

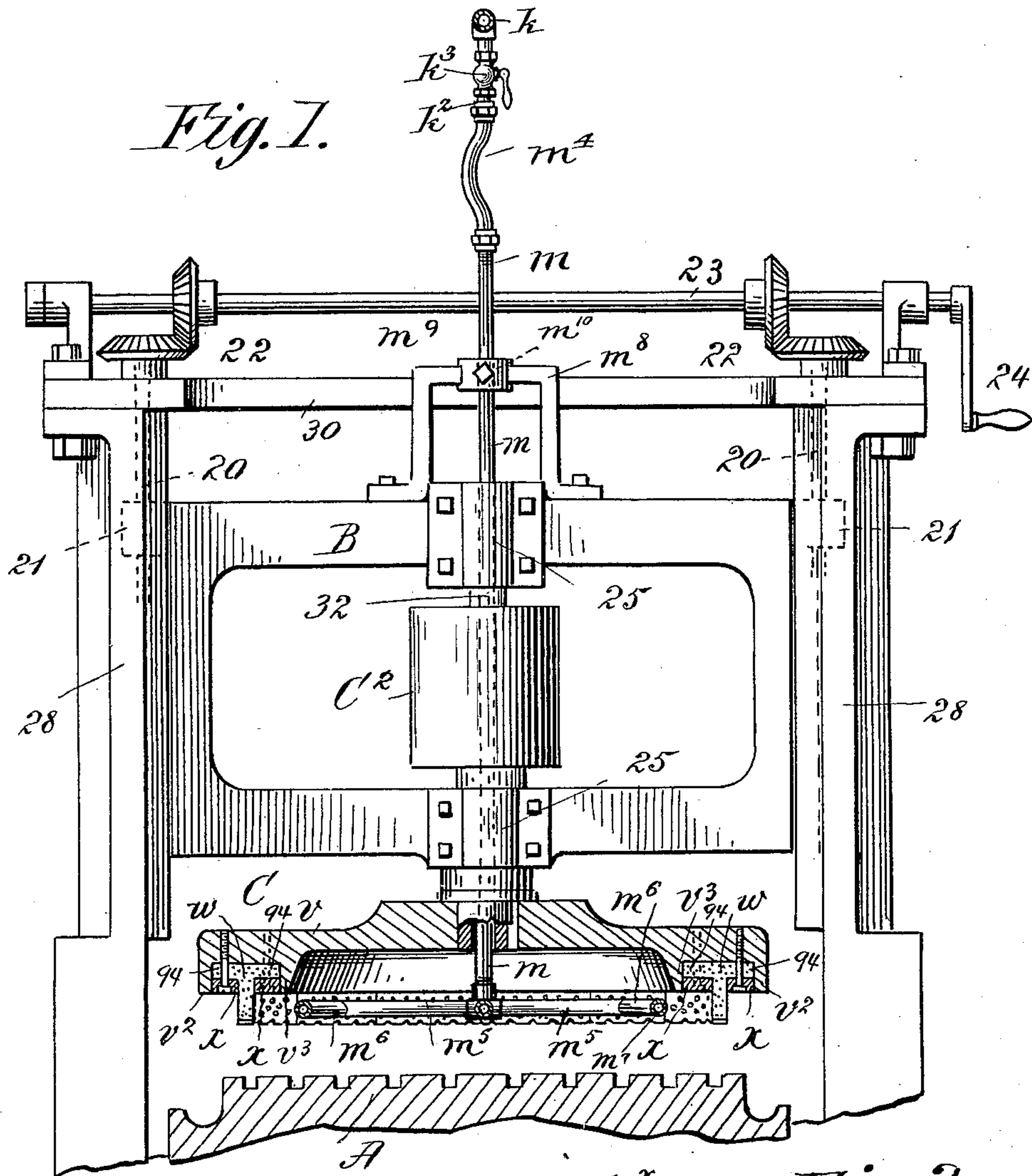
No. 639,955.

Patented Dec. 26, 1899.

