

No. 665,576.

Patented Jan. 8, 1901.

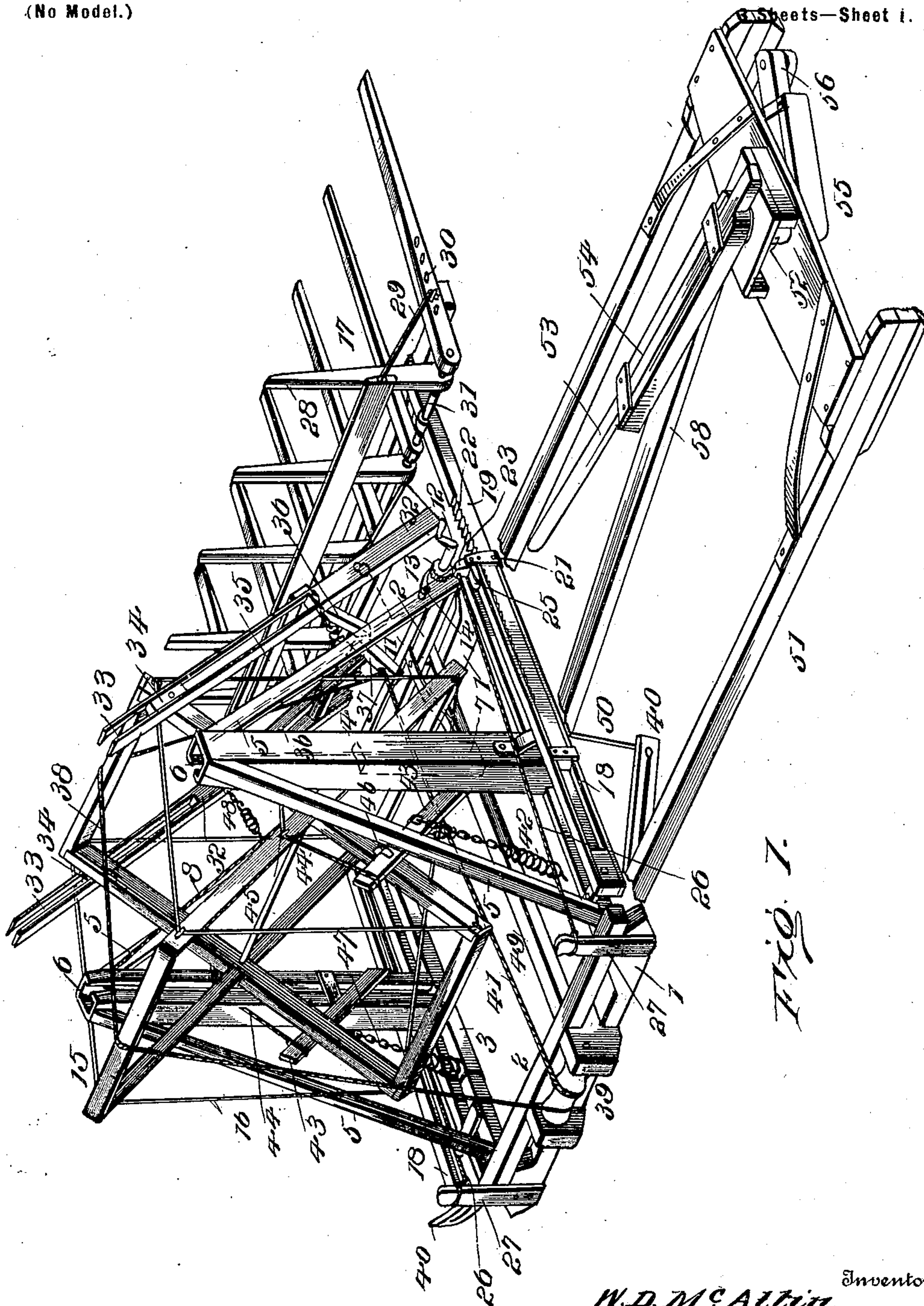
W. D. McATLIN.

HAY STACKER.

(Application filed Apr. 24, 1900.)

