2 Sheets—Sheet 1.

I. HART.

Thrashing and Cleaning Machine.

No. 29,374. Patented July 31, 1860.

Fig. 3.

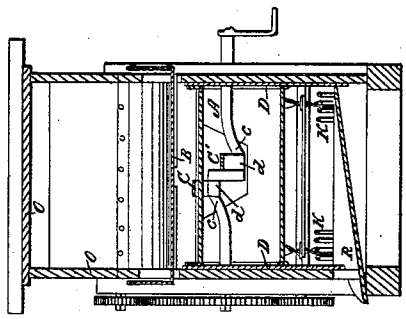


Fig. 4.

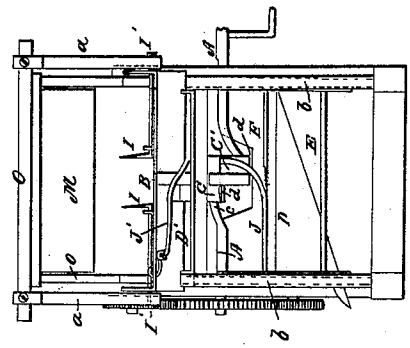


Fig. 1.

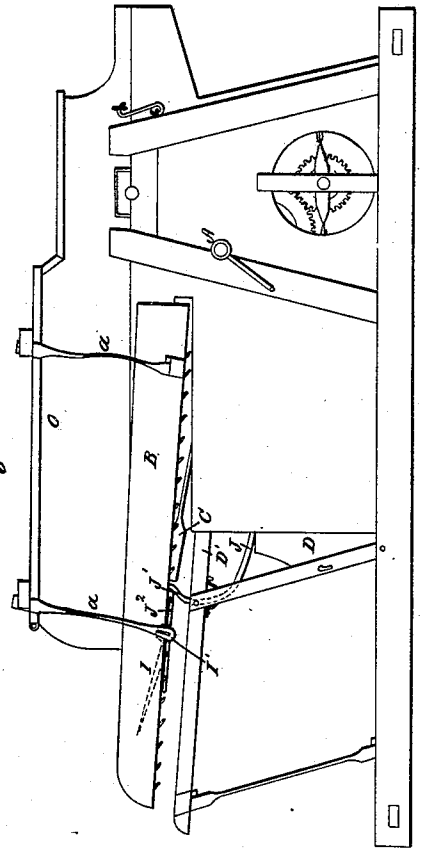
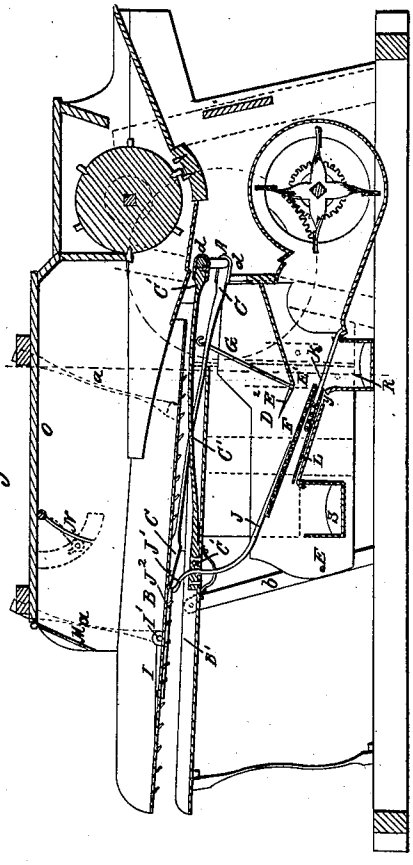


Fig. 2.



Witnesses:

Goodwin S. Abbe.

Inventor:

Ira Hart
by Munn & Co
Attorneys.

N. PETERS. Photo-Lithographer. Washington. D. C.

2 Sheets—Sheet 2.

I. HART.

Thrashing and Cleaning Machine.