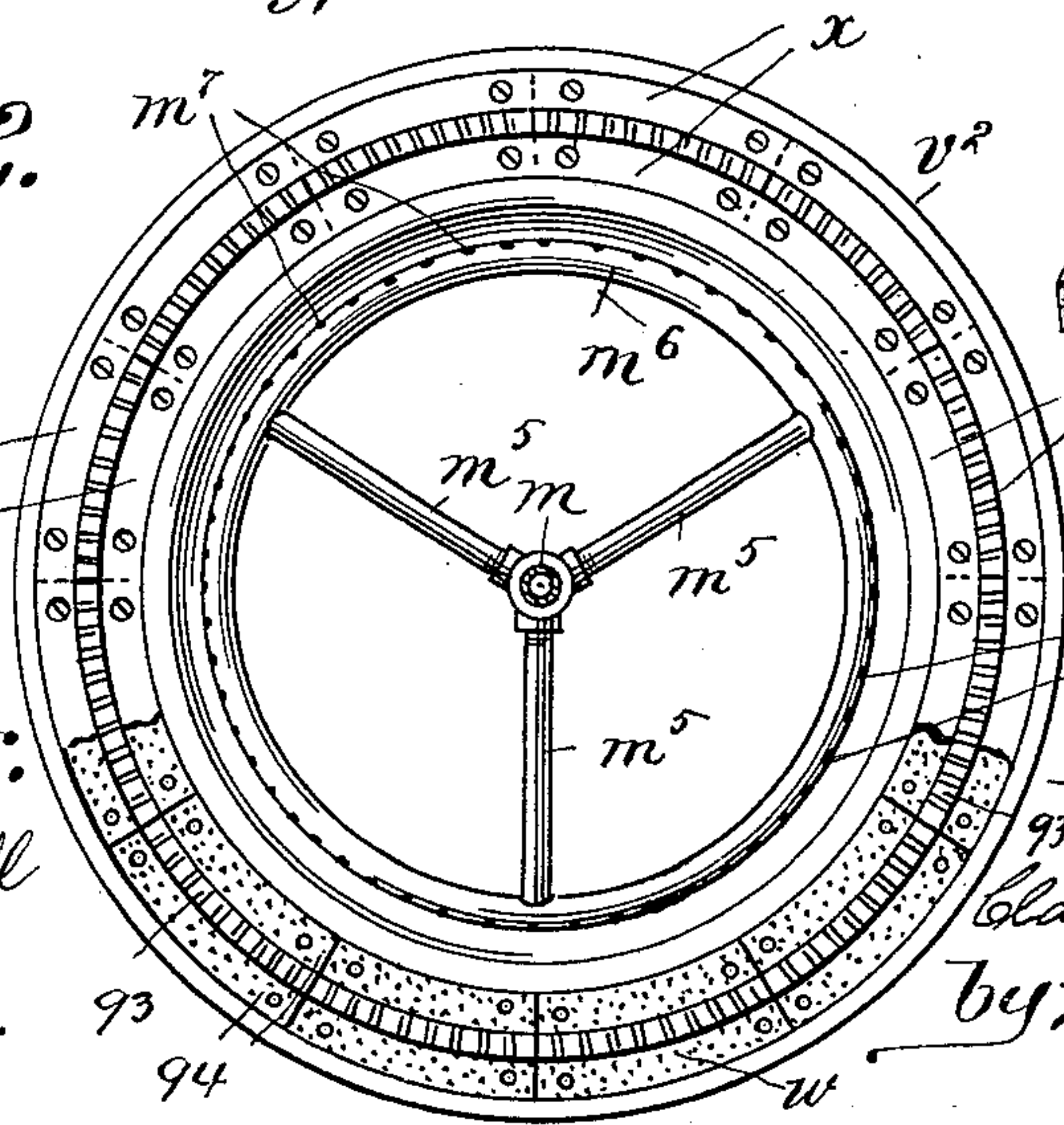
C. G. WARNER.  
WET WORKING SURFACING WHEEL.

(Application filed Aug. 14, 1899.)

