

No. 639,954.

Patented Dec. 26, 1899.

C. G. WARNER.
LITHOGRAPHIC STONE SURFACING WHEEL.

(Application filed Aug. 14, 1899.)

(No Model.)

Fig. 3.

Fig. 1.

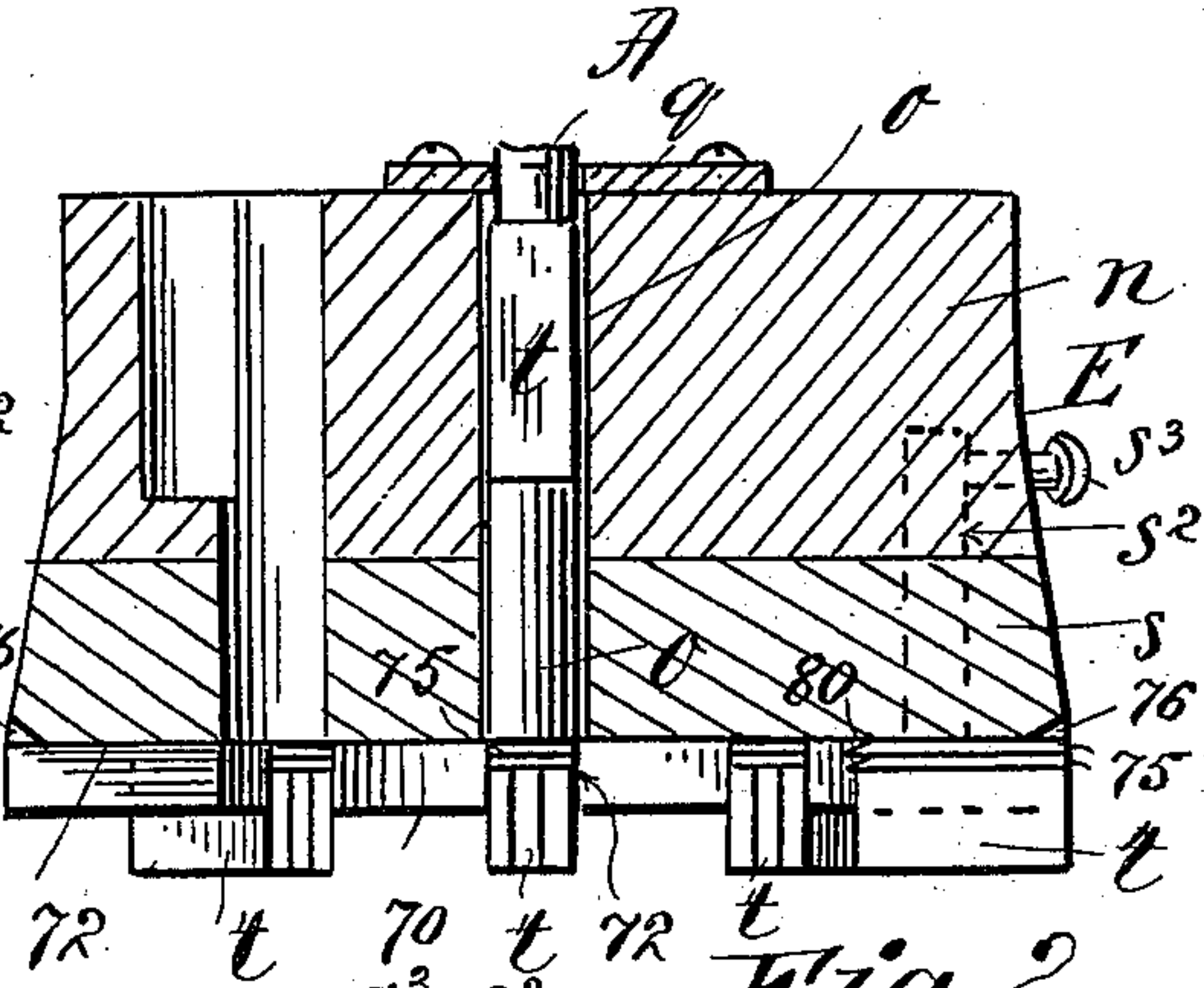
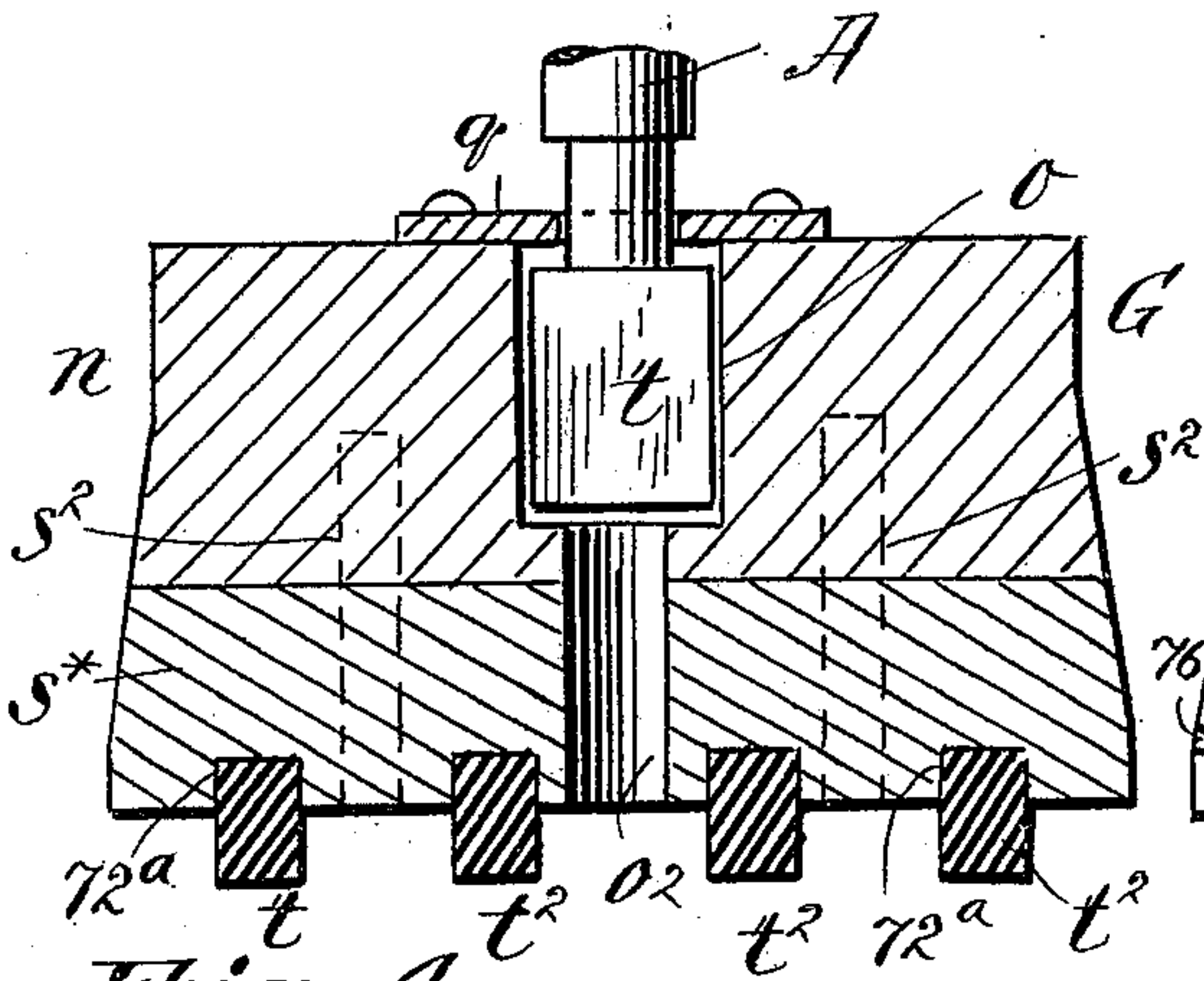


Fig. 4.

