

No. 791,533.

PATENTED JUNE 6, 1905.

H. BERGMAN.
HAY STACKER.

APPLICATION FILED DEC. 12, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

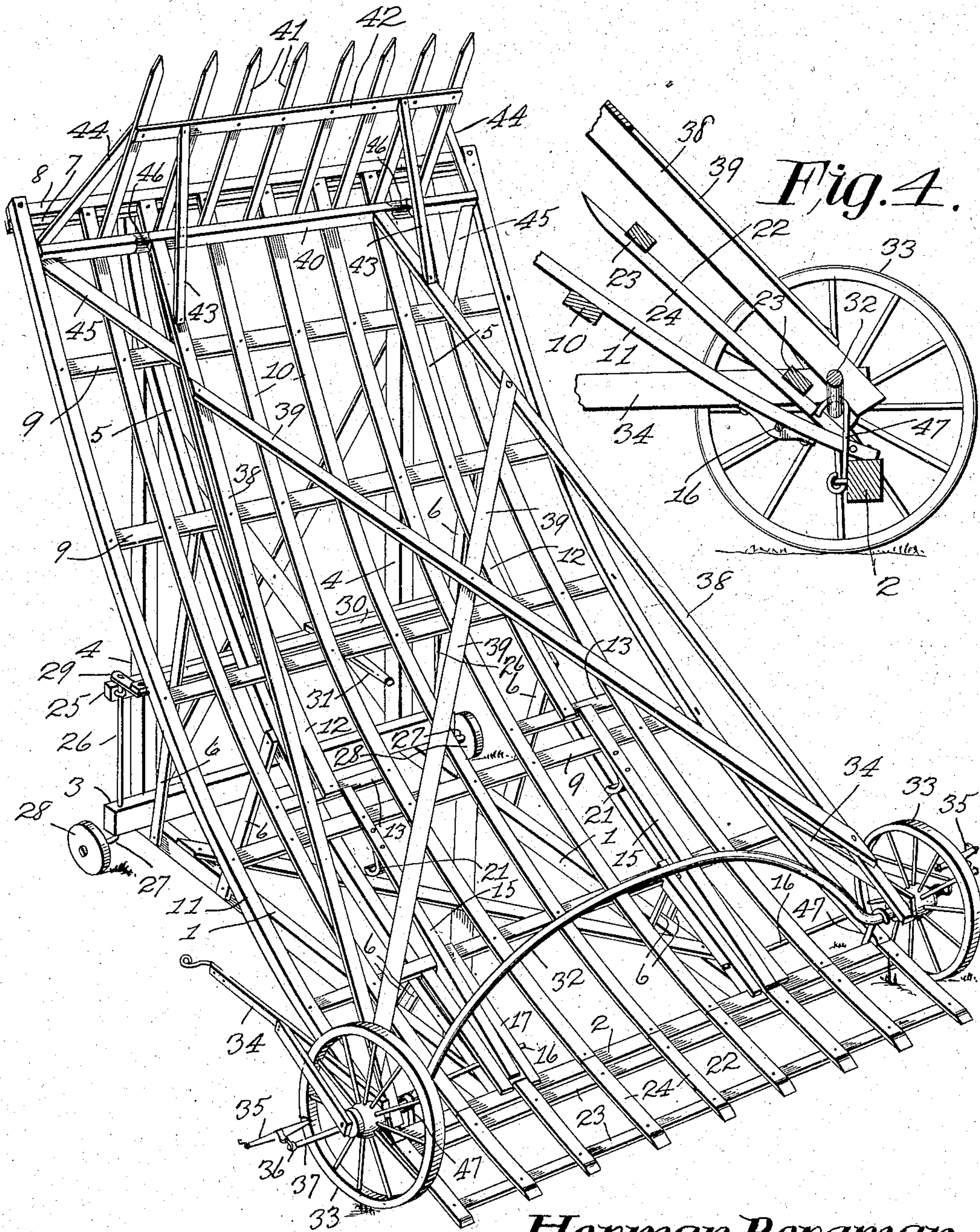


Fig. 4.

