

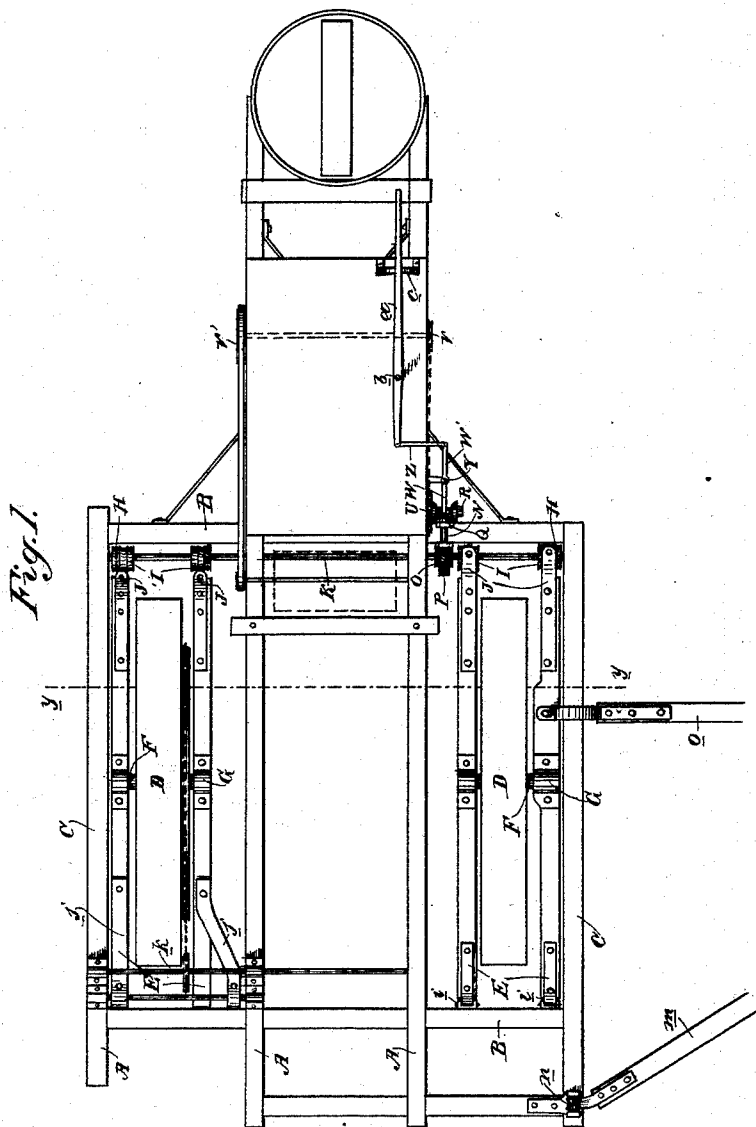
(No Model.)

3 Sheets—Sheet 1.

B. HOLT.
TRAVELING HARVESTER.

No. 483,449.

Patented Sept. 27, 1892.



Witnesses,
J. H. House
J. H. Aschbeck

Inventor,
Benjamin Holt.
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attys

(No Model.)

