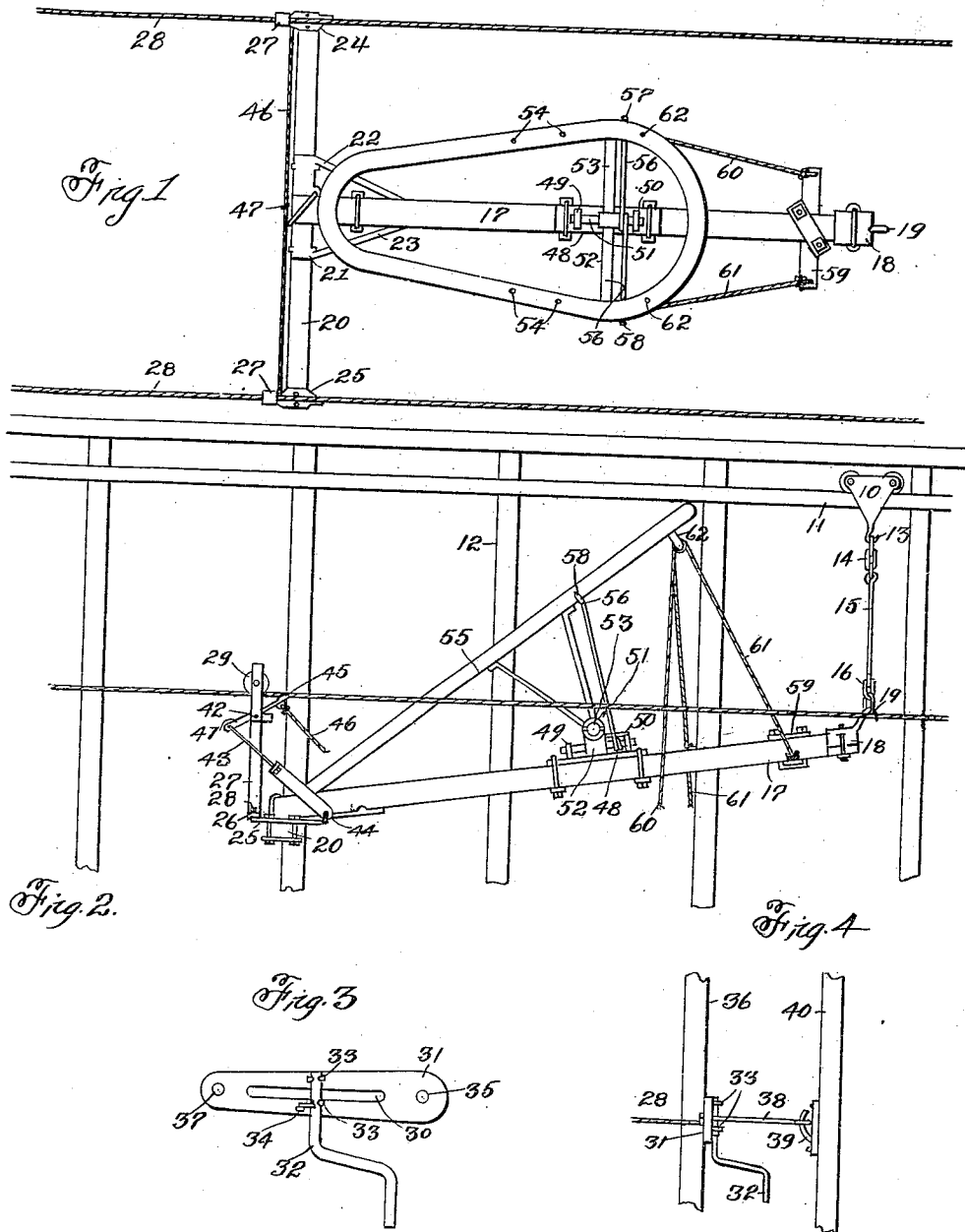


M. H. MADSEN.
HAY HANDLING MECHANISM.
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UNITED STATES PATENT OFFICE.

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HAY-HANDLING MECHANISM.

