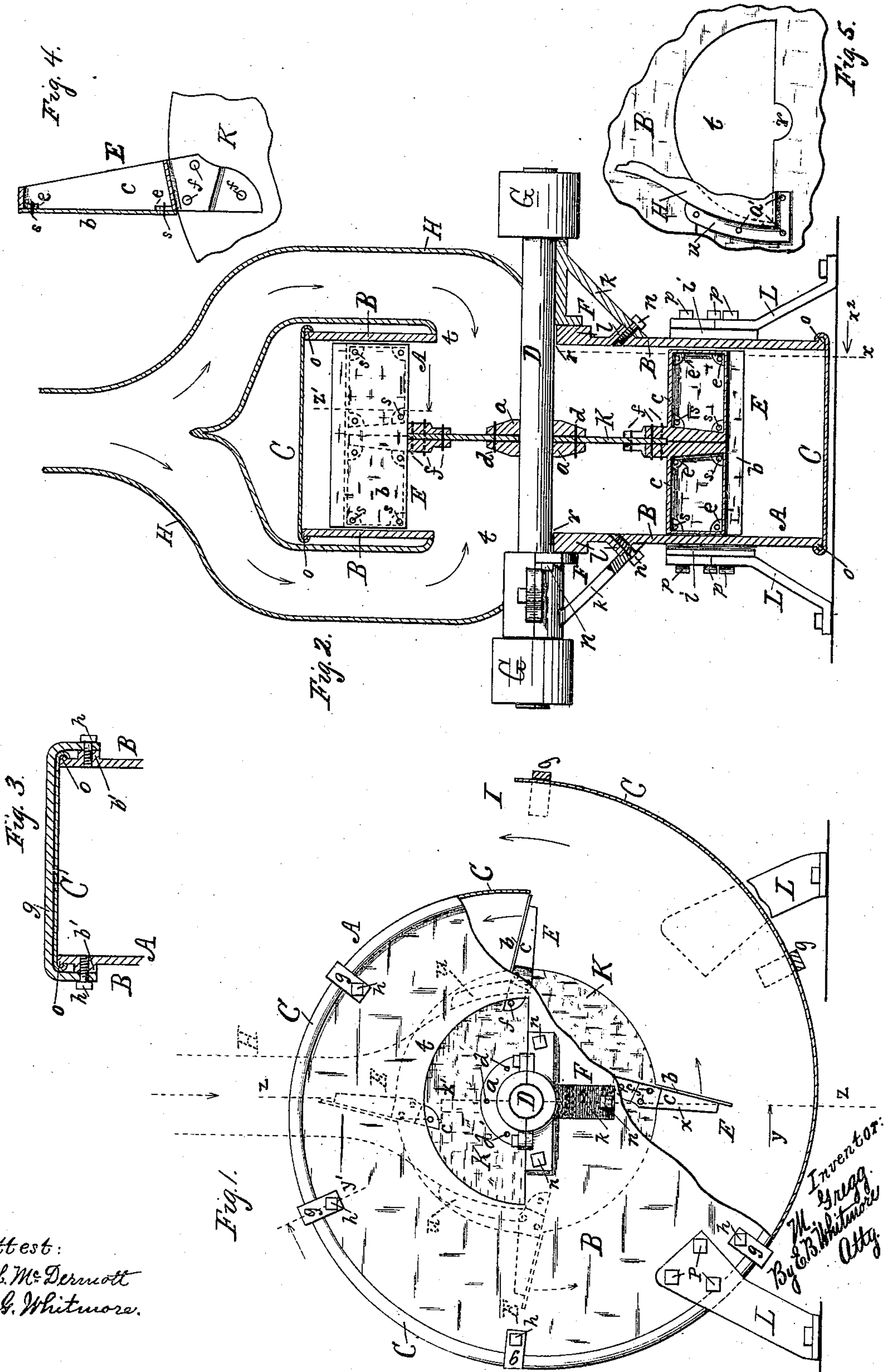


(No Model.)

M. GREGG.
BLAST OR EXHAUST FAN.

No. 370,389.

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UNITED STATES PATENT OFFICE.

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BLAST OR EXHAUST FAN.

SPECIFICATION forming part of Letters Patent No. 370,389, dated September 27, 1887.

Application filed April 1, 1887. Serial No. 233,274. (No model.)

To all whom it may concern:

Be it known that I, MAHLON GREGG, of Rochester, in the county of Monroe and State of New York, have invented a new and useful
5 Improvement in Blast or Exhaust Fans, which improvement is fully set forth in the following specification, and shown in the accompanying drawings.

The object of my invention is to produce an
10 improved blast or exhaust fan requiring less power to drive it than others in use, the improvement consisting, mainly, in the construction and manner of holding the blades, with other improvements, the invention being here-
15 inafter fully described, and more particularly pointed out in the claim.

