(No Model.)

G. C. TONER & J. W. McCOLLUM.

DISCHARGER FOR PNEUMATIC STRAW STACKERS.

No. 592,672. Patented Oct. 26, 1897.

Fig. 1.

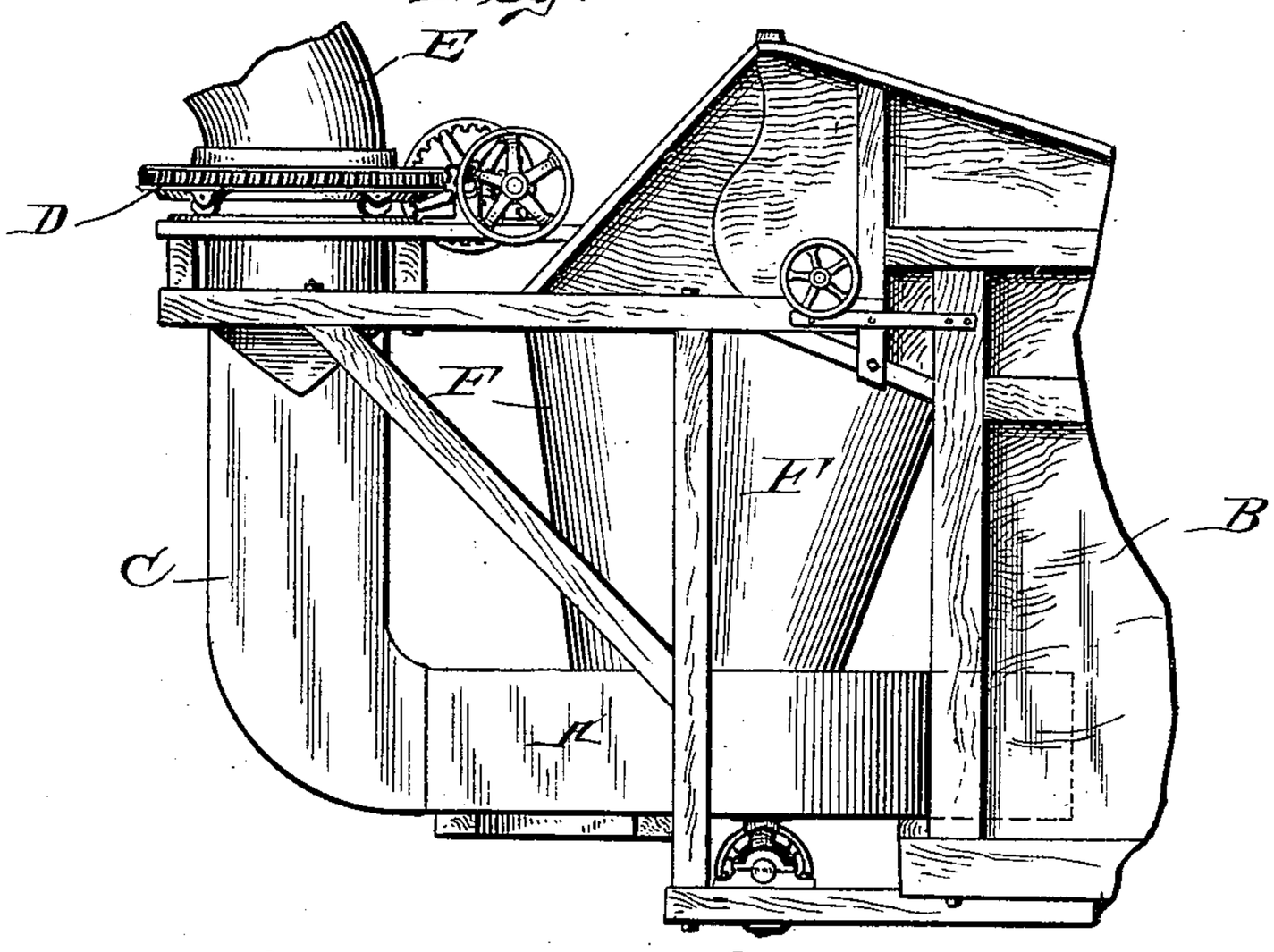


Fig. 2.

