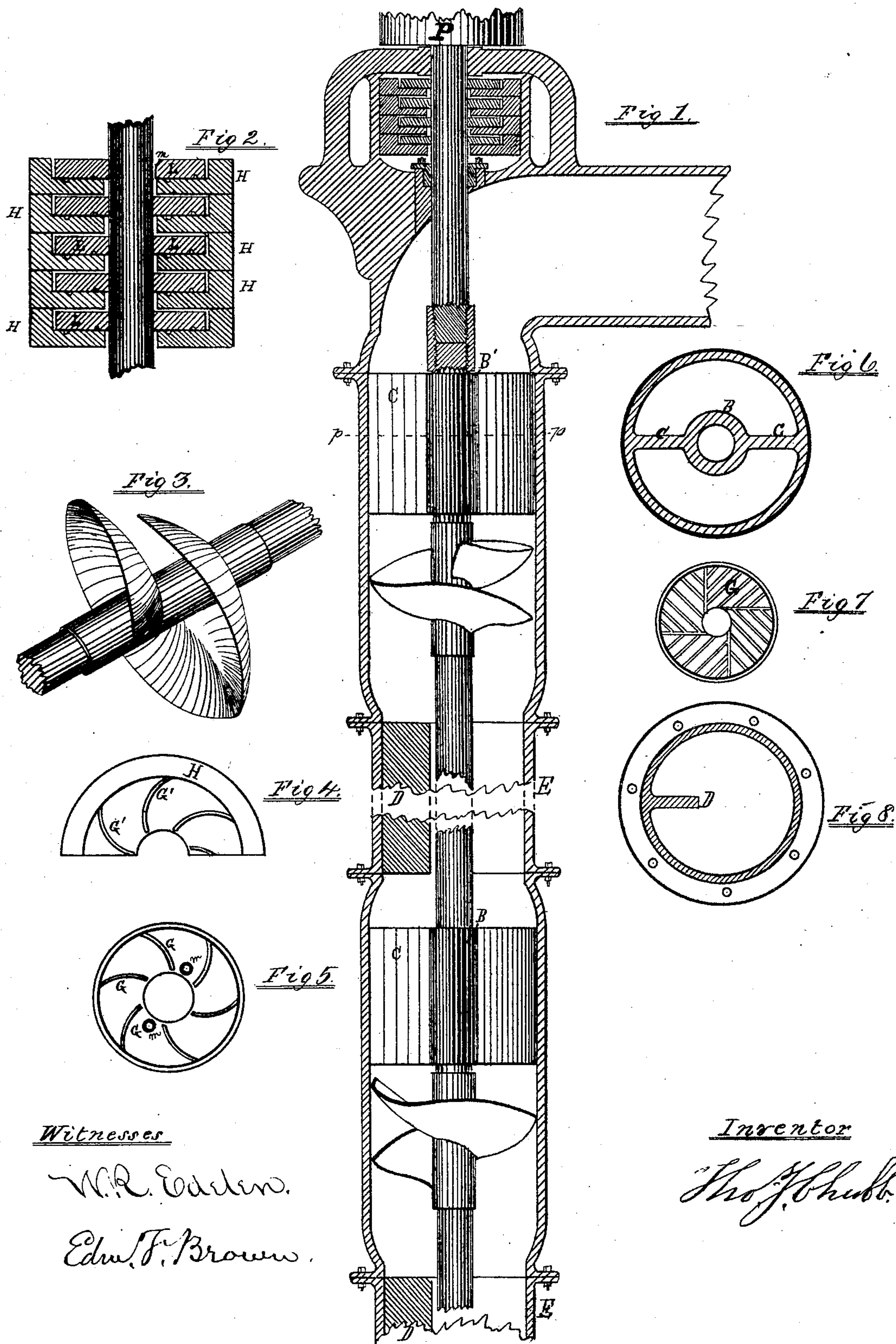


T. J. CHUBB.
Mining Pumps.

No. 132,384.

Patented Oct. 22, 1872.



Witnesses

W. R. Eadsen.
Edm. F. Brown.

Inventor

Thos. J. Chubb.

UNITED STATES PATENT OFFICE.

THOMAS J. CHUBB, OF WILLIAMSBURG, NEW YORK.

IMPROVEMENT IN MINING-PUMPS.

Specification forming part of Letters Patent No. **132,384**, dated October 22, 1872.

To all whom it may concern:

Be it known that I, THOMAS J. CHUBB, of Williamsburg, Kings county, State of New York, have invented new and useful Improvements in Mining-Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof.

