

No. 636,355.

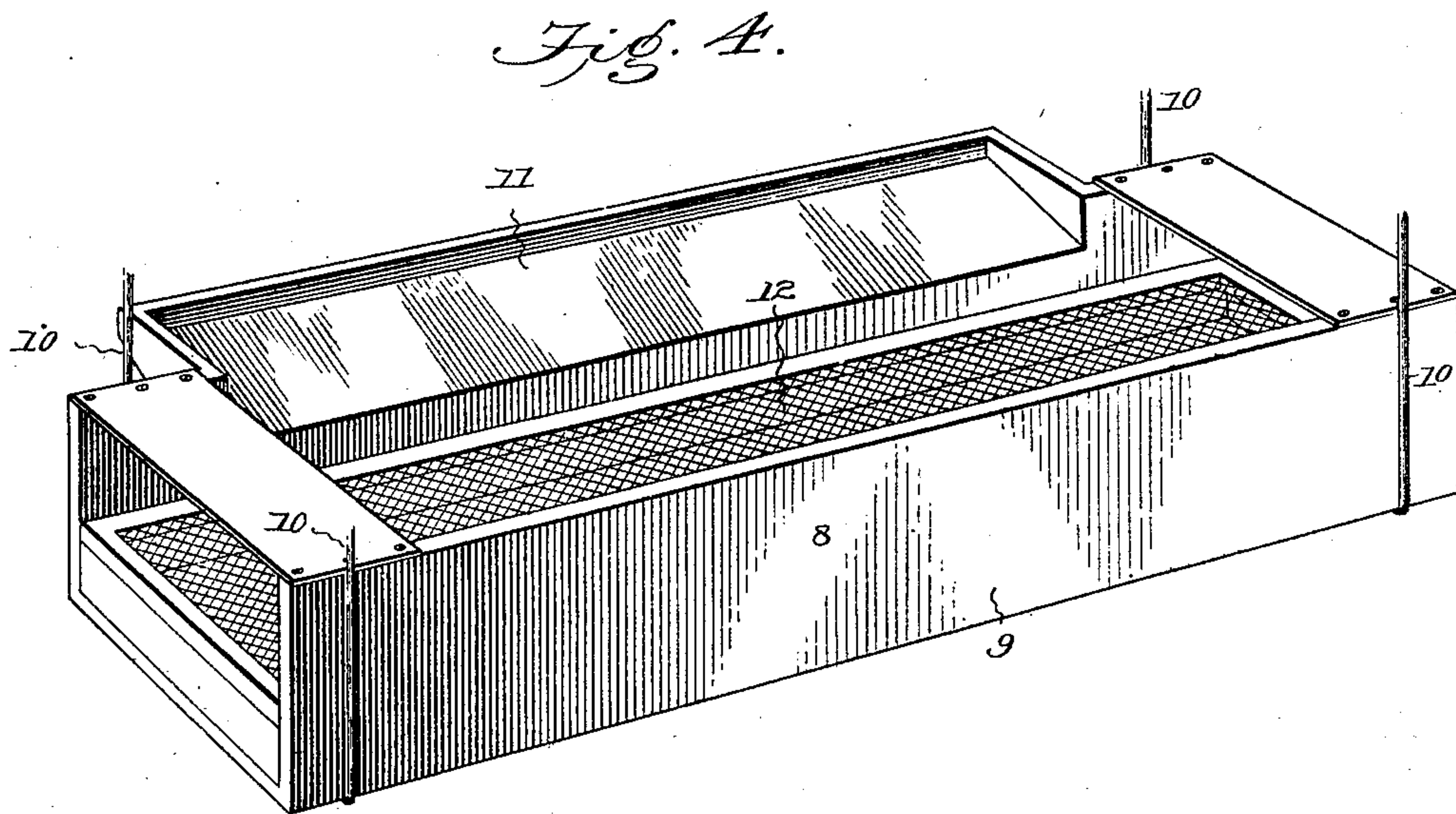
