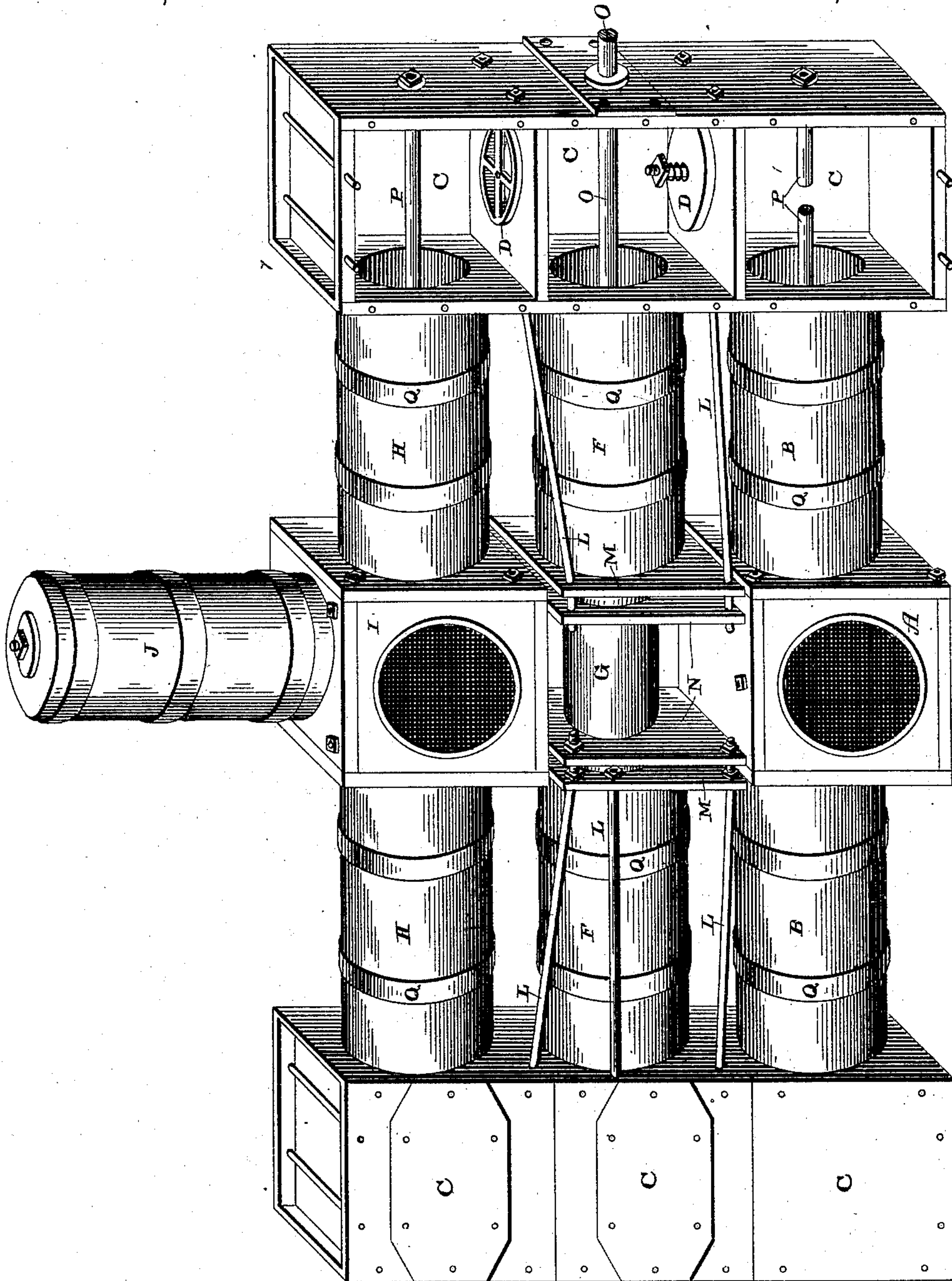


(No Model.)

S. WHITE.
DOUBLE ACTING PUMP.

No. 445,915.

Patented Feb. 3, 1891.



