[106.]

2 Sheets--Sheet 1.

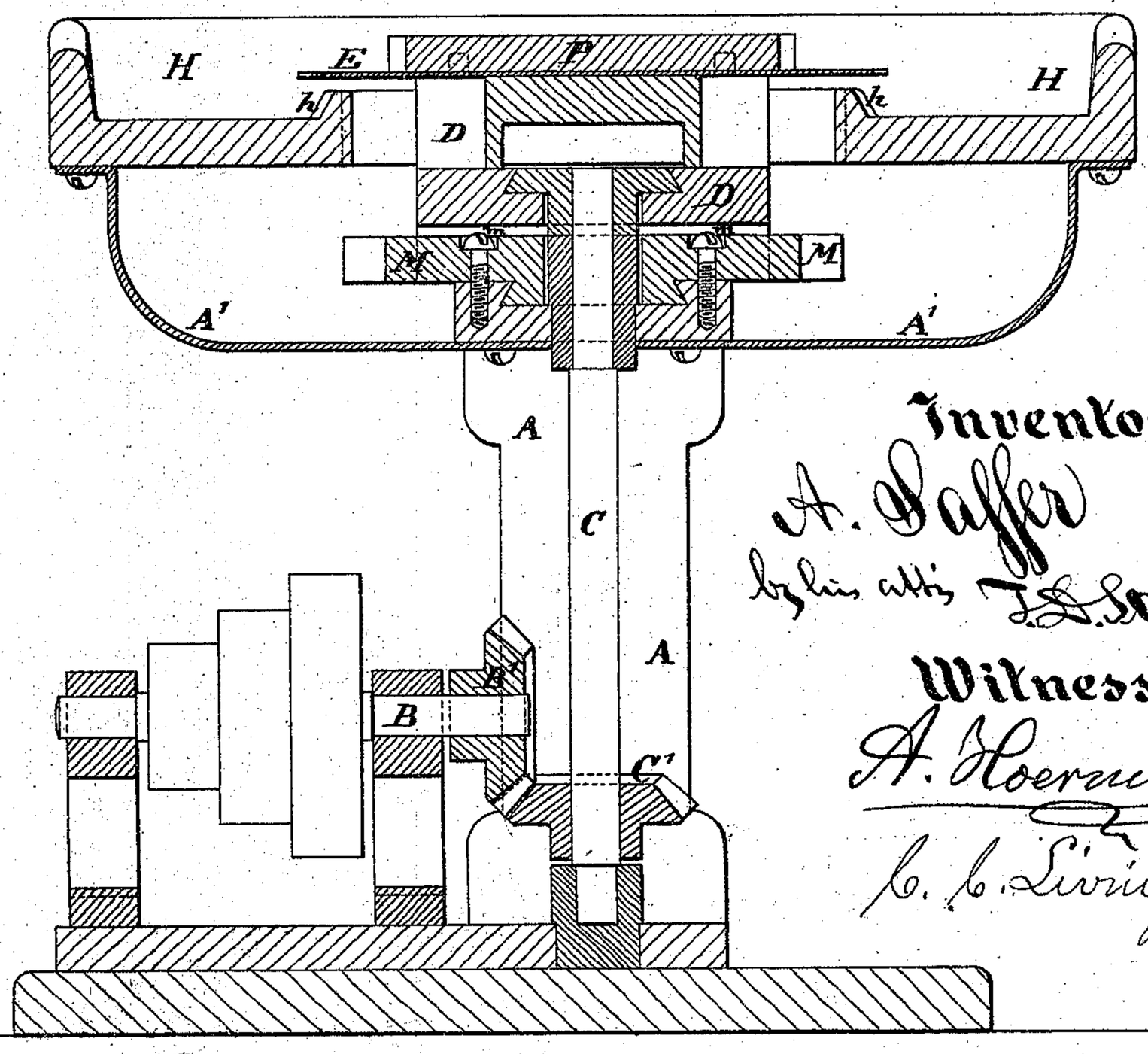
A. Saffer,

Polishing Stone,

No. 119,282.

Patented Sep. 26, 1871.

