S. W. RUGGLES.

ROTARY FAN BLOWER.

No. 11,511. Patented Aug. 8, 1854.

Fig. 4

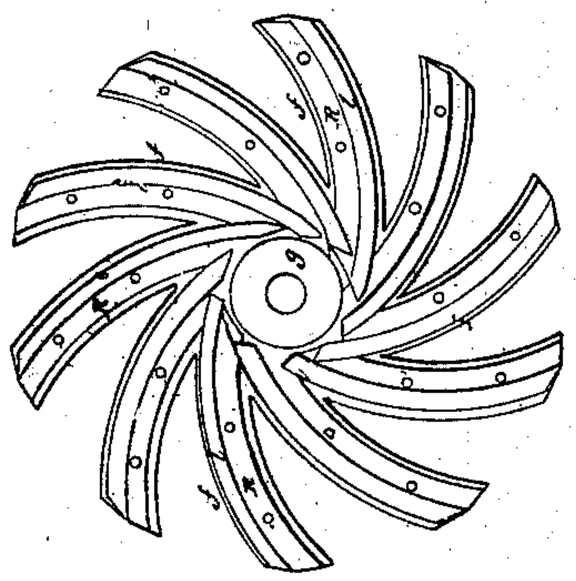


Fig. 6

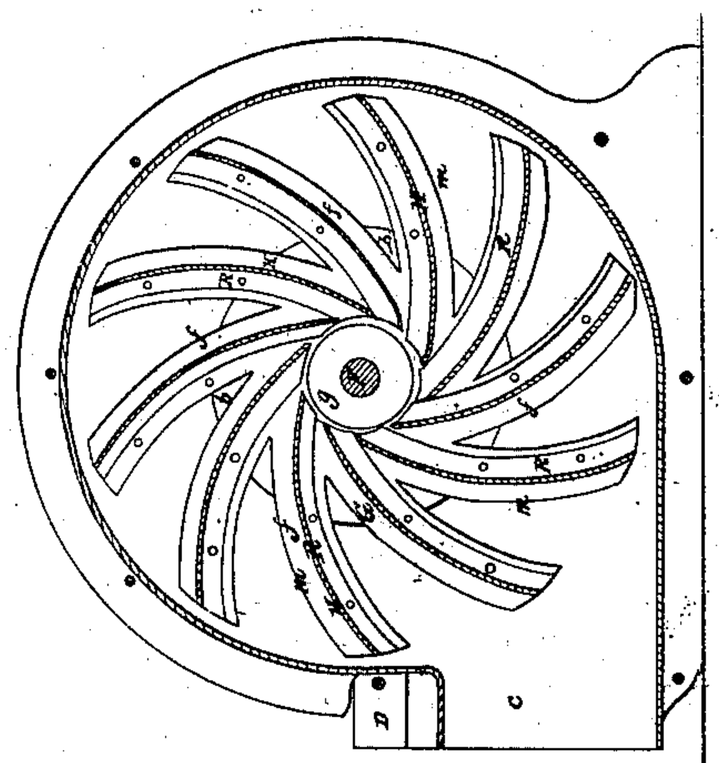


Fig. 3

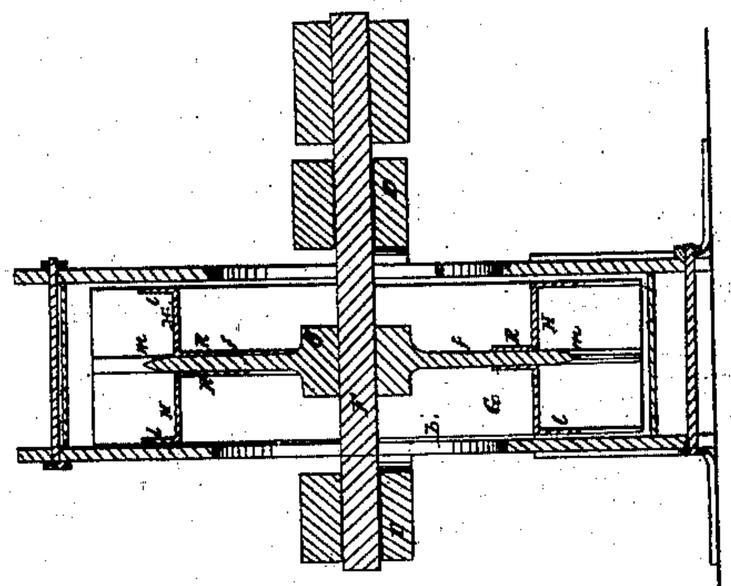


Fig. 2.

