

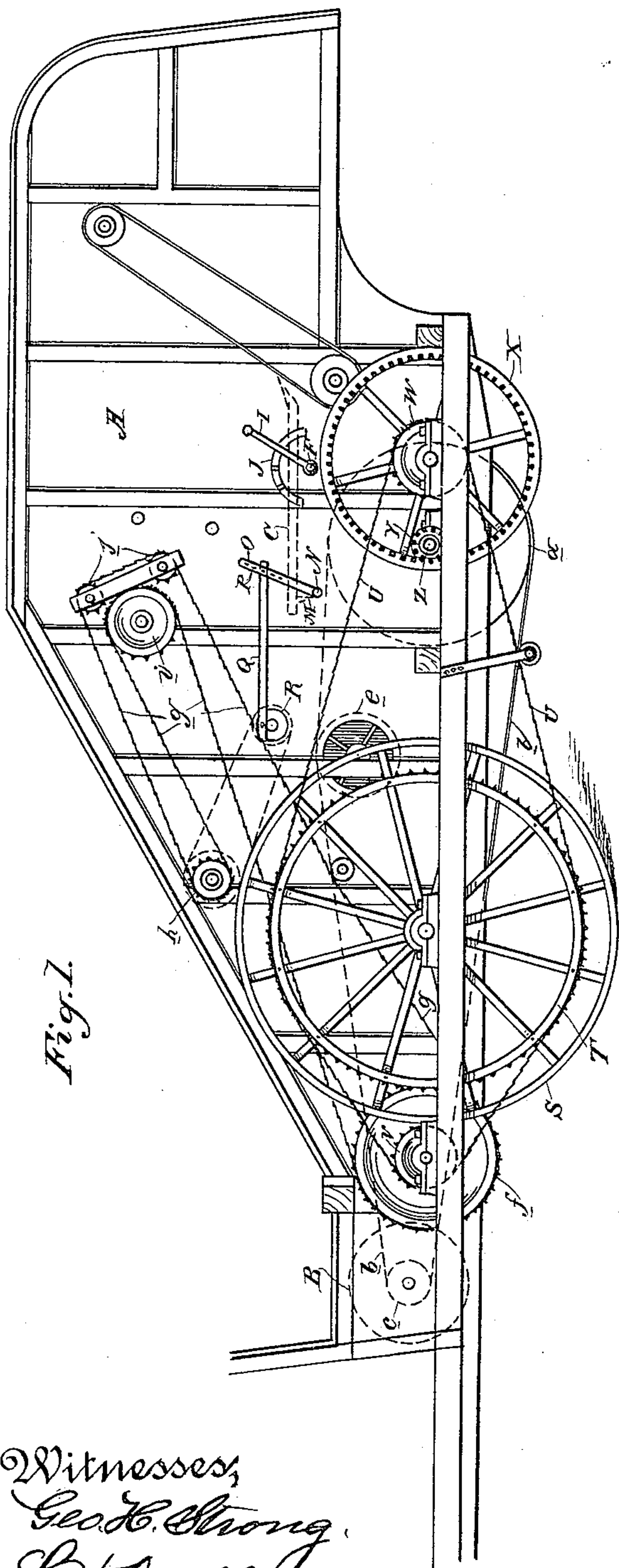
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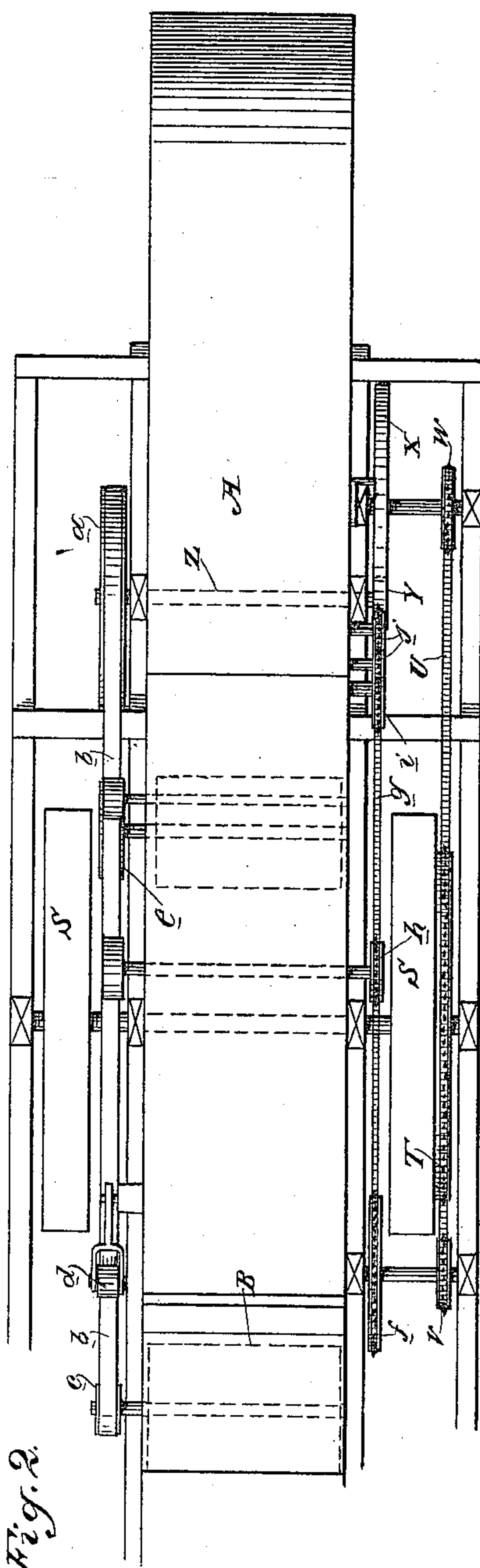
G. W. HAINES.
TRAVELING THRASHER AND CLEANER.