Witnesses

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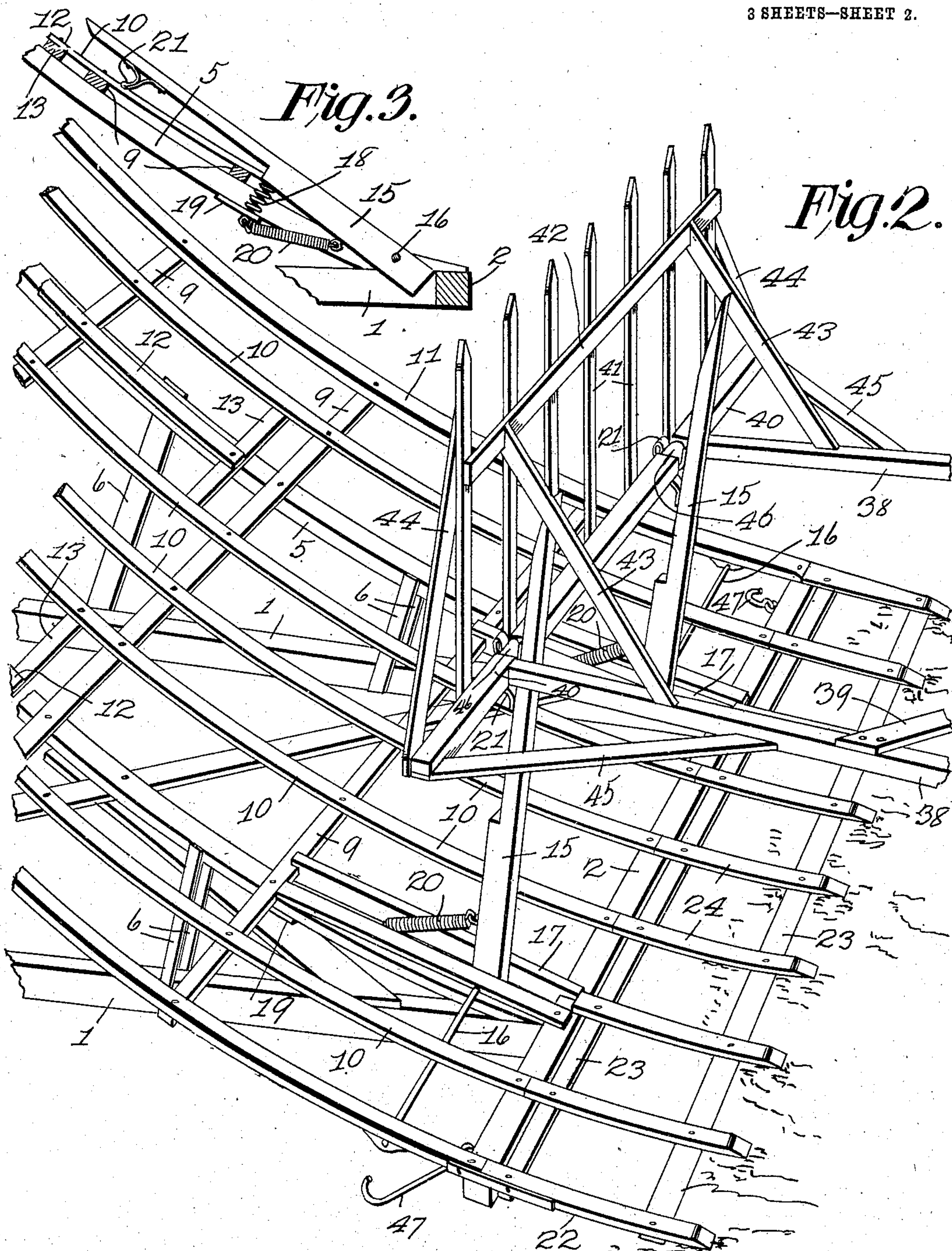
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