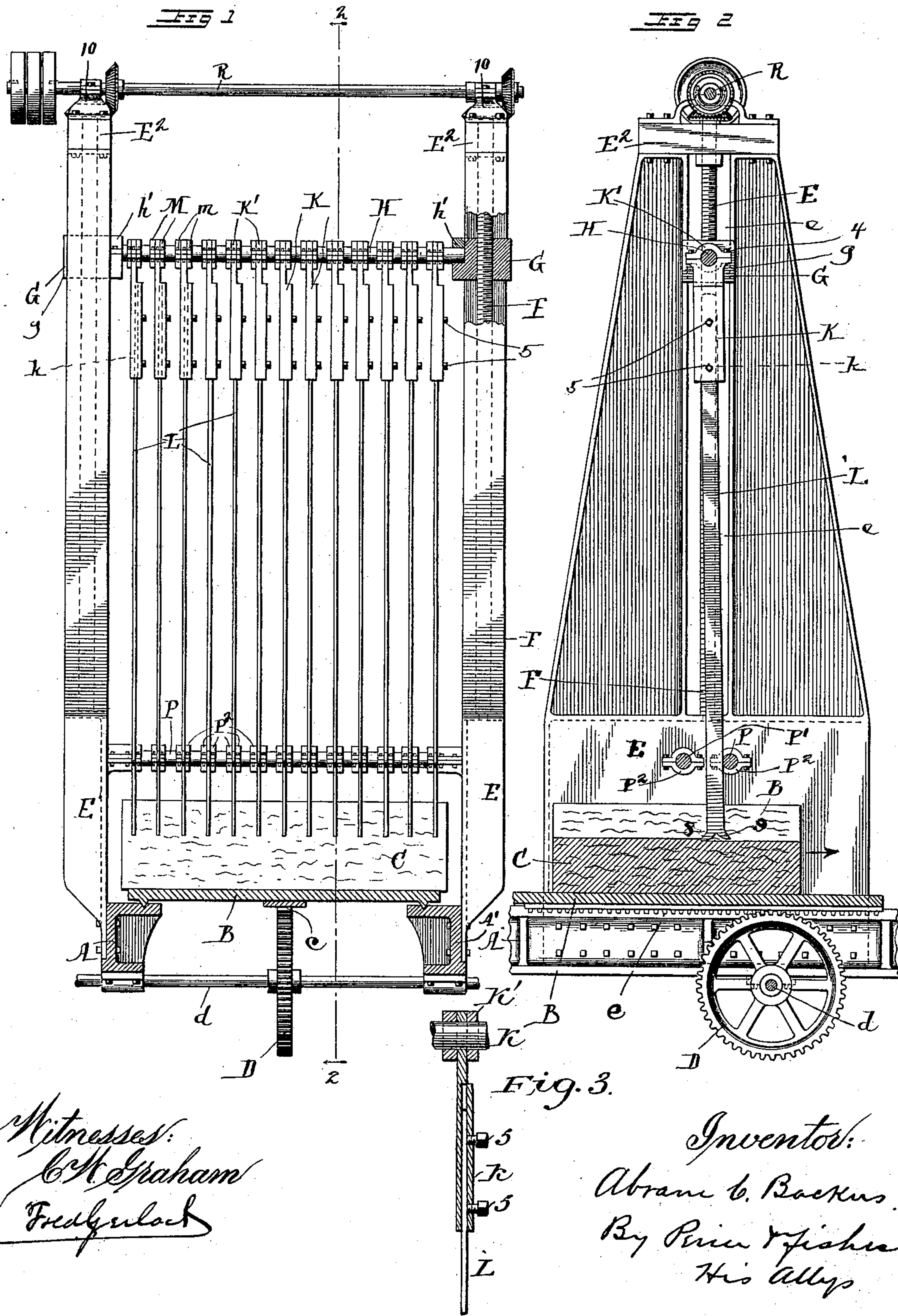


(No Model.)

