No. 704,038. Patented July 8, 1902.

J. T. HOPE.

FAN CASE FOR BLAST FANS.

(Application filed June 28, 1901.)

(No Model.)

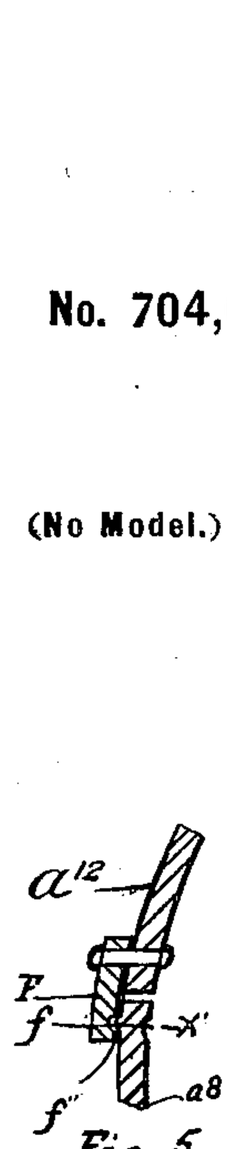

Fig. 5

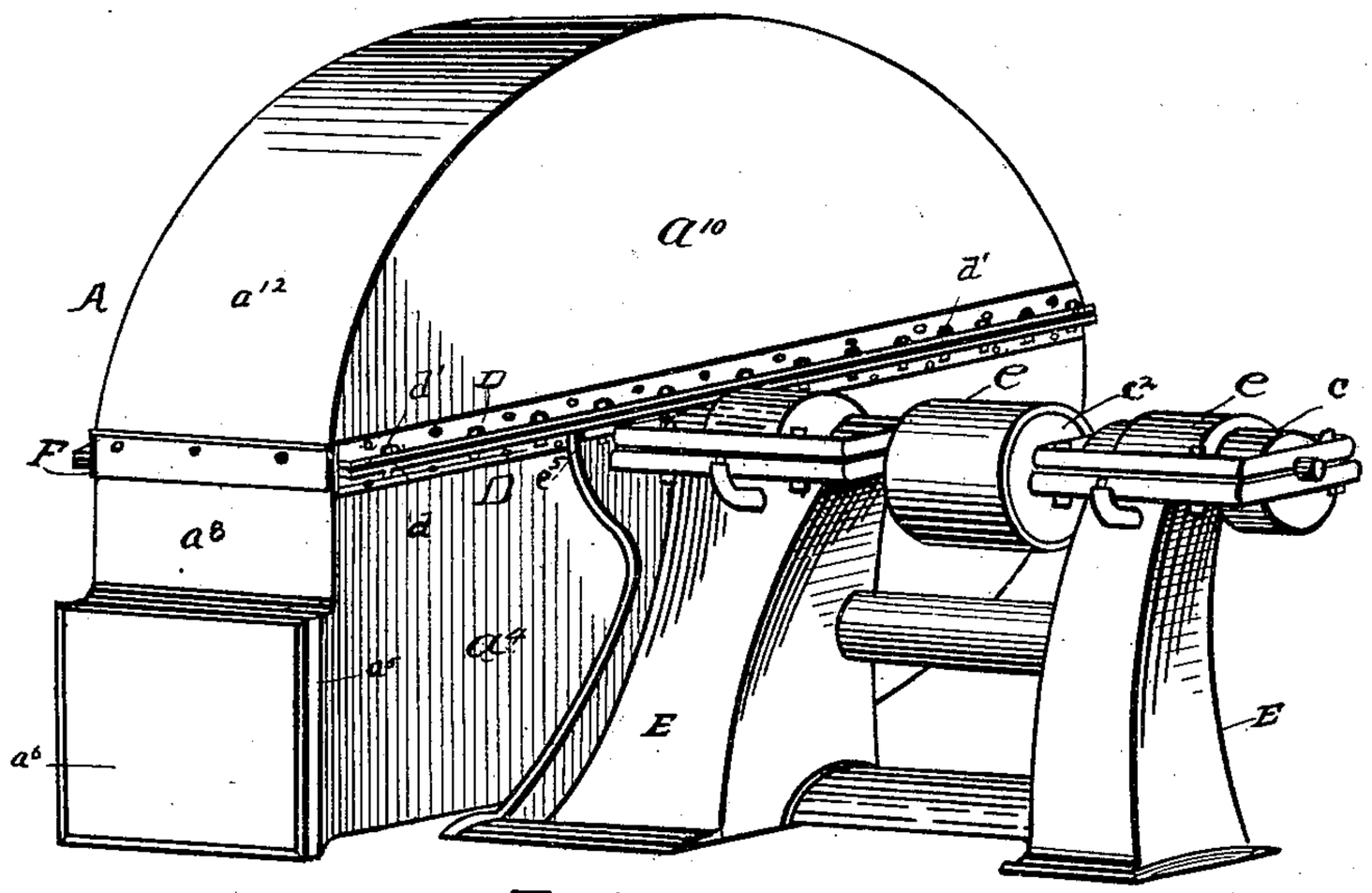

Fig. 1

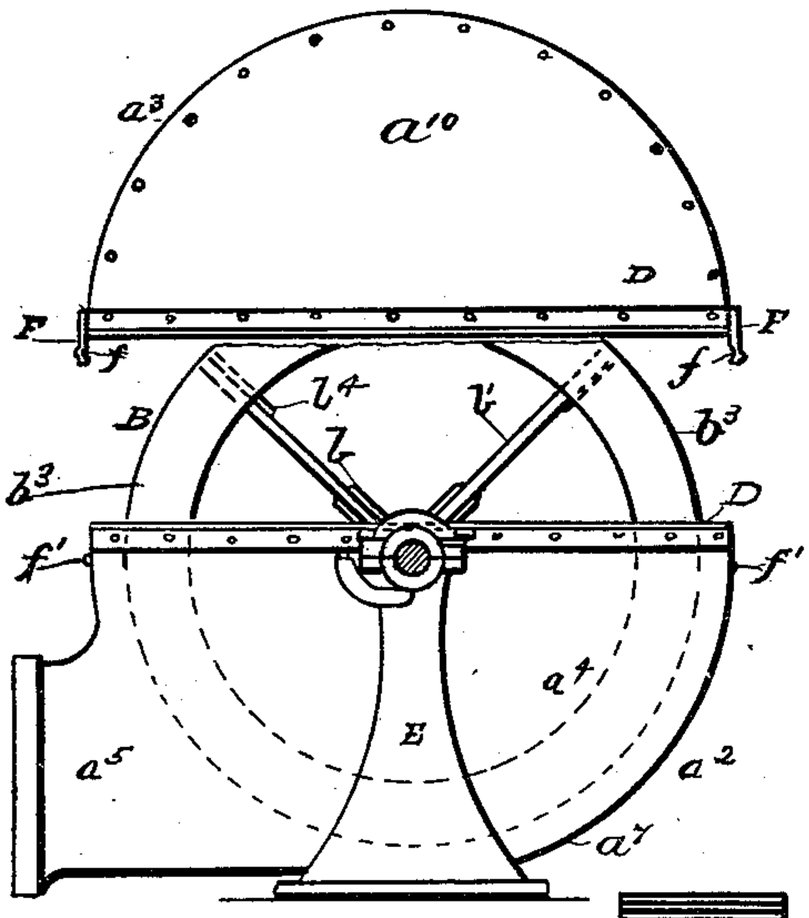

Fig. 2.