(No Model.)

8 Sheets—Sheet 1.



Witnesses

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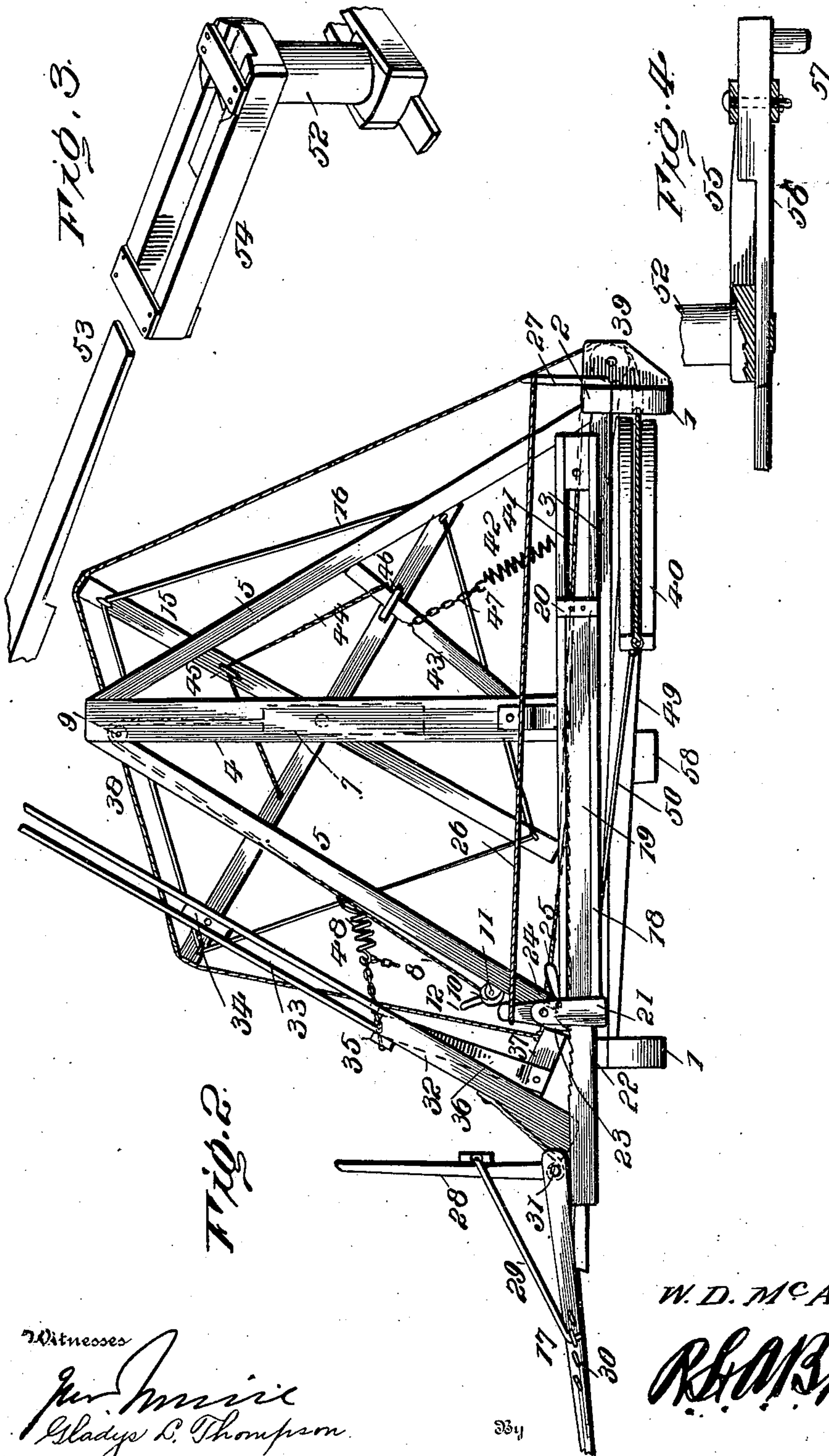
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3 Sheets—Sheet 2.



