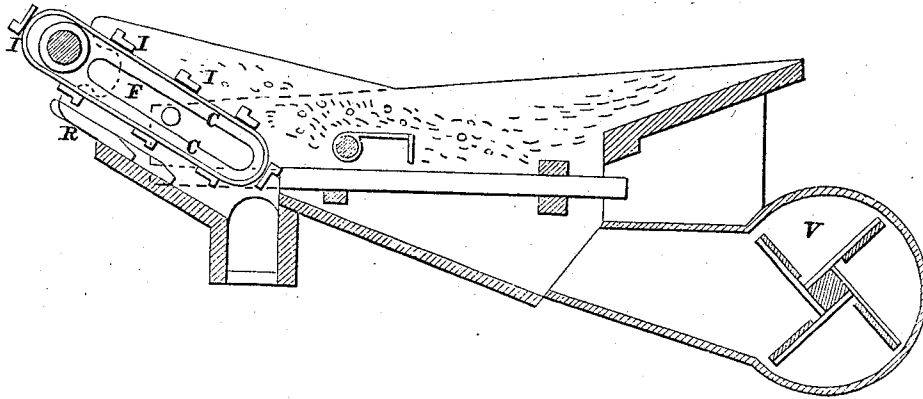


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SHOE FOR GRAIN SEPARATORS.

No. 24,084.

PATENTED MAY 24, 1859.



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HIRAM ALDRIDGE, OF MICHIGAN CITY, INDIANA.

SHOE FOR GRAIN-SEPARATORS.

Specification of Letters Patent No. 24,084, dated May 24, 1859.

To all whom it may concern:

Be it known that I, HIRAM ALDRIDGE, of Michigan City, in the county of La Porte and State of Indiana, have invented a new and useful Improvement in Grain Thresher and Separator Shoes, and do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1 represents a vertical longitudinal section through shoe, and Fig. 2 represents a side view. Fig. 3 represents a top plan. Fig. 4 represents an end view. Fig. 5 represents a frame covered with perforated sheet iron for sieve. Fig. 6 represents a slant or tail board. Fig. 7 represents end view of lug or cross slat to chaff and straw elevator.

Similar letters of reference when they occur in separate figures denote like parts of the shoe in all.

The nature of my improvement relates to the manner in which I have constructed and arranged the chaff and straw elevator in connection with the incline sieve and incline extension slant board, all of which is incased in rear end of common shoe and placed above the main cleaning sieve in an inclining position admits the application of powerful blast for thoroughly cleaning grain without blowing over or wasting.

The elevator belt with slats or lugs obviates danger of clogging and excessive accumulation by elevating and carrying off from incline sieve chaff straw and other impurities which is forced outward from main cleaning sieve by blast from fan mill.

To enable others skilled in the art to make and use my invention I will proceed to describe the same as connected with and applied to the shoe generally in use, with reference to the drawings.

A, represents the frame of ordinary shoe in which the incline extension slant board R, the incline sieve F, elevating belt C C, and ordinary cleaning sieve K is incased.

B, is a shaft supported at each end by sides of frame A, and provided with a pulley D, just outside of frame A, over which an endless belt may pass connecting back to a pulley at some convenient point in separator or fan mill to give motion to pulleys E E, on said shaft just inside of

shoe frame A over which the endless elevating belt C C, pass to obtain motion.

F, is sieve frame covered with perforated sheet iron and provided at lower end with idle pulleys G G, revolving on pins or journals H H made fast and stationary to sieve frame F. Idle pulleys G G act in concert with working pulleys E E, in propelling incline elevator belt C C. The sieve frame F may be covered with perforated sheet iron as shown in Fig. 5, or screen wire, or may be covered over tight with thin board or any tight substance, same results being accomplished in either case. The sieve F is fastened in the shoe inclining inward and made stationary by tightening the thumb screw J, which passes through sieve frame and through side of shoe frame. This sieve can also be elevated and changed to any desired angle, being adjustable on loosening thumb screw J.

The elevator belt C C, revolves upward just clearing the top surface of incline sieve F and returning underneath the same.

The advancing edge of lugs or slats I are provided with flanges at right angles with top and bottom surface of same as shown in Fig. 7 end view.

K is the ordinary cleaning sieve with holes L, in both sides of frame in which hooks M, which are fastened to sides of shoe is to be inserted, holding sieve stationary and also affording the means by which to move the sieve K, back and forward thereby increasing or entirely closing the space between sieve K and lugs I, in elevator belt.

