(No Model.)

A. T. DUNCAN.

GLAZIER'S DIAMOND TOOL.

No. 365,057. Patented June 21, 1887.

Fig. 1.

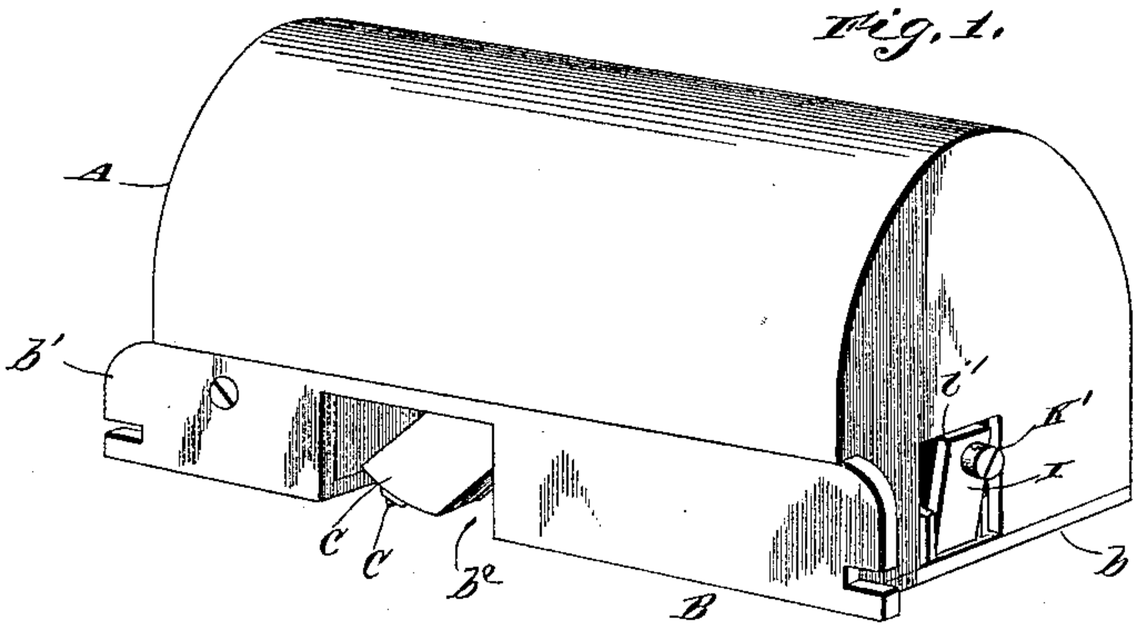


Fig. 2.

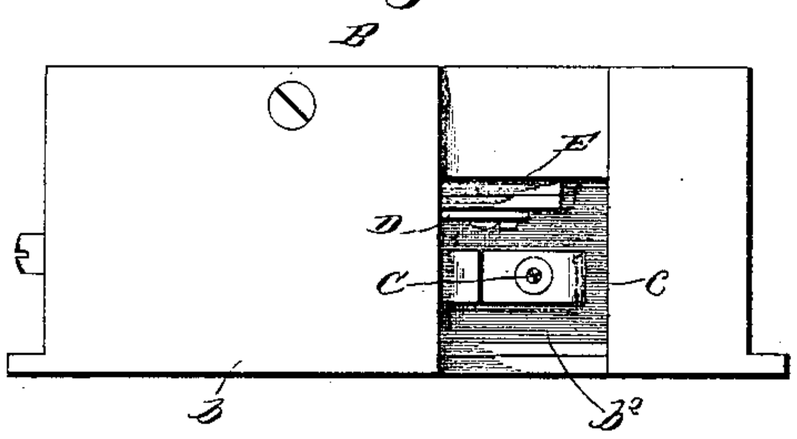


Fig. 3.

