

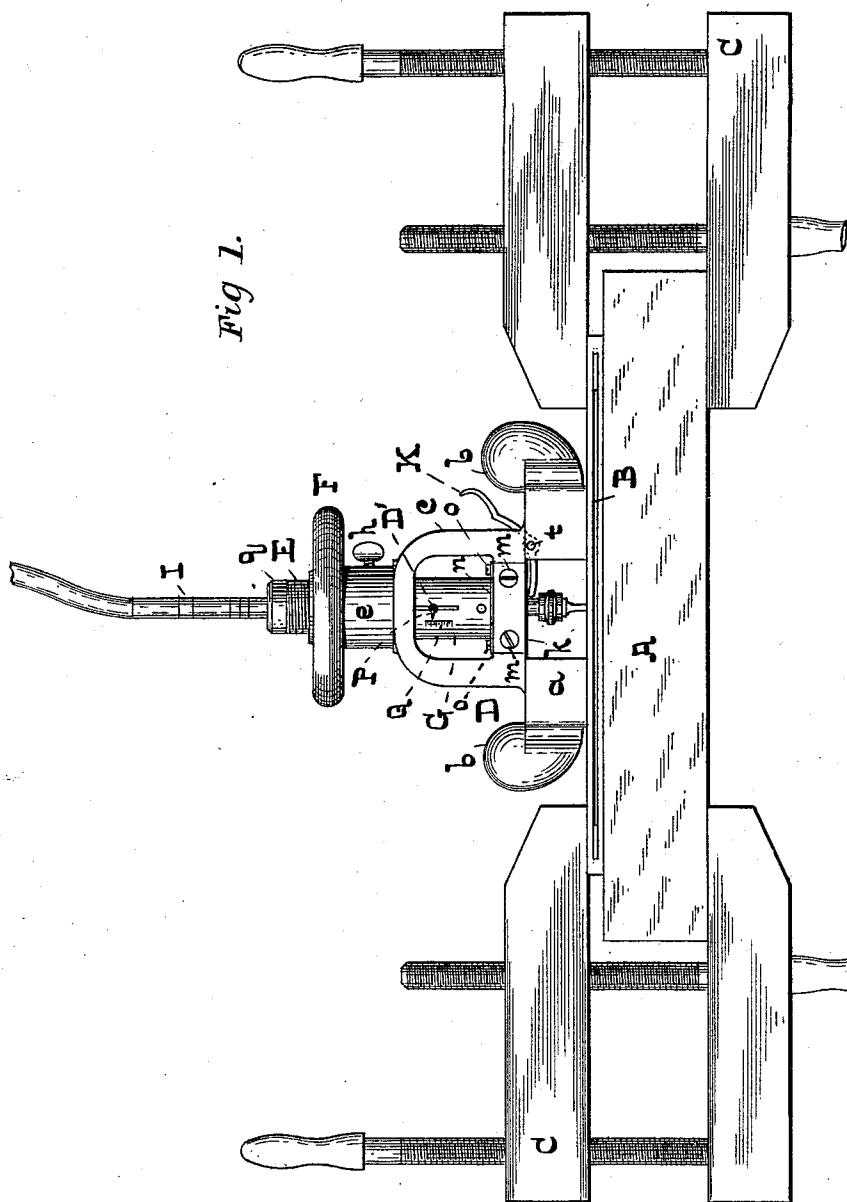
(No Model.)

4 Sheets—Sheet 1.

B. J. BEST & D. M. FULTON.
STONE ENGRAVING MACHINE.

No. 536,826.

Patented Apr. 2, 1895.



