No. 682,670. Patented Sept. 17, 1901.

C. CLOSZ.

GRAIN SEPARATING SCREEN.

(Application filed Dec. 29, 1900.)

(No Model.)

Fig. 1.

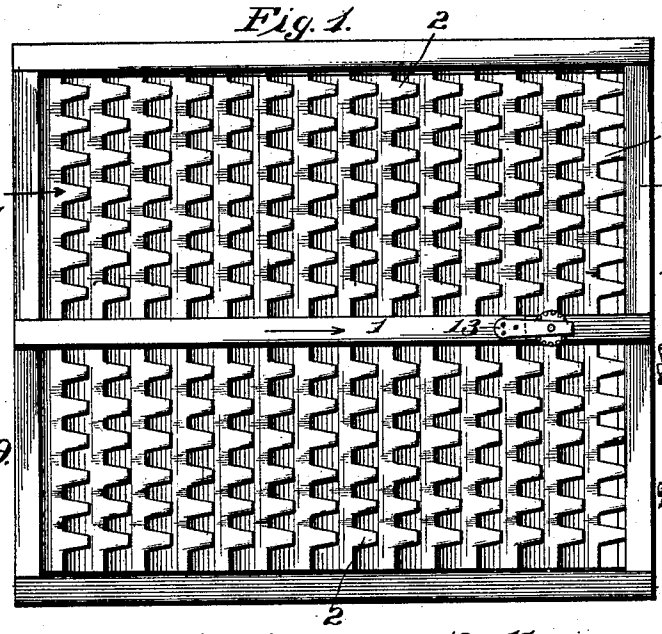


Fig. 6.

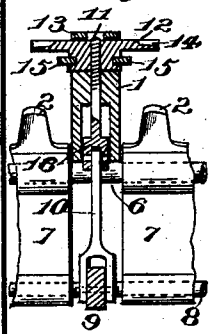


Fig. 7.

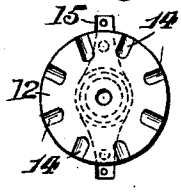


Fig. 9.

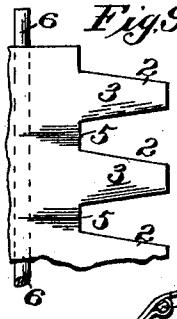


Fig. 2.

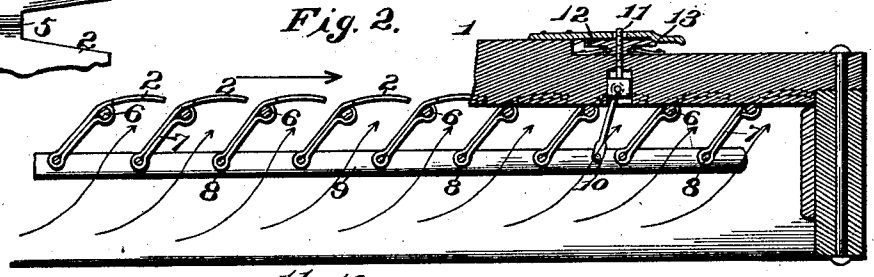


Fig. 3.

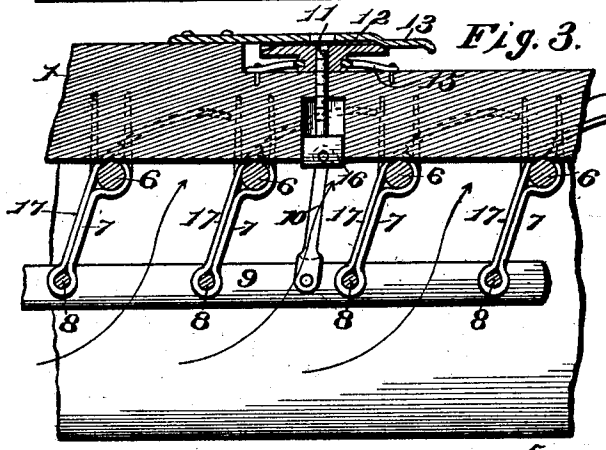


Fig. 4.



Fig. 5.

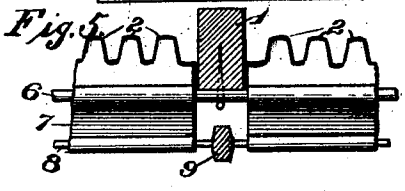
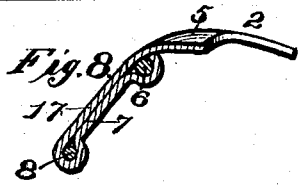


Fig. 8.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES CLOSZ, OF WEBSTER CITY, IOWA.

GRAIN-SEPARATING SCREEN.

