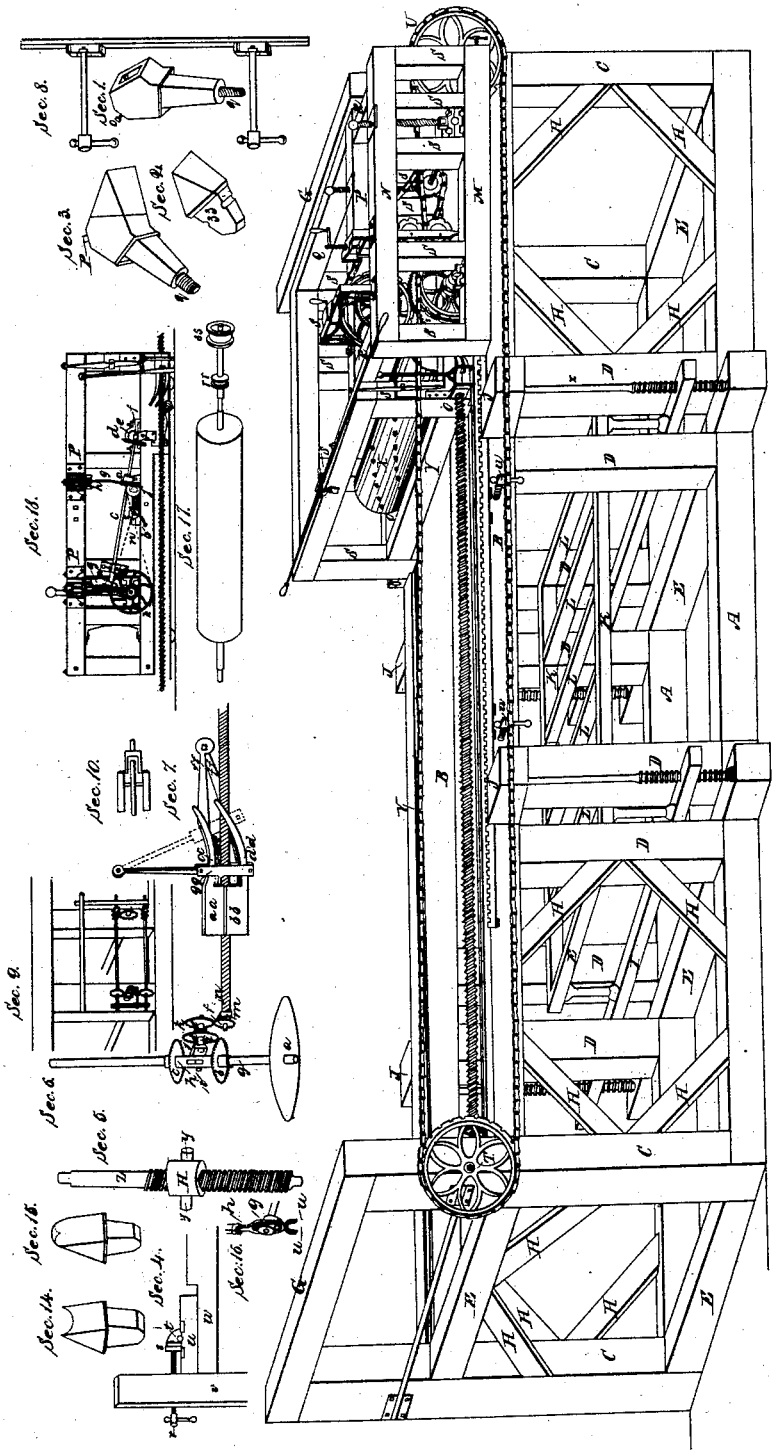
J. D. BUZZELL.

STONE DRESSING MACHINE.

No. 880. Patented Aug. 13, 1838.



UNITED STATES PATENT OFFICE.

JOHN D. BURRELL, OF CAPE ELIZABETH, MAINE.

MACHINE FOR CUTTING, DRESSING, GROOVING, AND BEADING MARBLE AND OTHER STONES AND SOCKET AND CHISEL USED IN THE SAME.

Specification of Letters Patent No. 880, dated August 13, 1838.

To all whom it may concern:

Be it known that I, JOHN D. BURRELL, of Cape Elizabeth, in the county of Cumberland and State of Maine, have invented a new application of the use of malleable-iron sockets and malleable-steel cutters or chisels to be used in revolving cylinders for the purpose of dressing grooving and beading marble and other stone; and I have invented a new application of the lateral motion to revolving cylinders for the purpose of dressing and polishing marble and other stone and also for the purpose of grinding and making even the points or edges of the tools used in the cast-iron cylinders for dressing marble and other stone; and I do declare that the following is a full and exact description thereof.

