May 28, 1946. N. O. DOKKEN 2,401,142

STACKER

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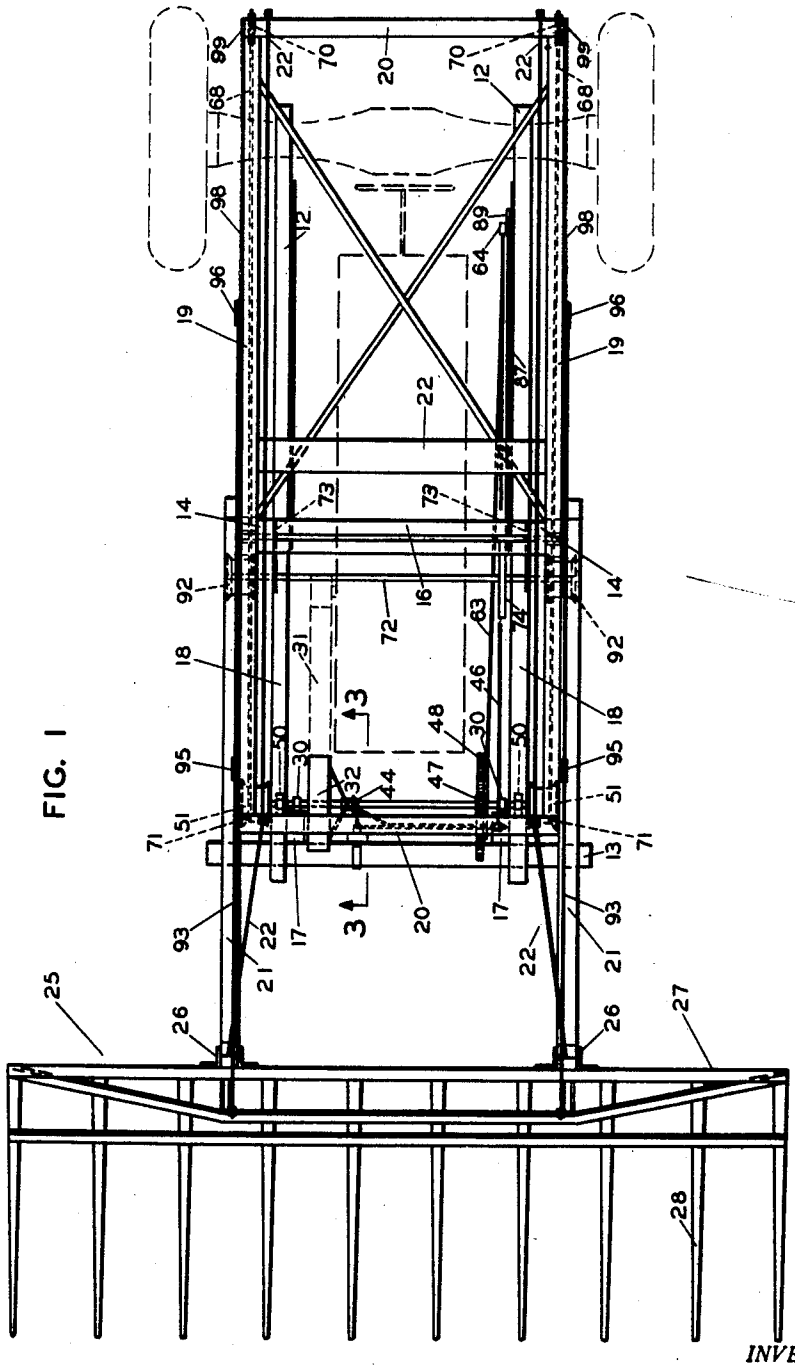


FIG. 1

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May 28, 1946. N. O. DOKKEN 2,401,142

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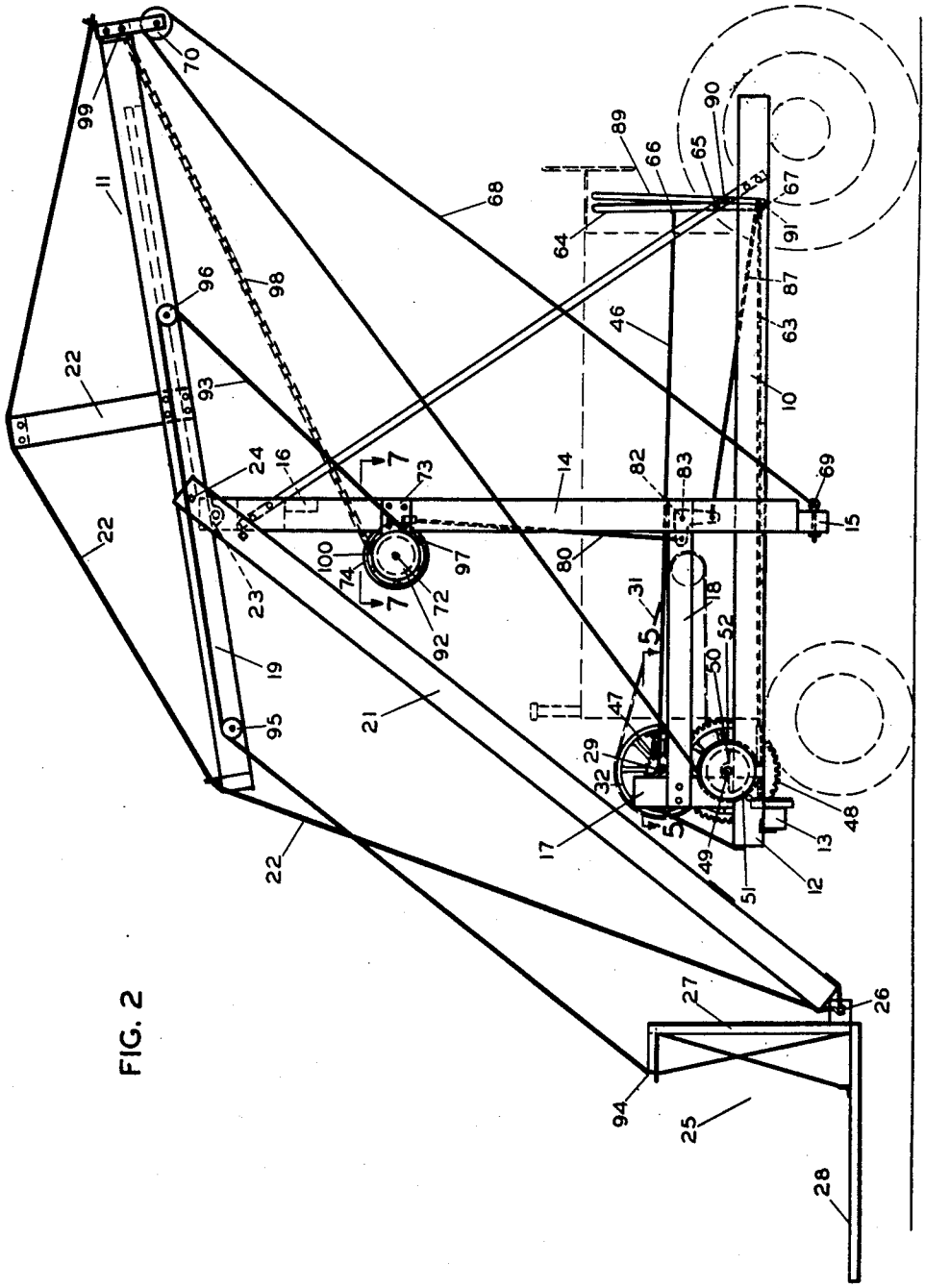



