

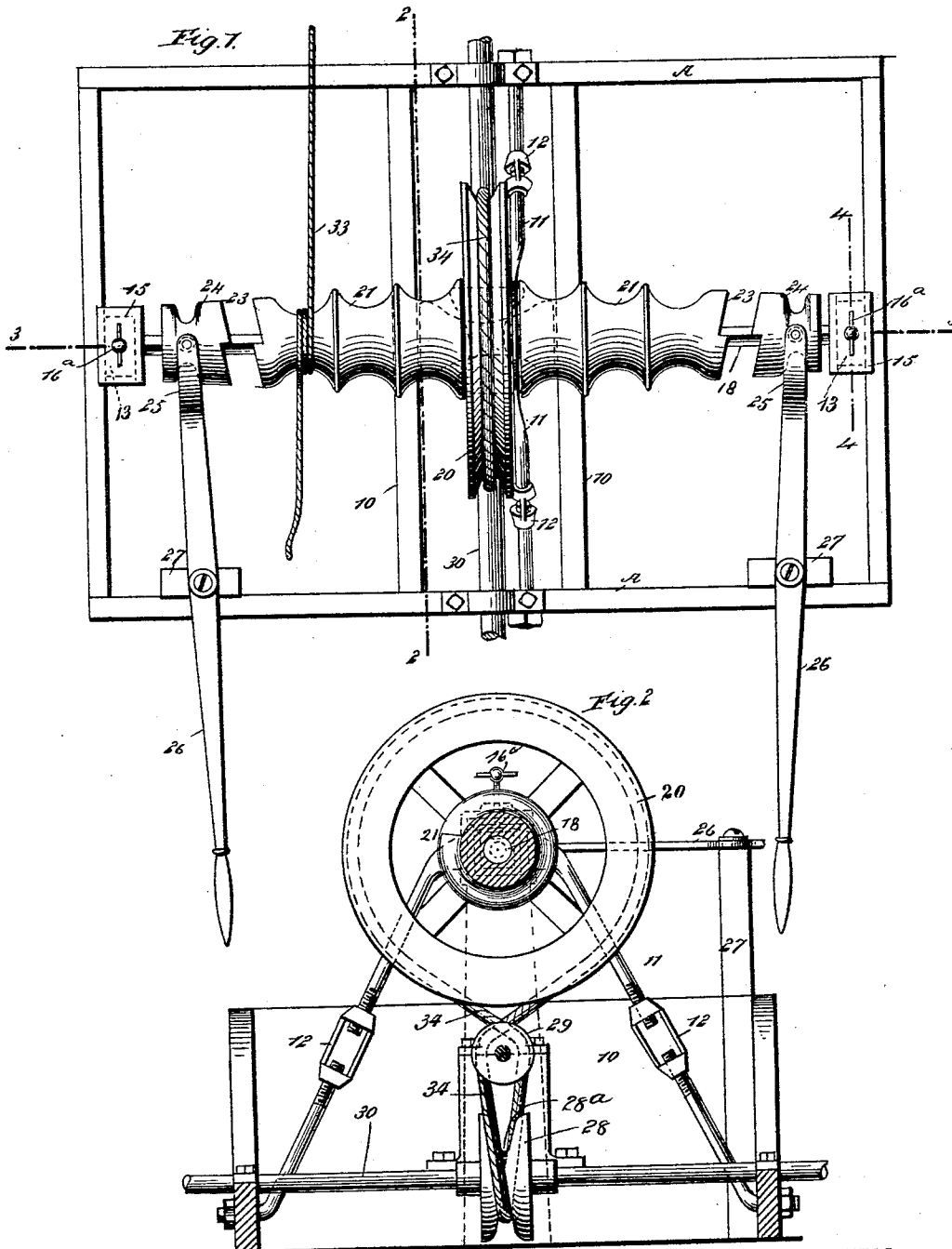
(No Model.)

2 Sheets—Sheet 1.

J. F. TUTTLE.
DEVICE FOR OPERATING HAY FORKS.

No. 569,437.

Patented Oct. 13, 1896.



