No. 729,883. PATENTED JUNE 2, 1903.

G. H. MOOD & E. R. LYMAN.

GRAIN SCREEN AND RIDDLE.

APPLICATION FILED JUNE 11, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

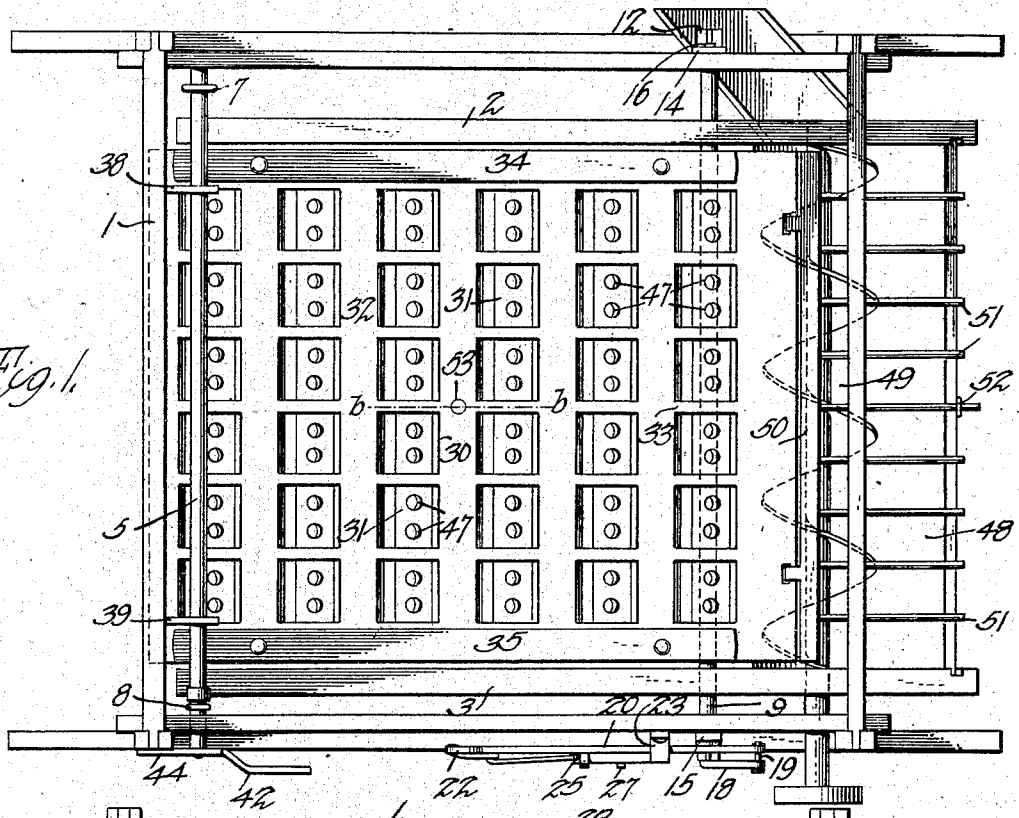


Fig. 2.

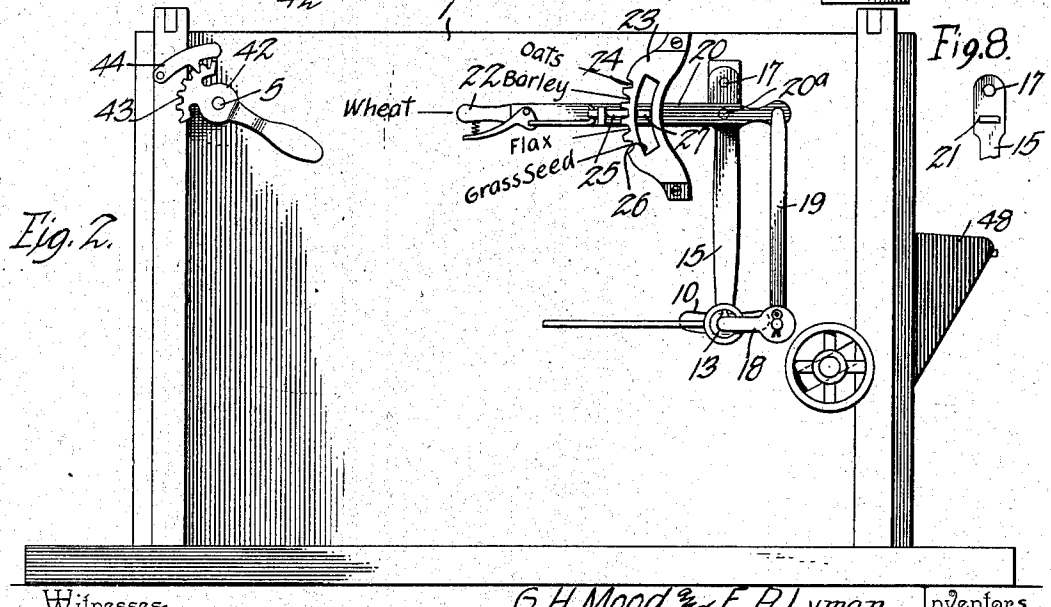


Fig. 8.

