J. S. JOHNSON.

MARBLE DRESSING MACHINE.

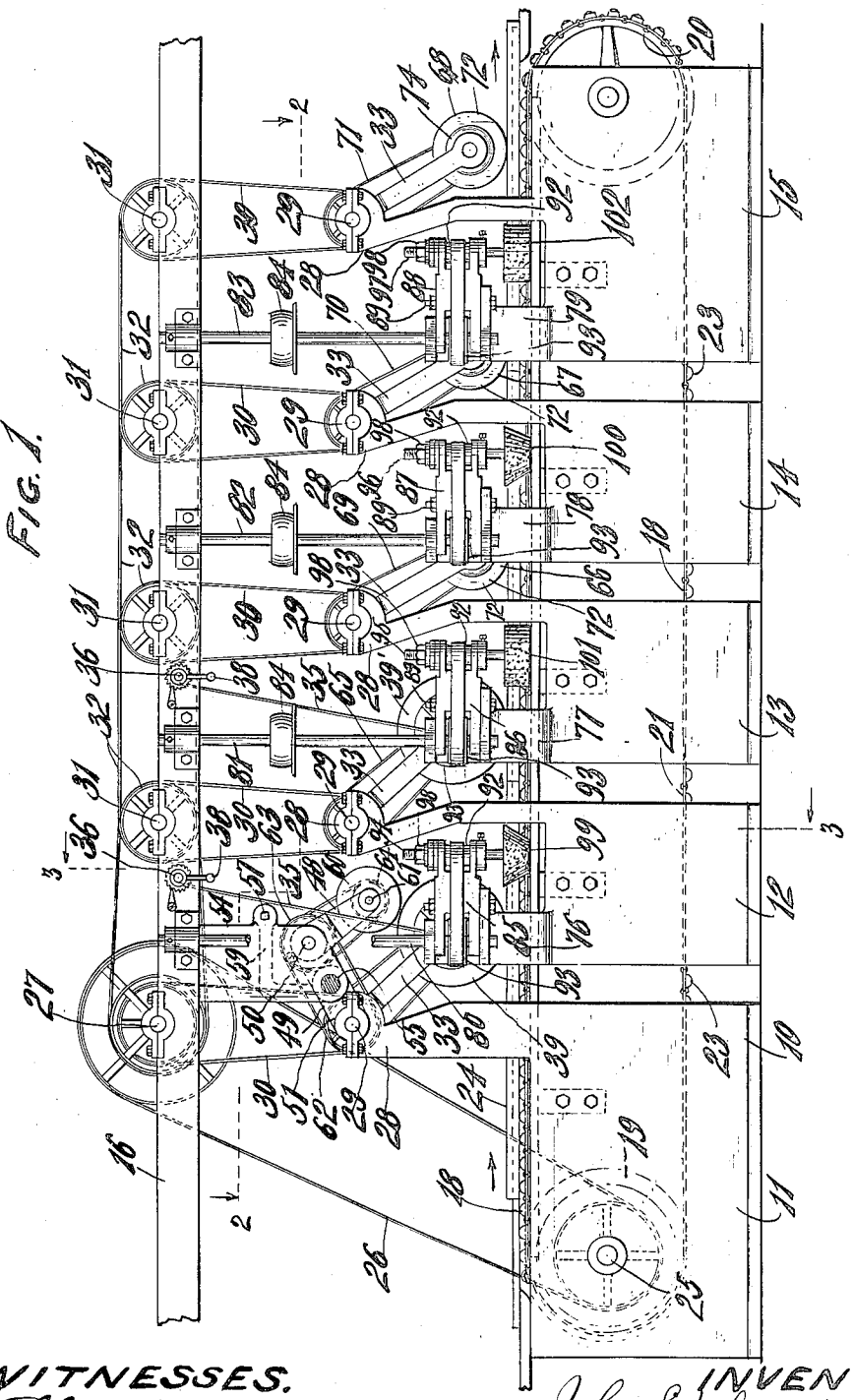
APPLICATION FILED AUG. 16, 1911.

1,126,023.

Patented Jan. 26, 1915.

4 SHEETS—SHEET 1.

FIG. 1.



WITNESSES.