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To all whom it may concern:

Be it known that I, MADS H. MADSEN, a citizen of the United States of America, and resident of Kimballton, Audubon county, Iowa, have invented a new and useful Hay-Handling Mechanism, of which the following is a specification.

The object of this invention is to provide an improved mechanism for receiving and dumping laterally quantities of hay delivered to this mechanism by a hay carrier.

A further object of this invention is to provide means for anchoring a hay handling mechanism in a building, such as a hay barn or mow.

A further object of this invention is to provide an improved construction for the hay handling mechanism whereby the parts thereof are strengthened and made more convenient of construction and operation.

A further object of this invention is to provide improved means for supporting and tightening a cable in a building, such as a hay barn or mow.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claims and illustrated by the accompanying drawing, in which—

Figure 1 is a plan of the device. Fig. 2 is a side elevation of the device. Figs. 3 and 4 are detail views of the cable hanger.

In the construction of the device as shown, the numeral 10 designates a carrier adapted for travel on a track 11 longitudinally of a hay barn 12. A hook 13 is formed on the carrier 10 below the track 11 and rings 14 are suspended from said hook. A rod 15 is suspended from the lowermost ring 14 and rings 16 are suspended from the rod. A supporting bar 17 is provided and preferably is made of wood. A stirrup 18 is clamped to one end portion of the supporting bar 17 and a hook 19 is formed on said stirrup and engages the lowermost ring 14. One or the other or any number of rings 14, 16 may be removed or additional rings may be supplied to determine, adjust and control the altitude of the supporting bar 17 and stirrup 18 relative to the carrier 10. A cross-bar 20 is provided and preferably is made of wood. The cross-bar 20 is arranged transversely of and beneath the forward end portion of the supporting bar 17, the latter being in approximately horizontal position. The cross-bar 20 is fixed and secured to the

forward end of the supporting bar 17 by means of a bracket 21 clamped to said supporting bar and also clamped to the cross-bar. The bracket 21 is formed with braces 22, 23 at oblique angles to the supporting bar and cross-bar. It will be observed that no bolt holes or apertures of any kind are formed in either the cross-bar or supporting bar at the point where the same are connected, such connection being wholly made by the bracket and clamps. Plates 24, 25, of like construction, are fixed to and extend transversely of end portions of the cross-bar 20. Each plate 24, 25 is formed with a hook 26 at its forward end and a yoke 27 engages said hook and extends upwardly therefrom. A split key 28 may be mounted through the hook 26 to hold the yoke thereon. The upper end portion of each yoke 27 extends over a cable 28 and is provided with a roller or pulley 29 engaging said cable and riding thereon. Two of the cables 28 are employed, one on each side of the barn or mow, and they are located at approximately the same altitude and at a lower altitude than the track 11. Each cable 28 preferably is mounted as shown: One end of the cable is secured to one or more of the rafters at one end of the barn. The opposite end of the cable is extended through a slot 30 formed in a plate 31 (Figs. 3 and 4). The extremity of the cable 28 is fixed to a crank-shaft 32 journaled for rotation in bearings 33 on the opposite side of the plate 31 from that at which the cables enter. A ratchet is formed on the crank-shaft 32 and a spring-pressed pawl 34 on the plate 31 engages said ratchet. A hole 35 is formed in one end of the plate 31 to receive a bolt whereby said plate may be attached to and depend from a rafter 36 near the end of the barn and a hole 37 is formed in the opposite end of said plate to receive an eye-bolt 38. The eye of the bolt 38 is engaged with a suitable device such as a hook 39 on a hook plate fixed to the end rafter 40 adjacent to the rafter 36. By this means the provision is made for the plate 31 depending from one rafter and braced to another in order that the crank shaft 32 may be free to rotate under manual control.

