

J. E. FOSTER.
PNEUMATIC STACKER.
APPLICATION FILED SEPT. 23, 1909.

984,549.

Patented Feb. 21, 1911.

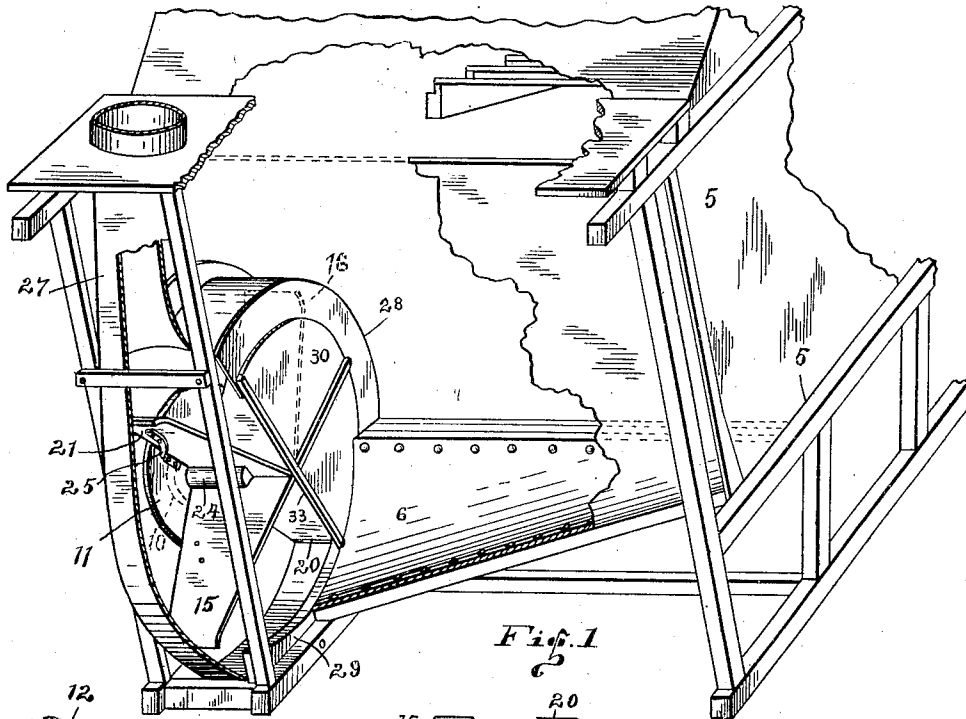


Fig. 1

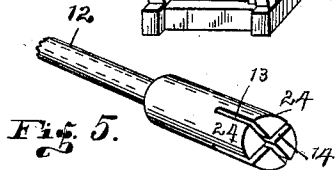


Fig. 5.

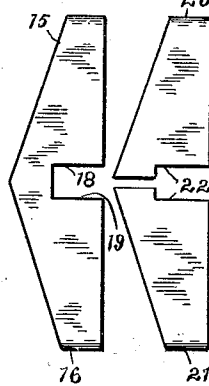


Fig. 7.

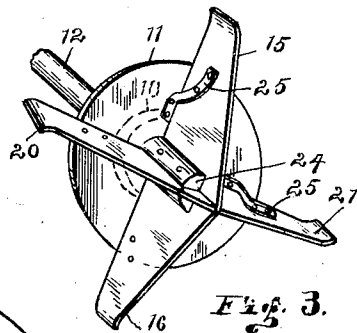


Fig. 3.

Fig. 2.

Witnesses:
Adelaide L. Carner.
L. R. Garber.

Inventor:
James E. Foster.
By James O. Walsh.
Attorney.

UNITED STATES PATENT OFFICE.

JAMES E. FOSTER, OF CLARKSBURG, ONTARIO, CANADA.

PNEUMATIC STACKER.

984,549.

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To all whom it may concern:

Be it known that I, JAMES E. FOSTER, a subject of the King of Great Britain, residing at Clarksburg, in the county of Grey and Province of Ontario, Canada, have invented certain new and useful Improvements in Pneumatic Stackers, of which the following is a specification.

My invention relates more particularly to improvements in fans for pneumatic stackers and the like, and the object of the invention is to devise a form of non-chokable fan and casing therefor which will effectively receive straw and material from a separator and instantly discharge the same from the ends of the fan wings without permitting such material to become tangled about the wings, or to revolve about the casing and become chopped or shredded and its feeding value thus lessened, and at the same time provide a fan capable of maximum discharging capacity at minimum power and thus economically operable, which is of great importance and advantage in localities where coal is not obtainable and a scarcity of other fuel exists, all as will be hereinafter more particularly pointed out.

In the accompanying drawings, which form a part hereof, Figure 1 is a perspective view of a pneumatic stacker embodying my invention; Fig. 2, a side elevation; and Figs. 3, 4 and 5 detail views of the fan structure.

As my invention relates essentially to the fan structure the parts associated therewith will be referred to but incidentally in describing the invention. The framework and casing, 5, forming the main straw chamber may be of any suitable construction for the purpose, the bottom portion or hopper 6, thereof also being of any appropriate construction, that illustrated being a sloping hopper which leads transversely across the chamber to the fan.