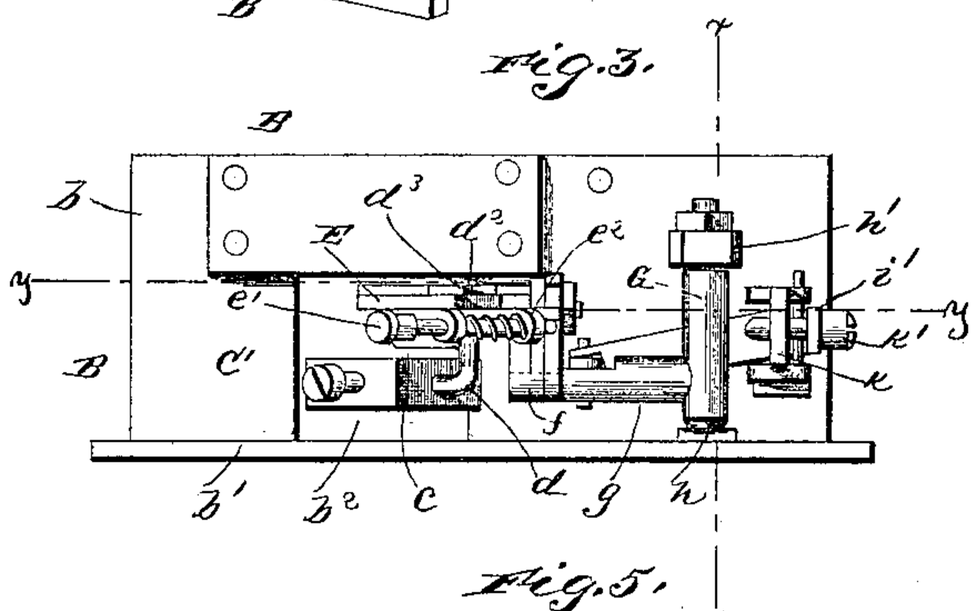


Fig. 4.

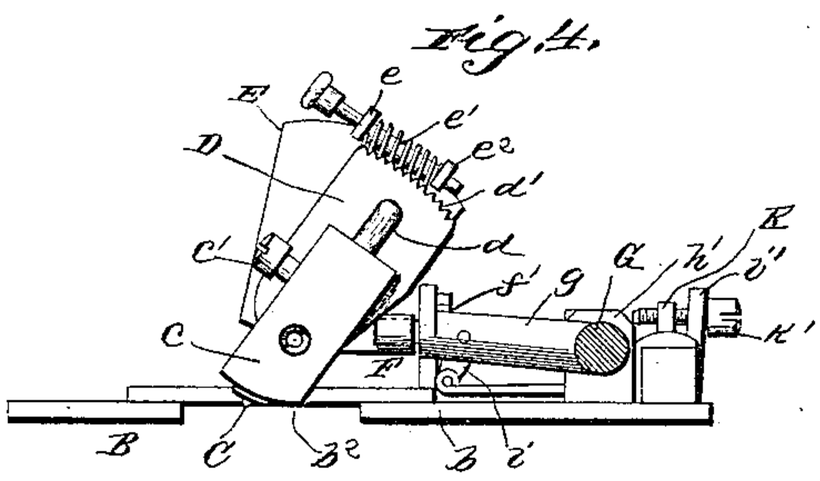


Fig. 5.

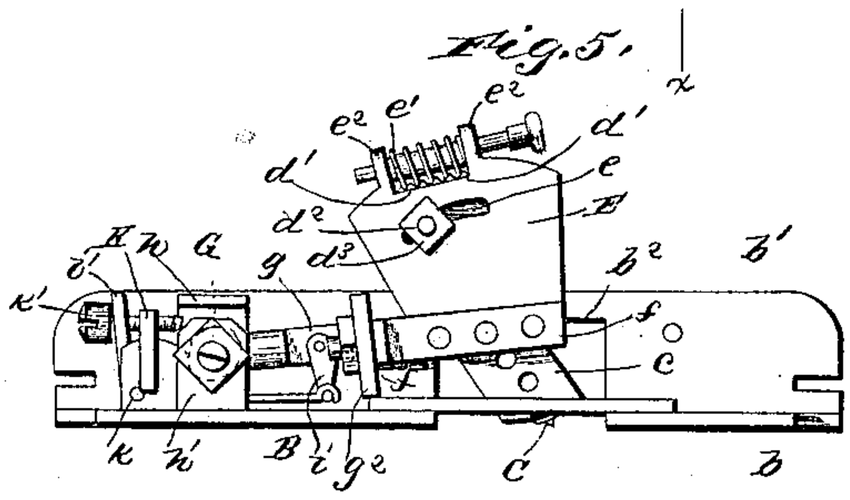


Fig. 6.

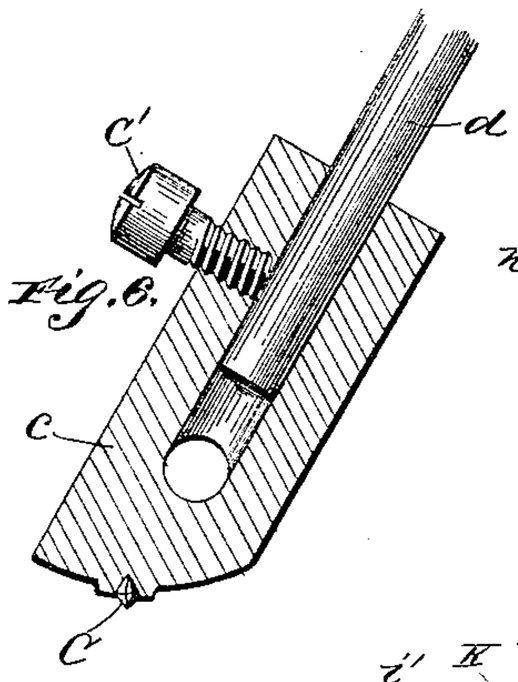


Fig. 8.

