No. 674,098. Patented May 14, 1901.

J. E. SHEPARD.

PNEUMATIC GRAIN LOADER.

(Application filed Nov. 7, 1900.)

(No Model.) 2 Sheets—Sheet 1.

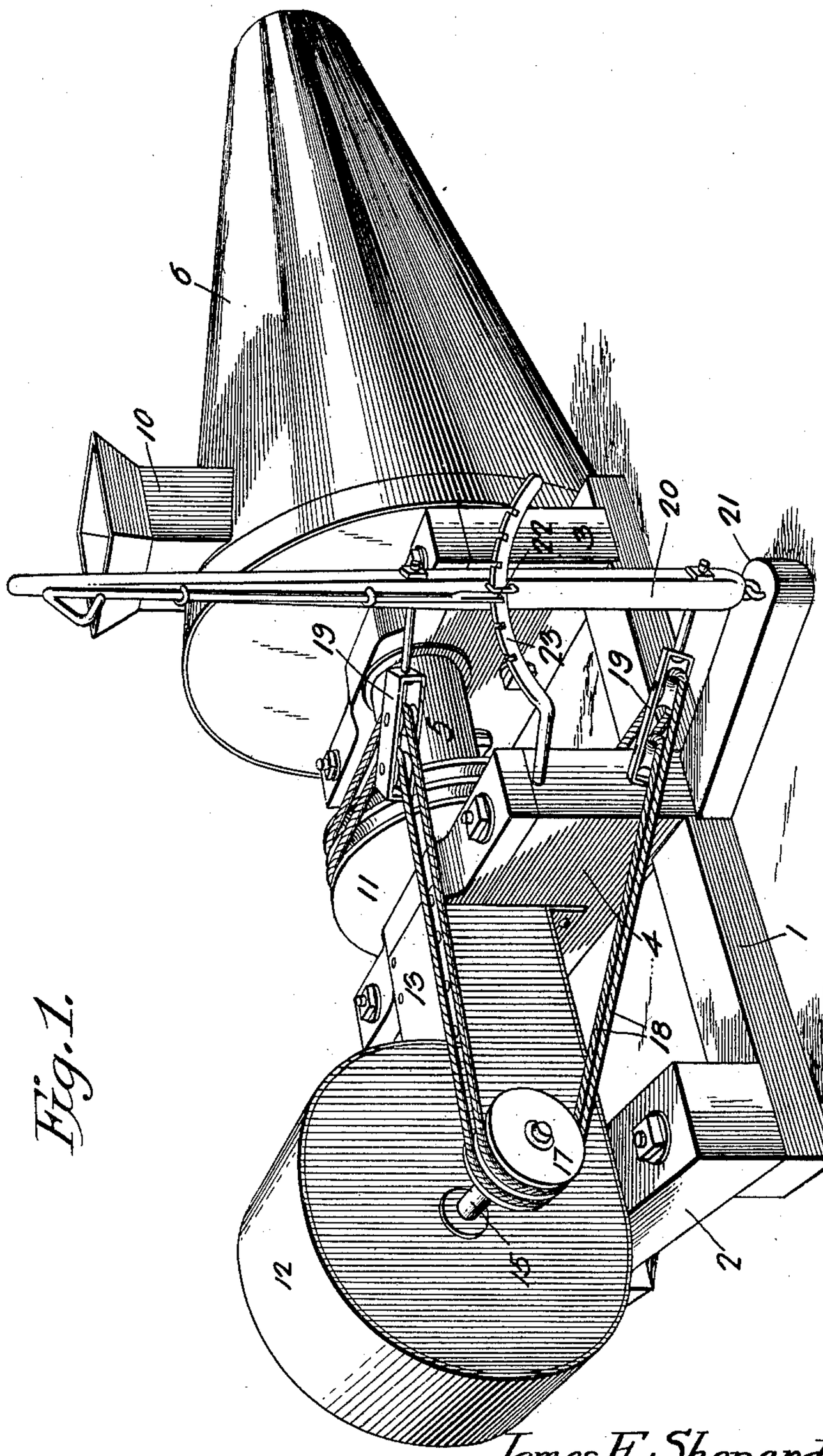

Fig. 1.

