(No Model.) 2 Sheets—Sheet 1.

W. W. BRIGGS.

GRAIN SEPARATOR.

No. 526,610. Patented Sept. 25, 1894.

Fig. 1.

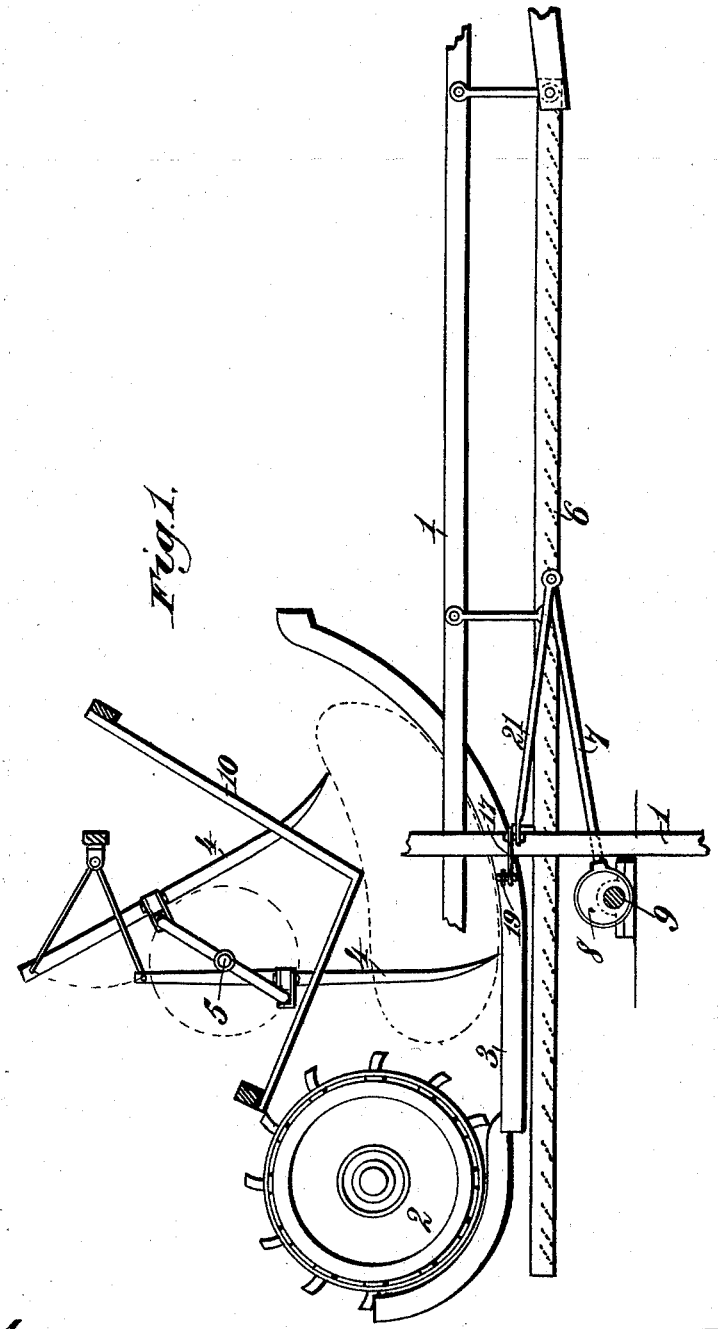

Fig. 5.

Fig. 3.

Fig. 4.

Witnesses.
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Thos. A. Gowen

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By James L. Norris.
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(No Model.) 2 Sheets—Sheet 2.

