

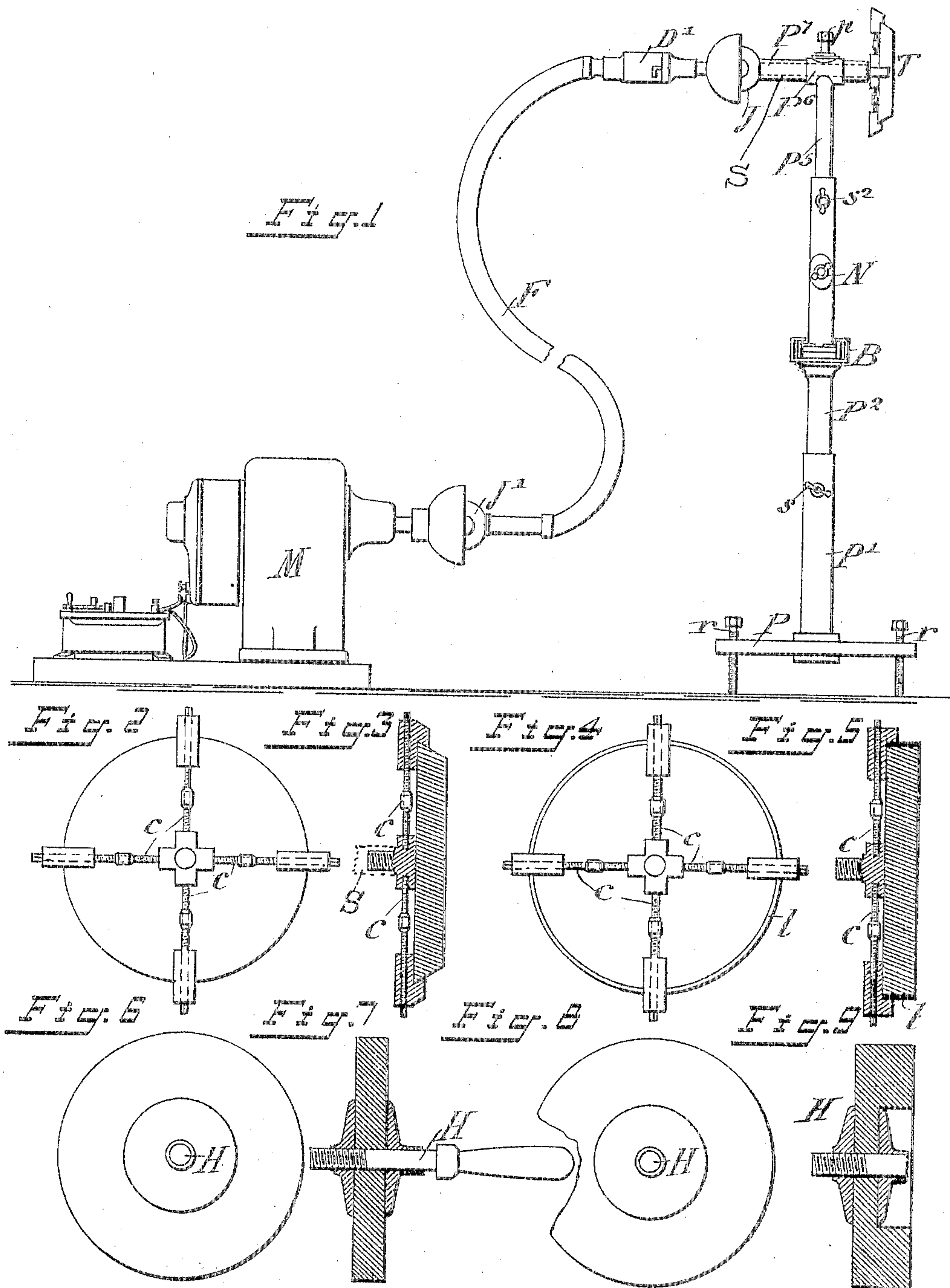
No. 794,074.

PATENTED JULY 4, 1905.

G. BENISCH.
MACHINE FOR RUBBING OR POLISHING STONE.

APPLICATION FILED JAN. 12, 1905.