-WITNESSES-

Sam'l Fisher
George Hemsley

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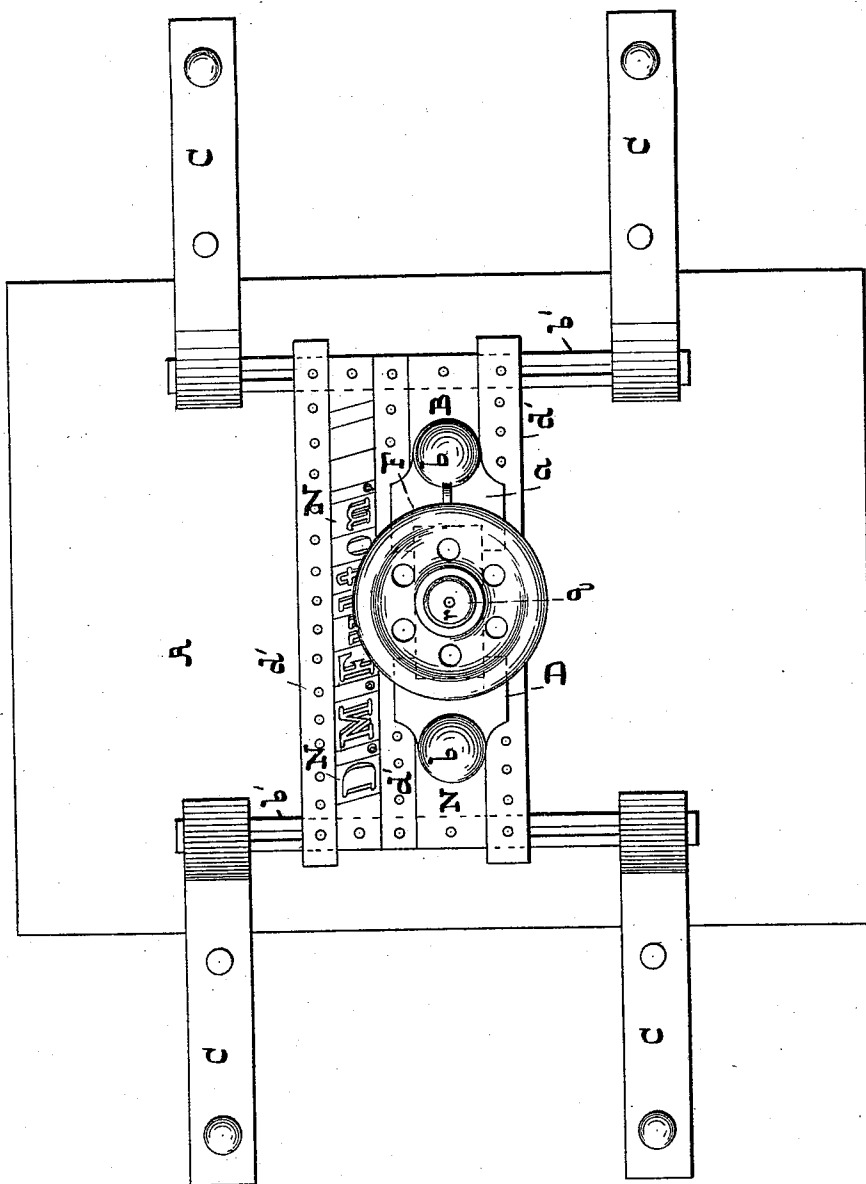
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Fig 2.



-WITNESSES-

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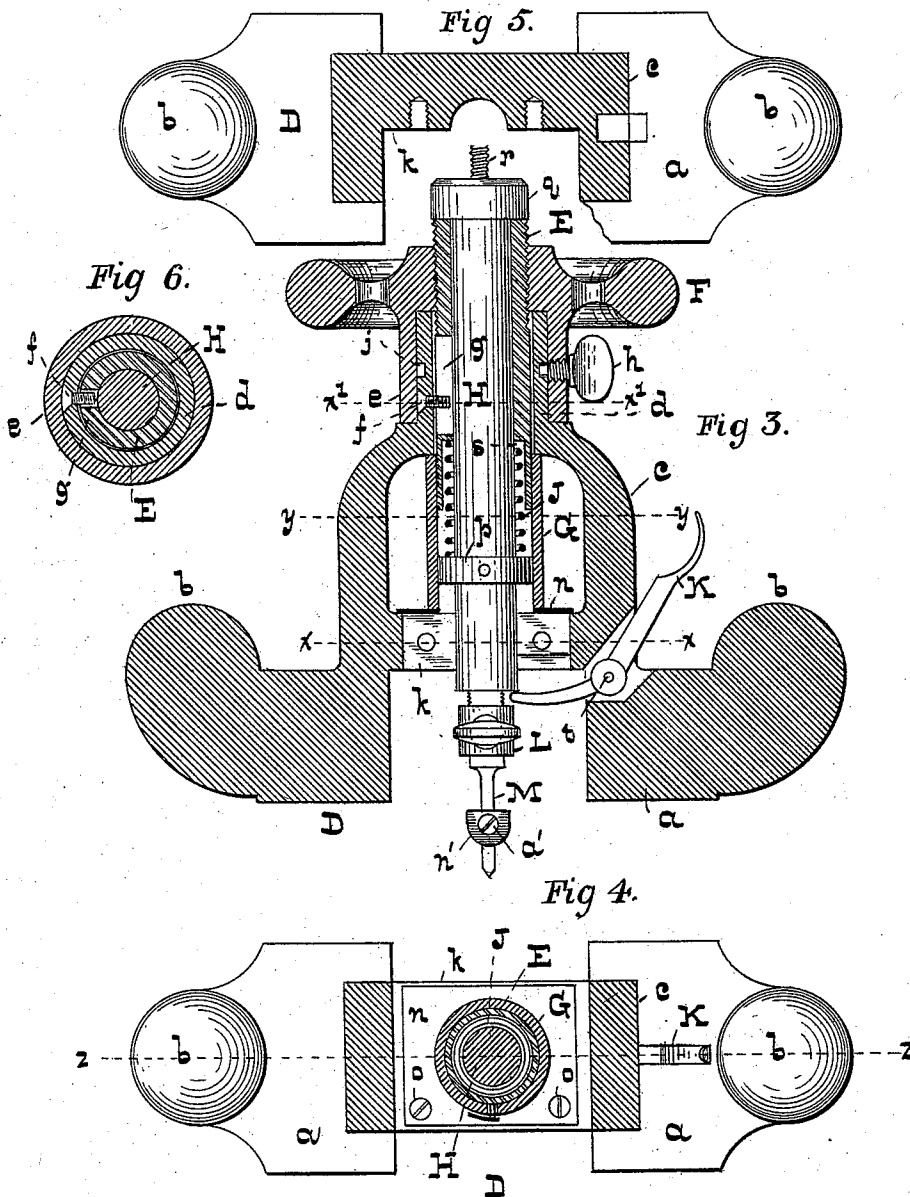
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UNITED STATES PATENT OFFICE.