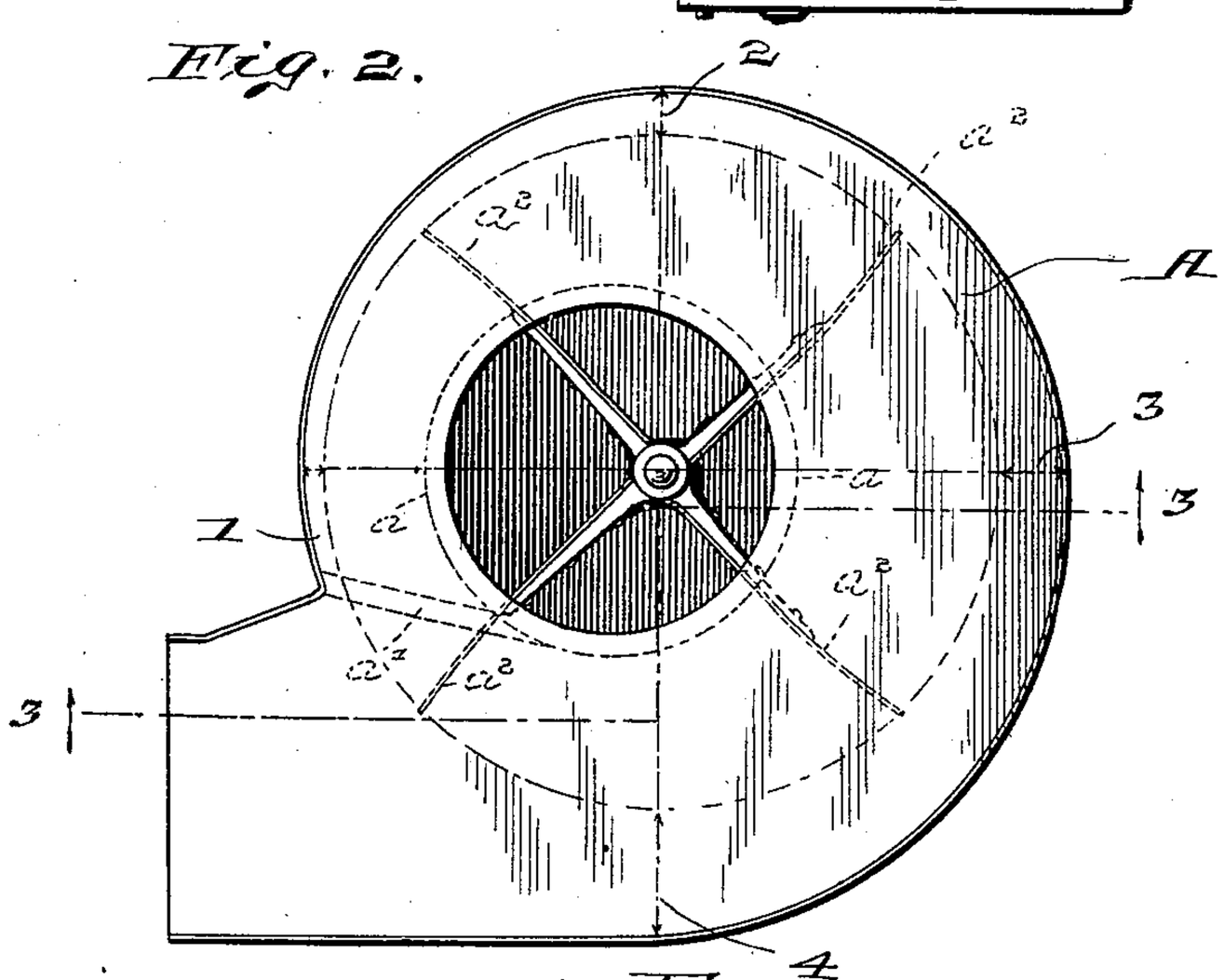
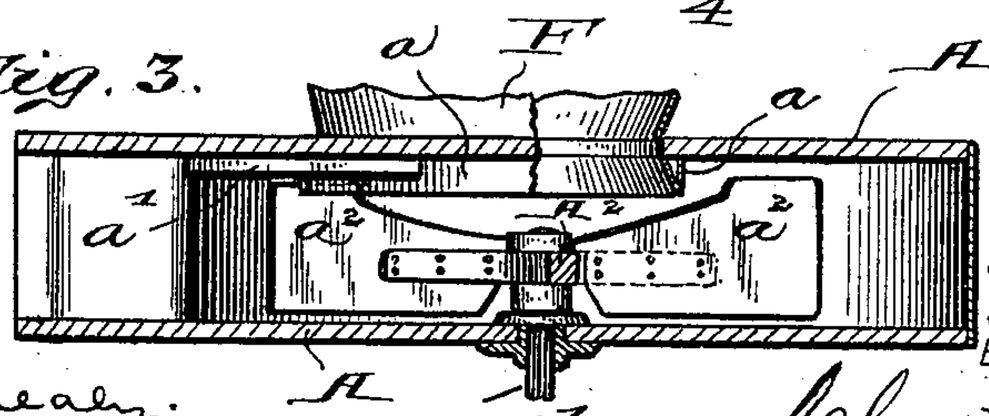