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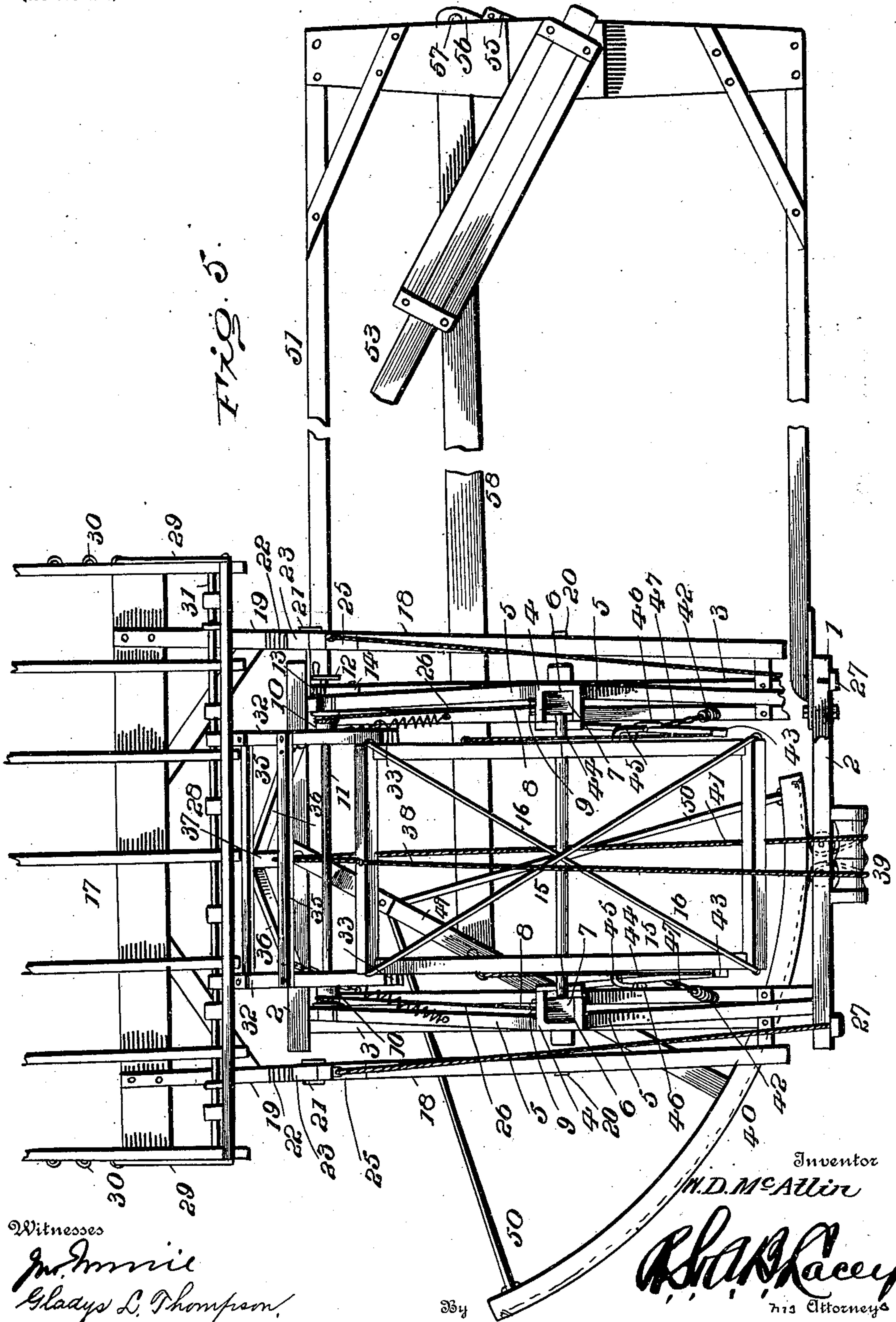
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3 Sheets—Sheet 3.



UNITED STATES PATENT OFFICE.

WILLIAM D. MCATLIN, OF WINIGAN, MISSOURI.

HAY-STACKER.