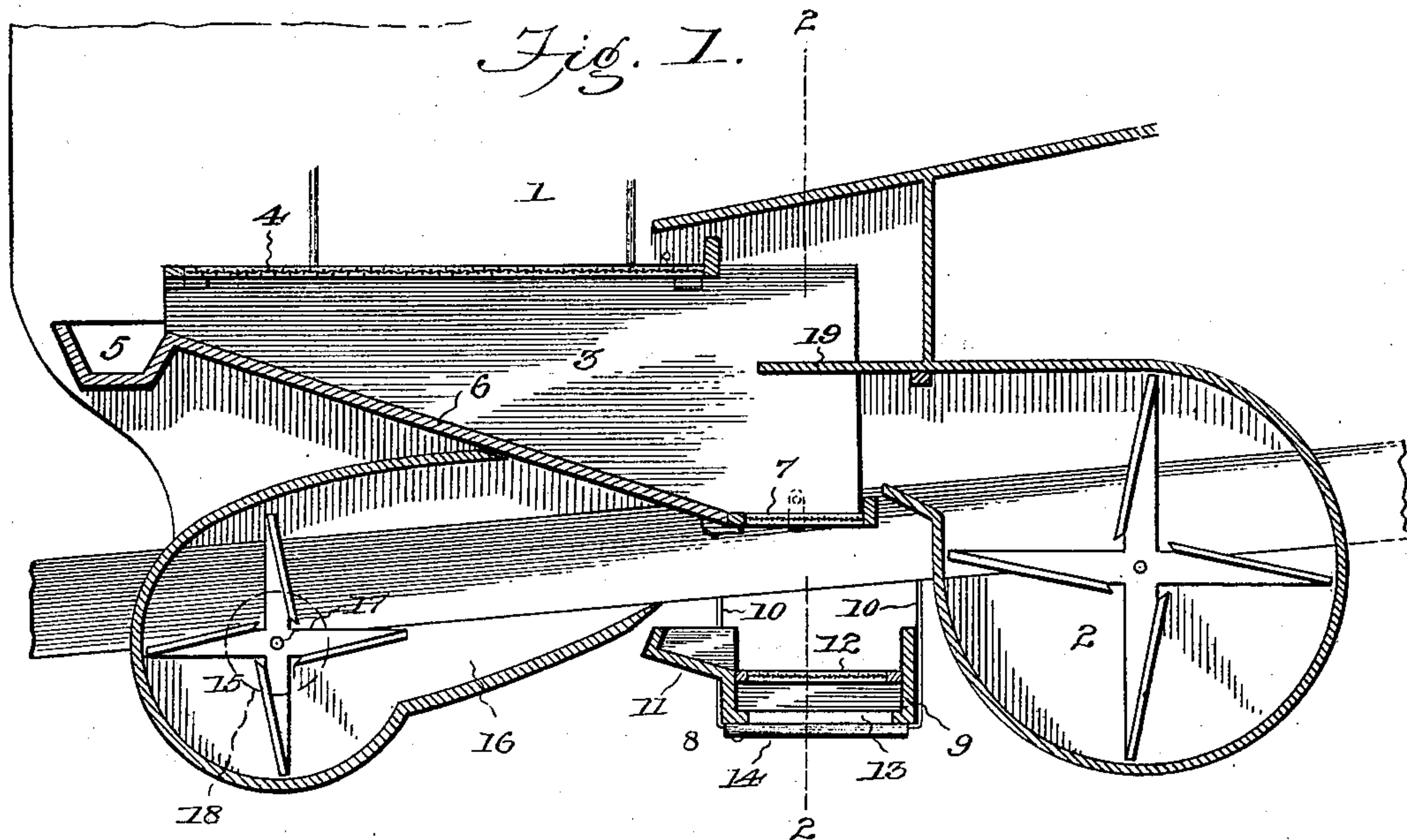
Patented Nov. 7, 1899.