1st. My first named invention consists in forming and molding in triangular shape as described in my Letters Patent from the United States under date of May 15th, A. D. 1837, certain cutters or chisels of the metal called malleable steel and of molding or forming of the metal called malleable iron, sockets, such as are described in my Letters Patent aforesaid into which said cutters or chisels are inserted. Specimens of each are herewith deposited.

The superior advantage derived from my invention consists in molding in exact form and at trifling expense the sockets and cutters or chisels used in dressing, fluting and beading marble and other stone by machinery or otherwise.

2d. The lateral motion of the grinding and polishing cylinders is produced to any extent desirable and by various methods. That which I consider the most perfect and which I use in my machine for cutting, dressing and polishing marble and other stone, as patented aforesaid is produced by cams fixed on an iron shaft marked *c*, as seen at letters *a*, *a*, section 18 on the drawing hereunto annexed. Each end of the shaft *c* rests and revolves in boxes marked *o*, *o*, connected to the movable carriage by bolts or screws as represented in said section 18. The left hand box is so constructed that it may be raised or lowered four or five inches by means of two oblong squares or slits in each end of the box or bearing. The box or bearing thus formed is fastened to the movable carriage by means of the heads of the bolts or screws and may be raised or lowered for the purpose of conforming to a cylinder of greater or less diameter. The cams made fast to this shaft are in number equal to the cylinders desired to be operated and are made to revolve with the shaft by means of a bevel geared cog wheel on one end of the shaft *c* which is operated upon and made to revolve by means of a bevel geared cog wheel on the end of the shaft of the cutting cylinder as seen at letters *d* and *e* in section 18.

The formation of the cam I use in my machine is represented at section 24 on the annexed drawing and its connection with the shaft *c* and operation on the oval iron is more fully delineated at section 16. This oval iron is connected to an iron which passes through the cross bar of the sliding box by a joint marked *h* on the annexed drawing and fully represented at sections 16 and 20 by the same letters. This sliding box is of cast or malleable iron and in form as represented at section 20. The sides of the sliding box marked figure 2 are of dovetail form and are inserted in, and are made to move upward and downward in a groove cut or cast in the plate of iron so as to conform to the dovetailed slides before described. These irons in which the slides are inserted are fully represented at section 23 at figures 3 and 3 on the annexed drawing and are fastened by bolts to the upper plate of the movable carriage as seen at letters P, P, section 18. The slides are moved up and down by means of a screen which passes through the cross bar of the slides and fastened to them. The upper and threaded part of the screen passes through a stationary iron projection marked figure 4 on section 23 and is confined to it by two square nuts, one above and one below the stationary iron projection. Thus by turning the nuts, the screws remaining fixed in the cross bar, the slides are raised or lowered at pleasure. A representation of these nuts may be seen at the top of the screen in section 20. The use of this slide and the apparatus connected with it is for the purpose of keeping the shafts of the polishing cylinder in contact with a semicircular branch attached to the lower part of the oblong oval iron or stirrup while raising or lowering the polishing cylinder so as to adjust it to the material to be operated upon. This stirrup is represented at letters *u u* on section 16 and

being formed so as to apply to the shaft of the cylinder, runs in a groove in the shaft similar to that represented at section 17 at point marked *r r* on the annexed drawing. The cams are so fixed to the shaft marked *c*, at section 18 as to give to the oval formed iron seen at section 16, within which they revolve, a vibratory or lateral motion which motion is communicated to the polishing and grinding cylinders by means of the semicircular branch or stirrup marked *u*, *u*, section 16, running in a groove of the shaft of the cylinder as before described. This lateral motion serves to keep the polishing cylinders equal in all their parts and prevents any portion of them from wearing off more than another so that the material operated upon receives an even and polished surface. A representation of the cam disconnected with the shaft is seen at section 24.

3d. The grinding cylinder represented at section 17 on the annexed drawing and used for the purpose of marking even the points or edges of the tools used in the cutting cylinder of my stone dressing machine patented as aforesaid, is placed parallel and immediately behind the cutting cylinder. Its shaft near each end of this cylinder runs in movable boxes or bearings attached to the lower plate of the movable carriage. A representation of this box or bearing may be seen at section 19 of the drawing hereunto annexed.

The letters *l*, *l*, *l*, represent the stationary part of the box or bearing.

Letters *m*, *m*, represent the movable part of the box.

Figures 5, 5, 5, 5, 5, represent iron pins used for the purpose of keeping the movable part of the box or bearing in place.