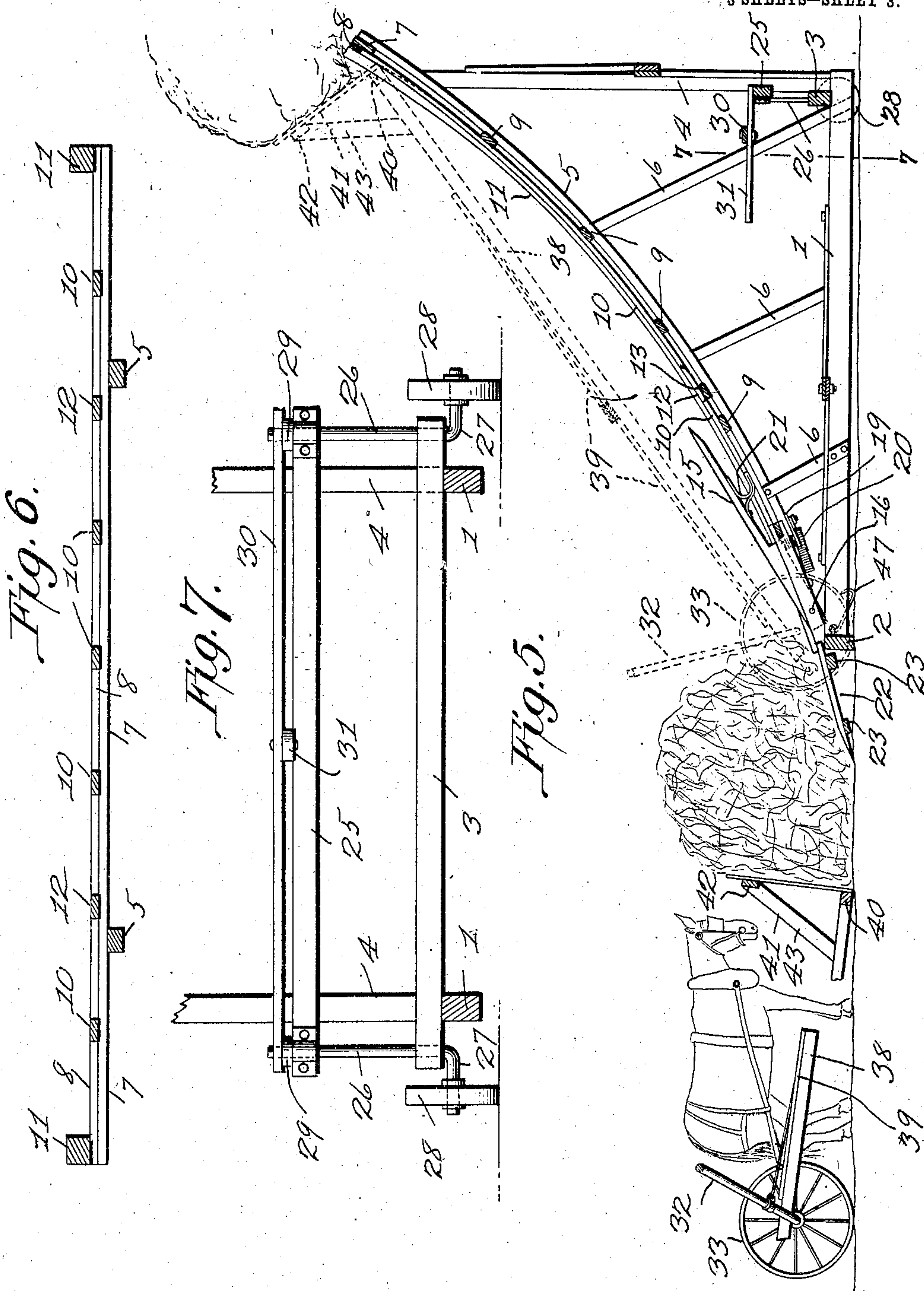
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UNITED STATES PATENT OFFICE.

