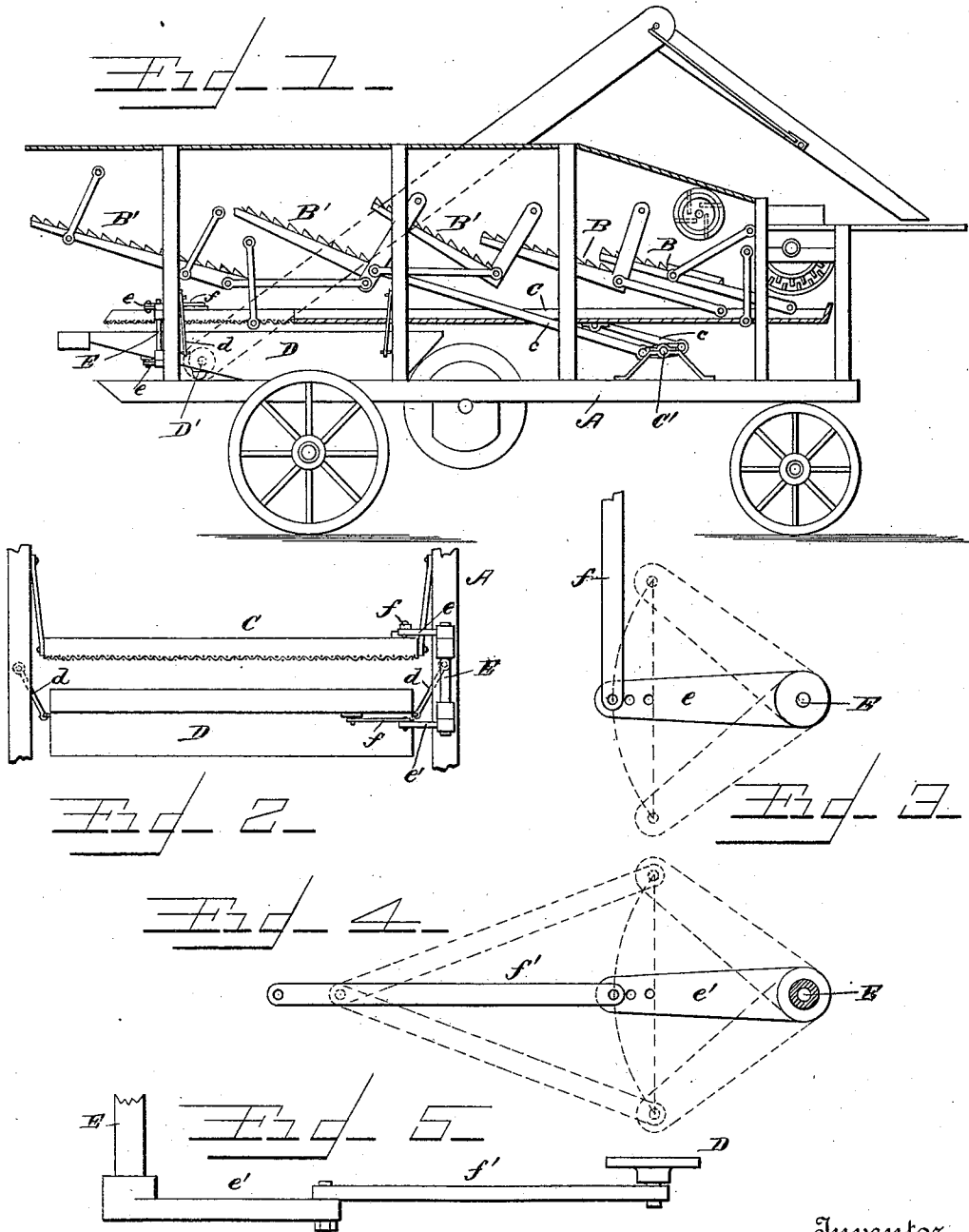


(No Model.)

F. G. SHEPARD.
THRASHING MACHINE.

No. 427,372.

Patented May 6, 1890.



Witnesses:
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UNITED STATES PATENT OFFICE.

FREEDOM G. SHEPARD, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO THE NICHOLS & SHEPARD COMPANY, OF SAME PLACE.

THRASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 427,372, dated May 6, 1890.

Application filed January 16, 1890. Serial No. 337,086. (No model.)

