A. W. ANDREWS.

Splitting and Shaping Stone by Machinery.

No. 205,989. Patented July 16, 1878.

Fig. 1.

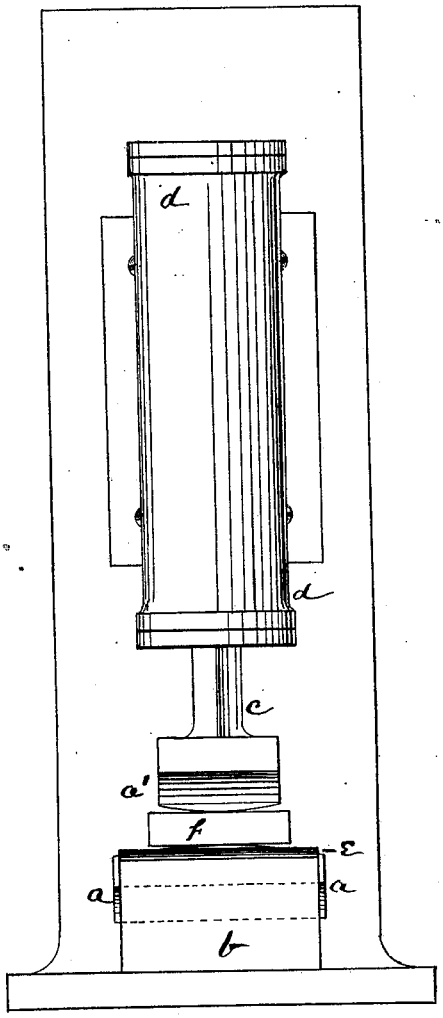
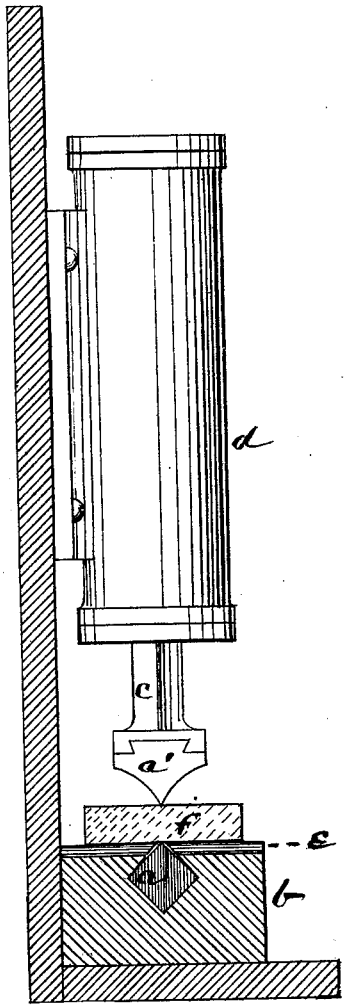


Fig. 2.



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IMPROVEMENT IN SPLITTING AND SHAPING STONE BY MACHINERY.

Specification forming part of Letters Patent No. **205,989**, dated July 16, 1878; application filed January 28, 1878.

To all whom it may concern:

Be it known that I, ABRAM W. ANDREWS, of Brooklyn, in the county of Kings, State of New York, have invented new and useful Improvements in Splitting and Shaping Stone by Machinery for Blocks for Pavements and other Purposes, of which the following is a specification, reference being had to the drawing accompanying and making part thereof.

The object of my invention is to split and reduce rock or stone in the rough into rectangular forms, and of suitable size, for blocks for the pavements of streets; and it is also applicable to the splitting of stone for any purpose in which one or more flat surfaces are required.

My invention has reference, first, to the form of the splitting tools or chisels and the manner of arranging and using the same in the machine; secondly, to the construction and use of an elastic bed or cushion for holding the stone in the rough and adjusting its position upon the anvil or base of the machine, so that it will be held properly to receive the action of the cutting or splitting tools; and, thirdly, to the combination of these devices with the driving and operating machinery.

In the accompanying drawing, Figure 1 represents a front elevation of my improvements, and of a steam-cylinder and piston-rod and the base or anvil of the machine. Fig. 2 represents a side elevation of the same parts at right angles to Fig. 1.

In each of the figures similar letters represent similar parts.

The splitting tool or chisel *a* is shown in both figures—in end view in Fig. 2 and in side view in Fig. 1, partly in dotted lines. It is composed of a solid block or bar of steel, of a quadrangular form, having four sharp angles along its whole length. These angles constitute the cutting or splitting edges of the chisel. This chisel is placed in the base or anvil of the machine *b*, in a recess corresponding to it in form, but so that the edge or angle will always project above the upper face of the anvil sufficiently to act upon the stone, and it extends across the anvil from side to side. It is fitted in the recess so as to be held firmly in its position.

Directly over the chisel *a* is placed the movable chisel *a'*, and which is secured firmly by a dovetail joint or other suitable means in the lower end of the piston or operating rod *c*, which has a vertical reciprocating motion within the cylinders *d*. The line of the cutting-edge of *a'* must coincide with that of *a*.

In the drawing, the cutting or splitting chisel *a'* is represented of a shape which has but one cutting or splitting edge; but this is not essential, as I, in practice, use the same form for the movable chisel *a'* as for the fixed chisel *a*, and fitted in like manner into a suitable recess to hold it, so that both chisels may be turned in their beds and held so as to present a fresh angle and edge to the stone as one edge becomes worn.

When the pieces of stone in the rough are to be operated upon by the chisels, it is necessary that these pieces should be placed in a suitable position, and to be retained in it, to properly receive the action of the chisels. For this purpose I construct a bed or cushion of india-rubber, *e*, which is laid flat upon the upper face of the anvil. This cushion or bed is provided with a slot or opening in the line of the edges of the chisels, so as to allow the edges to act upon the stone without injuring the rubber bed. This bed or cushion I make of india-rubber, as the best material for the purpose; but any other elastic or yielding material suitable may be used. The bed must be of sufficient thickness to embed the stone, so as to hold it in the position in which it may be placed to receive the blow of the chisel.

The stone to be split, *f*, may be of any size, to be placed between the chisels and allow the play of the machine. It is placed between the chisels, and is adjusted upon the bed of rubber, so as to receive the action of the chisels upon it, as is desired.

The piston-rod *c* being put in motion by the steam machinery, the operation of splitting and shaping the stone is performed with great rapidity and economy of time and labor, and with precision.

Having thus described my invention, and

the manner of using the same, what I claim therein, and desire to secure by Letters Patent, is—

1. The splitting-tool *a a'*, composed of a solid bar of steel of quadrangular form, and having the angles for splitting-edges, as set forth.

2. The elastic cushion or bed *e* upon the anvil, for adjusting and holding the stone in the required position, substantially as set forth.

3. The combination of the chisel or tool *a* and the bed or cushion *e* with the anvil *b* and the driving or piston rod *c*, for the purposes of a stone-splitting machine, in the manner substantially as set forth.

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