2 SHEETS—SHEET 1.



Witnesses

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Inventor

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By his Attorneys

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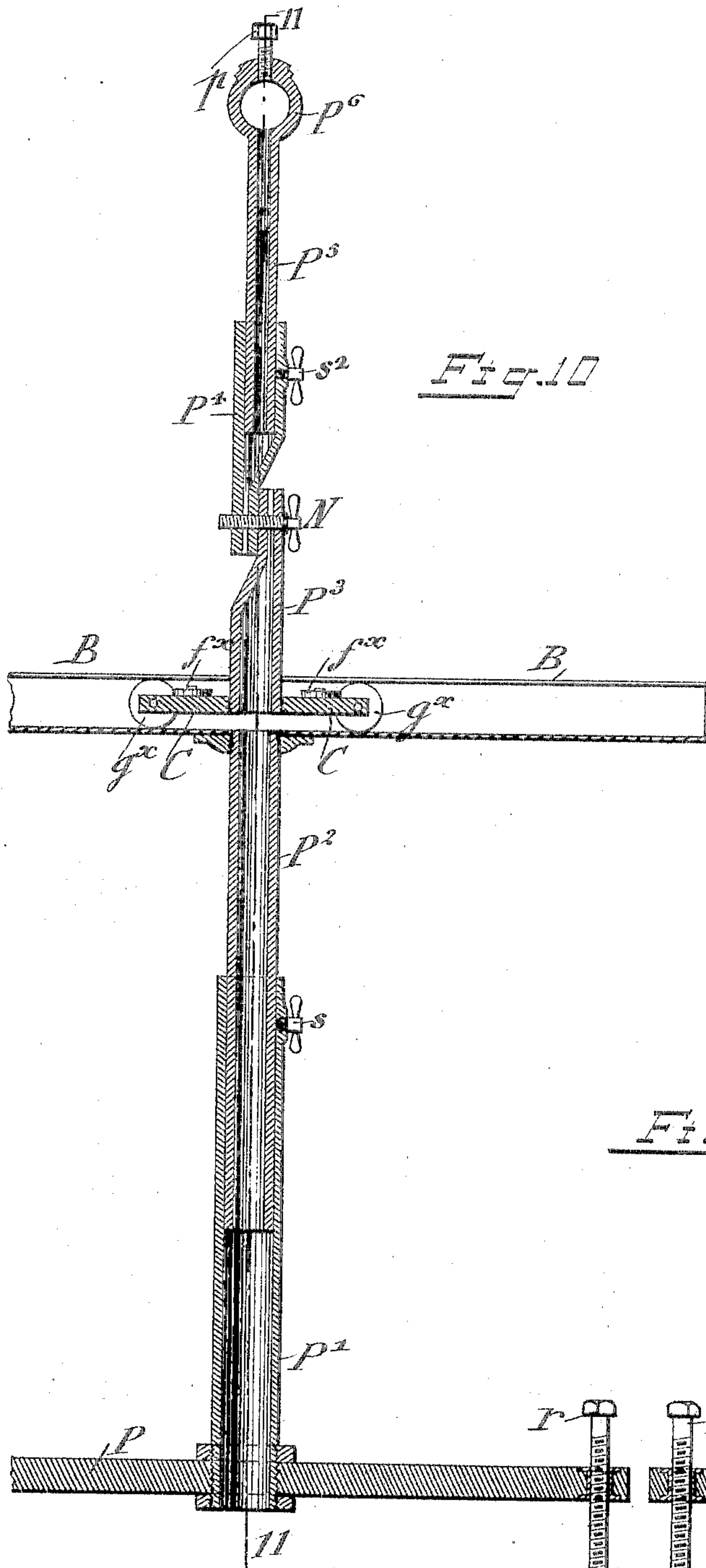


