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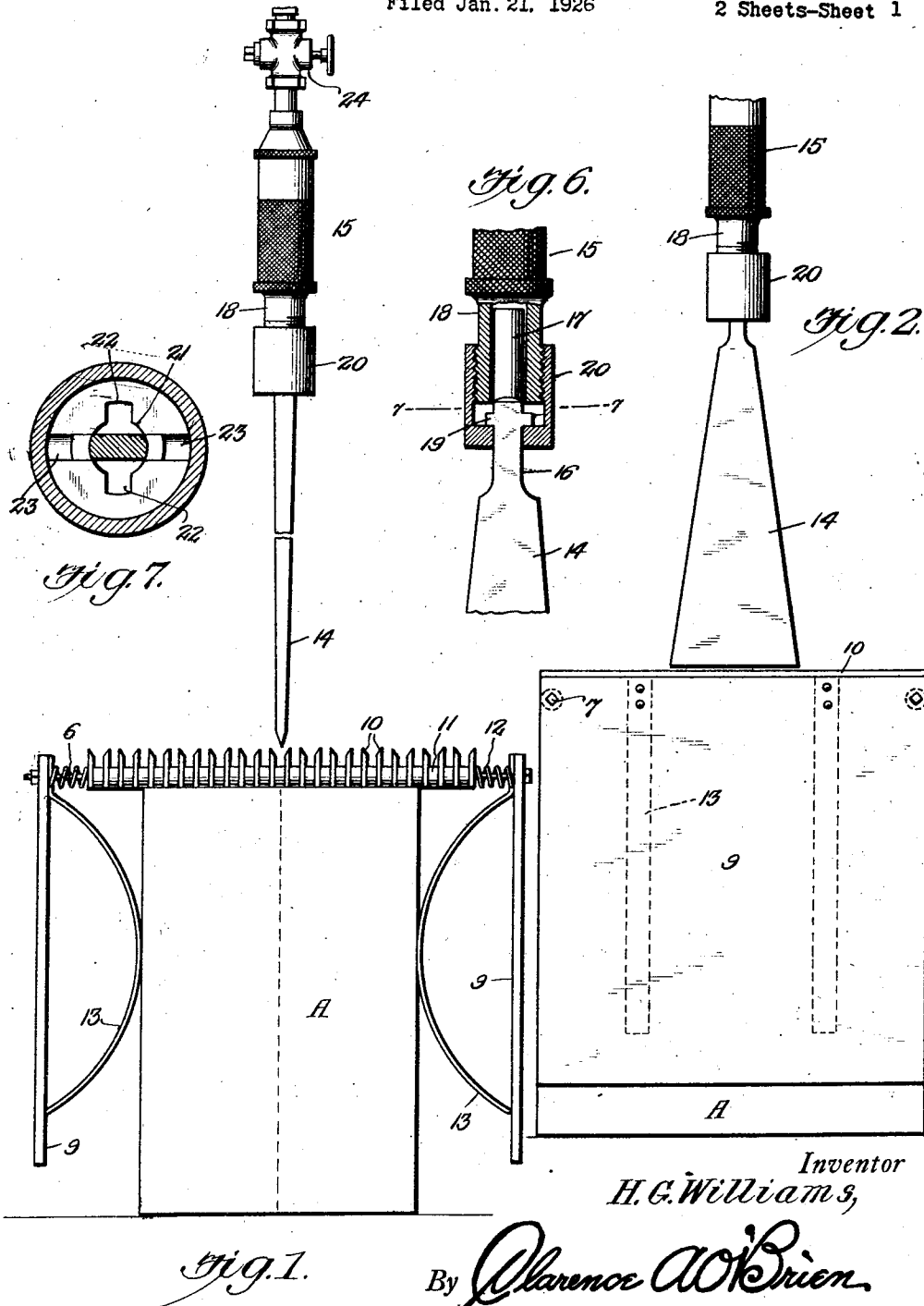
H. G. WILLIAMS

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METHOD OF AND APPARATUS FOR AUTOMATICALLY SPLITTING OR CLEAVING SLATE BLOCKS

Filed Jan. 21, 1926

2 Sheets-Sheet 1



Inventor
H. G. Williams,

By Clarence A. O'Brien.