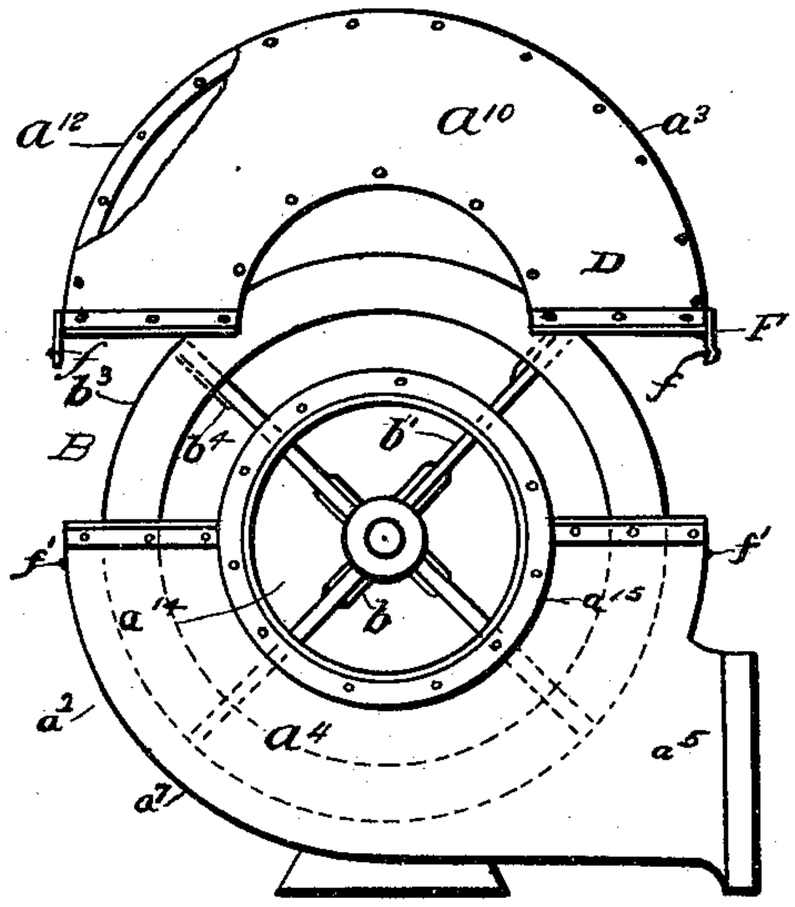

Fig 3

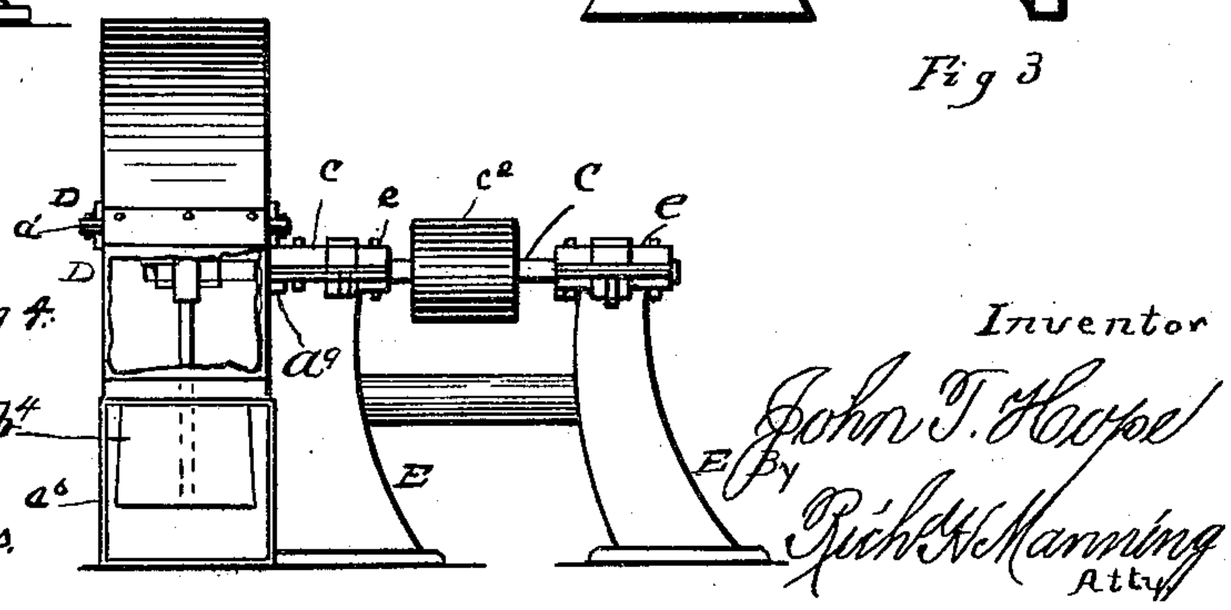

Fig 4.

Witnesess

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UNITED STATES PATENT OFFICE.

