Jan. 31, 1950 J. F. ISELIN 2,495,971

TOOL FOR PERFORATING GLASS TILE

Filed Oct. 18, 1946

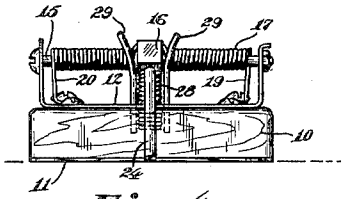


Fig. 4.

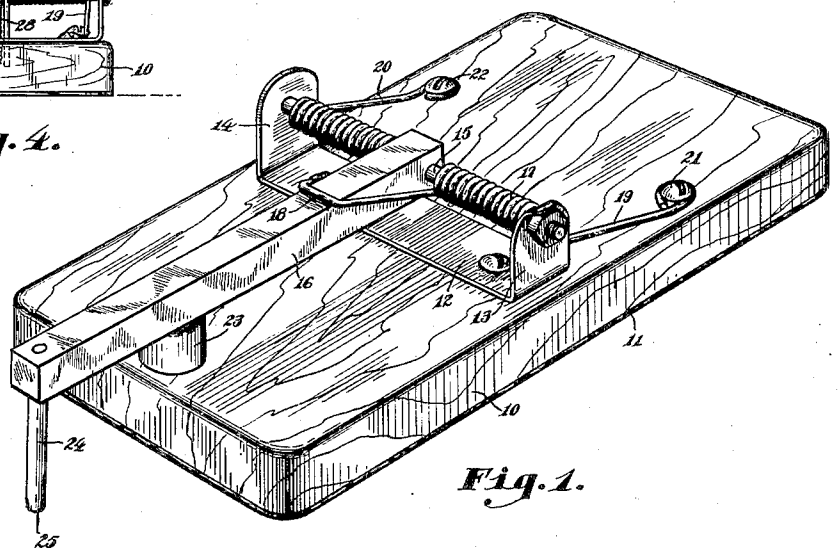


Fig. 1.

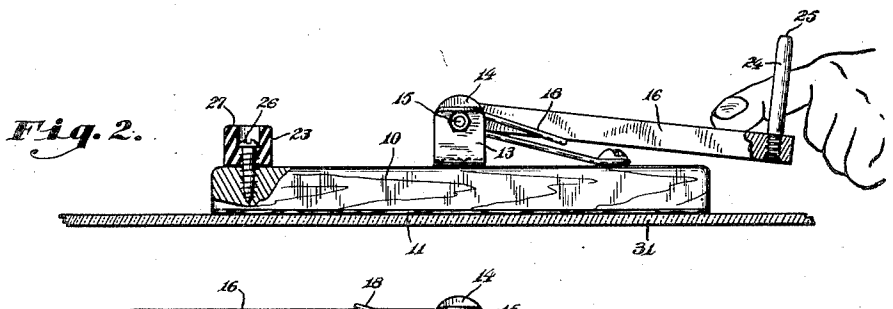


Fig. 2.

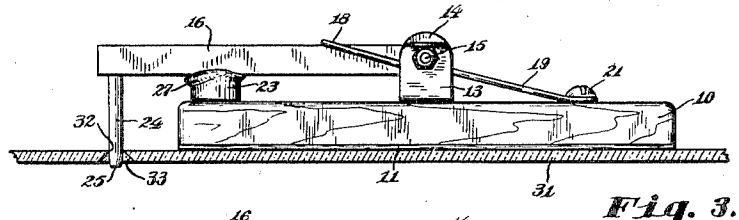


Fig. 3.

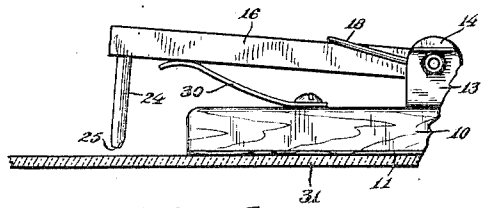


Fig. 5.

INVENTOR.
JOHN F. ISELIN,
BY:
Harold B. Hood.
ATTORNEY.

Patented Jan. 31, 1950

2,495,971

UNITED STATES PATENT OFFICE

2,495,971

TOOL FOR PERFORATING GLASS TILE

John F. Iselin, Indianapolis, Ind.

Application October 18, 1946, Serial No. 704,008

4 Claims. (Cl. 49—28)

1

Workers in structural glass, commonly known as glass tile, have, for many years, been confronted with the problem of forming openings through such tile without otherwise damaging the tile. The material in question is used primarily as a wall covering, though not exclusively so; and perforations must be formed therein to permit the passage of pipes and other plumbing fittings, electric wiring, and fittings and fixtures of various characteristics. Usually, though not invariably, the necessary perforations are produced in an individual tile by the glazier, just before he applies the tile to the position which it is to occupy on the wall. The necessary perforations will, of course, vary in size and shape to accommodate the particular elements which must be passed therethrough.

