

L. A. MILLER.
 IMPLEMENT FOR CUTTING SLATE.
 APPLICATION FILED FEB. 25, 1915.

Patented Aug. 13, 1918.
 2 SHEETS—SHEET 1.

1,275,459.

Fig. 1.

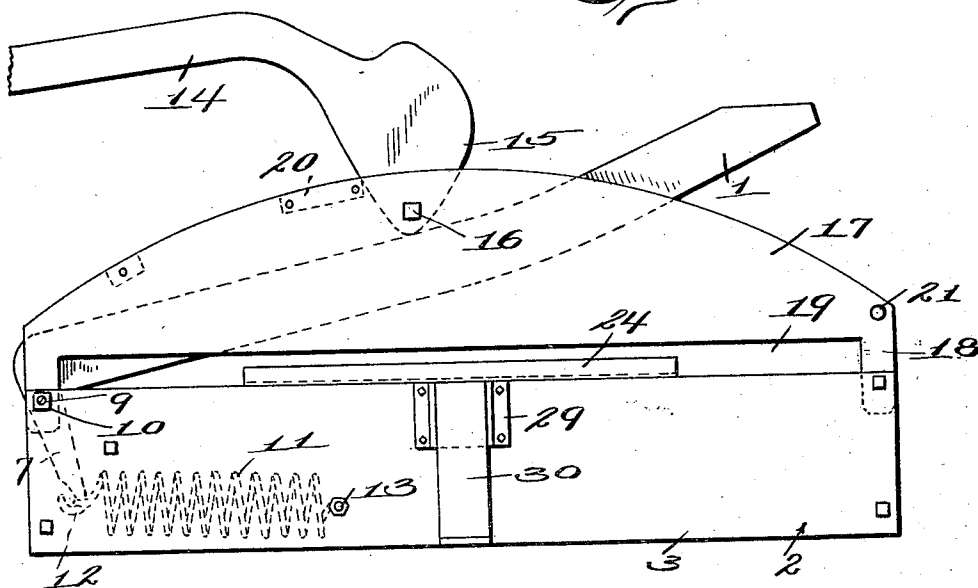
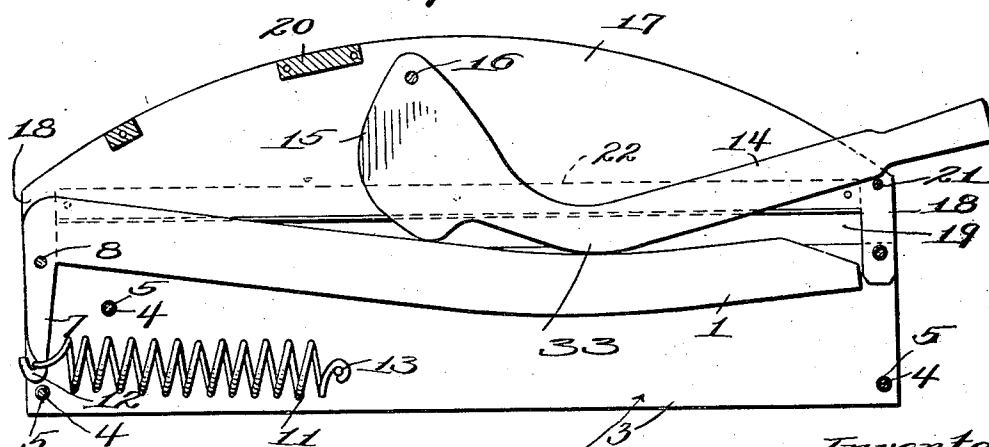


Fig. 2.



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Fig. 3.

