No. 645,936. Patented Mar. 27, 1900.

M. & J. BOWMAN.

THRESHING MACHINE SHOE.

(Application filed Dec. 5, 1899.)

(No Model.)

Fig. 1

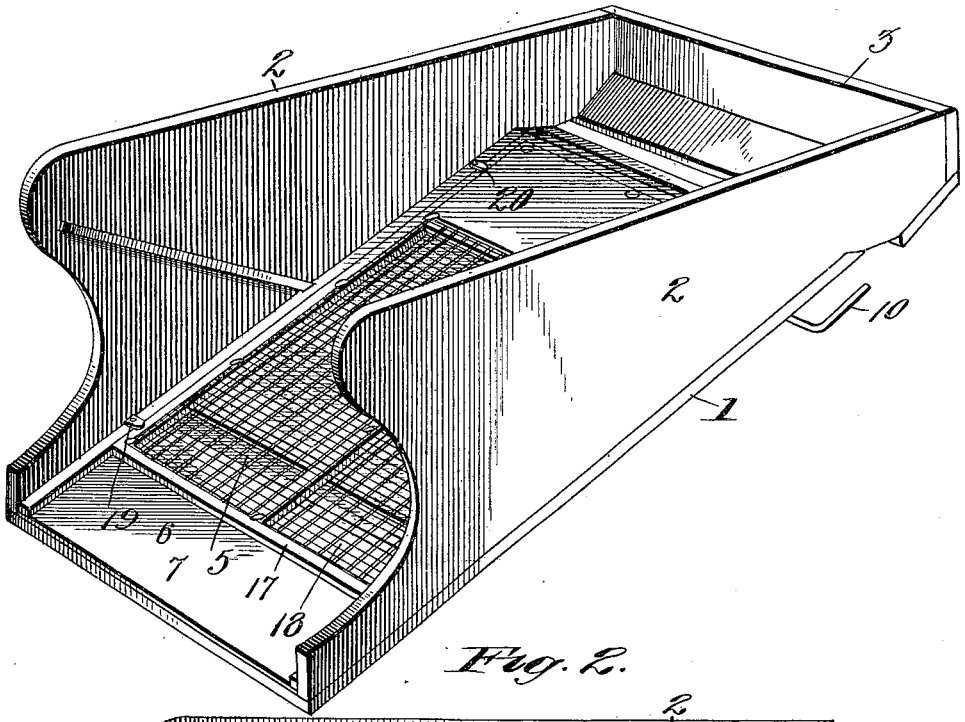


Fig. 2.

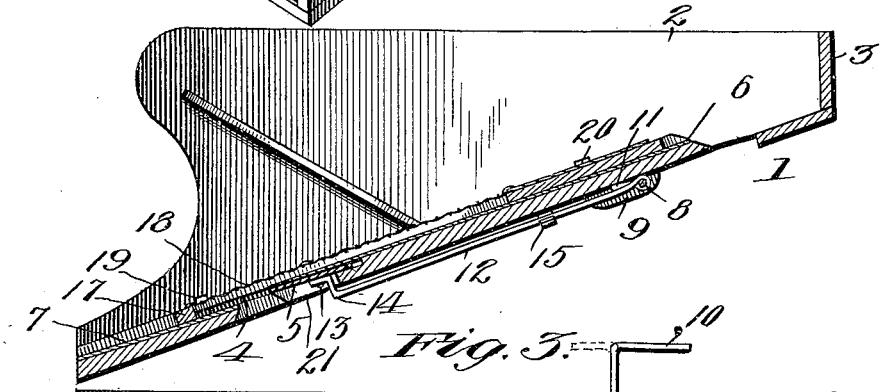
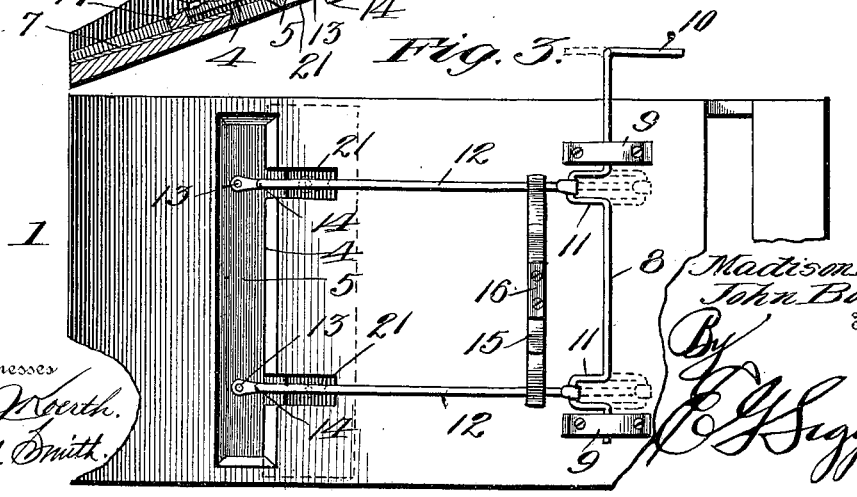