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE C. TONER AND JOHN W. McCOLLUM, OF WEST INDIANAPOLIS, INDIANA, ASSIGNORS TO THE INDIANA MANUFACTURING COMPANY, OF INDIANAPOLIS, INDIANA.

DISCHARGER FOR PNEUMATIC STRAW-STACKERS.

SPECIFICATION forming part of Letters Patent No. 592,672, dated October 26, 1897.

Application filed March 1, 1897. Serial No. 625,527. (No model.)

To all whom it may concern:

Be it known that we, GEORGE C. TONER and JOHN W. MCCOLLUM, citizens of the United States, residing at West Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Dischargers for Pneumatic Straw-Stackers, of which the following is a specification.

Our present invention relates to dischargers for pneumatic straw-stackers; and our objects are to simplify the construction, enable the straw to be delivered from the machine with less breakage, and to avoid back pressure in the fan. These objects are attained by constructing and arranging the fan parts in a peculiar manner, as will be hereinafter more particularly described and claimed.

Referring to the accompanying drawings, which are made a part hereof and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of the rear end of a threshing-machine or separator provided with a pneumatic straw-stacker having a discharger embodying our present invention; Fig. 2, a top or plan view of the discharger separately on a somewhat enlarged scale, and Fig. 3 a sectional view thereof as seen when looking in the direction indicated by the arrows from the dotted line 3 3 in Fig. 2.

All the parts except the discharger itself are or may be of any ordinary or desired construction, and as they form no part of our present invention will not be described herein except incidentally in describing said invention.

The fan-casing A is mounted in a suitable framework at the rear of the threshing-machine or separator B and has a continuation or neck C, which extends from this discharge-point up to and through the turn-table D to the "stump" of the usual stacker trunk or chute E. The straw passes from the threshing-machine or separator to the eye of the fan-casing through a suitable conduit or hopper F.

The fan-casing A is of the form most plainly shown in Fig. 2, and its eye is considerably to one side of the center, being nearest that portion of the periphery of the fan-casing which is just to one side of the neck or discharging-opening thereof. The fan-shaft is nearer the center of the fan-casing, being thus considerably to one side of the eye, as shown, but nevertheless so positioned that the ends of the fan-blades are nearest the periphery of the fan-casing at the "cut-off point" alongside the neck or discharge-opening therein, the distance between the points of the fan-blades and said periphery gradually increasing from that point around the curve, being greatest where the curve terminates. At the point marked 1 in the casing of a discharger of, say, forty inches in diameter the space would be about one-half inch; at the point marked 2, about two inches; at the point marked 3, about three and one-half inches, while at the point marked 4 there would be about seven inches clear space between the ends of the fan-blades and the wall of the fan-casing. Of course we do not confine ourselves to these dimensions or distances, as they may be varied considerably without departing from our invention, but state them merely for the purpose of giving a clear idea of the general character of the invention. In a fan of the size above indicated the open eye is about eighteen inches in diameter and the casing about eleven inches deep, while the distance across the discharging-opening is preferably a trifle less than the diameter of the eye.

Extending down from the under side of the top of the fan-casing to a distance of about two inches is a flange *a*, which surrounds the eye of the fan and has the effect of accelerating the flow of air out of the discharging-point and preventing what is known as "back pressure." This flange is flared or inclines backwardly, as shown in Fig. 3, and then returns perpendicularly to the upper side of the fan-casing. Extending from a point on the periphery of this flange to the point where the side of the discharge-opening begins is a rib *a'*, of about half the depth of the flange

a, the office of which is to assist in directing the current of air at this point out of the discharge-opening rather than to permit it to continue around inside the fan. As will be seen by an examination of Fig. 2, the side of the discharge-opening is at this point inclined for a short distance before it becomes parallel with the opposite side of said discharge-opening. This inclined portion is on a radial line from the axis of the fan, and this is an important feature of our fan, although not claimed except in connection with other features in the present application, it being the subject of a claim in an application filed concurrently herewith.