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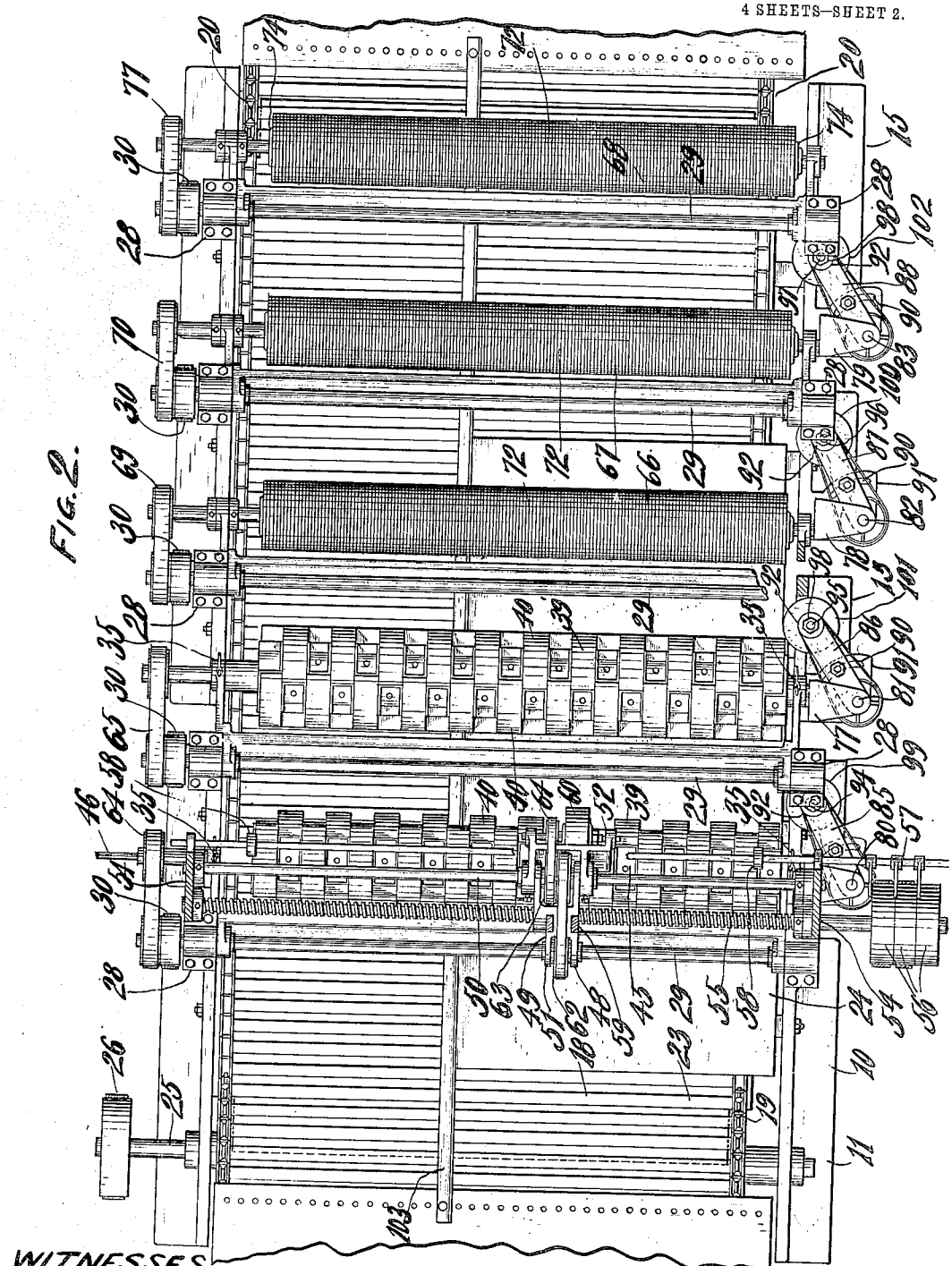
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4 SHEETS—SHEET 2.

FIG. 2.