The first part of my invention relates to an improvement in the form of the face of the threads or blades of the screw for lifting the water; and consists of dishing up a round sheet of metal and forming it into a concave screw, and fastening it to the center shaft, similar to the screw shown in Fig. 3 in the accompanying drawing. The second part of my invention is for the purpose of preventing the centrifugal force of the rapid motion of the screw from throwing the water off at a tangent against the side of the pipe or chamber, thereby creating a rotary motion to the water, which impedes its progress through the pipes and uses up power to keep the water in a circuitous or rotary motion, which I avoid, and use all the power in propelling the water straightforward up the pipe, in the arrangement of the journals B B' directly over the hub of the screw, with wide perpendicular cross-braces C, which have a tendency to keep the water flowing through the pipe in a perpendicular or parallel line with the pipe, and to break up any tendency of the water to revolve in the pipes that it may have acquired from the rapid rotary motion of the screw. The third part of my invention consists in the arrangement of a rib, D, in the plain connecting-pipe E, for the purpose of preventing the water flowing through the pipe in a circuitous or revolving manner, compelling it to flow straight up, thereby using the least amount of power to lift the water, as there are no stopping, reciprocating, revolving motions or eddies, or other unnecessary motion or motions, to counteract, there being but the one motion to the water flowing in one continuous straight current from the bottom to the top of the pipe or pump, picking up its own water and employing no valves, pistons, or other unnecessary obstruction to choke up or foul when pumping chips, straws, gravel, mud, and other fouling matter which would choke the Cornish or other usual mining-pump. The fourth part

of grooves G G on the bearing-face of the flange-collars L, shown in Figs. 1, 2, and 5, and also on the bearing-face G' of the metal rings H H H, shown in Figs. 1, 2, and 4, on which the collars rest, and which support the whole weight of the shaft and its connections, and the column of water in the pipe. The grooves force the oil out from the center to the circumference before it becomes heated, causing a surplus quantity of oil to be all over the bearing-face of the collar and rings, the grooves being arranged similar to the furrows shown in Fig. 7, in a grist-mill, cutting each other so as to force out the oil, and producing a perfect oil-bearing between the collars and the rings. The oil, by the same power, is forced up and through the filtering substances, and returns to the journal and grooved collars by holes M M in the collars and bearings, to be again used, thereby keeping the journals cool by a circuitous current of oil, the cistern into which the oil is forced being of sufficient size to allow the oil to cool.

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

Figure 1 is a vertical section of the pump, showing the internal arrangement. Fig. 2 is a vertical section, on a larger scale, of the stationary collars L on the shaft, and the rings H H H. Fig. 3 is a perspective view of the concave screw water-lifter. Fig. 4 is one of the semicircular rings or collar-bearings, showing the grooves for forcing out the oil. Fig. 5 is a bottom face of one of the collars on the shaft, showing the grooves G arranged at a tangent, so that when the two faces of the rings and the collars come together the lines of the grooves cross each other and force out the oil. Fig. 6 is a transverse section of the journal B taken through the line p p, showing the end view of the cross-brace C C. Fig. 7 shows another arrangement of the grooves on the face of the collar-bearings. Fig. 8 is a transverse section of the extension-pipe E, showing the end view of the rib D.

The operation of the pump is as follows: A belt is employed on the pulley P, on top of the center shaft, to turn it, and a sufficiently rapid motion is given to the shaft to cause a partial vacuum of the air in the pipe or pump, when the water will be forced up into the first or bottom concave screw, (which

should be near the bottom of the pipe,) whence it is lifted and forced up to the next screw, and so on to the top of the pump and out at the elbow. The smaller the diameter of the pipe the greater number of revolutions will be required, and the faster it runs the more water will be lifted, as the concave shape of the screw prevents the water from flying off at a tangent, or, technically termed, breaking the water.

What I claim as my invention is—

1. The concave screw, arranged in a pipe or chamber of a pump, and employed for the purpose set forth.

2. The arrangement of the journal B with its broad upright braces C, and the rib D in the pipe E, for the purpose of preventing the

rotary motion of the water, substantially as described.

3. The employment of grooves, arranged as described, on the face of the collar-bearings and on the rings, for the purpose of producing a free flow of the oil, or other lubricating substance, between the bearings, substantially as described.

4. The arrangement of one or more collars on the center shaft, grooved on the face, with corresponding grooved rings or bearings, in the manner described, and for the purpose set forth.

THOS. J. CHUBB.

Witnesses:

W. R. EDELEN,

EDM. F. BROWN.