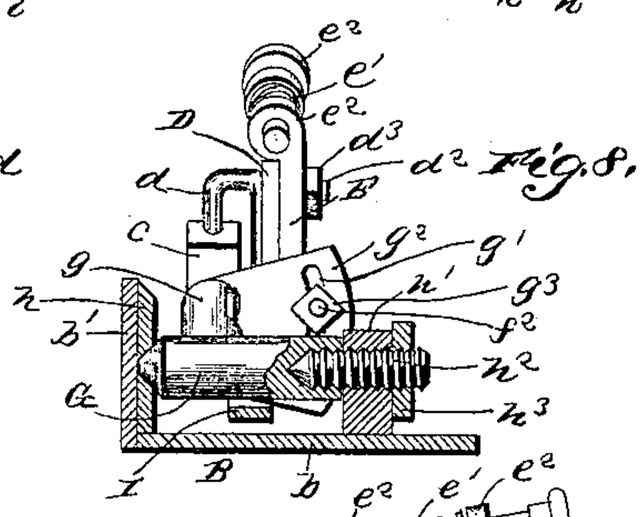


Fig. 7.

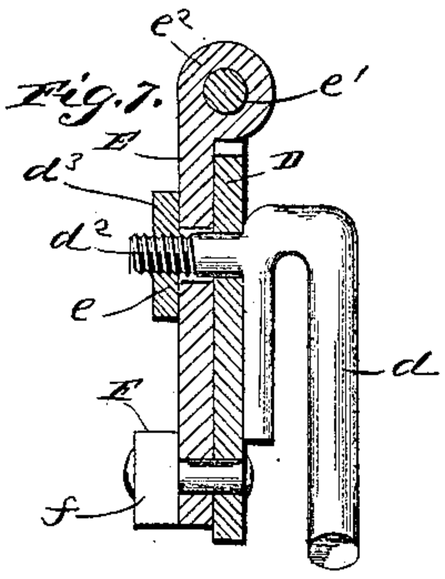
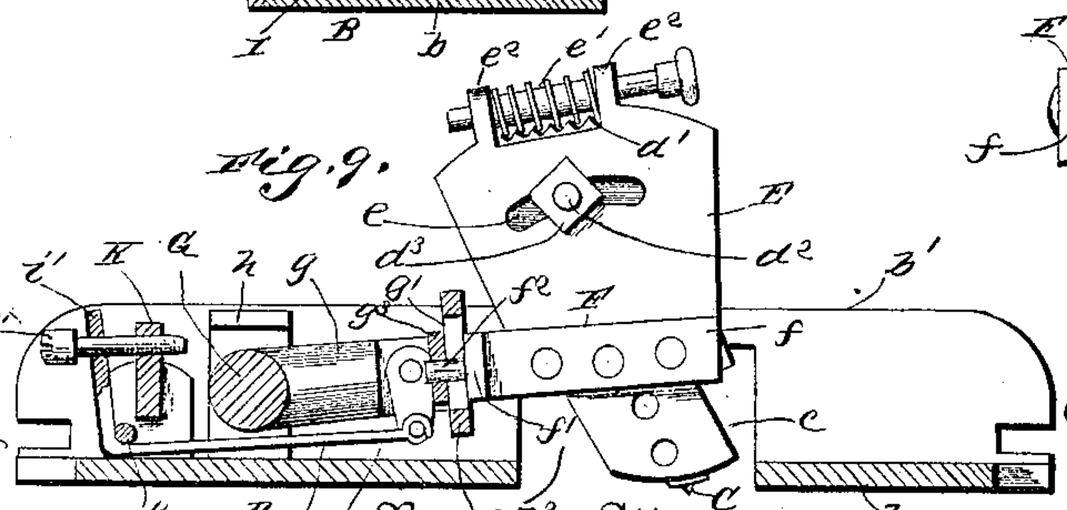


Fig. 9.



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UNITED STATES PATENT OFFICE.

ARTHUR THOMPSON DUNCAN, OF CLINTON, MISSOURI.

GLAZIER'S DIAMOND-TOOL.