Fig. 2.

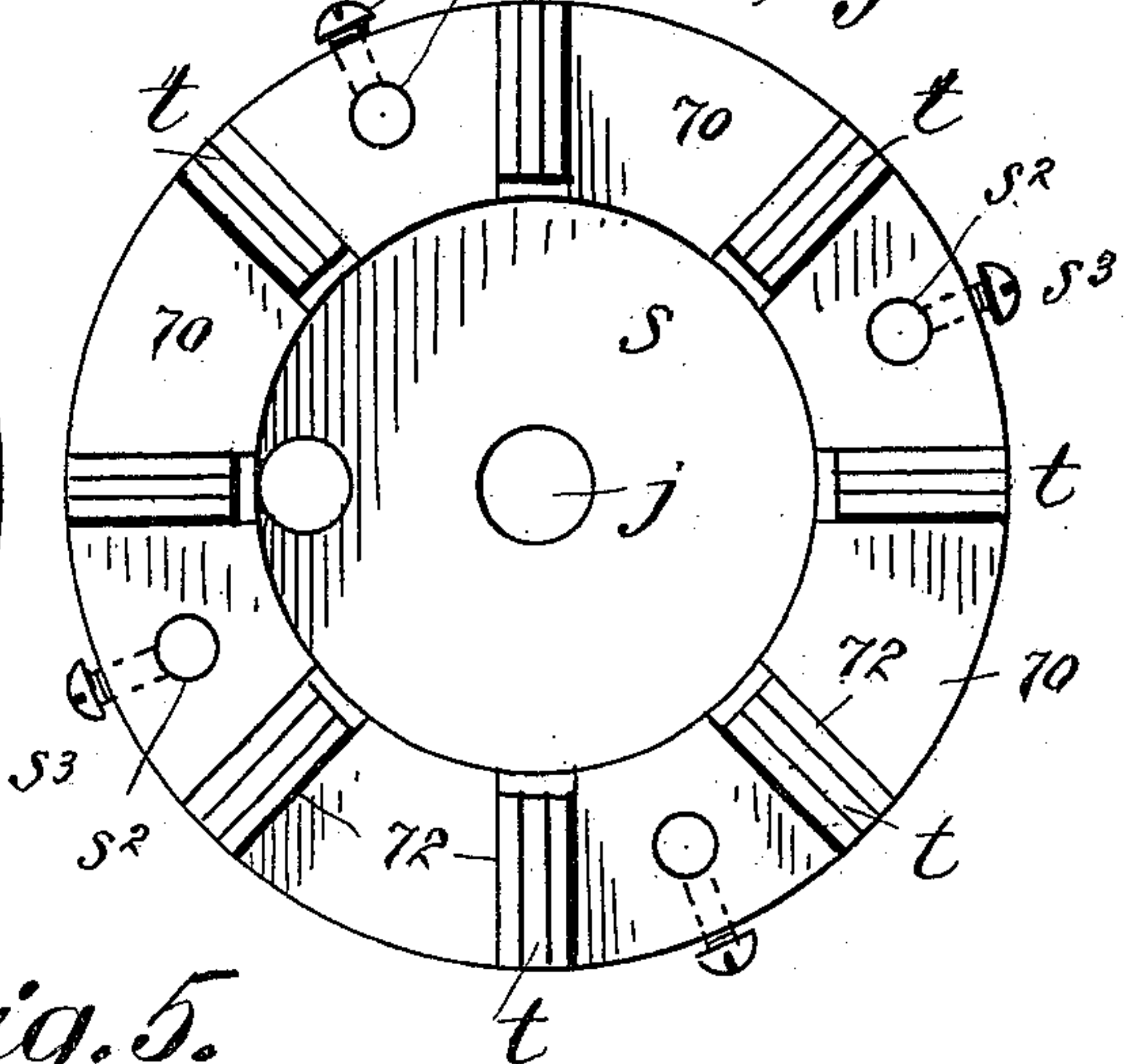