HERMAN BERGMAN, OF OGALLALA, NEBRASKA.

HAY-STACKER.

SPECIFICATION forming part of Letters Patent No. 791,533, dated June 6, 1905.

Application filed December 12, 1904. Serial No. 236,585.

To all whom it may concern:

Be it known that I, HERMAN BERGMAN, a citizen of the United States, residing at Ogallala, in the county of Keith and State of Nebraska, have invented a new and useful Hay-Stacker, of which the following is a specification.

This invention relates to devices for stacking hay and the like; and it has for its object to simplify the construction and to improve and facilitate the operation of this class of devices.

The invention consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of embodiment of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications to which recourse may be had within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a perspective view illustrating a skid or frame which constitutes a part of the invention and showing also a follower or pusher which constitutes another part of the invention, said follower or pusher being represented in the position which it occupies with relation to the skid-frame when the latter is to be moved from one place to another. Fig. 2 is a perspective view of the lower end of the skid-frame and showing also a portion of the pusher-frame in the position occupied by the latter when returning after the delivery of a load. Fig. 3 is a vertical sectional view through a portion of the skid-frame and showing in elevation one of the lifting-arms and related parts. Fig. 4 is a sectional detail view taken through the pusher-frame adjacent to one of the transporting-wheels and showing also the lower end of the skid-frame connected therewith for transportation. Fig. 5 is a side elevation showing the device in position for operation,

with dotted lines showing the position of the parts when the load is being discharged over the skid. Fig. 6 is a transverse sectional detail view taken near the upper end of the skid. Fig. 7 is a sectional detail view, on an enlarged scale, taken on the line 7 7 of Fig. 5.

Corresponding parts in the several figures are indicated by like characters of reference.

The skid-frame of the device comprises a pair of sills 1 1, connected at their front and rear ends, respectively, by cross-pieces 2 and 3, the cross-piece 2 being secured upon the front ends of the sills, while the cross-piece 3 is supported upon the upper sides of said sills near their rear ends. The sills 1 1 in rear of the cross-piece 3 support uprights 4 4, to the upper ends of which are secured curved bars 5 5, the lower ends of which are securely connected with the cross-piece 2. These curved bars are braced and reinforced by means of braces 6, extending from said curved bars to the sills at suitable intervals.

The upper ends of the curved bars 5 5 are extended above and in rear of the uprights 4 and are connected by a cross-bar 7, provided with a rib 8, which constitutes a stop. The curved bars 5 5 support a plurality of transverse bars 9, which in turn support a plurality of slats 10, which are curved to approximate the curvature of the bars 5. The lower ends of these slats are secured upon the frame-bar 2, and their upper ends are secured upon the cross-bar 7 where they abut upon the rib 8. Guide-bars 11 are provided, the upper ends of which are secured upon the cross-bar 7, at the ends of the latter, and the lower ends of which are secured upon the cross-bar 2, said guide-bars being intermediately supported upon the transverse bars 9. These guide-bars are of greater thickness than the slats 10, and they are for the purpose of preventing lateral displacement of the follower, which is to be hereinafter described, when said follower moves over the skid.

In addition to the slats 10 the skid-frame is provided with auxiliary slats 12, the upper ends of which are secured to the cross-bar 7 and the lower ends of which are secured to and supported by cross-braces 13, which connect pairs of adjacent slats 10 10, said cross-

braces being disposed a short distance above one of the transverse bars 9 near the lower end of the skid-frame. Hingedly connected with the curved bars 5, near the lower ends
 5 of the latter, are lifting-arms 15, which are preferably mounted pivotally upon rods 16, extending through the bars 5, the guides 11 and short bars 17 suitably spaced from the lower ends of the curved bars 5, the lifting-
 10 arms being disposed between the latter and the bars or braces 17. Said lifting-arms are supported with their upper ends in a raised position by means of cushion-springs 18, supported upon cross-pieces 19, which connect
 15 the bars 5 with the braces 17. Retracting-springs 20 are arranged to force the free ends of the lifting-arms normally in a downward direction toward one of the transverse bars 9; but the free ends of the lifting-arms are nor-
 20 mally held by the cushion-springs somewhat elevated above the level of the adjacent portions of the curved slats 10, as will be clearly seen by reference to Figs. 1 and 3. The under sides of the lifting-arms are provided with
 25 hooks 21.