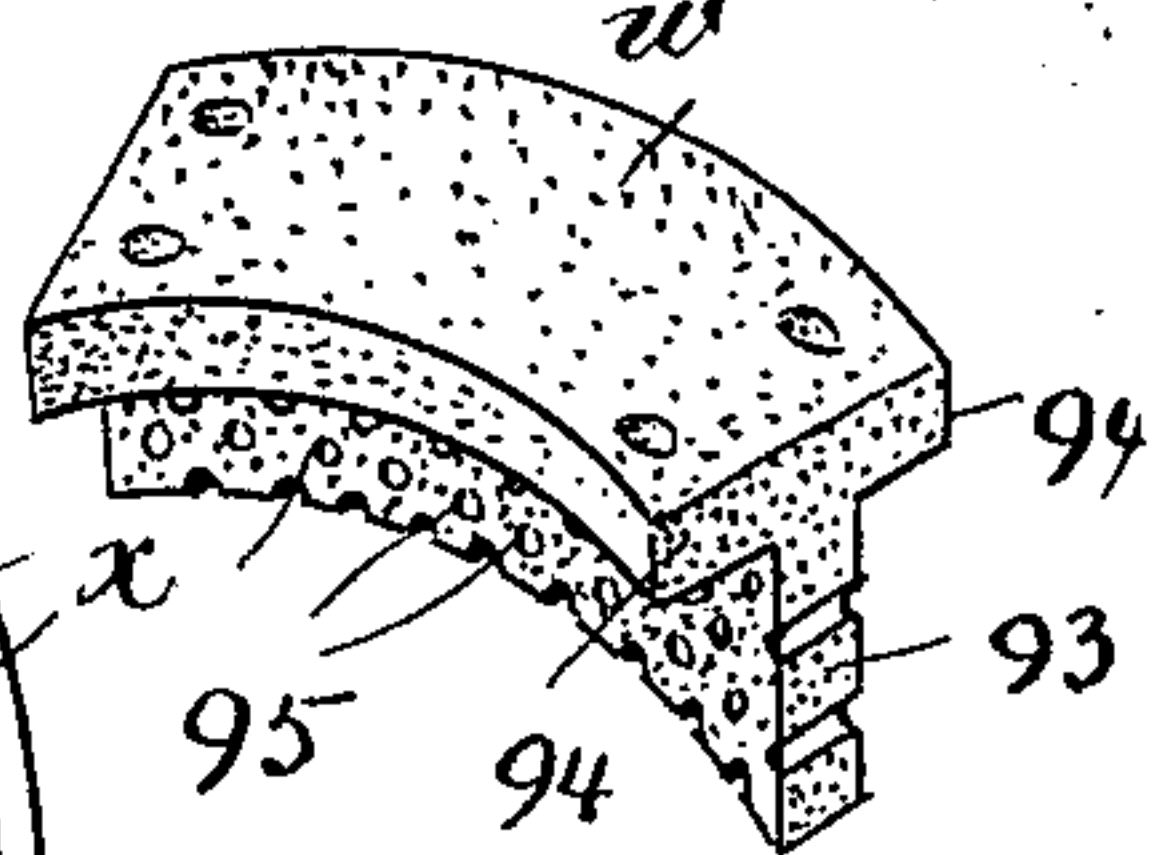
(No Model.)



*Fig. 2.*



*Fig. 3.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

CLARENDON G. WARNER, OF HOLYOKE, MASSACHUSETTS.

## WET-WORKING SURFACING-WHEEL.

SPECIFICATION forming part of Letters Patent No. 639,955, dated December 26, 1899.

Application filed August 14, 1899. Serial No. 727,112. (No model.)

*To all whom it may concern:*

Be it known that I, CLARENDON G. WARNER, a citizen of the United States of America, and a resident of Holyoke, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Wet-Working Surfacing-Wheels, of which the following is a full, clear, and exact description.

10 This invention relates to improvements in machines for surfacing and for resurfacing lithographic stones to be used or which have been used to bring them in readiness for use for an engraving transfer or drawing.