SPECIFICATION forming part of Letters Patent No. 365,057, dated June 21, 1887.

Application filed February 26, 1887. Serial No. 229,010. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR THOMPSON DUNCAN, a citizen of the United States, residing at Clinton, in the county of Henry and State of Missouri, have invented new and useful Improvements in Glaziers' Diamond-Tools, of which the following is a specification.

My invention relates to improvements in glaziers' diamond-tools; and its objects are to set the diamond at any suitable longitudinal or lateral angle, and to hold it constantly at said angle; to give the diamond different degrees of constant pressure upon the glass, so as to cut more or less deeply into the same; to cut plane surfaces as easily and accurately in curved lines as in straight lines, and curved surfaces as easily and accurately as plane surfaces, and to enable unskilled persons to cut glass into the required shapes as easily as those skilled in the art. These objects I attain by means of the construction and arrangement of a frame or handle and adjusting mechanism, hereinafter described, illustrated in the drawings, and pointed out in the claims hereto appended.

In the accompanying drawings, Figure 1 represents a perspective view of the complete device, showing the slot in the guide-plate and the diamond and holder therein. Fig. 2 represents a reversed plan view of the same. Flg. 3 represents a plan view of the guide-plate and adjusting mechanism detached from the handle or frame. Figs. 4 and 5, respectively, represent opposite side views of the same, the vertical portion of the guide-plate being cut away in the former view to show more clearly the mechanism. Fig. 6 represents a perspective view of the blocks holding the diamond and the means by which the same is rotated to different angles. Fig. 7 represents a detail view of the mechanism for giving the diamond different longitudinal angles. Fig. 8 represents a section on the line *x x* of Fig. 3, showing the mechanism for giving the diamond different lateral angles. Fig. 9 represents a section on the line *y y* of Fig. 3, to show the mechanism by which the pressure of the diamond on the glass is regulated.

Referring to the drawings, A designates the handle or frame, of block-like form, rounded on top to accommodate itself to the hand, and suitably hollowed out to contain the adjusting mechanism.

B is the guide-plate, secured to the handle by screws having their heads countersunk, and composed of the horizontal plate *b* and the vertical plate *b'*, standing from one edge of the latter.

b^2 is a transverse slot running to the inner or guide side of the plate, and extending up into the vertical part thereof, for a purpose hereinafter explained.

The mechanism by means of which the diamond is adjusted is described as follows:

C is the diamond, secured in the lower end of the ordinary-shaped holder or block *c*, in the usual manner. The said holder has a recess in its upper end, into which is inserted a rod, *d*, upon which the block *c* can rotate, and can be fixed at any angle thereon by means of the set-screw *c'*, which enters a threaded opening in the side of the holder and impinges on the rod *d*. The said rod stands outward, and then bends downward from the upper part of a plate, D, pivoted upon a plate, E, hereinafter described, and having on its upper edge the teeth *d'*, arranged on an arc concentric with its pivotal point. The plate E is provided with a curved slot, *e*, also concentric with the pivot-point of the plate D, and having passing through it from said plate a tapped or screw pin, d^2, by means of which and the nut d^3 on said pin the plates D and E are held closely together.

e' is a worm-shaft having bearings in lugs e^2 on the upper edge of the plate E, and engaging with the teeth *d'*, so as to set the plate D, and consequently the diamond, at different angles longitudinally with regard to the handle.

The lower edge of the plate E is secured to the longitudinal arm *f* of a rectangular adjusting-piece, F, the end of the transverse arm *f'* of which is pivoted upon the inner end of a longitudinal arm, *g*, of a transverse oscillating or rock shaft, G, which has bearings in the uprights *h h'*, rising from the floor of the guide-plate B.

f^2 is a tapped or screw pin, which extends outward from the angle of the adjusting-piece F, and passes through a slot, *g'*, made in a transverse plate, g^2, standing inward from near the end of the arm *g*, the said slot being on an

arc concentric with the pivotal point of the arm f' of the adjusting-piece F.

g^3 is a nut on the pin f^2. By means of the said pin and nut the adjusting-piece F, and consequently the diamond, can be set and held at any suitable angle on the plate g^2, laterally in regard to the handle.

The shaft G has a conical bearing in the upright h, and a conically-pointed screw, h^2, passes through a threaded opening in the upright h', and enters a corresponding recess in the other end of said shaft. A nut, h^3, engages the screw on the outside of the upright. These conical bearings are for the purpose of setting the described angles more accurately.