BENJAMIN J. BEST, OF SHINE, NORTH CAROLINA, AND DAVID M. FULTON,
OF BALTIMORE, MARYLAND.

STONE-ENGRAVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 536,826, dated April 2, 1895.

Application filed April 11, 1893. Serial No. 469,865. (No model.)

To all whom it may concern:

Be it known that we, BENJAMIN J. BEST, of Shine, in the county of Green and State of North Carolina, and DAVID M. FULTON, of the city of Baltimore and State of Maryland, have invented certain Improvements in Stone-Working, of which the following is a specification.

This invention relates to improved means for engraving ornamental patterns, figures, letters and various designs on stone, as will hereinafter fully appear.

In the description of the said invention which follows, reference is made to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a front view of our improved apparatus applied to a block of stone. Fig. 2, is a top plan view of the apparatus showing the same resting on a block of stone. Fig. 3, is a vertical sectional view of a frame carrying the engraving apparatus. Fig. 4, is a section of Fig. 3, taken on dotted lines *y—y* the dotted lines *z—z* indicating the line on which the section in Fig. 3 is taken. Fig. 5, is a section of the frame with its attachments removed taken on the line *x—x* Fig. 3. Fig. 6, is a horizontal sectional view taken on the line *x'—x'* Fig. 3. Fig. 7, is a top plan view showing the pattern frame carrying the stencils. Figs. 8 and 9, are edge views of the said frame. Fig. 10, is a sectional view of the frame taken on the line *x²—x²* Fig. 7, showing the peculiar manner in which the letters of the stencil are held in place within the frame. Fig. 11, is a detail view showing one way of holding the stencil letters in place. Fig. 12, is a sectional view through the same. Fig. 13, is a view showing the construction of a number of cutting tools employed in connection with the invention.

Referring to the drawings, A represents the block of stone to be engraved. The top face of the stone is shown in Fig. 2, and the front edge in Fig. 1.

The design to be engraved is cut through a pattern B, hereinafter described, and the same is clamped to the face of the stone by any suitable means. In Figs. 1 and 2 the clamping devices consist of ordinary hand screws C.

D is the frame of the engraving apparatus which consists of a block *a* of any suitable

size and shape, having handles *b* whereby it may be drawn over the surface of the pattern B, which, as before described, is clamped to the face of the block of stone. On the top of the block *a* and formed as a part of it is an open stand *c* having a cylindrical hub *d* at its upper end.

E is a sleeve turned exteriorly so as to fit loosely in the hub *d* of the frame D. The upper part of this sleeve is threaded on the outside, and onto this thread is screwed the interiorly threaded hand wheel F, with the lower part of its hub *e* fitting neatly over the hub *d* of the frame D. The sleeve E is prevented from turning independently of the hub *d*, by means of a screw *f* in the hub *d*, the point of which screw enters a slot *g* in the said sleeve. This prevents the sleeve from turning independently of the frame but admits of its being moved up and down. The hand wheel F constitutes the means of raising and lowering the sleeve E.

To prevent the hand wheel from being lifted from the hub *d* of the open frame, and at the same time allow of the same being fastened at any position in which it may be placed, its hub *e* has a set screw *h* which enters an annular groove *j* in the hub *d*. See Fig. 3. Between the under side of the hub *d* of the stand *c* and the top of the partition *k* which partition is in two parts, a fixed part which constitutes a portion of the stand and a removable part attached to the other by screws *m*, is a shell G having a flange *n* soldered or otherwise fastened to its bottom. This shell is held to the partition *k* by screws *o* which pass through the flange *n*. See Fig. 4.

H is a rotary spindle turned to fit the inside of the sleeve E, and near its lower end and in the shell G is a collar *p*. The spindle H has a head *q* which bears against or on the upper end of the sleeve E, and a threaded stem *r* to which a flexible shaft I, shown only in Fig. 1, is attached.