WITNESSES

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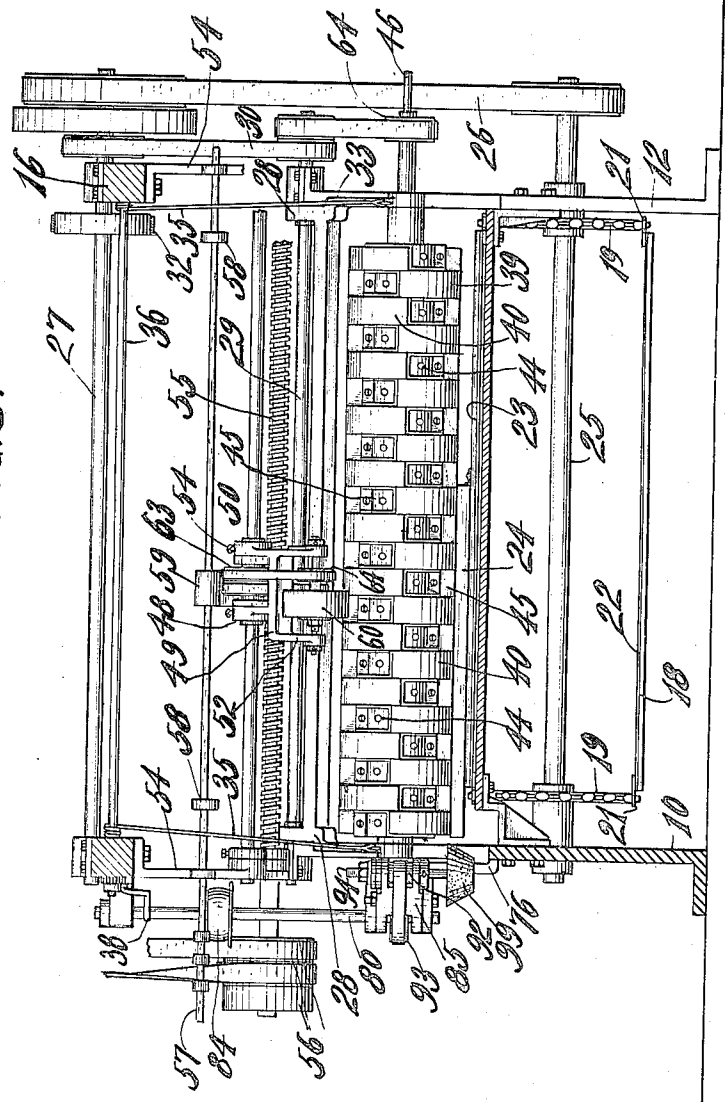
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4 SHEETS—SHEET 3.

FIG. 3.



WITNESSES

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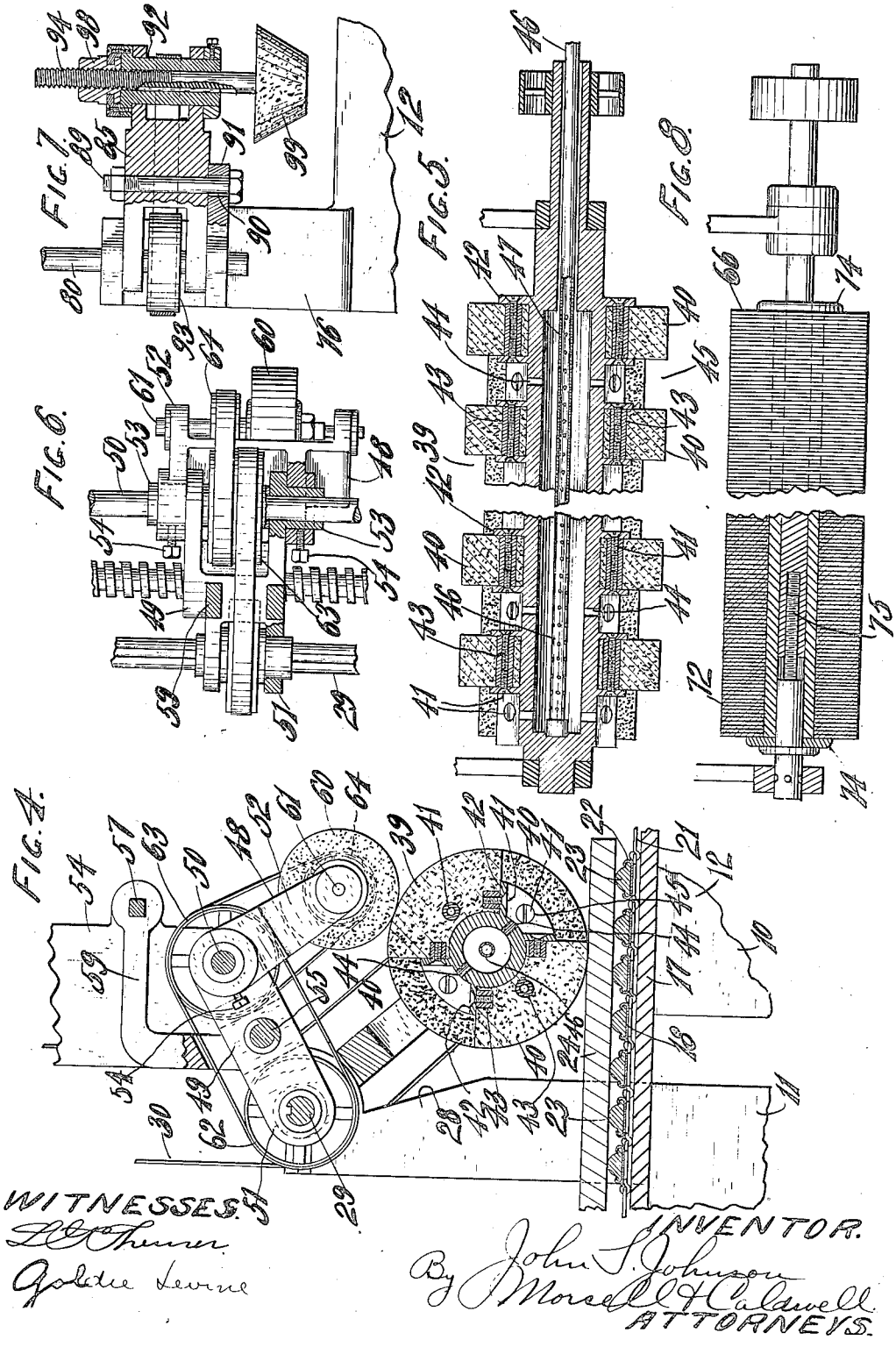
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4 SHEETS—SHEET 4.



