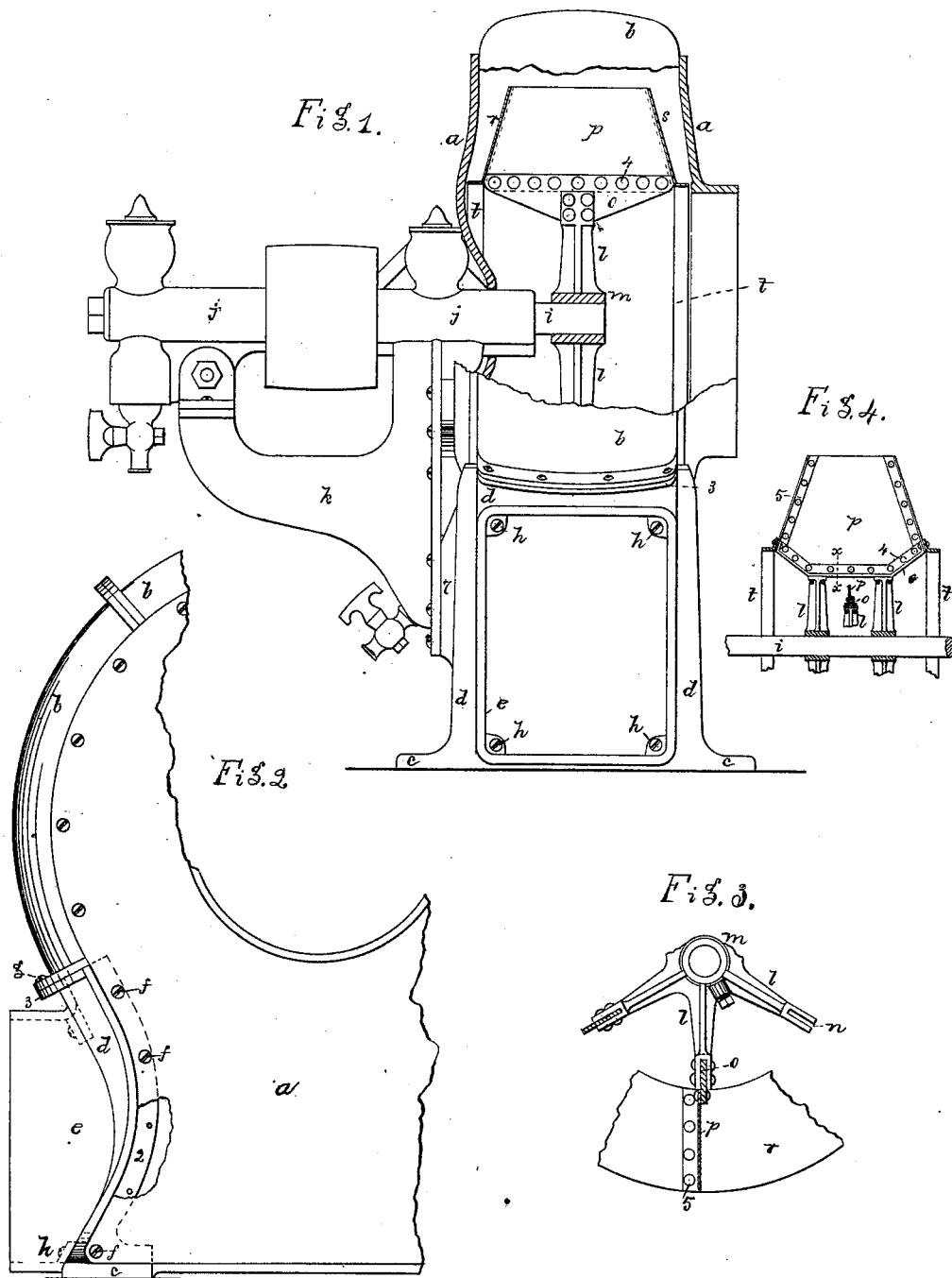


B. F. STURTEVANT.
Fan-Blower.

No. 196,998.

Patented Nov. 13, 1877.



Witnesses.

W. G. Pratt.
G. C. Perkins.

Inventor.