SPECIFICATION forming part of Letters Patent No. 665,576, dated January 8, 1901.

Application filed April 24, 1900. Serial No. 14,116. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. MCATLIN, a citizen of the United States, residing at Winigan, in the county of Sullivan and State of Missouri, have invented certain new and useful Improvements in Hay-Stackers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The primary object of this invention is the provision of a machine of novel construction for stacking hay and which is adjustable to make provision for a higher lift as the height of the stack increases in its formation.

The invention also consists of the novel features, details of construction, and combination of the parts which hereinafter will be more fully disclosed and finally claimed, and for this purpose and also to acquire a knowledge of the merits of the invention and the structural details of the means whereby the results are attained reference is to be had to the appended description and the drawings hereto attached.

While the essential and characteristic features of the invention are necessarily susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a hay-stacker embodying the invention. Fig. 2 is a side elevation. Fig. 3 is a detail perspective view of the shaft to which the sweep constituting the horse-power is attached. Fig. 4 is a detail section of the parts shown in Fig. 3. Fig. 5 is a plan view.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The frame for supporting the superstructure may be of any design and is preferably mounted upon runners 1, and consists of end sills 2 and side timbers 3, rigidly connected at their meeting ends. Posts 4 rise centrally from the side timbers 3 and are steadied by braces 5. Grooves 6 are formed in the inner side of the posts 4 and constitute guideways to receive slides 7. Ropes 8 or analogous connections are secured at one end to the respective slides 7 and pass over pulleys 9 at

the upper ends of the posts 4 and are attached at their opposite ends to drums 10 at the ends of a transverse shaft 11, journaled in bearings applied to corresponding braces 5, said shaft being rotatable by means of a crank 12 and prevented from backward rotation by a ratchet-wheel 13 and pawl 14. By rotating the shaft 11 in one or the other direction the ropes or connections 8 are adapted to be lengthened or shortened, so as to move the slides 7 to the required elevation, and when adjusted the position of the slides is fixed by the pawl 14 engaging the teeth of the ratchet-wheel 13. A reel 15 is journaled in the slides 7 and is vertically adjustable therewith, the reel-arms being connected by transverse bars and strengthened by brace-wires 16, arranged substantially as shown.

The rake 17 may be of any of the usual forms of construction, and its arms are preferably adjustable and are composed of bars 18 and 19, slidably related, so as to admit of the lengthening and shortening of the arms. The inner bars 18 are composed of spaced members, between which are received the bars 19, plates 20 being secured to opposite sides of the bars 19 at their inner ends and embracing the sides of the parts or members of the bars 18, so as to prevent lateral displacement of the parts 18 and 19. Shackles 21 connect the outer ends of the members comprising the bars 18, and their side portions embrace the sides of the bars 19 and act jointly with the plates 20 to hold the parts 18 and 19 in proper relation at all stages of their adjustment. The bars 19 are toothed along their upper edges, as shown at 22, and pawls 23, pivoted between the side extensions of the shackles 21, are adapted to engage with the teeth 22 and hold the bars 19 at any adjusted position. The pawls 23 have shoulders 24, against which the free ends of flat springs 25 engage, so as to hold the pawls in engagement with the teeth 22 of the bars 19. The pawls are adapted to be operated from the rear end of the stacker by means of cords or analogous means 26, which are attached to posts 27, provided at the rear corners of the frame. The rake-arms are rigidly attached at their forward ends to the rake-head and have pivotal connection at their rear ends to the frame of the stacker. A rack 28 is located

at the inner or rear end of the rake 17 and has pivotal connection therewith, so as to hold fast thereon. This rack is composed of a series of spaced fingers connected by a transverse bar, the fingers being journaled upon the rod or shaft 31, connecting the rear ends of the rake-teeth. The fingers of the folding rack 28 are disposed so as to fold into the space formed between adjacent rake-teeth. The rack is adapted to be positioned so as to occupy any angle with reference to the plane of the rake and is secured in an adjusted position by means of hooks 29 and a series of staples 30, the hooks having pivotal connection with the transverse bar of the rack and their hooked or bent ends being adapted to engage with any one of the series of staples 30. The purpose of the rack 28 is to support the hay during the operation of the rake to throw the load upon the stack.

