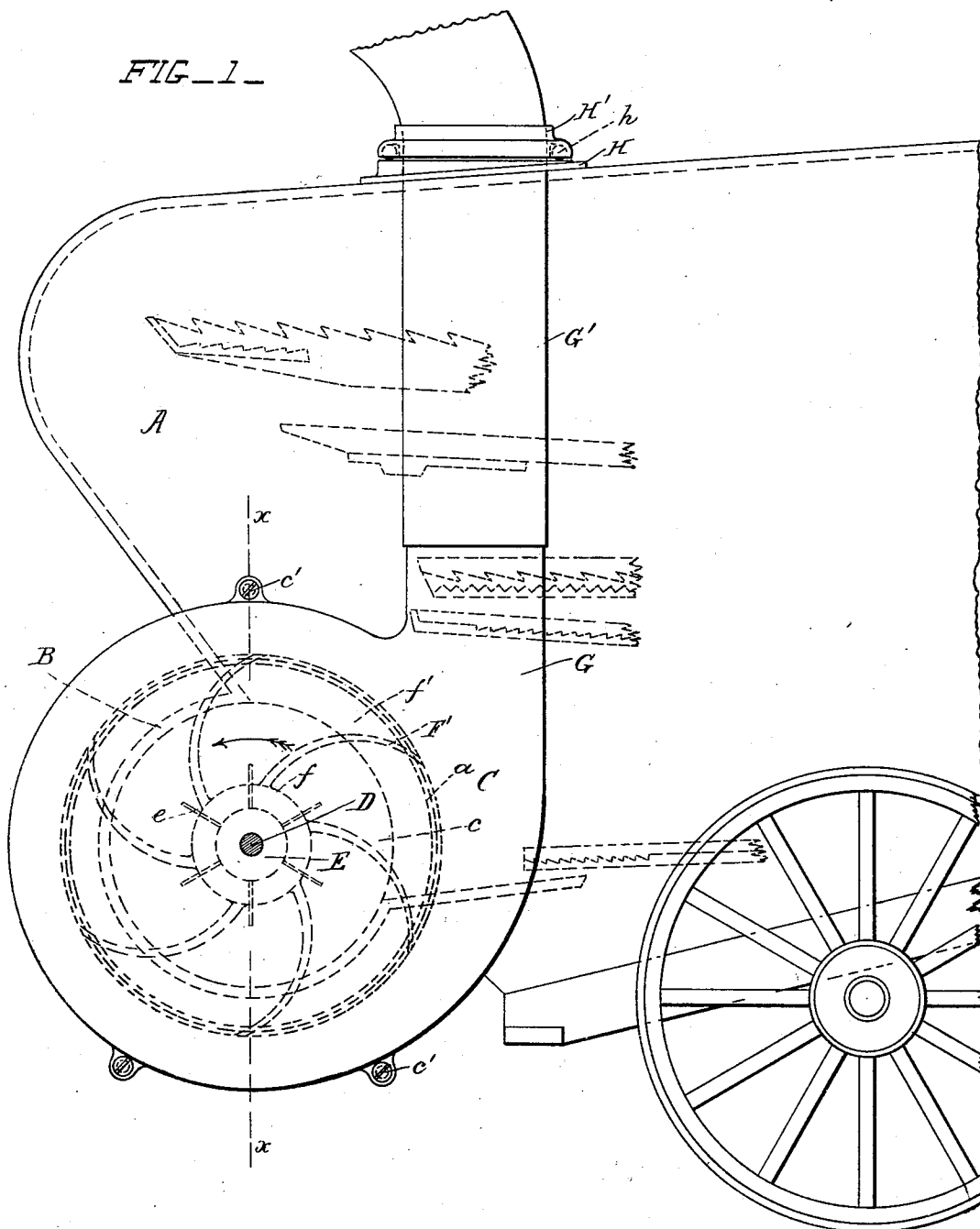


F. F. LANDIS.
STRAW STACKER.

No. 512,553.

Patented Jan. 9, 1894.

FIG. 1—



WITNESSES:

Walter Allen
Thos E Robertson

INVENTOR

Frank F. Landis.
BY
Herbert W. Jenner.
ATTORNEY.

(No Model.)