Witnesses
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J. C. Garner

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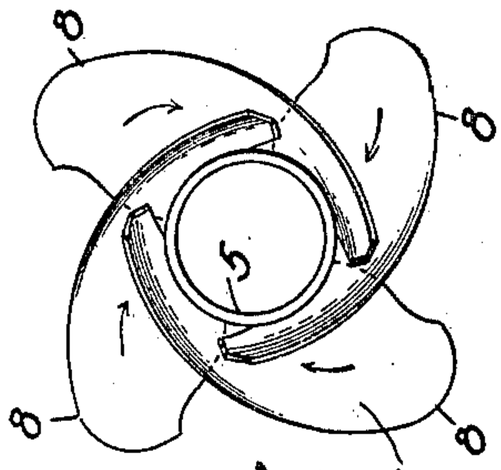

Fig. 4.

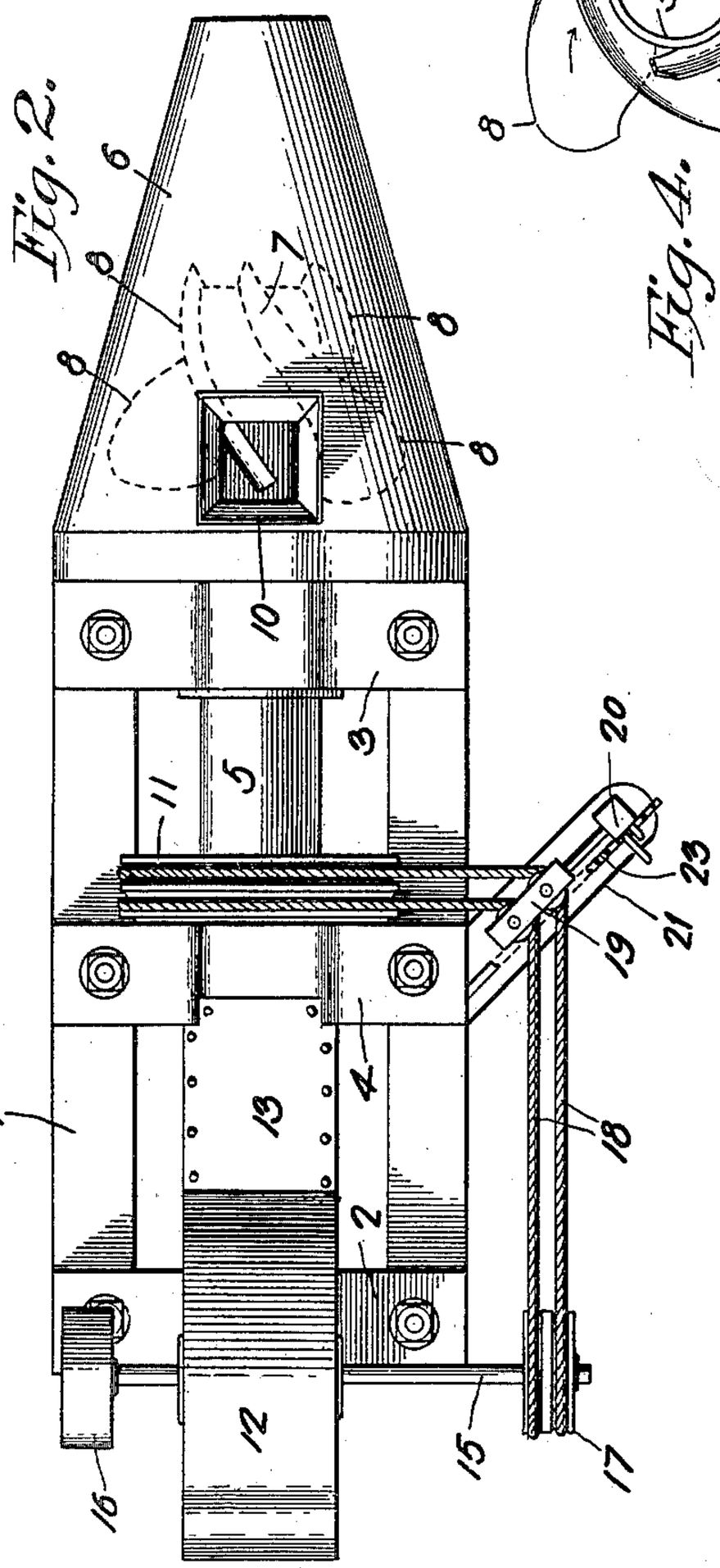

Fig. 2.