FIG. 2

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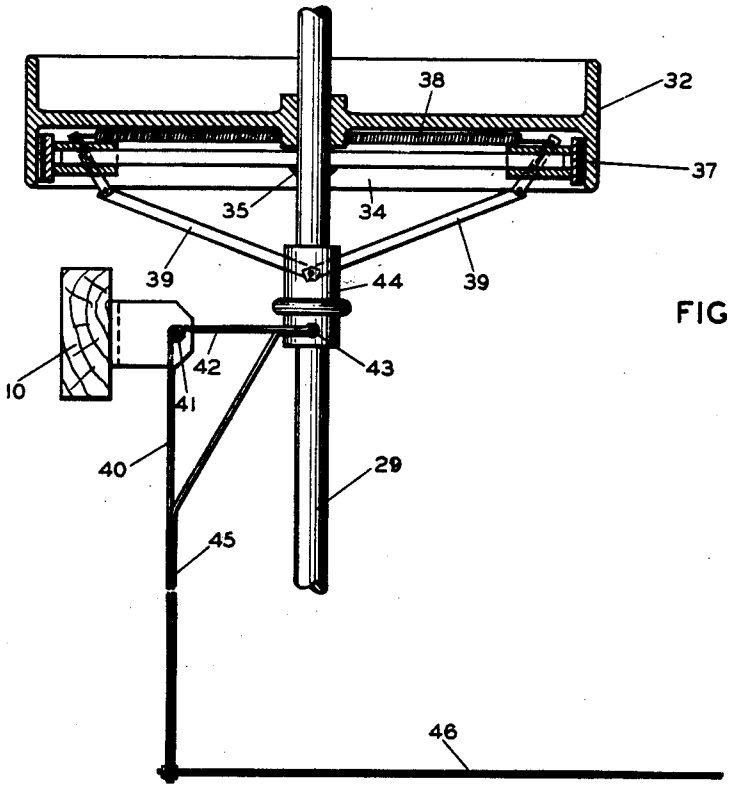
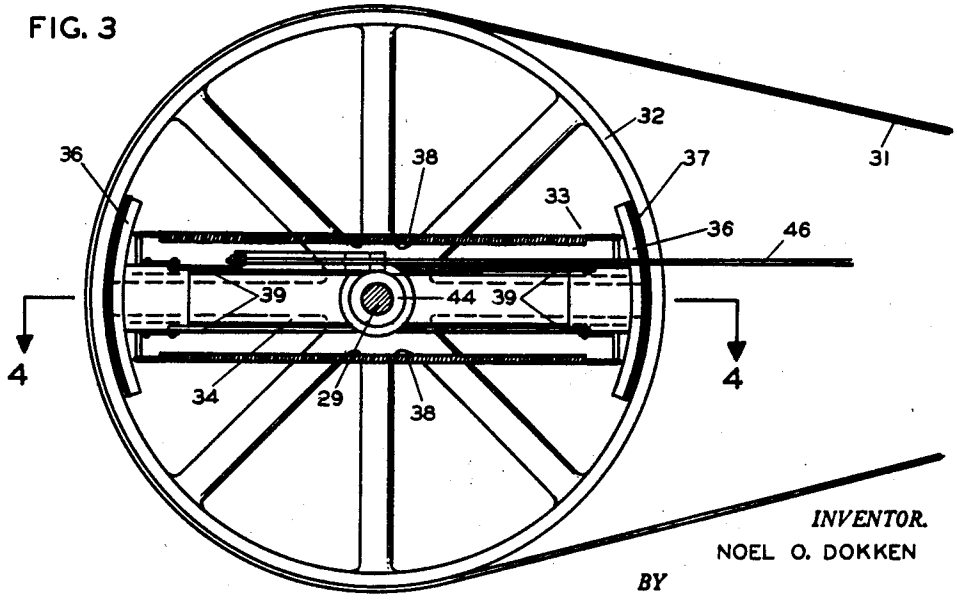



FIG. 4

FIG. 3




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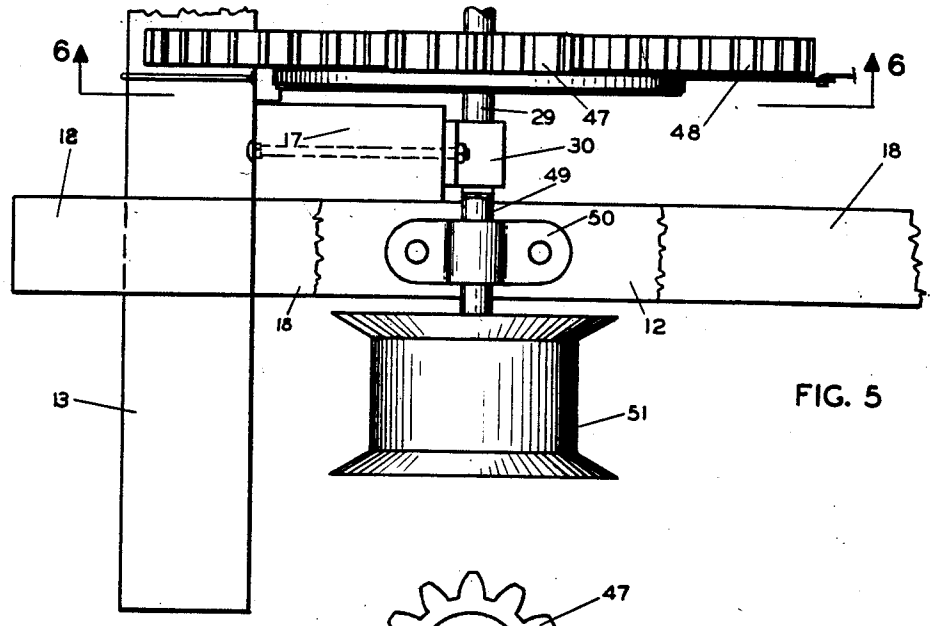