My improved fan preferably consists of a hub and disk, 10, 11, adapted to lie adjacent the outer fan casing, and through which I insert a shaft, 12, said shaft having a double split, 13, 14, through a portion of its outer end. Through one of said split portions I insert a blade constituting two fan wings, 15, 16, there being a cut-away portion intermediate thereof by which the edges, 18, 19, are permitted to pass beyond the terminus of the split portion in said shaft and thus lie tightly along the main portion of the

shaft, these members being thus substantially interlocked. On each side of said wings I insert in the other split portions, as 14, a pair of wings, 20, 21, each of which is substantially similar to half of the blade which composes wings 15, 16, and from each of said wings 20, 21, a portion, 22, is cut away to form shoulders designed to fit against the terminus of said splits 14. When thus assembled the quarter members, 24, of the shaft 12 each lie within the corners of the blades and are riveted or bolted to said wings, and a rigidly assembled and durable fan structure is thus secured. As shown most plainly in Figs. 3 and 4, these wings are tapered toward their outer ends, so that the rotating fan wheel is of conical form, being much wider through its central portion than at its wing ends, and when assembled in the manner described the quarter members of the shaft do not extend to the apex of this fan wheel, the wings crossing each other at right angles and leaving the corners at the apex point free from material. Said wings also, as indicated in Figs. 2 and 3, are bent slightly in the direction opposite to the rotation of the fan so that the material may readily escape therefrom into discharge duct 27. For greater stability I prefer to connect the base portions of said wings to disk 11 by suitable reinforcing brace bars, 25, which are secured to said disk, and then proportionately bent to lie along the rear and under side of said wings and there connected, as indicated in Fig. 3. I thus obtain a comparatively light but exceedingly durable and well balanced fan, driven in any suitable manner, and which is capable of creating both a highly efficient intake suction air current in the hopper and a powerful and steady material-discharging blast through the stacker chute. While I have shown four fan wings it will, of course, be readily understood that by slight modification any desired number may be employed.

Instead of a circular material inlet or eye in the fan casing as is common, I provide a segmental opening, 26, between the axis of the fan-wheel and the periphery of the casing at its rear and lower side immediately adjacent the discharge duct, 27, the opposite side of the casing being provided with a rim, 28, and at its lower side is provided with a throat-piece, 29, said rim and throat-piece being preferably concentric in form.

To rim 28 I secure an adjustable segmental covering, 30, which rim is provided with a slot, 31, through which a bolt, 32, is inserted, and by which arrangement I may shift said covering as desired to regulate the action of the air, the lower or base portion, 33, of said covering lying approximately across the apex of the fan-wheel or slightly thereabove.

- 10 In the operation of my improved stacker fan the material from the separating mechanisms discharges into the stacker hopper and is thence drawn into the rotating fan, but by the peculiar tapering and crossing of the wings, as indicated in Fig. 3, a vacuum exists about the apex of the fan wheel, and material striking that vicinity (or covering 30) is instantly drawn downwardly along the tapered wings to the ends thereof and discharged through the stacker chute, and said wings being thus freed at this point immediately gather and compress the air as they rotate behind the closed portion of the casing. As separators and stackers are made of varying dimensions the action of the air currents created thereby is not uniform in all constructions, and therefore the covering 30 which I employ may be adjusted to regulate the position of the inlet opening to the fan to properly receive the material according to the varying conditions referred to.

In actual operation in the field I have demonstrated that a pneumatic stacker 35 equipped with a fan of my arrangement is highly efficient in conveying material such as wheat and oat straw and pea and bean fodder in unbroken condition, and with material economy of power, which is of much benefit and advantage in small farming communities where all material suitable for fodder must be carefully handled and stored, and where the supply of fuel for operating threshing machinery is limited and 45 expensive.

I claim as my invention:

1. A fan for pneumatic stackers, comprising a vertically-arranged casing having an axial opening in one side, a concentric rim adjacent said opening, a fan-wheel in the casing, and a segmental closure for the opening adjustably guided on said rim.

2. A fan for pneumatic stackers, comprising a vertically-arranged casing having an axial opening in one side, a concentric rim adjacent said opening, a fan-wheel in said casing, a segmental closure for the opening mounted on said rim, and a throat-piece at one side of said casing adjacent said opening.

3. A fan for pneumatic stackers, comprising a vertically-arranged casing having an axial opening in one side, a concentric rim adjacent said opening, a fan-wheel in the casing the wings whereof at one edge are tapered from its apex toward their ends, and a segmental closure for the opening adjustably guided on said rim.

4. A fan for pneumatic stackers, comprising a vertically-arranged casing having an axial opening in one side, a concentric rim adjacent said opening, a segmental closure for the opening mounted on said rim, a concentric throat-piece at one side of said casing, and a fan-wheel in said casing having its wings tapering from its apex to their ends.

5. A fan for pneumatic stackers, comprising a vertically-arranged casing having an opening in one side, a concentric rim adjacent said opening, a fan in said casing, an adjustable segmental closure for said opening, and means for adjusting said closure on said rim.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES E. FOSTER.

Witnesses:

ANDREW G. FOSTER,
W. J. KELLOGG.