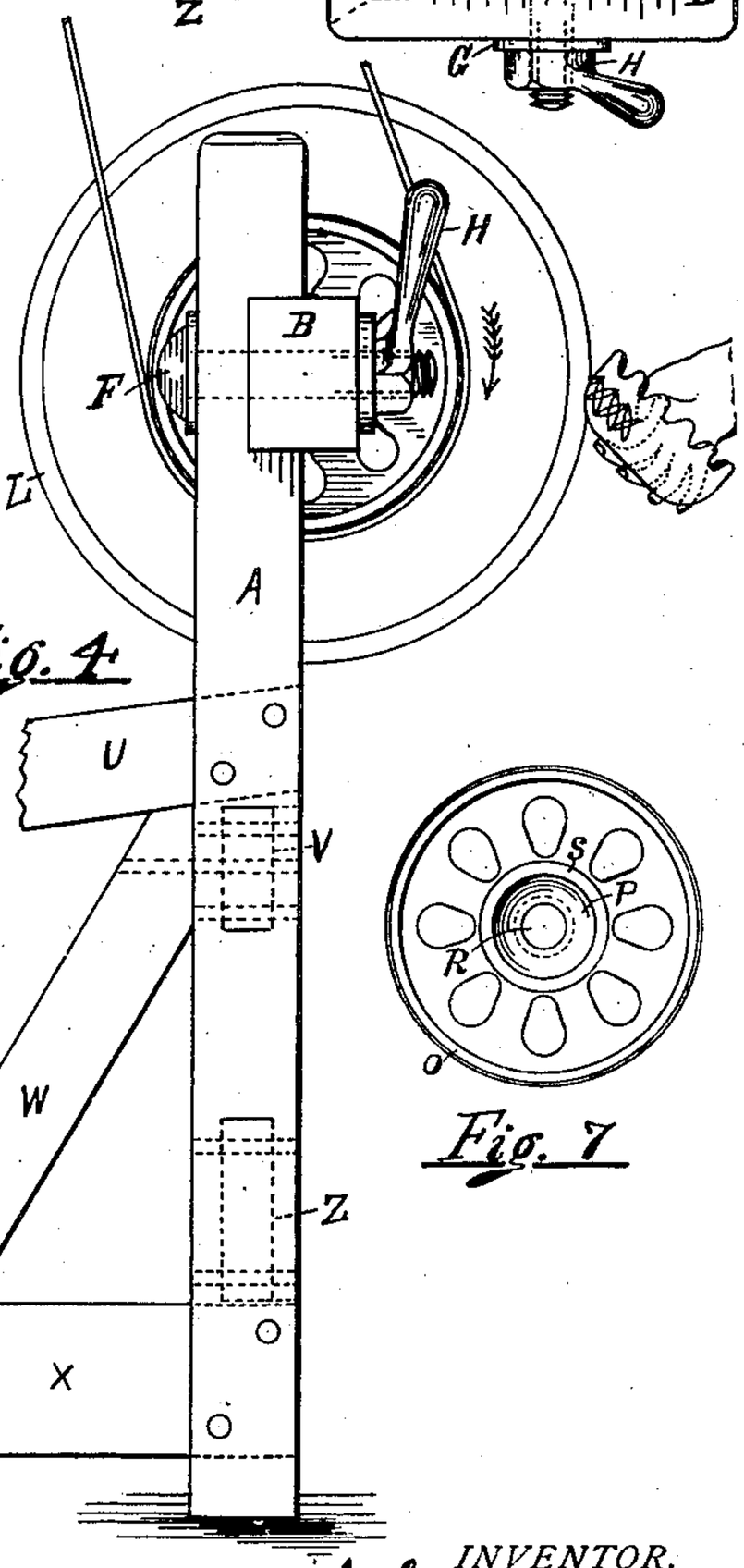


Fig. 4

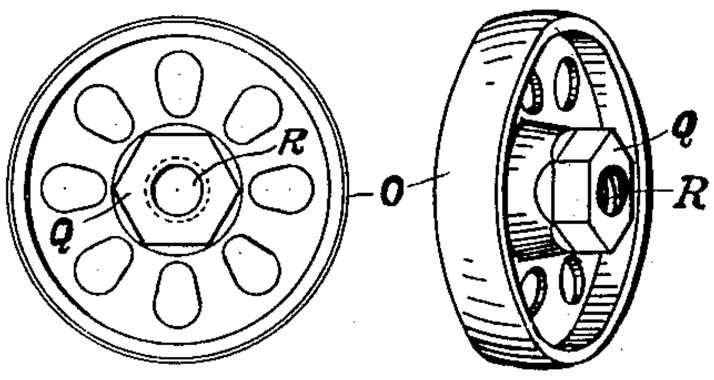


Fig. 5

Fig. 6

Fig. 7

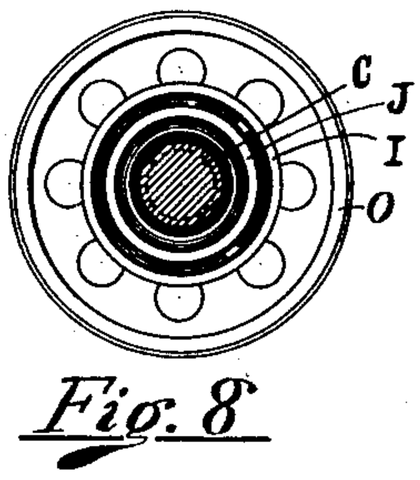


Fig. 8

WITNESSES:

Benjamin H. Payne

Daniel D. Bumgardner.

INVENTOR.

John T. Young

BY E. Horton

ATTORNEY.

UNITED STATES PATENT OFFICE.

JOHN T. YOUNG, OF ELMIRA, NEW YORK, ASSIGNOR OF ONE-HALF TO BENJAMIN N. PAYNE, OF ELMIRA, NEW YORK.

GLASS-CUTTING GRINDER.

No. 898,028. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed June 24, 1907. Serial No. 380,448.

To all whom it may concern:

Be it known that I, JOHN T. YOUNG, a citizen of the United States, residing at the city of Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Glass-Cutting Grinders, of which the following is a specification.

My invention relates to that class of machines for grinding or cutting glass, in which a shaft carrying a detachable pulley and steel grinding disk, is revolved with water and sand dripping on the disk which cuts away the glass as the disk revolves, into numerous figures or designs under the hand of the operator manipulating the glass against the beveled rim of the disk.

My invention is brought about by reason of the frequent necessity of changing the pulleys and disks on these grinders, in which the present method of using pulleys and disks with plain or smooth holes in their centers slipping loosely on a plain shaft adjoining shoulders, is attended with continuous difficulty, of having the shaft and grinding disk run absolutely true which is highly essential in the work to be done. My object is to remedy this, and I accomplish the purpose by the special constructions, and methods of forming and uniting the pulley and the disk with the shaft.

In the drawings Figure 1 is an elevation of the shaft or arbor, with the pulley and disk thereon, which are shown with a portion of the arbor and flange in section. This view also shows and includes at the left a portion of the frame, showing the adjustable bearing block providing a center for receiving and holding the centered tapered end of the shaft. Fig. 2 is a view in elevation of a portion of the frame standard, showing the bearing block adjusted out away from the shaft. Fig. 3 is a plan view of the said standard of the frame and showing a part of the cross bars of the frame work which supports the standards. Fig. 4 is a left side end elevation of the frame and shaft and bearing block, but showing only a portion of the cross bars of the frame, with a glass dish represented being cut by the disk. Fig. 5 is a view in detail of the left side of the pulley. Fig. 6 is a perspective view of the same pulley to show more fully the outer formation of its hub. Fig. 7 is a view in detail of the opposite or right hand side of the pulley. Fig. 8 is a sectional view of the shaft on the line *y y* looking in direction of the arrow point.