The rake is operated by instrumentalities presently to be described and is connected with the reel 15 by means of a frame, the latter comprising arms 32, mounted at their lower ends upon the rod 31 and having their upper ends slotted, as shown at 33, to receive blocks 34, having a swivel connection with corresponding arms of the reel. The arms 32 are connected by transverse bars 35 and strengthened by braces 36, a bull-tongue 37 projecting rearwardly from the lowermost bar 35 and having the lower ends of the brace 36 secured to opposite sides thereof. An operating rope, cable, or the like 38 is attached at one end to the bull-tongue 37 and passes upwardly over the transverse bars of the reel, thence through a pulley-guide 39, and attached to one end of an oscillatory segment 40. A second operating rope, cable, or the like 41 is attached to the bull-tongue 37 and passes rearwardly under the transverse bars of the reel, thence through the pulley-guide 39, and is attached to the opposite end of the oscillating segment 40. By disposing the parts in the manner stated it will be readily understood that upon moving the segment 40 in one direction the upper rope or cable 38 will be drawn upon and the rake elevated and that upon oscillating the segment 40 in the opposite direction the rope or cable 41 will be drawn upon and the rake returned to a normal position. By having the operating ropes, cables, or the like 38 and 41 attached to the opposite ends of the oscillating segment 40 one of the ropes is slack when the other is under tension, and both ropes move simultaneously in opposite directions. The weight of the rake and the parts attached thereto and a portion of the load is counterbalanced by springs 42 or their equivalents, (weights,) which are adjustable so as to vary their counterbalancing action. The springs 42 or equivalent counterbalancing means are connected to levers 43, which are pivoted to the posts 4, ropes, chains, or the like connecting the free ends of said levers with corresponding arms of the reel, as shown at 44. The con-

nections 44 pass over pins 45, applied to intermediate reel-arms, so as to hold the said ropes at a distance from the axis of the reel and secure a maximum amount of leverage sufficient to attain the best results. Stops 46 are applied to corresponding reel-arms and engage with the levers 43 and hold the reel and rake in a given position. As previously stated, the counterbalancing means, as the springs 42, have adjustable connection with the levers 43, so as to vary their effectiveness in counterbalancing the rake, attendant parts, and the load. As shown, chains 47 have one end secured to the levers 43 and their opposite ends adjustably connected with the hooked ends of the springs 42 by engaging said hooked ends with any desired links of the chains. Springs 48 are adjustably interposed between the arms 32 and adjacent brace-wires 16 of the reel and supplement the action of the parts 42 in counterbalancing the rake and load and also serve to ease the return of the rake to a normal position and prevent shock.

The oscillating segment 40 is grooved in its periphery to receive the operating-ropes and prevent vertical displacement thereof, and consists of a curved bar attached centrally to an oscillating arm 49, which is pivoted centrally to the end sill of the frame. Brace rods or wires 50 connect the terminals of the curved bar with the inner end of the arm 49. The oscillating segment is located below the frame, so as to be out of the way and occupy a minimum amount of space. Any means may be employed for imparting an oscillatory movement to the segment when the stacker is in operation. As shown, a frame 51 projects laterally from the stacker, and its side timbers are attached to the runners or end sills of the stacker-frame. A shaft 52 is journaled vertically in the outer cross-bar of the frame 51 and its upper end has a sweep 53 connected thereto, so as to enable the stacker to be operated by horsepower. The sweep 53 is adjustable, and its inner end is slidably fitted to an arm 54, attached directly to the upper end of the shaft 52, said arm being composed of spaced members, between which the inner end portion of the sweep 53 is adjustably secured. The sweep can be lengthened and shortened according to the load and the strength of the animal operating the machine. An arm 55, similar in construction to the arm 54, is attached to the lower end of the shaft 52, and a bar 56 has adjustable connection therewith and is provided at its outer end with a wrist-pin 51, connected with a pitman 58, by means of which power is transmitted to the oscillating segment 40 when the stacker is in service. By moving the bar in or out the length or amplitude of movement of the oscillating segment can be regulated.