Attorney

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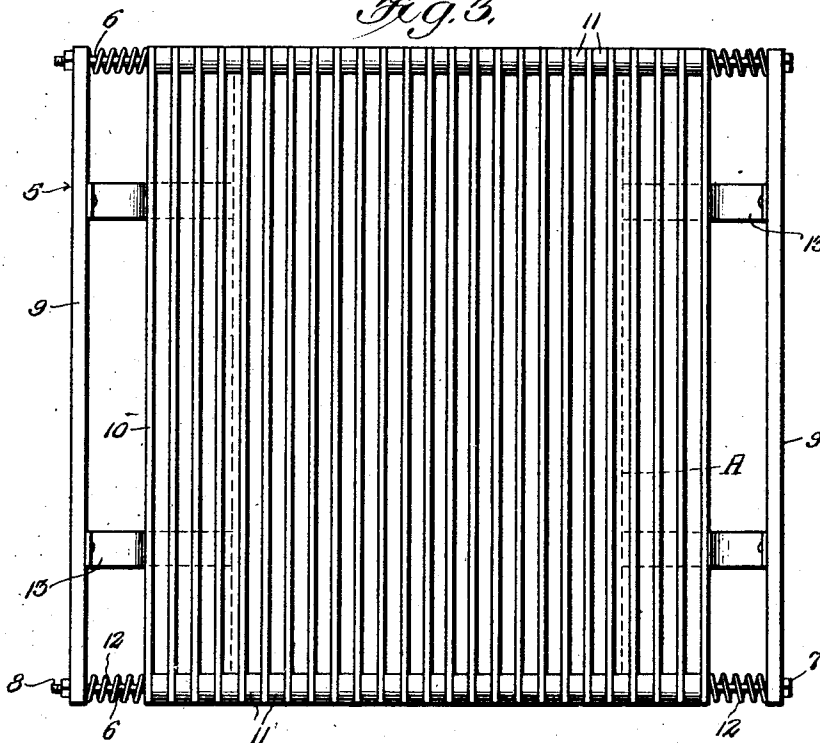
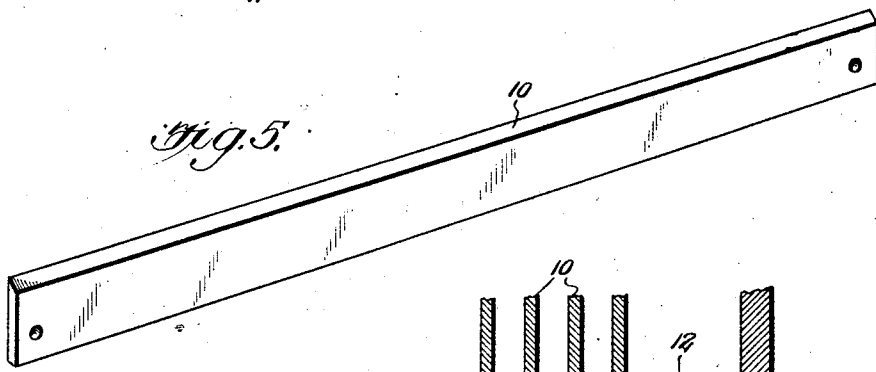
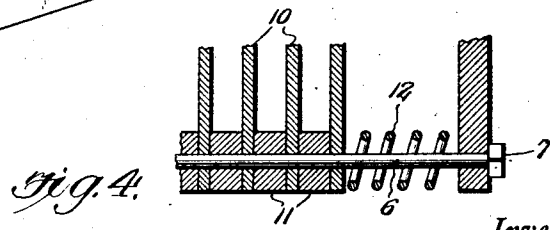
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Inventor

H. G. Williams,

By *Clarence A. O'Brien*

Attorney

UNITED STATES PATENT OFFICE.

HUGH G. WILLIAMS, OF GRANVILLE, NEW YORK.

METHOD OF AND APPARATUS FOR AUTOMATICALLY SPLITTING OR CLEAVING SLATE BLOCKS.

Application filed January 21, 1926. Serial No. 82,714.

This invention relates broadly to a method of automatically splitting or cleaving slate blocks, together with certain mechanism employed in carrying out the method, the primary object residing in such a method and such a mechanism wherein slate blocks may be accurately cleaved or split other than by medium of the hand chisel which is the only method known at this time.

A further object is to provide a method and means for use in carrying out the same for permitting of the use of a power driven chisel for accomplishing the splitting or cleaving operation which is absolutely an impossible expedient in so far as I am aware.

An additional object resides in a method and mechanism for use in carrying out the method wherein blocks may be cleaved or split to a plurality of slate slabs in a much more expeditious manner than is now possible.

A final salient object is to provide mechanism for use in carrying out the method that is of relatively simple construction, and easy of manipulation, thus permitting the method to be carried out by ordinarily skilled stone workers.

With the foregoing and other objects in view as the nature of the invention will be better understood, my method comprises the novel steps hereinafter more fully pointed out together with certain mechanism shown in the accompanying drawing, hereinafter more fully described and shown.

In the drawings wherein there is disclosed one manner whereby the present method may be carried out:

Figure 1 is an end elevation of a slate block with which is associated certain mechanism for permitting the same to be split or cleaved by a power driven impact chisel, certain element of which in a power driven chisel are old, while certain other elements thereof have been perfected in order that this method may be carried out.

Figure 2 is a side elevation thereof, the power driven chisel being fragmentarily shown.

Figure 3 is a top plan view of the means adapted to be frictionally disposed over the top side of a slate block to be split or cleaved in order that this method may be carried out.

Figure 4 is an enlarged fragmentary section of one corner of said means.

Figure 5 is an enlarged perspective of one of the power driven chisel guide bars of the means.

