Feb. 24, 1953 F. M. MOTTET 2,629,173

DIAMOND HOLDER ATTACHMENT

Filed April 5, 1950 2 SHEETS--SHEET 1

FIG. 1.

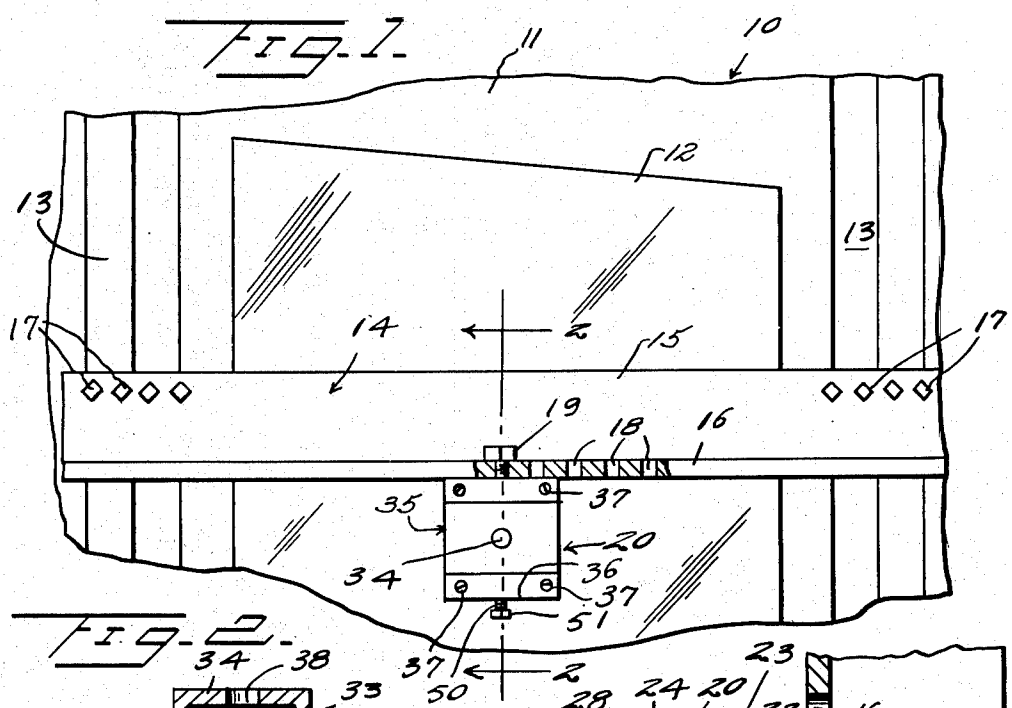
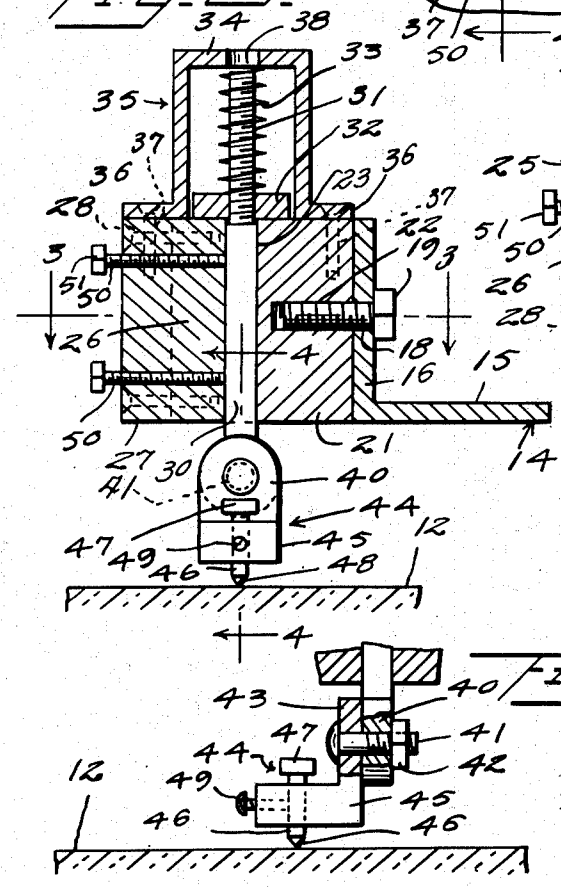


FIG. 2.