The stacker does not differ materially in operation from kindred devices, and the load received upon the rake is placed upon the

stack by elevating the said rake, which is effected by means of the oscillatory movement imparted to the segment 40 in the manner set forth. As the segment oscillates to and from the rake is correspondingly raised and lowered, both operations being positive. As the height of the stack increases the rake receives a higher lift by lengthening its arms, which is effected by means of outward adjustment of the bars 19. As the rake-arms are lengthened the arms 32 accommodate themselves to the varying distance between the rod 31 and the blocks 34 by reason of the slots 33, as will be readily comprehended.

Having thus described the invention, what is claimed as new is—

1. In a hay-stacker and in combination with the lifting-rake, a reel, connections passing around the reel in reverse directions, and means for actuating the said connections simultaneously in opposite directions, substantially as set forth.

2. In a hay-stacker and in combination with the lifting-rake, an oscillating segment, and connections between said segment and the rake for positively actuating the latter in opposite directions, substantially as set forth.

3. In a hay-stacker and in combination with the lifting-rake, a reel, an oscillating segment, connections between the rake and opposite ends of the said segment and passing around the reel in reverse directions, and means for imparting an oscillatory movement to said segment, substantially as set forth.

4. In a hay-stacker and in combination with the elevating-rake and actuating mechanism therefor, pivoted arms composed of slidably-related bars, the inner bars comprising spaced members and the outer bars being toothed and adapted to operate in the space formed between the members of the inner bars, shackles connecting the members of the inner bars, pawls pivoted to the extensions of said shackles and adapted to coöperate with the toothed bars, and means for operating said pawls, substantially as specified.

5. In a hay-stacker and in combination with the elevating-rake and pivoted arms therefor constructed of parts capable of extension, a vertically-adjustable reel, a connection adjustably interposed between the said reel and rake, and connections passing around the reel in reverse directions and attached to the aforementioned adjustable connection and adapted to have attachment with the actuating mechanism, substantially as specified.

6. In combination, an elevating-rake, pivotal and extensible arms therefor and actuating mechanism, a reel, means for adjusting the reel vertically and securing it in an ad-

justed position, a frame adjustably interposed between the rake and reel, and connections passing in opposite directions about the reel and having attachment with the said connecting-frame, substantially as specified.

7. In combination, an elevating-rake, pivotal and extensible arms therefor, and a vertically-adjustable reel, a connecting-frame having pivotal connection with the rake and slidable connection with the reel, and operating connections having attachment with the said frame and passing about the reel in opposite directions, substantially as set forth.

8. In combination, an elevating-rake, a reel, operating means for the rake passing around the reel, and a counterbalance for the rake and load operatively applied to the said reel, substantially as set forth.

9. In combination with the lifting-rake, a reel operatively connected with said rake, actuating mechanism applied to the rake through the instrumentalities of the reel, a lever having connection with the reel, and a counterbalance applied to said lever, substantially as set forth.

10. In combination, a lifting-rake, a reel operatively connected therewith, operating connections passing around the reel, a counterbalance applied to the reel, and a spring interposed between a portion of the reel and the connection between the reel and rake, substantially as set forth.

11. In a hay-stacker and in combination with the lifting-rake and an oscillating segment connected therewith, a frame projected from the stacker-frame, a sweep applied to the projected frame, and a pitman connecting an arm of the shaft carrying the sweep with the said oscillating segment, substantially as set forth.

12. In combination, a stacker-frame having vertical guides, a lifting-rake having extensible arms, a reel movably mounted in the said guides, means for adjusting the reel vertically and securing it in an adjusted position, a frame having pivotal connection with the rake and slidable connection with the reel, an oscillating segment located beneath the stacker-frame, and connections passing in opposite directions around the reel and attached to the frame interposed between the rake and reel and to opposite ends of the said oscillating segment, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM D. MCATLIN. [L. s.]

Witnesses:

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GEO. S. BURNS.