WITNESSES:

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MARBLE-DRESSING MACHINE.

1,126,023. Specification of Letters Patent. Patented Jan. 26, 1915.

Application filed August 16, 1911. Serial No. 644,396.

To all whom it may concern:

Be it known that I, JOHN S. JOHNSON, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Marble-Dressing Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to improvements in marble dressing machines and more particularly to machines which dress, polish and finish the sides and edges of marble slabs used in building construction.

It is one of the objects of this invention to provide a marble dressing machine in which unfinished slabs of marble placed in the machine at one end will pass through the machine and be discharged from the opposite end thereof completely dressed, polished and with the edges beveled and ready for use.

A further object of the invention is to provide a marble dressing machine which is adapted to take marble slabs of different widths and lengths and completely finish said slabs by passing through the machine once.

A further object of the invention is to provide a marble dressing machine which is automatic in its operations and is provided with means for feeding the slabs through the machine.

A further object of the invention is to provide a marble dressing machine in which the abrading wheels are formed of a plurality of small blocks of abrading material removably connected to the wheel or drum.

A further object of the invention is to provide a marble dressing machine in which the cooling water necessary in dressing the marble is fed thereto through the abrading wheels and directly upon the slabs.

A further object of the invention is to provide a marble dressing machine in which means are provided for automatically dressing the surface of the abrading wheel to prevent the formation of ridges or uneven portions thereof.

A further object of the invention is to provide a marble dressing machine with means for preventing the pressure of the dressing rolls from breaking the slabs passing through the machine.

With the above, and other objects in view, the invention consists of the improved marble dressing machine and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings in which the same reference characters indicate the same parts in all of the views, Figure 1 is a side view of the improved marble dressing machine; Fig. 2 is a horizontal sectional view thereof taken on line 2—2 of Fig. 1; Fig. 3 is a transverse sectional view taken on line 3—3 of Fig. 1; Fig. 4 is a detail view, partly in section, of the mechanism for initially grinding the faces of the slabs; Fig. 5 is a longitudinal sectional view of the grinding drum or wheel; Fig. 6 is a top detail view of the grinding drum dressing mechanism; Fig. 7 is a detail view partly in section, of the slab beveling mechanism; and Fig. 8 is a side view, partly in section, of one of the polishing rolls or wheels.

Referring to the drawings the numeral 10 indicates the main frame of the machine which is formed of a number of sections 11, 12, 13, 14 and 15 respectively, which are spaced a short distance apart and are each adapted to support certain portions of the operating mechanism. Portions of the operating mechanism are also supported from upper beams 16 which are preferably shown as not connected to the frame proper but may be so connected if desired.