Fig. 3.



Witnesses
Wm. Koerth.
R. M. Smith.

Madison Bowman,
John Bowman,
Inventors
By
E. G. Siggers
Attorney

UNITED STATES PATENT OFFICE.

MADISON BOWMAN AND JOHN BOWMAN, OF TOLEDO, ILLINOIS, ASSIGNORS OF ONE-THIRD TO ROBERT C. WILLIS, OF SAME PLACE.

THRESHING-MACHINE SHOE.

SPECIFICATION forming part of Letters Patent No. 645,936, dated March 27, 1900.

Application filed December 5, 1899. Serial No. 739,271. (No model.)

To all whom it may concern:

Be it known that we, MADISON BOWMAN and JOHN BOWMAN, citizens of the United States, residing at Toledo, in the county of Cumberland and State of Illinois, have invented a new and useful Threshing-Machine Shoe, of which the following is a specification.

In threshing-machines it is usual to provide the threshing-machine shoe with a sloping or inclined bottom and to form in the bottom of the shoe an opening which extends in the form of a narrow slot across the bottom near the lower end thereof. This opening, which is ordinarily termed the "cheat-hole," is usually closed by means of a wooden strip secured in place by means of buttons. When it is desired to clean the grain of cheat or any substance smaller than the grain itself, this strip is removed and a screen is placed on the bottom of a shoe so as to cover the cheat-hole, and thus the cheat or other material drops through the screen and opening, while the grain passes over the same. After the grain has been cleaned the cheat-hole is covered or closed and the screen removed. As the buttons or whatever means are employed for closing such discharge-opening are located under the machine, it is necessary for an attendant after stopping the machine to get beneath the same and while lying on his back in the dust adjust the strip which normally closes the opening.

The object of this invention is to do away with the wooden strip or closure and the securing means therefor above referred to and to provide in lieu thereof a slide by means of which the discharge-opening may be opened and closed by an attendant standing at the side of the machine.

The device hereinafter described and the operating means therefor being under the shoe are out of the way. The operation of the device is smooth and reliable and the construction simple and cheap.

The detailed objects and advantages of the invention will appear in the course of the ensuing description.

The invention consists in certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a threshing-machine shoe, showing the cheat-hole or discharge-opening and a removable screen covering the same. Fig. 2 is a longitudinal section through the same, taken in line with one of the operative connections between the crank-shaft and the slide, showing the manner of housing the slide between the bottom of the shoe and the sheet-metal lining for the bottom. Fig. 3 is a bottom plan view of the shoe, showing the operating means for the slide and the manner of sloping the shoe-bottom.

Similar numerals of reference designate corresponding parts in all the figures of the drawings.

In the drawings, 1 designates the bottom of a shoe of the type ordinarily employed in threshing-machines, the said shoe having also the usual side pieces 2 and end board 3. The bottom of the shoe slopes, as shown in Fig. 1, and under the ordinary arrangement said bottom inclines toward the middle of the machine and toward the front end thereof. Extending across the bottom 1, adjacent to its lower end, is a transverse discharge-opening or cheat-hole 4, which under the ordinary arrangement is closed by a strip which is removably fitted therein and held in place by buttons.

In carrying out the present invention we employ a slide 5, which is preferably constructed in the form of a flat metal plate, and said slide is inserted between the upper surface of the bottom 1 and the lower surface of a false bottom or sheet-metal lining 6, which covers the major portion of the wooden bottom 1, being secured thereto in any convenient manner. The lower portion of the bottom is covered by an auxiliary lining-plate 7, upon which the slide moves as it is shifted to its closed position. By providing the sheet-metal lining-plates 6 and 7 any cracks in the wooden bottom of the shoe are covered, thus preventing leakage when cleaning small field-seeds, such as timothy and clover. The

lining may be of any metal, such as zinc, galvanized iron, sheet-iron, &c. The lining also renders it unnecessary to calk the joints or cracks, which is inconvenient, as it requires an attendant to get under the machine and operate while in an awkward position. It also forms a convenient and effective housing for the closing-slide.