Fig. 10

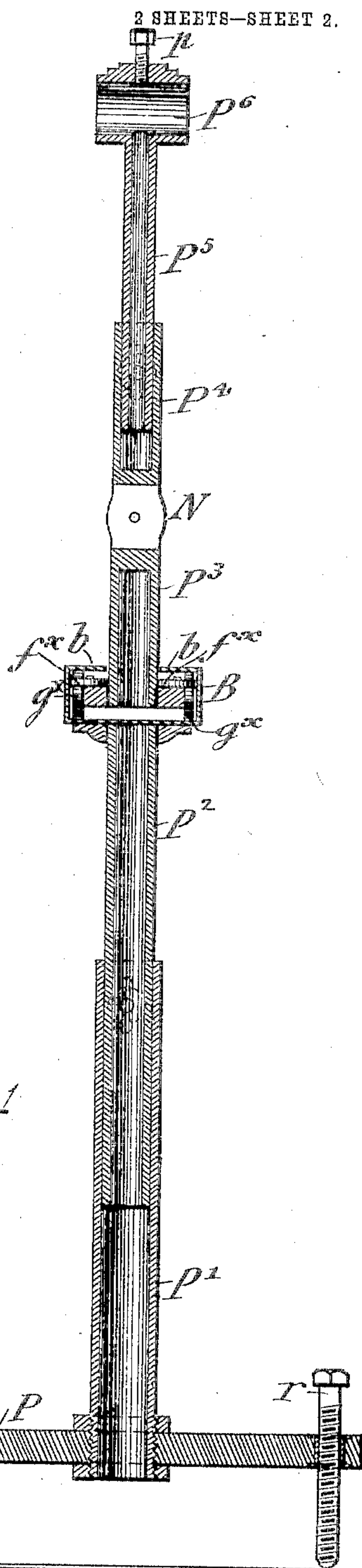


Fig. 11

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GUSTAV BENISCH, OF NEW YORK, N. Y.

MACHINE FOR RUBBING OR POLISHING STONE.

SPECIFICATION forming part of Letters Patent No. 794,074, dated July 4, 1905.

Application filed January 12, 1905. Serial No. 240,759.

To all whom it may concern:

Be it known that I, GUSTAV BENISCH, a citizen of the United States, residing in New York, borough of Brooklyn, in the State of New York, have invented certain new and useful Improvements in Machines for Rubbing or Polishing Stone, of which the following is a specification.

This invention relates to certain improvements in machines for rubbing or polishing stone—such as granite, marble, and other stones—said machine having the advantage of being portable, so that it may be carried to the work for rubbing or polishing the latter after it is in position to be operated upon; and for this purpose the invention consists in the novel features and combinations of parts, to be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, illustrative of one embodiment of the invention, Figure 1 is a side elevation of my improved machine for rubbing or polishing stone, shown as connected with a portable electromotor. Figs. 2 and 3, 4 and 5, 6 and 7, 8 and 9 are respectively rear elevations and vertical transverse sections of different rubbing or polishing tools that are used in my improved machine. Fig. 10 is a front elevation of the machine, partly in vertical section, showing the supporting-platform, stationary pillar, channel-bar, and movable pillar of the same; and Fig. 11 is a vertical transverse section on line 11 11, Fig. 10.

Similar letters of reference indicate corresponding parts throughout the several views.

My improved machine for rubbing or polishing stones is intended to be portable—that is to say, the rubbing and polishing tools, the adjustable stand, and the electromotor by which rotary motion is imparted to the rubbing and polishing tools are capable of being carried to the place of use—viz., to the place where the stone has been placed in position to be operated upon. For this purpose the machine consists of a portable platform P, which is preferably made of rectangular shape and suitable size and supported at its four corners by upright adjusting-screws α , by which the same is leveled according to the

floor or other support. On the platform P is supported a stationary tubular pillar P', in which is supported an adjustable tubular pillar P² by means of a clamping-screw s . The adjustable pillar P² is provided with a horizontal channel-bar B, of approximately U-shaped cross-section and open at its upper part, so as to guide a horizontally-movable carriage C, which is provided with rollers g^x , guided between the bottom of the channel-bar B and the inwardly-extending top flanges b of the same, as shown clearly in Figs. 10 and 11. The carriage C is preferably provided, in addition to the rollers g^x , with four horizontal rollers f^x , which bear against the sides of the channel-bar. On the platform of the carriage C is supported a third tubular pillar P³, to which is applied by a suitable pivot connection N a tubular socket P⁴, which is capable of forward or backward adjustment in a plane at right angles to the channel-bar B on the pillar P³. In the pivoted socket P⁴ is again supported a tubular pillar P⁵, which is capable of vertical adjustment in the socket P⁴ and adapted to be clamped thereto by a set-screw s^2 , said tubular pillar P⁵ being provided at its upper end with a short sleeve P⁶, in which the sleeve P⁷ of the shaft S of the rubbing or polishing tool is supported, as shown clearly in Fig. 1. The sleeve P⁷ is held in position by a set-screw p , that passes through the supporting-sleeve P⁶ at the upper end of the pillar P⁵.

The shaft S is connected at its front end, which is provided with a screw-socket, with a threaded stud on the center of the holder of the rubbing or polishing tool T and at its rear end by a universal joint J with a clutch D' at the end of a flexible shaft F, which shaft is connected at its lower end by a universal joint J' with the shaft of the electromotor M, which is mounted, with its usual accessories, on a suitable base, so as to be conveniently moved, with the portable stand of the rubbing or polishing machine, to the place of use, where the electromotor is connected by suitable conductors with a source of electricity, so that motion is imparted to the motor and by it to the flexible shaft and the rubbing or polishing tool. The electre

motor, as well as the rubbing and polishing machine, may be placed on a portable truck or other vehicle for being conveyed conveniently to the place of use.

