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TILE HOLDING TOOL FOR USE IN TILE CUTTING

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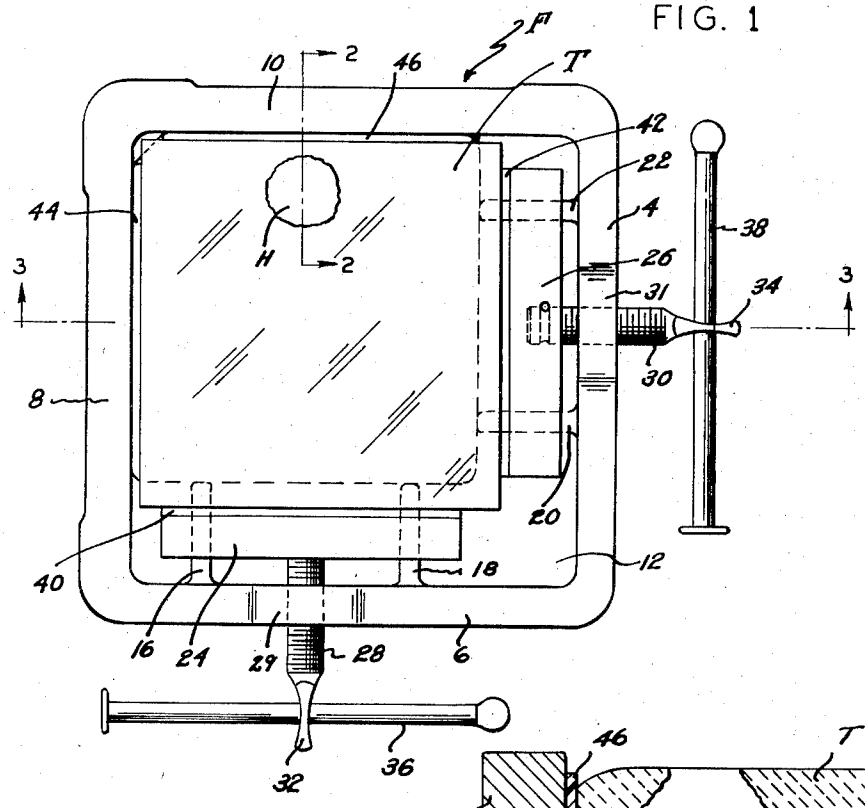
FIG. 1



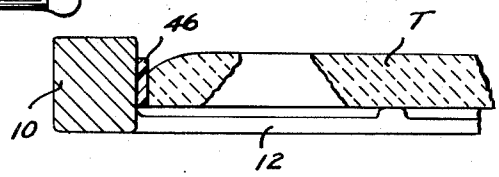


FIG. 2

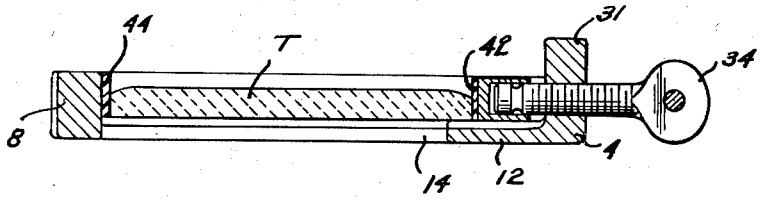


FIG. 3

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TILE HOLDING TOOL FOR USE IN TILE CUTTING

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3 Claims. (Cl. 125—35)

This invention relates to a press construction for supporting a work piece in compression and, more particularly, the invention is concerned with a press for supporting a ceramic tile element in a compressed state to facilitate the operation of forming a hole through the tile at a selected point.

When installing ceramic tile of the type used in kitchens, bathrooms and similar locations, it frequently occurs that a hole must be broken through the tile body in order to receive therethrough a pipe, fitting or other structural member. It is usually desired to break a substantially circular hole through the tile at a specific point and it is, of course, preferable to confine the hole to as small an area as possible in order to provide a neat workmanlike job without loss of time or tile breakage. The problem is somewhat complicated by the fact that ceramic tile is a difficult material to work with and tends to crack and separate out into jagged pieces when subjected to conventional piercing or breaking operations.

It is an object of the present invention to deal with the problem indicated and to devise a press construction comprising tile retaining enclosure or frame by means of which a hole breaking operation may be carried out quickly and efficiently to provide a substantially circular opening at any desired point.

Another object of the invention is to provide a tile supporting frame which can be cheaply manufactured, which is easy and convenient to use and which is of exceeding great durability and long life.

I have found that these objectives may be realized in at least one practical manner by holding a work piece such as ceramic tile in compression in such a way that a hole may be pierced through the tile without excessive cracking or chipping and the size and shape of the hole may be desirably controlled.

These and other novel features will be more fully understood and appreciated from the following description of a preferred embodiment of the invention selected for purposes of illustration and shown in the accompanying drawings, in which:

Fig. 1 is a plan view illustrating the press construction of the invention with a ceramic tile member supported therein and further indicating a hole formed through the tile at a predetermined point in accordance with the invention;

Fig. 2 is a cross-section taken on the line 2—2 of Fig. 1; and

Fig. 3 is a cross-section taken on the line 3—3 of Fig. 1.