I is a strong spring having its inner end bifurcated and pivoted to the lower end of a link, i, the upper end of which is pivoted at a suitable point upon a flattened part of the arm g of the shaft G. The outer end of the spring passes under a bracket, K, and a transverse retaining-bar, k, having its ends secured in the side plates of said bracket, and is bent upward, forming the arm i', which inclines outward from the bracket K.

k' is a regulating or adjusting screw, which passes through an opening in the arm i', and engages a threaded opening in the upper part of the transverse plate of the bracket K. The tendency of the spring k' is to draw down the arm g, and consequently the diamond, with a certain degree of force. This force is increased by turning the screw k' inward, because this action forces the arm i' toward the bracket K, and consequently forces the longitudinal arm of the spring downward. Thus the pressure of the diamond on the glass and the depth of its cut therein is regulated by the screw k'.

Before the guide-plate and attached mechanism are secured to the handle, the block c is set on the rod d, and the longitudinal and lateral angles of the diamond are adjusted by the described means, so that the latter will cut to its best advantage on its natural angle, which is its only cutting-angle; but the pressure upon the glass can be regulated at any time so the head of the screw k' projects through an opening in the handle.

In operation the horizontal part of the guide-plate rests upon the glass to be cut, being pressed down thereon so that the diamond can force itself into the glass, and in cutting straight, the vertical plate b' is placed against and guided by a straight-edge or ruler placed in proper position. When cutting circular or oval lines, the said plate b' is placed against a guide-piece of similar form to the cutting desired and its edge inserted in the slot b^2 of the same in such manner that it will rest against the edges of the slot. The tool is then carried around the guide-piece, with the edges of the slot engaged thereon, until the circle or oval is complete. A circle can also be cut by tying a cord to the ends of the tool and a second cord to the center of the first and using the second cord as a radius; or any desired curve may be cut by putting a piece of paper marked with said curve below the glass to be cut and following the line with the tool. In cutting convex glass, like that in many show-cases, the said glass will enter the slot b^2 of the plate b, and the tool can be guided by the edges of the slot, as described, in cutting curves on plane surfaces.

The device is drawn toward the operator when in use and not shoved like a plane.

The ends of the plate b', which extend beyond the handle, are provided with the notches or nicks $l\,l$, which glaziers use in separating the cut pieces of glass.

Having described my invention, I claim—

1. In a glazier's diamond-tool, the combination of the slotted guide-plate, the handle, and the diamond secured thereto so as to project through the slot in the guide-plate, substantially as specified.

2. In a glazier's diamond-tool, the combination of the handle, the transversely-slotted guide-plate secured to said handle, the diamond secured to a suitable block so as to project through the slot in the guide-plate, and means, substantially as described, whereby the diamond may be adjusted in position to cut to the best advantage on a natural angle, substantially as specified.

3. In a glazier's diamond-tool, the combination of the handle, the transversely-slotted guide-plate, and mechanism, substantially as described, whereby the pressure of the diamond on the glass may be regulated to cause it to cut more or less depth therein, substantially as specified.

4. The combination, with the handle, the slotted guide-plate, and the diamond supported in the handle by means substantially as described, of the rod d, forming part of the supporting mechanism, the block c, holding the diamond, and the set-screw c', substantially as and for the purpose specified.

5. The combination, with the handle, the slotted guide-plate, and the diamond supported in the handle by means substantially as described, of the plate E, provided with the curved slot e, the plate D, provided with the teeth d and screw-pin d^2, and pivoted, as described, upon the plate E, the nut d^3, engaging the pin d^2, and the worm-shaft e', having bearings in the lugs e^2, and engaging the teeth d, substantially as and for the purpose specified.

6. The combination, with the handle, the slotted guide-plate, and the diamond supported in the handle by means substantially as described, of the plate E, the rectangular adjusting-piece F, provided with the screw-pin f^2 and the nut g^3, the rock-shaft G, provided with the arm g, on which the piece F is pivoted, and the plate g^2, provided with the curved slot g', substantially as and for the purpose specified.

7. The combination, with the handle, the slotted guide-plate, and the diamond supported in the handle by means substantially as described, of the rock-shaft G, provided with the

supporting-arm *g*, bracket K, the link *i*, the spring I, and the regulating-screw *k'*, substantially as and for the purpose specified.

8. The combination of the handle A, rounded on top to suit the grasp, the guide-plate B, composed of the horizontal plate *b* and vertical plate *b'*, and provided with the slot b^2 and notches *l l*, the diamond secured to a proper block and projecting out of the slot b^2, and mechanism, substantially as described, whereby the angles that the diamond makes with the handle both longitudinally and laterally and the pressure of the diamond on the glass can be regulated, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ARTHUR THOMPSON DUNCAN.

Witnesses:
CHARLES B. WILSON,
W. S. DUNCAN.