A. C. BACKUS.
STONE CHANNELING MACHINE.

No. 591,615.

Patented Oct. 12, 1897.



Witnesses:
C. H. Graham
Frederick Lock

Inventor:
Abram C. Backus.
By Peirce & Fisher
His Attys

UNITED STATES PATENT OFFICE.

ABRAM C. BACKUS, OF CHICAGO, ILLINOIS.

STONE-CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 591,615, dated October 12, 1897.

Application filed May 2, 1896. Renewed April 14, 1897. Serial No. 632,171. (No model.)

To all whom it may concern:

Be it known that I, ABRAM C. BACKUS, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stone-Channeling Machines, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

The present invention has for its object to provide a simple, durable, and effective apparatus whereby the channeling of stone or like material can be readily and quickly effected at a minimum cost. This object of invention I have accomplished by the features of improvement hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

In carrying out my invention in practice I employ a series of cutting-tools that are adjustably sustained, so that they may be set at the proper distance apart, these tools being sustained by a cross-head in order to permit them to be advanced to the work as the cutting of the stone progresses. In the practice of the invention these cutting-tools may be mounted so as to travel back and forth over a stationary bed whereon the stone will rest, or the tools may be mounted within a stationary framework, the stone to be cut being carried back and forth beneath them upon a reciprocating bed.

In the accompanying drawings I have shown the stone as mounted upon a traveling bed, but it will be understood that the invention is in no wise to be understood as restricted thereto.

Figure 1 is an end view of the machine embodying my invention. Fig. 2 is a view in vertical section on line 2 2 of Fig. 1. Fig. 3 is a detail view showing a longitudinal section of one of the tool-holders and a portion of one of the tools.

A designates the framework of the machine, this framework being provided with rails of suitable or usual construction adapted to carry the reciprocating bed B, whereon will rest the stone C to be channeled or cut. I have shown the bed B of the machine pro-

vided upon its under side with a rack-bar *c*, with which will engage a gear wheel or pinion D, that receives motion from the shaft *d*, and serves to impart the necessary reciprocating movements to the bed B. From the base of the machine, at each side thereof, rise the standards E E', that are suitably bolted to the base A of the machine, and their tops are connected together by the head-block E², suitably bolted thereto. The standards E E', at each side of the machine, are set a slight distance apart to form the ways *e*, through which extend the screw-shafts F, each of these screw-shafts passing through a correspondingly-threaded slide-block G, the flanges *g* of which embrace the edges of the standards E E', that form ways whereon the slide-blocks may freely travel. Upon their inner faces the slide-blocks G are formed with bearings for the ends of the tool-holding shaft H, this shaft being held in place within its bearings by suitable caps or housings conveniently bolted thereto, as at *h'*.

Upon the shaft H are mounted a series of tool-holders K, these tool-holders being preferably of the construction shown in Fig. 2 of the drawings—that is to say, each of the tool-holders is formed at its upper end with a semi-annular recess to partially encircle the shaft H, the upper ends of the tool-holders being bolted, as at 4, to the caps or couplings K', that set upon the shaft H. The lower portion of each tool-holder is preferably formed with a vertical recess *k* to receive the upper end of the corresponding tool L, that is connected to the tool-holder by set-screws 5, that pass through threaded openings in the tool-holder. Each of the tool-holders K is preferably held in position upon the shaft by means of two coupling-clamps or sectional sleeves M, the flanged sections of which are bolted together, as at *m*. The lower ends of the tools L extend between parallel shafts or guide-bars P, (see Fig. 2,) the ends of which are held within suitable bearings at the sides of the machine, and upon each of these shafts or guide-bars P are fixed a number of guide-sleeves P', (two of such sleeves being used for each tool,) whereby the lower ends of the tools L are guided. Preferably the guide-sleeves P' will be formed of sections bolted together, so that their position upon the shafts P can be ad-