Fig. 1,



Inventor,

A. Saffer

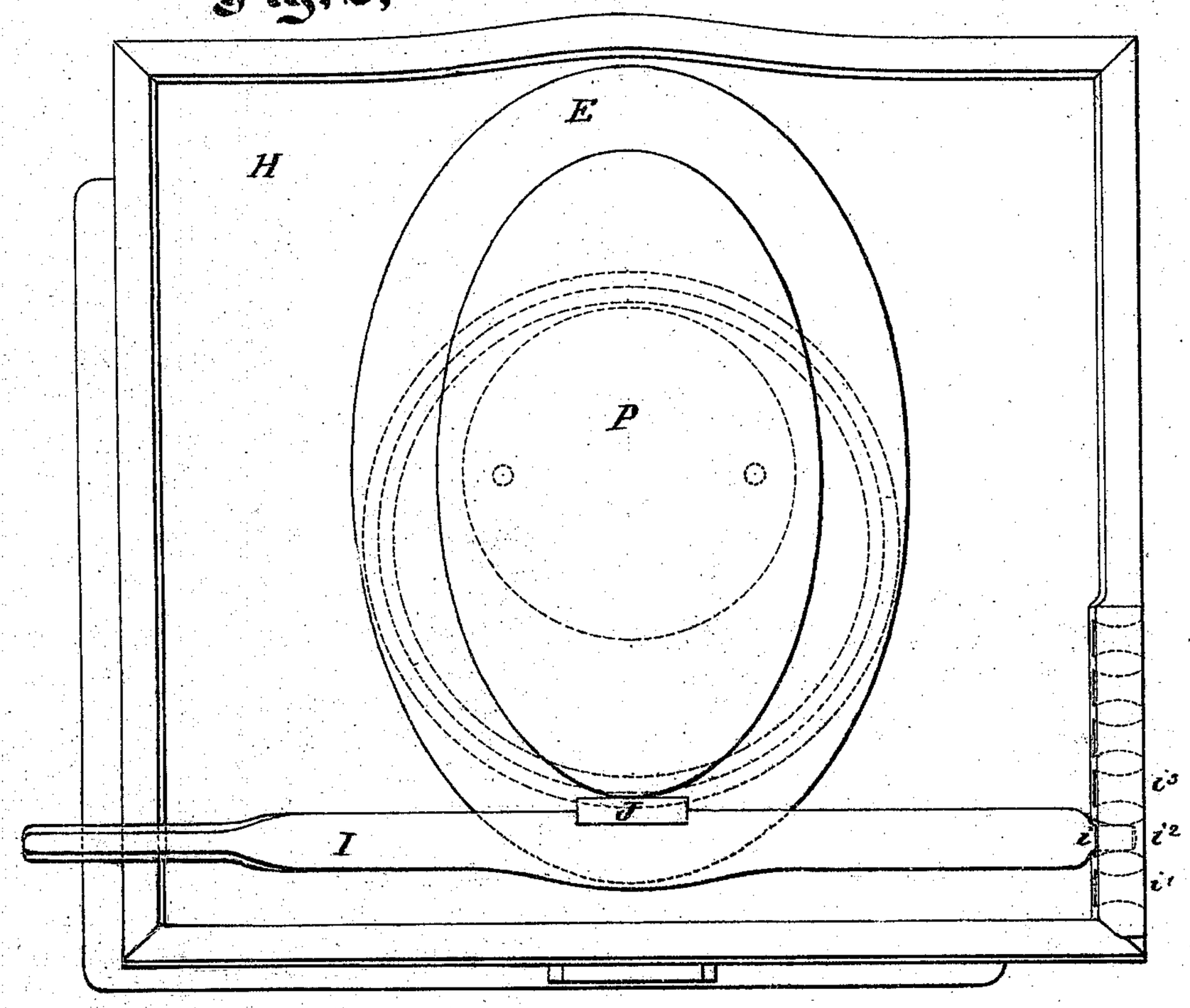
by his attys T. S. Sutton

Witnesses.

A. Hoermann.

C. C. Livingston

Fig. 2,



[106.] ANTON SAFFER. Polishing Stone. 2 Sheets--Sheet 2

No. 119,282. Patented Sep. 26, 1871.