It has been customary to form such perforations by drilling a preliminary hole with a glass cutting drill, that hole being of small diameter, since a drilling operation upon the glass is an extremely delicate one and is always accompanied by the risk of breaking or cracking the whole tile. After the preliminary hole is formed, the glazier enlarges it to the desired size and shape by chipping out the edge thereof with a chipping tool and hammer. It will readily be appreciated that this, too, is an extremely delicate operation which frequently results in damage and consequent loss of the piece of tile upon which the work is being performed.

I have devised a new tool, operating in an entirely novel fashion, for forming perforations through glass tile, or the like; the object of my invention being to produce a mechanical device capable of operation to form perforations of the character here under consideration substantially completely without danger of damaging the glass tile or the like being treated. A further object of the invention is to provide a device capable of delivering a sharp blow to a piece of glass tile or the like in a fashion such as to break out of the tile a conical piece whose tip will be almost truly circular and of predetermined diameter. A further object of the invention is to produce such a tool capable of delivering not only the sharp, heavy blow above suggested, but also light chipping blows whereby the diameter of the hole in the front surface of the tile may be enlarged, and whereby the shape of said hole may be modified. Further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, my invention may be embodied in the forms illustrated in the accompanying drawings, and includes the steps described and illustrated, attention being called to the fact, however, that the drawings are illustrative only, and that change may be made in the specific constructions illustrated and in the steps described, so long as the scope of the appended claims is not violated.

2

Fig. 1 is a perspective view of a tool constructed in accordance with the present invention;

Fig. 2 is a side elevation thereof, parts being shown in section, with the tool ready to deliver the breaking blow;

Fig. 3 is a similar elevation, showing the tool as it delivers that blow;

Fig. 4 is an end elevation of a modified form of tool; and

Fig. 5 is a fragmentary side elevation of a further modification.

Referring more particularly to the drawings, it will be seen that I have illustrated a tool comprising a base 10 whose bottom surface is preferably provided with a pad 11 of felt or similar material. Supported upon the base in a transverse position, intermediate the ends thereof, is a bracket 12 provided with laterally spaced upturned ears 13 and 14 between which is supported a journal element 15. Journalled upon the element 15 for swinging movement about the axis thereof is an arm 16; and a coiled spring 17 is wrapped about the journal element, on opposite sides of the arms 16, the intermediate portion of said spring being formed into a hoop 18 bearing upon the arm 16, and the opposite ends 19 and 20 of said spring being extended rearwardly and anchored upon the base 10 at 21 and 22.

Supported upon the forward end of the base 10 and in the path of the arm 16, is a yieldable buffer element 23 whose function will appear hereinafter. The free end of the arm 16 carries a hammer or striker element 24 whose depending end 25 may preferably be somewhat tapered, as shown. The parts are so proportioned and designed that, when the arm 16 is at rest against the upper end of the buffer element 23, as shown in Figs. 1 and 5, the end 25 of the striker element 24 will be positioned beyond the forward end of the base 10 and in a plane parallel with the planes of the top and bottom surfaces of the base, and intermediate the same. The buffer element, however, is yieldable, as stated, so that, when the arm 16 is fully retracted to the position of Fig. 2 and then released, it will strike the buffer, under the influence of the spring 17, with sufficient force to permit the end 25 of the striker 24 to descend considerably below the plane of

the bottom surface of the base 10. Preferably, the buffer element 23 will be a soft rubber block whose upper end is recessed, as shown, for the reception of a screw 26 securing the buffer in place on the base. The recessing of said block results in the production of an annular lip 27 which, under the influence of the blow above referred to, will be deformed in the manner illustrated in Fig. 3.

I have found that, if a glass tile or the like is placed on a relatively unyielding surface, and if the arm 16 is retracted in the manner shown in Fig. 2 and then released, the end 25 of the striker will deliver a blow of such character as to break out of the glass tile a substantially conical section, producing a substantially circular hole 32 of almost precisely the diameter of the striker 24, in the upper surface of the tile 31, and a substantially conical flaring cavity 33 in the body of the tile.

The buffer 23 acts, almost instantaneously after the blow is struck, to return the arm 16 to the position of Fig. 1, thus withdrawing the striker from the cavity 33 and hole 32 and returning its end 25 to a position intermediate the planes of the top and bottom surfaces of the base 10.