FIG. 5

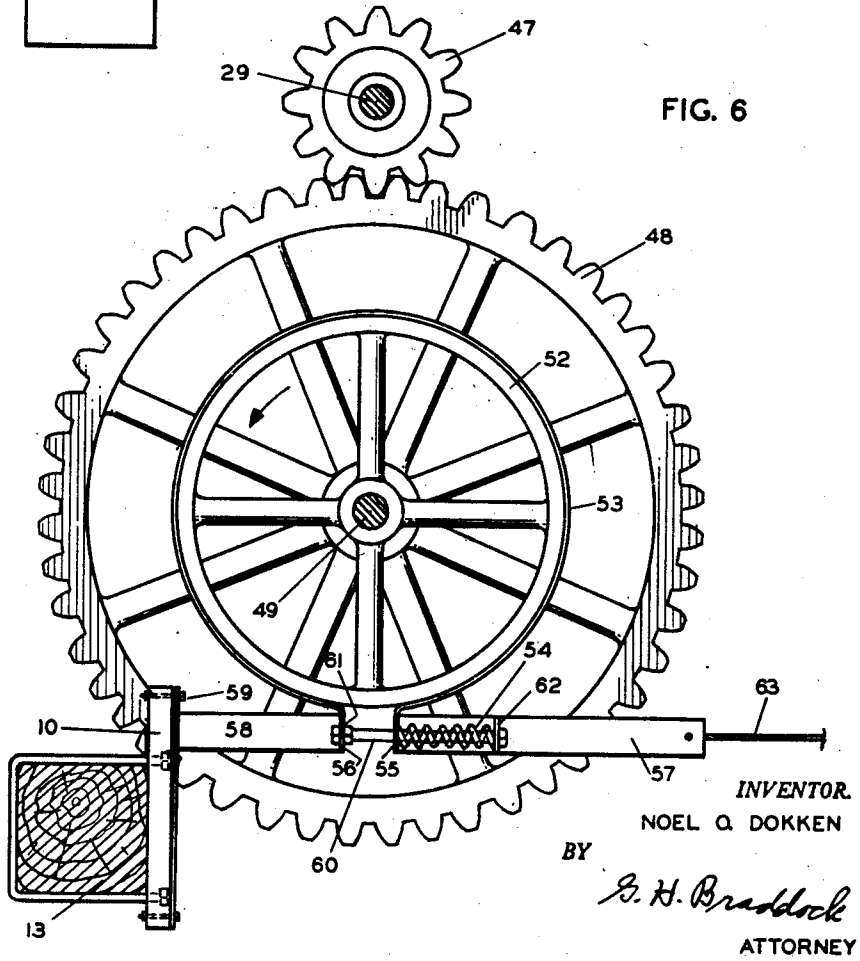



FIG. 6

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Search Room

May 28, 1946. N. O. DOKKEN 2,401,142

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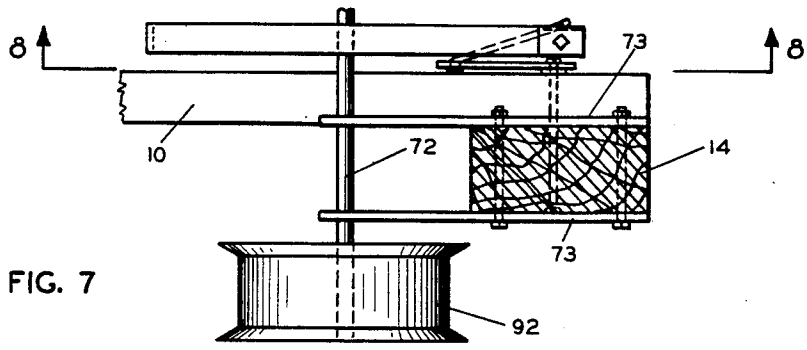



FIG. 7

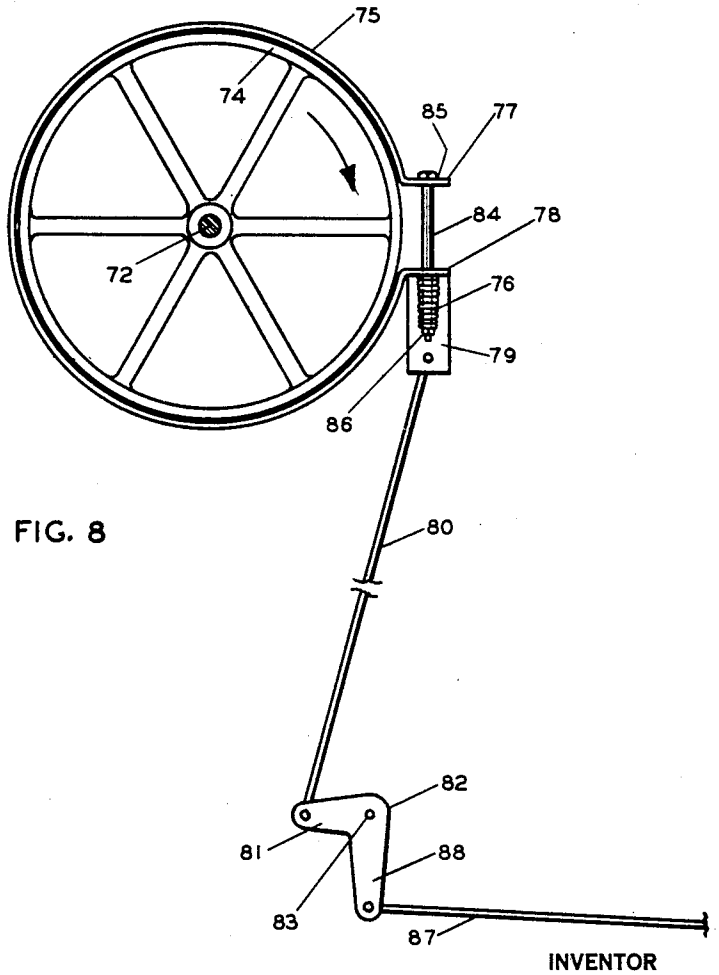



FIG. 8

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Patented May 28, 1946

2,401,142

# UNITED STATES PATENT OFFICE

2,401,142

## STACKER

Noel O. Dokken, Benson, Minn.