W. PFOFF.
THRESHING MACHINE.

(Application filed Mar. 11, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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By *his* Attorneys,

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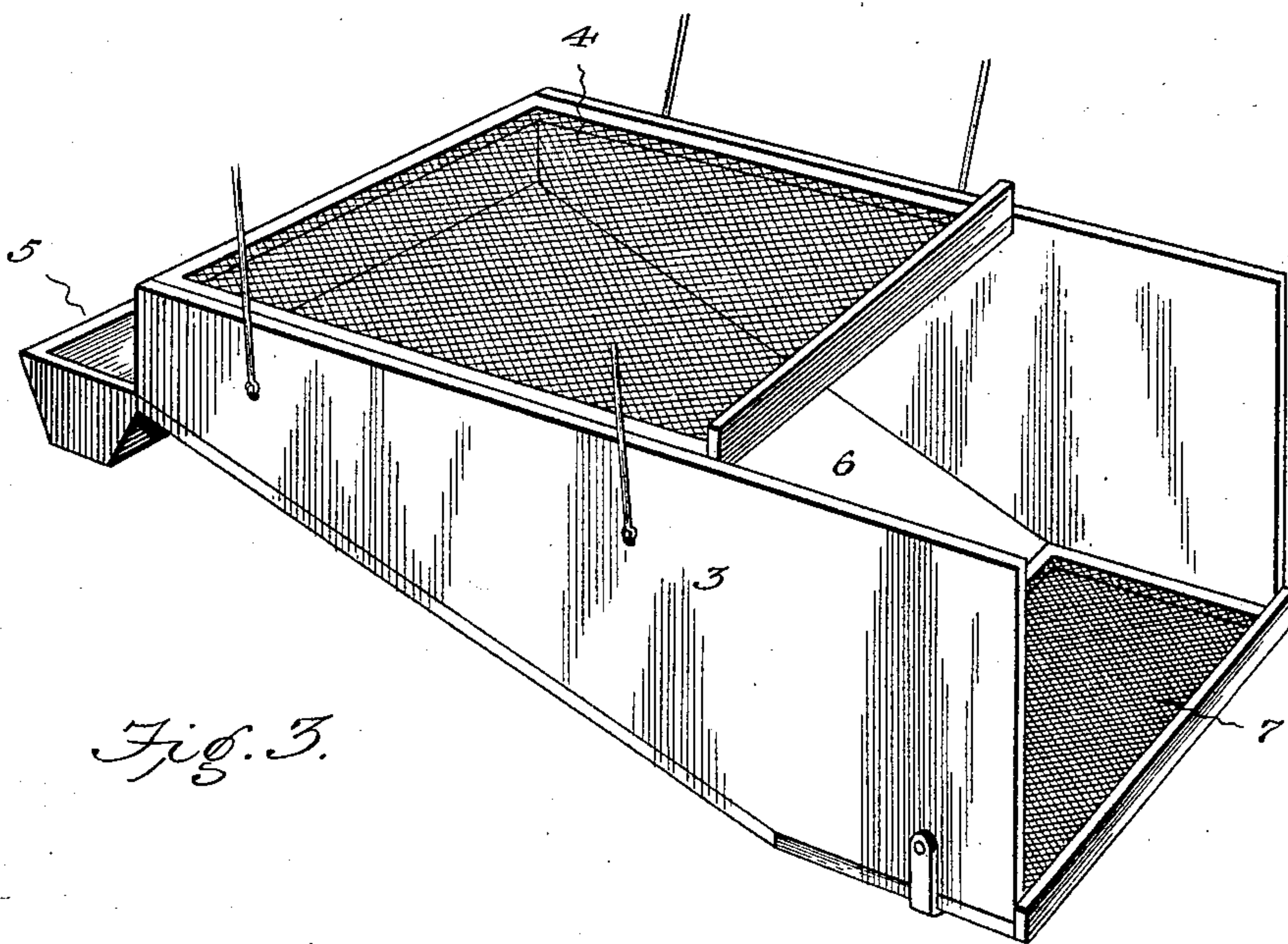
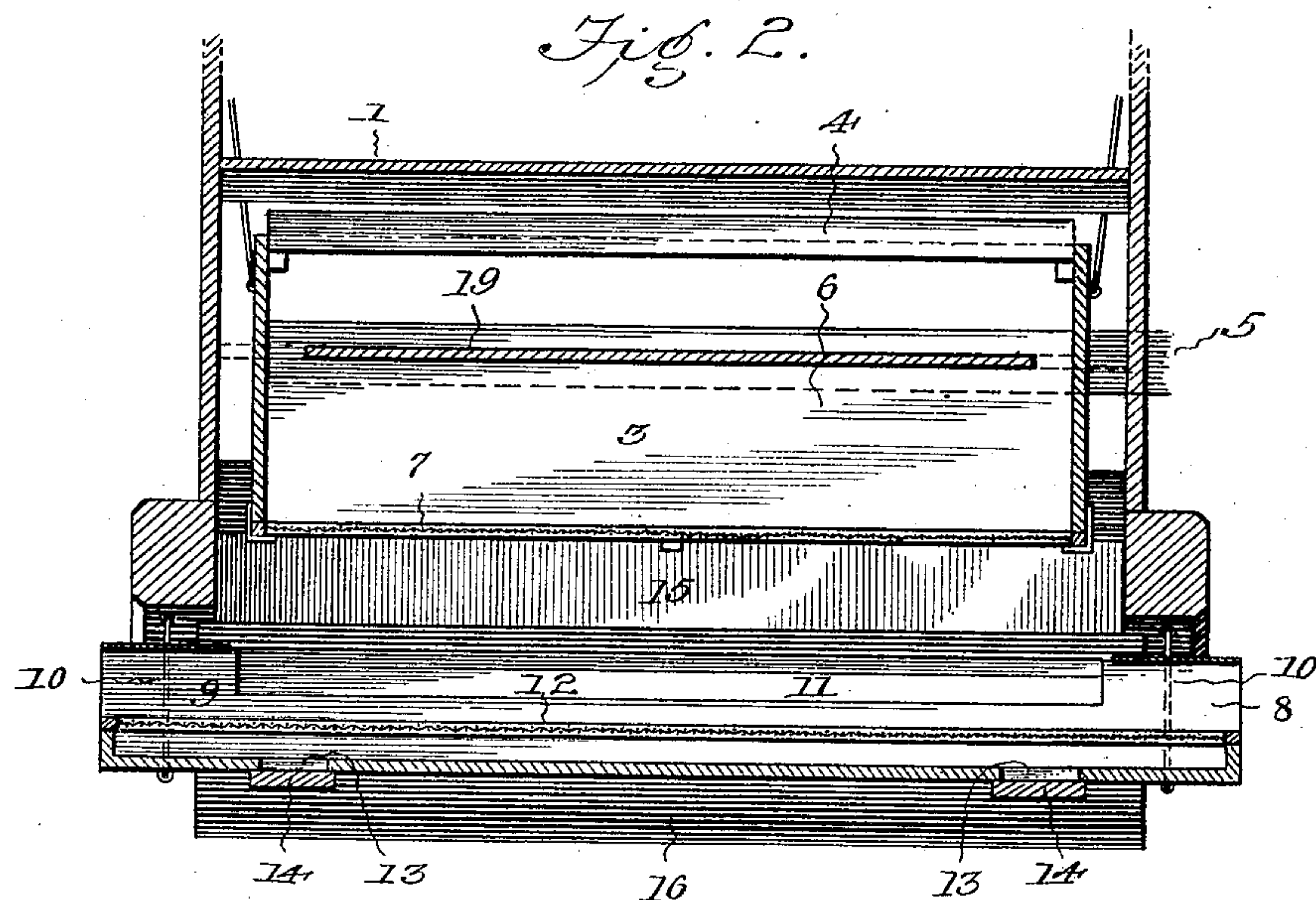
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(No Model.)