- 5 The rubbing or polishing tool can be made of different construction, according to the work to be performed by the same. When straight surface rubbing or polishing is to be accomplished, the tools shown in Figs. 2, 3, 4, and 5 can be used to advantage, in which a suitable disk of emery, carborundum, or other suitable abrading material is held in position by means of jaws which engage the circumference of the disk and are rigidly applied to the same by means of radial adjusting-screws *c*, connected with the center socket. When the work is roughly cut, several wheels may be used, starting with a disk of coarse grain and finishing with a disk of fine grain.
- 20 When a very good bottom or skin is desired, the emery or carborundum may be produced in flakes and placed on the canvas disk either on the face or edge of the same, according to the work that is to be done. When a polish is desired, the surface of the stone is first rubbed until a good bottom or skin is obtained and then polished by the use of a buffer-wheel of felt, to which water and putty-powder is applied before starting the machine.

- 30 When difficult moldings or deep narrow sinkages are to be treated, emery or carborundum wheels are not used, but a canvas wheel, the circumference of which is shaped to suit the work, to which the emery or carborundum is glued on in flakes. The rubbers are used flat wherever possible; but when they are used on edge a clamp-spindle *H* is used, as shown in Figs. 6 and 7, between which the wheel of carborundum, emery, or canvas is held by clamping-plates. When the emery or carborundum wheels are used on their flat sides, their circumference may be beveled and the supporting-jaws attached to the beveled edge by means of the radial adjusting-screws. Where the circumferential edge of the wheels is at right angles to the face of the wheel, a cushion *l*, of leather or other suitable material, is glued around the circumference of the wheel, to which the jaws, which are also formed at right angles, are attached, as shown in Figs. 4 and 5. When the wheels are used on their flat faces and the whole face of the tool is not necessary to be in contact with the work, a clamp-spindle *H* is used, as shown in Figs. 8 and 9, in which one of the clamping-plates is countersunk into a center recess in the face of the wheel. When it is desired to use the face of a felt buffing-wheel, the felt is nailed to a disk of oak-wood of the same size as the buffing-wheel, in which case the heads of the nails are countersunk and the center portion attached by screws to the face of the disk.

- 65 The essential features of the improved ma-

chine are, first, that the stand on which the rubbing or polishing tool is supported is portable, together with the motor for rotating the tool; second, that the lower portion of the stand is stationary, while the upper portion of the stand is movable in the horizontal channel-bar, so as to be moved by the operator to and fro over the work; third, that the rubbing or polishing tool can be adjusted by the upper movable pillar out of the plane of the channel-bar in a plane at right angles thereto, so as to set the tool to any suitable angle required by the work, and, fourth, that any desired tool can be attached to the rotary tool-shaft as required by the work.

My improved machine for rubbing or polishing stone is operated as follows: The machine is put up at the place of use by adjusting the platform relatively to the work, the channel-bar being so located as to be parallel with the face of the work. The supporting-pillar for the channel-bar, as well as the supporting-pillar for the tool-shaft, are then extended and adjusted, so that the tool is placed close to the work, the upper pillar being then set to the proper inclination toward the face of the work and held by the hand of the operator, so that the effective rubbing or polishing action is performed thereon. The machine is adapted to be operated in any place and on any shape of work to be done.

My improved machine is capable of operation at a very high speed, (from fifteen hundred to two thousand rotations per minute,) so that it will give a superior bottom or skin and a high gloss. In the rubbing or polishing machines heretofore in use the speed was limited to from two hundred to two hundred and fifty rotations per minute, as the tools when running at high speed force the material away by the centrifugal force, so that no work would be done on it. In my improved machine the abrading material is applied by the tool and the latter carried to the work, which can be finished without feeding any abrading material to the tool after the machine is started, so that the only limit to the speed of the tools would be the centrifugal force which they will be able to withstand. In case of the felt rubber for polishing enough material can be applied to the buffer before starting the machine to finish the work without feeding any additional material after the machine is started, and consequently the centrifugal force would not affect the same, as it is between the buffer and the work to be finished, while the time consumed for the work is so small that one application is sufficient.