Application March 26, 1945, Serial No. 584,781

10 Claims. (Cl. 214—140)

This invention has relation to a stacker of the type useful to the purpose of transporting materials, such as hay, etc., from place to place.

An object of the invention is to provide a stacker, commonly called a stacker loader, which will be of new and improved construction.

A further object is to provide a machine for picking up, transporting and depositing materials, such as hay, manure, etc., wherein will be incorporated various improved features and characteristics of construction novel both as individual entities of the machine and in combination with each other.

A further object is to provide a machine of the present character which will be an improvement generally over machines heretofore known for accomplishing the same purposes.

And a further object is to provide a stacker, or stacker loader, constructed and adapted to be operative in the manner as herein set forth.

With the above objects in view, as well as others which will appear as the specification proceeds, the invention comprises the construction, arrangement and combination of parts as now to be fully described and as hereinafter to be specifically claimed, it being understood that the disclosure herein is merely illustrative and intended in no way in a limiting sense, changes in details of construction and arrangement of parts being permissible so long as within the spirit of the invention and the scope of the claims which follow.

In the accompanying drawings forming a part of this specification,

Fig. 1 is a top plan view of a stacker in which the features and characteristics of the invention are incorporated;

Fig. 2 is a side elevational view of the stacker of Fig. 1;

Fig. 3 is an enlarged sectional view, taken substantially on line 3—3 in Fig. 1;

Fig. 4 is a detail sectional view, taken on line 4—4 in Fig. 3;

Fig. 5 is an enlarged fragmentary plan view detailing parts of the stacker as they would appear from about the position of line 5—5 in Fig. 2;

Fig. 6 is a detail sectional view, taken on line 6—6 in Fig. 5;

Fig. 7 is an enlarged sectional view, taken on line 7—7 in Fig. 2; and

Fig. 8 is a detail sectional view, taken on line 8—8 in Fig. 7.

With respect to the drawings and the numerals of reference thereon, a stationary supporting frame 10 of the stacker is adapted to be rested squarely upon a tractor, and a movable operative frame 11 of said stacker is pivotally mounted upon the stationary supporting frame 10.

Spaced apart, longitudinal side beams 12, 12 of said stationary supporting frame 10, at the opposite sides of the tractor, are adapted to be rigidly supported at their forward end portions upon a cross beam 13 rigid with said tractor. Spaced apart, vertical side beams 14, 14 of the stationary supporting frame, also at the opposite sides of the tractor, are rigid with intermediate portions of the longitudinal side beams 12, 12 and extend upwardly therefrom. The lower ends of the vertical side beams 14, 14 are rigidly supported upon a cross beam 15 rigid with said tractor, and the upper end portions of said vertical side beams are interconnected by a cross piece 16. The cross beam 13 is disposed forwardly of the tractor at elevation below its body, and the cross beam 15 is situated beneath an intermediate portion of said tractor body. The forward ends of the longitudinal side beams 12, 12 terminate a short distance to the front of the cross beam 13, and a subframe of the stationary supporting frame 10 consists of short vertical elements, denoted 17, 17 rigid with the forward portions of said longitudinal side beams 12, 12, respectively, and short longitudinal elements, represented 18, 18, rigid at their forward ends with upper portions of the short vertical elements 17, 17, respectively, and rigid at their rearward ends with lower portions of the vertical side beams 14, 14, respectively. The short vertical elements 17, 17 are situated in front of the tractor body and the short longitudinal elements 18, 18 are parallel with the longitudinal side beams 12, 12 and are disposed at opposite sides of said tractor body. The cross piece 16 extends transversely of the tractor when the stationary supporting frame 10 is set up on said tractor, and said cross piece is situated at elevation considerably above the tractor. The rearward ends of the longitudinal side beams 12, 12 terminate near the rear axle of the tractor.

The movable operative frame 11 of the stacker is constituted as a rigid structure including spaced apart, longitudinal side beams 19, 19, spaced apart, transverse end beams 20, 20 which interconnect the end portions of the longitudinal side beams 19, 19 and spaced apart, oblique side beams 21, 21. Reinforcement of said movable operative frame 11 is denoted generally at 22.

The movable operative frame is in vertical alinement with the stationary supporting frame,

and intermediate portions of the longitudinal side beams 19, 19 are pivotally supported, as at 23, upon the upper ends of the vertical side beams 14, 14, respectively of the stationary supporting frame 10. In the disclosure as made, the location of pivotal support of said movable operative frame upon said stationary supporting frame is somewhat forward of the midlengths of the longitudinal side beams 19, 19. The upper end portions of the oblique side beams 21, 21 are rigid, at 24, with portions of the longitudinal side beams 19, 19, respectively, adjacent the location of pivotal support of the movable operative frame, and said oblique side beams 21, 21 extend downwardly and forwardly from said longitudinal side beams 19, 19. The lower, forward ends of the oblique side beams 21, 21 terminate somewhat forwardly of the forward ends of the longitudinal side beams 19, 19, as well as forwardly of the stationary supporting frame 10, and a sweep 25 of the stacker is pivotally supported, at 26, upon said lower, forward ends of said oblique side beams. The construction and arrangement are such that the movable operative frame 11 and the sweep 25 are mounted upon the stationary supporting frame to be readily and easily swung upon the pivotal supports 23 and to be movable by gravity to overbalanced position as in Fig. 2. That is to say, the overall weight of the movable operative frame and sweep disposed forwardly of the pivotal supports 23 is somewhat or a trifle greater than the overall weight of said movable operative frame disposed rearwardly of said pivotal supports 23.

The sweep 25 is constituted as a vertical back board 27 and tines 28 rigid with and extending perpendicularly forwardly from said vertical back board. The pivotal supports 26 for said sweep 25 are at the lower, rearward side of the back board 27.