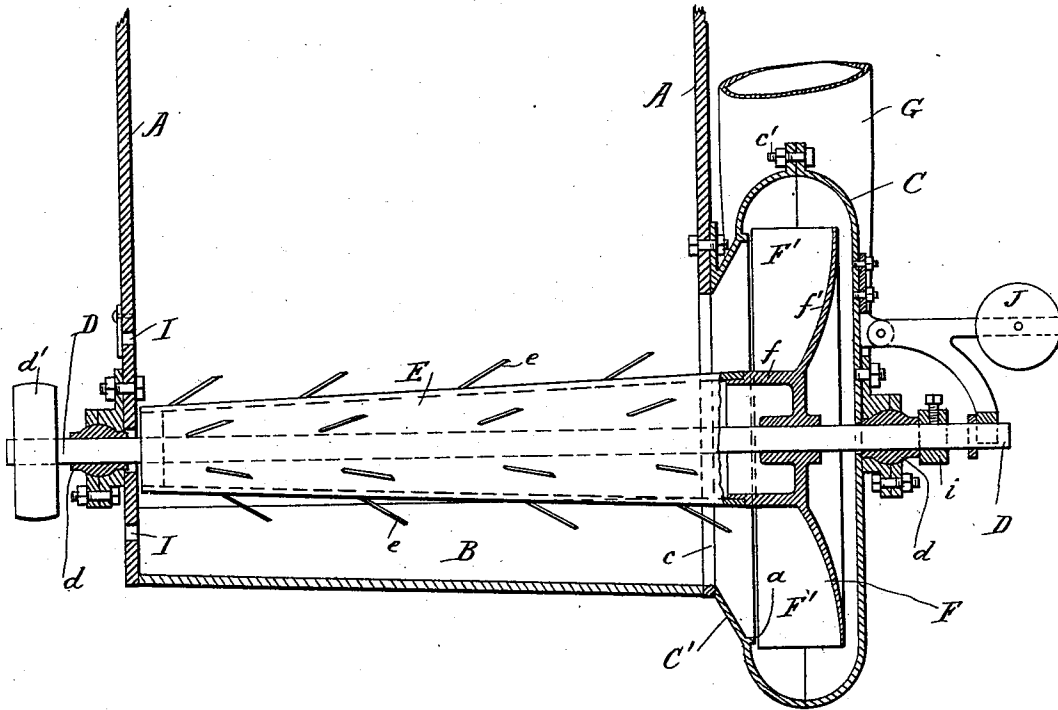
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FIG. 2.



WITNESSES:

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INVENTOR

Frank F. Landis.

BY

Herbert W. Jenner.
ATTORNEY.

UNITED STATES PATENT OFFICE.

FRANK F. LANDIS, OF WAYNESBOROUGH, PENNSYLVANIA.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 512,553, dated January 9, 1894.

Application filed May 25, 1893. Serial No. 475,443. (No model.)

To all whom it may concern:

Be it known that I, FRANK F. LANDIS, a citizen of the United States, residing at Waynesborough, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Centrifugal Straw-Stackers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to straw stackers adapted for use in connection with thrashing machines; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed whereby the straw is discharged from the end of the machine by centrifugal force and is stacked at a convenient distance from it.

In the drawings: Figure 1 is a side view of the straw stacker attached to one end of a thrashing machine. Fig. 2 is an end view of the same taken in section on the line *xx* in Fig. 1.

A is the end portion of the casing of a thrashing machine. The thrashing machine itself may be of any approved construction adapted to separate the grain from the straw and to discharge the straw at the rear end of the machine.

B is a chamber at the rear end of the machine for receiving the straw and chaff from the various separating devices inside the machine portions of which are indicated by the dotted lines in Fig. 1. This chamber B is preferably conical and is arranged horizontally, but it may be cylindrical if desired.

C is the discharger casing secured outside the casing A at the larger end of the chamber B.

C' is a conical throat piece which connects the discharger casing with the opening *c* at the end of the chamber B.

D is a shaft journaled in the bearings *d*, secured to the casings A and C, and provided with a belt pulley *d'* for revolving it. The direction of the revolution of the shaft D is indicated by the curved arrow in Fig. 1.

E is a barrel secured upon the shaft D in-

side the chamber B. This barrel is preferably conical but it may be made cylindrical if desired, and the barrel and the chamber it works in are usually made to correspond in form. The barrel is preferably provided with teeth *e* projecting outwardly and laterally toward the discharge opening *c*, but the presence of these teeth is not absolutely essential to the satisfactory discharge of the straw.

The discharger casing C is preferably made in two parts secured together by bolts *c'* for the greater convenience in putting the device together.

F is the discharger secured upon the shaft D inside the discharger casing. This discharger consists essentially of a web-plate or disk secured on a revolving shaft and provided with arms which catch the straw and forcibly project it up the delivery passage. This discharger is provided with a short cylindrical portion *f* of the same size as the end of the barrel against which it abuts, and an outwardly curved web *f'*. F' are the curved arms of the discharger which are arranged symmetrically about its axis as shown in Fig. 1. A bead *a* is formed on the inside of the discharger casing around the throat piece and is accurately faced off so that the side edges of the tips of the arms F may work as close as possible to it without absolutely touching it.

G is the delivery passage of the discharger, and G' is the delivery pipe which is swiveled upon the circular end of the delivery passage.

H is a bracket secured to the machine casing A, and H' is a plate secured to the delivery pipe. The delivery pipe passes through a hole in the bracket H and balls *h* are interposed between the plate H' and the bracket so that the delivery pipe is supported and may be swiveled around in either direction.