WITNESSES:
John A. Rennie
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INVENTOR
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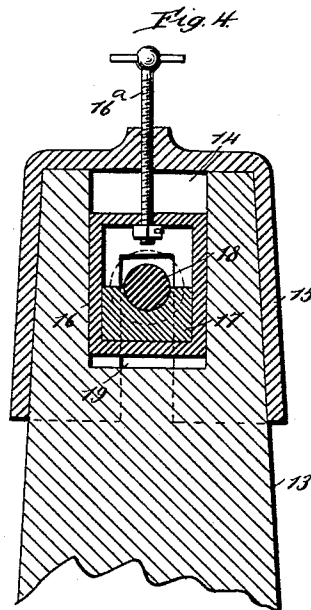
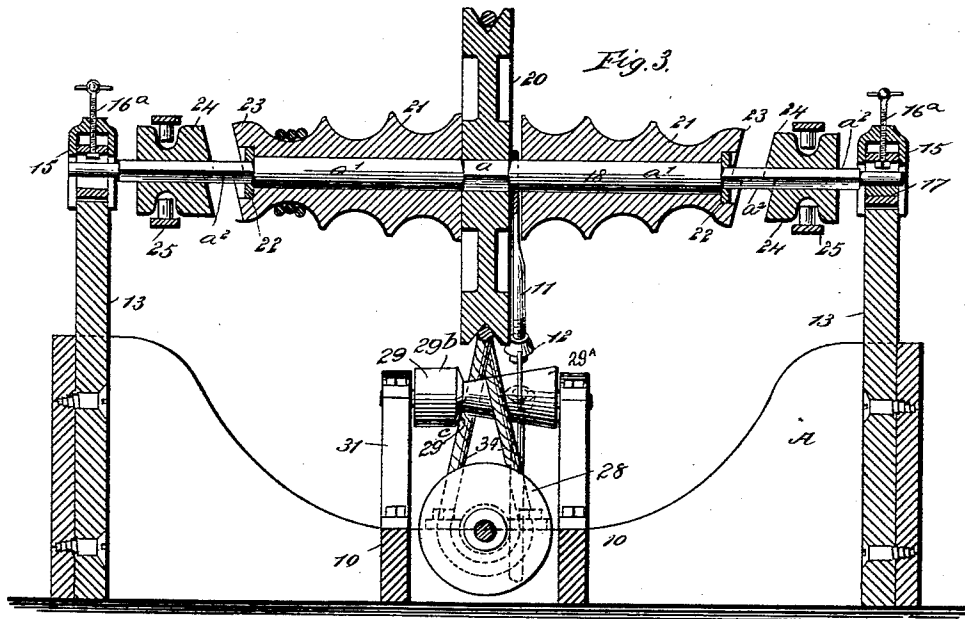
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UNITED STATES PATENT OFFICE.

JOHN FREMONT TUTTLE, OF SPRINGDALE, WASHINGTON.

DEVICE FOR OPERATING HAY-FORKS.

SPECIFICATION forming part of Letters Patent No. 569,437, dated October 13, 1896.

Application filed August 14, 1895. Serial No. 559,282. (No model.)

To all whom it may concern:

Be it known that I, JOHN FREMONT TUTTLE, of Springdale, in the county of Stevens and State of Washington, have invented a new and Improved Device for Operating Hay-Forks, of which the following is a full, clear, and exact description.

My invention relates to an improvement in mechanism adapted for the control of hay-forks or for similar purposes; and it has for its object to dispense with the derrick-teams used in connection with threshing-machines for the operation of the fork, thus insuring the safety of the forker, and enabling the fork to be used with more certainty than heretofore, furthermore enabling the fork to take up a much larger load than when the usual means are employed. Another object of this invention is to provide a device that will not allow the fork to interfere with the table-tender of threshing-machines.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the machine. Fig. 2 is a transverse vertical section taken substantially on the line 2 2 of Fig. 1. Fig. 3 is a longitudinal vertical section taken on the line 3 3 of Fig. 1, and Fig. 4 is a transverse detail section taken on the line 4 4 of Fig. 1.

In carrying out the invention the base-frame A is employed, usually of skeleton construction and of rectangular shape, the said frame being provided with cross-beams 10, one being placed at each side of its center, and a substantially yoke-bearing 11 is placed transversely in the frame between the cross-bars 10, and the said yoke-bearing is preferably made in sections connected by turnbuckles 12, whereby the members thereof may be adjusted as to length.

At each end of the frame an upright 13 is firmly secured or made integral therewith, and each upright is provided with a vertical slot 14 in its upper end, as illustrated in Fig.

4, the upper portion of each upright being covered by a cap 15. A frame 16 is held to slide in the slot of each upright, being raised and lowered through the medium of an adjusting-screw 16^a. Each frame 16 carries a box 17, and the ends of a line-shaft 18 are journaled in these boxes, the caps being provided with slots 19 in their lower edges, whereby they may be passed over the ends of the shaft.

The central portion of the shaft is preferably provided with a squared surface *a*, and at each side of the squared surface the shaft is given a rounded exterior contour, as shown at *a'*, while between the rounded portions of the shaft and its extremities flattened surfaces *a''* are formed, and the shaft is either rectangular or polygonal in cross-section at these points, as shown in Fig. 3.

A large pulley 20, serving likewise as a balance-wheel, is secured upon the central squared portion *a* of the line-shaft, and at each side of this pulley a conical or stepped pulley 21 is mounted to revolve on the round portions of the shaft, and the outer ends of these stepped or conical pulleys are countersunk to receive collars 22, secured on the shaft, and the outer extremities of the pulleys are given clutch-faces 23.