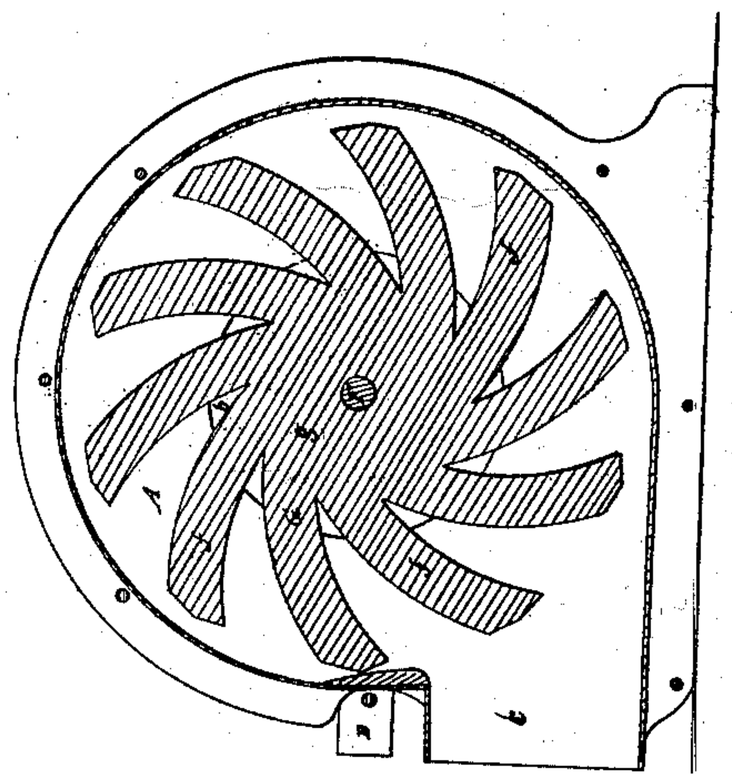


Fig. 1.

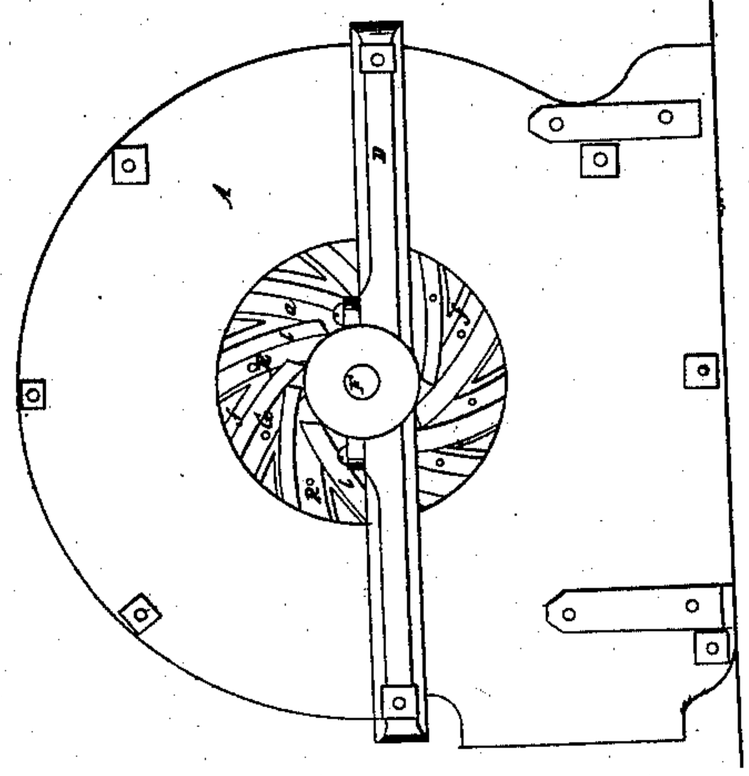
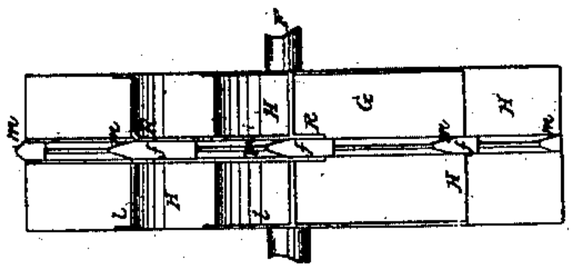


Fig. 5.



