

HARRISON & BUCHANAN.

Grain Separator.

No. 49,876.

Patented Sept. 12, 1865.

Fig. 1.

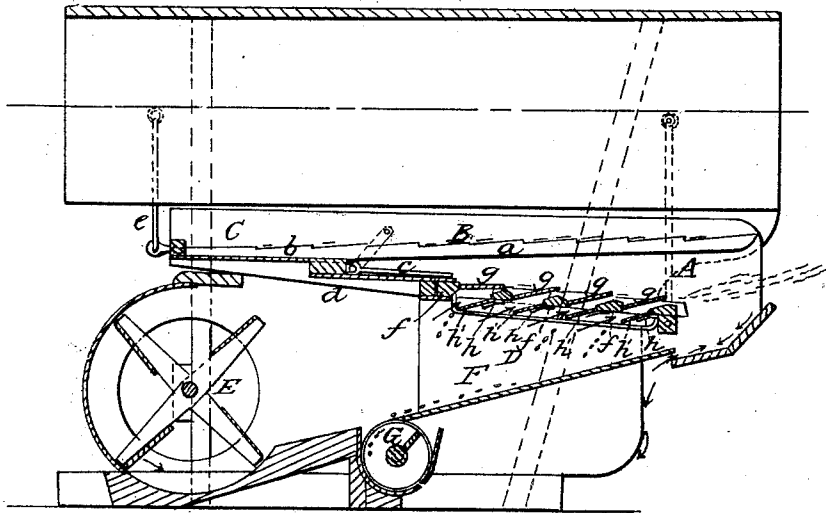


Fig. 2.

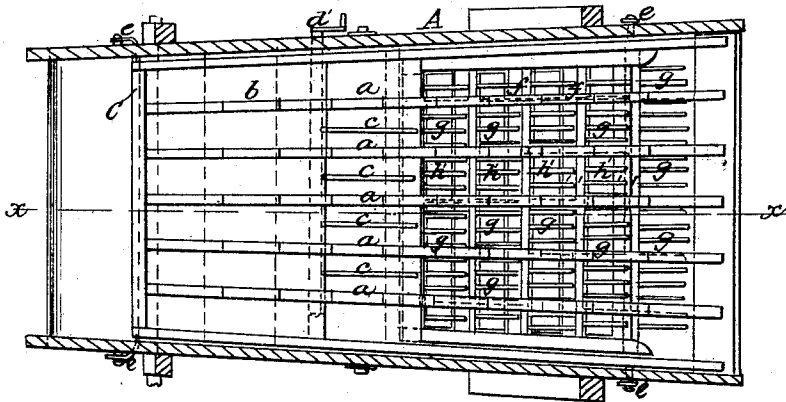
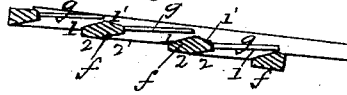


Fig. 3.



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UNITED STATES PATENT OFFICE.

THEOPHILUS HARRISON AND WM. C. BUCHANAN, OF BELLEVILLE, ILLINOIS.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 49,876, dated September 12, 1865.

To all whom it may concern:

Be it known that we, THEOPHILUS HARRISON and WILLIAM C. BUCHANAN, of Belleville, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Grain Separating and Winnowing Machines; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side sectional view of our invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same; Fig. 3, a detached longitudinal vertical section of a screen pertaining to the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to a new and improved screen or riddle for grain thrashing and winnowing machines; and it consists in constructing the screen or riddle in such a manner that it cannot possibly become choked or clogged by chaff or other impurities, a free passage being at all times obtained for the passage of the grain and blast through it.

To enable those skilled in the art to fully understand and construct our invention, we will proceed to describe it.

A represents a case or box, which contains the working parts of the grain-separating winnowing portion of a thrashing-machine. The parts pertaining to the thrashing-machine are not shown, as they do not form any part of the invention.