2 Sheets—Sheet 2.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM PFOFF, OF HUNTINGBURG, INDIANA.

THRESHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 636,355, dated November 7, 1899.

Application filed March 11, 1898. Serial No. 673,523. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM PFOFF, a citizen of the United States, residing at Huntingburg, in the county of Dubois and State of Indiana, have invented a new and useful Threshing-Machine, of which the following is a specification.

This invention relates to improvements in threshing-machines designed to effect a saving in the grain which in ordinary threshing-machines is blown out more or less through the rear delivery end thereof upon the straw-stack; and the primary object that I have in view is to provide a separating and cleaning mechanism for thoroughly cleaning the grain and separating the cheat, small grains, short straws, and chaff from the good grain.

A further object of the invention is to provide an improved cleaning mechanism which obviates the employment of so strong a blast of air from the main fan as to carry out the grain from the rear-end of the machine, particularly when threshing and cleaning damp heavy grain. In my improved cleaning mechanism for threshing-machines I employ an auxiliary blast-fan, which in a measure counteracts the blast from the main fan and reduces the tendency of the main blast to carry away the grain and deposit it on the straw-stack.

My improved cleaning mechanism is especially adapted for service in cleaning different kinds of grain—such as wheat, oats, barley, and rye—and it is well adapted for operation on grain in different conditions, wet as well as dry grain, as it comes from the field or stack.

The invention consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a longitudinal sectional view through a part of a threshing-machine having my improved cleaner embodied as a part thereof. Fig. 2 is a transverse sectional view on the plane indicated by the dotted line 2 2 of Fig. 1. Fig. 3 is a detail perspective view of the primary cleaning-shoe modified in ac-

cordance with my invention. Fig. 4 is a detail perspective view of the auxiliary cleaning-shoe.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

In order that others skilled in the art to which my invention relates may understand the construction and operation thereof, I have illustrated a part of the threshing-machine by Figs. 1 and 2 and embodied my improved cleaning mechanism therein.

The numeral 1 indicates a part of a threshing-machine which in all substantial respects is similar to those now in use in the art, and 2 is the ordinary blast-fan, arranged to deliver the blast against and through the cleaning-shoe 3. The cleaning shoe as ordinarily constructed embraces a cheat-screen below the wheat screen or riddle, and the tail end of this cleaning-shoe carries a transverse trough 5 for delivering the tailings to the return-elevator, (not shown) by which the tailings are carried back to the threshing-cylinder. In my invention I modify the construction of the cleaning-shoe by dispensing with the usual cheat-screen and employing an imperforate grain-board and an extra wheat-screen in connection with the ordinary wheat screen or riddle 4. The ordinary riddle or screen 4 is fitted or supported in the primary shoe in the ordinary or any preferred manner, and below this screen or riddle 4 is arranged the inclined grain-board 6. This grain-board is imperforate throughout its length and width, and it slopes or inclines downwardly and forwardly from the trough 5, which delivers to the tailings-elevator of the ordinary threshing-machine. The shoe 5, according to my invention, is provided with a short horizontal wheat-screen 7, which is rigidly attached to the sides of said shoe at the lower terminal of the imperforate inclined board 6, and this wheat-screen extends forwardly from the grain-board, so as to form practically a continuation thereof, the short transverse screen 7 lying at an angle to the inclined grain-board, as shown. The main shoe 3 is hung or suspended by ordinary means within the threshing-machine 1, so as to vibrate therein, and below the main shoe I suspend an auxiliary shoe 8, which is arranged to receive materials