A table 17 connecting the upper portions of the frame sections together is adapted to support an endless belt or conveyer 18 which extends around sprocket wheels 19 and 20 journaled respectively in the frame sections 11 and 15. This endless belt comprises opposite chain portions 21 joined together by channeled metal slats 22 which carry rubber strips 23 to form a yielding support for the marble slabs 24 placed thereon. The sprocket wheels 19 are mounted on the shaft 25 and the said shaft and the endless belt are rotated by means of a belted connection 26 between said shaft and the main driving shaft 27 journaled on the upper beams 16. The shaft 27 is driven in any manner desired from a source of motion.

All of the frame sections are provided with opposite standards 28 having transverse shafts 29 journaled in the upper portions thereof which have belted connections 30 with upper transverse shafts 31 mounted

on the upper beams 16. These upper shafts are all driven from the main shaft 27 by belts and pulleys 32. Swinging frames 33 journaled on projecting portions 34 of the standards and which are concentric with relation to the shafts 29 extend downwardly and rearwardly to positions above the next adjacent section to the one which supports the respective swing arm with the exception of the last swing frame. The swing frames of the frame sections 11 and 12 have their lower free end portions adjustably supported from the upper beams 16 by cables 35 which are connected to said lower swing frame portions and extend upwardly and are wound on shafts 36 extending across the upper beams.

The shafts are provided with ratchet wheels 37 on one end which are engaged by locking dogs and cranks 38 provide a means for turning said shafts to adjust the said swing arms. These two swing arms carry grinding drums or wheels 39 and 39′ which are provided with abrading surfaces of carborundum or other desirable abrading material in the form of blocks 40. The blocks are of segmental shape to conform to the periphery of the drums and are fastened thereto by screws 41 which pass through openings provided in projecting flanges 42 of the drums and are threaded into nuts 43 molded in the abrading material. The abrading blocks of the drums are staggered with relation to each other to provide a more efficient abrading surface.

In order to prevent heating of the drum 39 and the marble slabs being ground the said drum is provided with discharge openings 44 which extend from the interior or bore of the drum through the wall thereof to the pockets or spaces 45 between the abrading blocks. A water supply pipe 46 having lines of perforations 47 along its sides extends from a source of supply to and into the drum and is adapted to supply the necessary water, which is discharged through the openings 44 and on to the slabs 24.

Grinding a number of slabs of a width less than the length of the drum causes the portions of the drum used to wear to a greater extent than the other portions and to provide for keeping the abrading surface of the drum of the same diameter a mechanism 48 is provided for continuously dressing off the face of the roller while the drum in turn is dressing off the face of the slabs. This dressing mechanism comprises a two part frame 49 slidably mounted on the shaft 29 and a horizontal shaft 50 which extends from one side of the machine to the other. The forward portion 51 of the frame slides directly on these shafts while the rearward portion 52 of the frame is mounted on trunnions 53 projecting from opposite sides of the forward frame and surrounding the shaft 50. Set screws 54 are provided for adjustably clamping the two parts of the frame together. The shaft 50 is supported in brackets 54 which depend from the upper beams and these same brackets also carry a threaded shaft 55 which extends between the shafts 29 and 50 and has a threaded engagement with the forward portions of the two part frame. The threaded shaft is rotated alternately in opposite directions by means of belts and tight and loose pulleys 56 and a belt shifter 57. The belt shifter extends across the machine and through the depending brackets 54 and is provided with collars 58 on opposite end portions which are alternately engaged by an arm 59 projecting upwardly from the forward portions of the two part frame as the said frame is reciprocated back and forth.

A dressing wheel 60 fast to a shaft 61 journaled in the rearwardly extending portion of the two part frame rests on top of the grinding drum and is adapted to abrade the grinding face of said drum when operated.

A pulley 62 slidably splined on the shaft 29 and carried by the forward portion of the two part frame has a belted connection with one portion of a double pulley 63 journaled on the shaft 50 and the other portion of this double pulley has a belted connection with a pulley 64 mounted on the shaft 61 in order to rotate the dressing wheel 60 in a direction opposite to the direction of rotation of the drum.

The abrading blocks of the drum 39′ are formed of finer abrading material than the blocks of the drum 39 and the dressing wheel is omitted on this drum but may be used if desired. The water supply is also omitted but in other respects the drum is the same as the drum 39 and is operated in the same manner and is adapted to smooth the surfaces of the slabs to a greater extent than the drum 39.

The drum 39′ is rotated by a belted connection 65 with its shafts 29. The next three swing frames 33 carry rollers or wheels 66, 67 and 68 respectively which are rotated from their respective shafts 29 by belts 69, 70 and 71. These rollers are each formed of disks of cloth or felt 72 placed on a tubular hub 73 and tightly clamped between the heads 74 of said hub by the screw 75.

