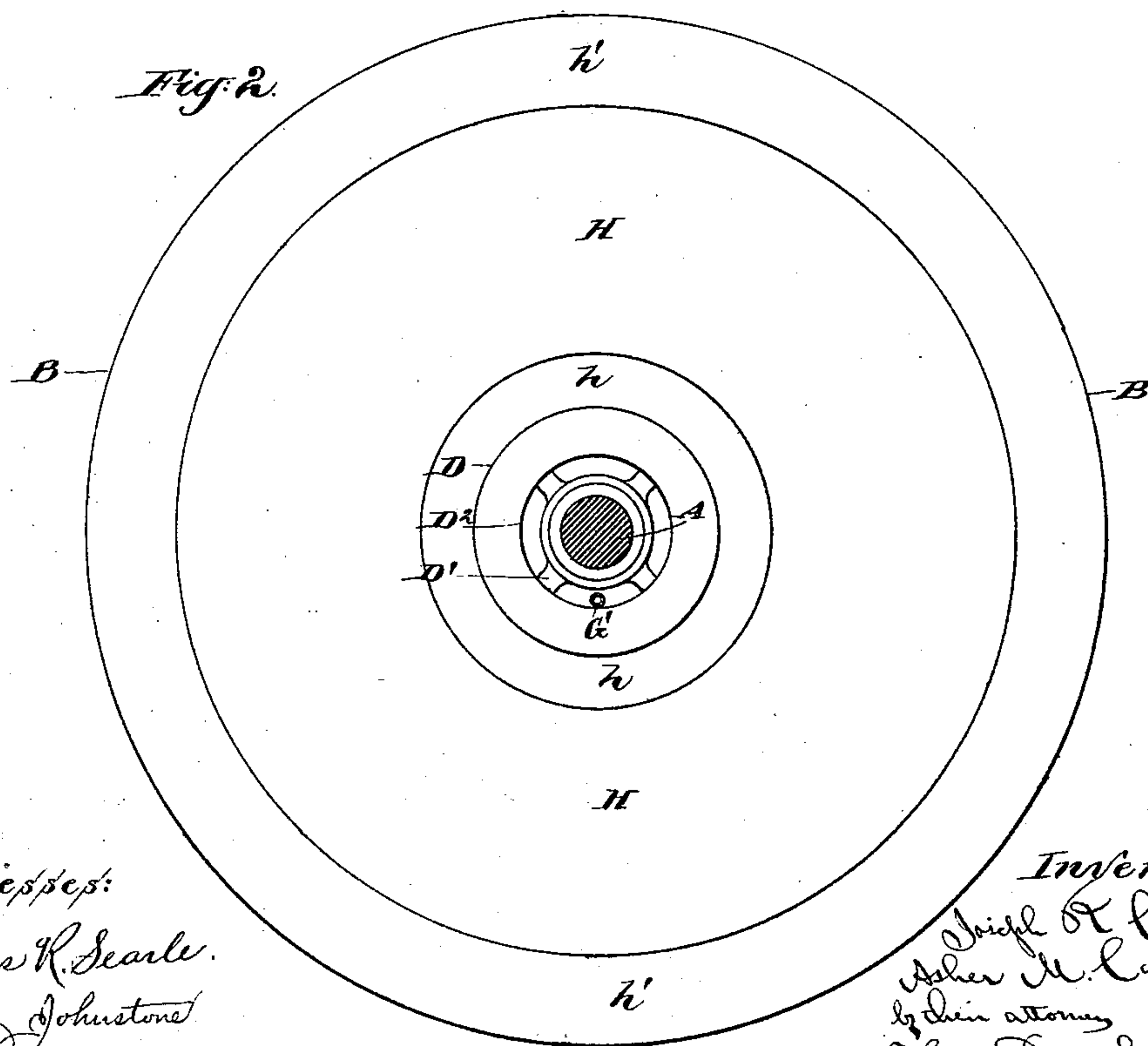