from the short transverse riddle or screen 7 at the terminal of the inclined grain-board. The auxiliary shoe consists of a narrow trough-shaped receptacle 9, which extends transversely across the machine, and the said shoe 8 is suspended from the machine 1 by means of the links 10. The main cleaning-shoe and the auxiliary shoe are designed to be vibrated or reciprocated by suitable connections with the operating parts of the threshing-machine; but as the driving devices for the shoes may be of the ordinary or any preferred construction I have not deemed it necessary to illustrate and describe in detail the means by which the main and auxiliary shoes are vibrated or driven. The auxiliary cleaning-shoe lies in rear of the main shoe 3, and it is situated between the said main shoe and the main blast-fan 2. Said auxiliary shoe 8 is provided with an apron 11, which is rigidly attached to the trough-shaped receptacle 9 of said shoe at the side thereof next to the supplementary blast-fan 15. This apron 11 is arranged in an inclined position on the auxiliary shoe, to which it is attached rigidly in any suitable way, and said apron extends toward the casing of the fan 15, so as to terminate beyond the rear edge of the narrow screen or riddle 7, forming a part of the main cleaning-shoe.

12 designates a cheat riddle or screen, which is removably fitted in the trough of the auxiliary shoe 8. This riddle or screen 12 is attached to a suitable frame adapted to fit snugly within the trough or receptacle 9 of the auxiliary shoe, and said riddle or screen 12 is adapted to be removed from the shoe by withdrawing it endwise from one side of the machine or one end of the shoe 8. In the bottom of the trough or receptacle 9 of the shoe 8 are provided the transverse slots or openings 13, two of which are preferably used, one near each end of said shoe, and these openings are adapted to permit the small grains to pass from the shoe into suitable receptacles placed beneath the machine. In separating some kinds of grain it is desirable to retain the grain in the shoe, and I therefore employ the valves or gates 14, which are adapted to close the discharge slots 13, said valves being connected to the bottom or under side of the shoe in a manner to be adjusted across the slots 13 or to be thrown out of line therewith to open the same.

One of the essential features of my invention consists in the employment of an auxiliary blower or fan 15, which is arranged to discharge its blast or current of air through the screen or riddle 7 in a direction contrary to the line of travel of the blast or current from the main fan 2. This auxiliary fan 15 has its casing 16 supported or attached in a suitable way to the part 1 of the threshing-machine, and the discharge mouth or opening from the fan-casing 16 is arranged to direct the blast of air under the screen or riddle 7 of the primary shoe. The fan-shaft 17 is jour-

naled in suitable bearings on the main machine 1, and to one end of the shaft is attached a pulley 18, around which passes a driving-belt, which is led from some rotating part of the threshing-machine, so as to drive the auxiliary fan by a suitable power connection. The auxiliary fan is situated below the rear part of the primary cleaning-shoe 3; but the blast from said fan does not act on the screen or riddle 4 of the primary shoe, because the inclined grain-board 6 is interposed between the fan and said riddle 4 of the primary shoe. The auxiliary fan is rotated by a belt, which is led from a rotating part of the threshing-machine, so as to drive the auxiliary fan, and this fan is arranged to deliver its blast through the screen or riddle 7 in a contrary direction to the blast from the main fan 2, and thus the blast from the auxiliary fan counteracts in a measure the blast from the main fan. This arrangement of the cleaning-shoe and the main and auxiliary fans effects a peculiar result in the treatment and cleaning of the grain. The improvement obviates the strong current or blast heretofore necessary for the elimination of the chaff, short straws, and refuse from the grain by the primary shoe and the main fan; but, as heretofore pointed out, one objection that exists to such strong blast to the main fan is that it carries some of the grain from the shoe and machine onto the straw-stack. My improvement overcomes this objection and enables the main fan to be run at small speed or reduces the capacity of said fan and at the same time the grain is more thoroughly cleaned from the small grains, cheat, chaff, and straw without the liability of the loss of good grain.

The blast from the main fan is directed primarily to the under side of the main screen or riddle 4 of the primary shoe 3 by a wind-board 19. This wind-board is arranged in a fixed position within and across the machine 1, and it lies between the shoe 3 and the main fan 2. Said wind-board occupies a horizontal position below the plane of the riddle or screen 4 of the main shoe, and in the preferred embodiment of the invention this wind-board projects into or between the sides of the main shoe 3, so that it overhangs the wheat screen or riddle 7, and in a measure intercepts the blast from the auxiliary fan 15.

