

(No Model.)

E. H. NICHOLSON.
STRAW SEPARATOR FOR THRASHING MACHINES.

No. 452,948.

Patented May 26, 1891.

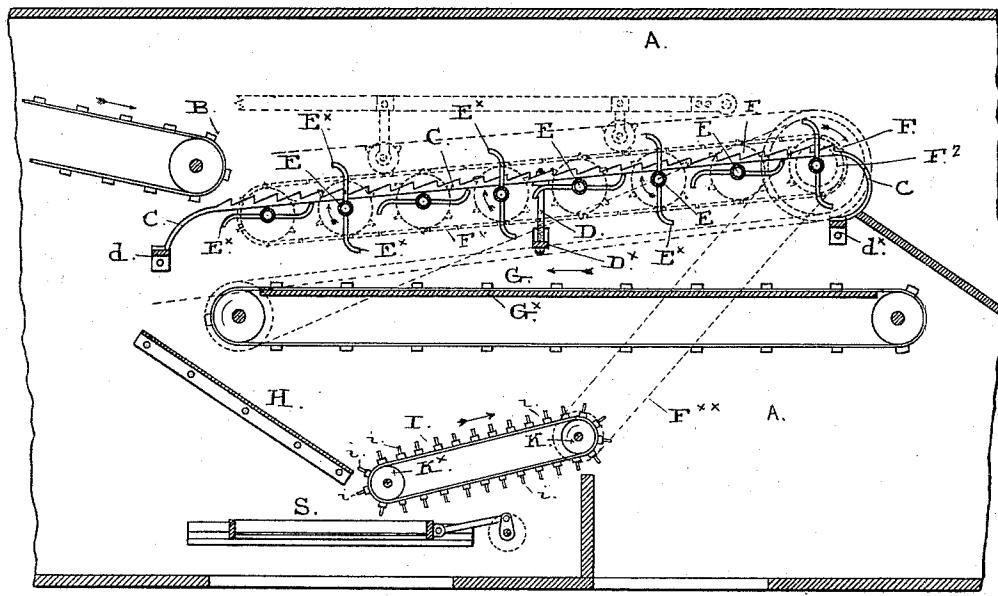


Fig. 4.

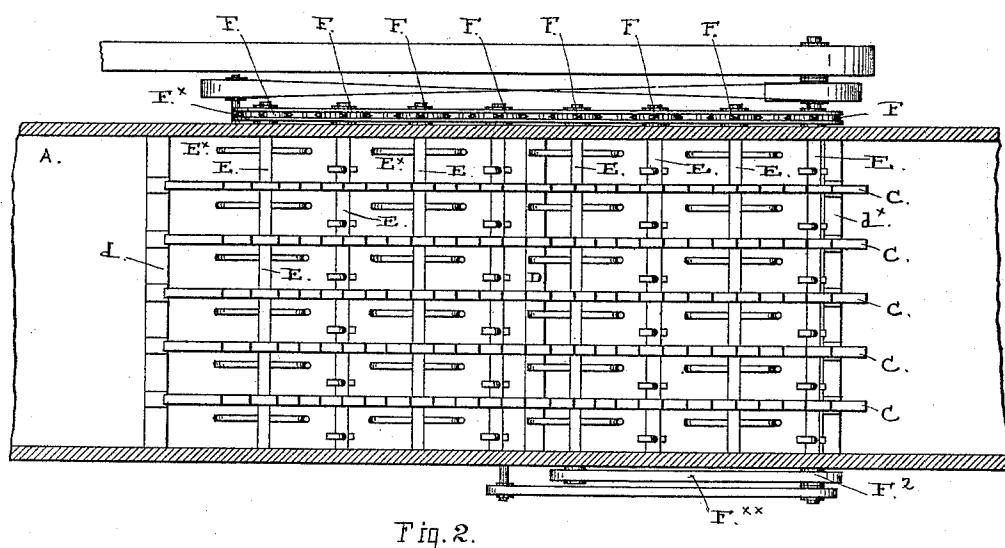


Fig. 2.

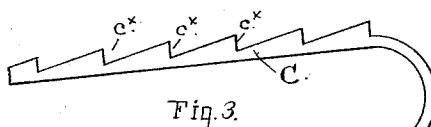


Fig. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

ELLIS H. NICHOLSON, OF SANTA MARIA, CALIFORNIA.

STRAW-SEPARATOR FOR THRASHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 452,948, dated May 26, 1891.

Application filed August 4, 1890. Serial No. 360,996. (No model.)

To all whom it may concern:

Be it known that I, ELLIS H. NICHOLSON, a citizen of the United States, residing in Santa Maria, Santa Barbara county, State of California, have invented certain new and useful Improvements in Straw-Separators for Thrashing-Machines, of which the following is a specification.

The object of my invention is to produce an improved means of separating and throwing out the straw from the grain, and particularly of removing the short and broken straw before it reaches the grain sieves or shoe of the thrasher; and the same consists in a novel construction and combination of parts, as hereinafter described, and pointed out in the claims, forming an improved mechanism that may be applied between the delivering end of the grain-draper and the separating-shoe, or immediately behind the thrashing-cylinder to take the grain and straw directly from that part of a thrashing-machine.