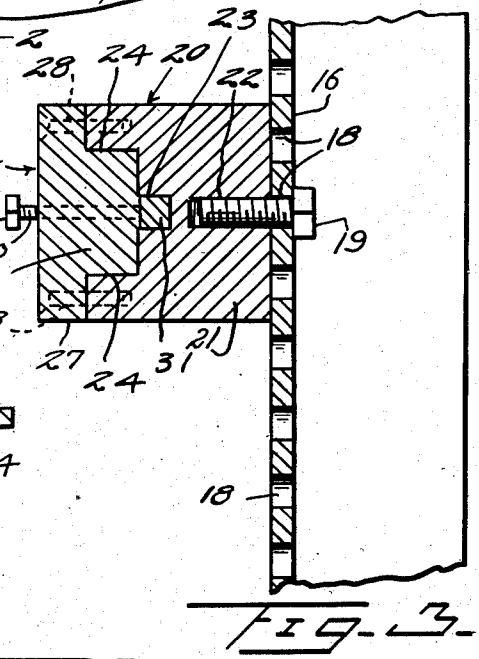


FIG. 3.

FIG. 4.

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Filed April 5, 1950 2 SHEETS—SHEET 2

FIG. 5.

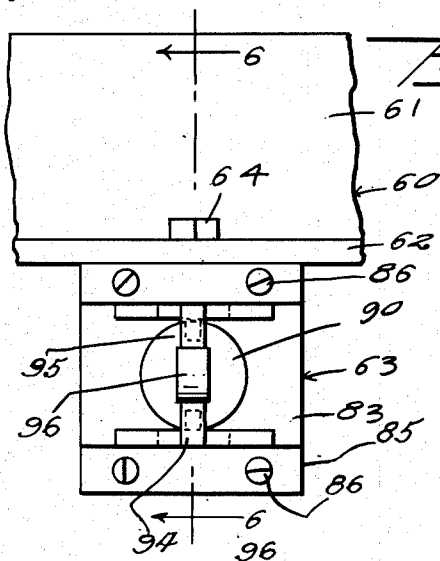


FIG. 7.

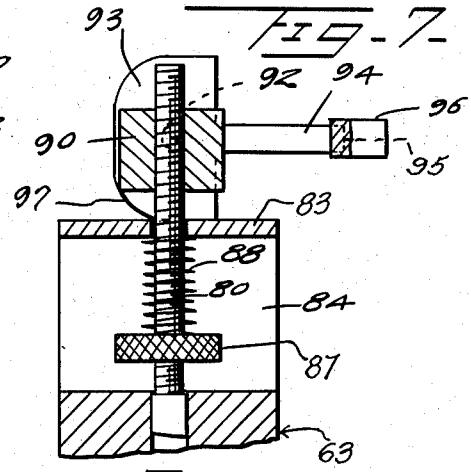


FIG. 6.

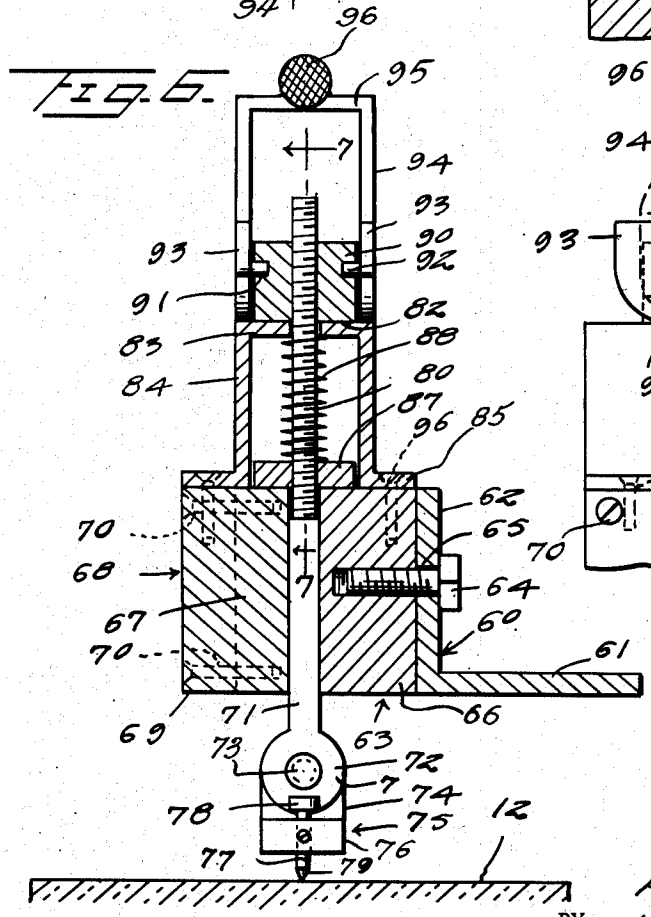
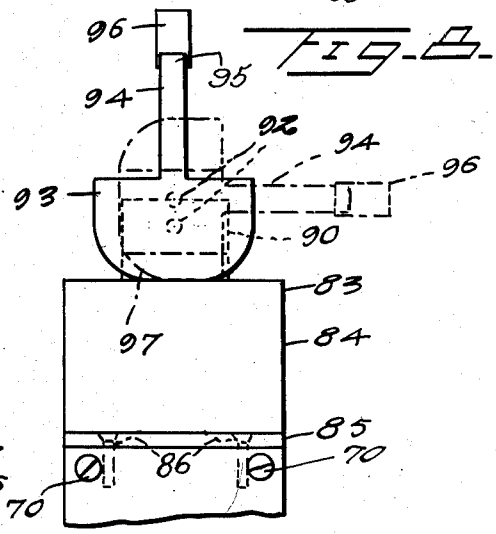