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Fig. 3.

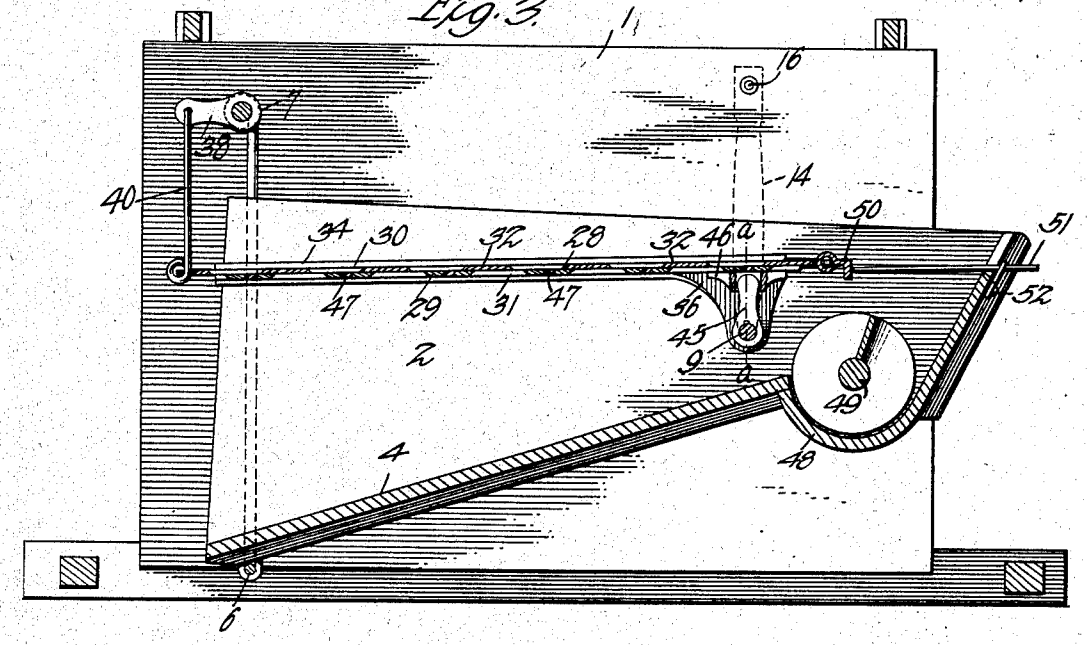


Fig. 4.

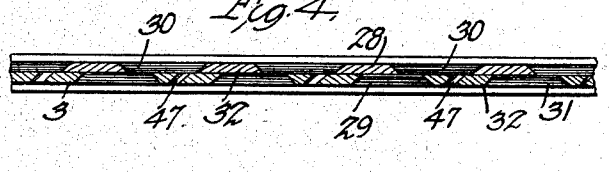


Fig. 5.

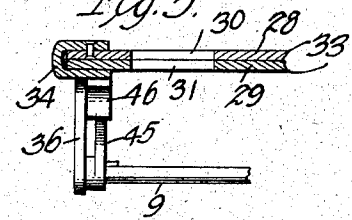


Fig. 6.

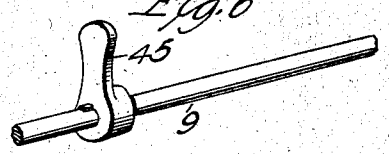
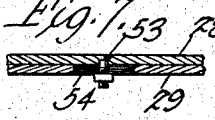


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE H. MOOD AND EDWIN R. LYMAN, OF COLFAX, WASHINGTON.

GRAIN SCREEN AND RIDDLE.

SPECIFICATION forming part of Letters Patent No. 729,883, dated June 2, 1903.

Application filed June 11, 1901. Serial No. 64,150. (No model.)

To all whom it may concern:

Be it known that we, GEORGE H. MOOD and EDWIN R. LYMAN, citizens of the United States, residing at Colfax, in the county of Whitman and State of Washington, have invented a new and useful Grain Screen and Riddle, of which the following is a specification.