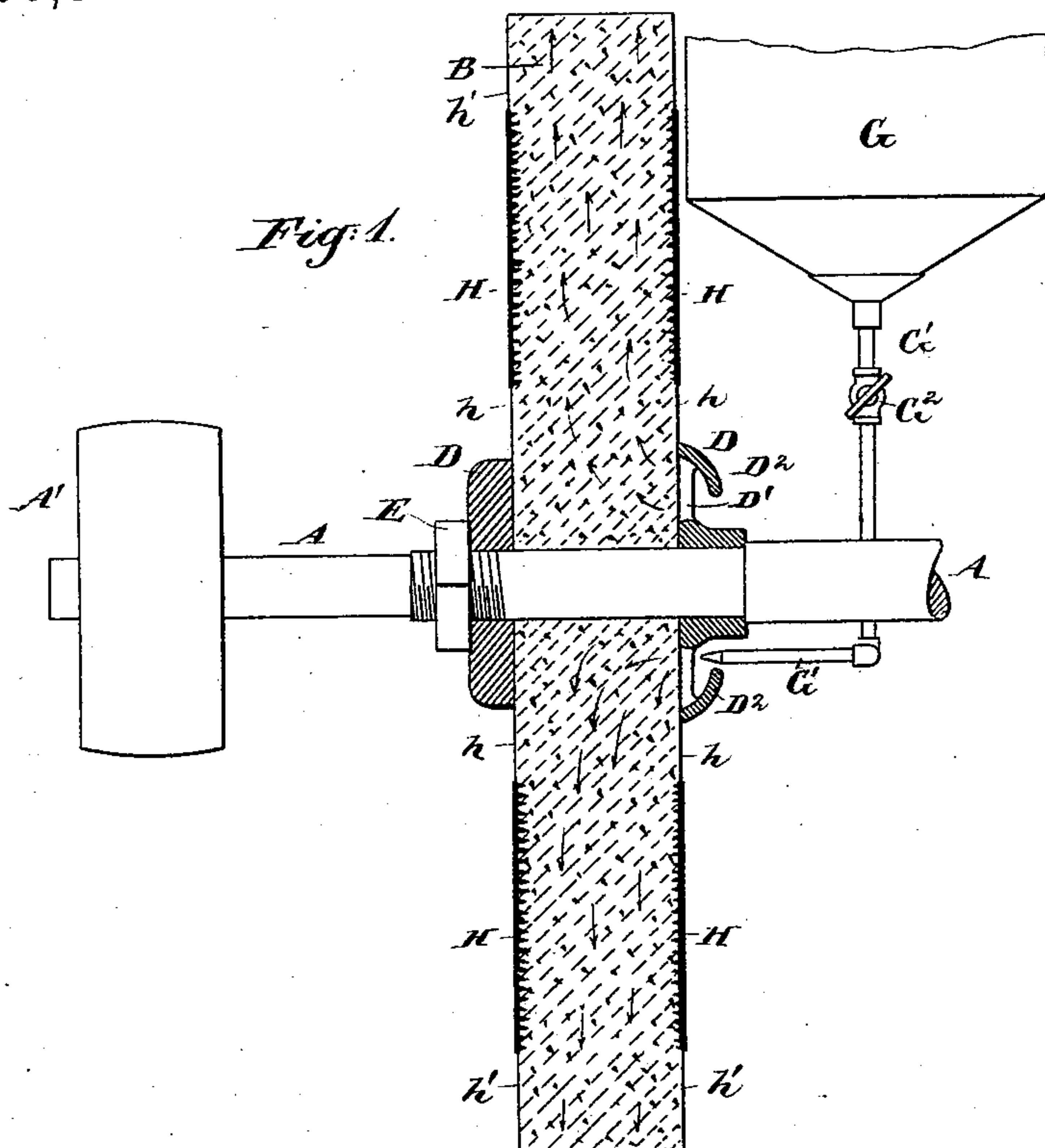