FIG. 8.



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DIAMOND HOLDER ATTACHMENT

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Application April 5, 1950, Serial No. 154,095

3 Claims. (Cl. 33—32)

1

This invention relates to a diamond holder attachment, and, more particularly, to such a device adapted for holding a diamond utilized in cutting glass or the like.

A primary object of this invention is the provision of an improved diamond holder adapted to be carried by the transverse supporting bar of the frame of a glass cutting apparatus, such, for example, as that disclosed in my Patent No. 2,467,983, issued April 19, 1949, entitled Glass Cutting Apparatus.

An additional object of the invention is the provision of such a device which may be readily adjusted transversely in the plane of the cutter carrying bar, and provided with pivotal means whereby the diamond cutter may be adjusted in a plane perpendicular to the plane of the transverse bar.

An additional important object of the invention is the provision of improved means for so positioning a cutting diamond as accurately to align a cutting edge thereof with the glass to be cut and in the direction of the cut, pivotal adjusting means being provided to permit alignment of the edge in both vertical and horizontal plane.

An additional object of the invention is the provision of such a device provided with means for holding the cutter at a selected height relative to the cutter carrying bar.

A further object of the invention is the provision of readily releasable means whereby the diamond cutter may be applied to the glass or other material to be cut on the cutting stroke and removed therefrom on the return stroke.

Still another object of the invention is the provision of a device of this character which is sturdy and durable in construction, reliable and efficient in operation, and relatively simple and inexpensive to manufacture, assemble and utilize.

In the drawings:

Figure 1 is a top plan view partially broken away, and partially in section, of a glass cutting apparatus, showing the device of the instant invention as attached thereto.

Figure 2 is an enlarged sectional view taken substantially along the line 2—2 of Figure 1 as viewed in the direction indicated by the arrows.

Figure 3 is a sectional view taken substantially along the line 3—3 of Figure 2 as viewed in the direction indicated by the arrows.

Figure 4 is a sectional view taken substantially along the line 4—4 of Figure 2 as viewed in the direction indicated by the arrows.

Figure 5 is a top plan view of a modified form

2

of apparatus shown as attached to the transverse bar of a cutting apparatus, only a fragment of the latter being shown.

Figure 6 is a sectional view taken substantially along the line 6—6 of Figure 5 as viewed in the direction indicated by the arrows.

Figure 7 is a sectional view taken substantially along the line 7—7 of Figure 6 as viewed in the direction indicated by the arrows.

Figure 8 is an elevational view of the parts disclosed in Figure 7, shown in a different position of adjustment, the relationship of the position of Figure 7 being indicated in dotted lines.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring now to the drawings in detail, there is generally indicated at 10 a fragmentary portion of a glass cutting apparatus of any desired type, although preferably of the type disclosed in my above mentioned Patent Number 2,467,983, the apparatus including a table 11 adapted to support a sheet of glass 12 or other material to be cut, and including frame support members 13 extending along the side edges thereof, between which frame members extends a transverse bar 14 including a horizontal flange 15, and a vertical flange 16. Bar 14 is adapted to be secured to frame members 13 in any desired manner as by means of bolts 17, and is adapted to be moved longitudinally of the sheet of glass 12 in the manner described in my above mentioned patent, for cutting the glass.