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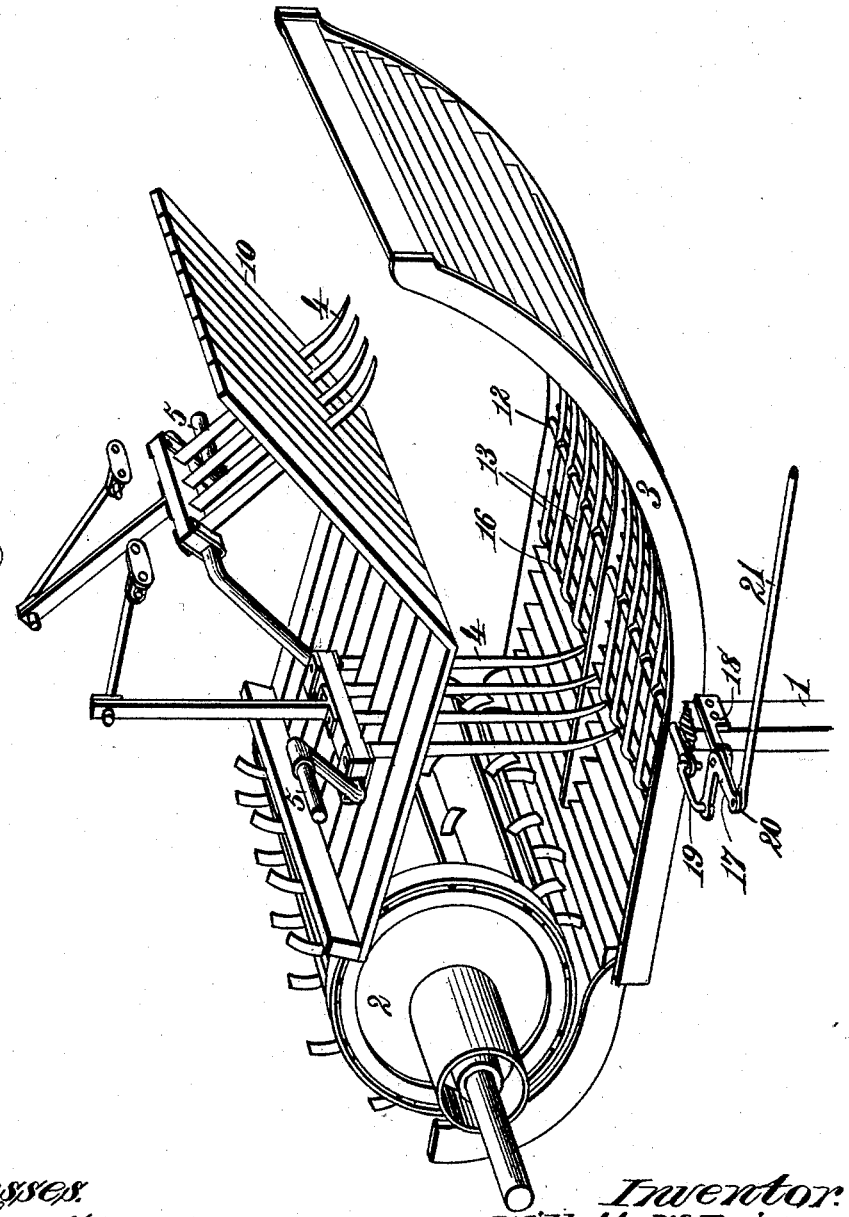
Fig. 2.



Witnesses.
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Thos. A. Gunn

Inventor.
Willett W. Briggs.
By James L. Norris
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UNITED STATES PATENT OFFICE.

WILLETT W. BRIGGS, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO THE ADVANCE THRESHER COMPANY, OF SAME PLACE.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 526,610, dated September 25, 1894.

Application filed November 15, 1893. Serial No. 490,994. (No model.)

To all whom it may concern:

Be it known that I, WILLETT W. BRIGGS, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented new and useful Improvements in Grain-Separators, of which the following is a specification.

This invention relates to that type of grain separators or thrashing machines wherein a grate is located in rear of the thrashing cylinder, and movable forks or other devices operate to carry the straw along and discharge it from the rear end of the grate to be subsequently operated on by other parts of the machine, for example as described and shown in Letters Patent No. 226,973.

The grate is constructed to permit the passage of grain therethrough to a vibrating grain pan or receiver located beneath the grate; and in the operation of the machine straw and chaff are liable to lodge upon the grate and not be carried off by the forks or other devices, thereby clogging the grate and interfering with the efficiency of the machine.

The object of my invention is to avoid the objection stated and to provide novel grate-cleaning devices which act to agitate the straw and chaff on the grate and place them in the path of the forks or other devices to be carried rearward thereby and discharged from the grate, while very fine particles and grain will sift through the grate. To accomplish this object my invention involves the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a detail side elevation of sufficient of the interior parts of a grain separator or thrashing machine to illustrate my invention. Fig. 2 is a detail perspective view, showing the thrashing cylinder, the grate, the forked guard, and the grate-cleaning devices. Fig. 3 is a detail plan view of one of the grate-cleaning fingers. Fig. 4 is a detail side elevation of the same; and Fig. 5 is a detail transverse sectional view of the same.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates a portion of the stationary frame work of a grain separator; 2, the thrashing cylinder; 3, the grate extending rearwardly from the thrashing cylinder; 4, the forks mounted on a crank-shaft 5; and 6 a vibratory grain pan or receiver projecting beneath the grate, and adapted to be vibrated or reciprocated longitudinally through the medium of any suitable mechansm. In the present instance the grain pan or receiver is vibrated or reciprocated by a connecting rod 7 engaging a cam 8 on the main drive-shaft 9 of the separator.

The grate is constructed to permit the passage of grain therethrough to the vibratory grain pan or receiver, and this may be accomplished by constructing the grate of transverse bars suitably spaced apart or separated, and connected with suitable side bars. The grate is horizontal for a portion of its length, and then rises in the arc of a circle, and the forks project through a slotted guard 10 and operate to carry the straw rearward and discharge it from the upper end of the grate to be subsequently operated on by beaters and other parts of the machine, substantially the same as described in the patent before mentioned, for which reason I do not deem it essential to more fully describe these features.