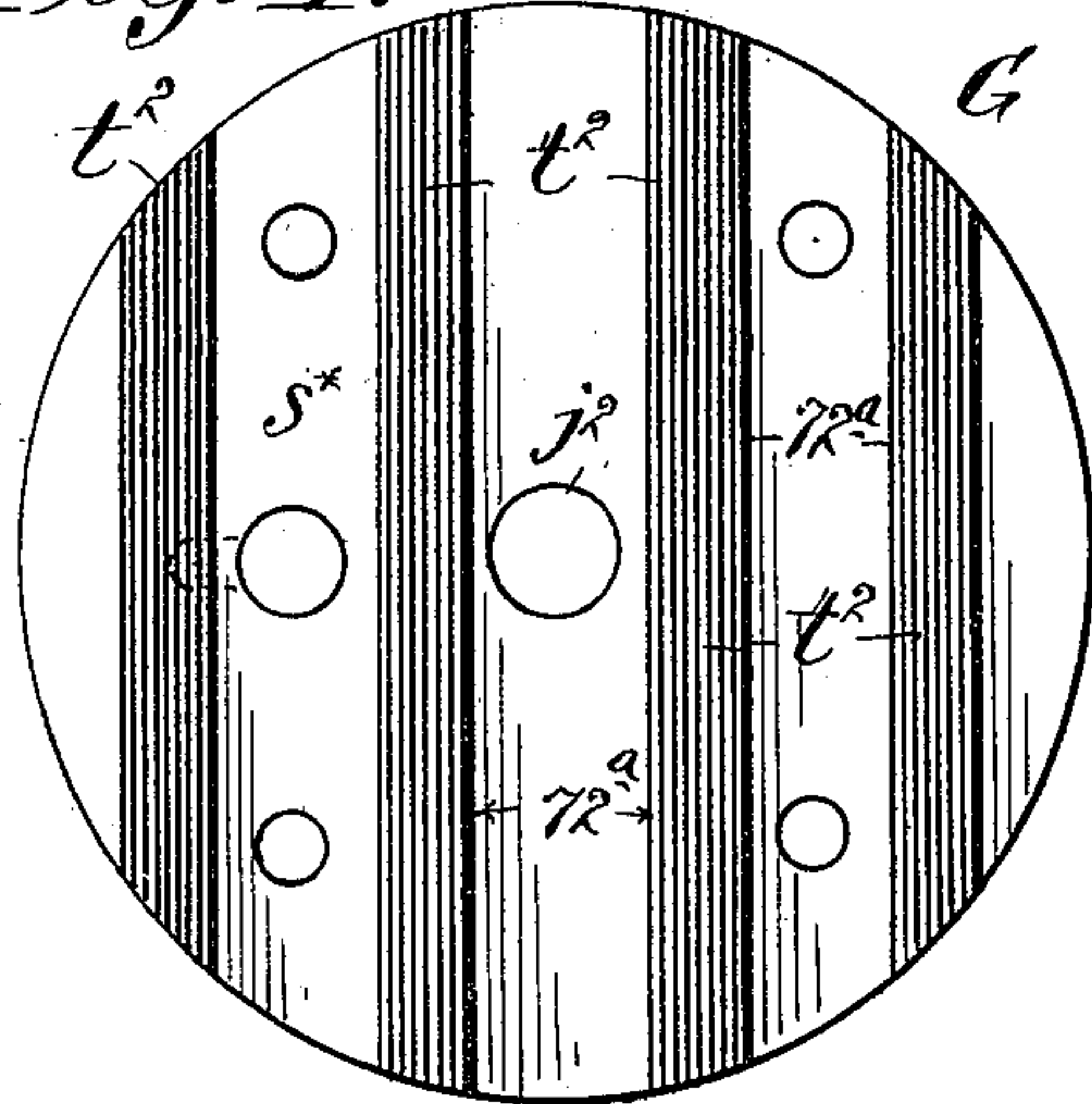