The vertical flange 16 is provided with a plurality of apertures 18 in horizontal alignment therealong through which a selected one of which is adapted to pass a bolt 19, for the support of the cutter holder of the instant invention generally indicated at 20. Bolt 19 also provides a pivot whereby the holder and hence its associate diamond may be adjusted in a transverse vertical plane projecting to align the cutting edge in its most efficient cutting position. Cutter holder 20 is comprised of a block 21 having a threaded aperture 22 therein for the reception of bolt 19, and provided with a vertically extending bore or channel 23, and a cut-away portion 24 forming a recess.

A closure member generally indicated at 25 having a projecting portion 26 and a flange 27 of a dimension to correspond to the block 21 is adapted to seat within the recess 24, the flange 27 being secured to the block 21 as by means of screws or bolts 28 extending through suitably

aligned threaded apertures in the respective parts.

Adapted to seat within groove or channel 23 is a rectangular shank 30, rounded and threaded at its upper extremity as at 31, the threaded upper extremity being adapted to have positioned thereon a nut 32 which acts as an adjustable abutment engageable with the block 21 for limiting the downward movement of the shank 30. The nut 32 has positioned thereabove a coiled spring 33 surrounding the shank 31, the spring being held in abutting relation with nut 32 biasing the latter toward the top of block 20 by means of upper portion 34 of a U-shaped stirrup member 35, the latter being provided with transverse flanges 36, apertured to receive screws 37 for securing the same to the top of the block 20. The top 34 of the stirrup is provided with a centrally positioned aperture 38 through which shank 31 may extend to a required degree when shank 30 is raised.

The lower portion of shank 30 below block 20 is provided with an enlarged portion 40 having a centrally positioned aperture therein through which extends a bolt 41, secured in position as by means of a nut 42 for securing the apertured vertical flange 43 of an L-shaped cutter holder member generally indicated at 44 thereto. Member 42 also includes a horizontal flange 45 having a vertical cylindrical bore therethrough for the reception of a diamond holder 46 having a head 47 and being provided with a diamond cutting point 48 adapted for the cutting of a groove or channel in glass sheet 12 in a known manner, the spring 33 serving to bias the diamond 48 downwardly towards the glass to be cut.

Bolt 41 also provides a pivot whereby diamond 48 may be adjusted in a plane transverse to the cutter bar perpendicular to the plane of adjustment permitted by pivot bolt 19, to permit more accurate alignment of the cutting edge. Obviously longitudinal alignment of the cutting edge may be effected by rotation of holder 46 in its associated bore. Thus cutting of the glass in the most efficient manner, with a minimum of wear on the diamond is assured.

A set screw 49 extends transversely of horizontal flange 45 for holding the diamond cutter in desired angular relation and height relative to the glass 12.

A pair of regulating screws 50 provided with heads 51 extend through the central portion of closure plate 25, suitable threaded bores being provided therein for this purpose, and abut the shank 30 for regulating the play in the shank and its associated diamond holder relative to block 20.

Obviously in the use of the device the cutter may be readily adjusted by means of the mechanism previously described to any desired height relative to the sheet of glass, and may be further suitably positioned transversely relative to the sheet, and, by virtue of pivots 19 and 41, the angularity of the diamond cutter relative to the sheet may also be suitably varied to assume the most accurate alignment of the cutting edge thereof.

On the return stroke of the mechanism the entire apparatus may be lifted from the glass in the manner disclosed in my above mentioned patent, or, by suitable adjustment of the set screws 50, shank 30 may be raised to hold the cutting diamond out of contact with the glass surface during this stroke.

Under certain conditions it may be desirable to utilize the holder of the instant invention with other types of cutters not provided with automatic means for raising the diamond holder on the return stroke. Under such conditions it is desirable that means be provided for quickly and easily raising the cutter manually for the return stroke. A form of the invention embodying such means is disclosed in Figures 5 to 8, inclusive.

In this modification of the invention a transverse cutter carrying bar 60 including a horizontal flange 61 and a vertical flange 62 is provided to which a cutter holder generally indicated at 63 is pivotally secured by means of a bolt 64 passed through any one of a series of suitable apertures 65 similar to the apertures 18 previously discussed. An elongated slot may be substituted for the series of apertures if desired. The holder 63 includes a block 66 grooved and recessed in a manner similar to the block 21, and adapted to receive a forwardly extending portion 67 of a closure plate 68 having a flange 69 of a dimension similar to that of the block 66, and secured thereto by means of suitable screws 70. Vertically movable within the central channel of block 66 is the shank 71 of a cutter holder member having an enlarged end 72 to which is pivotally secured by means of a bolt 73 the vertical flange 74 of an L-shaped cutter member generally indicated at 75 including a horizontal flange 76, having a vertical bore therethrough within which is positioned a diamond holder 77 having a head 78 and a diamond cutting tip 79 substantially identical to the previously discussed diamond cutter 46.