Now, preferably, the tile 31 will be lifted and the glass fragments driven out of the cavity 33 will be removed from beneath the tile. The operator will then shift the base 10 sufficiently to bring the striker 24 into registry with an edge of the hole 32, and will lift the arm 16 only a short distance away from the buffer 23, and then release it. The end 25 of the striker 24 will thus be caused, under the influence of the spring 17, to strike a sharp, chipping blow against the edge of the hole 32, which results in chipping away a very small section of that edge. The operator continues this operation, moving the base slightly, then lifting and releasing the arm 16, and the hammer, upon each downward movement of the arm 16, chips away a small piece of the edge of the hole, and then is retracted from the hole by the buffer 23. The base 10 may be thus moved about on the surface of the tile without scratching the tile because of the provision of pad 11.

Obviously, if a very large opening is required, the operator will strike several hard blows against the tile with the tool, at points suitably spaced, and then will chip away the edges of the holes so produced to join all of such holes.

In Fig. 4, I have shown a modified form of tool in which the rubber block 23 is replaced by a coiled spring 28 suitably secured to the base 10 and laterally guarded by upstanding guide posts 29, 29. Ordinarily, the hoop 18 of Fig. 1 will sufficiently guide the arm 16; but if the arm develops any tendency to shift laterally, or if a different kind of spring means is associated therewith, the posts 29, 29 may be provided to center the arm 16 accurately at the time of delivery of its hammer blow.

In Fig. 5, I have shown a leaf spring 30 secured to the base to take the place of the buffer 23 or the coiled spring 28.

In actual use, I have found my tool to be extremely efficient, and to save enormous amounts of time. In addition, satisfactory work of the character under consideration can be done by relatively unskilled labor through the use of my tool, whereas a high degree of skill has always been required heretofore in order to avoid

breakage of the tile. Furthermore, my tool is admirably adapted to form openings in glass tile, or the like, even after the elements to be perforated have been installed on a wall. In this connection, the tool is particularly useful, since breakage of a tile, after installation, may cause irreparable damage. For instance, if a new plumbing or electrical outlet is to be provided in a wall built a number of years earlier, it may be impossible to match the elements of that wall in case one element is broken. Perforating such an element by means heretofore known is extremely likely to break the element; whereas I have found that, through the use of my tool, the desired perforation can be made substantially without any danger of breakage of the tile.

I claim as my invention:

1. A glazier's tool comprising a base adapted to rest on the work and to be readily shifted from point to point on the work, an element supported upon said base for movement relative thereto, means resiliently urging said element toward movement in one direction relative to said base, yieldable buffer means carried on said base in the path of said element for yieldably limiting the movement of said element in said one direction, and striker means carried by said element and projecting ahead of said element in said one direction, said buffer means normally supporting said element with the projecting end of its striker means disposed above that surface of said base resting on the work but yielding, in response to movement of said element under the influence of said resilient means, to permit momentary projection of said striker means below said surface.

2. A glazier's tool comprising a base having a first surface and a second surface, an element supported upon said second surface for movement through a limited path disposed entirely on one side of said second surface, means resiliently urging said element toward one end of its path adjacent said second surface, yieldable buffer means carried on said base and disposed in the path of said element and near said end thereof, and striker means carried by said element and projecting ahead thereof as said element moves toward said path end, said buffer means yielding, when struck by said element, to permit said striker to project past said first surface, and then recovering promptly to return said striker to a position spaced from said first surface in the direction of said second surface.

3. A glazier's tool comprising a base having a bottom surface and a top surface, journal means supported above the top surface of said base, an arm supported on said journal means and swingable thereabout, a yieldable buffer projecting above the top surface of said base in the path of said arm, spring means biasing said arm toward engagement with said buffer, and a striker carried by said arm, the free end of said striker being positioned, when said arm is normally supported on said buffer, beyond the limits of said base and in a plane parallel with said bottom and top base surfaces and disposed between said surfaces.

4. A glazier's tool comprising a base having a bottom surface and a top surface, journal means supported above the top surface of said base, an arm supported on said journal means and swingable thereabout, a yieldable buffer projecting above the top surface of said base in the path of said arm, spring means biasing said arm toward engagement with said buffer, and a striker

carried by said arm, the free end of said striker being positioned, when said arm is normally supported on said buffer, beyond the limits of said base and in a plane parallel with said bottom and top base surfaces and disposed between said surfaces, said buffer means being distortable, under the effect of a blow struck against it by said arm moving under the influence of said spring, to permit said striker end to move beyond the plane of said bottom surface.

JOHN F. ISELIN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
254,090	Carr	Feb. 21, 1882
347,742	Rylands	Aug. 17, 1886
458,381	Watson	Aug. 25, 1891
810,474	Doane	Jan. 23, 1906
813,123	True	Feb. 20, 1906

FOREIGN PATENTS

Number	Country	Date
15,281	Great Britain	Nov. 20, 1884
10,815	France	Oct. 27, 1854