SPECIFICATION forming part of Letters Patent No. 682,670, dated September 17, 1901.

Application filed December 29, 1900. Serial No. 41,517. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CLOSZ, a citizen of the United States, residing at Webster City, in the county of Hamilton and State of Iowa, have invented certain new and useful Improvements in Grain-Separating Screens, of which the following is a specification.

The improvement in grain-cleaning screens for threshing-machines which forms the subject-matter of this patent is illustrated in the accompanying drawings, which, in connection with the following description and the concluding claims, will set out the parts and combinations of parts which distinguish between what is old and what is claimed as new.

The screen is of the character in which the mesh surface is formed of adjustable pivoted slats to meet the requirements of different kinds and conditions of grain, so that a suitable adjustment of the slats will change their inclination, and thereby increase or diminish the openings between them to suit different kinds or sizes of grain and to control the volume of the air-currents directed upward between the slat-fingers, so that a single shaking-screen may be adapted for use in the same machine for different kinds of grain. For this purpose my improvements are directed to the form and to the construction of the fingered slats and to the provision whereby they may be adjusted, and in these particulars the novel features will be set out in the following description.

The sieve structure embodying these improvements is illustrated in the accompanying drawings in top view in Figure 1. Fig. 2 shows in vertical longitudinal section the forward end part of the screen. Fig. 3 shows enlarged, in vertical section, that part of the screen having the connections whereby the screen-slats are adjusted to close or to vary the size of the openings between the slats. Fig. 4 shows in sectional detail the concavo-convex toothed form of one of the slats at that edge at which the opening is formed between the slats. Fig. 5 shows the way in which one of the fingered slats is mounted on the top frame-bar fixed mediately of the width of the frame. Fig. 6 is a detail in cross-section of the top frame-bar, the contiguous parts of the transverse slats, and the provision for connecting and adjusting the transverse slats. Fig. 7 is a top view of the thumb-nut by which the adjustment of the slats is made. Fig. 8 is one of the sheet metal slats in transverse section, showing its doubled mounting form and the surface edge groove between the fingers. Fig. 9 is a detail in top view of the fingered edge of the slat, showing where the hollow surfaces are formed between the fingers at the edge of the slat.

The screen is designed especially for separating the chaff and coarse matter which usually comes from the first separation onto the cleaning-screen, and for such purpose the construction is especially advantageous in preventing the undue passage of the grain or small seeds when the slats are closed, or nearly so, to give effective direction to the wind-blast and a good surface for carrying straws, weeds, and other coarse material over the screen.

The frame is of rectangular form and for use is mounted in the well-known manner for a reciprocating endwise movement. A bar 1, mediately of its width, supplements the frame, while the screening-surface is formed of transverse sheet-metal slats loosely mounted on rods in the side bars and connected to the under side of the mediate bar, so that their surface-forming parts lap, and at such lapping the mesh-openings are formed for the passage of the grain. These slats are of peculiar construction, their edges formed with fingers 2 standing forward, the spaces between them forming the mesh. These fingers have a convex transverse form 3, and the edge of the slat between them has a concave form 4, making surface groove 5, Fig. 8, running back from the edge, as in Figs. 4, 5, and 9, while the fingers stand forward of the concave edge, with a slightly-downward longitudinal curve. (Best seen in Fig. 8.) The fingers so curving promote the separating effect of the wind-blast, especially when the openings between the slats are closed for certain kinds of grain and to facilitate the movement of coarse stuff over them, such closing being formed by the ends of the fingers of one slat resting on the back of the adjacent forward slat, back of its fingers. The transversely-convex form of the fingers promotes the side rolling of the grain off between them, while the concave formation of the edge of the slat, between the fingers, forms a series of