No. 440,843.

Patented Nov. 18, 1890.



Witnesses,
Geo. H. Strong,
J. H. Nourse



Inventor,
George W. Haines
By Dewey & Co. atty

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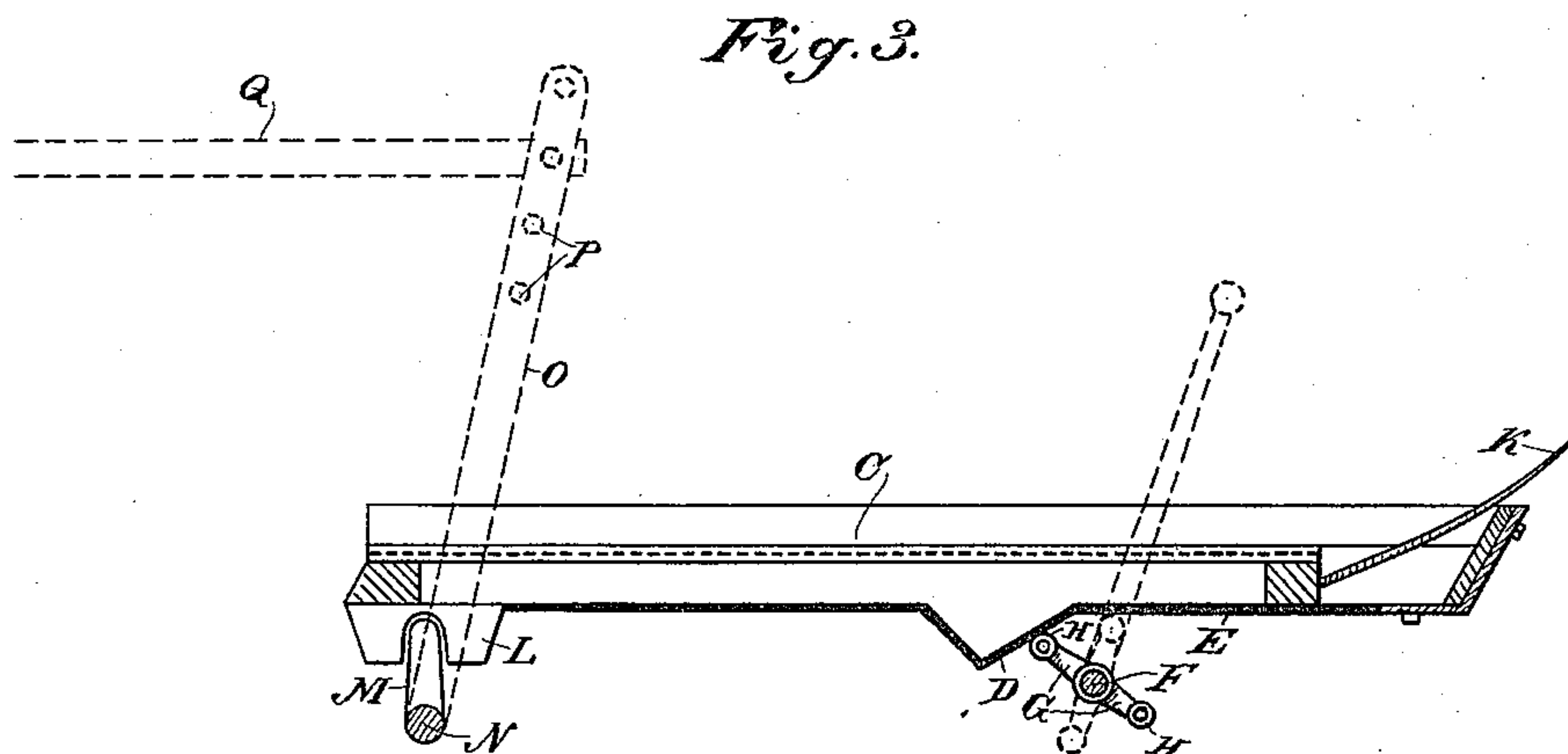
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UNITED STATES PATENT OFFICE.