Hingedly connected with the cross-bar 2, at the lower end of the skid-frame, is an extension-frame 22, composed of cross-pieces 23, connected by a plurality of slats 24, the points
 30 of which are adapted to rest upon the ground when the device is in position for operation, so as to cause the material which is to be elevated to slide readily onto the skid-frame.

The skid-frame is reinforced wherever needed by braces and diagonals, and the rear up-
 35 rights 4 4 are connected at a suitable distance above the cross-bar 3 by a cross-bar 25. The cross-bars 3 and 25 have bearings for vertical shafts 26, the lower ends of which are pro-
 40 vided with crank-axes 27, carrying caster-wheels 28. The upper ends of the shafts 26 are provided with cranks 29, connected by a cross-bar 30, which has pivotal connection with a lever 31, fulcrumed upon the cross-bar
 45 25. This mechanism constitutes a steering-gear by means of which the skid-frame may be guided when it is to be moved, as will be hereinafter described.

The pusher or follower, which is used in
 50 connection with the skid-frame, includes an arched axle 32, having wheels 33 and provided with bifurcated draft-bars 34, pivotally connected with the spindles in such a manner that the wheels will engage the forks of said draft-
 55 bars, thus enabling the latter to be turned or swung in a forward or rearward direction, as may be desired. The swingletrees 35 are connected, by means of links 36, with the extended ends of the spindles 37, so that said swingle-
 60 trees may likewise be turned or shifted from one side to the other. Suitably connected with the axle 32 is a frame consisting, essentially, of side members 38, connected and spaced apart by diagonals 39 and also con-
 65 nected at their outer or front ends by a cross-

bar 40, which is of a length to fit accurately between the guide-bars 11 of the skid-frame. The cross-bar 40 constitutes a head, to the front side of which are secured a plurality of
 70 uprights 41, connected with each other by a cross-bar 42, the latter being connected by braces 43 with the side members 38. Additional obliquely-disposed braces 44 and 45 are provided to reinforce this part of the device, which may be generally designated as the
 75 "pusher-head" or the "follower-head." The cross-bar 40 is provided with rounded portions 46, forming bearings adapted to engage the hooks 21 of the lifting-arms.

Suitably connected with the cross-bar 2 at
 80 the lower end of the skid-frame are hooks 47, adapted to be placed in engagement with the arched axle of the pusher-frame for the purpose of elevating the lower ends of the skid-frame from the ground for transportation. 85

In operation the follower-frame is initially lowered from the skid-frame and arranged at a suitable distance from the latter, draft-an-
 90 mals being attached to the whiffletrees at the ends of the arched axle and the follower-head being permitted to rest upon the ground, the skid-frame being disposed in the position where it is desired to build the stack. The hay or other material that is to be stacked is gathered by means of rakes of the ordinary
 95 description, and it is deposited upon the extension-frame at the lower end of the skid-frame. The follower-frame is now moved in the direction of the skid-frame, and the fol-
 100 lower-head will impact upon the mass of hay and push the same in an upward direction upon the skid-frame, the cross-bar 40 of the pusher-head being guided between the bars 11. Owing to the curvature of the slats and
 105 bars which constitute the skid-frame, which curvature is in a downward direction, no great power will be required to effect the first portion of the lift when the pusher-frame is in an approximately horizontal position. As
 110 the draft-animals approach the skid-frame, however, the pusher-head, following the curvature of the track, commences to travel more decidedly in an upward direction; but at this time the axle, which constitutes the fulcrum
 115 of the lever formed by the pusher-frame, moves in the direction of the perpendicular of the load, and the draft-animals will thus operate to better advantage in raising or lift-
 120 ing the latter. When the pusher-head approaches the upper end of the skid-frame, the load will be dumped over the upper edge of the latter and onto the stack. 125