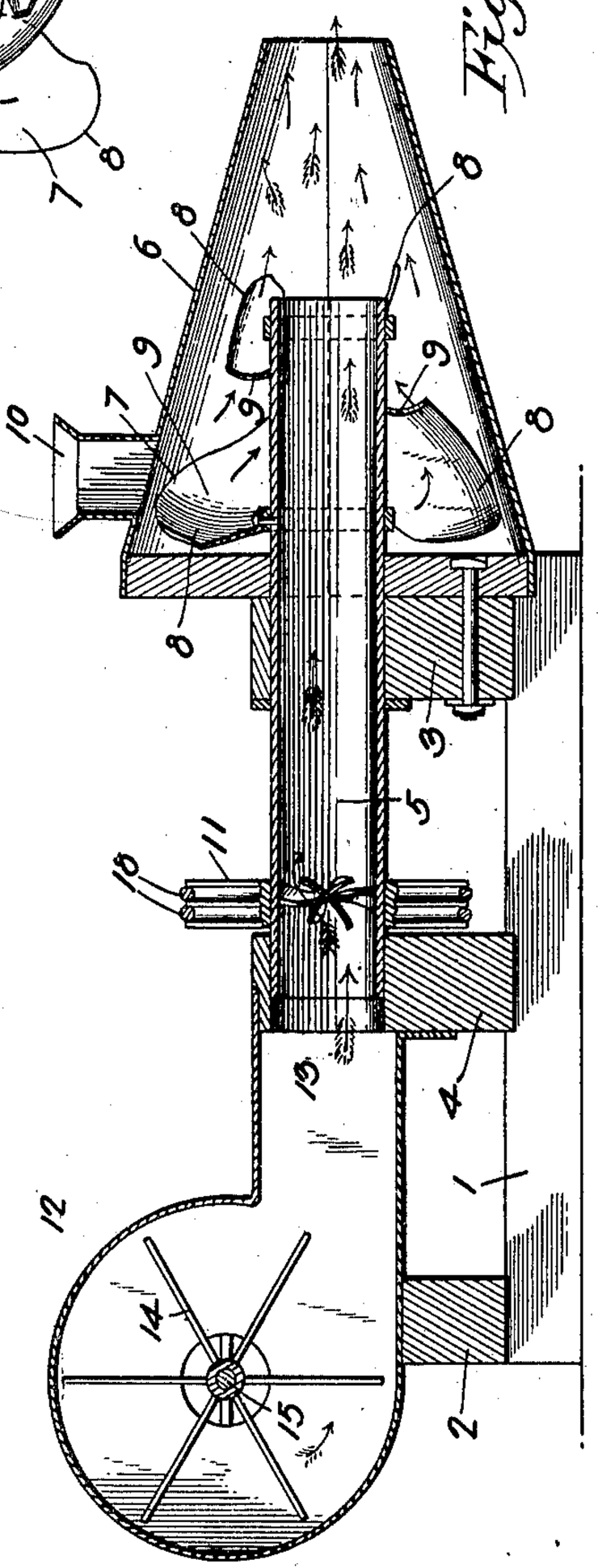

Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES E. SHEPARD, OF KENTLAND, INDIANA.

PNEUMATIC GRAIN-LOADER.

SPECIFICATION forming part of Letters Patent No. 674,098, dated May 14, 1901.

Application filed November 7, 1900. Serial No. 35,750. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. SHEPARD, a citizen of the United States, residing at Kentland, in the county of Newton and State of Indiana, have invented a new and useful Pneumatic Grain-Loader, of which the following is a specification.

My invention is an improved pneumatic grain-loader for loading cars and the like; and it consists in the peculiar construction and combination of devices hereinafter set forth, and pointed out in the claims.

The object of my invention is to provide a cheap and simple pneumatic grain-loader, which is of maximum efficiency, is light, compact, and requires but little power to operate it, and may be constructed at comparatively slight cost.

In the accompanying drawings, Figure 1 is a perspective view of a pneumatic grain-loader constructed in accordance with my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical longitudinal central sectional view of the same. Fig. 4 is a detail end elevation of the revoluble tubular shaft and the screw-fan thereon.