The accompanying drawings, forming part of this specification, illustrate the manner in which I construct and apply my improvement at the delivery end of the grain-draper, and it shows in Figure 1 a vertical section taken in a longitudinal direction through parts constituting the separating mechanism and also the discharge end of the grain-draper and the separator-shoe, in Fig. 2 the straw-separator in top view without the grain-draper, and in Fig. 3 a side view, on a larger scale, of one of the notched bars that carry the long straw, the rear end portion of the bar being shown.

A represents the sides of the thrashing-machine, and B the discharging end of the grain-draper.

C C are long bars or rods having saw-tooth notches c^x in the top faces, the inclined sides of which stand toward the rear or in the direction of travel of the straw. The ends of the bars curve downwardly and are supported by the horizontal cross-pieces d d^x, the front ends being secured to their support d, but the rear ends being unattached, so that the bars may be raised or lowered at the rear to change the degree of inclination, if desired. The rear ends are set higher than the front ends, in order to give the supporting-surface formed of these bars an upward inclination in the direction of travel, and provision is made for

setting the bars separately by fixing beneath each bar a screw-threaded rod D, working through a stationary cross-bar D^x and furnished with setting-nuts, as shown in Fig. 1. These afford adjustment of any one or all of the notched bars for purposes of alignment, and in the case of very long bars this means of adjustment can be placed at several points 60 in the length of the bar to prevent sagging and preserve an even surface.

E E are a number of picker-shafts furnished with radial arms E^x and supported in bearings in the sides of the machine-casing for rotation in horizontal position one behind the other, one shaft being set at suitable distance from the other to bring its arms within the circle described by the ends of the arms on the next shaft adjacent to it. Each shaft is set somewhat above the level of the shaft next in front, in order to bring the arms of the whole set of shafts to project in their revolutions at uniform distances above the straw-supporting surface formed of the notched bars. There are two sets of arms or fingers E^x on each shaft, one diametrically opposite to the other, and continuous rotation of the whole number of shafts is produced from a principal driver by means of a sprocket-wheel F on the end of each shaft and the drive-chain F^x running above and beneath all the sprocket-wheels from the driving-wheel. They are connected in this manner to run positively and without changing the relative 85 positions of their fingers, which are so set and timed that those on one shaft alternating with those on the next adjacent shaft shall stand horizontally when the others of the next shaft project through the surface of notched bars and stand about perpendicularly. These picker-shafts are best made of gas-pipe or similar light tubing drilled for the fingers, which are driven through from one side to the other and turned up at the ends.

When in operation, the fingers of one shaft act under and against the straw to take it from the fingers of the shaft next below and throw it within the paths of the fingers next above, and by this means the whole series 100 running continuously a regular and rapid progression of the straw is kept up by the joint operation of all the shafts.

The inclined bars are notched on the top to

prevent backward movement of the straw, and are set at suitable distances apart to let the grain and short straw fall through to the endless carrier G. The office of this part G 5 is to catch and convey the grain and short straw to a separating device beneath, and it is formed of a slatted endless apron or what is commonly known as a "grain-drag," consisting of spaced slats fixed to carrying-belts 10 and arranged over driving-pulleys to run closely against the top face of a board or solid bottom G^X from end to end continuously in one direction. The discharging end of this carrier is placed just above an inclined apron 15 H, that delivers the grain to the separator-shoe S, so that the matter falling from the end of the carrier G is delivered by the fixed apron H to the separating-sieve. Before reaching the sieve, however, the shorter straw 20 that has been carried along with the grain is removed by a short endless carrier I, which is set with one carrying-roller K in close relation to the lower end of the fixed incline and the higher discharging end at sufficient distance beyond to throw the straw out of the 25 machine.

The carrier I is an endless apron of slats armed with pins or short teeth i i, projecting from their upper faces, which run closely to 30 the bottom edge of the incline to catch the straw, while the grain drops through to the sieve, and it is driven by belt and pulleys, as shown in Figs. 1 and 2, from the shaft above,

or in other suitable way from another shaft of the machine.

The grain-sieve and its operating mechanism are of usual construction, and no special description thereof is necessary to a clear understanding of my present invention.

Having thus fully described my invention, 40 what I claim, and desire to secure by Letters Patent, is—

1. In a straw-separator, the combination of the rods or bars C, each supported at one end and free at the other, and adjusting-screws 45 whereby the elevation of each bar can be controlled with a series of revoluble picker-shafts having arms projecting up between the bars C, as set forth.

2. The combination of the notched inclined 50 bars supported at one end and free at the other, an adjusting-screw for each bar by which its elevation is controlled, and a series of uniformly-rotated picker-shafts arranged beneath the bars and having arms which project between them, with the endless traveling carrier arranged beneath the bars and shafts, and grain-receiving and straw-separating devices arranged at the discharge end of the carrier, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

ELLIS H. NICHOLSON. [L. S.]

Witnesses:

PHILIP STEWART,
E. T. KETCHAM.