In order to operate the slide, we provide an operating crank-shaft 8, mounted in suitable bearings 9 beneath the bottom 1 of the shoe and secured thereto. The shaft 8 is provided at one end with a hand-crank 10 and at intermediate points with the double cranks 11, to which are connected the corresponding ends of a pair of connecting-rods 12, which extend along the bottom of the shoe and connect at their opposite ends to the bottom of the closing-slide, as shown at 13. As the slide 5 is arranged in a higher plane than the lower surface of the bottom 1, the lower ends of the connecting-rods 12 are offset or extended upward, as shown at 14, after which they are terminally connected to the slide 5.

In order to hold the slide in either of its adjustable positions—that is, either closed or open—we provide a tension device which operates upon the connecting-rods 12. This tension device consists of a spring 15, which is secured at a point intermediate its ends to the bottom of the shoe by any suitable securing device, as 16, the oppositely-projecting ends of the spring overlapping and passing under and bearing against the connecting-rods 12, the tension of the spring being exerted to hold the connecting-rods upward in close proximity to the bottom. As the crank-shaft 8 is turned in one direction or the other the rods 12 are forced downward by the cranks 11, thus temporarily overcoming the tension of the spring 15. When the cranks 11, however, come in contact with the bottom 1 at either end of their throw, the tension device 15 operates to uphold the connecting-rods and prevents the operating-shaft from turning accidentally, thus locking the slide in either its closed or open position.

17 designates a screen-frame with which the cheat-hole is covered when the slide is withdrawn to allow the cheat and other small material to pass therethrough. Such fine material passes through the meshes of the screen 18 and through the discharge-opening or cheat-hole 4, while the grain itself passes downward over the screen and past said opening. The screen is removably fitted in the shoe and is held in place by suitable keepers 19 and buttons 20. After the cheat has been removed the screen may be removed from the machine and the threshing operation continued. The bottom of the shoe is also provided with short longitudinal slots 21, which lie parallel to each other, near the sides of the shoe. These slots are disposed at right angles to the axis of the discharge-opening in the bottom of the shoe and are arranged to open into or to communicate with the discharge-opening, as shown by Fig. 3. The terminally-bent ends of the connecting-rods 12 are adapted to play in said short slots 21 in the operation of opening or closing the slide; but when the slide is fully opened the bent ends of said connecting-rods are adapted to occupy the slots, whereby the slots permit of the desired adjustment of the rods and the slide. It will thus be seen that we have provided simple and effective means for opening and closing the discharge-opening in the bottom of a threshing-machine shoe and that the closing-slide may be operated from the side of the machine by an attendant without requiring the attendant to get under the machine; also, that the slide is held by means of the tension device in either its closed or its open position and that it is not liable to be misplaced or jarred from its position by the operation of the threshing-machine.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A shoe for threshing-machines, provided with a discharge-opening, a closing-slide for the opening, an operating crank-shaft, connections between the crank-shaft and slide, and a friction-spring engaging with the connections, substantially as specified.

2. A shoe for threshing-machines, provided with a discharge-opening, a closing-slide for the opening, an operating crank-shaft, a connecting-rod between said crank-shaft and slide, and a tension device acting on said rod to hold the slide in either position, substantially as specified.

3. A shoe for threshing-machines, provided with a discharge-opening, a closing-slide for the opening, an operating crank-shaft, rods connecting the crank-shaft and slide, and a spring coöperating with the rods for holding the slide in either position, substantially as specified.

4. A shoe for threshing-machines, provided with a discharge-opening in its bottom, a metal lining secured to the bottom and extending partly across the opening therein, a closing-slide housed between the bottom and lining, and operating means for said slide, substantially as specified.

5. A shoe for threshing-machines, provided with a discharge-opening in its bottom and having slots communicating with said open-

ing, a closing-slide for the opening, an operating crank-shaft, and rods connecting said crank-shaft and slide, the ends of said rods being terminally offset and connected with the slide to operate through the slotted bottom of the shoe, substantially as specified.

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

MADISON BOWMAN.
JOHN BOWMAN.

Witnesses:
R. C. WILLIS,
J. B. HOWARD.