An upper transverse shaft 29 of the stacker, suitably and conveniently mounted, as at 30, 30, upon upper portions of the short vertical elements 17, 17, is adapted to be driven by a usual driven pulley upon the tractor through the medium of a belt 31 riding said tractor pulley and also riding a pulley 32 upon said upper transverse shaft 29. The pulley 32 is freely rotatable on the upper transverse shaft 29, and an internal clutch 33 is adapted to be actuated to cause said pulley 32 selectively to be gripped to and released from said upper transverse shaft. More explicitly, the internal clutch 33 includes an entity 34 thereof welded, at 35, to the upper transverse shaft 29 and oppositely disposed clutch shoes 36 adapted to be slid along the entity 34 away from each other to be situated in gripping engagement with an internal cylindrical surface 37 of the pulley 32 and toward each other to be freed from said internal cylindrical surface. Spaced apart, tension coil springs 38, 38 between the clutch shoes 36, 36 normally retain said clutch shoes clear of the internal cylindrical surface 37, and spreader arms 39, 39 of the internal clutch 33 are adapted to be actuated to cause the clutch shoes 36, 36 to be moved apart against resilient action of the tension coil springs 38, 38. A clutch lever 40, suitably and conveniently pivotally mounted, as at 41, upon the subframe of the stationary supporting frame 10, includes a shorter arm 42 pivotally connected, at 43, to a clutch slide 44 for actuating the spreader arms 39, 39 and a longer arm 45 to the free end of which an operating cable 46 is connected.

A pinion 47, suitably and conveniently fixed upon the upper transverse shaft 29, meshes with a gear 48 suitably and conveniently fixed upon a lower transverse shaft 49 directly below and alined with the upper transverse shaft 29 in the disclosure as made. The lower transverse shaft 49 is rotatably mounted, as indicated at 50, 50, upon upper surfaces of forward portions of the longitudinal side beams 12, 12 of the stationary supporting frame 10 at location forwardly of the tractor, and the opposite end portions of said lower transverse shaft 49 extend to positions beyond and outwardly of said longitudinal side beams 12, 12 and rigidly support drums, each denoted 51. That is to say, there is a drum 51 upon each of the opposite end portions of the lower transverse shaft 49 at the outer side of and adjacent to the longitudinal side beam 12 at the corresponding side of the stacker.

A brake drum 52 for the drums 51 is suitably and conveniently fixed upon the lower transverse shaft 49, up against a surface of the gear 48 in the illustrated embodiment of the invention. A brake band 53 upon the brake drum 52 normally is urged in holding relation to said brake drum 52 by a tension coil spring 54. More explicitly, the brake band 53 includes adjacent end portions, represented 55 and 56, respectively, the end portion 55 is rigidly connected to an operating bar 57 for said brake band, and the end portion 56 is rigidly connected to an anchor bar 58 for the brake band. The anchor bar 58 is itself suitably and conveniently secured, as at 59, upon the stationary supporting frame 10. A rod 60 is secured, at 61, to the end portion 56 of the brake band 53 and extends through and is slidable in the end portion 55 of said brake band, a collar 62 is fixed upon the end of said rod 60 at the side of said end portion 55 opposite said end portion 56 and said tension coil spring 54 is situated upon the rod 60 between said collar 62 and the end portion 55. An operating cable 63 is connected to the free end of the operating bar 57.

An operating lever 64, suitably and conveniently pivotally supported, as at 65, at a rearward portion of the stationary supporting frame 10, is for causing both the internal clutch 33 and the brake band 53 to be actuated. The operating cable 46, for said internal clutch 33, is connected, at 66, to a portion of the operating lever 64 which is above the pivotal support 65, and the operating cable 63, for the brake band 53, is connected, at 67, to a portion of said operating lever 64 which is below said pivotal support 65. The construction and arrangement are such that when the upper portion, above the pivotal support 65, of the operating lever 64 manually is swung rearwardly, the operating cable 46 is made taut and moved rearwardly thus to cause the shoes 36, 36 of the internal clutch 33 to be grasped against the internal cylindrical surface 37 of the pulley 32, and when said upper portion of said operating lever 64 is released, said operating cable 46 is free to permit said shoes 36, 36 of said internal clutch 33 to be removed from said internal cylindrical surface 37 of said pulley 32. The construction and arrangement also are such that when the lower portion, below the pivotal support 65, of the operating lever 64 is swung rearwardly, by manual forward swinging of the upper portion of said operating lever 64, the operating cable 63 is made taut and moved rearwardly thus to cause the brake band 53 to be released from the brake drum 52, and when said lower portion of the operating lever 64 is released, said operating cable 63 is free to permit said brake band 53 to be engaged against said

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brake drum 52. The construction and arrangement additionally are such that the brake band 53 when applied is adapted to permit the brake drum 52 to rotate freely in the direction of the arrow in Fig. 6 but to preclude rotation of said brake drum 52 in opposite direction. The arrow in said Fig. 6 denotes the driving direction of the drums 51, 51.

A pair of cables, each denoted 68, are for actuating the movable operative frame 11. An end of each cable 68 is attached, as at 69, to an end portion of the cross beam 15, and each cable 68 extends upwardly and rearwardly to a sheave 70 upon the rearward end of the longitudinal side beam 19 at the corresponding side of the stacker, thence over the sheave 70 from rear to front and thence downwardly and forwardly to the drum 51 at the corresponding side of the stacker. The ends of the cables 68, 68 opposite the ends attached to the cross beam 15 are suitably and conveniently attached, as at 71, to the drums 51, 51 in ordinary or preferred manner.

A third transverse shaft 72 of the stacker, suitably and conveniently mounted, as at 73, 73, upon upper portions of the vertical side beams 14, 14, fixedly supports an auxiliary brake drum 74. A brake band 75 normally is urged in holding relation to said brake drum 74 by a tension coil spring 76. More explicitly, the brake band 75 includes adjacent end portions, denoted 77 and 78, respectively, and the end portion 78 is rigidly connected to an operating bar 79 for said brake band itself connected by a cable 80 to an arm 81 of a lever 82 pivotally supported, at 83, upon the subframe of the stationary supporting frame 10. A rod 84 is secured, at 85, to the end portion 77 of the brake band 75 and extends through and is slidable in the end portion 78 of said brake band, a collar 86 is fixed upon the end of said rod 84 at the side of said end portion 78 opposite said end portion 77, and said tension coil spring 76 is situated upon the rod 84 between said collar 86 and the end portion 78. An operating cable 87 is connected to the free end of an arm 88 of the lever 82.

A second operating lever 89, suitably and conveniently pivotally supported, as at 90, at a rearward portion of the stationary supporting frame 10, adjacent the operating lever 64, is for causing the brake band 75 to be actuated. The operating cable 87, for said brake band 75, is connected, at 91, to a portion of said second operating lever 89 which is below the pivotal support 90. The construction and arrangement are such that when the upper portion, above the pivotal support 90, of the second operating lever 89 manually is swung forwardly, thus to cause the lower portion of said second operating lever 89 to be swung rearwardly, the operating cable 87 is made taut and moved rearwardly thus to cause the brake band 75 to be released from the auxiliary brake drum 74, and when said upper portion of the second operating lever 89 is released, said operating cable 87 is free to permit said brake band 75 to be engaged against said auxiliary brake drum 74. The construction and arrangement are such that the brake band 75 when applied is adapted to permit the auxiliary brake drum 74 to be rotated freely in the direction of the arrow in Fig. 8 but to preclude rotation of said auxiliary brake drum 74 in opposite direction.