The grain after being threshed at cylinder works its way by the usual process to the back end of separator, then falling on slant board N, is worked down by the shaking motion of shoe on to the cleaning sieve K, where it comes in contact with the blast from fan mill V, which blows off the light chaff and straw entirely beyond the elevated sieve and belt, thoroughly cleaning the grain, which falls through the mesh of sieve into a suitable reservoir below, but a large amount of light grain and unthreshed grain heads are forced and lifted forward by the strong blast necessarily applied to clean the grain rapidly, which lodging at different points on the sieve F, and is still forced upward over end of shoe by the lugs I, which just clearing the top surface

of sieve F sufficiently to allow grain to return underneath the same, which falls through the open space between the lugs I and sieve K into a spout below and passes
5 off through the opening O, in side of shoe and returned as usual to cylinder, it is however still evident there will be a great deal of unthreshed grain heads and more or less shrunk and light grain forced upward and
10 over the top of incline sieve F by the upward movement of lugs I.

A portion of blast from fan V strikes the incline shoe bottom P, passing upward along the same, is forced through the reservoir or
15 tailing spout O, thence following the next incline board Q coming out at and underneath the upper or elevated extremity of incline sieve F and elevator belt C C, blowing out such light and worthless stuff as
20 may have been forced upward by lugs I, the blast at this point is at times sufficiently strong to blow over and waste such grain as may have been forced over with the foul stuff at extreme end of shoe. To avoid this
25 the extension incline slant board R, is brought into use which moves in slots or grooves S, made in shoe slide A, being extended upward on same incline of slant board Q in bottom of shoe to a point where
30 the blast has so far spent its force as not to blow over anything but the light and worthless impurities, the grain returning down the incline board R and Q and sieve F finds its way to the reservoir or return spout and
35 passes out of side of shoe at opening O as before described.

Thumb screw T in Fig. 41 being fastened to side of shoe, by its pressure on the end of extension slant board R, it is held to its
40 position and is easily adjusted.

N, represents blocks or guides fastened to sides of shoe frame A to steady and hold stationary sieve K.

The shoe thus described has in general
45 construction and form a resemblance to the common shoe in use. Excepting so much as alludes to my invention the operation and application of which as connected with the ordinary shoe being already described in
50 detail, I will proceed to describe the difficulties of operating the common shoe, without the application of my invention.

The frame of ordinary shoe is the same or nearly so, as shown in Fig. 1, after removing
55 the incline sieve F, belt C C, with lugs I, tail board R, shaft B, and its pulleys D and E E, thumb screw T and J and also cutting down side and end of shoe frame corresponding with dotted lines *w w w w w* and

extending sieve K out to end in a straight
60 line as shown by dotted lines marked *x x x x x*, or instead of extending sieve K out to end in a straight line, a separate sheet iron or tight sieve is usually inserted.

The power driving the threshing ma-
65 chine and separator is always subject to great variation, the fanning mill and shoe being attached to same is subject to much irregularity in speed, the blast at times being too strong and again not strong enough,
70 in the former case grain would be lifted and carried over outward end of shoe and in the latter the blast being weak grain and chaff would rapidly accumulate on sieve and clog and require aid to clear it. Again the
75 same difficulty might occur from unsteady feeding at the cylinder, even when power is steady and regular, taxing the shoe more at one time than another, hence we see there is liability to blow too strong and not strong
80 enough, as well as danger of unsteady feeding, and in either case liable to clog in sieve and not clean grain well for want of blast and also liable to wash and blow over grain
85 by having too much blast.

It is evident the shoe would clog to simply insert the incline sieve or tight board F for the purpose of arresting the grain in its outward flight, to save and separate the same from chaff &c. without also inserting
90 with it the elevator belt C C and its lugs I as well also as the necessary fixtures described for operating the same, hence we see the difficulty of operating the common shoe without the aid of my invention, but when
95 my invention or improvement is inserted and operated in the same as previously described, the following difficulties which it is apparent exists in the ordinary shoe is effectually overcome: 1st, liability to imperfectly clean grain for want of blast, 2d, liability to blow over and wash same by having
100 too much blast, 3d, liability to clog on sieve for want of blast and also by unsteady feeding at cylinder.

Having fully described the nature of my invention, what I claim therein as new and desire to secure by Letters Patent is—

The endless incline elevator belt C C, with its lugs or cross slats I in combination with
110 the incline sieve or board F and incline extension board R arranged in the manner and for the purpose set forth.

HIRAM ALDRIDGE.

Witnesses:

F. HASKELL,
H. B. CARYL.