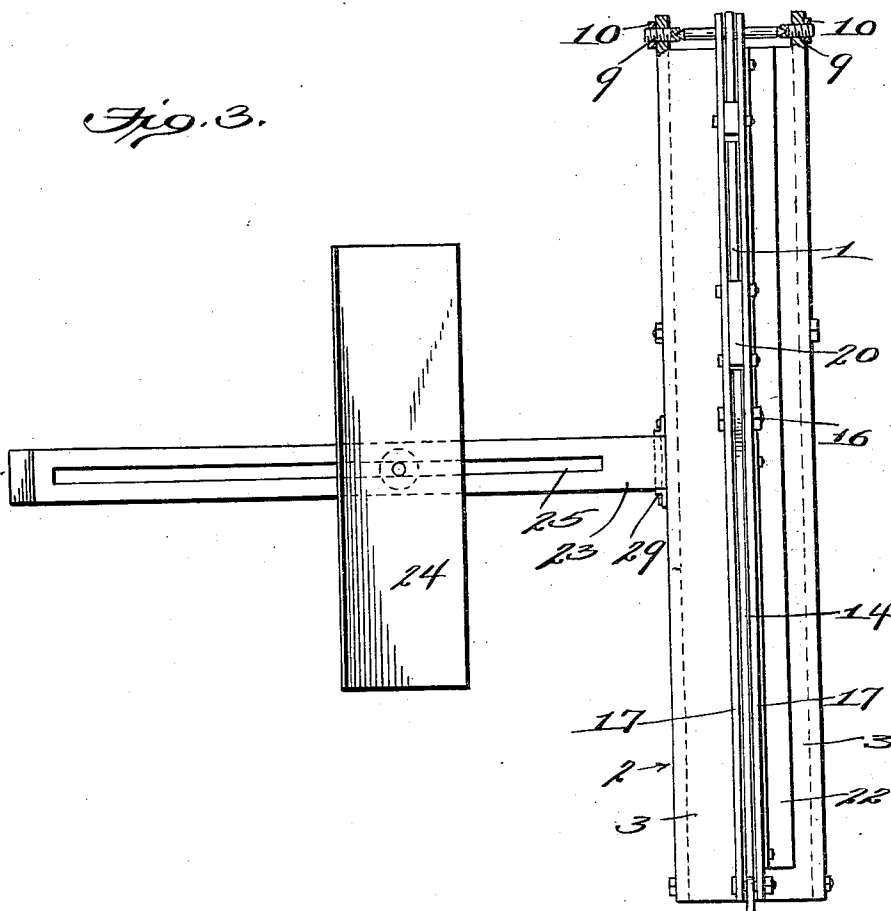
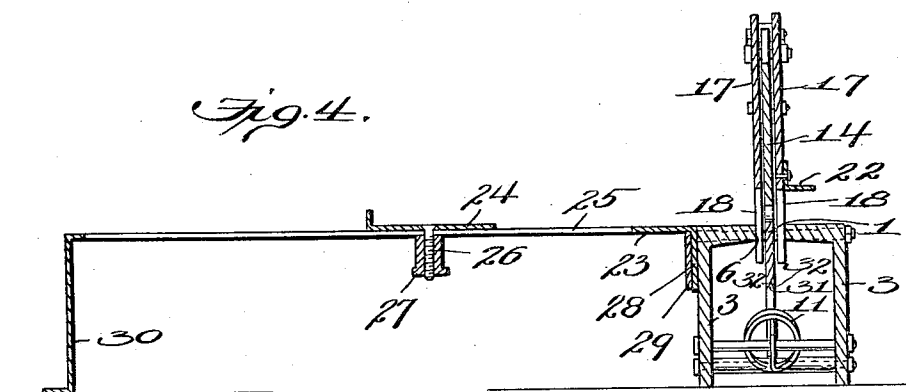


Fig. 4.



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UNITED STATES PATENT OFFICE.

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IMPLEMENT FOR CUTTING SLATE.

1,275,459.

Specification of Letters Patent.

Patented Aug. 13, 1918.

Application filed February 25, 1915. Serial No. 10,541.

To all whom it may concern:

Be it known that I, LEWIS A. MILLER, a citizen of the United States, residing at Scottsdale, in the county of Westmoreland and State of Pennsylvania, have invented new and useful Improvements in Implements for Cutting Slate, of which the following is a specification.