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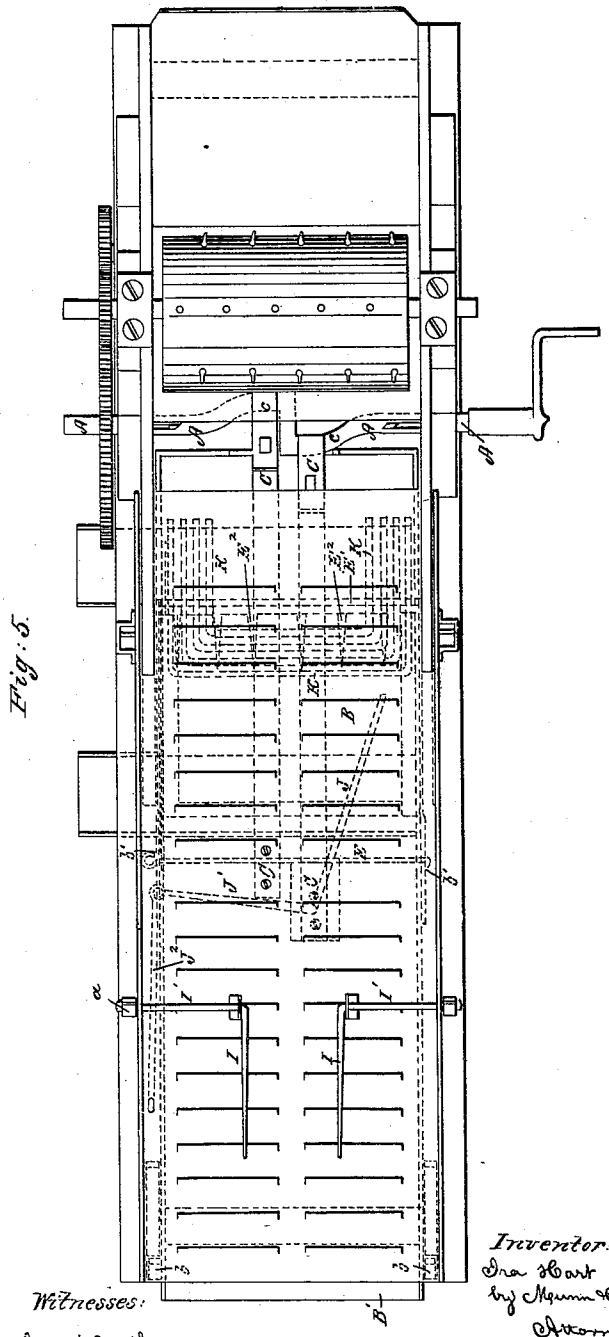


Fig. 5.

Witnesses:

Goodwin M. Aldrich

Inventor.

Ira Hart

by Munn & Co

Attorneys

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

IRA HART, OF CLARKSBURG, VIRGINIA.

MACHINE FOR THRESHING AND CLEANING GRAIN.

Specification forming part of Letters Patent No. 29,374, dated July 31, 1860; Reissued June 1, 1869, No. 3,474.

To all whom it may concern:

Be it known that I, IRA HART, of Clarksburg, in the county of Harrison and State of Virginia, have invented certain new and useful Improvements in Machines for Threshing and Cleaning Grain; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side view of my improved machine. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a vertical transverse section of the same. Fig. 4 is a front view of the same, and Fig. 5 is a plan view with the cap of the machine removed.

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

To enable others, skilled in the art, to make and use my invention, I will proceed to describe its construction and operation.

The threshing cylinder and fan are arranged in the usual manner, and therefore need not be described.

A, represents the driving shaft. It has two cranks *c*, *c'*, and is arranged in front and somewhat below the threshing cylinder. To the cranks of the shaft, spring connecting rods C, C', are attached loosely by eye straps *d*, *d*. These rods extend forward and connect two vibrating tables B, B'. The rod C, attaches to the bottom of slatted table B, and the rod C', to the top of solid table B.' These tables are suspended and supported on spring and pivoted bars *a*, *a*, *b*, *b*. The bars *a*, *a*, which suspend the upper table, incline slightly toward the threshing cylinder and those *b*, *b*, which support the lower table incline slightly away from said cylinder. By thus inclining the bars in reverse direction, and giving them considerable elasticity and having two cranks and two thin spring connecting rods, the tables are caused to move simultaneously in opposite directions and notwithstanding this both have similar upward and accelerating forward movements, and thus act upon the straw and grain in a very effective manner.

Just above the upper table and suspended on turning shafts from the inside of the cap (*o*) of the machine, are two straw arresters M, N. The arrester N, is controlled by a set screw and acts positively against the straw and thus prevents its too rapid escape at the commencement. The arrester M, hangs loose and free and does not interfere with the escape of the straw, but prevents any flying grain from passing out and being wasted. Having one of the arresters adjustable is found to be exceedingly useful in threshing grain of different kinds and in different conditions.