15 In a certain description of machine for the purpose indicated and for which I filed application for Letters Patent of the United States June 2, 1899, Serial No. 719,156, there is embodied a carrier or reciprocatory bed for 20 the stone to be surfaced, a roughing-wheel to the action of which the top of the stone is subjected, a further wheel or set of wheels of a finer character to the action of which the stone is next subjected, and, in combination 25 with the foregoing, a final polishing wheel or wheels, which secondary and tertiary wheels are transversely reciprocated horizontally relatively to the stone thereunder.

30 This invention more particularly relates to the construction of the first-named roughing-wheel and to the means combined therewith for supplying water suitably adjacent the annular working edge of the roughing-wheels and adjustable means operating in conjunction with the water-supplying pipe for elevating and lowering such supplying-pipe, 35 whereby its position may be always suitably adjacent the working edge of the roughing-wheel, whether the latter is in its new and 40 unworn condition or is in a much-worn-away condition.

The invention consists in the construction and arrangements of parts, as hereinafter described, and set forth in the claims.

45 Reference is to be had to the accompanying drawings, in which the present invention is illustrated with sufficient fullness to enable others skilled in the art to construct the same.

50 Figure 1 shows a cross-section of the bed

on which the stone is to be carried horizontally, and an elevation thereabove of the supporting-head or transversely-arranged frame for the roughing-wheel shown as journaled therein for rotation in a horizontal plane with 55 its working edge upon or adjacent the stone to be surfaced. Fig. 2 is a plan view of the under side of the roughing-wheel; and Fig. 3 is a perspective view of one of the abrading sections or segments, of which there are a circularly - arranged series comprised in the 60 roughing-wheel.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the bed of 65 the machine, which is understood to be constructed and operated the same as the bed of a planer-machine and having at opposite sides thereof the standards 28 and a cross-tie beam 30, and movable in said standards is the head 70 B, in which are the journal-bearings 25 25 for the hollow vertical shaft 32, at the lower end of which is affixed and supported rough-grinding or coarse-surfacing wheel C, arranged to rotate in a horizontal plane suitably above 75 the bed A, the carrying-shaft having the pulley C<sup>2</sup> thereon, whereby to be driven through means of a belt in the ordinary manner.

The head B is elevated and lowered through the turning by the crank-handle 24 of the 80 shaft 23, which at 22 is geared to the vertical screw-shaft 20, engaging the nuts or screw-tapped projections 21, formed on or affixed to said head, so that the latter and the shaft 32 and grinding-wheel C may be bodily raised 85 and lowered as occasion may require.

The wheel C is constructed with a cast-iron body *v*, having a circular form, with a depending external flange *v*<sup>2</sup> and a depending internal flange *v*<sup>3</sup> leaving the annular groove, 90 which is downwardly opening between such flanges.

The roughing or abrading medium consists of a series of sections *w* of T-form in cross-section and extending as to their length in an 95 arc. These sections are made of granulated or pulverized emery, corundum, or equivalent abrading material molded to the form shown—that is, having the depending central portion 93 and head-flanges 94 94. The 100



depending central portion 93 is constructed with a multiplicity of perforations or rendered porous, as indicated at 95, and the lower edge is formed serrated, as indicated at 96.

5 These arc-formed and cross-sectionally T-shaped abrading sections  $w$  are held in place by the annular clamping-rings  $x$ , which lie within the aforesaid annular groove of the roughing-wheel body  $v$ , with a retaining engagement against the portions 94 94 of said sections, said clamping-rings being confined by set-screws or bolts, which pass through, and with a screw engagement into the solid top of the body  $v$ . The depending middle part 93 of the sections  $w$  projects quite a little below the body  $v$  of the roughing-wheel.