The upper extremity of shank 71 is provided with a round threaded portion 80 substantially longer than the previously discussed portion 31, which extends upwardly through an aperture 82 in the top 83 of a U-shaped stirrup member 84 flanged as at 85 and secured to the top of block 66 and closure plate 68 as by means of screws 86. A nut 87 is adapted to engage the top of block 66 when diamond point 71 is in contact with the glass 12. A spring 88 surrounds the portion of threaded shank 80 between the top 83 of the stirrup and nut 87 normally biasing nut 87 into engagement with the top of block 66.

Surrounding and secured to the portion of shank 80 above the top 83 of the stirrup is a cylindrical block or nut 90 apertured as at 91 to receive inwardly extending projections 92 comprising portions of cam surfaced members 93 integral with a U-shaped bracket 94 at the lower extremities thereof, bracket 94 including a transverse top member 95 having a finger gripping portion 96.

The cam surfaced members 93 include arcuate surfaces 97 adapted to ride on the top wall 83 of stirrup member 84 adjacent the edges thereof, the arrangement being such that when the parts are in the position shown in Figure 7, with the operating holder of the cam in substantially horizontal position, the longer axis of cam member 23 is in vertical alignment with the shank 80 in such manner as to raise nut 87, and consequently, shank 71 and diamond cutting point 79 upwardly, the point 79 being thus spaced above the glass 12, to a degree equal to the spacing of the nut 87 above the top of the block 63.

When parts are moved from the dotted line position of Figure 8 to the full line position therein indicated, the shorter axis of the cam member 93 is juxtaposed to the top 83 of stirrup 84, permitting the nut 87 to seat on top 83 of block 63, and diamond cutter point 79 to engage glass 12

for cutting the same, adjustment of the cutting edge of the diamond being effected in the manner previously discussed.

Obviously the cutter point may be readily shifted vertically to place the same substantially instantaneously into or out of engagement with the surface of the material to be cut.

From the foregoing it will now be seen that there is herein provided a device which accomplishes all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative, and not in a limiting sense.

I claim:

1. In combination with a glass cutting apparatus including a transverse bar longitudinally movable over a sheet of glass to be cut, a block secured to said bar, a vertical channel in said block, a U-shaped member disposed over said channel and having an aperture aligned with the channel, a shank extending through said channel and said member, a threaded upper extremity on said shank, a nut on said threaded extremity within said U-shaped member and engageable with the top of said block, spring means biasing said nut toward the top of said block, a cutting device secured to the lower end of said shank, and means for moving said shank vertically in said channel to raise the cutting device to an inoperative position, said means comprising a movable cam-surfaced member carried by said shank and engaging the top of said U-shaped member.

2. In combination with a glass cutting apparatus including a transverse bar longitudinally movable over a sheet of glass to be cut, a block secured to said bar, a vertical channel in said block, a shank extending through said channel, and adjustable abutment carried by said shank, an apertured U-shaped stirrup secured to the top of said block with said shank extending through the aperture therein, a spring positioned between the top of said stirrup and said abutment urging said abutment toward the top of said block, a

cutting device secured to the lower end of said shank said cutting device having a radially adjustable plate with a perpendicular member carried thereby, and cam means adjustably mounted on said shank and engageable with the top of said stirrup for raising said shank to an elevated position against the urge of said spring.

3. In glass cutting apparatus, a horizontal supporting bar, a block fixed to one side of said bar, said block having a vertical guide channel having a polygonal configuration in transverse section, an elongated polygonal shank slidable in said channel, a cutter, means securing said cutter on the lower end of said shank, an inverted U-shaped member having the bight thereof overlying said shank and formed with an opening aligning with the latter, laterally extending flanges carried by the lower ends of the vertical sides of said member, means securing said flanges to the upper side of said block, a threaded stud extending upwardly from said shank, a spring about said stud bearing at its upper end against the bight of said member, and a combined spring-tensioning nut and stop member threaded on said stud and bearing against the opposite end of said spring, said nut normally contacting with the upper side of said block and limiting the downward movement of said shank.

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