This invention relates to scoring and breaking devices, and its general object is to provide a device that is capable of scoring and breaking tile, glass and the like, along straight or curved lines, in an accurate and expeditious manner and with minimum effort on the part of the user.

A further object is to provide a tile scoring and breaking device that includes a work holding base and handled breaking means substantially in the form of pliers having scoring means and guiding means for the latter carried by one of the handles, the guiding means being interchangeable to vary the movement of the scoring means for directing the latter along straight or curved lines, and the handle being slidably mounted within the guiding means for adjustment of the scoring means, as well as having graduations thereon to bring about an accurate adjustment.

Another object is to provide a tile scoring and breaking device that is compact, light in weight, simple in construction, inexpensive to manufacture, and extremely efficient in operation, use and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a side elevation illustrating my scoring and breaking device in use for providing a straight score line in a block of tile.

Figure 2 is a top plan view thereof.

Figure 3 is a sectional view taken approximately on line 3–3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a detail perspective view of the guide member to be used when scoring the tile along a straight line.

Figure 5 is a top plan view of my scoring and breaking device in use for providing a curved score line on the tile.

Figure 6 is a fragmentary vertical sectional view taken through Figure 5.

Figure 7 is a detail perspective view of the guide member to be used for scoring the tile along a curved line.

Figure 8 is a perspective view of the breaking means.

Figure 9 is a front view of the breaking means in use.

Referring to the drawings in detail, the reference numeral 1 indicates the base of my device, which is shown as being flat and of square formation, the base being preferably made from a single sheet of plate metal having two of its right angled disposed edges upturned to provide abutment flanges 2 for a block A of tile or other vitreous product. Secured to the underside of the base are feet 3 preferably disposed adjacent to each of the corners thereof and from their point of connection with the base, the feet are downwardly curved and reduced in tapered formation to terminate in penetrating points, to set up a biting engagement with suitable supporting means to prevent casual movement of the device, when in use for scoring tile and the like, as will be apparent.

The breaking means of my device is substantially in the form of pliers as best shown in Figure 8, in that it includes a pair of companion members provided with handles 4 and 5 extending from enlarged flat inner portions 6 disposed in face to face wiping engagement and having registering openings therein for receiving pivot means for pivotally securing the members together, the pivot means including a headed stud 7 having threaded thereon a nut 8, with a set screw 9 threaded in the nut and engaged with the stud to prevent unthreading of the nut, as will be apparent.

Formed on the enlarged portion of the handle 4 is a relatively long narrow jaw 10 that preferably has its inner face recessed as at 11 and the outer portion of the jaw 10 is beveled to provide a cutting or biting edge 12. The jaw 10 is adapted for disposal on the underside of the tile and therefore I refer to the same as being the lower jaw while the upper jaw likewise includes a relatively long narrow portion 13 that has secured to the inner face thereof a substantially flat jaw member 14 that extends outwardly beyond the outer end of the portion 13 and is of a width to extend a considerable distance laterally beyond the sides of the portion 13, as clearly shown in Figure 8. The jaw member 14 is bent along its point of contact with the portion 13 to provide outwardly directed diverging portions and the member 14 is formed to provide a downwardly flanged 15 along the inner edge thereof to provide abutment means for the tile when breaking the same, as clearly shown in Figure 9.

The jaws are held normally spaced from each other to facilitate the application of the tile be-
tween the same, by a spring 16 that has one end fixed to a screw 17 secured to the handle 4 within a recess 18, and the spring extends forwardly from the screw 17 for disposal between the flat portions 6. The forward portion of the spring is looped rearwardly and its rear end is fixed to scoring means carried by a handle 5, as best shown in Figure 1.

The above mentioned scoring means includes a threaded shank 10 extending through a boss 20 formed on the inner face of the handle 5 and the scoring means is fixed to the boss 20. The shank 10 is likewise held at the rear end of the spring to the shank, the rear end being disposed between a pair of washers. The head 22 that is formed on the lower end of the shank is engaged with the underside of the boss and is bifurcated, with a scoring wheel 23 journaled between the bifurcated portions, as clearly shown in Figure 1.

When it is desired to score tile or the like, along a straight line, I provide a straight edge guide member 24 having an attaching bracket 25 secured to the upper surface thereof midway towards the blade 21. The straight edge guide member 24 is applied to the handle and the latter adjusted for positioning the scoring means in proper position with respect to the tile, thence pressure is applied to the handle 4 for urging the wheel 23 in biting engagement with the tile, and then by sliding the device along the tile, the latter will be provided with a straight score line, as will be apparent from Figure 2.