This invention is applicable to any form of grain-cleaning machines—such as fanning-mills, threshing-machines, and the like; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described and specifically pointed out in the claims.

In the drawings, Figure 1 is a plan view. Fig. 2 is a side elevation, and Fig. 3 is a longitudinal sectional elevation, of our improved screen and riddle arranged in a supporting-casing. Fig. 4 is an enlarged sectional detail of portions of the double adjustable screen-plates. Fig. 5 is an enlarged detail in cross-section on the line *a a* of Fig. 3. Fig. 6 is a detached perspective view of one of the screen-actuating cams. Fig. 7 is a detached sectional detail on the line *b b* of Fig. 1. Fig. 8 is a detached detail of a portion of one of the shoe-hanger bars.

The framework supporting our improvements is designated as 1 and may be of any desired construction and forming a part of the machine to which our invention is applied. Suspended in this framework 1 is a shoe of any ordinary construction and consisting, preferably, of vertical sides 2 and 3 and inclined bottom 4. Journaled transversely in the frame 1 above the "feed" end of the shoe is a shaft 5, having a rod 6 connected by its ends 7 8 to the shaft 5 and passing transversely beneath and connected to the bottom 4 of the shoe and affording a suspension means for the feed end of the shoe. The feed end of the shoe is thus free to be vibrated longitudinally of the casing. The "tail" or discharge end of the shoe is provided with a transverse shaft 9, journaled in the sides 2 and 3 and with its ends projecting through slots 10 and 11 in the framework 1.

Mounted loosely upon the ends of the shaft 9, outside the frame 1, are collars or sleeves 12 13, and each sleeve is provided with an upwardly-extending arm 14 15, the upper ends of the arms pivotally connected to the casing or framework 1, as at 16 17, by which means the discharge end of the shoe is suspended and left free to be vibrated longitudinally of the framework, while at the same time the shaft 9 is free to be oscillated in the collars or sleeves 12 13 independently of the vibratory movement of the shoe.

At one end the shaft 9 is turned off to one side into a crank-arm 18, as shown in Figs. 1 and 2, and the outer end of this crank-arm is connected to a vertical rod 19, the upper end of the rod being pivotally connected to a lever-arm 20. The lever-arm 20 is pivoted at 20^a in a short slot 21 in the suspension-rod 15, near its upper end. The lever-arm 20 extends toward the feed end of the machine and terminates in a handle 22.

23 is a curved plate attached to the frame 1 and behind which the lever-arm 20 moves. The curved plate 23 is provided with segmental notches 24, with which a spring-pawl 25 is adapted to be engaged, as shown in Fig. 2.

26 is a curved slot in the curved plate 23, into which a stud 27 on the lever-arm 20 fits, as shown. The suspension-arm 15 is thus free to vibrate with the shoe without affecting the lever-arm 20, because the pivot 20^a of the lever is engaged to the lever-arm in slot 21 in the latter, which thus provides for a certain degree of horizontal movement of the rod 15 independently of the oscillatory movement of the lever-arm. The stud 27, working in the curved slot 26, keeps the parts all working in unison, while at the same time leaving each part free to work independently.

The screen mechanism is of a peculiar construction and consists of two flat plates 28 29, lying face to face and provided, respectively, with preferably rectangular perforations 30 31, separated by transverse ribs 32 and longitudinal ribs 33, the upper and lower edges of the perforations being reversely knife-edged, as shown in Figs. 1, 2, and 3. The upper plate 28 is attached by its side edges to grooved plates 34 35, and the side edges of the plate 29 are attached to the same grooved plates, but are loose therein, so that the plate 29 is free to slide beneath the plate 28 and in close proximity to its under side. Near their

upper ends the grooved plates are formed with depending brackets 36, embracing the shaft 9 loosely, by which means the tail ends of the screens are supported. Attached to the shaft 5 near its ends are arms 38 39, connected at their outer ends by rods 40 to the feed end of the plate 28. On the outer end of the shaft 5 is an arm 42, having a toothed segment 43, the segment adapted to be engaged by a pawl 44, so that the shaft may be turned to and held at any desired point. By this simple means the feed ends of the screen-plates may be adjusted vertically by oscillating the shaft 5 and setting it at any desired point. Thus the inclination of the screen may be adjusted to any desired extent to adapt it to the work required or to the quality or condition of the grain to be treated and to correct the variations of level in a traveling machine.