Fig. 6 represents the bevel geared cog wheel attached to the end of the screw which passes through the stationary part of the box and into the movable bearing, which screw when turned moves backward or forward the movable bearing.

No. 7 represents the screw. That part of it which passes through the stationary part of the box is not threaded.

The movable bearing is cast in two parts which are coupled together and fastened by screws. These bearings in which each end of the grinding cylinder runs are moved by means of a long iron shaft fastened by bearings to the lower plate of the movable carriage. This shaft runs parallel with the grinding cylinder and immediately behind it, at each end of which there are bevel geared cog wheels, which mesh into the bevel geared cog wheels on the ends of the screws before described, and represented at No. 6, section 19. This shaft is turned by a crank, and thus both screws which move the bearings of the grinding cylinder are turned at the same time and exactly the same distance each. By this means the chisels or tools at one end of the cylinder are made of the same length as the other. A representation of the iron-shaft with the bevel geared cog wheels (2) on each end of it, together with the crank, is seen on the annexed drawing at section 25. The grinding cylinder may be made of metallic substance overlaid with emery, or it may be made of stone. It should be of the same length as the cutting cylinder. When the tools are sufficiently ground the grinding cylinder is carried back by the same means by which it is brought forward, so as not to interfere with the cutting cylinder when in operation.

On the end of the grinding cylinder shaft, as represented at section 17 on the annexed drawing, is an iron pulley marked *s*, *s*, with flanges for the purpose of preventing the band from slipping off. This pulley is seen at letter *j*, section 18 of the drawing hereunto annexed. This small pulley is connected by a band to a large iron pulley placed on the end of the polishing cylinder as seen at letter *k*, section 18. The band is marked *n*, on the annexed drawing. The grinding cylinder is thus made to revolve with great rapidity having the lateral motion by means of the cam as before described corresponding to that which gives the lateral motion to the polishing cylinders as before described.

The coupling of the shafts of the cylinders to which I design to give the lateral motion I have delineated on the annexed drawings and are seen at sections 21 and 22.

Figure 10 represents the polishing cylinder on section 21.

Figure 8 at section 21, represents the shaft coupled together.

Figures 9, 9 at section 22 represents the two parts of the shaft disconnected.

Letters *a*, *a*, at section 22 represent the barrel of the coupling part of the shaft.

Letter *b* of section 22 represents the large part of the gudgeon of the coupling shaft.

Letter *c* of the same section represents the small part or pivot of the same shaft.

A hole is made in the barrel of the shaft marked *a*, *a* as before described so as to conform to the gudgeon part of the shaft marked *b* and *c*. The pivot *c* fits snugly, but the larger part marked *b* is sufficiently loose, so as to prevent friction.

Letter *c*, section 22, represents a parallelogram or slit four inches or more long and one half inch wide.

Letter *f*, section 22, represents the key hole in the gudgeon part of the shaft one half an inch in diameter made round into which a key is inserted when coupled together. The long parallelogram key hole thus allows a lengthening and shortening of the shaft, so that the stump of the oblong oval iron represented at section sixteen be-

ing attached to the grinding or polishing cylinder gives to it a lateral motion without acting upon or moving laterally the wheel that gives to the polishing cylinders the rotary motion.

Each of the inventions herein described may be and are intended to be used in connection with my stone dressing machine or in separate machinery all combined or separately for the purposes herein described.

The drawings hereunto annexed embraces my stone dressing machine patented as aforesaid with sections of the same to which are added sections 16, 17, 18, 19, 20, 21, 22, 23, 24, and 25, introduced to show particularly the invention herein set forth all of which are referred to in the foregoing specifications.

By means of the combination of machinery which regulates and puts in motion the cutting and grinding cylinders the latter may be brought to bear upon the tools, whenever they are found to be uneven, whether the cutting cylinder is in operation or not.

What I claim as my invention and for which I desire to secure Letters Patent is—

The application and use of malleable iron sockets and the application and use of malleable steel cutters or chisels for the purpose of cutting, grooving, fluting and beading marble and other stone, the application of the lateral motion to revolving cylinders used for the above said purposes of dressing and polishing marble and other stone; also the combination of machinery as before described by which I give at the same time the rotary and lateral motion by means of the cam and the coupling joint delinated and described in the aforesaid drawings and specifications; also the combination of machinery by which the points of the tools in the cast iron cylinder are made even by means of a grinder having a lateral and rotary motion acting on the points of the tools, all as above described.

JOHN D. BURRELL.

Witnesses:

BENJAMIN MCKENNEY,

GEORGE H. SMITH.