Witnesses,
A. Hoerneman.
C. C. Livingston

Inventor,
Anton Saffer
by his atty
J. D. Stetson

Fig. 3.

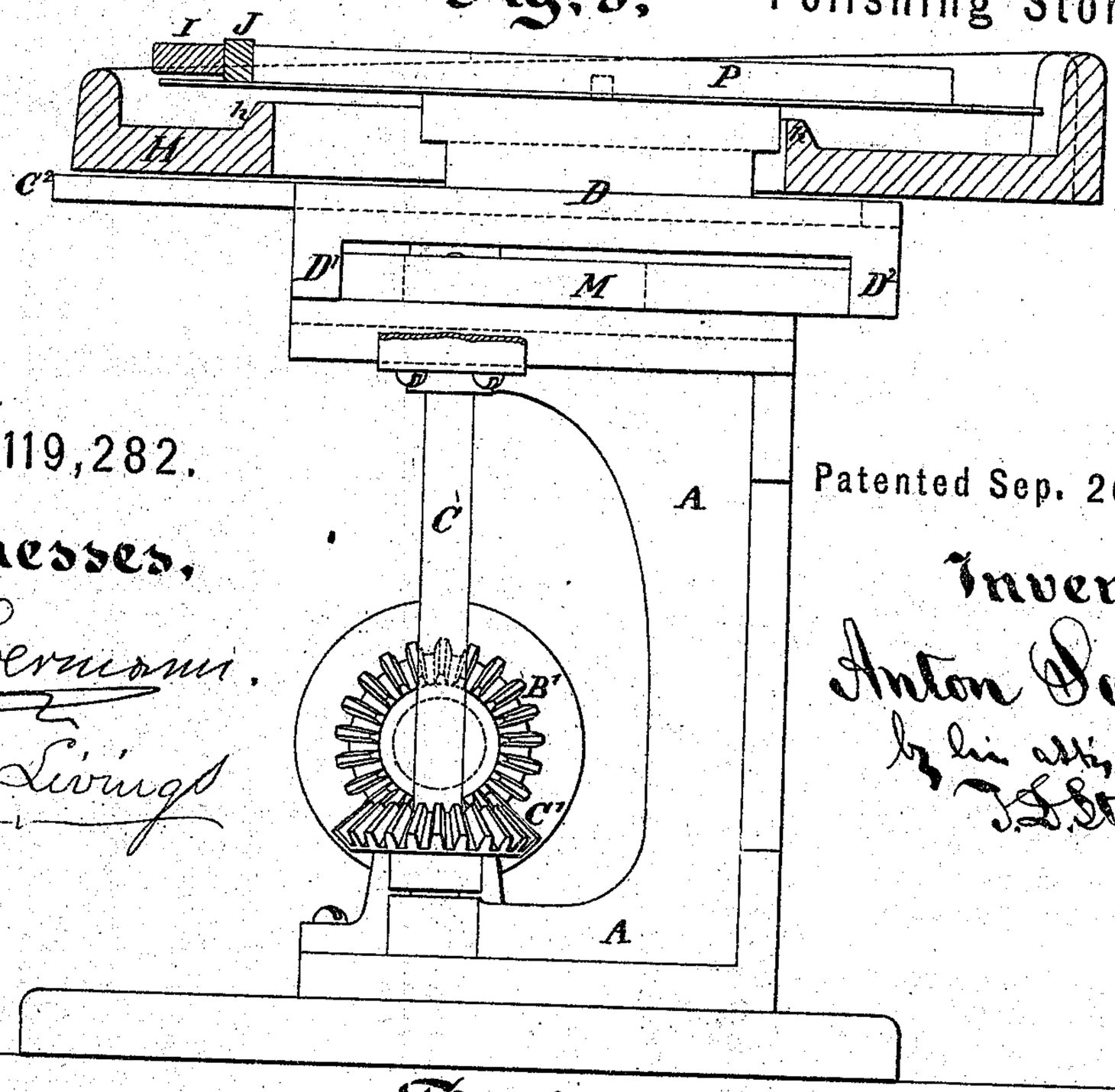
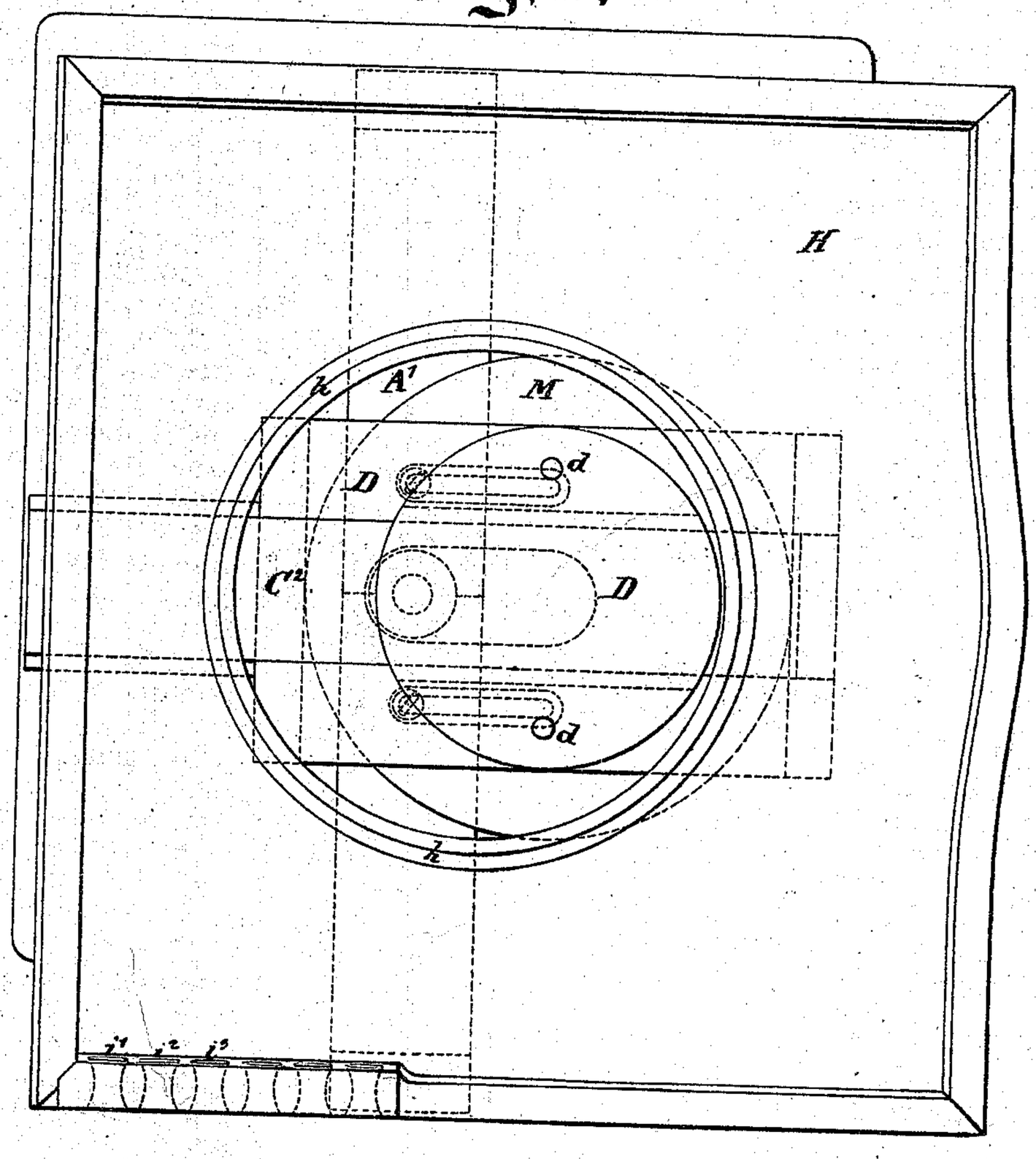


