(No Model.) 6 Sheets—Sheet 1.

A. ZANARDO.

STONE CARVING MACHINE.

No. 518,640. Patented Apr. 24, 1894.

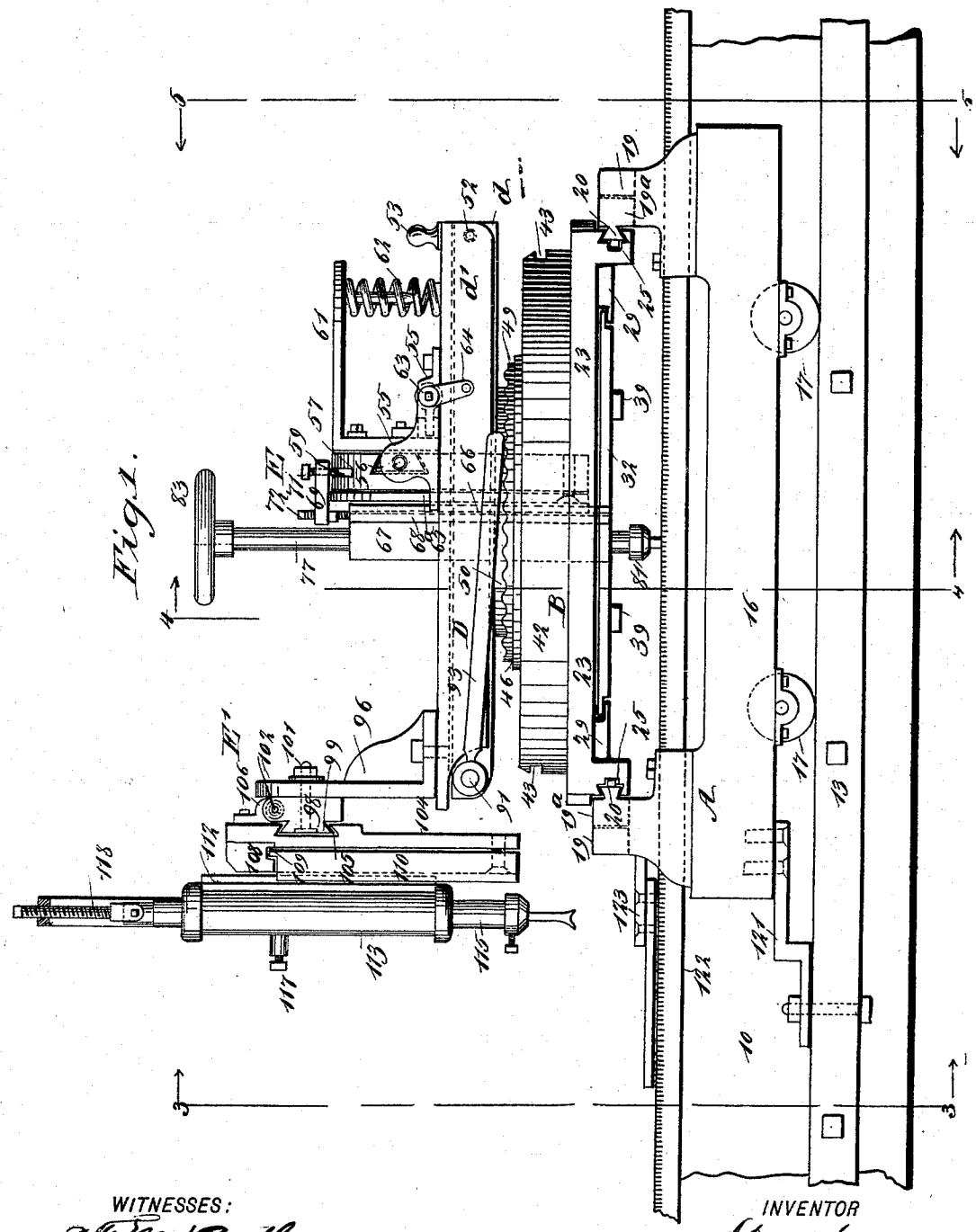

Fig. 1.

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A. ZANARDO.

STONE CARVING MACHINE.

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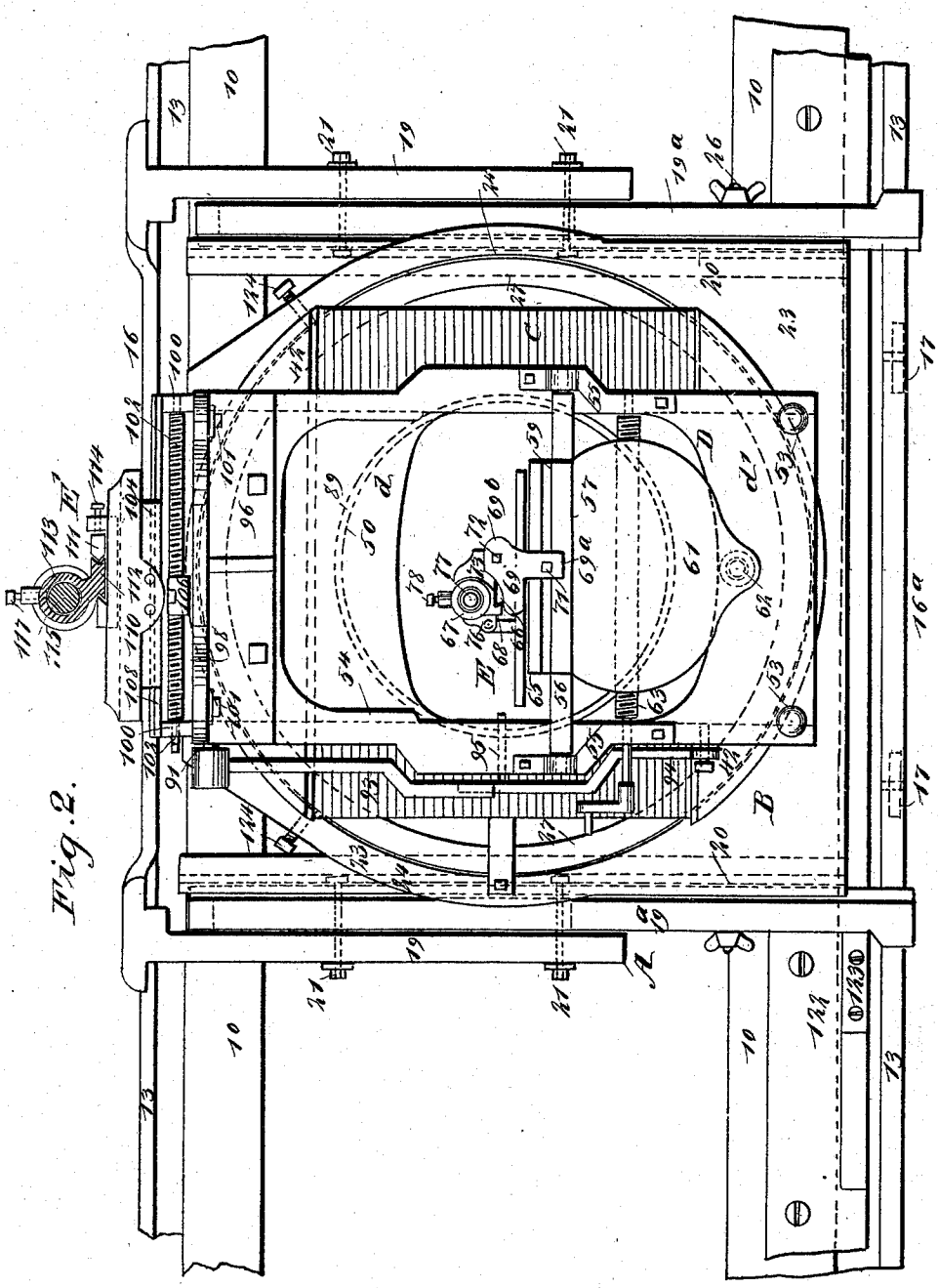