In order to score the tile along a curved line, I provide a pivoted guide member that includes a post 28 having a reduced lower end 29 to be mounted in an opening in the base, as best shown in Figure 6, and secured to the upper end of the post 28 is an attaching bracket that includes a pair of clamping ears 30 for slidable receiving the handle 5 between the same, for adjusting the scoring means with respect to the tile, and the handle is held in adjusted positions by a bolt and nut connection 27 having its bolt extending through the upper ends of the ears, as best shown in Figure 3, and the nut is of the wing type to facilitate the adjustment. It is believed that it will be obvious from Figure 2, that when it is desired to score a block of tile such as A along a straight line, the block A is laid upon the base in abutting engagement with the flanges 2. The straight edge guide member 24 is applied to the handle and the latter adjusted for positioning the scoring means in proper position with respect to the tile, thence pressure is applied to the handle 4 for urging the wheel 23 in biting engagement with the tile, and then by sliding the device along the tile, the latter will be provided with a straight score line, as will be apparent from Figure 2.

The handle 6 is preferably graduated as at 32 to bring about an accurate adjustment of the scoring means with respect to the tile, and it will be obvious that when the straight edge guide member is used, it must be held in place when adjusting or sliding the handle through the attaching bracket thereof.

When it is desired to break the tile along the score lines, the tile is placed between the jaws, with the score line uppermost and disposed in alignment with the center of the jaw member 14, then pressure is applied to the handles to force the edge 12 in biting engagement with the underside of the tile and such will result in breaking the tile along the score line.

If it is desired to break the tile along an acute curve, I provide a hook 33 for that purpose, and which is formed on the outer end of the handle 4. The tile is of course first scored, by use of the pivoted guide member and the scored portion is placed within the hook, thence holding the tile and swinging the tool upwardly, the action of the hook will bite into the tile and break the same along the score line.

I also preferably provide a scoring wheel 34 on the outer end of the handle 5 and which can be used for scoring the tile along a line diagonally thereof. When scoring the tile accordingly, it is positioned against the flanges 2 diagonally upon the base and the straight edge member 24 is used as a guide for the wheel 34.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:
1. A scoring and breaking device for tile and like, comprising a square cornered work receiving and holding base, abutting flanges for the work and rising from the base, feet secured to and depending from the base and terminating in support receiving penetrating points, breaking means, and scoring means secured to one of the handles of the breaking means, guiding means for the scoring means and having said handle slidable mounted therethrough for adjustment of the scoring means, and said guiding means being detachable from the handle and associated with the base for guiding the scoring means in its movement.
2. A scoring and breaking device for tile and like, comprising a work receiving and holding base, handled breaking means, scoring means secured to one of the handles of the breaking means, guiding means for the scoring means and having said handle slidable mounted therethrough for adjustment of the scoring means, and said guiding means being detachable from the handle and associated with the base for guiding the scoring means in its movement.
3. A scoring and breaking device for tile and like, comprising a work receiving and holding base, abutting flanges for the work and rising from the base, feet secured to and depending from the base and terminating in support receiving penetrating points, breaking means including handled companion jaws, scoring means fixed to one of the handles, guiding means for the scoring means and having said handles slidable mounted therethrough for adjustment of the scoring means, said guiding means being removable from the handle and associated with the base for guiding the scoring means in its movement, and said handle being graduated to facilitate the adjustment of the scoring means.
4. A scoring and breaking device for tile and like, comprising a work receiving and holding base, handled breaking means, scoring means secured to one of the handles of the breaking means, guiding means for the scoring means and including an attaching bracket for detachably receiving said handle therein for slidable movement for adjustment of the scoring means, means for raising the tile, means for clamping the bracket to the handle to hold the scoring means in adjusted positions, and said guiding means being associated with the base for guiding the scoring means in its movement.
5. A scoring and breaking device for tile and like, comprising a work receiving and holding base, handled breaking means, scoring means se-
secured to one of the handles of the breaking means, straight edge guiding means for the scoring means, a bracket secured to and rising from the guiding means and having said handle slidably mounted therethrough for adjustment of the scoring means, said bracket being detachable from the handle, and said guiding means being slidably associated with the base for guiding the scoring means in its movement.

6. A scoring and breaking device for tile and the like, comprising a work receiving and holding base having an opening therein, handled breaking means, scoring means secured to one of the handles of the breaking means, guiding means for the scoring means and including a post, a clamping bracket secured to and rising from the post and having said handle slidably mounted therethrough for adjustment of the scoring means, means for securing the handle to the bracket for holding the scoring means in adjusted positions, and said post having a reduced end seated in the opening for movement of the scoring means in the arc of a circle.

FLEMING A. FEDON.