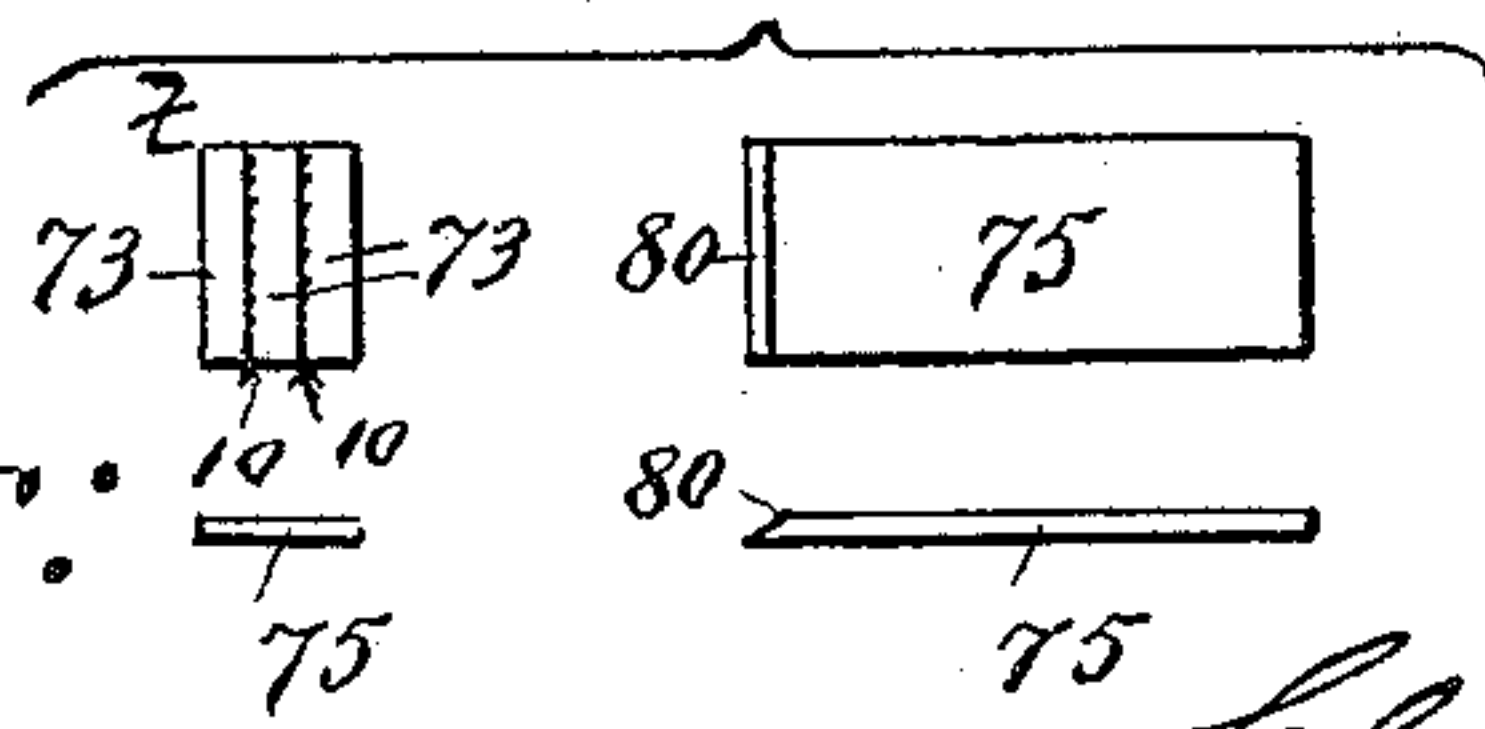