Referring more in detail to the drawings, arrow F denotes generally an enclosure frame which includes frame sides 4, 6, 8 and 10 having a cross-sectional shape such as is more clearly shown in Fig. 2. The enclosure frame is open at its upper section and at its bottom portion is provided with a transversely extending base 12 which, together with the frame sides, constitutes a tile receptacle.

The base 12 is preferably recessed to form a hole

piercing aperture 14 which extends into close proximity to the two sides 8 and 10. Formed on the upper surface of the base 12 are ribs as 16, 18, 20 and 22 which are adapted to support and locate a ceramic tile element T in a raised position with respect to adjacent upper surfaces of the base 12 so that the tile may be freely moved along the ribs when forced into an engaged position against the frame sides.

In accordance with the invention, I have devised presser bar means 24 and 26 adjustably mounted in the frame through the frame sides 6 and 4, respectively. The presser bar means 24 and 26 may be supported in some suitable manner as, for example, by means of threaded screws 28 and 30. These screws are threaded through bosses 29 and 31 in the sides 6 and 4, as shown, and have their inner ends anchored to the presser bars 24 and 26. At their outer ends, the screw members 28 and 30 are constructed with flats 32 and 34 through which are pierced openings for receiving lever elements 36 and 38.

The presser bar means 24 and 26 are provided with cushioning elements 40 and 42, respectively, which may be secured to the bars by adhesive, mechanical fastenings or the like. These cushioning elements may consist of a thin rubber-like material and are of a vertical dimension, as shown in Fig. 3, which provides for the bottom edges thereof lying in spaced relation to the base 12. Also secured against two other frame sides 8 and 10 are similar cushioning elements 44 and 46 similarly disposed in spaced relation to the base to comprise retaining surfaces for receiving each of the edges of the tile member T, as suggested in Figs. 1 and 3.

In using the tool above described, it will be assumed that a hole is required to be formed in a tile member at a specific point to permit receiving a pipe therethrough. The tile with the center of the desired opening having been inscribed on the upper surface thereof is placed in the frame F and its bottom surface located upon the ribs 16, 18, 20 and 22 in a position such as that shown in Fig. 1.

Thereafter, the levers 38 and 36 are turned in a clockwise direction to advance the screw members 28 and 30 through the frame sides 6 and 4 so that the presser bars 24 and 26 with their respective cushioning elements are advanced into contact with the adjacent edges of the tile T which extend at right angles to one another. As further movement of the bars takes place, the tile is forced against the cushion elements 44 and 46 of the frame sides 8 and 10, respectively. Finally, the levers 36 and 38 are tightened by hand until a very considerable compression is exerted on the tile which acts inwardly from each of the four edge surfaces in a uniform manner.

With the tile thus held in compression, a tool such as a drill, nail set or similar cutting device is then placed on the center point for forming the hole and a series of sharp blows are struck. The effect of these percussive forces operates to break away tile at a closely limited region so that there is formed a hole H which is readily cut away in a relatively circular shape and which, at thet underside of the tile, breaks away with an undercut formation such as is shown in Fig. 2.

I have found that, if the percussive forces thus applied to the tile are kept at a suitably limited intensity, the compressed portions of the tile immediately surrounding the region of cutting will strongly resist cracking and breaking out in large jagged pieces. Therefore, it is apparent that, by compressing the tile simultaneously from each of its four sides, any percussive force acting at right angles to the compression forces will operate to localize the percussion force in a small area and desirable control of a hole breaking operation can be realized and only

a short period of time is necessary to perform the piercing operation.

It is pointed out that, by supporting the under surface of the tile on the two pairs of ribs extending at right angles to one another, there is eliminated any possibility of the tile jamming against the base as compression forces are increased in intensity and the tile is free to become automatically displaced to the degree necessary to provide for uniform compression.

Although I have described the invention specifically with reference to ceramic tile, it is intended that the frame may be employed to various other types of work pieces. Therefore, while I have shown and described a preferred embodiment of the invention, it should be understood that various other modifications may be resorted to as defined by the appended claims.

Having thus described my invention, what I claim is:

1. A tile retaining press construction for supporting a tile element in a state of predetermined compression required for a selective hole breaking operation, said press construction including a four-sided frame, said frame having two of its sides meeting to form a fixed corner, tile supporting base portions extending inwardly along the opposite sides of the frame, a bottom portion having a hole therethrough, a pair of pressure bars adjustably disposed in the frame at right angles to one another and oppositely to the fixed corner, said pressure bars

being adapted to engage and hold the tile element against the fixed corner with an unsupported bottom of the tile element occurring over the said hole and screw means for tightening the respective pressure bars to exert compressive forces on the tile element.

2. A structure according to claim 1 in which the tile supporting base portions are formed with ribs for slidably retaining the tile element when compressive forces are exerted by the screw means.

3. The method of perforating a ceramic tile which comprises positioning the tile on a support against a pair of spaced confining walls, applying adjustable pressure to the side of the tile diametrically opposed to the confining walls to hold the tile under relatively high compression while performing the perforating operation to avoid cracking the tile about the perforation.

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