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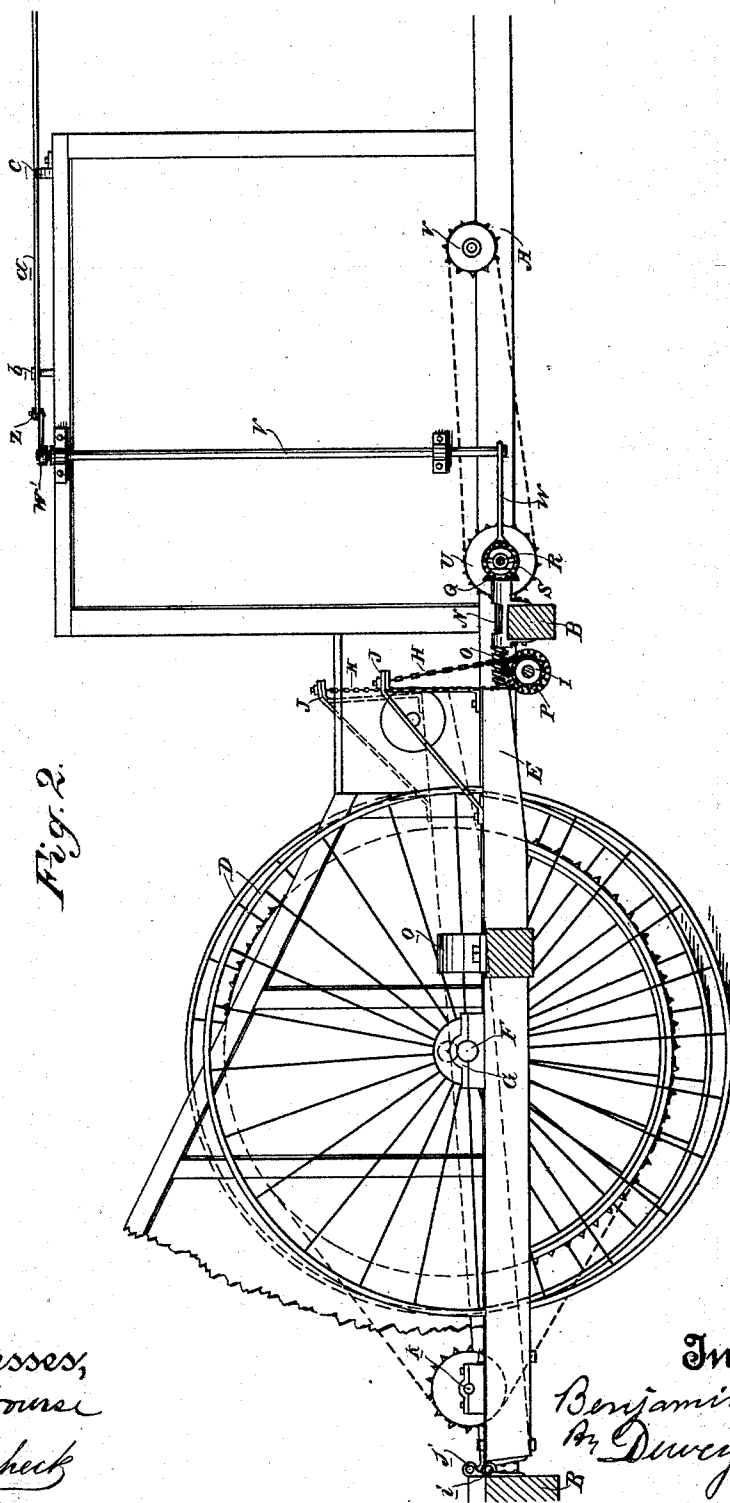


Fig. 2.

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Fig. 3.

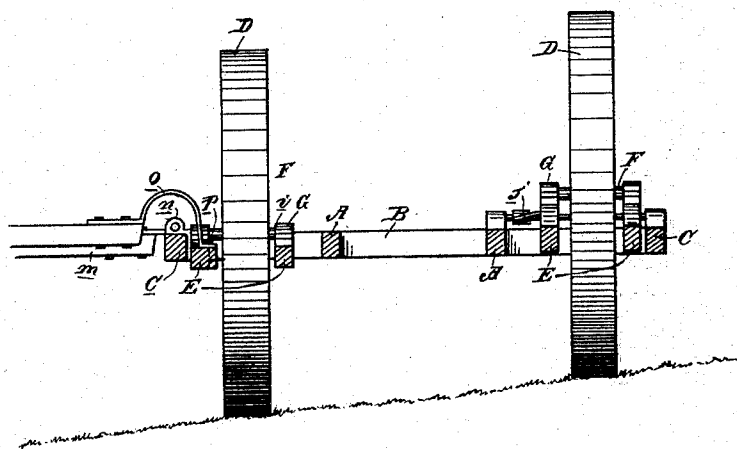
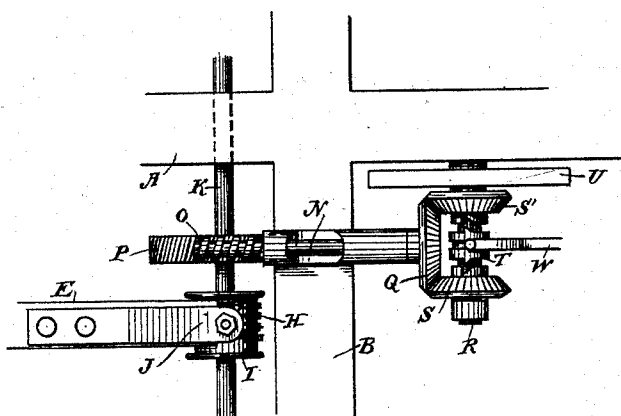


Fig. 4.



