A. Cook,

Fan Blower.

No. 7,423. Patented June 11, 1850.

Fig. 3.

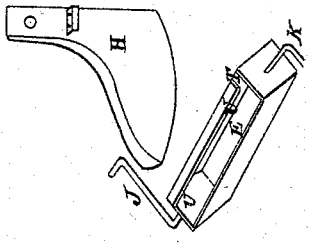


Fig. 1.

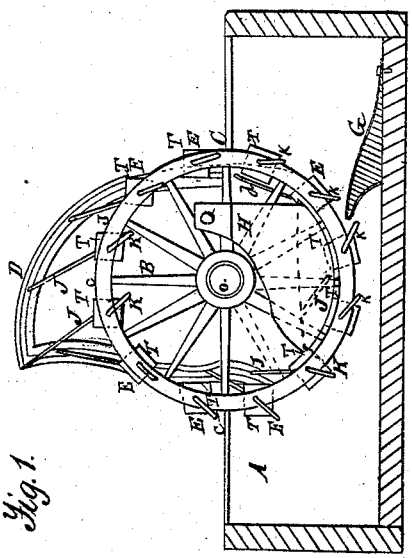


Fig. 4.

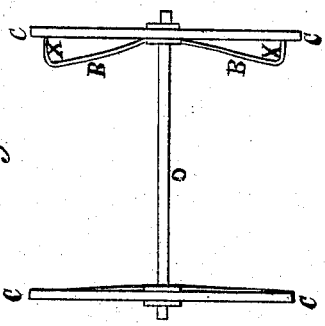
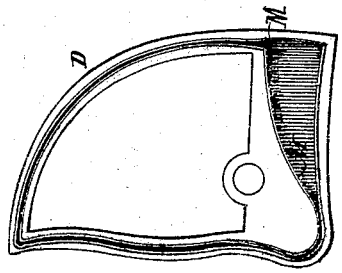


Fig. 2.



UNITED STATES PATENT OFFICE.

RANSOM COOK, OF SARATOGA SPRINGS, NEW YORK.

HYDRAULIC APPARATUS FOR PRODUCING BLAST.

Specification of Letters Patent No. 7,423, dated June 11, 1850.

To all whom it may concern:

Be it known that I, RANSOM COOK, of Saratoga Springs, county of Saratoga, and State of New York, have invented a new and useful machine for producing a blast of wind or air to be used in heating, smelting, and other mechanical and manufacturing purposes, which I denominate a "hydraulic blowing-machine;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings as making a part of this specification.

Figure 1, is a sectional elevation of the machine as suspended in the cistern, in which A represents the cistern; O, the shaft, of the wheel; B, the spokes; C C C, the felly or rim; E E E, the air boxes; D, the cam; J J J, the guiding cranks of the air boxes; K K K, the throwing cranks of the air boxes; T T T, the discharging mouths of the air boxes; G, the catch block for throwing forward the crank J; H, the receiver.

Fig. 2 is the cam in which M M represents the groove or channel in which the guiding cranks of the air boxes move.

Fig. 3 is a view of the receiver and one of the air boxes. In the latter the discharging mouth T is more distinctly shown, and the part U U, which partly closes the open side of the air box is exhibited.

Fig. 4, is a sectional view of the wheels showing the dish or concavity of one of them at X X.

To construct this blowing machine, two wheels, or disks, or two sets of arms or spokes, all of which may be made of wood or iron, should be secured to a shaft at such distance from each other as will enable the builder to insert air boxes between them of the capacity required. The sides of these wheels or arms, or one of them, should be dished near the ends of the arms or periphery of the wheel with the concave side outward as shown in Fig. 4. Where wood is the material used, an overhanging projection may be built on the periphery of the disk or wheels so as to form a concavity or recess in the side of the wheel, to enable the receiver to project over the mouths of the air boxes to receive their discharge of compressed air.

The air boxes may be made of such material as suits the builder, having their open side partly closed by the piece U U, as shown in Fig. 3, leaving the mouth T, as exhibited in the same figure. These air boxes are then to be placed between the wheels or disks on the shaft, with their ends secured to said wheels near their periphery by movable joints or journals and at such distance from each other as will allow them a free rotary movement on their own journals. To each of these journals cranks are attached, or formed of the same piece with the journal. The longer cranks, J, J, J, which I denominate the guiding cranks, are bent with a handle at one end. This handle, with or without a friction roller, moves in the cam groove M M. This crank and cam groove guide the air boxes through most of their revolution, determining the position in which they shall enter the water, empty their compressed air into the receiver and emerge from the water. The short cranks, K K K, at the other ends of the air boxes, stand in an opposite direction from the long cranks and serve by coming in contact with the block G, to turn the air box and thus throw forward the long crank J, so that it again enters the cam channel M, and gives the air box such a position that it leaves the water with ease.

The receiver H, built of wood or iron and strengthened by bolts, is then suspended in the cistern or flume by the side of the wheel with its lower and open end projecting into the dish or recess of the wheel before mentioned and over the mouths of the air boxes marked T. The cam D is fully described by the drawing of it.

To put this machine in operation the flume or cistern in which it is suspended is nearly filled with water so as to immerse almost one half of the wheel. The wheel is then slowly turned by any power which may be preferred, in the direction which would carry the long crank under D, in Fig. 1, to the point of the cam at the left. The cam groove M M, and the cranks J J J, cause the air boxes E E E, to enter the water with their open sides downward. As they are forced downward in the water, the air within them is increasingly compressed until they reach the receiver H, when the cam and crank turn the air boxes on their sides, the piece U U, retaining the air in the boxes until it can escape into the receiver through the mouth T. As the box moves onward after having emptied its air, the short crank K, comes in contact with the block G,

which by turning the air box throws forward the long crank J, so that it again enters the cam channel M. As the air boxes ascend the cam and crank hold them in such a position that the water is poured from any part of the receiver above water.

The receiver having its lower end open and mostly immersed, the pressure of the water from below serves to keep the discharge of the blast steady and even. The depth to which the lower end of the receiver extends in the water determines the pressure which may be obtained in the blast. Pipes for leading off the blast may be inserted in any part of the receiver above water.

What I claim as my invention and which I desire to secure by Letters Patent is—

1. The use and application of boxes, tubs or cavities, attached to wheels, disks or arms by movable joints or journals and then carried in a rotary direction alternately through air and water; said boxes or cavities moving at the same time on their own journals in such a manner that they shall enter the water with their open sides downward and when beneath the same shall empty or discharge the air which has been compressed within them by the water, into a receiver which is separate from such wheels and air boxes; all for the purpose of producing a blast of air to be used in heating, smelting and other mechanical operations.

2. I also claim for this purpose the dish, recess or concavity of the wheel so as to allow the receiver to project over the mouths of the air boxes to receive their compressed air.

3. I also claim for the same purpose the cam D, the cranks J J J, and the cranks K K K, attached to the air boxes, together with the piece U U, on the open side of the boxes, the mouth T, for discharging their compressed air and the block G, for throwing forward the cranks J J J.

RANSOM COOK.

Witnesses:
C. W. Van Voorhis,
John Duecy.