Referring to the drawings, Figure 1 is a side elevation of the fan, a part of the side shell being broken away and a part of the peripheral shell, with two of the cross-ties or binders, being sectioned as upon the dotted line x
20 in Fig. 2, the figure being viewed as indicated by the arrow x^2 , the draft or exhaust pipes being shown by dotted lines; Fig. 2, an elevation of the same, viewed as indicated by arrow
25 y in Fig. 1, the case and draft-pipes being sectioned as upon the dotted line z , the frames of the blades, the disk carrying the frames, and the collars thereon being sectioned as
30 upon the broken dotted line x' ; Fig. 3, a longitudinal section of a part of the shell and a cross-tie, taken as on the dotted line y in Fig. 1, and viewed as indicated by the arrow pointed
35 thereon. Fig. 4, drawn to a larger scale, is a cross-section of one of the frames for carrying the blades and a blade attached, with a portion of the disk carrying the blade-frames, said blade and frame being sectioned on the
40 dotted line z' in Fig. 2, and viewed as indicated by the arrow associated therewith; and Fig. 5, a view of a portion of the side of the case, seen in the direction in which Fig. 1 is
45 seen, drawn to better show the form of the inlet-opening for the air and the manner of fastening the inlet air-pipe to the case.

Referring to the parts of the device, A is the case of the fan, formed of side plates, B, and the involute peripheral plate C.

D is the axial shaft of the fan, said shaft

resting in bearings F, secured to the side plates 50 of the case.

G are pulleys upon the shaft D to receive driving-belts for the fan.

H is the inflow or draft pipe, and I the mouth or exit for the outflowing air. 55

K is a disk for carrying the fans proper, E, said disk being held between collars a upon the shaft, one being preferably rigid with the shaft and the other loose thereon.

c are frames which hold the blades b of the
60 fans, said frames being secured to the disk by rivets or bolts f . The disk is secured to the collars a by simple bolts d . The case is supported upon legs L, held to the sides thereof
65 by bolts p , entering thickened parts or projections i from the sides B. The bearings F for the shaft are formed with braces k and held to the sides of the case by bolts n , said bolts entering projections l at the sides of the case.
70 The side plates, B, of the case are formed with beads or ridges o around at their edges on their outer sides, and the peripheral plate C is turned at its edges over said beads, as shown, the parts B B and C being held in place by
75 cross-ties g , placed against the outer side of the plate C and bent inward at their ends against the outer surfaces of the respective side plates, and secured thereto by bolts h , entering thickened parts b' of said side plates.
80 These cross-ties firmly join the parts B B and C.

t are inlet-openings for the air through the sides B of the case, which are semicircular, as shown, their respective straight sides or diameters passing through the axis of the shaft. 85
I gain an advantage by making the openings in this manner instead of in the form of a concentric circle, as they are usually made, for, by having the opening wholly above or at one
90 side of the shaft, I have the opportunity of fastening the bearings F of the shaft to the sides of the case in the manner most convenient, instead of having to form said bearings to reach over and beyond the openings in order to secure them to the sides.

The frames c are double, or formed of a right and left hand part placed side by side, with the disk K reaching to a distance between 95

them, and the blades *b* are each in one piece and of a length to cover both frames of each pair, said blades being held to the frame by simple rivets or bolts *s*, passed through lugs *e* of the frames.

The disk *K* is imperforate, save as to the holes formed therein to receive the bolts *f* and *d* and the shaft *D*, on which account the air entering into and within the case is not beaten or thrown into whirls or eddies, as is the case where spokes are used to carry the fans. The disk, being continuous and not divided into spokes or arms, gives the air an easier passage through the fan, and as a result a greater and more rapidly moving volume of air is drawn into and expelled from the fan in proportion to the power expended than when the air is chopped and hurled about by arms or spokes.

As a further advantage attending the forming of the sides of the case with the inlet-openings *t* wholly above the shaft, the lubricating-oil that occasionally drops from the bearing of the shaft at *F F* falls wholly without the case and is not carried therein by the inflowing air, which occurs when the sides of the case are open all round the shaft, as heretofore made.

The inflow and outflow pipes may be made in any form desired. The inflow-pipe *H*, as shown, is divided near the case, having a branch extending on either side thereof to the openings *t*, which they are formed to cover, and are held to the sides of the case by simple means, as bolts at *a'* passed through flanges *u*.

The blades *b* are preferably inclined away from radial planes leading from the axis of the shaft to a degree about as shown.

This fan or blower answers equally well to give a blast for blacksmiths' forges or furnaces or to act as a suction or exhaust fan to draw away dust or fine shavings from machines used in manufacturing.

What I claim as my invention is—

In combination with a revolving disk, *K*, a blast-fan, similar right and left hand open frames *c*, secured to said disk and extending beyond the periphery thereof, and a blade, *b*, placed to cover said frames and tie them together, substantially as shown and described.

MAHLON GREGG.

Witnesses:

E. B. WHITMORE,
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