In the embodiment of my invention I provide a suitable supporting-frame 1, which may be horizontally disposed or supported at any desired inclination. At one end of the said frame, which I will call the "inner" end thereof, is a cross-bar 2. At the outer end of the said frame is a bolster or block 3, and between said bolster or block and said cross-bar is a bolster or block 4. A longitudinally-disposed revoluble cylindrical tubular shaft 5 is journaled in bearings on the blocks 3 4. The outer end of said tubular shaft 5 projects beyond the outer side of the block 3, and to the latter is secured the inner end of a conical-shaped discharge-hood 6. A screw-fan 7 is secured on the projecting outer end of the tubular shaft 5, the said screw-fan being located and revoluble in the inner end of said conical hood 6. Each of the flights or wings 8 of said screw-fan 7 is spirally disposed and is broader at its base than at its outer end, and in practice each of the said flights should describe half a circle on the tubular shaft. The pitch of the said flights may, however, be varied, as may be required. Each of the said flights or wings is concaved on its face, as at 9. The hood 6 is provided on its upper side with an intake 10, which is located above the inner portion of the screw-fan. The tubular shaft 5 is provided with a suitable power-pulley 11, whereby it may be rotated, and when in operation the said tubular shaft, which carries and rotates the screw-fan, is revolved at a suitable rate of speed. In a machine of moderate capacity and size I find it advantageous to drive the tubular shaft and screw-fan at the rate of about five hundred revolutions per minute.

A fan-casing 12 is secured on the cross-bar 2 at the inner end of frame 1, and the discharge-trunk 13 of said fan-casing communicates with the inner end of the tubular shaft 5. The blower-fan 14, which is located in the fan-casing 12, has its shaft 15 provided with a suitable power-pulley 16, whereby it may be rotated, and in the form of my invention here shown the said blower-fan has a pulley 17 on its shaft, which pulley 17 is connected to the pulley 11 on the tubular shaft 5 by endless power-cables 18, which pass over direction-pulleys 19, that are supported by a lever 20, the lower end of which is pivotally connected to an arm 21, that projects from the frame 1. By means of this lever the power-cables may be tightened or slackened as may be required to properly transmit power from the blower-shaft to the tubular shaft 5. Said lever 20 is supported at any required adjustment by a dog 22, which engages a notched segment 23. It will be understood, however, that power will be applied to the blower and to the tubular shaft by any suitable means, and I do not limit myself in this particular. In practice the blower is rotated at a higher rate of speed than the screw-fan, so that the current of air blown through the tubular shaft by the blower is much stronger than would be an exhaust-current through the said tubular shaft set up by the screw-fan.

In a machine of moderate size and capacity, with the blower and screw-fan proportioned about as herein shown, the blower should be driven at the rate of about twelve hundred revolutions to the minute.

In the operation of my invention the grain is fed to the hood through the intake 10. The

action of the screw-fan is such as to set up a cyclonic current of air in the base of the hood and to compress the same toward the contracted discharge end of the hood, and the whirling motion of this cyclonic compressed-air current serves as a cushion which supports and whirls the grain in the base of the hood and in coaction with the concaved faces of the flights or wings of the screw-fan prevents the grain from settling in the lower side of the hood, and, moreover, the said current of air in escaping from the discharge end of the hood carries the grain with it, being assisted by the mechanical action of the flights or wings of the screw-fan. The efficiency of the screw-fan in thus pneumatically and mechanically discharging the grain from the hood is greatly increased by the blast from the blower, which blast operates centrally with relation to the screw-fan, and the velocity of the said blast-current being greater than that of the cyclonic currents set up by the screw-fan the velocity of the grain which is initially moved by the screw-fan is increased by the said blast-current, and hence the grain is discharged at a high velocity from the contracted discharge end or nozzle of the hood.

Having thus described my invention, I claim—

1. In a pneumatic grain-loader, the combination of a discharge-hood to which the grain is fed, a revoluble screw-fan in the said discharge-hood, said screw-fan having a tubular axle-shaft and means to set up a blast-current through said tubular axle-shaft, substantially as described.

2. In a pneumatic grain-loader, the combination of a discharge-hood having a grain-intake, a revoluble tubular shaft, a screw-fan on said shaft, the latter being arranged in the said discharge-hood, and a blower to discharge a blast of air through the said tubular shaft, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES E. SHEPARD.

Witnesses:
WM. B. MOORE,
EDGAR L. PRESHER.