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FAN-CASE FOR BLAST-FANS.

SPECIFICATION forming part of Letters Patent No. 704,038, dated July 8, 1902.

Application filed June 28, 1901. Serial No. 66,376. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. HOPE, a citizen of the United States of America, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Fan-Cases for Blast-Fans; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The objects of the invention are, first, a fan-case which will admit of expeditious adjustment or repair of the fan; second, an air-excluding separable fan-case; third, to impart rigidity to the sides of the fan-case and prevent lateral distortion, and, fourth, to automatically seal the ends of the separable parts of the case.

The invention consists in the novel construction and combination of parts, such as will be first fully described, and then specifically pointed out in the claims.

In the ordinary construction of fan-cases the fan after a period of constant use and from various causes, such as clogging of the fan and changes in shaft adjustment, and also from occasional distortions of the case itself and general wear from the stress of the belt, becomes disabled, and in order to remedy the injury the dismemberment of the case is the only alternative. The reuniting of these parts so as to obtain a perfect adjustment of the fan is ordinarily attended with difficulty, and the result of the present invention is to obviate the disadvantages enumerated.

In the drawings, Figure 1 is a view in perspective of the fan-case for a rotary fan embodying the invention, also showing the fan-shaft and supporting-frame. Fig. 2 is a side view of the fan-case, taken from the position of the outer support to the fan-shaft, showing the upper separable part of the fan-case raised in position to show the fan. Fig. 3 is a reverse view of the fan-case to that shown in Fig. 2. Fig. 4 is an end view of the fan-case, showing the automatically-engaging plates and also showing the fan shaft and supports, as in Fig. 1. Fig. 5 is a sectional detail view of the parts of the top and sides of the case, showing the automatically-engaging plate.

Similar letters of reference indicate corresponding parts in all the figures of the drawings.

Referring to the drawings, A represents the improved fan-case, which is made to inclose a rotary fan B, which fan is supported in the ordinary manner upon the inner end c of a horizontal shaft C, which extends through one side of the case and to a position about half-way between the sides of the fan-case, as hereinafter described. The other end of shaft C is mounted in the journal-boxes e e upon the upper ends of the standards E E, one of said standards being close in position to the side of the fan-case. Upon shaft C is a band-wheel c^2. The fan-case A consists of a lower portion or section a^2 and an upper removable top section a^3. The lines of the sides a^4 a^4 of the lower portion a^2 of the case, which are arranged the proper distance apart for the operation of the fan, extend from the rear ends in arcs of circles and at the forward ends project, as at a^5, a short distance horizontally to form the sides of the eduction or blast opening a^6 to the case. The bottom a^7 and one end of the section a^2 of the fan-case consists of a single plate, the edges of which are connected rigidly with the sides a^4 a^4 of the case and extend in the lines described of the said sides to the line of the forward edge of the extension a^5. The end of the case above the opening a^6 is closed by a plate a^8, which is bent inwardly from the upper edge of said opening and thence extended upwardly to the upper edge of the lower portion of the case. The line of separation of the sides and ends of the respective upper and lower sections a^2 a^3 of the case extends horizontally a short distance above the line of shaft C, and the side a^4, adjacent to the standard E, is perforated at a^9 to receive said shaft.

The top section of the case A consists of the semicircular sides a^{10} a^{10}, which are connected with a plate a^{12}, bent in the line of the upper edges of said sides and bolted to said sides, as seen in Fig. 3. In the sides of the lower section a^2 and the upper section a^3 of case A, opposite the sides through which shaft

C enters, is a circular induction-opening a^{14}, into which the material or substance is drawn. Connected with said sides a^4 and a^{10} and extending around the edges of opening a^{14} is a circular plate or ring a^{15}, which is bolted to said sides.