Fig. 5.



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UNITED STATES PATENT OFFICE

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LITHOGRAPHIC-STONE-SURFACING WHEEL.

SPECIFICATION forming part of Letters Patent No. 639,954, dated December 26, 1899.

Application filed August 14, 1899. Serial No. 727,111. (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 Lithographic - Stone - Surfacing Wheels, of which the following is a full, clear, and exact description.

10 This invention relates to the smoothing, surfacing, or polishing wheels for machines for surfacing lithographic stone or other material required to be produced with a smooth plane face.

15 In application for Letters Patent of the United States filed by me June 2, 1899, Serial No. 719,156, there is illustrated a machine in which is comprised the carrier or reciprocatory bed for the stone to be surfaced; a
20 roughing-wheel, to the action of which the top of the stone is subjected; the further wheel or set of wheels of a somewhat finer character as to the working surface thereof, to the action of which the stone is next sub-
25 jected, and there is still, furthermore, the final polishing wheel or wheels, the second and third wheels or sets of wheels being traversed horizontally while being rotated, with their lower abrading or polishing edges in suitable
30 pressure bearing upon the stone reciprocated relatively thereto.

This invention more particularly relates to the abrading, surfacing, or polishing wheels used in the aforesaid machine for the inter-
35 mediate and final surfacing and polishing operations which follow the action of the roughing-wheel, having its abrading-surface of a coarser character.

Inasmuch as these surfacing-wheels are car-
40 ried at the lower end of a respectively provided shaft for rotating them and are quite heavy, for the purpose of insuring sufficient pressure bearing on the work by reason of their weight, one object of this invention is
45 to provide the surfacing-wheels with a main body and a holder or carrier section provided with the series of members or sections of abrading or surfacing material, so that after the latter have become worn and their replace-
50 ment is required the holder may be detached

from the body, at the bottom of which it is carried, and removed from the machine and inverted to be newly equipped with the abrading-sections, manifestly much easier than if the whole wheel, which in this class of ma-
55 chine may often weigh two or three hundred pounds, was removed in its entirety.

Another object of the invention is to provide in the secondary surfacing-wheel sections of abrading or surfacing material hav-
60 ing especial fitness and utility in and for the performance of the work and to provide means for the retention of the secondary-surfacing or final-polishing sections in place in the carrier therefor and for adjusting them
65 to compensate for wear.

To these ends the invention consists in the constructions and combinations of parts and materials, all substantially as hereinafter described, and set forth in the claims, reference
70 being had to the accompanying drawings, in which—

Figure 1 is a substantially central vertical sectional view through one of the surfacing-
75 wheels. Fig. 2 is a plan view of the under side of the same. Figs. 3 and 4 are similarly sectional and under side plan views of the final-polishing wheel, which has certain char-
acteristics in common with the aforementioned wheel. Fig. 5 is a view of a group of parts
80 in detail—that is, at the left upper part an end view of one of the sectional surfacing-blocks, and therebelow and also to the right thereof, respectively in plan and edge views,
85 of one of the chisel-edged strips used in conjunction with the said blocks, which parts are hereinafter individually referred to.

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

The surfacing or secondary wheel is repre-
90 sented by the letter E, and the final-polishing wheel by the letter G. The surfacing and polishing wheels are both constructed with a circular body *n*, which may advantageously be made of cast-iron, and this body is so engaged
95 on the lower end of the vertical shaft A therefor that it may have a slight degree of lost motion or play relatively to its shaft, whereby it may conform to the level surface of the stone being worked upon, and yet so that the rotary
100

motion of the shaft will rotate the surfacing-wheel, and also whereby a bodily lifting in a considerable extent of the shaft will elevate the surfacing-wheel clear from its work. This connection is constituted by forming the body of the surfacing-wheel with a squared mortise *o*, extending vertically and centrally from its top, while the lower end of the carrying-shaft *A* is constructed with a solidly formed or rigidly-connected tenon *t*, which is sunk within the mortise and is overlaid by the retaining-cap *q*. The height of the tenon is slightly less than the depth of the mortise therefor, as shown.

Detachably connected with the surfacing-wheel body is the annular carrier *s* for the series of surfacing-sections of abrading material with which said carrier is provided at its under side. Said carrier has dowel-and-socket engagements with the body, as indicated at *s*², retaining or set screws *s*³ engaging the dowels, the same being provided to penetrate the body of the carrier from its periphery.