UNITED STATES PATENT OFFICE.

SOLOMON W. RUGGLES, OF FITCHBURG, MASSACHUSETTS, ASSIGNOR TO S. W. RUGGLES AND A. R. SMITH.

FAN-BLOWER.

Specification of Letters Patent No. 11,511, dated August 8, 1854.

To all whom it may concern:

Be it known that I, SOLOMON W. RUGGLES, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Rotary Fan-Blowers for Forcing Air into Forges, &c.; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of said drawings Figure 1 denotes a side elevation of one of my improved fan blowers; Fig. 2 is a central, vertical, and longitudinal section of the same; Fig. 3 is a transverse, vertical and central section of the same; Fig. 4 is a side elevation of the fan or blast wheel, and Fig. 5 is an end elevation of the same. Fig. 6 is a vertical, and longitudinal view taken through one of the wings and between their supporting wheel and one of the journal boxes of the case.

In the said drawings A represents the circular box or case of the blower. This box is provided with two circular air induction openings *a*, *b*, formed respectively through its two opposite sides and concentric with the curved perimeter of the case. Such blower case is also made with an eduction opening, *c*, through which the air expelled by the fan or blast wheel is driven when the machine is in operation.

There is a cross bar, D, arranged horizontally across the external surface of each side of the machine and fixed firmly to said external surface and arranged so as to support the boxes or bearings and caps, *d*, *d*, of the shaft, F, of the rotary blast wheel, G, which is placed and made to revolve within the case. This rotary blast wheel G is formed of a series of curved arms, *f*, *f*, *f*, (projected from a hub, *g*,) and having a curved wing, H, affixed to each side of each arm. This is the manner in which I apply the wings to the arms and it is the convex surface of each wing which is the propelling surface or that which is to be moved against the air while the machine is in rotation; the outer edge of such propelling surface may be turned up or provided with a projection or flanch as seen at *k*, *k*. The two curved plates that are thus arranged on the opposite side of each arm, may, for the sake of illustration, be considered as a single wing as they might be otherwise formed or made from a single plate. For the sake of convenience of construction of the machine, I make each wing of two parts and from each part with an inner and outer flanch as seen at *k* and *l*; the inner flanch being applied directly against and riveted to the side of the arm which sustains it.

My improvement in the construction of the blast wheel to which air is led in two opposite directions consists in extending from or near the middle part of the propelling surface of each of said wings a deflecting rib, *m*, an end view of which is seen in the end view of the wheel.

In my construction of the wheel as represented in the drawings, I have exhibited this deflecting rib as making part of the arm to which the wing is supported. But it will be evident that when it does not make a part of such arm, it may be extended directly from the propelling surface of the wing. The two sides of this rib are made to approach one another as they rise above the wing, and this for the purpose of deflecting the currents of air entering the wheel laterally in two opposite directions and throwing them directly forward during the rotation of the wheel or preventing them from that contact or impulsion against one another, which without the intervention of the rib occurs during the operation of the wheel and produces a buzzing or humming noise.

Much of the buzzing or humming noise incident to fan wheel is prevented by the little flanch raised on the outer edge of the wing, but this although it diminishes to some considerable extent, this annoying humming or noise is found not to entirely cure the evil.

I have discovered that by application of a deflecting rib to the middle of the propelling surface of the fan wheel receiving two currents of air blowing toward it in opposite directions, that such deflecting rib will so operate or have such an effect on such currents of air as to very nearly if not entirely prevent them from making any of the unpleasant humming or noise which would otherwise result from their direct impingement upon one another.

What therefore I claim as my improvement in the blast wheel receiving air in two opposite directions at one and the same time, is—

The application of a deflecting rib to the middle of and so as to extend beyond the

propelling surface of each of the curved wings of the blast wheel, and formed so as to deflect the currents of air entering the and prevent them from that contact or im- wheel laterally in the opposite directions pulsion against one another which produces the humming or buzzing noise as above set forth.

In testimony whereof I have hereunto set my signature this twenty-seventh day of December A. D. 1853.

SOLOMON W. RUGGLES.

Witnesses:
G. F. BAILEY,
NATHL. WOOD.