Fig. 2.

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A. ZANARDO.

STONE CARVING MACHINE.

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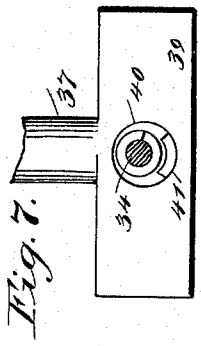
Fig. 7.



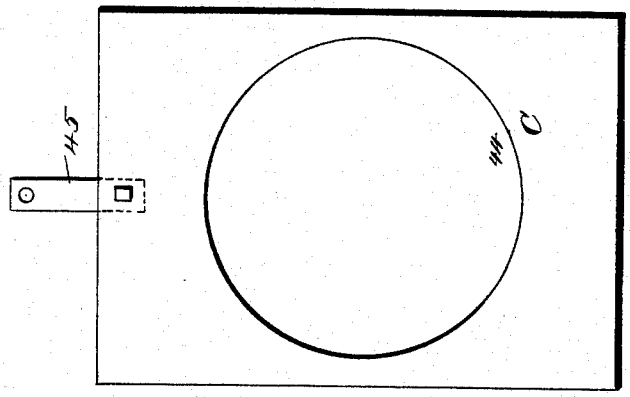


Fig. 8.

Fig. 3.

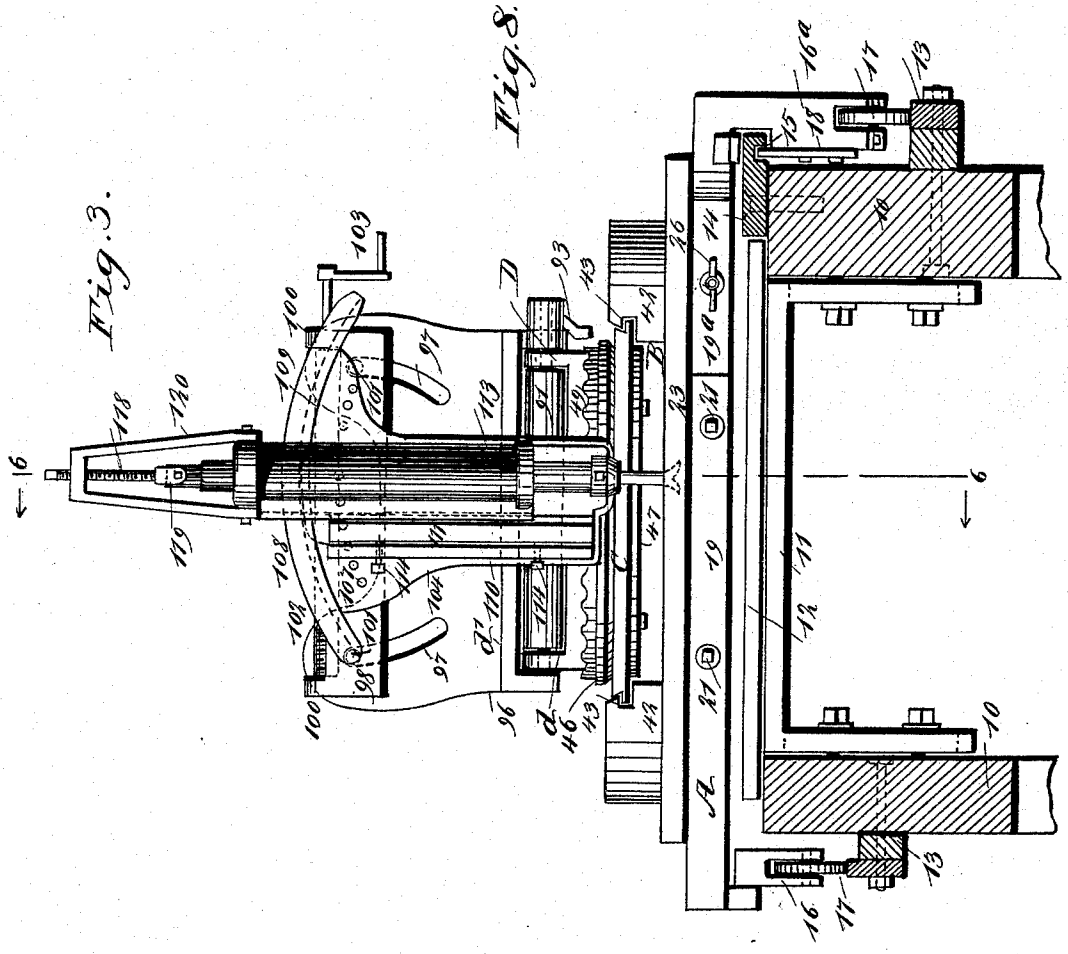


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Fig. 10.

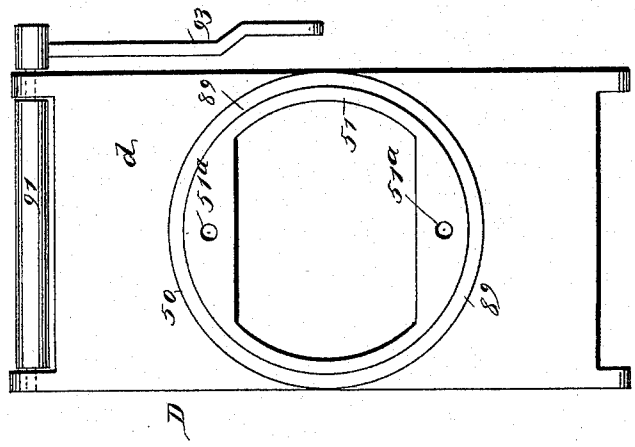


Fig. 9.