GEORGE W. HAINES, OF STOCKTON, CALIFORNIA.

TRAVELING THRASHER AND CLEANER.

SPECIFICATION forming part of Letters Patent No. 440,843, dated November 18, 1890.

Application filed June 13, 1890. Serial No. 355,352. (No model.)

To all whom it may concern:

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

My invention relates to improvements in traveling harvesters, and especially to that portion of the machine which contains the thrashing and cleaning mechanism.

It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the machine taken from the left side. Fig. 2 is a plan view of the machine. Fig. 3 is an enlarged sectional view of the separating-shoe and the connected mechanism.

A is the body or case of the thrashing-machine mounted upon wheels and having the thrashing-cylinder situated at B and receiving the unthrashed straw from a self-feeder and a traveling belt or draper which receives the straw as it is cut and delivers it upon the self-feeder. These parts being common and forming no part of my invention are not here shown.

From the thrashing-cylinder the straw and grain are carried upward and backward by the usual carrier-belt, and the grain, together with some chaff and unthrashed heads and other impurities, is delivered upon the screen C of the separating-shoe. This shoe consists of a wooden frame, the sides of which are formed with an inclined projecting portion D beneath the rear end, this incline being shod with iron, as shown at E.

F is a shaft extending across the machine below the rear end of the shoe and journaled at each side, and upon this shaft the arms G are fixed, having anti-friction rollers H at the ends. These arms are fixed to the shaft just beneath the rear sides of the shoe and extend each side of the shaft a short distance, as shown. When the shaft is turned to the position shown in the full lines of the drawings, the rollers upon one end of the arms are turned upward against the inclined portion D of the

shoe, and it will be manifest that if the shoe is oscillated longitudinally the inclined portion moving upon the rollers will give the rear end of the shoe a lifting or up-and-down motion in conjunction with its longitudinal oscillation. When the shaft F is turned so as to disengage the rollers from the inclined portion of the shoe, the rollers at the opposite end of the arms are brought up beneath the horizontal portion of the sides of the shoe, as shown in the dotted lines, and in this position the shoe will have a simple longitudinal motion without any up-and-down or lifting action. At the outer end of the shaft F is fixed a crank-arm I, by which the shaft may be turned to bring the arm G into either of the positions above described at pleasure, and a curved rack J serves to hold the arm I at any desired point.

K are wire fingers fixed to the rear end of the shoe inclining upward and backwardly over the rear portion, so as to lift and convey away any straw or chaff which is carried backward to this point during the operation of cleaning. The forward end of the shoe has the lugs L fixed to the lower portion of the sides, and these lugs are slotted, as shown, to receive the upper ends of the rocker-arms M. These arms are fixed to a shaft N, which is journaled across the machine below the shoe, and upon the outer end of the shaft is a rocker-arm O, having adjusting-holes P at different distances from the center. A connecting-rod Q unites this rocker-arm with a crank-wheel R, which receives motion from some convenient part of the driving machinery, and this oscillates the shaft N and the rocker-arms M, which engage the front end of the shoe. This oscillation produces a longitudinal reciprocating motion of the shoe, and also gives the front end of the shoe a slight movement in the arc of a circle during these reciprocations.

When the quality of the grain renders it unnecessary to agitate the shoe violently, the shaft F, previously described, is turned so that the arms G stand at such an angle that the rear end of the shoe will be supported by the rollers H beneath its straight or plane surfaces, and the only motion the shoe will then have will be the longitudinal reciproca-

tion and the slight up-and-down movement of the forward end of the shoe, the rear end moving in approximately a straight line.