B represents what is commonly termed a "conveyer," composed of a series of bars, *a*, secured to a close or solid bottom, *b*, which may be attached to a shoe, C, so as to vibrate with it, or be hung separately, so as to operate independently of the shoe, which is frequently or most generally the case. This conveyer serves to carry the straw along, and in doing so causes the grain to be separated or shaken from it, the latter operation being assisted by the employment or use of a series of fingers, *c*, which are attached to a shaft, *d*, passing transversely under the bars *a* of the conveyer, and having a rising-and-falling movement communicated to them, so as to shake up and agitate the straw as it is passed along by the conveyer,

the fingers *c* rising above the bars *a* as the latter move forward, and falling below the fingers during the backward movement of the latter. These parts, however, have been previously used, and therefore do not require a more minute description.

The shoe C is suspended or swinging on pendulous bars *e*, and has a reciprocating movement communicated to it in the usual or in any proper way.

In the shoe C, and directly underneath the discharge ends of the bars *a* of the conveyer, there are placed transverse slats or bars *f*, with spaces or throats between them. These slats or bars *f* are made beveling on their upper surfaces, as shown at 1 1', (see Fig. 1,) and their under surfaces may be straight or constitute each one horizontal plane, or they may be beveled like the upper surfaces from the center outward, as shown at 2 2', so as to approximate to a diamond-shape in their transverse section.

In Fig. 1 the slats or bars are shown constructed according to the first-described plan, and in Fig. 3 according to the last. Each slat or bar *f* has a series of wires, *g*, attached to it at its front end, and projecting from it at right angles. The wires *g* of one slat or bar extend forward over the back part of the slat or bar immediately in front of it, and they consequently cover the spaces or throats between the slats or bars.

Instead of wires wooden rods may be used, if necessary or desired, and we design to have the slats or bars *f* so arranged that each one will be a trifle lower than the one preceding it, (see Fig. 3,) so as to have the spaces or throats in a favorable position for the action of the blast.

To the back edge of each slat or bar *f* there is attached by hinges or suitable joints, *h*, a board or flap, *h'*. These boards or flaps extend the whole length of the slats or bars, and their outer edges are retained or prevented from falling below a certain point by means of a rod, D, extending longitudinally underneath them. (See Fig. 1.) These slats or bars *f*, with the wires or rods *g* and boards or flaps *h'*, constitute our improved screen or riddle. Underneath this screen or riddle the fan E is placed, which may be constructed in the usual way, and

F is an inclined board or chute, which conducts the grain into a spiral conveyer, G. These latter-named parts, being of usual construction, do not require a minute description.

The blast generated by the fan E passes readily through the spaces or throats between the slats or bars *f*, and drives out from the machine all light impurities, while the grain is allowed to slip freely down between the wires or rods *g* and through the spaces or throats between the slats or bars *f*, the latter, in consequence of the beveled surfaces 1 1' 2 2' and their position relatively with the fan or its blast, greatly facilitating the screening operation.

The boards or flaps *h'* perform an important function in keeping the throats of the screen or riddle perfectly free or clear. These boards or flaps have a motion imparted to them by the motion of the shoe C. During the forward movement of the latter the boards or flaps will close over the spaces or throats between the slats or bars, and they open or drop during the backward movement of the shoe. This operation of the boards or flaps causes the blast from the fan to operate intermittingly and with sudden force, so as to expel all foreign substances from the spaces or throats. The boards or flaps also prevent loose straws from passing through the spaces or throats lengthwise.

We do not confine ourselves to any precise arrangement of the slats or bars and wires or rods *g* as regards the distance or space between them, for that may be varied according to the different kinds of grain to be operated upon. Nor do we confine ourselves to any particular arrangement of the screen or riddle in the shoe, or in relation with a straw carrier or conveyer, for that may be varied or modified to suit circumstances.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The construction of the riddles consisting of transverse slats *f* with double beveled upper sides, and with projecting wires *g* spanning the intervening spaces, the successive slats descending as they recede from the fan, substantially as described.

2. The boards or flaps *h'*, attached to the strips or bars *f*, to operate in combination with the bar D, in the manner substantially as and for the purpose set forth.

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