The opposite end portions of the third transverse shaft 72 extend to positions beyond and outwardly of the vertical side beams 14, 14 and rigidly support drums, each denoted 92. That is to say, there is a drum 92 upon each of the opposite end portions of said third transverse shaft 72 at the outer side of and adjacent to the vertical side beam 14 at the corresponding side of the stacker.

A pair of cables, each denoted 93, are for actuating the sweep 25. An end of each cable 93 is attached, as at 94, to an upper portion of said sweep 25, and each cable 93 extends upwardly and rearwardly to a sheave 95 upon a forward end portion of the longitudinal side beam 19 at the corresponding side of the stacker, thence over the sheave 95 from front to rear to a sheave 96 upon a rearward portion of said longitudinal side beam 19 at the same side of the stacker, thence over the sheave 96 from front to rear and thence downwardly and forwardly to the drum 92 at the corresponding side of said stacker. The ends of the cables 93, 93 opposite the ends attached to the sweep 25 are suitably and conveniently attached, as at 97, to the drums 92, 92 in ordinary or preferred manner.

A pair of chains, each denoted 98, are adapted to cooperate in the accomplishment of actuation of the sweep 25. The rearward end of each chain 98 is attached, as at 99, to the rearward end of the longitudinal side beam 19 at the corresponding side of the stacker, and the forward end of each chain 98 is attached, as at 100, to the drum 92 at the corresponding side of the stacker.

When the operative parts of the stacker are situated as disclosed in Figs. 1 and 2 of the drawings, the sweep 25 is held, near the ground as shown, in stable, load receiving position relative to the remainder of said stacker through the instrumentality of the cables 93, 93 and the drums 92, 92, which drums are held stationary by the brake band 75 because applied to the auxiliary brake drum 74. That is to say, the second operating lever 89 is disclosed in said Figs. 1 and 2 in position permitting the brake band 75 to grasp the auxiliary brake drum 74 thus to preclude rotation of said auxiliary brake drum, and hence the drums 92, 92, in direction which would permit downward swinging by gravity of the sweep 25 upon its pivotal supports 26, 26. When the operative parts of the stacker are situated as in Figs. 1 and 2, the tractor can be advanced to cause the tines 28 of the sweep to be pushed or forced under a load.

To cause a load upon the sweep to be elevated, the operating lever 64 manually is swung rearwardly thus to cause the internal clutch 33 to be grasped to the pulley 32, and the drums 51 to be rotated, through the instrumentality of the tractor pulley when operating, the belt 31, said pulley 32, said internal clutch 33, the upper transverse shaft 29, the pinion 47, the gear 48 and the lower transverse shaft 49, in direction to cause the cables 68, 68 to be wound upon said drums 51, 51. Obviously, winding of the cables 68, 68 upon the drums 51, 51 will cause said cables to be shortened, the rearward end portion of the movable operative frame 11 to be swung downwardly and the forward end portion of said movable operative frame to be swung upwardly. The driving of the drums 51, 51 can be terminated when the sweep with load has been elevated to any selected height, thus to arrest upward movement of the load, merely by releasing said operating lever 64 and thus permitting the internal clutch 33 to move clear of the pulley 32, and the brake consisting of the brake drum 52 and the brake band 53 evidently will retain the load at the height to which elevated when said clutch is freed.

To release an elevated load, the second operating lever 89 manually is swung forwardly thus to cause the brake band 75 to be released from the auxiliary brake drum 74. Upon release of said auxiliary brake drum, the sweep 25 will swing downwardly by gravity upon its pivotal supports 26, 26 and cause unwinding of the cables 93, 93 from the drums 92, 92.

To permit the movable operative frame 11 to swing by gravity from position where the sweep is elevated to position as in Figs. 1 and 2, the operating lever 64 manually is swung forwardly causing the brake band 53 to be released from the brake drum 52 thus to cause the drums 51, 51 to be free to be rotated and permit the cables 68, 68 to be elongated in response to overbalancing action of said sweep and the forward portion of said movable operative frame.

The construction and arrangement are such that the overall lengths of the cables 93, 93 are adapted to be neither lengthened nor shortened during swinging movement of the movable operative frame 11 upon the stationary supporting frame 10. That is to say, the overall length of each cable 93 between the sweep 25 and the corresponding drum 92 remains the same no matter what may be the relation of said movable operative frame to said stationary supporting frame. The sweep 25 of course will be retained at set relation as in Fig. 2 to the oblique side beams 21, 21 during elevation of a load, being so held by the applied brake band 75 which precludes retrogressive movement of the auxiliary brake drum 74. It will be apparent that said sweep 25, when held in fixed relation to the movable operative frame 11 by cooperative action of the auxiliary brake drum 74 and the brake band 75, can be pushed or forced under a load to be picked up no matter what may be the elevation of the forward portion of said movable operative frame. That is, the stacker is adapted to be employed to transport a load from a higher to a lower level, as well as from a lower to a higher level, or from one position to another at the same elevation.

In Figs. 1 and 2 of the drawings, the chains 98, 98 are disclosed taut and completely unwound from the drums 92, 92, although said chains need not be completely unwound. The construction and arrangement are such that with elevation of a load, and consequent lowering of the rearward end of the movable operative frame 11, the rear ends, at 99, 99, of said chains will move closer to the drums 92, 92 than in Fig. 2, thus to cause the chains to become slack. It will be evident from said Fig. 2 that with downward swinging movement of the rearward portion of the movable operative frame, about the pivotal supports 23, the points of attachment of the rearward ends of the chains 98, 98 to said movable operative frame progressively will be moved in direction closer to the drums 92, 92, so that when a load is in elevated position there will be considerable slackness in said chains. The construction and arrangement are such that downward swinging movement by gravity of the sweep 25, during release of a load, which causes unwinding of the cables 93, 93 from the drums 92, 92 will also cause winding of the chains 98, 98 upon said drums. Then, upon descent of the forward portion of the movable operative frame, with the sweep, and elevation of the rearward portion of said movable operative frame, with the rearward ends of the chains 98, 98, said chains will be unwound from the drums 92, 92 to the same extent that the chains were wound upon said drums 92, 92 thus to cause these drums to be turned an amount adapted to cause the cables 93, 93 to be wound upon the drums 92, 92 to extent which will cause the sweep to be moved from its unloading or upset position to its loading or set position as in Fig. 2. The brake band 75 is adapted to offer no interference to rotation of the auxiliary brake drum 74 in the direction of unwinding action of the chains 98, 98 and winding action of the cables 93, 93.