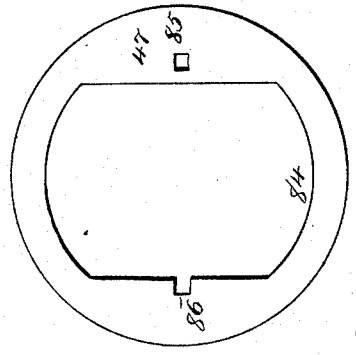
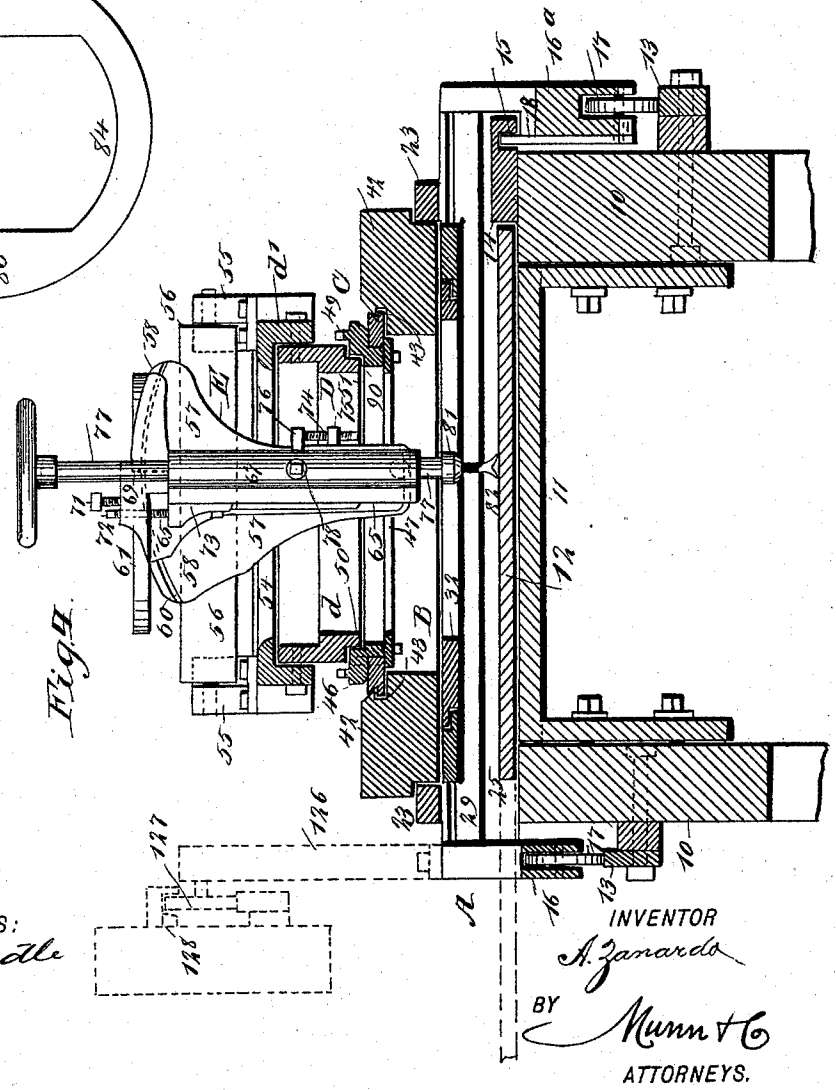


Fig. 4.



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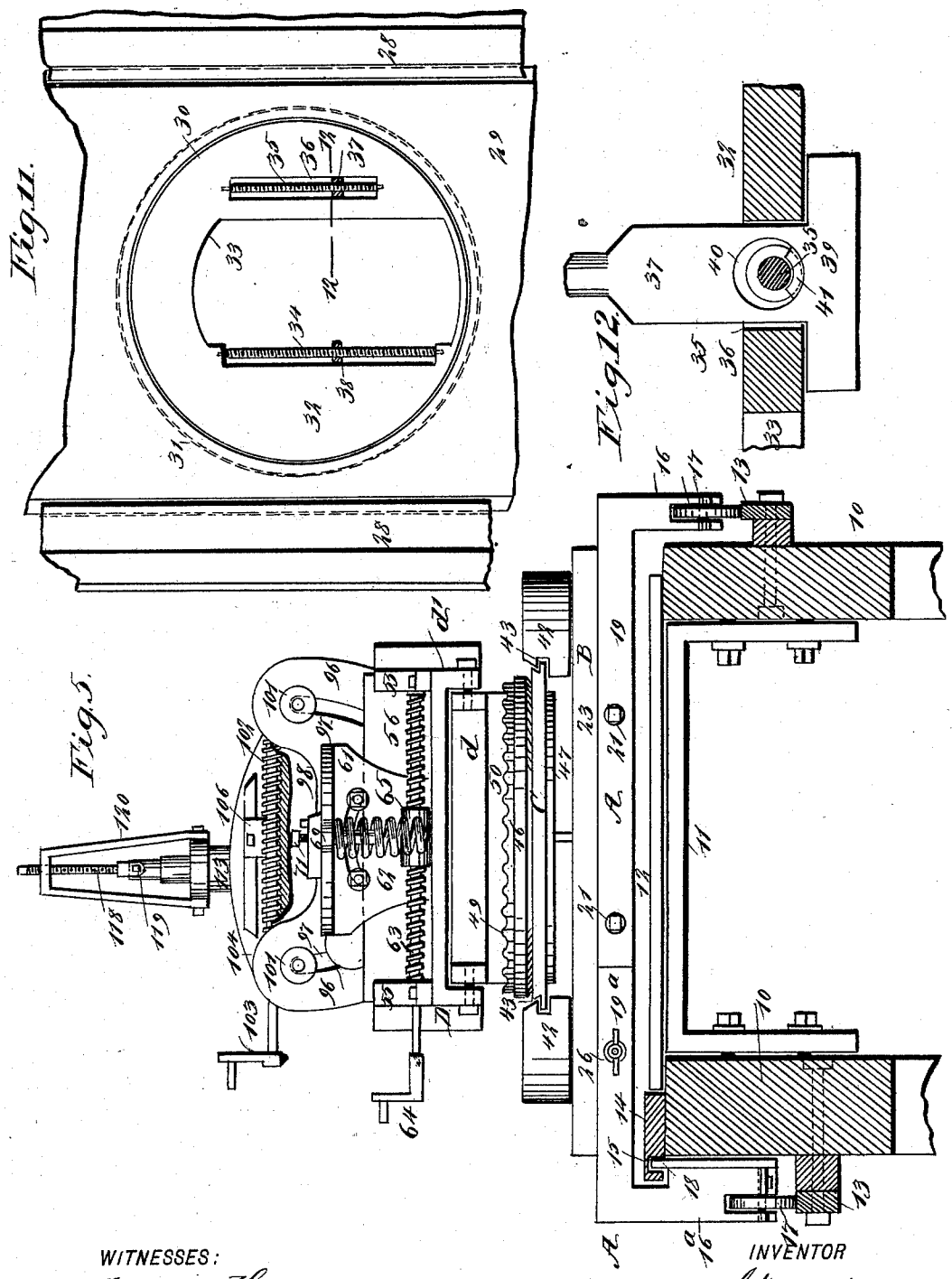
No. 518,640. Patented Apr. 24, 1894.