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UNITED STATES PATENT OFFICE.

BENJAMIN HOLT, OF STOCKTON, CALIFORNIA.

TRAVELING HARVESTER.

SPECIFICATION forming part of Letters Patent No. 483,449, dated September 27, 1892.

Application filed April 25, 1892. Serial No. 430,606. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN HOLT, a citizen of the United States, residing at Stockton, San Joaquin county, State of California, have invented an Improvement in Traveling Harvesters; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in apparatus designed to cut, thrash, clean, and sack grain.

It consists in so constructing the apparatus as to enable it to travel upon side hills and maintain the body of the thrashing and cleaning machine in a horizontal position and the wheels in a vertical position at all times, whatever may be the inclination or variation of inclination of the ground upon which the machine is working.

It also consists in details of construction by which this is carried out.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a plan view of my harvester. Fig. 2 is an elevation of the same, the side timber C being removed. Fig. 3 is an end section of the same on line *yy* of Fig. 1. Fig. 4 is a detail plan view of the raising clutch mechanism.

The object of my invention is to enable a traveling harvester and thrasher to be used upon side hills of any description and maintain the frame of the thrasher and cleaner at all times in a horizontal position and at the same time maintain the bearing-wheels in a vertical plane.

It also has for its object the application of a suitable simple mechanism by which the positions of the bearing-wheels relative to the frame may be changed to suit the varying declivities over which the machine will pass.

In the present drawings I have only shown so much of the outlines of the well-known traveling harvester, thrasher, and cleaner as will enable my present invention and its connection therewith to be clearly understood. I have purposely left out all unnecessary wheels, belts, and gears by which the various portions of the machinery within are driven, but which are of common knowledge to every one familiar with this class of machinery.

A are the longitudinal base-timbers of the harvester-frame, having the transverse timbers B fixed across them and extending beyond them upon each side in front of and behind the bearing-wheels. Upon the outer ends of these transverse timbers are the side timbers C, which, with the transverse timbers, inclose the space within which the main bearing-wheels D travel. These wheels are ordinarily journaled across this frame upon short independent shafts; but in the present case I have shown a supplemental frame E, which is sufficiently smaller than the space included between the timbers A, C, and B to allow this frame to move freely in the space. The wheels D have the independent shafts F, journaled in boxes G upon the frame-timbers E which, as before described, are independent of the timbers A and C. At one end the timbers E are hinged to the transverse timbers B of the main frame. In the present case I have shown these hinges at the rear of the bearing-wheels for the purpose of placing the operating mechanism near the front and within reach of the driver, as the apparatus to which the device is here shown attached is of that class in which the machine is hauled by a team of horses or traction-engine or other motor attached to the front.

It will be manifest that if the apparatus be driven by power applied at the rear, as in the case of some harvesters, a different arrangement of details would be necessary; but the main features of the construction would be retained—that is, the hinging of the wheel-frames to the main frame, so that the wheels could be raised or depressed independently of each other.

Various devices may be employed to raise and depress the movable or free ends of the swinging wheel-frames about their hinges. In the present case I have shown chains H, coiled around winding-drums I, which are fixed upon a shaft K, extending across the main frame and journaled in bracket-boxes beneath the main frame A. The chains H extend from the winding-drums up to the projecting ends of stout brackets J, which are fixed upon the swinging wheel-frames. The chains connecting with the brackets of the swing-frame upon one side of the machine are

coiled about their respective drums in one direction, while the chains of the opposite side are coiled about their drums from the opposite direction. It will thus be seen that when the shaft K is turned in one direction the chains upon one side of the machine will be wound up, thus drawing the ends of the swing-frames down below the level of the main frame, while the chains at the opposite side will be correspondingly unwound and the swing-frame with which they connect will be allowed to rise in proportion as the frame on the opposite side is depressed. The effect of this is plainly shown in Fig. 3, in which the relative positions of the two wheel-frames serve to retain the main frame A and the operative parts of the machine in a level position. In order to rotate the shaft K, by which these movements are accomplished, I have shown a transverse shaft N, extending in the present case just above the shaft K and having upon it the worm or screw O, which meshes directly with a gear-wheel P, fixed upon the shaft K, so that when the worm O is turned in either direction it will act through the gear to rotate the shaft K either one way or the other.