The wings of the fan are cut away in the center and at the ends extend up so that they run as close as is safely possible to the under side of the rib *a'*, the upper edges of these ends being above the extreme lower edge of the flange *a*, as is shown in Fig. 3. The effect is to hold the greater part of the force of the blast of air confined behind this flange and cut off from the eye or ingress opening, thus efficiently counteracting any tendency to back pressure.

As will be readily seen, in operation the straw and chaff enter the fan mostly to one side of the fan-shaft and much nearer to one side of the fan-casing than the other. This provides not only a freer ingress, but subjects the straw less to the action of the fan-blades, so that it is discharged from the fan-casing in a less broken-up condition than where the axis of the fan and the center of the fan-eye are coincident. The continuously-increasing space around the outer portion of the fan-casing between the ends of the fan-blades and said casing not only aids in this result, but also enables the fan to more completely clear itself of the straw and to deliver its blast with more force out of the discharging-opening. The flange around the fan-eye and the rib running from said flange to the beginning of the discharging-opening have the effect to help direct the blast out of the discharging-opening and aid materially in preventing what is known as "back pressure" in such fans. A material portion of the work is done by the portion of the fan-blades beyond the flange *a*, which, as before stated, are so formed as to extend up behind said flange. As the fan is relieved of its work as it revolves it runs with less power than where the material to be thrown out of it is massed tightly against its blades and between them and the fan-casing. The space between the ends of the fan-blades and the fan-casing as said blades pass the cut-off point alongside the discharging-opening is very small, and consequently but a trifling amount of air is carried by them past said point.

Having thus fully described our said invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a discharger for pneumatic straw-stackers, of the fan-casing the eye whereof is to one side of the center, and a fan the axis whereof is to one side of the center of the fan-eye and arranged nearest the inner side of the mouth or discharge-opening where the peripheral wall of the fan-casing unites with the discharge-spout so that there is a continuously-increasing space between the ends of the fan-blades from next the discharge-opening of the fan-casing around to the opposite side of said opening, whereby the fan is continuously enabled to free itself during its revolution, substantially as shown and described.

2. The combination, in a discharger for pneumatic straw-stackers, of the fan-casing having an inwardly-projecting flange surrounding the fan-eye, and the fan, substantially as set forth.

3. The combination, in a discharger for pneumatic straw-stackers, of a fan-casing having an eye-opening in one side thereof, a flange extending inwardly from said eye-opening, and a fan revolving below said eye-opening the ends of the fan-blades extending up somewhat behind said flange to a point above the lower edge thereof.

4. The combination, in a discharger for pneumatic straw-stackers, of a fan-casing having its eye to one side of the center, a fan the axis whereof is to one side of the center of the fan-eye, and a flange surrounding said fan-eye and extending down within the casing toward the fan-blades, substantially as shown and described.

5. In a discharger for pneumatic straw-stackers, a fan-casing the eye-opening whereof is to one side of the center and which has an inwardly-projecting flange surrounding the same, said flange being flared and largest at its extreme lower end, substantially as shown and described.

6. The combination, in a discharger for pneumatic straw-stackers, of a fan-casing having an eye or ingress opening in one side with an inwardly-projecting flange surrounding said eye, and a fan located within the fan-casing and having the central portion of its blades cut away, the outer portions or ends of the fan-blades extending up behind said flange, substantially as shown and described.

7. A discharger for pneumatic straw-stackers, the fan-casing whereof has its eye to one side of its center, with a flange surrounding and extending inwardly from said fan-eye, and a rib leading from said flange to the beginning of the discharge-opening of the fan-casing, substantially as shown and described.

8. The combination, of a fan-casing having an eye on one side only and located to one side of the center thereof, a fan mounted in said casing with its axis to one side of the center of the fan-casing but less distant therefrom than the center of the fan-eye, whereby

the ingress-opening is to one side of the fan-shaft while the space between the fan-blades and the periphery of the fan-casing is a continuously-increasing one from next the discharging-opening around to the opposite side of said discharging-opening in the direction of the rotation of the fan.

In witness whereof we have hereunto set our hands and seals, at Indianapolis, Indiana, this 25th day of February, A. D. 1897.

GEORGE C. TONER. [L. S.]
JOHN W. McCOLLUM. [L. S.]

Witnesses:
CHESTER BRADFORD,
JAMES A. WALSH.