It will be observed that while the stacker is adapted to be very stably supported upon a tractor, thus to be capable of operating in efficient, steady manner, said stacker is, at the same time, constructed to pick up and deposit loads at position well in advance of a tractor upon which the stacker is mounted. The machine of the invention is designed so that it can deposit a load of hay, for example, well into a hay stack and thus preclude necessity for subsequently pitching and/or pulling of the hay.

What is claimed is:

1. A machine of the character described comprising a stationary supporting frame, a movable operative frame above said stationary supporting frame, means pivotally mounting an intermediate portion of said movable operative frame upon said stationary supporting frame, a shaft adapted to be driven rotatable mounted upon said stationary supporting frame, a drum rigid with said shaft, a cable upon said drum ridable over a part of said movable operative frame situated rearwardly of said pivotally supporting means and anchored to said stationary supporting frame, a sweep supported upon a part of said movable operative frame situated forwardly of said pivotally supporting means, said shaft being adapted to be driven to cause said drum to be rotated in direction to cause said cable to be wound thereon thus to cause the part of said movable operative frame over which said cable is ridable to be lowered and the part of the movable operative frame upon which said sweep is supported to be raised, means adapted to permit rotation of said shaft with drum in direction causing said cable to be wound upon said drum and normally to preclude rotation of the drum in opposite direction, and means for releasing said drum to permit rotation of the drum in direction adapted to cause said cable to be unwound from said drum.

2. A machine of the character described comprising a stationary supporting frame adapted to be supported upon a tractor, a movable operative frame above said stationary supporting frame adapted to extend forwardly and rearwardly of said tractor, means pivotally supporting an intermediate part of said movable operative frame upon said stationary supporting frame for swinging movement of the movable operative frame in a vertical plane, a shaft adapted to be driven rotatably mounted upon said stationary supporting frame, a drum rigid with said shaft, a cable upon said drum ridable over a part of said movable operative frame situated rearwardly of said pivotally supporting means and anchored to said stationary supporting frame, a sweep supported upon a part of said movable operative frame situated forwardly of said pivotally supporting means, the overall weight of said sweep and the portion of said movable operative frame disposed forwardly of said pivotally supporting means being greater than the overall weight of the portion of the movable operative frame disposed rearwardly of the pivotally supporting means, said shaft being adapted to be driven to cause

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said drum to be rotated in direction to cause said cable to be wound thereon thus to cause said rearward portion of said movable operative frame to be lowered and the sweep and said forward portion of the movable operative frame to be raised against the action of gravity, means adapted to permit rotation of said shaft with drum in direction causing said cable to be wound upon said drum and normally to preclude rotation of the drum in opposite direction, and means for releasing said drum to permit the overall weight of said sweep and said forwardly disposed portion of said movable operative frame to be lowered by gravity thus to cause said drum to be rotated in direction adapted to cause said cable to be unwound from said drum.

3. A machine of the character described comprising a stationary supporting frame adapted to be supported upon a tractor, a movable operative frame above said stationary supporting frame adapted to extend forwardly and rearwardly of said tractor, means pivotally supporting an intermediate part of said movable operative frame upon said stationary supporting frame for swinging movement of the movable operative frame in a vertical plane, a shaft adapted to be driven rotatably mounted upon said stationary supporting frame, a drum rigid with said shaft, a cable upon said drum engaged with said stationary supporting frame and with a part of said movable operative frame situated rearwardly of said pivotally supporting means, a sweep supported upon a part of said movable operative frame situated forwardly of said pivotally supporting means, the overall weight of said sweep and the portion of said movable operative frame disposed forwardly of said pivotally supporting means being greater than the overall weight of the portion of the movable operative frame disposed rearwardly of the pivotally supporting means, said shaft being adapted to be driven to cause said drum to be rotated in direction to cause said cable to be wound thereon thus to cause said rearward portion of said movable operative frame to be lowered and the sweep and said forward portion of the movable operative frame to be raised against the action of gravity, means adapted to permit rotation of said shaft with drum in direction causing said cable to be wound upon said drum and normally to preclude rotation of the drum in opposite direction, and means for releasing said drum to permit the overall weight of said sweep and said forwardly disposed portion of said movable operative frame to be lowered by gravity thus to cause said drum to be rotated in direction adapted to cause said cable to be unwound from said drum.

4. In a machine of the character described, a frame, a sweep pivotally supported upon said frame for swinging movement in a vertical plane, a rotatably mounted shaft, a drum fixed to rotate with said shaft, a cable upon said drum connected to said sweep, said shaft being adapted to be driven to cause said drum to be rotated in direction to cause said cable to be wound thereon thus to cause said sweep to be swung upwardly against action of gravity relative to said frame, means adapted to permit rotation of said shaft with drum in direction to cause said cable to be wound upon said drum and normally to preclude rotation of the drum in opposite direction, and means for releasing said drum to permit said sweep to swing downwardly by action of gravity relative to said frame thus to cause said drum to be rotated in direction adapted to cause said cable to be unwound from said drum.

5. In a machine of the character described, a frame, a sweep pivotally supported upon said frame for swinging movement in a vertical plane between a load retaining position and a load dumping position for said sweep, a rotatably mounted shaft, a drum fixed to rotate with said shaft, a cable upon said drum connected to said sweep, said shaft being adapted to be driven to cause said drum to be rotated in direction to cause said cable to be wound thereon thus to cause said sweep to be swung upwardly against action of gravity relative to said frame from said load dumping position to said load retaining position, means adapted to permit rotation of said shaft with drum in direction causing said cable to be wound upon said drum and normally to preclude rotation of the drum in opposite direction, and means for releasing said drum to permit said sweep to swing downwardly by action of gravity relative to said frame from said load retaining position to said load dumping position thus to cause said drum to be rotated in direction adapted to cause said cable to be unwound from said drum.

6. In a machine of the character described, a frame, a sweep pivotally supported upon said frame for swinging movement in a vertical plane between a load retaining position and a load dumping position for said sweep, a rotatably mounted shaft, a drum fixed to rotate with said shaft, a first cable upon said drum connected to said sweep, said shaft being adapted to be driven to cause said drum to be rotated in direction to cause said first cable to be wound thereon thus to cause said sweep to be swung upwardly against action of gravity relative to said frame from said load dumping position to said load retaining position, an element adapted to be moved toward and away from said drum, a second cable upon said drum connected to said element, means adapted to permit rotation of said shaft with drum in direction causing said first cable to be wound upon and said second cable to be unwound from said drum and normally to preclude rotation of the drum in opposite direction, and means for releasing said drum to permit said sweep to swing downwardly by action of gravity relative to said frame from said load retaining position to said load dumping position thus to cause said first cable to be unwound from and said second cable to be wound upon said drum.