Upon the end of the shaft N is a beveled gear Q, and just in front of it is journaled a shaft R, having upon it beveled pinions S and S', which engage with opposite sides of the gear Q. These pinions are loose upon the shaft R and ordinarily receive no motion from it, the shaft R being free to turn within them; but either one of the pinions is caused to engage so as to turn the gear-wheel Q by means of a clutch-sleeve T, which slides upon a feather on the shaft R intermediate between the pinions S and S'. The shaft R being rotated in one direction all the time, it will be seen that when the clutch T is moved to engage one of the pinions S it will revolve the gear Q, shaft N, and worm O in one direction and through it will turn the gear-wheel P and the shaft K so as to raise the hinged wheel-frame upon one side and depress the wheel-frame upon the opposite side. By reversing the clutch T and causing it to engage with the opposite pinion S' the movement of the parts in the opposite direction will be produced. The shaft R, the end of the shaft N, and the bevel-gears Q, S, and S' are supported in an iron bracket bolted to the main frame B. The shaft R has a sprocket-wheel U, and a chain from this sprocket-wheel passes around a sprocket-wheel V, fixed upon the outer end of the driving-shaft of the self-feeder, which supplies unthrashed straw to the thrashing-cylinder, and also over the sprocket-wheel V' at the opposite end of the feeder. As this self-feeder is always in motion when the machine is traveling, it will be seen that the shaft R will also be driven with it, and it will only be necessary to operate the clutch T by a suitable mechanism to engage either of the pinions S and S', and thus raise or lower either side of the machine.

The connection to drive the mechanism may, however, be made with any convenient part of the machine.

The operating mechanism in the present case consists of a clutch-lever W, the forked ends of which engage the groove or channel in the clutch T. This clutch-lever W is fulcrumed at Y, and a rearward extension W' is connected by a link Z with a lever *a*, fulcrumed at *b* upon the top of the case containing the self-feeder. This lever *a* extends forward to a point within easy reach of the operator and there engages a rack *c*, by which it may be held either in a central position, in which the clutch T is disengaged from both the pinions S and S', or it may be held at one side or the other to engage one or the other of the pinions with the clutch. In this manner it is easy to apply the power to raise or depress either of the wheel-frames with reference to the main frame. In the present case I have shown the hinges *i*, by which the wheel-frames E are connected with the transverse timbers B, at approximately a level with the wheel-frame E upon the right side of the machine; but upon the left side the hinge is shown as elevated above the frame E and connected with it by a stout strap-iron *j*. The object of this is to bring the hinge approximately into line between the wheel-shaft F and the shaft *k*, upon which is fixed the sprocket-wheel, to which power is communicated by the chain from the sprocket-wheel upon the main bearing-wheel D on that side. By this construction the chain will be maintained sufficiently taut for all practical purposes whether the wheel-frame be raised or depressed about its hinge, the chain slackening a little when it is raised or depressed to the extreme distance, but not sufficiently to interfere with the operation of the machine.

In order to maintain the proper connection between the header-frame, which is hinged to the right side of the thrashing-machine frame, the rear timber *m* of this frame is connected by a loose or rolling hinge-joint *n* with the rear end of the outer frame-timber C upon that side, while the front header-frame timber *o* is connected with a pin *p* upon the outer wheel-frame timber E upon that side, as is plainly shown in Figs. 1 and 3. By this construction it will be seen that the front timber *o* of the header-frame, being connected with the wheel-frame E, will always remain in the same relation with the surface of the ground, while the rear timber *m*, being connected with the main frame of the machine, will be raised or depressed with relation to the wheel-frame, as the timber *o* is the one upon which the movable portion of the header is supported and at the outer end of which the bearing-wheel of the header-frame is journaled. It will be manifest that by this construction the header will always be maintained in the proper relation with the surface of the ground and will not be subject to changes of position on account of the change of position of the main frame. It will be seen

from this construction of my device that no matter how much the wheels may be raised or depressed with relation to each other they always stand in a vertical plane, or what is termed upon a "plumb-spoke," as shown in Fig. 3, and, the main frame being always maintained in an approximately-horizontal position transversely, it will be manifest that it will be impossible to upset the machine, even although it works upon an incline as great as

It will be understood that in harvesting grain upon side hills the machine will always move in an approximately-horizontal line along the face of the hill and at right angles with the inclination thereof.

The gearing and mechanism herein described have been tested and found to work in a satisfactory manner; but it will be obvious that the adjustable wheel-frames may be operated by many different mechanical contrivances which will suggest themselves to a mechanic, the object being in any case to maintain the main frame in an approximately-level position by the relative movements of the independently-movable wheels.