As the lower portions of the frame standards and frame parts do not particularly relate to my improvements, they may be of any suitable construction. I have shown only sufficient thereof, to show how the frame standards A A may be supported in upright manner to hold my laterally adjustable bearing blocks B B at each end of the shaft C, said shaft being tapered at each end to form true axial centers D D, extending into the end of the bearing blocks and on which the shaft truly revolves. Each block B is halved into a standard A and provided with a slot, E, so that they may slide laterally towards or from each other and be held in any adjusted position by the grip bolts, F, which pass through the standards, A and slots, E, of the blocks. Each bolt has on it a washer, G, and a handle nut H, the turning of which serves to grip the block at any point of its movement rigidly with the standard of the frame. The arbor shaft C, near its central part, is provided with a rigidly fixed flange or collar C′ which is formed with annular ribs or shoulders I and J, that are faced or turned truly at right angles with the axis of the shaft, see Fig. 8. Said shaft is provided with a right hand screw thread K, which leads up to the flange or collar C′. The grinding disk L is fitted with a central hole threaded to fit the threads on the shaft, and to screw truly up against the annular shoulders I J of the flange C′. As these grinding disks L are of various sizes, and frequently changed upon the shaft in being operated, it will be noted that after once being threaded, and fitted to the shoulders I J on the shaft, that whenever removed and replaced again, they have to screw up each time to the same point of contact, thus assuring their balance with the shaft as when first trued thereon, but which would not be the case, if they were held to the shoulder of the flange by a nut screwed against them, with the hap-hazard placing or turning of the disk forming new points of contact, thus slightly unbalancing it on the shaft, and causing the shaft to wabble, which is the old way of securing the disk.

Near the left end of the shaft is a collar or flange M, which is provided with a perfectly true angular face N to the axis of the shaft. Beyond this flange the shaft at its end is

given a right hand thread for a distance toward the shoulder of the flange, the shaft being smaller in diameter in front of the shoulder.

It being desirous to regulate the speed of the shaft, according to the size of the grinding disk L being used, I have arranged a novel form to the pulley O, and in its attachment to the shaft, so one may be quickly removed and substituted by another pulley of greater or less diameter as may be desired, the form of the pulley hub, in each pulley, being such in its attachment to the shaft, like the disk, as to always return to its original points of contact with the shaft on removal and replacement.

To further facilitate the true centering of the pulleys upon the shaft in their frequent removals and replacing thereon, I have cut away the center of the pulley hub, to the depth of the pulley face or rim to form a conical opening or chamber P around the shaft adjoining the shoulder N, and have extended the hub Q beyond the pulley rim at the bottom of the chamber, and have fitted same with a threaded hole R to fit the thread on the shaft, and which serves to screw the opposite annular face S of the hub, outside the chamber, which has been truly turned, up against the shoulder N of the shaft.

The principle of self centering which this form of pulley may suggest, in addition to its always refitting on the same point of contact with the shaft, may be noted as follows:—The formation of the chamber and screw, permits the pulley to swing slightly laterally in any direction until all points of contact between the hub S and shoulder N, are equalized under the pressure of the screw of the hub, that is to say, the screw of the hub being within, or nearer the axis of the shaft, tends to give radial or outward pressure at every point of the hub S, on the resisting shoulder N, until the pulley is centered by the places of resistance on the shoulder moving to equalization.

The resistive action of grinding the glass on the periphery of the disk, see Fig. 4, is adverse to the driving direction of rotation of the pulley, so that the operation tends to more firmly grip both disk and pulley against their respective shoulders.

The extended end of the pulley hub Q, has been squared on its outside, see Figs. 5 and 6, so that a wrench may be applied thereto on the first setting of the pulley on the shaft when it may be desired.

I claim:—

1. The combination of a shaft provided with a flange or collar and a screw-thread near said collar, of a driving-pulley having a part of its hub recessed and out of contact with the shaft and another part threaded and screwed on to the shaft, the inner face of the hub around the recess being held against the face of said flange or collar, for the purpose specified.

2. The combination of a shaft provided with two flanges formed with oppositely arranged screw-threads adjacent said flanges and leading to the faced sides thereof and one of which flanges is formed with annular ribs, a grinding-disk screwed up against the face of said ribbed flange and a driving-pulley having a part of its hub recessed and out of contact with the shaft and another part screwed on to the shaft, the inner face of the hub around the recessed portion being held against the faced side of the adjacent flange, for the purpose specified.

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

JOHN T. YOUNG.

Witnesses:
STEPHEN B. WATKINS,
MARCUS M. JORDAN.