

No. 751,820.

PATENTED FEB. 9, 1904.

G. TONS, JR. & R. E. SHERIDAN.
SURFACE SMOOTHING AND SANDPAPERING MACHINE.

APPLICATION FILED AUG. 8, 1903.

NO MODEL.

Fig. 1.

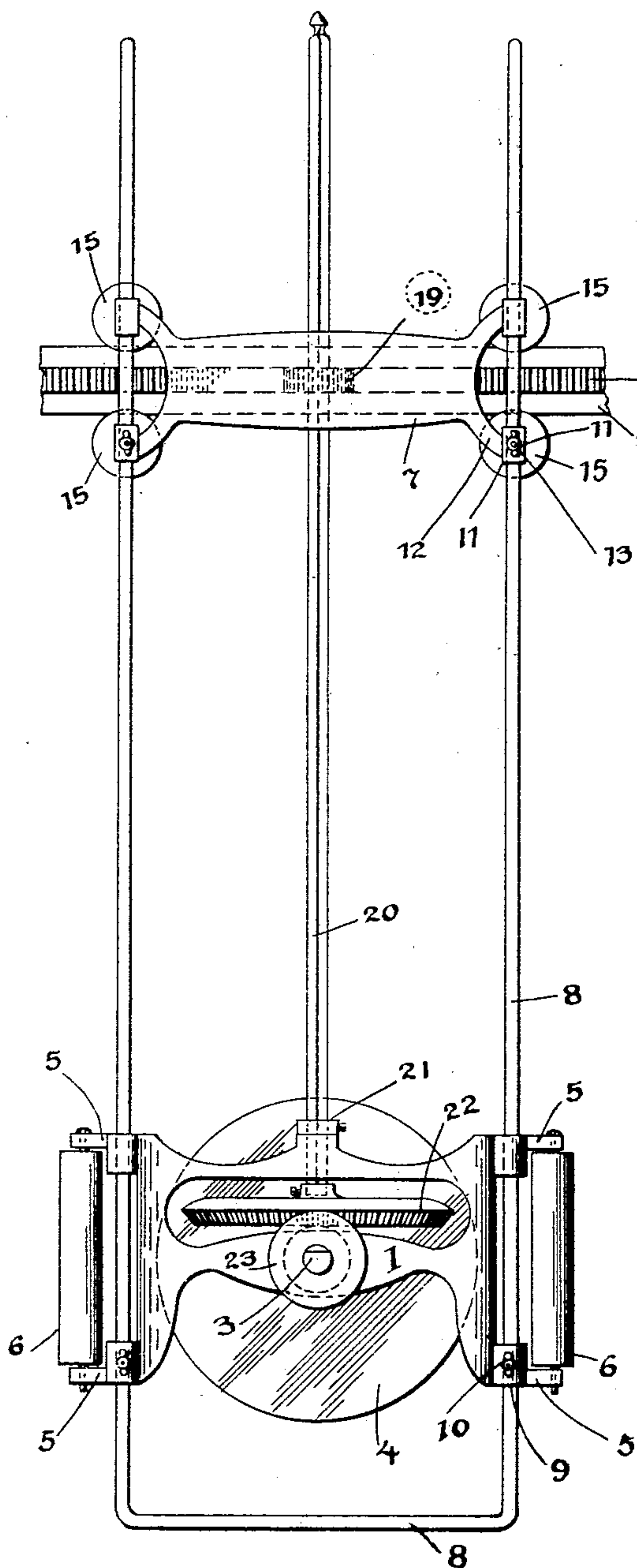


Fig. 3.