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

1. The hinged frames within the main frame of the machine and carrying the main supporting-wheels, and mechanism connecting said frames to move one of them simultaneously with and in a vertical direction opposite to the other wheel-frame, whereby the said hinged frames may be adjusted to the surface of the ground without affecting the normal horizontal position of the main frame.

2. In a traveling harvester and in combination with its main frame for supporting the thrashing and cleaning mechanisms, the wheel-frames located within opposite sides of the main frame and carrying the main supporting-wheels, said wheel-frames being movable simultaneously in opposite vertical directions without changing the normal horizontal position of the main frame, substantially as herein described.

3. In a traveling harvester, a main frame adapted to support the thrashing and cleaning mechanisms, the wheel-frames adjustably connected with the main frame and having the main wheels upon opposite sides journaled in them, and mechanism connecting said wheel-frames with each other, whereby said frames may be simultaneously moved in opposite vertical directions without changing the normal horizontal position of the main frame, substantially as herein described.

4. In a traveling harvester and in combination with its main frame, vertically-adjustable frames carrying the main supporting-wheels and means connecting with the wheel-frames and moving them simultaneously in opposite vertical directions, whereby the main frame is maintained in an approximately-horizontal position.

5. In a traveling harvester, a main frame upon which the thrashing and cleaning machinery are supported, supplemental side frames hinged at one end to the main frame, so that the opposite ends swing in vertical planes with relation to the main frame, bearing-wheels journaled in the supplemental movable frames independently of each other, chains connected with the movable ends of the wheel-frames, and a transverse shaft having winding-drums fixed upon it about which the chains are reversely coiled and uncoiled, whereby the wheel-frames are elevated or depressed simultaneously and in opposite directions, substantially as herein described.

6. In a traveling harvester, the main frame, the supplemental wheel-frames hinged to the main frame so as to move in vertical planes with relation thereto, chains connected with the free ends of the hinged frames, a shaft or shafts extending transversely across the main frame and journaled thereon, and winding-drums fixed to said shafts upon which the chains connecting with the wheel-frame upon one side are coiled, while those upon the other side are simultaneously uncoiled, whereby one wheel-frame is raised and the other depressed with relation to the main frame, substantially as herein described.

7. In a traveling harvester, a main frame, supplemental wheel-frames independently hinged to the main frame, a horizontal shaft extending transversely across the main frame, having winding-drums upon its outer ends, chains connected with the wheel-frames and winding upon the drums upon opposite sides of the shaft, so that one wheel-frame will be raised and the other simultaneously depressed by the rotation of the pinion-shaft, mechanism whereby said shaft is rotated, consisting of a transverse shaft, a worm-wheel upon the pinion-shaft, a bevel-gear Q upon a worm-shaft, and bevel-pinions upon a supplemental shaft R, engaging opposite sides of the gear-wheel, and a clutch T, sliding upon a feather upon said shaft intermediate between the pinions and movable so as to engage either of the pinions and cause the worm-shaft to be revolved in either direction, substantially as herein described.

8. In a traveling harvester, the main frame, the independent wheel-frames hinged thereto upon opposite sides of the machine, chains connected with said wheel-frames, a shaft extending across the main frame, and winding-drums thereon upon which the chains coil and uncoil, so that the rotation of the shaft will simultaneously raise one of the wheel-frames and depress the other, a worm-gear, the counter-shaft R, the bevel-wheel Q, pinions S and S', and clutch T, levers W' a, and connecting-link Z, whereby the mechanism is moved so as to engage the clutch with either of the pinions to reverse the pinion-shaft, substantially as herein described.

9. In a traveling harvester, the main frame having the thrashing and cleaning machinery

supported thereon, independent wheel-frames
hinged thereto upon opposite sides so as to
move in vertical planes with relation to the
main frame, and mechanism whereby said
5 wheel-frames are moved in opposite direc-
tions and the main frame maintained in a
horizontal position, in combination with the
header-frame, the outer end of which is sup-
ported upon an independent bearing-wheel,
10 the front timber *c* of said frame being con-

nected with the movable wheel-frame near
the wheel-axle and the rear timber hinged to
the main frame, substantially as herein de-
scribed.

In witness whereof I have hereunto set my 15
hand.

BENJAMIN HOLT.

Witnesses:

GEO. H. COWIE,
W. J. HALL.