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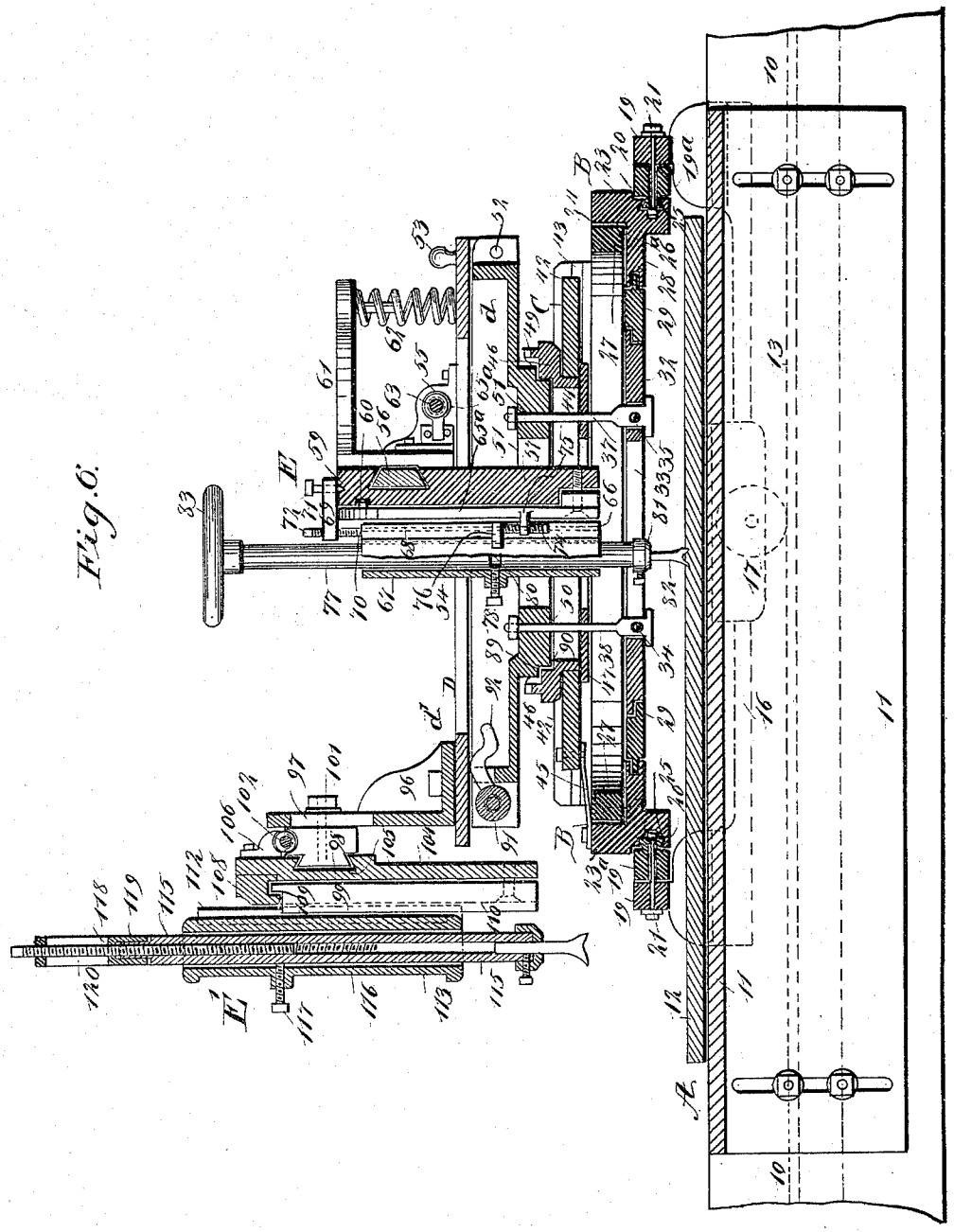
A. ZANARDO.

STONE CARVING MACHINE.

No. 518,640. Patented Apr. 24, 1894.

Fig. 6.



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UNITED STATES PATENT OFFICE.

ANTONIO ZANARDO, OF NEW YORK, N. Y.

STONE-CARVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 518,640, dated April 24, 1894.

Application filed September 2, 1893. Serial No. 484,627. (No model.)

To all whom it may concern:

Be it known that I, ANTONIO ZANARDO, of New York city, in the county and State of New York, have invented a new and Improved Stone-Carving Machine, of which the following is a full, clear, and exact description.

My invention relates to a machine for carving and cutting stone, and it has for its object to provide a machine in which the tool may be given any desired angle to produce an under-cut of any desired character, and whereby the tool may be regulated so as to carve various embossed figures upon the same plane, or cut said figures on different planes, and whereby also the machine may be made to cut intaglio figures either in the same plane or in different planes, and whereby also the adjustment of the tool may be expeditiously and conveniently accomplished, and when the tool is once placed in position therein it will remain in that position until again set.

A further feature of the invention is to construct the machine in such manner that circles of any desired diameter, or ovals more or less elongated may be made expeditiously and correctly, and whereby the machine may be utilized to carve any design, even to a figure of a human being in relief.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the machine. Fig. 2 is a plan view thereof, the forward tool being in horizontal section, the sliding carriage being located at right-angles to the sliding table of the machine. Fig. 3 is a transverse section through the supporting beams of the machine, the machine being practically in front elevation, the section being taken practically on the line 3—3 of Fig. 1. Fig. 4 is a transverse section, taken about centrally of the machine practically on the line 4—4 of Fig. 1. Fig. 5 is a transverse section taken essentially on the line 5—5 of Fig. 1. Fig. 6 is a longitudinal section through the machine, taken on the line 6—6 of Fig. 3. Fig. 7 is a detail view or a bolt adapted to hold the eccentric plate of the machine in position, the adjusting screw being in section. Fig. 8 is a plan view of the sliding table of the machine. Fig. 9 is a plan view of the eccentric plate. Fig. 10 is a bottom plan view of the lower section of the carriage of the machine. Fig. 11 is a bottom plan view of the sliding table and eccentric in place; and Fig. 12 is a detail sectional view through the eccentric plate and one of its adjusting devices, said section being taken practically on the line 12—12 of Fig. 11.

In carrying out the invention the machine is usually supported upon beams 10, arranged at predetermined distances apart, the said beams being connected by a table 11, upon which the slab or stone 12 to be operated upon is usually made to rest, as shown in Fig. 5. The beams 10, are provided upon their outer faces with tracks 13, which are removed a slight distance from the beams, and upon one of the beams a plate 14, is located, adapted to extend beyond the outer face of the beam, the projecting portion of the plate being provided with a groove 15 in its under face.