On top of the upper screen, near its front, I arrange two lifting fingers I, which stand at right angles to the axes I', on which they turn. These fingers play up and down as the upper table vibrates, said motion resulting from the axes of the fingers being attached fast to the lower ends of the suspension springs *a*, *a*, said springs, as they assume a vertical position, moving the axes of the fingers with them and thereby compelling the fingers to rise, and as they return to their incline position, compelling them to descend.

Below the second table, B', is arranged a grain clearing shoe D; this shoe has two sieves or screens F, L, and is suspended by means of swinging bars G, and transverse bars E, E'; the rod E, having its bearing in the pivoted supports *b*, *b*, of the lower table and the rod E', its bearing in the frame of the shoe.

Over the sieve F, are arranged a series of lifting fingers E^2, said fingers being on the rod E'. Over the sieve L, a series of square open stationary scrapers K, are arranged, as shown in red in Fig. 5, and in black in Figs. 2 and 3, and underneath the sieves F, L, are arranged transverse discharge spouts R, S, as represented.

By having the shoe and fingers arranged as above described, it is obvious that when the tables move back and forth, the shoe will perform a similar movement, and also that as the shoe moves back and forth the fingers will necessarily rise and fall, and thus lift and open up the substances which may be on the first screen, and while the fingers are performing this operation, the stationary scrapers, by reason of the lower screen passing under them, are acting to keep said screen clean.

In order to keep the meshes of the first screen of the grain cleaning shoe open, I arrange an arm J, just above the surface of the same, said arm being parallel with the screen, but having a vertical axis which turns in an opening in the bottom of second

table B′; and is connected to the bottom of the first table B, by means of an arm J′, and a connecting rod J^2, as represented. By thus arranging the arm J, it will be evident that, as the tables move back and forth, it has a lateral vibratory motion imparted to it and thus caused to continuously sweep the surface of the screen F.

As fast as the grain is cleaned, it discharges into the spout R, the unthreshed heads descending into the spout S.

In order to make more evident the utility of my machine, I will now give a connected description of its operation.

The power is attached by placing a universal joint on either end of the driving shaft. The sheaves of grain are fed in the usual way to the threshing cylinder and the straw and grain are all thrown up to the cap, and by it and the first arrester, which is adjustable, are thrown down on the shaker or first table. The second arrester does not impede the progress of the straw, but stops any flying grains which may have passed by the other arrester. The shaker by not having merely a horizontal motion, as usual, but a vertical motion accelerating as it approaches the end of its motion outward, shakes up the straw and separates the grain from it, and also passes forward the straw, leaving the grain resting on the slats of the shaker which are placed nearly in the plane of its motion, and as the grain has no tendency to pass off, it slides easily through the slots or openings to the lower shaker. As the straw continues its course, the fingers I, thoroughly agitate it and thus separate any grain which may be hanging to it. The grain falls onto the second table, which acts to carry it and any chaff which may have fallen through the upper shaker, to the chute board, from whence it is sifted onto the upper screen F. At this point, it has the same motion which a skilful operator gives to the grain in a sieve, and by reason of the arm J, vibrating over the screen, any improper accumulation of foreign substance is prevented, and thus the necessity of a hand-threshing avoided. The grain now passes to the lower screen and the stationary scrapers break off and clean off such fragments of heads and straws as may pass through the upper sieve and are inclined to stick into and choke the lower screen; without these scrapers, the lower screen becomes useless in a few hours' threshing. The cleaned grain discharges at the spout R, and the unthreshed heads at spout S. The amount of stuff taken off here depends and is regulated by the position of the upper screen. The cheat, cockle and other small impurities pass out of the opening Y, below.

The two shakers or tables counterbalance each other and produce no injurious jar of the machine while running.

The small amount of gearing with the total absence of belts and pulleys are advantages which all must appreciate, especially in a machine which is expected to run without shelter. The decreased cost of construction together with ease of repair are important items.

What I claim as my invention and desire to secure by Letters Patent, is—

1. The scrapers K, which sweep the lower screen when constructed with three sides and arranged as shown for the purpose set forth.

2. The combination of a stationary adjustable straw arrester N, with a swinging one M, in the cap O, of the machine, as set forth.

IRA HART.

Witnesses:
A. F. Barnes,
I. B. Wright.