This invention relates to an implement for cutting slate, for example, in the production of slate shingles; and its principal objects are to provide an implement by which slate may be cut rapidly and cleanly; and which is simple and compact in its structural nature, readily operated, easily carried about from place to place, and not liable to derangement or undue wear.

With the above objects in view, the invention consists in certain details of structure, combination and relation which will appear as the description proceeds.

An embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a side elevation of a slate cutting implement in which the features of the invention are incorporated;

Fig. 2 is a longitudinal sectional view thereof;

Fig. 3 is a top plan view thereof; and

Fig. 4 is a horizontal sectional view thereof.

The slate is cut by the action of a knife 1 and during the cutting operation rests upon a stand 2 with which the knife coöperates. In the embodiment disclosed, the stand 2 comprises a pair of angle irons 3 connected at appropriate intervals by bolts 4 on which are mounted spacing sleeves 5. The angle irons are held by the sleeves 5 in spaced relation to one another whereby a longitudinal slot 6 intervenes between their top flanges which project toward one another and are co-planar and, therefore, provide a table of substantial width upon which the slate rests during the cutting operation. The knife 3 works through the slot 6, the width of which is substantially greater than the thickness of said knife whereby clearances are provided at both sides of the knife through which the spawl from the under side of the slate, along the edges thereof which are cut, falls. In this way the cutting action of the knife is unhampered and the edges of the slate are clean or unbroken. The knife is pivoted at the rear end of the stand 2 and

in the embodiment shown is provided at its rear end with a downward extension 7 through which passes a transverse pivot pin 8 having conical ends which engage in conical bearings 9 threaded through the side flanges of the angle irons 3 and normally held against movement by lock nuts 10. By mounting the knife in this manner, there is no liability of its binding consequent to the tightening of the bolts 4 which connect the angle irons 3; and the bearings 10 may be adjusted to provide for any desired degree of freedom of movement of the knife and to compensate for wear of the points of the pin 8. The knife is raised above the stand 2, as shown in Fig. 1, by a retractile coil spring 11 having one end engaged with a hook 12 at the lower end of the extension 7 and having its other end engaged with a pin or bolt 13 extending between the angle irons 3.

For the operation of the knife a lever 14 is provided, said lever having a cam faced engaging end 15 which works upon the upper face of the knife midway of its length. The lever 14 moves about a pin 16 as a pivotal axis and is supported by a suitable guide which, in the embodiment shown, comprises parallel plates 17 between which the pin 16 extends and which are provided at their ends with depending extensions 18 projecting through the slot 6 and mounted, at the front end of the stand 2, upon one of the bolts 4 and at the rear end of the stand 2 upon the pivot pin 8.

The plates 17 which are coextensive in length with the stand 2 project in upright relation from said stand and their lower edges are suitably spaced from the upper face of said stand whereby a slot 19 intervenes between the plates 17 and the stand 2 through which the slate to be cut is inserted.

The rearward movement of the lever 14 is limited by a bar 20 extending between the plates 17 and the forward movement of the lever 14 is limited by a pin 21 extending between the extensions 18 at the front ends of the plates 17.

The plate 17 at the side opposite to that at which the operator stands is preferably provided with a flange 22 extending laterally from its lower edge for the purpose of preventing the piece of slate which has been severed by the knife from being thrown up when the knife is raised.

The implement preferably includes in its equipment a gage which, as shown and pre-

ferred, consists of a bar 23 extending at a right angle from the central portion of the stand 2 and substantially co-planar with the upper face of said stand and a gage plate 24 adjustable lengthwise and pivotally of said bar, the latter having a longitudinal slot 25 and the gage plate having a depending pin 26 which projects through the slot 25 and carries a securing nut 27. Obviously, the gage plate may be set at any desired position lengthwise of the bar 23 and in any position at which it is set may be turned to any desired angle. The bar 23 has at its inner end a depending extension 28 which, when the gage is used, is fitted within a suitable keeper 29 secured to the adjacent angle iron 3 and at its outer end a supporting leg 30.