surface grooves 5, Fig. 8, at the base of and between the convex formation of the fingers to promote the free movement of the grain toward the edge of the slat. The transverse form of the slat is also peculiar in that its surface from its pivoting-rod 6 is convex longitudinally to the ends of the fingers and in the line thereof, as in Fig. 8, and its pivoted mounting on the transverse rod is formed by lapping or doubling the slat at 7, with its edge freely clasping said pivot-rod as a sleeve on the wind side of the slat, which being made of sheet metal is easily so formed. In like manner the lower edge of each slat is freely bent around a transverse rod 8, forming a sleeve whereby all the slats are connected to a longitudinal bar 9, through which the rods 8 pass, thereby freely suspending said rod 9, and when lifted or lowered has the effect to close or to open the fingers of each slat with relation to the upper surface of the contiguous slat to adjust them to give more or less width of opening between the slats or to close the fingers upon the slats. This construction for freely mounting the sheet-metal slats is important in rendering them stiff lengthwise, giving them a well-supported construction in which the sheet-metal fingers are very much increased in their stiffness, with a minimum weight. The slat doubled transversely renders it easy to make and to mount, for the mounting-rods need only to be passed through the sleeves formed by the lapped or doubled under part, so that these connections are permanent. While the sheet-metal fingers formed as described give a strong construction, the separating-surface formed thereby offers the least resistance when opened for the movement of the coarse stuff. The provision whereby the slats are adjusted consists of a bar 9, freely suspended by the rod 8, transversely passed through the sleeves formed by the doubled lower parts of the sheet-metal slats, a link 10, pivotally connecting this suspended bar to a bolt 11, passing up through the mediate bar, a nut 12 on the upper end of the bolt, and a plate-spring detent 13 on the bar engaging recesses 14, Fig. 7, in the upper surface of the nut as a means for locking it, when by turning the nut the freely-suspended bar is thereby raised or lowered, causing the transverse rocking of the loosely-mounted slats on their fixed pivot-rod 6, and thus set the slat-fingers nearer to or farther from the convex slat-surface. The nut is preferably located in a stepped or recessed part of the mediate bar near the forward end of the screen, so that the plate-spring in its engagement with the nut extends on a level with the top of said bar over its recessed part, and thereby offers no impediment to the movement of the coarse stuff over the screen. A convenient way of making the nut is seen in Figs. 6 and 7, wherein its upper surface is seen as provided with notches 14 and the plate-detent 13 formed to engage them, as in Fig. 3. A keeper of two plate-sections 15 engages a groove in the nut as a convenient means of securing it in place, while the pivotal connection of the bolt-head with the link 10 prevents the bolt from turning. In this adjustment provision the freely-suspended bar is the important feature whereby the adjustment of all the fingered slats is rendered easy and convenient, while with the link 10 and bolt connection with the mediate bar the slats are securely held to their set relation. Looking at Figs. 3 and 8, it will be seen that while the slat parts 17 are straight to give the proper direction to the upward air-currents between the fingered slats the overhanging sloping finger part convex in cross-section and the surface grooves 5 at the base of the fingers give satisfactory results in connection with the adjustable capacity of the slats for the different requirements for different grain. In Figs. 2 and 3 it is seen that it is the freely-suspended bar 9 that permits the use of the vertical link and its pivotal connection with the vertical adjusting-bolt as the means whereby the screen-slats are set to suit the kind of grain.

I claim—

1. In a grain-separating screen and in combination with a frame, of fingered slats pivotally mounted therein the fingers and the slats having a construction giving to the fingers a forward and downward curve and a convex transverse form extending back of the edges of the slats, the latter being concave at the edges between the fingers giving an undulating formation along said slat edges and means whereby the slats are adjusted to open and to close the openings between the fingered edges of the adjacent slats.

2. In a grain-separating screen and in combination with a frame, a screening-surface composed of transverse parallel slats pivotally mounted in said frame having fingers curving forwardly and downwardly, of transverse convex form, the slats between the fingers having surface grooves 5 running back from the edge of the slat.

3. In a grain-separating screen and in combination with a frame, a screening-surface composed of transverse parallel slats pivotally mounted in said frame having fingers curving forwardly and downwardly, the depending portion of each slat doubled or lapped on itself forming sleeves thereby, a pivot-forming bar 6 on which one of said sleeves is mounted, rods 8 passed through the other sleeve, a freely-suspended bar mounted on said rods and means whereby said freely-suspended bar is raised and lowered.

4. In a grain-separating screen and in combination a frame, metal slats each doubled or lapped about half its width forming a sleeve, fingers curving forward from said sleeve and of convex transverse form, the convexity extending back of the fingered edge and the latter concave between the fingers, a pivot-forming bar on which said slat-sleeves are mounted and means connecting the lapped

ends of the slats for adjusting the fingered edges of the adjacent slats.

5. In a grain-separating screen and in combination a frame, metal slats, each having fingers curving forward and grooves at its edge between the fingers extending back from the fingered edge, a fixed pivot-forming bar on which each slat is loosely mounted and means connecting the slats for adjusting the openings between the fingered and concave edges of adjacent slats.

6. In a grain-separating screen and in combination a frame provided with a mediate bar, slats pivotally mounted in said frame having fingers curving forward so that the openings between the slats will be formed between their adjacent fingered edges, a bar freely suspended on the slats, a bolt vertically in the mediate bar, a link connecting the bolt and the suspended bar, a nut seated on the mediate bar engaging said bolt and a detent arranged to cover and prevent the straw from catching on the nut, whereby a lift connection is made from the mediate bar to adjust the slats.

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

CHARLES CLOSZ.

Witnesses:
A. E. H. JOHNSON,
A. ROLAND JOHNSON.