To all whom it may concern:

Be it known that I, FREEDOM G. SHEPARD, a citizen of the United States, and a resident of Battle Creek, county of Calhoun, and State of Michigan, have invented a new and useful Improvement in Thrashing - Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to the means for connecting the shoe with the lower longitudinal screen or grain-pan of the grain-separator, whereby the shoe, while operated from the grain-pan or longitudinal screen, is made to receive two short and rapid lateral vibrations to each longitudinal vibration of the latter, thereby facilitating the work of cleaning the grain and obviating the heavy jar and strain on the machine due to the long and simultaneous vibration of the shoe and grain-pan or screen.

It consists in a novel arrangement of rock-shaft with arms and links connecting the laterally-vibrating shoe with the longitudinally-moving screen or grain-pan, whereby two vibrations are given to the shoe in each vibration of the pan, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents in side elevation so much of a thrashing-machine grain-separator as is necessary to show my improvements. Fig. 2 is an end view of the same, partly broken away, showing the rock-shaft and its connections in elevation. Fig. 3 is a plan view of the rock-shaft, its upper crank-arm, and connecting-rod; and Fig. 4 is a similar view of the shaft, its lower crank-arm, and connecting-rod. Fig. 5 is a side elevation of the parts shown in Fig. 4.

A indicates the frame of the machine, which may be of any usual construction; B B', the upper sectional straw carrier and shaker, and C the lower longitudinal shaker-screen or grain-pan, which receives the grain, chaff, &c., escaping through the upper shaker or carrier, and from which the grain escapes to the shoe D, and thence to the conveyer at D', which carries it out of the machine. Longitudinal vibration is imparted to the shaker B B' and grain-pan C by links c c, connecting them with

suitable actuating-cranks on a shaft C', as shown, or in any usual manner. The shoe is suspended at its outer or rear end on links d, connecting it with the frame A, and which permit a lateral movement or vibration of said end relative to the frame.

E indicates a vertically-arranged rock-shaft mounted in suitable bearing-brackets on the frame A, and provided at its ends with transversely-arranged crank-arms e and e', the upper one of which is connected by a rod or pitman f with the longitudinally-moving grain-pan C, and the lower one by a transversely-arranged rod or pitman f' with the bottom or side of the shoe D. The arrangement of the shaft E is such, preferably, that when the grain-pan C is at about the center of its throw or longitudinal movement the shaft will stand with its arms e' at right angles, or nearly so, with the path of said pan, so that in the vibration of the pan said arms will swing in an arc of a circle about the same distance back and forward of said position in which the rod or link f', connecting the shoe D with the arm e', will be in line substantially parallel with said arm. Consequently as the arm vibrates from said central position the shoe D will be vibrated back and forth laterally on each side of said central line a distance equal to the axis of the arc described by the end of the arm e' plus the difference between the base and the hypotenuse of a right-angled triangle, the base of which is formed on a line with the crank-arm e' and link f', and the hypotenuse by the pitman with the crank-arm at the end of its throw on either side of said base-line; or, in other words, the throw of the shoe will be equal to the difference in the distance between the shaft E and the pivotal connection of the rod F' with the shoe D, with the crank-arm e' and rod f' extended in a right or parallel line and the same points when the crank-arm and rod f' are deflected to the extent of their throw on either side of said parallel line, as illustrated in Fig. 4, the parts vibrating like the arms of a toggle-link and giving two vibrations of the shoe D to each one of the pan C. The throw of the shoe will of course be determined by the relative length of the arms e and e', and may be varied by making the links f and f' adjustable

in and out on said arms, which are shown provided with a series of perforations permitting such adjustment.

By the arrangement described two short
 5 rapid vibrations of the shoe are obtained in each vibration of the grain-pan, such as are found to be very effective in effecting a separation of the grain from the chaff and the impurities mingled therewith, much more so
 10 than the long slow vibrations imparted to the shoe under the usual arrangement of the parts for actuating it; and, further, these short quick vibrations of the shoe are found to be less injurious to the frame-work of the machine than the long and heavy strokes, as
 15 producing less swaying of jar and strain on the parts, and therefore rendering the machine more durable.

The arrangement of parts of the machine
 20 not hereinabove particularly described may be similar to that of machines in common use.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with the longitudinally- 25 reciprocating grain-pan or screen, the crank-shaft for actuating said pan, and the laterally-vibrating shoe, of the interposed rock-shaft, the crank-arms thereon arranged substantially at right angles to the adjacent sides of 30 the pan and shoe, and link-rods connecting said arms, one with said grain-pan and the other with the shoe, substantially as described, whereby two lateral vibrations are imparted to the shoe in each longitudinal vibration of 35 the grain-pan, as specified.

In testimony whereof I have hereunto set my hand this 11th day of January, A. D. 1890.

FREEDOM G. SHEPARD.

Witnesses:

A. C. KINGMAN,
 C. C. BEACH.