The knife 1 preferably has a divided cutting face characterized by the provision of a longitudinal groove 31 which extends from end to end thereof and parallel cutting portions 32 at opposite sides of said groove. In the embodiment shown, the groove 31 has a substantially inverted V-shape whereby the cutting portions 32 have their inner sides inclined downwardly and outwardly toward their outer sides which, in any event, are perpendicular.

The construction and relation of the knife 1 and the lever 14 is such that when said knife and said lever are fully depressed, as shown in Fig. 2, both of said elements will be self-locked in their lowered positions. Thus the point of the cam most distant from the pivot 16 will, when the lever and the knife are fully depressed, be in substantially vertical alinement with said pivot and said pivot and said cam point will both be in a line substantially or nearly coincident with the direction in which the knife will exert its thrust against the lever.

The operation will be readily apparent from the foregoing description. The spring 11 at all times holds the knife 1 against the cam 15 of the lever 14 and acts to raise said knife whenever the lever is raised. In this way, after each operation of the implement, when the lever 14 is reset for another operation thereof, the knife 1 is automatically reset with said lever, assuming a position as shown in Fig. 1 wherein the slate may be readily inserted through the slot 19. To cut the slate, the lever is given a forcible downward movement and the knife is forced downwardly by said lever, and during its downward movement is subject to a uniform application of power, the knife and the lever both moving about their pivots in a common plane and in the same direction. The knife, in its cutting action, removes from the slate a portion equal in width to the thickness of the knife, leaving the edges at the sides of the portions thus removed straight or clean and unbroken.

Any spawl consequent to the cutting action of the knife falls through the slot 6 to the surface of the support upon which the stand 2 rests by virtue of the fact that the slot 6 is substantially wider than the thickness of the knife. The cutting operation may be performed with rapidity, a single downward throw of the lever being all that is required to cut a piece of slate of the maximum width that the implement will accommodate; and a single upward throw of the lever being all that is required to reset the knife and the lever for a further operation. The knife moves with requisite freedom since there is no binding on its pivot pin, nor between its sides and the sides of the slots 16.

When the implement is out of use, the lever 14 and the knife are moved into their lowermost positions, in which positions they remain until the lever is intentionally raised. When the lever and the knife are in their lowermost positions, as shown in Fig. 2, the implement may conveniently be stored away or carried from place to place. The gage may be conveniently detached when its use is not required by simply lifting the bar 23 until its extension 28 has disengaged or passed from the keeper 29.

The implement has been described as a slate cutter because its special features of structure and arrangement render it particularly advantageous for such use and it is contemplated that the cutting of slate will be the principal, if not the only, use of the device. It will be understood, however, that the invention includes within its scope any use of the implement for the cutting of other materials for which the implement may be advantageously employed by virtue of and without departure from its essential features of structure, organization and operation above described and to be now set forth in the appended claims and which render the implement of especial advantage as a slate cutter.

Having fully described my invention, I claim:—

1. An implement for cutting slate comprising a stand having a longitudinal slot, a knife working through the slot and of substantially less thickness than the width of the slot, the knife being arranged centrally of the slot and having a pivotal mounting at one end of the stand, the knife having at its rear end an extension projecting downwardly adjacent and below its pivot, an operating lever pivotally mounted above the knife for movement in a plane common to the plane of movement of the knife, the operating lever having its pivotal end formed as a cam for cooperation with the knife and engaging the knife midway of its length and a spring having an end secured to the stand and an end secured to said extension and

acting to hold the knife at all times in contact with the cam end of said lever, the lever having its cam end formed whereby when the lever is fully depressed the said cam end holds the knife against upward movement consequent to the force of the spring, the knife and cam thus being self-locking in their lowered positions.

2. An implement for cutting slate comprising a stand composed of a pair of angle irons, having horizontal portions which project toward one another in co-planar relation, thereby to provide a slate supporting table, bolts connecting the angle irons, elements on the bolts to hold the angle irons in definitely spaced relation whereby to provide a slot between them, a knife working through the slot, a pivot pin associated with one end of the knife and having conical ends, and conical bearings for the ends of said pivot pin, said bearings being threaded through said angle irons, as and for the purpose set forth.