Benjamin F. Sturtevant
by Crosby & Gregory, attys.

UNITED STATES PATENT OFFICE.

BENJAMIN F. STURTEVANT, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN FAN-BLOWERS.

Specification forming part of Letters Patent No. **196,998**, dated November 13, 1877; application filed September 18, 1877.

To all whom it may concern:

Be it known that I, BENJAMIN F. STURTEVANT, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Fan-Blowers, of which the following is a specification:

This invention relates to fan-blowers, and has special reference to the construction of the fan and of the mouth-piece, as will be hereinafter described.

Figure 1 represents, in front view, a fan-blower embodying my improvements, the fan-casing being partially broken away to show the fan; Fig. 2, a partial side elevation, showing the case and mouth-piece; Fig. 3, a detail of the fan, and Fig. 4 a modification.

The shell is composed of side pieces *a*, connected together by segments *b*. The blower-feet *c*, to receive bolts by which to fasten the blower to the floor, instead of being cast upon the shell, are made to form part of the mouth-piece frame *d*, from which projects the mouth-piece *e*, it being preferably made removable, so that the blower may be made to discharge from either end, as provided for in a patent already granted to me. This frame *d* and feet *c*, cast in one piece, has flanges 2 and 3—the former to receive bolts or rivets *f*, to confine the side pieces to the frame, and the latter to receive bolts or nuts *g*, to hold the segment *b* to the frame. The mouth-piece *e* is connected with the frame by means of screws or bolts *h*.

When the mouth-piece *e* is removed to be placed at the other end of the case, the opening in the frame *d* will be covered by a plate taken from the other end of the case, the plate and mouth-piece being interchangeable, as in my patent referred to.

The fan-shaft *i* is supported in journals *j* on a bracket, *k*. This shaft is overhung, and on its end next the journal is placed the fan.

To enable this overhung fan to be run steadily at high speed, I have provided it with one set of centrally-located arms, *l*, projecting from a hub, *m*. These arms are preferably slotted at their ends, as at *n*, to receive independent cross-bars *o*, to which the fan-blades *p* are attached by rivets 4. The fan-blades are also riveted to the frusto-conical side plates *r* *s* by rivets 5.

In fans as commonly made, the annular rims *t* at the sides thereof have been formed as portions of the cast arms, to which the fan-blades have been riveted.

In this present fan-wheel these annular rims *t* are detached from the arms, and serve only to strengthen the side plates.

If the fan-blade and cross-piece were made in one piece and connected with the arm, the fan would not have sufficient strength to be effective at high speed without employing material so thick as to make the fan too heavy for practical use.

The strong cross-bars *o* extend between the sides *r* *s*, and support them and the fan-blade, the latter being of the usual thin metal. This cross-piece may be used to advantage in connection with a fan-wheel having two sets of arms, as in Fig. 4, wherein the cross-piece is shown as made of T-iron, adapted to be riveted to the arms *l*, and to have the annular rims *t* riveted to them.

The side plate *a*, next the bracket *k*, is projected outwardly, as at 7, to strengthen the side plate, and form a stiff, strong seat for the bracket.

I claim—

1. The independent mouth-piece frame, provided with feet to support the blower-case, and with flanges for attachment with the side pieces and segments.

2. The independent mouth-piece frame, provided with flanges for attachment with the side pieces, substantially as described.

3. The independent mouth-piece frame, provided with a flange for attachment with the segments.

4. The independent mouth-piece frame, provided with flanges, in combination with the detachable mouth-piece, substantially as described.

5. The combination, with the side plates and arms, of independent but attached cross-pieces and blades, the latter being riveted or attached to the cross-pieces and side plates.

6. The single set of central arms *l*, forked, as at *n*, in combination with the cross-pieces held in such forks, and with the fan-blades riveted to the cross-pieces and to the side plates, all substantially as described.

7. The independent mouth-piece frame, provided with feet to support the blower-case, substantially as described.

8. The side plate *a*, provided with an outwardly-projecting seat, to strengthen the side plate and sustain the bracket, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJ. F. STURTEVANT.

Witnesses:

G. W. GREGORY,
W. J. PRATT.