Attached to the shaft 9 near its ends inside the shoe are upwardly-projecting cam-arms 45, adapted to engage socket-plates 46 on the bottom of the movable plate 29, so that as the shaft 9 is oscillated the cam-arms will adjust the plate 29 back and forth in the grooved plates or strips 34 35. By this means when the plate 29 is moved by the shaft 9 upward toward the tail end of the machine the transverse bars 32 of the lower plate 29 will uncover the apertures 30 in the upper plate 28, and then when the shaft 9 is oscillated in the opposite direction the bars 32 of the lower plate will entirely cover the apertures 30. Thus by adjusting the plate 28 at any of its intermediate points the width of the apertures 30 left unobstructed may be regulated as desired. The extent of this adjustment is controlled by the lever 20, as before described. The knife-edges serve also to cut and destroy any trash or other obstruction that may clog the screen-meshes.

Formed through the transverse aperture dividing bars 32 of the lower plate 29 are a series of preferably circular perforations 47, preferably two in each section and inclined toward the head end of the screens these perforations being gaged as to size by the sizes of the seeds which it is designed shall pass through them, and will generally be fine enough for grass and other fine seeds. The openings through the screen-plates between the respective bars thereof may by adjusting said plates be either entirely closed or opened to any desired extent, according to the material to be screened. When the said screen-plates are so adjusted as to entirely close said openings, the small grass-seed openings 47 will be uncovered, as will be understood from an inspection of Fig. 4. Thus the screen may be readily and quickly adjusted for the various-sized seeds which it is designed to separate, and this adjustment can be accomplished while the machine is in operation and without stopping any of its motions.

The notches 24 in the segment 23 will correspond to required adjustments of the plates 28 29 to vary the size of the openings 31, as may be required for treating the various grains, so that the operator can know the position to which the plate 28 is adjusted by the location of the notch 24 with which the pawl 25 is engaged, and in practice each notch 24 will be appropriately marked. Thus if flax is to be separated the lever 20 will be adjusted so that the pawl 25 will enter the notch denoted by the mark "Flax," and so on for any of the seeds.

The air-blasts enter from the larger end of the shoe and pass rearwardly and upwardly through the screens, and by inclining the perforations 47, as shown, the air-currents pass more readily through them and meet with less resistance from the plates.

Arranged in a transverse trough 48 in the upper or tail end of the shoe is a "worm" or screw conveyer 49, adapted to receive the tailings from the screens and carry it away from the machine.

Hinged to the tail end of the upper screen-plate 28 is a bar 50, having fingers 51 projecting over the trough 48 and serving to carry any straw or larger particles over the screw conveyer and discharge it from the tail of the machine. This straw-rack 50 51, being hinged to the screen, may be folded back to give access to the conveyer-trough and will be provided with a catch 52, by which it may be locked in its downward position. As hereinbefore stated, the machine may be set for any-sized mesh which may be required and without stopping the machine or changing any parts, whereas in the ordinary make of machine multiple sets of screens must be furnished with each machine to adapt it to clean the various sizes of grains, and the machine must be stopped and the screens exchanged before another kind of material can be operated on. This is a great source of annoyance, and by entirely avoiding it we can handle a much greater quantity of grain in a given time, besides producing a much cheaper machine, which can be more conveniently operated.

If required, one or more intermediate supports may be employed between the screen-sections, consisting of a bolt 53, secured in one section and engaging a slot 54 in the other section, as shown in Figs. 1 and 7, so that while supporting the lower screen-section and maintaining it in proper relations to the upper section it does not interfere with the slidable adjustment of the lower screen-section.

What we claim as new is—

1. In a device of the class described, a sieve or screen comprising a pair of slidably-related rigid sections, one superposed upon the other, said sections having transverse ribs and longitudinal ribs with openings between the said ribs, said openings in the two sections being of the same size, shape and relative position and adapted to register, and the transverse

ribs in both sections being of the same width as the adjacent openings, and reversely beveled, and smaller inclined perforations in the transverse ribs of the lower section, substantially as described.

2. In a device of the class described, the combination with a fixed support, having slots in its sides near one end, of a vibrating shoe having its feed end adjustably suspended for oscillation from said fixed support and having its discharge end suspended for oscillation upon a rock-shaft which passes through bearings in said shoe and through the slots in the fixed support, arms pivoted to the fixed support and provided with collars adapted to pivotally support the ends of said rock-shaft, an adjustable-mesh sectional screen suspended for oscillation at its feed end from the fixed support and having depending brackets which embrace said rock-shaft, means for operating said rock-shaft independently of its oscillatory motion and an arm projecting from said rock-shaft and adapted to engage one of the sections of the screen, substantially as and for the purpose set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

GEORGE H. MOOD.
EDWIN R. LYMAN.

Witnesses:
O. B. HILL,
L. M. HASKINS.