justed as required, in order to retain the tool-holders at the desired distance apart. It will be observed that the distance between the guide bars or shafts P is somewhat greater than the width of the tools L, the purpose of this arrangement being to allow a slight back-and-forth movement of the lower ends of the tools in order to permit a slight rocking movement of the tools L about the upper shaft H, so that when one of the cutting-points 8 of the tools is at work the opposite cutting-point 9 will be raised slightly above the line of work and will consequently be saved from unnecessary wear. From the foregoing description it will be seen that any desired number of tools may be mounted upon the tool-holding shaft H, and by means of the sectional sleeves of the couplings M these tools may be held at any desired distance apart, it being understood, of course, that the sectional guide-sleeves or couplings P' upon the guide-shafts P will be correspondingly adjusted in order to insure the accurate positioning of the tools.

The screw-shafts F have their lower ends stepped in suitable bearings, while their upper ends extend through the head-blocks E² and are provided with beveled gears that mesh with corresponding beveled pinions upon the shaft R, that is journaled in suitable brackets 10, rising from the head-blocks E². It will thus be seen that by turning the shaft R motion will be imparted to the screw-shafts F, which will be communicated to the slide-blocks G, causing these blocks to raise or lower and correspondingly shift the tool-holding shaft H. By this means the tools L may be readily, accurately, and uniformly presented for cutting the stone C or may be raised clear of the working position. By reference to Fig. 2 of the drawings it will be seen that when the bed B of the machine is traveling in the direction of the arrow there shown the tool L will be swung to bear against the shaft P, and during such travel the cutting-points 8 of the tool L will be in action, while the point 9 will be raised above the surface of the stone and consequently will be free from wear. On the other hand, when the direction of travel of the bed B is reversed the tool L will be swung into bearing with the shaft P', thereby lifting the points 8 of the tools out of action and bringing the points 9 to the cutting position. Inasmuch as each of the tools L is adjustably connected by the set-screws 5 to one of the tool-holders K the tools can be individually adjusted, so as to insure the bringing of their cutting-points at all times to the required position.

It is manifest that the details of construction above set out may be varied by the skilled

mechanic without departing from the spirit of the invention, and I do not wish, therefore, that the invention shall be understood as limited to such details.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In apparatus of the character described, the combination with a suitable work-holding bed and with a vertically-movable tool-support, of a series of tools pivotally sustained from said support to vibrate in the plane of travel of the bed, and arranged transversely of said bed, said tools being adjustable in lateral direction with respect to each other and transversely of the work-holding bed, substantially as described.

2. In apparatus of the character described, the combination with a suitable work-holding bed, having standards at its sides provided with guideways, of a tool-support sustained within the upper part of said guideways, a series of tools pivotally carried by said support and arranged to vibrate therefrom as a center, said tools being arranged transversely of the bed and being individually adjustable in vertical direction and being laterally adjustable with respect to each other, substantially as described.

3. In apparatus of the character described, the combination with a suitable work-holding bed and with a tool-holding shaft or bar mounted above said bed transversely thereof, of a series of individual tool-holders laterally adjustable upon said shaft or bar and pivoted to swing thereon in the plane of travel of the bed, and a series of double-pointed tools carried by said tool-holders and adjustably connected therewith, substantially as described.

4. In apparatus of the character described, the combination with a tool-holding shaft or bar, of a series of tool-holders adjustably mounted upon said bar, tools carried by said tool-holders and front and rear guide-bars for the lower portions of said tools, substantially as described.

5. In apparatus of the character described, the combination of a tool-holding shaft H, suitable slide-blocks G for sustaining said shaft, means for moving said slide-blocks up and down, laterally-adjustable tool-holders K connected to said shaft H, front and rear guide bars or shafts P, P' between which the lower ends of said tools extend and laterally-adjustable guides upon said shafts or bars P, P', substantially as described.

ABRAM C. BACKUS.

Witnesses:

GEO. P. FISHER, Jr.,
ALBERTA ADAMICK.