Each yoke 27 is provided with a brake-lever 41 fulcrumed intermediate of its ends beneath the cable 28 by means of a pin and each pin is removable and replaceable. The lower end of each lever 41 is connected

by a tension rod 43 to a hook 44 on the rear end of a plate 24 or 25. The upper end portion of each lever 41 is formed with a brake-shoe 45 adapted to engage the cable 28 at the rear of the pulley 29. A rope 46 is fixed to each lever 41 adjacent the brake-shoe and extends therefrom to a point of connection at 47, from whence said rope extends within reach of the operator of the mechanism.

A head 48 is mounted on the central portion of the supporting bar 17 and is clamped rigidly to said supporting bar. Ears 49, 50 are formed on and rise from the head 48 and a shaft 51 is mounted rigidly in said ears. A hub 52 is journaled on the shaft 51 between the ears 49, 50 and rises therefrom. A lateral shaft 53 is mounted in and extends through the hub 52 above and at right angles to the shaft 51 and brackets 54, one of which is shown in Fig. 2, are journaled on the outer ends of said shaft and extend upwardly therefrom. A frame 55, of generally elliptical form, wider at one end than the other, is fixed at its sides to and supported by the brackets 54. A spring 56 is coiled at its center about the shaft 51 in front of the ear 50 and beneath a flange on said ear, and the arms of said spring extend laterally and upwardly and terminate in hooks 57, 58 engaging the sides of the frame 55 at the rear of the brackets 54.

A cross-head 59 is mounted on and clamped to and transversely of the rear end portion of the supporting bar 17. Ropes 60, 61 are connected at their rear ends to the ends of the cross-head 59 and extend through pulleys 62, one of which is shown in Fig. 2, and thence downwardly on opposite sides of the supporting bar 17 within reach of the operator of the mechanism.

In practical use of the mechanism above described, it is employed in connection with a hay carrier (not shown) which may be of any desired form or construction susceptible of operation to carry a portion of hay along the track 11 into contact with and upon the frame 55. The mechanism of this invention is located as shown and anchored against rearward movement by contact of the brake-shoes 45 with the cables 28. The impact of a portion of hay on the frame 55 tends to move said frame and its support rearwardly and such movement is resisted by the brake-shoes 45 frictionally engaging with and tending to flex the cables 28 adjacent the rollers 29. Such operation of the brake-shoes is effected by draft through the tension rods 43 on the lower ends of the levers 41. When the portion of hay has been deposited on the frame 55, it also has moved said frame rearwardly and into approximately horizontal position against the resilience of the arms of the springs 56 engaging at the rear of the brackets 54. Thereafter draft is applied manually to the rope

60 or 61 in either direction laterally for the purpose of tilting the frame 55 laterally. If it is desired to tilt the frame 55 laterally to the left, the rope 61 is drawn and if it is desired to tilt said frame to the right, the rope 60 is drawn. Lateral and downward draft on the rope 60 or 61 is communicated through it and a pulley 62 to the side of the frame and tends to tilt said frame, the bracket 54, shaft 53, and hub 52 on the shaft 51 against the resilience of one or the other of the arms of the spring 56. Such lateral tilting of the frame 55 results in depositing the portion of hay on said frame to one side of the center of the barn or mow and said portion of hay rolls off said frame in such shape as easily to be pushed a little farther or packed in position by the operator. If the portion of hay is deposited from the frame 55 and manual draft is released from the rope 60 or 61, the spring 56 re-positions the frame 55 as shown in Fig. 2. The mechanism of this invention can be moved forwardly by longitudinal draft on the ropes 60, 61 or it can be moved rearward by downward and rearward draft on the rope 46, which effects a release or disengagement of the brake-shoes 45 from the cables 28.

When it is not desired to use the mechanism of this invention the levers 41 may be detached from the yokes 27 by removal of the pins 42, the yokes may be lifted from the cables 28 and the device may be swung around against the rear end of the barn or mow and attached in any desired manner. Or, in addition to the operation just described, a link 14 may be unhooked from the carrier 10 and the entire device be removed from the barn or mow.