It will be noted that the auxiliary shoe is suspended by the links 10 below the main shoe and in the vertical plane of the wheat-riddle 7, which forms an integral part of the main shoe. This main shoe is reciprocated lengthwise within the machine-frame by suitable power connections, and hence the position of the short wheat-screen 7 of said main shoe varies with relation to the suspended auxiliary shoe. To prevent the grain from escaping and becoming lost during the reciprocation of the main shoe, I provide the auxiliary shoe with the laterally-extended apron 11, which serves to catch the grain that does not lodge upon the screen of the auxiliary shoe,

and which apron is inclined toward the screen of the auxiliary shoe to deliver the grain thereto. The blast from the auxiliary fan is directed over the auxiliary shoe and upwardly through the wheat-screen of the main shoe, so as to reclean the wheat before it lodges upon the auxiliary shoe, and any light matters thrown upwardly by the blast from the fan 17 are intercepted by the projecting portion of the casing for the fan 2 and carried out through the open space between the top riddle and the grain-board.

In the operation of the machine the fans deliver the blasts or currents of air in opposite directions, the main blast from the fan 2 traversing the screens or riddles of the primary and auxiliary shoes, while the blast from the auxiliary fan is delivered through the riddle or screen 7 of the main shoe 3, so as to, in a measure, counteract the blast from the main fan, and also enable the blast from said auxiliary fan to traverse the upper screen of the auxiliary shoe. The grain from the riddle or screen 4 traverses the inclined board 6 to the screen 7, through which it passes into the auxiliary shoe to be deposited upon the cheat-riddle 12 thereof, and this riddle separates the small grains and cheat from the large good grain, which is discharged from one or both ends of the shoe 8, while the cheat and small grain pass through the openings 13 in said shoe. In cleaning certain kinds of grain the valves or gates 14 are adjusted to close the openings 13, and as the shoe is suspended below the machine the operator can have ready access to said valves to adjust them as required.

I am aware that changes in the form and proportion of parts and in the details of construction may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of my invention, and I therefore reserve the right to make such modifications as clearly fall within the scope of the invention.

Having thus described the invention, what I claim is—

1. The combination of the upper main shoe provided with the top riddle, 4, and the grain-board, 6, downwardly inclined from the tail

toward the front of said shoe, the blast-fan, the narrow horizontal screen, 7, the fan-casing having its upper portion projecting well within said shoe and over said riddle and its lower lip substantially closing the space between it and the screen, 7, and the fan and casing, 16, 17, arranged to produce upward blast through said screen, 7, whereby the light matters thrown upwardly by the blast from the fan, 17, are intercepted by the projecting portion of the fan-casing and carried out through the upper space between the top riddle and the grain-board, substantially as described.

2. In a cleaning mechanism for threshing-machines, the combination with a main shoe having a screen at its lower end, and a main fan, of a transversely-arranged auxiliary shoe suspended below the main shoe in the vertical plane of said lower screen thereof, an inclined apron carried by the auxiliary shoe and extending beyond the vertical plane of the lower screen in said main shoe, and an auxiliary fan situated adjacent to the apron of the auxiliary shoe and arranged to deliver its blast over said shoe and through the screen of the main shoe, substantially as described.

3. In a cleaning mechanism for threshing-machines, the combination of a main shoe provided with an upper riddle, an inclined grain-board and a narrow screen at the lower end of said grain-board, a fixed wind-board arranged below the upper riddle and over the screen of said shoe, a main fan arranged to deliver its blast directly to the main shoe and below the wind-board, an auxiliary shoe suspended below the narrow screen of the main shoe and provided with a laterally-extended apron, and an auxiliary fan situated below the grain-board of the main shoe and at one side of the auxiliary shoe to deliver its blast over the latter and through the lower screen of the main shoe, 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.

WILLIAM PFOFF.

Witnesses:

MATHIS BLESSINGER,
ALBERT MENDEL.