If the grain is heavy and choked with weeds and impurities, it is necessary to give the rear end of the shoe a more violent lifting or tossing motion, and this is accomplished by turning the shaft F so as to bring the rollers at the ends of the arms G beneath the inclined portion D of the shoe, so that while the shoe reciprocates longitudinally the rear end will also have a considerable rising-and-falling motion, which acts to lift or toss the grain and other substances at the rear of the shoe, and thus separate them more completely.

The thrashing-machine is mounted upon the usual bearing-wheels S, which support the main portion of the weight, and thereby a sufficient traction is produced, so that these wheels serve to drive the machinery of the header and thrasher. The wheel at the left (shown in the present case) acts to drive the thrashing and cleaning mechanism, while the wheel at the right is connected with the header mechanism. (Not here shown.)

Upon the side of the left bearing-wheel S is fixed a chain-driving sprocket-wheel T. A chain U passes over the top and bottom of this wheel, and also over the smaller chain-wheels V in front of the wheels S and W, which are behind it. These wheels are so much smaller than the wheel T that the chain as it passes above and below the wheel T will have a sufficient hold upon the sprockets or teeth of the wheel, so that both the upper and lower portions of this wheel act to drive the chain U, and this single driving-chain passing around both the sprocket-wheels V and W communicates motion to them.

Upon the shaft of the wheel W, which is suitably journaled upon the thrashing-machine frame, is fixed the wheel X, having the internal gearing, as shown, and this engages with the pinion Y, which is fixed upon the shaft Z, extending across the thrashing-machine frame. Upon the opposite end of this shaft is a pulley *a*, and a belt *b* from this pulley extends along the right side of the machine and passes around the pulley *c*, which is fixed upon the end of the thrashing-cylinder shaft, so that the latter is driven by this means.

d is a tightener-pulley journaled in a swinging frame hinged to the side of the thrashing-machine, this pulley resting upon the belt *b* and maintaining the proper tension of the belt. The belt *b* in passing from the pulley *a* to the pulley *c* also passes over a pulley *e*, which is fixed upon the end of the fan-shaft, and this belt thus serves to drive the fan.

Upon the shaft of the sprocket-wheel *v* is a larger sprocket-wheel *f*, and a chain *g* passes around this sprocket-wheel, thence around sprocket-wheels *h* and *i* and the direction or guide pulleys *j*, so that this single chain serves

to drive the carrier-belt shaft, the cleaning-shoe within the thrashing-machine, and also the mechanism of the supplemental cleaner, which is not here illustrated.

I am aware that it is common to drive this class of machinery by combinations of sprocket-wheels and chains, and also that the cleaning-shoe has been given a variety of motions by suspending it from hangers and in various other ways, and I do not claim, broadly, these features.

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

1. In a thrashing-machine and separator, the cleaning-shoe having its forward end supported upon the rocker-arms by which a longitudinal vibration of the shoe is produced, the inclined lower surface at the rear end of the shoe, in combination with the shaft having the transverse arms with friction-rollers at their opposite ends, said shaft being rotatable to move the arms, so that the rear end of the shoe will be supported either upon a plane or an inclined surface at will, substantially as herein described.

2. A separator-shoe having its front end supported upon rocker-arms by which a longitudinal oscillation is produced, inclined surfaces at the rear end and arms mounted transversely upon a shaft beneath the shoe having anti-friction rollers at the ends of the arms, and a lever and rack whereby the shaft may be turned so that one set of rollers may be raised to support the plane surfaces of the shoe or the other set to support the inclined surfaces, whereby either a longitudinal or a combined longitudinal and tossing motion may be given to the shoe, substantially as herein described.

3. The combination, with the frame of the thrashing-machine and its supporting-wheels, thrashing-cylinder, and separating and cleaning mechanisms, of a sprocket-wheel fixed to revolve with one of the main supporting-wheels, a sprocket-wheel mounted on a shaft in the thrasher-frame in front of the supporting-wheel, a similar sprocket-wheel mounted on a shaft in said frame in the rear of the supporting-wheel, a chain passing over said main sprocket-wheel and extending in front and rear thereof and passed around the sprocket-wheels at opposite ends of the machine, and two trains of gearing driven directly from said shafts, whereby the thrashing-cylinder and cleaning and separating mechanisms are operated, substantially as herein described.

In witness whereof I have hereunto set my hand.

GEORGE W. HAINES.

Witnesses:

H. E. WILLIAMSON,
M. C. GODDARD.