The grate cleaner is composed of a horizontal shaft or rod 12, having its end portions suitably mounted in bearings in the sides of the grate, so that the shaft or rod can move or reciprocate lengthwise; and upon the shaft is mounted a series of cleaner fingers 13 arranged at suitable distances apart, and so spaced that they can move laterally in the spaces between the fork fingers for the purpose of agitating the straw and chaff on the grate to place them in the path of the forks and to sift very fine particles and grain through the grate. The cleaner fingers are preferably mounted on the shaft or rod by providing each finger between its extremities with a sleeve 14, so that the cleaner fingers can be strung upon the shaft or rod and be secured by pins 15 or otherwise. The cleaner fingers are also preferably V-shaped in cross section, as clearly shown in Figs. 3 and 5, and the extremities of the fingers, nearest the thrashing cylinder, are bent or turned down-

wardly, as at 16, to extend between the cross bars of the grate, so that such extremities will not interfere with the proper movement of the straw along the grate.

The shaft or rod 12 is reciprocated lengthwise for the purpose of imparting lateral movements to the cleaner fingers, and this may be accomplished by any suitable mechanism. As here illustrated, the shaft or rod 12 is reciprocated by means of a bell-crank lever 17, pivoted at its angle to a supporting bracket 18 on the frame work 1, and having one of its arms connected by a link 19 with one end of the shaft or rod 12, and its other arm connected to one end of a pitman 21, which, at its opposite end, is pivotally engaged with the vibratory grain pan or receiver 6 in such manner that the longitudinal reciprocating movement of the pan or receiver will oscillate the bell-crank lever to reciprocate the shaft or rod 12, and thereby move the cleaner fingers laterally.

By the means described straw and chaff are not liable to lodge upon the grate and clog the same; but, on the contrary, the fine straw and chaff are agitated and placed in the path of the forks to be carried rearward thereby and discharged from the grate, while very fine particles and grain will sift through the grate.

It is obvious that the cleaner fingers should be so adjusted with relation to the fork fingers as not to strike the latter at any time, as such would be objectionable and likely result in damage.

I do not confine myself to the particular construction of grate illustrated and described, as this feature may be variously modified. Nor do I confine myself to the employment of forks mounted on a crank-shaft for carrying the straw rearward and discharging it from the grate, as other devices for this purpose may be employed.

I prefer to reciprocate the grate cleaner laterally through the medium of connecting devices operated by the vibrating or reciprocating grain pan or receiver, as this provides a very simple and efficient construction and arrangement; but the grate cleaner may be otherwise reciprocated laterally if desired.

Having thus described my invention, what I claim is—

1. The combination of a thrashing cylinder, a stationary grate extending rearward and upward from the cylinder and on which the straw is delivered therefrom, straw-raking mechanism located above and independent of the grate, a horizontally reciprocating grate cleaner working over the surface of the grate and arranged below the raking mechanism in rear of the cylinder, for agitating the straw and chaff on the grate, and means for horizontally reciprocating the grate cleaner, substantially as described.

2. The combination of a thrashing cylinder, a grate extending rearward from the cylinder and on which the straw is delivered therefrom, devices above and independent of the grate for carrying the straw rearward, a laterally reciprocating grate cleaner arranged below the said straw carrying devices in rear of the cylinder, for agitating the straw and chaff on the grate, and means for laterally reciprocating the grate-cleaner, substantially as described.

3. The combination of a thrashing cylinder, a grate arranged in rear of the cylinder and on which the straw is delivered therefrom, devices above and independent of the grate for carrying the straw rearward, a grate-cleaner composed of a lengthwise reciprocating shaft or rod having a series of attached cleaner fingers working over the surface of the grate in rear of the cylinder and beneath the straw-carrying devices, and means for lengthwise reciprocating the shaft or rod, substantially as described.

4. The combination with the cylinder and concave of a grain separator, of a grate extending rearward therefrom, a grate-cleaner arranged in rear of the cylinder and concave and reciprocating laterally in a horizontal plane, and means for actuating the grate cleaner, substantially as described.

5. The combination with the grate of a grain separator, and raking mechanism arranged above and independent of the grate, of a laterally movable grate-cleaner arranged over the grate and below the raking mechanism, a movable grain-pan or receiver below the grate, and connecting mechanism between the grain-pan or receiver and the grate-cleaner for operating the latter, substantially as described.

6. The combination with a thrashing cylinder, a grate extending rearward therefrom, and means for carrying the straw rearward and discharging it from the grate, of a movable grate-cleaner composed of a shaft or rod having a series of cleaner fingers, the extremities of which in proximity to the cylinder are bent or turned downward, and means for actuating the grate-cleaner, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLETT W. BRIGGS.

Witnesses:
A. G. HIGHAM,
L. B. ANDERSON.