After the barn or mow is filled to the greatest extent possible with the use of this device, the cables 28 may be slackened by releasing the pawls 34 and reversely moving the crank shafts 32 and said cables may be allowed to remain in such slackened condition until desired for use at another time.

I claim as my invention—

1. A hay handling mechanism, comprising a carrier adapted for travel on a track, a supporting bar, flexible means for connecting one end of said supporting bar to said carrier, a cross-bar fixed to the opposite end of said supporting bar and adjustable longitudinally thereof, hangers on the ends of said cross-bar, cables supporting said hangers, and a frame mounted for longitudinal and lateral oscillation on said supporting bar, said frame also adjustable longitudinally of the supporting bar.

2. A hay handling mechanism, comprising a carrier adapted for travel on a track, a supporting bar, flexible means for connecting said supporting bar to said carrier, a cross-bar, a bracket adjustably clamped to one end of the supporting bar and engaging

the central portion of said cross-bar, hangers on the ends of said cross-bar, cables supporting said hangers and a frame mounted for longitudinal and lateral oscillation on said supporting bar.

5 3. A hay handling mechanism, comprising a carrier adapted for travel on a track, a supporting bar, means for connecting said supporting bar and carrier, a cross-bar, a
10 bracket adjustably clamped to one end of said supporting bar and engaging the central portion of said cross-bar, yokes on end portions of said plates, pulleys in said yokes, cables supporting said pulleys, braking
15 levers on said yokes adapted to engage said cables and a frame mounted for longitudinal and lateral oscillation on said supporting bar, said frame also adapted for longitudinal adjustment on the supporting bar.
20 4. A hay handling mechanism, comprising a carrier, a supporting bar attached at one end to said carrier, a cross-bar, a bracket connecting the opposite end of said supporting bar to the central portion of said cross-
25 bar, hangers on the ends of said cross-bar, cables supporting said hangers, braking levers on said hangers adapted to engage said cables and a frame mounted for longitudinal and lateral oscillation on said sup-
30 porting-bar.

5 5. A hay handling mechanism, comprising a carrier, a supporting bar connected at one end to said carrier, a cross-bar, a bracket connecting the central portion of the cross-
35 bar to the opposite end of the supporting bar, plates on the ends of said cross-bar, yokes on ends of said plates, pulleys in said yokes, cables engaging and supporting said pulleys, levers fulcrumed in said yokes, shoes

on said levers engaging said cables, tension 40 rods connecting the opposite ends of said plates and the lower ends of said levers, ropes depending from the upper ends of said levers, and a frame mounted for longitudinal and lateral oscillation on said support- 45 ing bar.

6. In a hay handling mechanism, a supporting bar, a head adjustably mounted thereon, a shaft rigidly mounted in said head, a hub journaled on said shaft, a trans- 50 verse shaft fixed at its center in said hub, brackets journaled on end portions of said transverse shaft, a frame mounted rigidly on said brackets and means for oscillating said frame longitudinally and laterally. 55

7. In a hay handling mechanism, a supporting bar, a head clamped to said bar, a shaft in said head, a hub on said shaft, a transverse shaft in said hub, brackets on said transverse shaft, a frame on said brack- 60 ets, a spring on the first shaft, and engaging said frame, and means for oscillating said frame longitudinally and laterally against the resilience of said spring.

8. In a hay handling mechanism, a plate 65 formed with a longitudinal slot, a crank-shaft mounted on said plate and crossing said slot, pawl and ratchet devices connecting said shaft and plate, means for supporting said plate and a cable extending through 70 said slot and fixed to said crank shaft.

Signed by me at Des Moines, Iowa, this nineteenth day of February, 1909.

MADS H. MADSEN.

Witnesses:

W. W. FINK,
S. C. SWEET.