(No Model.)

J. R. & A. M. CARPENTER.
EMERY WHEEL.

No. 500,561.

Patented July 4, 1893.



Witnesses:

Charles R. Searle.
H. A. Johnstone

Inventors:

Joseph R. Carpenter
Ashe M. Carpenter
by their attorney
Thomas Drew Station

UNITED STATES PATENT OFFICE.

JOSEPH R. CARPENTER AND ASHER M. CARPENTER, OF WILLIAMSPORT,
PENNSYLVANIA.

EMERY-WHEEL.

SPECIFICATION forming part of Letters Patent No. 500,561, dated July 4, 1893.

Application filed March 9, 1893. Serial No. 465,226. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH R. CARPENTER and ASHER M. CARPENTER, citizens of the United States, residing at Williamsport, Lycoming county, in the State of Pennsylvania, have invented a certain new and useful Improvement in Emery-Wheels, of which the following is a specification.

Our improvement supplies water to the interior and allows it to percolate outward through the pores of the wheel. Various efforts have been made to attain this end, but all such previous to our invention have required a boring or otherwise chambering of the body of the wheel. Such involved expense and weakened the wheel, rendering it more liable to burst at the high speeds with which such wheels are driven.

In what we esteem the most complete form of our invention, we make much of each face of the wheel impervious, but leave a circle near the center with its pores open. A very absorbent condition is induced at and near the center by the intensely rapid revolution given to the wheel. The water is thrown upon the face near the center and is absorbed there and given off again at the periphery.

The accompanying drawings form a part of this specification and represent what we consider the best means of carrying out the invention.

Figure 1 is a vertical section through the wheel and flanges and a corresponding elevation of the adjacent parts. Fig. 2 is an end view of the wheel and flange with a vertical section of the shaft and water-supply pipe.

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

We have discovered that an emery or corundum wheel formed with a sufficiently porous texture and revolved at the high velocity required for effective use, becomes by reason of the centrifugal force, abnormally dry and absorbent near the center, and will receive water rapidly through its pores if presented thereto on either or both faces, and that the water so absorbed will be driven outward by the centrifugal force, and exude at the surface, serving usefully in keeping the effective surface of the wheel wet and cool. This end has been previously sought by boring or

chambering the wheel, or providing complicated means for presenting water to the wheel under pressure. We preserve the full strength of the wheel by avoiding all chambering or boring. We simply bring the water in properly graduated quantities into contact with the plane surface of the wheel on one side or both sides at or near the center.

We produce the proper quality of porous emery-wheel by mixing emery with other minerals and subjecting the mixture to such heat as will flux and unite them. The material cools in a strong and sufficiently porous condition.

A is the shaft, which may be rotated by a belt and pulley from any convenient power, not shown, turning on the pulley A'. This shaft may be supported in suitable bearings, not shown.

B is a porous emery wheel.

D D are flanges fitted on the shaft, adapted to match against the approximately plane surfaces of the wheel.

E is a nut, by turning which the flanges may be pressed against the stone with any required degree of force.

G is an elevated tank, and G' a pipe leading the water down therefrom, controlled by a cock G². The lower end of the pipe is contracted and projects the water in a fine jet against the face of the wheel near the center. The water is there rapidly absorbed in consequence of the condition induced by the centrifugal force, and is then moved outward by the same force and delivered at the periphery by percolation through the interstices.

H is a broad ring on each face, which is formed with a material, as copal varnish, impervious to water. The space *h* within this ring receives the jet of water and allows it to be absorbed. The space *h'* outside of the ring H may be used for grinding. If face-grinding is not likely to be done, then the ring H may be extended outward nearly or quite to the periphery of the stone. The impervious ring H prevents air from being drawn in there, and the partial vacuum at the center is thereby strengthened.

One of the flanges D in addition to its duty in aiding to firmly hold the wheel B serves by means of spider arms D' and a cup-shaped

rim D^2 by catching the water and presenting it to be absorbed by the wheel when it is delivered too slowly to form a jet. If the water flows in a jet it strikes the wheel between the spider-arms and is absorbed. When it issues more slowly by reason of the controlling cock G^2 being more nearly closed, it drops by gravity from the end of the pipe G' , and is caught by the cup-like rim D^2 and being driven outward by the centrifugal force equally reaches the wheel and is similarly absorbed.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. We can wet both faces, providing a water pipe corresponding to G' with means for supplying water there-through for each.

Parts of the invention can be used without the whole. We can omit the impervious ring H .

We claim as our invention—

1. A grinding wheel B of porous structure, mounted on a shaft with driving means adapted to give it a high velocity, in combination with a pipe G' containing water under pressure and presenting it against the surface of

the wheel near the axis without chambering or boring, so that the water may be received into the interstices of the wheel near the center, and shall be moved outward through such interstices by the centrifugal force and discharged at the periphery, as herein specified.

2. The grinding wheel B of porous structure, a ring H of varnish or other impervious material applied on its end of face but leaving an annular portion h near the center of its end in an absorbent condition, such wheel being mounted on a shaft with driving means adapted to give it a high velocity, in combination with a pipe G' containing water under pressure and presenting it against the surface h , as herein specified.

In testimony that we claim the invention above set forth we affix our signatures in presence of two witnesses.

JOSEPH R. CARPENTER.
ASHER M. CARPENTER.

Witnesses:

F. H. MCCORMICK,
J. G. LITTLE.