The base A of the machine consists of two parallel side bars 16 and 16^a, which side bars are provided with wheels 17 in their under faces, the wheels being adapted to travel on the tracks 13; and one side bar is provided with a guide plate 18, as shown in Fig. 5, which enters a recess 15 in the overhanging plate 14 of the supporting beams, in order that the base shall not have vertical movement. The side bars 16, are provided at their ends with branch bars, located at right angles to the side bars, and constituting what may be termed the ends of the base, the end or branch bars of the side bars 16 being designated as 19, and the corresponding branches of the side bars 16^a, are designated as 19^a, being best shown in Fig. 2. The end or branch bars 19 and 19^a of the base are adapted to slide one upon the other, and the inner bars 19^a, are preferably made longer than the outer bars 19, the said inner bars having produced upon their inner faces a rib 20, ordinarily of a dove-tail character, shown in Figs. 1 and 6. The side bars of the base are adjustable to and from one another in order

that the machine may be lengthened sidewise to enable large slabs to be operated upon, and the adjustment is usually effected by producing longitudinal slots in the inner end bars 19ª of the base and passing adjusting bolts 21 through the outer end bars 19 and through the slots in the inner end bars, the bolts being provided with suitable nuts at their ends.

The base carries an adjustable bed B, and the said bed is constructed of the following parts: A body-plate or section 23, which is provided with a central circular opening 24 as shown in Figs. 2 and 6, and the said body section is so shaped that its side edges have practically dove-tailed shaped grooves 25, produced in them, to receive the dove-tail ribs on the end bars of the base; and in this manner the body of the bed may be adjusted horizontally upon the base and independent of the adjustment of the latter, the body section of the bed being held in its adjusted position by means of set screws 26, passed through one of the end bars of the base and into the slots made in the body of the bed. The body of the bed, as shown in Fig. 2, is more or less rectangular exteriorly, especially at one end; but its sides are parallel with the end bars of the base, and in the drawings one end of the body plate of the bed is shown more or less circular, this end being properly the front end. In cross section the body plate 23 of the bed is provided with a shoulder 26ª about midway of its inner surface as shown in Fig. 6, and that portion of the body of the bed above the shoulder 26ª extends above the plane of the base bars. A ring 27, is made to rest upon the shoulder 26ª of the body of the base, and this ring section is adapted to turn freely in the body section. The body section 23, is also provided with an inwardly-extending horizontal member 28, as shown in the sectional view, Fig. 6, which extends inward from its shouldered portion. The member 28 of the body of the bed is straight or parallel with the end bars of the base, as shown in the detail view in Fig. 11, and it may here be remarked that the members 28 are located only at opposite sides of the body of the bed, as they are adapted to form guides for a plate 29, the said plate being capable of movement in direction of the ends of the body portion of the bed. The plate 29 is shown in detail in Fig. 11, and it is provided at its center with a circular opening 30, having a rabbeted margin, as indicated by the dotted lines 31. To that end the extension members 28 of the body of the bed are provided with grooves upon their inner faces, receiving tongues formed upon the plate 29. The plate 29, is adapted to carry what I denominate an eccentric plate 32. This plate is circular in its outline, and is made to rest in a rabbet formed at the margin of the opening of the sliding plate 29. The eccentric plate 32, is provided with an opening 33 made eccentrically therein; that is to say, the opening at one end is nearer the margin of the plate than at its opposite end, as is likewise shown in Fig. 11. The sides of the opening are ordinarily made straight, while its ends may be and preferably are made somewhat concaved. The eccentric plate carries two adjusting screws 34 and 35, one of which 34, is shown as located in a recess at one side of the main opening 33 of the plate, while the other screw 35, may be at one side of the main opening. The screws at their ends are mounted in sockets formed in the plate, the sockets being so constructed that the screws may be removed if in practice it is desired. Each adjusting screw is provided with an adjusting bolt, the bolts being designated respectively as 37 and 38. These bolts are provided with a key head at their lower ends, and the said heads, which are designated as 39, and are shown best in Figs. 6, 9 and 12, are adapted as supports for the eccentric plate, since they engage with its under face. One of said bolts, 37, passes upward through a slot 36 in the plate 32. Each bolt is provided at or near its head with an opening 40, preferably of a circular character, and each opening is provided with one or more segmental teeth 41, preferably forming a portion of its lower wall, the teeth being adapted to enter the spaces between the threads of the adjusting screws, as shown in Fig. 12, and therefore have locking engagement with the latter. Through the medium of the adjusting bolts the eccentric plate 32 and its slide 29, are adjusted more or less eccentrically to the tool employed in carving, and said plate is brought into use only when ovals are to be formed, and the adjustment of the plate will determine the lesser diameter of the oval, or the width of the same. The manner in which the plate is held in its adjusted position will be hereinafter more fully described. In the further construction of the bed, opposing blocks 42, are located upon opposite sides of the ring 27 of the bed, and as shown in Fig. 2, the blocks are preferably made to extend partially over the body section of the bed, and as illustrated in Figs. 3, 5 and 6, the inner faces of the blocks are provided with slide-ways 43, and in these slide-ways a table C, is held to slide, the table being provided, as shown in Fig. 8, with a circular central opening 44. The table, when a circle is to be made, is held stationary; on other occasions it is usually permitted to slide, but it may be held stationary through the medium of a strap 45, attached for example to the body portion of the bed, as shown in Fig. 6, and to the under surface of one end of the table. The table carries a collar 46, which collar is held to turn upon the upper face of the table and extends downward through the opening 44, and it is held in place through the medium of a ring 47, or its equivalent, attached to the under surface of the collar, and moving loosely or freely against the under face of the table. Upon the upper surface of the collar 46, a fluted or wave-like rib 49, is located, the rib being of

like contour as the collar. When the ring 27 of the bed is turned, it carries with it the sliding table C, enabling the table to be carried in direction of either side, or either end of the base. A carriage D, is held to turn upon the table C, being supported thereby. The carriage is preferably made in two sections, a lower section *d* and an upper section *d'*. The lower section is of somewhat box-like contour, being made more or less rectangular, and the central lower portion of the lower section is thickened in a manner to provide a disk-like extension 50 from its under face, which disk-like extension is adapted to turn freely in a suitable guide-way produced in the inner face of the collar 46. An opening 51, is made in the central thicker portion of the lower section of the carriage, and at each side of the said opening the adjusting bolts 37 and 38 emanating from the eccentric plate are located, the bolts being passed upward through suitable slots or apertures 51^a made in the said lower section of the carriage, as shown in Fig. 6, and the upper ends of the bolts are provided with suitable nuts or equivalent fastening devices. The upper section *d'* of the carriage, is substantially in the shape of a plate, and at its rear end it is hinged to the lower section, as shown at 52 in the drawings, knobs 53, or their equivalents being placed upon the plate at its hinged portion to facilitate raising the same. The upper or plate section of the carriage is provided with quite a large opening 54, which in the drawings is shown as somewhat rectangular, and the upper section of the carriage has connected with it the apparatus designed to carry the tool or tools employed.