Fig. 4.



UNITED STATES PATENT OFFICE.

ANTON SAFFER, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR STONE POLISHING.

Specification forming part of Letters Patent No. 119,282, dated September 26, 1871; antedated September 11, 1871.

To all whom it may concern:

Be it known that I, ANTON SAFFER, of New York city, in the State of New York, have invented certain new and useful Improvements in Machines for Rubbing and Polishing Stone; and I do hereby declare that the following is a full and exact description thereof.

My machine is intended more especially for polishing the edges of oval tables; but it may also be used for polishing the edges of round tables.

I will proceed to describe what I consider the best means for carrying out my invention. The accompanying drawing forms a part of this specification.

Figure 1 is a vertical section in the plane of the driving-shaft. Fig. 2 is a plan view with an oval table-top in position thereon. Fig. 3 is an end elevation with the upper portion in section. Fig. 4 is a plan view, corresponding to Fig. 3, with the table-top and the card-table on which it is supported removed.

Similar letters of reference indicate corresponding parts in all the figures.

A is an arched frame-work of cast-iron or other suitable material. B is a driving-shaft with pulleys, receiving motion from a belt driven by a steam-engine or other motive power, not represented. The bevel-gear wheel B′ meshes into a corresponding wheel, C′, on the upright shaft C, which carries the work. The peculiar motion imparted to the stone is effected by a mechanism which is strongly analogous to what I think has been used before in a different combination for turning ovals in wood and for engine turning, and for ornamental engraving on watches and the like. As used in this machine it is intended always to be adjusted so that the edge of the stone, in performing a revolution, shall just touch a polishing-tool or piece of pumice-stone of a proper form, held in a suitable fixed position. It is provided with means for holding the table-top or other round or oval stone P firmly in a horizontal bed, which is rotated and at the same time caused to travel bodily to and fro to an adjustable extent, which may be made just sufficient to compensate for the ellipticity of the table. The rotary motion is derived from the upright shaft C. The traverse bodily is derived from a fixed circular piece, which may be nicely adjusted with its center in line with the shaft C, or considerably out of line therewith. Each table-top has on its under side two shallow holes at a considerable distance apart, to receive pins *d d* fixed in the upper surface of the carrier D. This carrier D receives a rotary motion from a long bar, C^2, which is fixed on the shaft C and fits in a groove extending the whole length of the carrier D, the latter being excavated through the center to allow it to traverse freely. The weight of the carrier D and its connections may be supported either on the stout bar C^2 by giving it a dovetail or a corresponding T-shape form, or it may be allowed to press with a whole or any portion of its weight upon the adjustably-fixed guide-table M below. I will describe it as suspended on the bar C^2, which plan I esteem preferable, and in which the carrier D will traverse with its compound motion without its under surface getting a sixteenth of an inch, more or less, above the upper face of the guide-table M. There are deep lips D^1 D^2 at the opposite ends on the carrier D, the parallel inner faces of which are at a distance apart exactly corresponding to the diameter of the adjustable table M. The revolving of the shaft C, with its cross-bar C^2, induces a corresponding revolving motion of the carrier D, and the contact of the inner faces of the lips D^1 D^2 with the periphery of the guide-table M compels the carrier D to traverse or reciprocate longitudinally to the bar C^2 at each revolution to an extent depending on the amount of eccentricity of position of the table M. When this guide-table M is adjusted with its center exactly in a line with the axis of the shaft C the motion of the carrier D, and consequently of the marble table-top P fixed thereon, will be simply rotary; but when the guide-table M is adjusted with its center out of line with the shaft C it will compel a corresponding reciprocation of the carrier D and its connections. The guide-table M is extended downward and locks into a dovetailed groove in the framing A, and may be adjusted backward and forward in such groove by means of set-screws *m*, as will be readily understood.