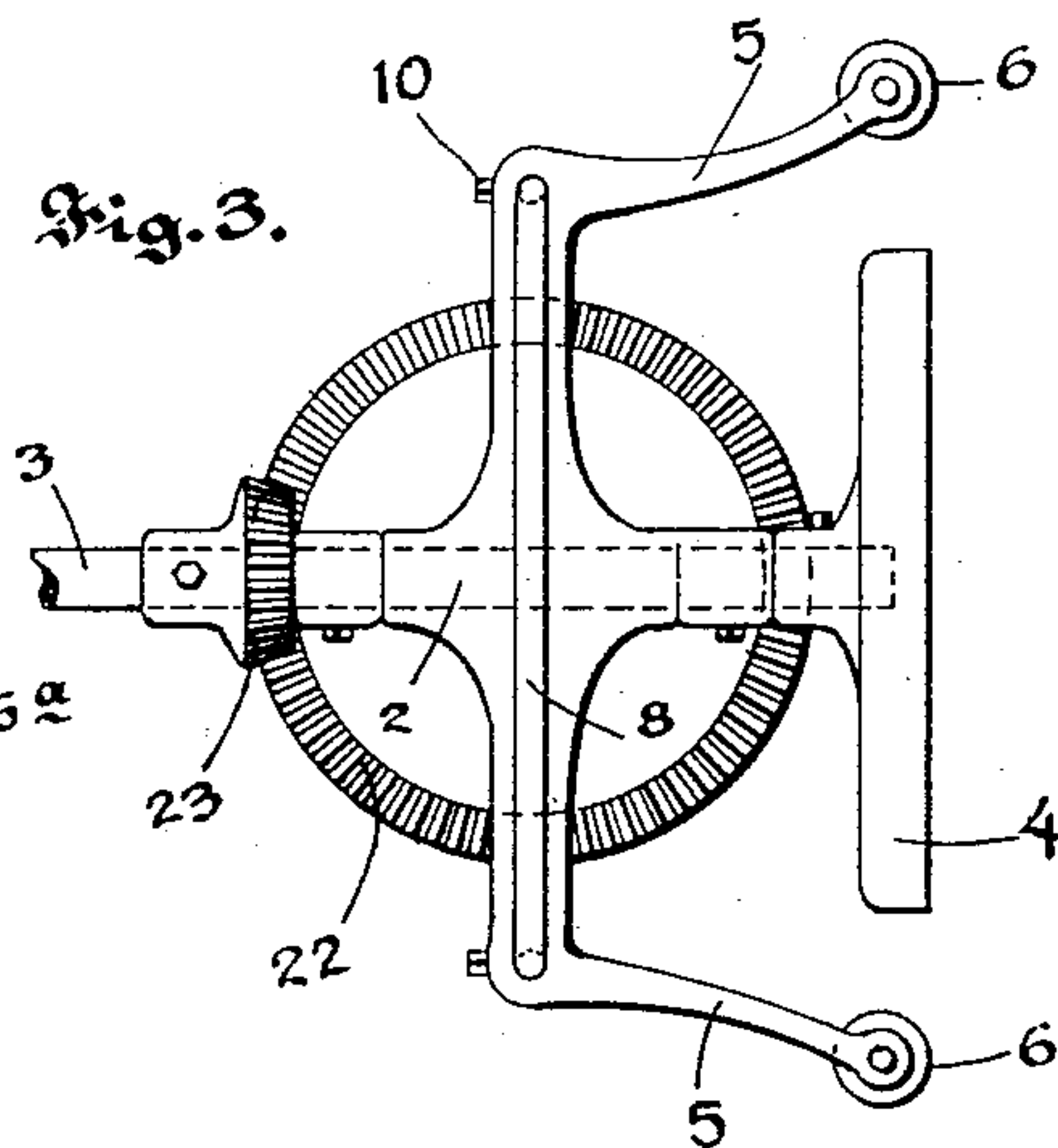