Witnesses:
E. P. Ellis,
B. Brockett,

Inventor:
Stewart White,
per
Lehmann & Pattison,
Attys

UNITED STATES PATENT OFFICE.

STEWART WHITE, OF GREENSBURG, PENNSYLVANIA.

DOUBLE-ACTING PUMP.

SPECIFICATION forming part of Letters Patent No. 445,915, dated February 3, 1891.

Application filed October 14, 1890. Serial No. 368,106. (No model.)

To all whom it may concern:

Be it known that I, STEWART WHITE, of Greensburg, in the county of Westmoreland and State of Pennsylvania, have invented
5 certain new and useful Improvements in Double-Acting Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it
10 pertains to make and use it, reference being had to the accompanying drawing, which forms part of this specification.

My invention relates to an improvement in double-acting pumps; and it consists in the
15 combination and construction of parts which will be fully described hereinafter.

The objects of my invention are to produce a pump which is constructed almost entirely of wood, so as to withstand the action
20 of the sulphur-water in a mine, and in which the parts are few and simple and not liable to get out of order, and to operate the plunger of the pump by means of a steam-pump connected thereto.

The accompanying drawing represents a pump which embodies my invention, a portion of the casing being removed.

A represents a box having an opening through one end or side, through which the
30 water passes; and B, the barrels through which the water passes to the valve-boxes C. These valve-boxes are placed at right angles to the barrels, and in which the spring-actuated valves D are placed.

Rigidly secured to the inner sides of the valve-boxes C are the barrels F, in which the ends of the plunger G operate, and above these barrels F are placed the barrels H,
40 which connect at their inner ends with the discharge-box I, upon which is placed an air-chamber J. The barrels F are secured to the valve-boxes C by means of brace-rods L, which have their inner ends to pass through the plates N, in which the packings are secured. The plunger G works back and forth
45 through the packings M, and hence there is no wear upon the ends of the barrels. To one end of the plunger G is secured a rod O, which passes through the outer side of the
50 valve-box C, and the outer end of this rod is connected to an ordinary steam-pump placed any suitable distance away. The valve-boxes C are rigidly clamped against the ends of the barrels B F H by means of clamping-
55 bolts P, which extend through the boxes A

and I, and which bolts are protected from the action of the sulphur-water by a covering of hose. All the bolts used in connection with this pump are embedded in the wood, so as to be protected from the action of the
60 water.

Where a pump is made of iron, the sulphur-water of a mine very soon destroys it, and hence in order to do away with this material I make all of the barrels and boxes of the
65 pump of wood; and in order to strengthen the barrels and the air-chamber, metallic bands Q are passed around them, as shown, so as to enable them to withstand the internal pressure of the water and air. The valve-cham-
70 bers are preferably made of yellow or Norway pine, while the barrels are made of ordinary wooden pipe. The packing-boxes are made of cast-iron or phosphor-bronze. The valve-seats are also made of phosphor-bronze
75 and are inserted in the wood of the valve-boxes. The valve bolts and springs are preferably made of bronze, while the valves are made of wood, of a circular form and filled with square gum packing. The wood of this
80 pump, after being subjected to sulphur-water, becomes almost as hard as iron and improves constantly in this respect by use and age, wood being so much cheaper than iron and being practically indestructible, and no part
85 of the pump being subjected to wear except the packing-boxes.

A pump constructed of wood, as here shown, will last almost indefinitely and cost but about one-third as much as a pump con-
90 structed of iron.

Having thus described my invention, I claim—

In a pump, the combination of two parallel end boxes, barrels connected with the ends
95 of the boxes and extending inward, inlet and outlet boxes connecting the inner ends of the said barrels, plunger-barrels connecting the centers of the said parallel end boxes, a plunger placed in the plunger-barrels, trans-
100 verse divisions in the said end boxes between the ends of the said barrels, and valves in the said divisions, substantially as shown, and for the purpose described.

In testimony whereof I affix my signature in
105 presence of two witnesses.

STEWART WHITE.

Witnesses:

D. K. THOMPSON,
THOMAS J. ARMSTRONG.