The roller 66 is what is known as the acid roller and is kept saturated with a chemical in any desirable manner to coat the surfaces of the slabs before they are engaged by the buffer rolls 67 and 68. These buffer rolls as before stated are similar in construction to the acid roll but are adapted to rub the surfaces of the slabs to a high finish.

The construction thus far described provides for placing the unfinished slabs in

one end of the machine and the slabs as they pass through the machine will be successively engaged by the grinding drums, the acid roll and the polishing rolls and when the slabs are discharged from the opposite end of the machine their upper surfaces will be smooth and highly polished and ready for use. In some cases it is necessary to finish one edge of the slab and in order to accomplish this result while the slabs are passing through the machine means are provided on the machine for grinding and polishing one side edge of the slabs while they are being finished on their upper surfaces. This means provides for finishing the slabs with a straight or beveled edge as desired and comprises the construction now about to be described.

The frame sections 12, 13, 14 and 15 are provided with outwardly and upwardly extending arms 76, 77, 78 and 79 through which extend and have their bearings vertical shafts 80, 81, 82 and 83. These shafts are provided with pulleys 84 for belted connection with a suitable source of power.

Horizontal adjustable frames 85, 86, 87 and 88 are carried by the upwardly extending arms 76, 77, 78 and 79 respectively and are connected thereto to swing concentrically with relation to the vertical shafts. These frames are adjustably held in positions by means of bolts 89 which pass through opening in said arms and through arc shaped slots 90 in the projecting segmental flanges 91. The free ends of these horizontal frames have short vertical pulley sleeves 92 journaled therein which have a belted connection with pulleys 93 fast on the shafts 80, 81, 82 and 83, short shafts 94, 95, 96 and 97 extending through the pulley sleeves and having a splined engagement therewith are provided with threaded upper portions which are engaged by nuts 98 to adjust the shafts vertically.

The short shaft 94 is provided with a conical grinding wheel 99 which is adapted to bevel the edges of the slabs of marble passing through the machine. After the edges have been beveled they are further engaged by the conical polishing roller 100 mounted on the lower end of the shaft 96.

The short shaft 95 is provided with a grinding wheel 101 and the shaft 97 is provided with a polishing wheel 102 both of which have straight slab engaging surfaces for grinding and polishing slabs having straight edges. In finishing the straight edges of the slabs the beveled wheel frames are adjusted so that their wheels will not engage the slabs and when beveled slabs are being formed the straight wheel frames are likewise adjusted.

A guide strip 103 is provided for properly guiding slabs of less width than the width of the machine.

From the foregoing description it will be seen that the marble dressing machine provides for grinding, buffing and polishing one surface and one edge of slabs passing through the machine so that when the slabs are discharged from the opposite end of the machine they will be completely finished and ready for use.

It is to be understood that the invention is not limited to any specific form or arrangement of parts except in so far as such limitations are specified in the claims.

What I claim as my invention is:

1. A marble dressing machine, comprising a frame provided with standards and upwardly extending arms, horizontal shafts journaled in the standards, swing frames pivoted to said standards and depending downwardly therefrom, a grinding drum journaled in one of the swing frames, an acid drum journaled in another swing frame, buffing wheels journaled in the remaining swing frames, vertical shafts journaled in the frame arms, adjustable arms carried by the frame arms, edge abrading wheels carried by the free ends of the adjustable arms, a driving means between the abrading wheels and the vertical shafts, and an endless conveyer mounted on the frame and extending beneath the swing frames and adjacent to the edge abrading wheels for moving slabs of marble into successive abrading engagement with the drums and the buffing wheels and the side abrading wheels.

2. A marble dressing machine, comprising a frame provided with standards, and upwardly extending arms, horizontal shafts journaled in the standards, swing frames pivoted to said standards and depending downwardly therefrom, a grinding drum journaled in one of the swing frames, an acid drum journaled in another swing frame, buffing wheels journaled in the remaining swing frames, vertical shafts journaled in the frame arms, adjustable arms carried by the frame arms, edge abrading wheels carried by the free ends of the adjustable arms, a driving means between the abrading wheels and the vertical shafts, and an endless conveyer for moving slabs of marble into successive abrading engagement with the drums and the buffing wheels and the side abrading wheels.

In testimony whereof, I affix my signature, in presence of two witnesses.

JOHN S. JOHNSON.

Witnesses:
R. S. C. CALDWELL,
KATHERINE HOLT.