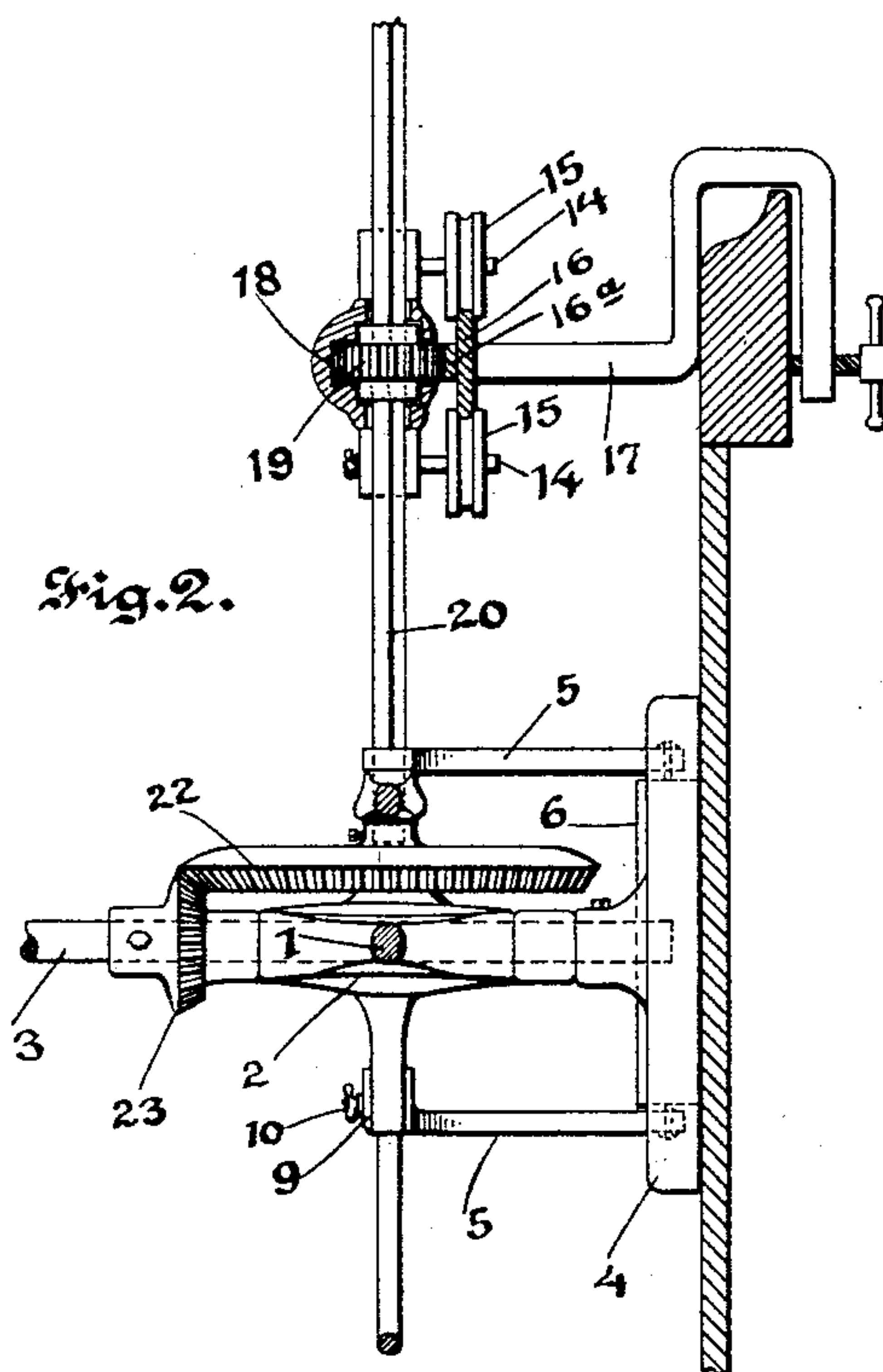