3. An implement for cutting slate comprising a stand composed of a pair of connected parallel members having a longitudinal slot between them of uniform width throughout its extent, a knife working through the slot, a pair of guide plates upright from and co-extensive in length with the said stand, the guide plates having at their ends depending extensions which project through the said slot and are mounted between the parallel members, the guide plates having their lower edges spaced above the stand whereby to provide a slot through which the sheet to be cut may be inserted, and a lever pivotally supported by and between the guide plates for movement in the plane of the knife and having a cam to engage the knife, the knife also working between the guide plates.

4. An implement for cutting slate comprising a stand composed of a pair of connected parallel angle irons having horizontal portions which project toward one another with their upper faces coplanar and which provide a slate supporting table, said horizontal portions having a longitudinal slot between them of uniform width throughout its extent, a knife pivoted between the angle irons and having an extension adjacent and below its pivot, a spring acting on said extension and confined between the angle irons, a pair of guide plates upright from and co-extensive in length with the said stand, the guide plates having at their ends depending extensions which project through the said slot and are mounted between the angle irons, the guide plates having their lower edges spaced above the stand whereby to provide a slot through which the sheet to be cut may be inserted, and a lever pivotally supported by and between the guide plates for movement in the

plane of the knife and having a cam to engage the knife, the knife working between the guide plates and through the slot between the angle irons.

5. An implement for cutting slate comprising a stand composed of a pair of connected parallel angle irons having horizontal portions which project toward one another with their upper faces co-planar and which provide a slate supporting table, said horizontal portions having a longitudinal slot between them of uniform width throughout its extent, a knife pivoted at its rear end between the angle irons and of substantially less width than the slot in which it works, the knife being disposed centrally of said slot, a pair of guide plates upright from and co-extensive in length with said stand, the guide plates having at their ends depending extensions which are secured to the stand and being arranged at opposite sides of said slot, and a lever having an end cam to engage the knife and effect the operation thereof, the said cam being pivotally mounted between the guide plates in the same longitudinal plane as the knife, the guide plates having their lower edges between said extensions spaced above the stand, whereby to provide slots through which the sheet to be cut may be inserted for support on the stand.

6. An implement for cutting slate having a pair of connected angle irons which have support on their vertical flanges and whose horizontal flanges are in co-planar relation to provide a slate supporting table and are spaced to provide a slot extending lengthwise of the table, a pair of plates supported by the angle irons in upright relation therefrom and in registry with the said slot, a knife operating through the slot and a cam lever mounted between the plates for effecting the operation of the knife.

7. An implement for cutting slate having a pair of connected angle irons which have support on their vertical flanges and whose horizontal flanges are in co-planar relation to provide a slate supporting table and are spaced to provide a slot extending lengthwise of the table, the said vertical flanges having a greater spacing than the walls of said slot to provide a clearance under said table, a pair of plates supported by the angle irons in upright relation therefrom and in registry with the said slot, a knife operating through the slot, a cam lever mounted between the plates for effecting the operation of the knife and a spring arranged in said clearance and acting on the knife to hold the same in operative relation to said cam lever.

8. An implement for cutting slate having a pair of connected angle irons which have support on their vertical flanges and whose horizontal flanges are in co-planar relation to provide a slate supporting table and are

spaced to provide a slot extending length-
wise of the table, a pair of plates supported
by the angle irons in upright relation there-
from and in registry with the said slot, a
5 knife operating through the slot, and a
cam lever mounted between the plates for
effecting the operation of the knife, the
plates having downward extensions at their
ends by which they are supported from the
10 angle irons and by which the lower edges
of the plates are spaced above the table,

thereby to provide a slot through which the
slate to be cut may be inserted and which
extends at a right angle to the slot between
the horizontal flanges of the angle irons. 15

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

LEWIS A. MILLER.

Witnesses:

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REGINA M. NASH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."