As the machine is portable it is possible to bring the machine to the work instead of bringing the work to the machine, as heretofore. This saves considerable time and money, as often the amount of rubbing or polishing is comparatively small and the work to be done

very bulky, heavy, and difficult of transportation. When the work is already in position, as in a building erected, it is more convenient to place the machine on a suitable scaffold and to work in any part of the building, as it only requires an additional length of conductors to connect it with the source of electricity. The machine can rub and polish moldings or other work of irregular shape which heretofore could not be finished except by hand and only in a much less perfect manner than by the machine described.

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

1. In a machine for rubbing or polishing stone, in combination, a stand, a channel-bar mounted thereon and adjustable toward and away from the same, a carriage guided along said channel-bar, and a tool mounted on said carriage.

2. In a machine of the class described, in combination, a stand, a pillar of adjustable height mounted thereon, a channel-bar supported by said pillar, a carriage guided along said channel-bar, and a tool mounted on said carriage.

3. In combination, a stand of adjustable height, a pillar mounted on said stand, a channel-bar supported on said pillar, a carriage guided along said channel-bar, and a tool mounted on said carriage.

4. In a machine for rubbing or polishing stone, in combination, a stand, a horizontal channel-bar mounted thereon, means for adjusting the height of said channel-bar, a carriage guided along said channel-bar, a pillar mounted on said carriage, and a rotary tool-shaft carried by said pillar.

5. In combination, in a machine such as described, a stand of adjustable height, an extensible pillar on said stand, a channel-bar supported by said pillar, a carriage guided along said channel-bar, and a tool mounted on said carriage.

6. In a machine for rubbing or polishing stone, in combination, a channel-bar, a carriage guided thereby, a pillar mounted on said carriage, a second pillar pivoted to the first pillar in a plane at right angles to the direction of movement of said carriage, and a rotary tool-shaft carried by said second pillar.

7. In a machine for rubbing or polishing stone, in combination, a horizontal channel-bar, a carriage movable therein, an upright pillar mounted on said carriage, a second pillar pivoted to said first pillar in a plane at right angles to said channel-bar, and a rotary tool-shaft carried by said second pillar.

8. In a machine for rubbing or polishing stone, a channel-bar, a carriage guided thereby, a pillar of adjustable length mounted on said carriage, and a rotary tool-shaft carried by said pillar.

9. A machine for rubbing or polishing stone

including in its construction a channel-bar, a carriage guided thereby, a pillar mounted on said carriage, an extensible pillar pivoted to said first-named pillar, and a tool carried by said extensible pillar.

10. A machine for rubbing or polishing stone including in its construction a channel-bar, a carriage guided thereby, a pillar fixedly mounted on said carriage, an extensible pillar pivoted to said fixed pillar in a plane at right angles to said channel-bar, and a tool carried by said extensible pillar.

11. In a machine for rubbing or polishing stone, the combination of a portable platform, a vertically-adjustable stand supported on said platform, said stand consisting of a stationary lower portion provided with a horizontal channel-bar and a movable upper portion, and a tool-shaft supported at the upper end of the movable portion and having a rubbing or polishing tool mounted thereon.

12. In a machine for rubbing or polishing stone, the combination of a portable platform, a stationary pillar on the same, an adjustable pillar in said stationary pillar, a channel-bar mounted on said adjustable pillar, a movable carriage guided in said channel-bar, an upright pillar supported on said carriage, a second pillar pivoted to the upright pillar, an adjustable pillar in the pivoted pillar, and a tool-shaft supported at the upper end of said adjustable pillar and having a rubbing or polishing tool mounted thereon.

13. In a machine for rubbing or polishing stone, the combination of a portable platform, an extensible pillar on the same, a horizontal channel-bar supported on said pillar, a second pillar movable along said channel-bar and provided with a pivoted portion, an adjustable pillar in said pivoted portion, a sleeve supported on said adjustable pillar, a tool-shaft, a sleeve surrounding said shaft and supported in the sleeve at the upper end of the adjustable pillar, and a rubbing or polishing tool attached to one end of said tool-shaft.

14. In combination, in a machine for rubbing or polishing stone, a portable platform, an adjustable pillar on the same, a horizontal channel-bar supported on said pillar, a movable pillar guided in said channel-bar and capable of movement in the vertical plane of the channel-bar, means for adjusting the upper part of said pillar in a plane at right angles to the plane of said channel-bar, and a tool-shaft supported on said movable pillar and having a rubbing or polishing tool mounted thereon.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

GUSTAV BENISCH.

Witnesses:

PAUL GOEPEL,

HENRY J. SUHRBIER.