Fig. 2.



Witnesses:

F. W. Duweckel.

J. D. Rippey

Inventors:

George Tons, Jr.
Robert E. Sheridan

By Attorney:

William P. Sheridan

UNITED STATES PATENT OFFICE.

GEORGE TONS, JR., AND ROBERT E. SHERIDAN, OF ST. LOUIS, MISSOURI.

SURFACE SMOOTHING AND SANDPAPERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 751,820, dated February 9, 1904.

Application filed August 8, 1903. Serial No. 168,782. (No model.)

To all whom it may concern:

Be it known that we, GEORGE TONS, Jr., and ROBERT E. SHERIDAN, citizens of the United States, and residents of St. Louis, Missouri, have invented new and useful Improvements in Surface Smoothing and Sandpapering Machines, of which the following is a specification.

This invention relates to a surface smoothing and sandpapering machine; and it consists of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

One object of our present invention is to provide a power-driven machine whereby surfaces may be rapidly and uniformly smoothed or sandpapered, adapted also to be used as a buffer when found desirable or convenient.

Another object in the construction of the machine is to provide a rapidly-rotating power-driven shaft carrying on its end a disk or wheel provided with an abrasive surface which acts directly upon the surface to be altered, the power-shaft also rotating by means of suitable intermediate gearing an independent shaft which, in connection with its associated devices, carries the machine laterally along the surface which is acted upon.

A further object is to provide a surface smoothing and sandpapering machine having a rotating abrasive disk or wheel in combination with suitable mechanism for carrying the same laterally when in operation and while acting on the surface to be affected.

There are other objects and desirable results attained by our improved machine, all of which may be more readily understood by referring to the accompanying drawings, in which—

Figure 1 is a plan view of the machine mounted upon the supporting-track. Fig. 2 is a vertical section and shows the track-frame in detail. Fig. 3 is a view of the lower end of the machine.

Our improved machine as illustrated consists of a suitable frame 1, strongly formed and having a bearing 2 near its center, in which the inner end of the power-driven shaft 3 is located. The said shaft 3 projects beyond the bearing 2 and has affixed to its inner ex-

tremity a disk or wheel 4, held in position thereon by a set-screw or other fastening device, but removable. This wheel may be provided with an abrasive surface by affixing thereto a coat of sandpaper or emery-paper or other abrasive substance, or, if preferred, the wheel used may have undulations on its grinding or polishing surface to act directly upon the surface to be smoothed. The wheel 4 by being removable affords opportunity for substituting therefor any other device the use of which may be desirable as applied to this machine—such, for instance, as a buffer. The shaft 3 is intended to be driven at a high rate of speed, and therefore the surface to be affected will be very rapidly smoothed.

At each end of the frame 1 are two rigid arms or projections 5, the ends of which are outside the periphery of the wheel 4. Each pair of said arms or projections 5 carries a roller 6, preferably composed of or coated with rubber or analogous material and the rolling or bearing surface thereof being in alinement with the grinding or abrasive surface of the wheel 4 and rolling over the same surface upon which the said wheel acts. (See Fig. 3.)

7 indicates the traveling suspension frame or truck, which upholds the parts just described when the machine is in use. A substantially U-shaped rod 8 extends through bearings 9 on the shoulders of the arms or projections 5 and is adjustably held by means of set-screws 10. The two arms of the said rod 8 also project through bearings 11 on projecting arms 12, rigid or integral with the suspension-frame 7, and are adjustably held therein by means of set-screws 13. It is apparent from this description that the frame 1 and the associated parts may be raised or lowered relative to the suspension-frame by the adjustment of the U-shaped rod 7, which operation may be readily understood by reference to Fig. 1. The projecting arms 12, two of which are at each end of the frame 7, each has integral or rigid therewith a projecting trunnion 14, whereon are mounted grooved rollers or wheels 15, intended and adapted to operate upon the horizontal track 16, supported in some manner, as by brackets 17, adjacent to the surface to be operated upon by the wheel

4. Said track also has a rack 16^a on its outer surface, the purpose of which will presently appear.

A recess 18 is formed in the frame 7 and a small gear-wheel 19 located therein in constant mesh with the rack 16^a when the device is in use. A square or polygonal shaft 20 projects vertically through an enlarged opening in the frame 7 and also through the wheel 19 and can be raised or lowered therethrough; but both the wheel and shaft must rotate together. The lower end of the shaft 20 projects through an opening in a part of the frame 1 and is upheld by a collar 21, secured thereon by a set-screw, as clearly shown in Fig. 1. The lower end of the shaft 20 carries a large bevel gear-wheel 22, removably held thereon by some suitable fastening device, such as a set-screw, and in mesh with a small bevel-wheel 23 on the rapidly-driven shaft 3.

