(No Model.)

J. DAY.

FORGE BLOWER.

No. 395,956. Patented Jan. 8, 1889.

Fig 1.

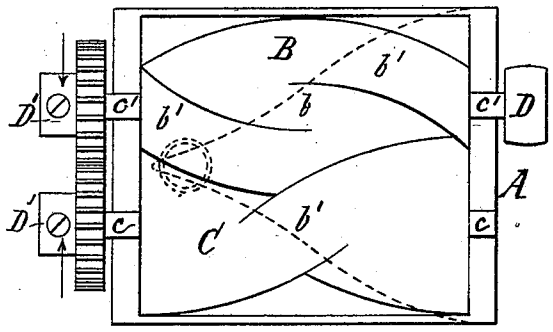


Fig 2.

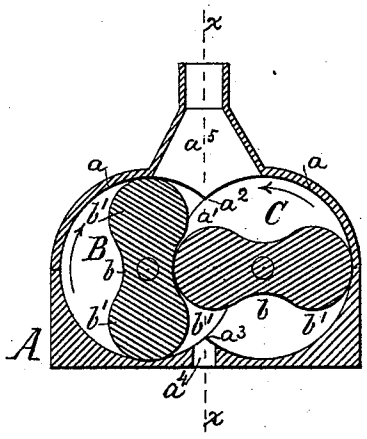


Fig 3.

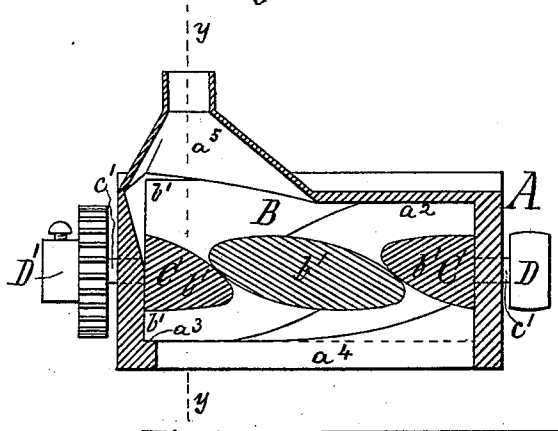


Fig 5.

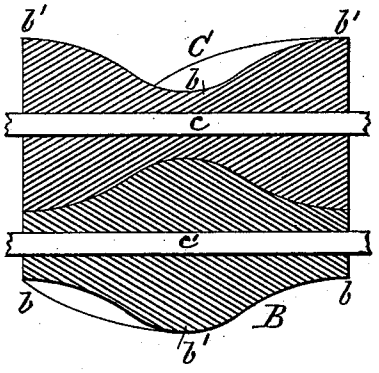
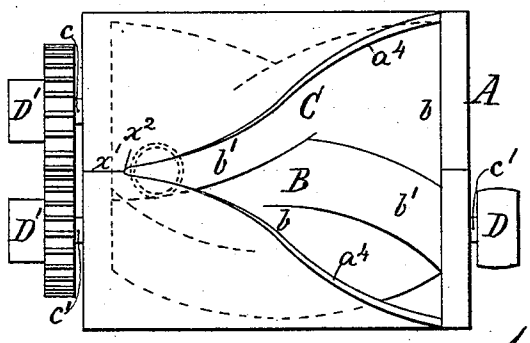


Fig 4.



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UNITED STATES PATENT OFFICE.

JOHN DAY, OF MALTA BEND, MISSOURI.

FORGE-BLOWER.

SPECIFICATION forming part of Letters Patent No. 395,956, dated January 8, 1889.

Application filed March 23, 1888. Serial No. 268,192. (No model.)

To all whom it may concern:

Be it known that I, JOHN DAY, a citizen of the United States, residing at Malta Bend, in the county of Saline and State of Missouri, have invented certain new and useful Improvements in Blacksmiths' Forge-Blowers and for all Purposes wherein a Blast of Air is Required; 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 appertains to make and use the same.

My invention consists in a twin screw blower or air-propeller for supplying forges with the necessary blast and for other blasting purposes, the same by its very simple construction not only making it a cheap article of manufacture, but also a very durable, uniform, and reliable blasting contrivance for the blacksmith and others.