The mechanism designed to carry the tool to perform the finished carving is designated in the drawings by the reference letter E, and consists of the following parts: Lugs 55, are formed upon the sides of the upper section of the carriage, and the ends of a bar 56, are pivoted in the said lugs, the said bar being practically of wedge shape in cross section, with the exception of at its extremities. A tool post 57, is held to slide horizontally upon the bar 56, as shown in both Figs. 1 and 6, which post extends downward a predetermined distance through the openings formed in the carriage and the table C. The post is provided with a semi-circular head 58, having a groove 59 in its upper surface and a segmental groove 60, in its front face. A bracket 61, preferably of angular construction, is attached by means of its vertical member upon the back of the tool post over the slide-way receiving the rocking bar 56, as shown in Fig. 6, and a spring 62, has bearing against the horizontal member of the bracket and the upper section of the carriage D. The spring and bracket are adapted to normally maintain the tool post in a vertical position, and to provide for the return of the tool post to such position in the event the exigency of the work should demand the departure of the tool from its normal position. The tool post is given the spring-controlled rocking movement in the direction of the rearward movement of the carriage in order that the tool may pass yieldingly across any object it may strike and which is at that time not to be operated upon. The lugs 55 of the carriage are carried rearward sufficiently far to journal the ends of a screw shaft 63, ordinarily turned by a crank 64. This screw shaft is used for shifting the tool post in a horizontal line, and to that end the shaft receives a suitably threaded nut 65, removably attached either to the rear of the tool post or the bracket 61. The nut is made removable from the post in order that by detaching the nut from the post the latter may be quickly adjusted upon its supporting bar 56, the nut remaining upon the screw shaft. A tool plate 65^a, is pivoted at its lower end upon the lower portion of the tool post, and the said plate is provided with a longitudinal rib 66 upon its front face, upon which a tool casing 67 is held to slide, the casing being provided with a groove or slide-way 68 in its rear face, corresponding in cross section to that of the rib 66 which it is adapted to receive. Ordinarily the groove and rib are dove-tailed shape in cross-section. A head 69, is formed upon the tool plate, being provided upon its rear face with a stud 70, see Fig. 6, which stud enters the groove 60 in the tool post, and serves as a guide for the plate. The head 69, is constructed with a rear branch 69^a which extends over the top of the tool post and carries a set screw 71, that enters the groove 59 in the head of the tool post, as shown in Figs. 1, 2 and 6. By means of the screw 71 the tool plate may be held rigidly in position after it has been adjusted either to the right or to the left for the purpose of placing the tool employed in a diagonal position with respect to a line drawn perpendicularly through the machine, and the screw serves also to hold the tool in a vertical position. The head of the tool plate is provided with a second branch 69^b, which extends forwardly at one side of the tool casing. This branch carries an adjusting screw 72, said screw being also carried downward through an aperture the wall whereof is threaded, produced in a lug 73, located upon one side of the tool casing, as shown in Figs. 2 and 4. Through the medium of the screw 72 the tool casing is adjusted vertically upon the tool plate. In order to prevent the tool casing from being adjusted downward beyond a predetermined limit, thereby insuring when desired, all the embossed surfaces to be carved being of the same height, or if intaglio surfaces are being produced whereby the said surfaces may all be cut to the same depth, a gage screw 74, is employed, held to turn in a suitable support 75 located upon the tool plate, and a lug 76, is produced upon the tool casing, adapted to strike the upper end of the gage screw, as shown in Figs. 4 and 6, and when such a con-

tact is made the tool casing can not be adjusted farther downward. A tool holder 77, of any desired construction, but which preferably comprises a cylindrical body capable of turning freely in the tool casing, is held in the tool casing by means of a screw 78, which passes through the said casing and into an annular groove 80, made in the holder, as shown best in Fig. 6. The tool holder is completed by the formation at or attachment to its lower end of a chuck 81, capable of holding the shank of a carving tool 82. From the foregoing description it will be observed that the tool carrying mechanism E, is so constructed that the tool post may be carried horizontally upon its support either to the right or to the left, thus bringing the tool over any desired point in the stone to be worked; furthermore, the tool plate, while it is adjustable horizontally with the tool post is capable of an independent lateral adjustment, that is, of being inclined in direction of either the right or the left, so as to place the tool at an angle more or less obtuse to the stone to be operated upon, it being necessary that the tool should be held in this position to produce under-cuts for example. In addition to the adjustment afforded by the tool plate the tool may be vertically adjusted through the medium of the adjusting screw 72, carried by the tool plate, operating on the tool casing. These adjustments are all made independent one of the other, and either one or all of them may be brought into action as required. The tool may be turned, as in drilling, for example, by revolving the tool holder 77, which may be accomplished by hand power through the medium of an attached hand wheel 83, or its equivalent, or by any other form of applied power, or the tool may be held rigid by causing the set screw 78 to bind against the tool holder. It may here be remarked that the ring 47, located at the bottom of the fluted collar 46, is provided in addition to its central opening 84 with two smaller openings 85 and 86, as shown in Fig. 9, through which the eccentric plate adjusting bolts 37 and 36 are passed, said openings being in alignment with the apertures or openings 51^a in the embossed or collared or central portion of the lower carriage section also for the reception of the eccentric bolts. In Fig. 10 and likewise in Fig. 6, it will be observed that a shoulder 89, is made upon the lower marginal portion of the collar 46, which fits upon a corresponding shoulder 90, made in the inner upper marginal surface of the disk-like extension 50 of the carriage, thus insuring the carriage having guided movement upon the collar when said carriage is revolved thereon, and it may here be remarked that the attachment between the ring 47 and the washer plate is so made as to bind the collar firmly and fixedly upon the sliding table C.

It is often necessary that a vibratory motion should be imparted to the carriage as it is revolved, and thereby impart the same motion to the tool holder and tool, since such a movement is often required in the carving of various designs. This movement is accomplished in the following manner: A shaft 91, is journaled in the forward end of the lower section of the carriage, as shown in Figs. 6 and 10. This shaft is provided at or near its center with an arm 92, preferably more or less curved, which arm extends within the lower section of the carriage, and is adapted for engagement with the upper section; therefore, when the shaft 91 is rocked a vibratory motion will be imparted to the upper section of the carriage by the engagement of the arm 92 therewith, and a like movement will be transmitted to the tool-carrying mechanism, since it is connected directly with the said section of the carriage.