The pulleys are in three or more diameters, being shown in three diameters in the drawings, and the partitions between the several steps of the pulleys are somewhat sharpened, being conical in cross-section, enabling a rope or cable to be passed from one step readily to the other, and upon the outer squared portions *a''* of the shaft clutches 24 are held to slide and turn with the shaft, or the clutches may be splined on the shaft, and each clutch is embraced by the forked end 25 of a shifting lever 26, usually fulcrumed upon uprights attached to the frame, so that there are two sets of driving-pulleys 21, each being capable of independent action since each is provided with its own clutch and means for shifting the same.

A guide-pulley 29 is journaled in the beams 10, below the large driving-pulley 20, said guide-pulley being parallel with and immediately below the line-shaft 18. The pulley 29 is practically made in two sections, namely,

a long conical section 29^a and a shorter guide-section 29^b, of larger diameter than the conical section, the drop from one section to the other being very abrupt, forming a shoulder 29^c, as shown in Fig. 3. The second or driving pulley 28 is mounted upon a tumbling-rod 30, and the pulley 28 is at a right angle to the guide pulley 29. The driving-pulley is provided with a substantially V peripheral groove 31. The tumbling-rod, a section only of which is shown, is connected at one end by a knuckle-joint with a connecting-rod extending to a horse-power, and in like manner is connected with a separator, but as such construction is ordinary it is not illustrated.

The line-shaft 18 is driven by passing a belt 34 around the driving-pulley 20, crossing the same beneath said pulley and carrying it to an engagement with the guide-pulley 29 and the driving-pulley 28, the belt bearing against the shoulder of the guide-pulley, and also bears on the groove of the driving-pulley, and by reason of the angularity of this groove the belt is grasped or gripped at the sides and at the bottom. The shoulder upon the guide-pulley insures the belt running properly upon the main pulley 20, and the conical portion of the guide-pulley insures the belt running properly on the driving-pulley 28.

A rope 33, attached to the hay-fork and connected with the derrick in the usual way, is passed over one or the other of the steps of one of the conical pulleys 21, being passed around a step of greater or less diameter according to the speed desired to be imparted to the forks, and in the event the speed is to be increased or decreased at any time the rope or cable 33 may be readily shifted from one step to the other, being slid up the incline to the partition between the steps and down the opposite side thereof.

The fork having been placed in position to be loaded or having received its load, the clutch 24 is thrown into engagement with the cone or stepped pulley around which the rope 33 is passed, and the pulley will then revolve and draw the fork in direction of the machine or carry it to any point desired, the attendant simply coiling the slack of the rope at his feet. When the fork is to be returned, the clutch is thrown out of engagement with the cone or stepped pulley, and the cable will then play loosely on the pulley, the latter turning of its own accord, permitting the cable to run through the derrick.

When the machine is to be attached to a steam-thresher, the upper part only is used, and the belt is run from the pulley 20 to a

smaller pulley upon the driving-shaft of the engine or a convenient line-shaft.

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

1. In a machine for controlling hay-forks and like devices, a driving-shaft, a pulley located on the said shaft, a guide-pulley located beneath the said shaft-pulley, the said guide-pulley being made in two sections, one section being of greater diameter than the other, the section of the smallest diameter being conical, whereby a shoulder is formed between the two sections, the said guide-pulley being placed at an angle to the shaft-pulley, a driving-pulley located at an angle to the guide-pulley and beneath the same, being provided with a peripheral V-groove, and a belt engaging with the three pulleys, substantially as and for the purpose set forth.

2. In a machine for operating hay-forks and the like, the combination with a line-shaft, a pulley thereon, a conical or stepped pulley loose on the shaft, and a clutch for locking the conical or stepped pulley to the shaft, of a guide-pulley below the pulley of the said shaft, said guide-pulley being in two sections with shoulder between them, one section being larger than the other and the smaller section being conical, a grooved driving-pulley below and at right angles to the guide-pulley, and a belt passing around the said pulleys, the said belt being crossed between the guide-pulley and the pulley of the line-shaft, substantially as described.

3. In a machine for operating hay-forks and like articles, the combination, with a line-shaft, a driving-pulley secured on the shaft, conical or stepped pulleys mounted to turn on the shaft at each side of the driving-pulley, the face of each stepped or separated pulley-partition being concaved, a clutch adapted one for engagement with each stepped or conical pulley, and shifting devices for operating the said clutches, of a drive-shaft, a guide-pulley secured on the said drive-shaft beneath the driving-pulley of the line-shaft, and at right angles to the line-shaft, a second pulley located above the pulley of the drive-shaft, said guide-pulley being conical and having an abrupt shoulder at its small end being placed at right angles thereto, and a belt passed around the pulley on the line-shaft, crossed and carried over the lower pulleys, as and for the purpose specified.

JOHN FREMONT TUTTLE.

Witnesses:

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