The carrier of the surfacing-wheels *E* is constructed with the depending annular flange 70, formed with a series of radial recesses or pockets 72, opening at the bottom of said flange, and in these pockets, which also open radially at the outer periphery of the flange, are the blocks or sections *t t* of rectangular form and which may be of any material or combinations of materials to constitute an abrading medium having fitness to the purpose. These blocks may advantageously be made of layers 73 of wood or leather or other material of fine grain or texture, having their adjoining faces surfaced with glue, which glue before the so-surfaced layers are placed together and clamped are liberally sprinkled with emery, so that the finished block *t* is constituted with intermediate strata 10, which are angular to the plane of rotation of the wheel of ground emery or like gritty material, which in use exerts, in conjunction with the fibrous material, to a very good surfacing action on a lithographic stone. This block retains its good surfacing capability even after having been considerably worn away, always presenting at its working face the combination of the comparatively smooth-grained and more gritty substances. These blocks are crowded into place tightly within the radial recesses 72 therefor, and are held against displacement by reason of their crowding fit, which is materially increased by the expanding effect of the water copiously applied in the surfacing-operations of the machine.

Inasmuch as the abrading sections or blocks, the lower edges of which protrude beyond the base of the flange 70, become finally uniformly reduced and worn away they are downwardly-crowded to compensate for the wear by inserting thin strips 75 of wood or other suitable material in the top walls of the recesses

72, and in order to render this easy the outer corners of the recesses are beveled, as shown at 76, and the said strips are formed with their entering ends beveled or chisel-shaped, as seen at 80, Figs. 1 and 5, whereby they may be entered to their crowding action above the blocks *t*.

The pair or set of wheels *G G*, which are designed to operate on the face of the surface lithographic stone after the same has previously been reduced by the roughing-wheel and the surfacing-wheels *E E*, is shown as having a body *n*² the same, and mounted on its shaft in the same manner at the body of the surfacing-wheel *E*, and the holder *s*^{*}, which has the dowel-and-socket engagement and set-screw confinement, as before described, is here made in the form of a disk, with a small central opening *j*² for the disposition therein of the water-pipe, and recesses 72^a extend from edge to edge of the holder, and in these recesses are fitted bars or sections of the abrading material, (indicated by *t*²), these being rubber in any of its elastic compounds, or combinations of rubber and cloth or felt or other polishing material.

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

1. A lithographic-stone-surfacing wheel, consisting of a circular body having at its lower portion a detachably-connected holder provided with a series of recesses and surfacing or abrading sections fitted in and projected below the bottom of said holder, substantially as and for the purpose set forth.

2. A lithographic-stone-surfacing wheel, consisting of the circular body or carrier *n* and a circular holder *s* having a dowel-and-socket engagement with the bottom thereof, set-screws for confining the so-engaged parts and said holder having provided in engagement with the bottom thereof a series of abrading or surfacing sections, detachable and renewable, substantially as described.

3. In a surfacing-wheel, the holder or carrier-bottom portion of the wheel, provided at its under side with the series of horizontal downwardly-opening recesses, with the beveled portion 76 at the junction of the tops of said recesses with the periphery of said part and the blocks or sections of abrading surfacing or polishing materials fitted in said recesses and extended below the bottom of the wheel, for the purpose set forth.

4. A surfacing-wheel having in the bottom portion thereof the series of downwardly-opening recesses 72 with the bevells 76 as shown, the abrading or polishing surfacing blocks or sections fitted in said recesses, and the flat strip 75 having chisel ends for distending said blocks after having become worn away, as set forth.

5. A surfacing-wheel consisting of a metallic holder constructed in its lower portion with

a plurality of downwardly-opening recesses and having a plurality of separate blocks or sections provided in said recesses, and extending below the bottom of the holder, said sections consisting of layers of material of smooth grain or texture, and intermediate layers of emery or other like gritty material, the said

several layers being angular to the plane of rotation of the surfacing-wheel, substantially as described.

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