The shaft 91, is given the rocking motion above referred to in the following manner: At one end of the shaft a second arm 93, is secured, which may be termed a crank arm, and this arm, as may be seen in Figs. 1 and 2, extends rearwardly along one side of the carriage, and normally rests upon the sliding table. When a vibratory movement of the tool is required, a second crank arm 94, is brought into action, and is pivoted at one end to the rear side portion of the carriage, as shown in Fig. 2; this rearward or second arm is made to support the inner end of the forward arm 93, and the rear arm is also provided with a pin or stud 95, extending at right angles from its inner face to an engagement with the fluted surface of the collar 46; therefore, when the carriage is revolved, the collar remaining stationary, the pin or stud 95 in following the convolutions of the collar will cause the forward shaft to rise and fall, imparting thereby a rocking movement to the carriage shaft 91, and therefore a vibratory movement to the upper section of the carriage.

In addition to the tool-carrying mechanism E, a second tool-carrying mechanism E′ may be employed, which when used is located upon the forward portion of the upper section of the carriage, and the tool carried by this latter mechanism is adapted as a roughing tool, and will rough out the work that is to be finished by the tool carried at the center of the machine, or that carried by the mechanism E. The roughing tool carrying mechanism consists of a standard 96, which is removably bolted or otherwise secured upon the upper face of the upper section of the carriage. The standard is provided with segmental slots 97, produced in opposite sides and somewhat diagonally located, as shown in Fig. 3; and a bar 98, is located upon the forward face of the standard, said bar being provided upon its front face with a dove-tail rib 99, shown best in Fig. 1, and upon its ends with upwardly-extending ears 100. The bar 98, may be inclined, as desired, upon the standard, by reason of its connecting mechanism, which consists of bolts 101, passed through the slots 97 of the stand-

ard and through the bar. A screw-shaft 102, is journaled in the ears 100 of the bar, which shaft may be revolved by the crank handle 103, or its equivalent. The tool post 104, is provided upon its back with a dove-tail slot 105, which receives the dove-tail rib 99 on the bar 98; and the said post may be adjusted horizontally upon its supporting bar 98, through the medium of the screw shaft 102, as the post is provided with a threaded projection or mutilated threaded sleeve 106, secured to its back, the threaded portion of the sleeve or projection engaging with the thread of the shaft. The tool post is usually provided with a series of apertures 107, and with a sector head 108, the latter being provided with a groove or channel 109 in its under face. The tool plate 110, is pivoted at its lower end to the lower portion of the tool post, and is provided at its top with a rib, as shown in Fig. 1, adapted to slide in the segmental groove of the sector head 108, as shown in Figs. 1 and 6. The tool plate 110 is provided with flanges at each side, and likewise usually with a gib 111, adjustably located upon the plate, one of the flanges being provided with an under-cut groove in its inner surface, the gib being likewise provided with an under-cut groove in its side facing the grooved flange, forming thereby a dove-tail slide-way to receive the dove-tail rib 112, located longitudinally upon the back of the tool casing 113; and the casing is held in any vertical position desired in the tool plate by tightening up set screws 114, passed through one of the flanges of the plate to an engagement with the gib 111, which action forces the gib in such contact with the rib 112 of the tool casing as to hold the latter in the desired position. It will be observed that the tool casing may be given a diagonal position by moving the supporting bar 98 of the tool post upon the standard 96, and that a further adjustment in a lateral direction may be made by moving the tool plate upon the tool post and passing a pin through an aperture produced in the tool plate and through one of the apertures 107 in the tool post, while the vertical adjustment of the casing is effected, as heretofore stated, by tightening and loosening the gib 111. The tool holder 115, as shown in Fig. 6, is tubular and is provided with an interior thread 116. It is held to move vertically in its casing, and to revolve therein, and it is maintained in a predetermined position by a set screw 117, which passes through the casing to a contact with the holder. The tool holder may be forced downward and revolved through the medium of a screw 118, which engages with the threaded portion of the holder and extends outward through a cap 119, pivotally and removably attached to the upper end of the holder, and likewise through a yoke 120, which is removably connected with the casing; but if in practice it is found desirable instead of operating the tool holder by the screw 118 the screw may be omitted and the holder may be operated in like manner as the holder described in connection with the tool-holding mechanism E.

With reference to sundry details of the machine, a lock of any approved construction may be employed to secure the base upon the track in a fixed position. One such lock is shown in Fig. 1, and it consists of a button or its equivalent, designated as 121, which is pivoted upon the track, and is adapted for engagement with one of the side bars of the base. The table 11, upon which the marble or other stone to be cut is to be placed, may be and preferably is provided with a scale or rule 122, shown in Fig. 1, and a sliding gage 123 used in connection with the scale to measure off points in the work. The outer or body section of the body is also generally provided with set screws 124, shown in Fig. 2, by means of which the loosely mounted ring section 27 of the bed may be held in its adjusted position.

It frequently happens that a very large piece of marble or other stone is to be operated upon, and when this is the case one of the side bars, 16 for example, is removed from the base, and vertical bars 126, shown in dotted lines, Fig. 4, are connected with the ends of the end bars 19 of the base, for example, and the said extension bars 126 will be provided with wheels 127, to travel in an elevated or over-head support or track 128, thus permitting the marble or other stone to extend out beyond the table 11 on that side of the machine.

In the operation of the machine, when for example a circle is to be made, the tool 82 that is to do the carving is inclined until it will strike a point on the stone which will represent the periphery of the proposed circle, and by tightening up the tool holder and preventing it moving, and revolving the carriage D, a circle will be made either in intaglio or embossed, as may be desired, and of any desired design or surface ornamentation, the latter being effected by the character of the tool being employed. In the event that an oval is to be carved, the adjusting bolts 37 and 38 of the eccentric plate are loosened, and the slide carrying the plate is slid outward to render the center of the opening 44 of the table C more or less eccentric to the center of the carriage, and the lesser the distance between the end of the screws facing the direction in which the plate is moved and the bolts through which the screws pass, the greater will be the width of the oval, since the adjustment of this plate determines the width of the oval, while the length of the oval will be determined by the lateral adjustment or inclination given to the tool, as in the matter of forming a circle. When a circle is to be formed the eccentric plate is bolted to the carriage concentrically therewith; but when the plate is adjusted endwise it will be more or less eccentric to the carriage, and will consequently determine

what the width of the oval shall be; that is to say, whether the oval figure shall be more or less inclined to a circular formation, or be more or less elongated. While an oval is being formed the table C has sliding movement, but when a circle is to be made, the table is anchored to the body of the bed.

It will be observed that with a machine constructed as above set forth the tool may be carried in any direction or may be given any inclination desired, and that the various parts of the machine may be manipulated to give any desired action to the tool; as, for example, the bed is capable of adjustment, the base is likewise capable of one or more adjustments, and the sliding table may be manipulated horizontally, and the carriage may be revolved upon the table, the base and the bed. The tools have simply a carving or horizontal cutting action, and the different cuts are effected by rotating the bed or the carriage, or by reciprocating the table. The tools have preferably no vertical cutting action.

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

1. In a stone-carving machine, a bed, a table having movement in the bed, a tool carriage held to revolve upon the table, a plate adjustably located in the bed, and adjusting devices whereby the bed plate may be set eccentric to the carriage, as and for the purpose set forth.