Upon the outer sides a^4 a^{10} of the upper and lower parts of case A, near the line of separation of the lower section a^2 and the upper section a^3 of the said case, are riveted the angle-plates D D. The said angle-plates on the sides a^4 a^{10} of the case toward the standard E extend horizontally from the line of one end of the case to the line of the other end. Upon the other sides of the case these angle-plates are cut in short lengths, their inner ends abutting against the edges of the ring a^{15}. Between the lateral parts of the angle-plates D D are rubber gaskets d. The lateral parts of the angle-plates in the upper and lower sides a^4 a^{10} of the case are bolted together by the bolts d'. Upon the side a^4 of the case, near the standard E, the lateral part of the angle-plate is supported by a lug e^5 on the standard E, which extends upwardly above the line of the cap-plate of the journal-box and beneath said angle-plate. The space at the ends of the case at the meeting edges of the upper and lower parts of the case is longitudinally sealed by the plates F F. These plates extend in length the width of plate a^{12} and are secured by rivets to said plates a short distance from the ends of said plates. On the inner side of the plates F, near their lower edges, are longitudinal grooves f, and upon the plate a^7 at one end of case A and upon the plate a^8 at the other end of said case are transverse half-round projections f', which extend within the grooves f in the plates F F. The plates F F yield outwardly when they come in contact with the projections f', and when the grooves come opposite the projections the plates close automatically upon the ends of the lower part of the case. Upon the end of shaft C within the case A are separate lugs b, extending radially from the shaft. With the lugs b b are connected radial angle-plates b', upon which are transverse fan-plates b^4. With the ends of fan-plates b^4 are connected annular plates b^3 b^3, comparatively narrow in width, the outer annular edges of which extend to the outer edges of plates b^4.

In the ordinary description of fan-cases the distortion of the fan is of frequent occurrence. This occurs from the entrance of hard substance in the induct-opening, such as blocks in the conveyance of sawdust and stones in sand, and more often the blades of the fan are broken, requiring immediate repair. In the distortion of the fan the sides of the fan are driven in contact with the inner sides of the case and distort the case. In other cases the wear of the shaft in its bearings from the strain in the belt causes the fan to change its position and interfere with the case. For any cause which requires the removal and repair of the fan the bolts in my invention are removed from the angle-irons D D and the top of the case at once removed, and this is accomplished with saving of time and expense.

The angle-irons D D add strength to the sides of the case and resist the distortion which the strain upon the shaft C from the belt will exert.

The case A may be made of cast material, in which instance the angle-plates serve as a useful adjunct to stiffen the sides of the case. When the repairs are made to the fan, the separable upper part of the case is replaced and the angle-irons bolted together, the gasket preventing the admission of air, and the plates F are hermetically sealed as soon as the grooved parts f pass over and engage with the projections f', thus making the case practically efficient in its induction and eduction capacities, said projections being elastic, if preferred.

I am aware that fan-cases have been made with upper and lower sectional parts and provided with angle-plates at the line of separation of said parts. In my invention I aim to strengthen the side of the fan-case through which the shaft enters by the application of an angle-plate extending in one piece from one end of the case to the other and above the line of separation of the case and also prevent the deflection of the angle-plates by the lug on the support E for the shaft.

It is obvious that modifications may be employed which are within the scope of the invention.

Having fully described my invention, what I now claim as new, and desire to secure by Letters Patent, is—

1. A fan-case comprising a lower sectional part and a shaft extending through one side thereof and an upper sectional part of said case separable transversely to the case upon a line above the plane of said shaft, angle-plates upon the side of said case through which said shaft extends and near the line of separation of said upper and lower sectional parts one of which angle-plates extends from one end of said case to the other and suitable fastening devices for said angle-plates substantially as described.

2. A fan-case comprising a lower sectional part and a shaft extending through one side thereof, and a support for said shaft adjacent to said side an upper sectional part of said case separable transversely to the case upon a line above the plane of said shaft, angle-plates upon the side of said case through which the shaft extends and near the line of separation of said upper and lower sectional parts, one of which angle-plates extends from one end of said case to the other end, fastening devices for said angle-plates and a lug on the support for said shaft beneath said angle-plates.

3. In a fan-case comprising a lower sectional part and an upper sectional part the combination of angle-plates upon the sides of said

sectional parts at the line of separation of said upper and lower parts, devices for securing said plates together and separate air-excluding plates connected with the ends of one of said sectional parts in position to engage with the other when the parts are brought together.

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

JOHN T. HOPE.

Witnesses:
JOHN T. MARSHALL,
MARVIN MINNEAR.