Figure 6 is a section through the connecting end of a conventional form of power hammer and a particular form of chisel blade provided for the proper carrying out of the method, and

Figure 7 is an enlarged transverse section taken substantially upon the line 7—7 of Figure 6.

Before describing my method and the means for use in carrying out the same, it may be well to herein state that up to the present time it has been an impossibility to cleave or split slate through the medium of a power driven chisel or other tool, mainly for the reason that it is a physical impossibility to maintain the cutting edge of the chisel or tool against transverse vibratory movement upon the face of the block being split, thus making it a necessity to split or cleave these slate blocks through the medium of a hand chisel and impact delivering mallet in the hands of an unusually skilled stone worker. In my method, use is made of a power driven splitting or cleaving chisel that is maintained against rotation and transverse vibration during the splitting or cleaving operation.

Having particular reference to the drawing, A designates a conventional slate block that is to be split or cleaved into a plurality of slate slabs through reason of the present method and mechanism for use in carrying out the same.

In carrying out my method I provide a chisel guiding and bracing frame 5, of substantially rectangular shape that is adapted to be disposed upon the upper edge of the block to be operated upon. This frame comprises a pair of spaced relatively elongated parallel rods 6—6 headed at one end as at 7 and threaded at their opposite ends as at 8, Figures 1 and 3. Pendent from the opposite ends of said rods are rectangular shaped boards or plates 9—9 between which and freely slidable upon said rods are longitudinally extending chisel guiding and bracing bars 10 of flat-like material that are maintained in spaced relation through the medium of washers 11, encir-

clinging the rods, and being removable and interchangeable with other washers of increased or diminished thickness for regulating the thickness of the slate slabs produced from the block A.

Encircling the rods 6—6 between the boards 9—9 and the adjacent cross bars are relatively strong expansible helical springs 12 that serve to maintain the bars 10 and washers 11 in close contact, but permitting of the sliding of the same upon the bars when the power driven cleaving or splitting chisel is inserted between adjacent predetermined ones of the bars, and for also maintaining predetermined ones of the bars in tight engagement with the opposite faces of the spring or cleaving chisel for preventing transverse vibrations of the same.

As previously mentioned, the frame 5 is adapted to be disposed over the top side of the block A in the manner as clearly shown in Figure 1, and in order that this frame will be maintained in frictional engagement with the block I provide arcuate shaped leaf springs 13 secured at their upper ends to the boards 9—9 adjacent the outer edges thereof for contacting the opposite sides of said block as clearly shown also in Figure 1. The lower ends of these springs contact the boards 9—9 for preventing the outward bending of the same which would otherwise reduce their block securing power.

The frame just described permits the use of a power driven chisel in the splitting or cleaving of the block which in this instance constitutes the provision of a generally conventional type of blade 14 associated with an air or steam cylinder 15 of a conventional type of impact hammer within which is the usual impact delivering plunger or bullet.

In the use of such power driven splitting chisel it is necessary that a connection be provided between the cylinder and blade 15 and 14 respectively in order that said blade will not rotate during operation thereof. To this end, the blade 14 is formed at its upper end with a flat shank 16, the upper end of which is rounded as at 17 for engagement within the usual externally threaded circular neck 18 upon the lower end of the cylinder 15.

Directly beneath the rounded portion 17 of the shank is a cross tang 19, and in order that the blade may be slidably but non-rotatably connected to the neck 18 of the cylinder,

there is provided an internally threaded thimble 20 for threaded engagement upon said neck, the bottom wall of which is formed with a circular opening 21 at diametrically opposed points of which are notches 22—22 for permitting the tang 19 of the shank 16 to be passed therethrough. The inner face of the bottom wall of said thimble is formed with cross slots 23—23 between the notches 22—22 for receiving the ends of the tang after the shank has been passed through the opening and then given a quarter turn.

The upper end of the cylinder 15 is adapted to have communication with a source of compressed air or steam supply through reason of a quick acting thumb control valve 24 of conventional construction.

It will thus be seen that I have provided highly novel and efficient mechanism wherein slate blocks may be split or cleaved through a method of applying a power driven chisel to the surface of the block and then operating the same without the consequent rotation of the blade as well as the transverse vibrations thereof, resulting in a clean split and for permitting the block to be split or cleaved into slabs of desired thickness in an expeditious manner.

Having thus described the invention, what I claim as new and desire to secure by Letters patent is:—

1. In a structure of the class described, a multiplicity of bars adapted to be disposed across the top surface of a slate block, and a supporting and retaining frame structure upon which said bars are mounted, said frame including yieldable block engaging springs for frictionally holding the frame upon the block.

2. In a structure of the class described, a pair of plates adapted for vertical disposition, horizontally disposed rods connecting said plates together in spaced relation, a plurality of guide bars supported upon said rods for sliding movement, means for maintaining the bars in spaced parallelism also carried by said rods, springs surrounding the end portions of the rods and bearing against the plates, and bowed springs carried by said plates and adapted to press against the block.

In testimony whereof I affix my signature.

HUGH G. WILLIAMS.