In operation the track 16 is supported adjacent to the surface to be operated upon by means of the brackets 17 or in any other preferred manner, and the entire machine is suspended by mounting the rollers or wheels 15 upon and under the said track, as shown. The shaft 3 is then rotated at a high rate of speed by the application of motive power in some known manner, and the abrasive surface of the wheel or disk 4 at once commences to act upon the surface to be smoothed. The machine at the same time is moved laterally through the medium of the shaft 20 and its gear connections with the shaft 3 and the track 16, the operation of which is readily apparent by referring to Fig. 2. Hence the wheel 4 has two distinct movements over the surface to be smoothed—a rapid rotary movement and a lateral traveling movement—and thereby the surface will be evenly and uniformly smoothed or polished. After the wheel 4 has been operated over one portion of the surface in the manner described it can be raised or lowered to another portion of the surface by releasing the set-screws 13 sufficiently to permit the U-shaped rod 8 to be raised or lowered in its bearings 9 on the suspension-frame 7. This may be done without obstruction, for the reason that the shaft 20 moves freely in the opening in the frame 7, as heretofore set forth.

To any one familiar with mechanical devices of this character many modifications in the construction of the apparatus, as illustrated and described, will probably suggest themselves; but we do not wish to be understood as limiting or restricting ourselves to the exact forms shown. The machine may also be put to other uses than those herein enumerated.

We claim—

1. A surface smoothing and sandpapering machine, comprising a power-driven abrasive wheel or disk, a supporting-frame, and devices for moving the said parts laterally when-

ever the abrasive wheel is rotated, substantially as set forth.

2. A surface smoothing and sandpapering machine, comprising a track supported adjacent to the surface to be operated upon, a frame mounted on said track, an abrasive mechanism suspended therefrom, and means for moving the said frame and abrasive mechanism laterally when the latter is set in motion, substantially as specified.

3. A surface smoothing and sandpapering machine comprising a rotary abrasive wheel or disk, a frame supporting the same, a track for the frame, and connections for moving the frame along the track when the wheel or disk is rotated, substantially as specified.

4. A surface smoothing and sandpapering machine comprising a frame, a power-driven shaft journaled therein, an abrasive wheel or disk attached to said shaft, a movable frame and devices for suspending the first-mentioned frame therefrom, a track for said movable frame, and connections for moving the movable frame along the track when the power-driven shaft is rotated, substantially as specified.

5. A surface smoothing and sandpapering machine, comprising a frame, a power-driven shaft journaled therein, an abrasive member attached to said shaft, a track, a frame mounted thereon, connections between the first and second mentioned frames whereby the former will be upheld, and gear and shaft connections for propelling the second-mentioned frame along the track, whenever the power-driven shaft is operated, substantially as specified.

6. An apparatus of the class mentioned, comprising a track, a traveling frame thereon, in combination with a power-driven rotary shaft, an abrasive member attached thereto, supports depending upon the traveling frame for upholding said parts, and shaft and gear connections for propelling the traveling frame along the track when the rotary shaft is driven, substantially as specified.

7. An apparatus of the class mentioned comprising, a track, a traveling frame mounted thereon, a second frame, adjustable connections supporting the same from the traveling frame, rollers for balancing the second frame, a power-driven rotary shaft journaled in said second frame, an abrading member attached to said shaft, and shaft and gear connections between the power-driven shaft and the track whereby the entire mechanism will be moved laterally when in operation, substantially as specified.

8. A surface smoothing and sandpapering machine, comprising a track adapted to be supported adjacent to the surface to be operated upon, a frame mounted by means of rollers upon said track, a second frame adjustably suspended from the first-mentioned frame, balancing-rollers on the suspended frame, a power-driven shaft journaled also in said

frame, an abrading member attached to said power-driven shaft, and a shaft and gear-wheels communicating between the power-driven shaft and the track whereby the entire
5 machine will be propelled laterally when in use, substantially as herein set forth.

In testimony whereof we hereto set our

hands, this 5th day of August, 1903, in presence of two witnesses.

GEORGE TONS, JR.
ROBERT E. SHERIDAN.

Witnesses:

WM. P. SHERIDAN,
JOSEPH D. DONOVAN.