In the accompanying drawings, Figure 1 is a top view of the improved blower with the top portion of its case removed. Fig. 2 is a vertical transverse section of the blower in the line *y y* of Fig. 3, looking toward the air-induction end of the blower. Fig. 3 is a vertical longitudinal section in the line *x x* of Fig. 2. Fig. 4 is an inverted plan of the blower, and Fig. 5 is a detail horizontal central section of the revolving twin screws.

The letter A in the drawings represents a casing or housing, in which the twin screws are hung, the same fitting the cylindrical inner surfaces, as well as the end surfaces thereof, practically air-tight. This casing in cross-section has a chamber with two nearly-circular compartments, *a a*, connected at the center of its width by an opening, *a'*, nearly as great as the diameter of the respective circular compartments. At the union of the two circular compartments the metal forming the casing is terminated at top and bottom in a ridge, as a^2 a^3, the surfaces of the bases of which are concentric with the said compartments *a a*, as shown. The upper ridge, a^2, extends along a portion of the interior length of the case, while the lower edge extends from the point x' to x^2, when it is cut away by the formation in the bottom of the case of an air-inlet passage, a^4, of nearly V shape, as indicated by the dotted lines in Fig. 1 and in full lines in Fig. 4.

The case is provided at its rear or discharge end, on a line with the ridge a^2, with a downwardly-placed air-discharging passage, a^5, surrounded by a collar for connecting with the pipe or nozzle of a blacksmith's forge, fire-bed, or other places where uniform or steady and powerful blasts are required.

B C are twin screws, the former being a right-handed and the latter a left-handed thread, both of the same pitch. The threads of the two screws are shaped exactly alike and extend from end to end of the case. The screws consist, respectively, of a central spiral web or body portion and two projecting spiral wings, b' b', every part of the webs being concentric with the periphery of the wings, while every part of the periphery of the wings is concentric with the interior of the compartments in which they revolve. The spiral wings of the respective screws exactly match the spiral webs thereof, and one engages snugly with the other, as illustrated in the drawings. The screws are provided with shafts or journals *c c'*, which are fitted closely in suitable bearing-boxes of the casing or housing A, one of said shafts being provided with a driving-pulley or other suitable wheel, D, and both with gears D', of equal diameters.

In operation the twin screws B C revolve together toward one another, as indicated by the arrows, and as they revolve air is drawn into the case A through the inlet-opening a^4 and propelled upward, around, and toward the opening a^5 by the twin screws in a uniform and powerful manner, and discharged in a steady and uniform blast through the said opening a^5 into the fire of a blacksmith's forge or other desired place, thus avoiding the bad effects of sudden unequal air blasts or puffs, as produced by other blowing or blasting apparatuses heretofore devised for this purpose.

This invention is contemplated to be used for other purposes than forges—for instance, for mining and the like, when a steady strong blast of air is needed, it giving both a steady and strong blast, moving the air in a more natural direction, the spiral twist of the blades or

wings forcing the air in the line of their formation and imparting greater direct force to it, while a less expenditure of power for operating it is required from the fact that each of the twin screws is provided with two blades, each formed exactly with a half-twist, and both constructed with a nice-fitting air-tight contact with respect to the interior circular surfaces of the compartments of the case in which they revolve, that the recesses and blades of one screw-bladed cylinder are constructed to exactly match and fit air-tight the blades and recesses of the other cylinder, so that the screws gear by means of their wings and recesses with one another perfectly, thereby insuring a uniform revolution of one with the other without leakage of air, and that the outlet for air above and at one end of the twin screws of my blower is very small comparatively with respect to the inlet for air beneath the twin screws, said inlet resembling in form the letter V and extending from end to end of the twin screws, beginning at nothing and gradually increasing in width nearly equal to both of the screws, or corresponding in its increasing width to the inclinations of the blades (of the two screws) opposite the inlet, thus insuring a large and proper influx of air without liability of back escape of air, while, by means of having a small outlet, a powerful pressure is obtained above the twin screws, and the blast produced is of a character well adapted for a forge and other similar purposes.

What I claim as my invention is—

The combination, with twin screws formed, respectively, with two blades, each blade having a half-twist, of the case having a small outlet on top, above and near one end of the screws, and a relatively-large tapering inlet in its bottom beneath the screws, and extending from end to end of the screws and equally on opposite sides of the center of the bottom of the case, substantially as and for the purpose described.

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

JOHN DAY.

Witnesses:
ALONZO T. PALMER,
JAS. L. JONES.