I are the air holes in the end of the chamber B, and similar holes may be provided in the curved side wall of the chamber if desired. These holes may be provided with means for closing them or partially closing them, such as cover plates of approved construction, but

the air holes I may be omitted altogether if desired.

The shaft D is movable longitudinally in its bearings, and *i* is a collar which permits the edges of the arms F' to run very close to the bead *a* and to be moved back from it for a considerable distance.

A weight J, or its equivalent, such as a spring, may be used to press the discharger toward the bead *a*, or it may be used to assist the air pressure. The teeth *e* may be inclined in the direction of their circular motion if desired and may be arranged in straight rows or spirally around the barrel.

15 The operation of the device is as follows: The shaft D and the discharger are revolved rapidly and the arms of the discharger draw the air through the throat piece and drive it up the discharge pipe. This action of the discharger
20 arms causes an increase in the pressure of the air in the discharger chamber, behind the web *f'*, above the pressure of the atmosphere, and this pressure holds the edges of the arms in close proximity to the bead *a* so that very
25 little air can escape backward into the throat piece. The straw, chaff and other rubbish which fall into the chamber B are drawn laterally into the discharger. The conical form of the barrel and the chamber B, together with the revolving teeth on the barrel,
30 assist the passage of the straw into the throat piece, and at the same time cause the straw to revolve about the barrel. The straw slides freely through the throat piece and is caught
35 by the curved arms of the discharger. These arms catch the straw, when it is revolving and moving laterally, and throw it off by centrifugal force together with the air drawn in with the straw. The air and straw are thrown
40 off at the same velocity from the curved surfaces of the arms and are driven up the discharge pipe. The discharge pipe is moved about so as to stack the straw at a convenient distance from the machine. A discharge
45 pipe of large size is not requisite because the arms of the discharger operate directly on the straw and throw it and the air off at an equal velocity, and the blast of air is only relied on to keep the straw in continuous motion in the discharge pipe. When the
50 straw accumulates in the chamber B, or when bunches of straw get into the said chamber, the dense straw is drawn into the discharger and some of it strikes against the web *f'*. The discharger does not become choked
55 however because it then moves automatically away from the bead *a* and allows the straw a free passage between the arms and the bead. If this free passage were constantly provided much of the air would escape and the efficiency of the discharger would be greatly reduced. The edges of the arms bear against a portion of the straw and the straw slides up the arms until it strikes
60 the bead. The straw then tips in between

the arms and is thrown off by them. As soon as the accumulation of straw has been discharged, the discharger resumes its original position automatically with the edges of the arms in close proximity to the bead.

I am aware of the patent of J. Rayner, No. 45,676, dated December 27, 1864, and that it is not new to combine an ordinary exhaust fan with a separator, for removing dust, chaff and short straw from the separator, but an ordinary exhaust fan is not effective in removing the long unbroken straw such as ordinarily discharged from thrashing machines.

What I claim is—

1. In a centrifugal stacker, the combination, with a straw chamber, and a discharger casing provided with a delivery passage; of a discharger consisting of a revoluble web-plate provided with arms and operating to forcibly project the straw up the said delivery passage.

2. In a centrifugal stacker, the combination, with the straw chamber provided with an opening at one end, and the discharger casing secured over the said opening; of a shaft passing through the said straw chamber and casing, a barrel secured on the said shaft inside the said chamber, and a discharger secured on the said shaft inside the said casing and provided with arms and abutting against the end of the said barrel, substantially as set forth.

3. In a centrifugal stacker, the combination, with a conical straw chamber provided with an opening at its larger end, and the discharger casing secured over the said opening; of a shaft passing through the said straw chamber and casing, a conical barrel secured on the said shaft inside the said chamber, and a discharger provided with arms and secured on the said shaft inside the said casing adjacent to the larger end of the barrel, substantially as set forth.

4. The combination, with the barrel provided with laterally inclined teeth, of the discharger provided with arms and abutting against one end of the barrel, and casings inclosing the said parts, substantially as set forth.

5. The combination, with the straw chamber having an opening at one end, of the conical throat piece secured to the said chamber, the discharger casing secured to the said throat piece, and a revoluble discharger provided with arms and operating to remove the straw from the straw chamber, substantially as set forth.

6. In a centrifugal stacker, the combination, with the discharger casing provided with an inlet opening at one side, of the laterally-movable, revoluble discharger provided with a web and with arms and normally held in close proximity to that part of the casing around the inlet opening by the pressure of

the air behind the said web, substantially as set forth.

7. In a centrifugal stacker, the combination, with the straw chamber, and the dis-
5 charger casing secured at one end of it, of a yielding discharger provided with arms and revolving in close proximity to the inlet opening in its casing, said discharger being adapted

to be moved laterally by the incoming straw to prevent it from becoming choked. 10

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

FRANK F. LANDIS.

Witnesses:

HERBERT W. T. JENNER,

A. D. MORGANTHALL.