10  $k$  represents a water-supplying pipe having the depending member  $k^2$  provided with a cock  $k^3$ , and this is above the tubular shaft 32, which latter is open through from end to end and has extending downwardly through it the vertical water-supply pipe  $m$ , which has its upper end coupled to a flexible pipe-section  $m^4$ , which section is also coupled to the depending member  $k^2$  of the water-supply pipe  $k$ , which ranged along over the machine. The lower end of the vertical water-supply pipe  $m$  has radial horizontal branches  $m^5$ , which connect in the manner of the spokes of a wheel the said vertical pipe with the annular surrounding pipe  $m^6$ . This latter pipe is thus supported within the grinding or abrading section at a proper height relatively to the working edge thereof and has the series of jet-holes  $m^7$ , whereby the water may be expressed at all points around the circular working edge of the roughing-wheel. The vertical pipe  $m$ , on the lower end of which the spoke-connected annular pipe is carried, plays vertically through the socketed bracket  $m^8$  of the head B and is held adjustably higher or lower, as occasion may require, by the set-screw  $m^9$ .

When the grinding-wheel C has been used for a protracted period and the depending rib-like parts 93 of the abrading-sections  $w$  have been worn up close to the bottom of the iron body  $v$  of the surfacing-wheel or have become worn in a material extent, the set-screw  $m^9$  is loosened and the water-supply pipe and the annular pipe  $m^6$  carried therewith is correspondingly raised, and when the abrading-sections  $w$  have been worn away completely or nearly up to the body  $v$  of the surfacing-wheels the clamping-rings  $x$  are removed and a new set of the sections  $w$  are replaced and confined as before. By making the sections  $w$  with the interstices or pores substantially as shown such roughing or abrading mediums are relieved of the tendency to become glass-like or smooth at their working edges after a short time of use and present after continued employment always a fresh and suitably rough working edge, and, furthermore, as the wheel be-

comes worn away by reason of the aforesaid perforations the edge successively becomes edgewise recessed, permitting the water supplied within the wheel to flow under the working edge.

When the head B is raised or lowered to correspondingly bodily move the grinding-wheel C and the water-distributing pipe therefor, the flexible conduit-section becomes deflected or straightened correspondingly, and it also permits the independent adjustment vertically of the water-pipe  $m$  to bring the circular distributing-pipe  $m^6$  higher or lower relatively to the working edge of the wheel as occasion may require.

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

1. An annular inverted-cup-shaped roughing or surfacing wheel carried at the lower end of a vertical hollow shaft, a water-delivering pipe extending downwardly through said shaft, radial tubular arms extending from the lower extremity of said pipe and a circular pipe connected with said radial tubular arms located near the working edges of the wheel and having water-delivering jet-holes.

2. A grinding or surfacing wheel having an annular depending rib-like working edge composed of suitable abrading or surfacing material, mounted for rotation in a horizontal plane, and a hollow vertical carrying-shaft therefor, a vertical pipe  $m$  extending down through the hollow shaft, and having connected therewith radial tubular arms which at their outer ends are connected with, and support, the circular pipe located suitably adjacent the working edge of the wheel, and having water-delivering jet-holes, means for supporting the vertical pipes and its outlying circular pipe in any desired vertical adjustment, relatively to the working edge of the wheel, and means for supplying water through such pipe.

3. A grinding or surfacing wheel having a depending annular abrading edge rotating in a horizontal plane, a tubular vertical carrying-shaft for the grinding-wheel, a head or frame in which said carrying-shaft is journaled having the bracket  $m^8$  with a vertical socket therethrough, an overhead water-supply pipe  $k$ , the vertical water-supply pipe  $m$ , the circular pipe  $m^6$  having jet-holes, and the radial tubular connecting-arms  $m^5$ , the set-screw  $m^9$  and the flexible conduit-section  $m^4$  connecting the upper end of pipe  $m$  with the overhead supply-pipe  $k$ , arranged and cooperating, substantially as described.

4. In a lithographic-stone-surfacing machine, an axially-vertical roughing-wheel having an annular depending working edge composed of abrading material which is rendered porous or perforated, and has its working edge notched or serrated, for the purpose set forth.

5. In a lithographic-stone-surfacing ma-



chine, an axially-vertical roughing-wheel C |  
having a circular metallic body *v* provided |  
with the downwardly-opening annular seat- |  
groove, a series of sections or segments *w* of |  
5 abrading material, each of T shape, in cross- |  
section, and of arc form as to its length and |  
the clamping-rings 94, 94, and means for con-

fining them, substantially as described and  
shown.

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Witnesses:

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