2. In a stone-carving machine, a bed, an eccentric plate adjustably carried by the bed, a table having sliding movement in the bed over the plate, the plate and table being each provided with a central aperture, a carriage having rotary movement upon the table, a tool-holding mechanism attached to the carriage and extending downward through an opening in the carriage and openings in the table and eccentric plate, and mechanism, substantially as shown and described for changing the position of the eccentric plate with reference to the carriage, as and for the purpose set forth.

3. In a stone carving machine, a bed provided with an eccentric plate having a central aperture and capable of sliding movement in the bed, a support of substantially circular character having rotary movement upon the body of the bed, a table provided with an opening therein, having sliding movement in the rotary section of the bed, a tool carriage having rotary movement upon the table, and adjusting devices connecting the eccentric plate with the carriage, whereby the said plate may be adjusted concentrically or eccentrically to the carriage, as and for the purpose specified.

4. In a stone-carving machine, a base constructed of adjustable sections, said base having wheeled supports, a bed adjustably connected with the base, a slide capable of lateral movement in ways produced in the bed, and a tool carriage having rotary movement upon the table, as and for the purpose specified.

5. In a stone-carving machine, an adjustable base, a bed adjustably located upon the base, a table having sliding movement in the bed, a collar having a fluted surface secured upon the table, a tool carriage having rotary movement upon the table, and a reciprocating mechanism connecting the fluted section of the collar with the carriage, and imparting to the latter a vibratory movement, as and for the purpose specified.

6. In a stone carving machine, a base, a bed adjustably connected with the base, the bed being provided with an opening to admit a tool, a table having sliding movement in the bed and likewise provided with a tool-receiving opening, means for anchoring the table to the bed, a carriage having rotary movement upon the table, and a tool-carrying mechanism adjustably located upon the carriage and extending through the openings in the bed and table, as and for the purpose set forth.

7. In a stone carving machine, an adjustable base, a bed adjustably connected with the base, a table having sliding movement in the bed, and means for anchoring the table to the bed, a carriage having rotary movement upon the table, a tool-carrying mechanism having spring controlled connection with the table and comprising a series of sections adjustably connected with the table and with each other, substantially as shown and described.

8. In a stone-carving machine, the combination, with a carriage, of a tool-holding device, the same consisting of a tool-post having yielding spring connection with the carriage, an adjusting device connected with the tool post, whereby it is moved horizontally upon its support, a tool plate having pivotal connection with the tool post and lateral adjustment thereon, and a tool casing having vertical adjustment upon the tool plate, as and for the purpose specified.

9. In a stone-carving machine, the combination, with a carriage, of a tool-holding device, the same consisting of a tool post having yielding spring connection with the carriage, an adjusting device connected with the tool post, whereby it is moved horizontally upon its support, a tool plate having pivotal connection with the tool post and lateral adjustment thereon, a tool casing having vertical adjustment upon the tool plate, a limiting device controlling the vertical movement of the tool casing, a tool holder held to revolve in the casing, and means, substantially as shown and described, for connecting the holder rigidly with the casing, as and for the purpose set forth.

10. In a stone-carving machine, the combination, with a bed comprising an adjustable body, and a support having rotary movement in the body, a sliding table carried by the rotary section of the bed, and means for anchoring the table to the bed, the table being provided

with an opening, of a fluted surface located upon the table around its opening, a carriage comprising a body section and a tool carrying section having hinged connection with the body section, the body section being held to turn upon the table, a rock shaft carried by the body section of the carriage, an arm projected from the rock shaft and engaging with the tool-carrying section of the carriage, and a connection between the rock shaft and the fluted surface of the table, whereby a vibratory movement is imparted to the tool-carrying section of the carriage, as and for the purpose set forth.

11. In a stone-carving machine, the combination, with an adjustable base having a wheeled support, a bed comprising a body section having adjustable connection with the base, and a supporting section having a rotary movement upon the supporting section, and a table having sliding movement in the supporting section of the bed, of a carriage constructed in two sections, a body section having rotary movement upon the table, and a cover section having hinged connection with the body, a spring-controlled pivotal support located upon the cover section of the carriage, a tool post having sliding movement upon the spring-controlled support, and a tool holder having lateral and vertical adjustment upon the tool post, the tool holder being adapted to extend through the carriage, the table, bed and base, substantially as shown and described.

12. In a stone-carving machine, the combination, with a bed comprising an adjustable body section and a supporting section mounted to turn upon the body section, both sections being of ring-like construction, a slide carried by the body section of the bed, having an opening therein for the reception of a tool, and a table provided with an opening registering with that of the slide, the table having lateral movement upon the supporting section of the bed, of a tool carriage having rotary movement upon the slide, and adjusting devices having fixed connection with the carriage and adjustable connection with the slide of the bed, whereby the said slide may be placed eccentrically or concentrically to the carriage, substantially as shown and described.

13. In a stone-carving machine, the combination, with a bed comprising a sliding and a rotary section, both sections being of substantially ring-like construction, an apertured plate having sliding movement in the sliding section of the bed, an apertured table having sliding movement in the bed over the rotary section, and means, substantially as shown and described, for anchoring the table to the bed, and a fluted rib carried by the table, of circular construction, a carriage comprising a bed and a cover section, one hinged to the other, the body section having rotary movement upon the slide, a vibratory mechanism connecting the cover section of the carriage with the slide, an adjusting mechanism fixedly secured to the body of the carriage and adjustably connected with the slide in the bed, whereby the latter may be placed concentric or eccentric to the carriage, and a tool-holding mechanism adjustably supported upon the cover section of the carriage, the said tool holding mechanism comprising sections, the several sections having independent adjustment in various directions, as and for the purpose set forth.

14. In a stone carving machine, the combination, with an expansible base, a bed adjustably connected with the base, a slide having rotary and sliding movement on a portion of the base, a tool-carriage having rotary movement upon the slide, a tool-holding mechanism located upon the carriage and extending through the central portion of the carriage, slide and base, the said tool-holding mechanism being adapted to carry a finishing tool, and a second tool-holding mechanism removably attached to the carriage near one end and adapted to carry a roughing tool, both of the tool-holding mechanisms having independent adjustment laterally and vertically, substantially as shown and described.

15. In a stone-carving machine, the combination, with an expansible base having wheeled supports, a bed comprising a body having sliding movement upon the base, and a supporting section having rotary movement upon the body, an eccentric plate or slide adjustably located upon the body of the bed, and a table having sliding movement in the rotary section of the bed, of a tool carriage, an adjusting mechanism adjustably connected with the eccentric plate and having fixed connection with the carriage, and tool-holding mechanisms supported by the carriage, one tool holding mechanism being located at the end of the carriage and another about centrally thereof, both tool-carrying mechanisms having independent adjustment vertically and laterally, the inner mechanism being spring-controlled, as and for the purpose set forth.

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