I have now described the parts which form my peculiar oval chuck, with the means of holding an oval table-top thereon; but this simply, so far as described, would form a very imperfect machine. It is necessary to defend the parts against water and grit. For this purpose I apply a broad plate or guard, E, corresponding nearly

or exactly with the table-top, the edges of which are to be polished, but considerably larger. This is perforated with holes to match the pins *d d*, and is laid directly on the carrier D and between it and the table-top P, which latter I will hereafter simply term the marble, explaining, however, that it may be of any other stone which may require the polishing of its edge in an oval form. This plate E is large enough to extend always over a fixed rim or lip, *h*, which forms the edge of a hole in a broad trough or rimmed table, H, which is supported on arms A′ fixed to the framing A. The broad trough H might with some propriety be called merely an extension of the fixed frame-work of the machine. It fulfills the function of receiving the water and sand which drop from the edges of the plate E, and of conveying it away through any suitable spout at either corner, (not represented,) or, if preferred, be allowed to accumulate to a moderate depth at the bottom of the trough H. The height of the rim *h* and the height of the border or external edge of the trough H may be varied within wide limits. It is essential only that the top of the inner rim *h* be below the guard-plate E, and that the open space in its interior be sufficient to allow for the maximum eccentricity of motion of the carrier. It will be observed that the carrier D is extended upward in a circular form in the aperture thus provided within the rim *h*.

The machine is now provided with all the essentials for receiving stones of suitable size and of various degrees of ellipticity, and of revolving them with such a degree of wabbling motion that its edge may always coincide in its position with the polisher held at a fixed point on one side. The polisher may be of pumice-stone or other ordinary or suitable material, previously worked to approximate the proper form, according to the pattern of the edge, and it may be held by various devices, more or less complex, which will allow it to be pressed with a gentle force against the edge of the table at the proper point, to wit, the point where its edge has the least wabbling motion. It may be well to hold the pumice-stone J or polishing material in a hinged holder so that it may tilt or swing a little to allow it to better coincide with the various positions in which the edge of the table P will be presented thereto in the various parts of its revolution. I do not, however, esteem these essential to success. I have found in my experiments that ordinary pumice-stone, if held in a fixed position, will soon assume a form which allows it to work with tolerable success on all parts of the edge. I employ as an economical and convenient holding means the small lever I, operated by the hand at one extremity, while the other extremity is allowed to pivot on the point *i*, which latter may be changeable at will by any ordinary or suitable means. I believe it sufficient for this latter purpose to simply provide a series of holes or notches, i^1, i^2, &c., in the outer rim of the trough H, so that the lever I may be fulcrumed in either of them. The pumice-stone J may be fitted into a recess provided in the lever I, as represented.

The table-tops or stones P are previously prepared of uniform size, with the holes to receive the pins *d* at uniform distances apart. They are also previously dressed by well-known machinery to the proper oval contour by means of tools which leave the edge either perpendicular or plain, or variously molded in ogee or other tasty patterns. My polishing-machine is stopped for a moment, the previously-polished stone lifted off and a new one applied, and the belt again shifted so as to set the machine in motion. Now, the hand being applied to the lever I so as to induce a gentle pressure of the pumice against the edge of the stone or table-top P, which is both revolving and reciprocating bodily so as to present its edge always in or near the same point, as it passes the pumice J it is rapidly smoothed and polished, while the water applied at the rubbing points between the pumice and the table is received at first on the plate E and is discharged therefrom into the trough H. In a little time the polishing is completed, the machine again stopped, and the operation repeated.

I can change the pins *d d* so as to stand at different distances to match smaller or larger tables, and I can change the whole carrier D and other parts for some varieties of work; but it will be sufficient in most cases to simply change the plate E. The necessity of changing this plate will be most apparent when changing from highly elliptical work to work which is nearly or exactly round. I propose to furnish several of the plates E of different sizes and degrees of ellipticity with each machine.

Instead of putting the guard-plate E directly upon the circular top of the carrier and allowing the guard-plate to extend out alone unsupported, I often prefer, in practice, to fix the pins *d d* in a stiff plate, (not represented,) of an oval form, larger than the circular top of D. The operation is the same in all respects as here represented, except that the pins *d d* may be further apart, and the stone P and also the guard-plate E will be a little better supported at the edges.

I claim as my invention—

The oval stone-polishing machine herein described, having the means *d* for rapidly and easily securing and releasing the stone, and the means E for protecting the mechanism against the water and grit, in combination with the oval lathe mechanism, and with means I J for forcibly pressing against and polishing the edge of the stone, as herein set forth.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

A. SAFFER.

Witnesses:

A. HOERMANN,

C. C. LIVINGS.