Between the collar *p* and the bottom of a recess *s* in the sleeve E, is a coiled spring J which yieldingly holds the head *q* of the spindle H in contact with the top of the sleeve E. The spindle H may however be raised independently of the sleeve and the spring J compressed, by means of a hand lever K ful-

crumpled at t to the block a , the short arm of which rests against the bottom of the spindle.

L is a socket into which the graving tool M is secured. The tool consists of a drill, and it is held in the socket by a thumb screw a' . The tool shown in Fig. 3 is pointed, but any other shaped cutting end adapted to the description of cut to be made, may be used.

The pattern B before referred to, consists in the present case of a frame formed of the slotted strips, b' , the slotted bars d' which latter are placed over the slotted strips, and certain blocks hereinafter described which are set up between the slotted bars. The bars d' have holes e' through which screws are inserted to hold the bars and strips together. The multiplicity of holes e' admits of the change in width of the frame. The edges of the bars d' have dovetail grooves h' , see Fig. 10, which is a section of Fig. 7 taken on the dotted line x^2-x^2 , and between the bars d' are placed letter blocks N which have beveled edges g' which fit into the dovetailed grooves h' in the bars. The blocks N have letters, numerals and various designs, cut, stamped or cast through them, and they are locked in the pattern frame in a manner similar to type locked in a chase.

In Fig. 8 both the slotted strips b' and the slotted bars d' are shown as they would appear in looking toward the broken ends of the said strips. Fig. 9 is a similar view except that the slotted strips b' are omitted, the bar d' only being shown.

The drill or graving tool is made to follow the inner surface of the spaces in the block and thereby cut their shape in the surface of the stone. In letters such as "D" and "O," where there is a portion entirely detached from the other, a center piece is unnecessary as the drill in following the inner surface of the opening, leaves the detached piece standing; but in other letters such as "M," "N" and "F," the whole letter is shown. In some letters such as "B" and "a," the blocks are originally made to exhibit the outlines only, as in "D" and "O" but as there are two parts to stand which intersect, after the outline is cut, a supplemental block k' to guide the tool, is screwed to the face of the block so that after the first operation, the tool may be guided in forming the intersecting standing parts of the letter. See Fig. 7.

When standing letters are to be cut as shown in Fig. 11, a pattern letter is secured in the opening in the block by means of small strips m' .

When it is desired to shade letters as particularly in script, or form the letters with heavy and light lines, a pointed tool is used and on it is secured a rounded stop n' . See Fig. 3. In connection with the stop n' the inner sides of the pattern letter where the heavy lines are to be cut, are beveled as shown by the heavy lines in Fig. 7. The stop as it strikes the beveled edges sinks deeper into the stone than where it follows a sharp angle,

and the effect is that heavy and light lines are produced.

It is impossible to describe all the different changes required in the pattern blocks to produce a great variety in letters and designs, but as the invention extends to the employment of patterns through which the graving tool is inserted in cutting the designs, such a description, if possible, is not necessary.

D' is a screw projecting from the sleeve E through a slot in the shell G having a pointer P, which, in connection with a scale Q, may be used to indicate any change in the vertical position of the cutting tool.

The operation of cutting letters to form words and sentences in a block of stone consists as follows: The letter blocks which will give the desired words are selected and then set up, as are type, and secured in the frame. The frame is then clamped on the surface of the stone and the graving apparatus described, placed over it. The graving tool is then set so as to give the proper depth of cut, and after the tool spindle is placed in rotation, the tool is made to follow the inner surfaces of the spaces in the letter blocks, the graving apparatus being drawn over the surface of the pattern frame by hand. When a letter is finished, and it is desired to commence another, the tool is elevated temporarily by means of the hand lever.

We claim as our invention—

1. In an apparatus for engraving letters and designs in the surface of a block of stone, and through a pattern held thereon, a liftable frame adapted to stand alone in an upright position, and to be freely slid or drawn over the surface of the pattern in any direction by hand, a rotary spindle having means at its upper end adapted for connection to a flexible driving shaft, and constructed so as to admit of its being raised and lowered within the frame, a cutter attached to the lower end of the spindle, and means to effect the raising and lowering of the said spindle and cutter, combined substantially as specified.

2. In an apparatus for engraving letters and designs in the surface of a block of stone, and through a pattern held thereon, a liftable frame adapted to be slid or drawn over the surface of the pattern, a sleeve having a vertical movement only, within the frame and threaded at its upper end, a threaded hand wheel on the sleeve whereby the said sleeve may be vertically adjusted, a revoluble spindle in the sleeve carrying a collar near its lower end and a head at the top, a spring confined endwise between the said collar and a projecting edge in the sleeve, and a cutter fastened to the lower end of the spindle, combined substantially as specified.

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Witnesses:

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