7. A machine of the character described comprising a stationary supporting frame, a movable operative frame above said stationary supporting frame, means pivotally supporting an intermediate part of said movable operative frame upon said stationary supporting frame for swinging movement of said movable operative frame in a vertical plane, a sweep pivotally supported upon a part of said movable operative frame at location forwardly of said pivotally supporting means for swinging movement of said sweep in a vertical plane between a load retaining position and a load dumping position for said sweep, a rotatably mounted shaft, a drum fixed to rotate with said shaft, a first cable upon said drum connected to said sweep, said movable operative frame including a part thereof at location rearwardly of said pivotally supporting means adapted to be moved toward said drum with downward vertical swinging movement of the rearward portion of said movable operative frame and away from said drum with upward vertical movement of said rearward portion of the movable operative frame,

a second cable upon said drum connected to said mentioned rearward part of said movable operative frame, said second cable being adapted to be unwound from said drum in response to downward vertical swinging movement of the rearward portion of said movable operative frame to cause said drum to be rotated in direction to cause said cable to be wound upon the drum thus to cause said sweep to be swung upwardly against action of gravity relative to said frame from said load dumping position to said load retaining position, means adapted to permit rotation of said shaft with drum in the unwinding direction of said second cable and the winding direction of said first cable and normally to preclude rotation of the drum in opposite direction, and means for releasing said drum to permit said sweep to swing downwardly by action of gravity relative to said movable operative frame from said load retaining position to said load dumping position thus to cause said drum to be rotated in direction adapted to cause said first cable to be unwound from and said second cable to be wound upon said drum.

8. A machine of the character described comprising a stationary supporting frame, a movable operative frame above said stationary supporting frame, means pivotally supporting an intermediate part of said movable operative frame upon said stationary supporting frame for swinging movement of said movable operative frame in a vertical plane, a sweep pivotally supported upon a part of said movable operative frame at location forwardly of said pivotally supporting means for swinging movement of said sweep in a vertical plane between a load retaining position and a load dumping position for said sweep, a rotatably mounted shaft, a drum fixed to rotate with said shaft, a first cable upon said drum connected to said sweep, sheaves upon said movable operative frame for said first cable, said movable operative frame including a part thereof at location rearwardly of said pivotally supporting means adapted to be moved toward said drum with downward vertical swinging movement of the rearward portion of said movable operative frame and away from said drum with upward vertical swinging movement of said rearward portion of the movable operative frame while the overall length of said first cable remains unchanged, a second cable upon said drum connected to said mentioned rearward part of said movable operative frame, said second cable being adapted to be unwound from said drum in response to downward vertical swinging movement of the rearward portion of said movable operative frame to cause said drum to be rotated in direction to cause said cable to be wound upon the drum thus to cause said sweep to be swung upwardly against action of gravity relative to said movable operative frame from said load dumping position to said load retaining position, means adapted to permit rotation of said shaft with drum in the unwinding direction of said second cable and the winding direction of said first cable and normally to preclude rotation of the drum in opposite direction, and means for releasing said drum to permit said sweep to swing downwardly by action of gravity relative to said movable operative frame from said load retaining position to said load dumping position thus to cause said drum to be rotated in direction adapted to cause said first cable to be unwound from and said second cable to be wound upon said drum.

9. A machine of the character described comprising a stationary supporting frame, a movable operative frame above said stationary supporting frame, means pivotally supporting an intermediate part of said movable operative frame upon said stationary supporting frame for swinging movement of the movable operative frame in a vertical plane, a first shaft rotatably mounted upon said stationary supporting frame, a first drum fixed to rotate with said first shaft, a first cable upon said first drum engaged with said stationary supporting frame and with a part of said movable operative frame situated rearwardly of said pivotally supporting means, a sweep pivotally supported upon a part of said movable operative frame situated forwardly of said pivotally supporting means for swinging movement of said sweep in a vertical plane between a load retaining position and a load dumping position for said sweep, the overall weight of said sweep and the portion of said movable operative frame disposed forwardly of said pivotally supporting means being greater than the overall weight of the portion of the movable operative frame disposed rearwardly of the pivotally supporting means, said first shaft being adapted to be driven to cause said first drum to be rotated in direction to cause said first cable to be wound thereon thus to cause said rearward portion of said movable operative frame to be lowered and the sweep and said forward portion of the movable operative frame to be raised against the action of gravity, means adapted to permit rotation of said first shaft with said first drum in direction to cause said first cable to be wound upon said first drum and normally to preclude rotation of the first drum in opposite direction, means for releasing said first drum to permit the overall weight of said sweep and said forwardly disposed portion of said movable operative frame to be lowered by gravity thus to cause said first drum to be rotated in direction adapted to cause said first cable to be unwound from said first drum, a second shaft rotatably mounted upon said stationary supporting frame, a second drum fixed to rotate with said second shaft, a second cable upon said second drum connected to said sweep, a part of the portion of said movable operative frame disposed rearwardly of said pivottally supporting means being adapted to be moved toward said second drum with downward vertical swinging movement and away from said second drum with upward vertical swinging movement of said rearwardly disposed portion, a third cable upon said second drum, means connecting said third cable to said rearwardly disposed portion of said movable operative frame, said third cable being adapted to be unwound from said second drum in response to downward vertical swinging movement of the rearward portion of said movable operative frame to cause said second drum to be rotated in direction to cause said second cable to be wound upon the second drum thus to cause said sweep to be swung upwardly against the action of gravity relative to said movable operative frame from said load dumping position to said load retaining position, means adapted to permit rotation of said second shaft with second drum in the unwinding direction of said third cable and the winding direction of said second cable and normally to preclude rotation of the second drum in opposite direction, and means for releasing said second drum to permit said sweep to swing downwardly by action of gravity relative to said movable oper-

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ative frame from said load retaining position to said load dumping position thus to cause said second drum to be rotated in direction adapted to cause said second cable to be unwound from and said third cable to be wound upon said second drum.

10. The combination as specified in claim 9, sheaves upon said movable operative member for said first cable, and wherein the length of said first cable is adapted to remain unchanged during swinging movements of said movable operative frame upon said stationary supporting frame.

NOEL O. DOKKEN.