While one load is being elevated another load may be deposited at the foot of the skid-frame, and when the pusher-frame is returned
 125 to its initial position, which may be accomplished either by backing the draft-animals or by reversing the position of the draft-bars and whiffletrees and facing the animals about, the cross-bar 40 will pass under the elevated
 130

ends of the lifter-arms 15 and engage the hooks 21 upon the under sides of the latter. It is to be noted that in the upward passage of the load and the pusher-head the lifting-arms will be readily depressed against the tension of the pushing-springs 19, so as to offer no obstruction. In the downward passage of the pusher-head, however, when the cross-bar 40 or the rounded bearing portions of said cross-bar engage the hooks 41 the lifting-bars will turn upon their pivots, thus elevating the pusher-head, as shown in Fig. 2 of the drawings, and enabling it to clear the load or bunch of hay which may have been deposited at the foot of the skid-frame. As soon as the pusher-head passes clear of the lifting-arms the latter are restored to their normal or initial position by the action of the retracting-springs 20, after which the operation may be repeated.

When it shall be desired to slightly move the skid-frame from one position to another, the pusher-frame is moved onto the skid-frame until the pusher-head is near the upper end of said skid-frame, when the hooks 47 may be placed in engagement with the axle, thus slightly raising the lower end of the skid-frame clear of the ground. This may be done without changing the position of the extension-frame, and the skid-frame may now be conveniently pushed in the direction of the arrow in Fig. 1. When the skid-frame is to be moved greater distances, the extension-frame is folded upon the skid-frame, as shown in Fig. 4, and draft may now be applied in the opposite direction to pull the entire machine to any desired position, the skid-frame being guided by means of the steering-gear herein described.

This improved hay-stacking device, as will be seen, is extremely simple in construction, and it may be produced at a moderate expense. By this device heavy loads may be lifted, and the operation is performed speedily and without difficulty. It will be noted that there is an entire absence of ropes and other tackle which is apt to become tangled and which is considered highly objectionable in hay-stacking devices of ordinary construction. Owing to the position of the lifting-arms, whereby the pusher-head is enabled to clear a load placed at the foot of the skid, the operation of the device may be made practically continuous and loss of time is avoided.

Having thus described the invention, what is claimed is—

1. In a hay-stacking device, a skid, guides at the sides of said skid, a pusher operating between said guides, and a wheel-supported frame rigidly connected with said pusher.

2. In a hay-stacking device, a skid constructed with a downward curvature, guides at the sides of said skid, a pusher movable between said guides, a frame rigidly connected

with said pusher, a wheel-carrying axle supporting the rear end of said frame, and draft means connected reversibly with the axle.

3. In a hay-stacking device, a skid, lifting-arms connected pivotally with said skid, a pusher slidable upon said skid and adapted to engage the lifting-arms, and a wheel-supported frame rigidly connected with said pusher.

4. In a hay-stacking device, a skid, a pusher or follower, and means for swinging said pusher or follower clear of the skid while moving downward upon the latter.

5. In a hay-stacking device, a skid, a pusher or follower, lifting means connected pivotally with the skid near the lower end of the latter to engage the pusher or follower in the downward movement of the latter and to swing it clear of the skid, and a wheel-supported frame connected rigidly with the pusher.

6. In a hay-stacking device, a skid, a pusher or follower, arms connected pivotally with the skid near the lower end of the latter and supported with their free ends normally raised a short distance above the skid to engage a cross-bar of the follower, and a wheel-supported frame rigidly connected with the follower.

7. In a hay-stacking device, a skid, a pusher or follower, arms connected pivotally with the skid near the lower end of the latter, cushion-springs supporting the free ends of said arms normally above the level of adjacent portions of the skid, hook members upon the under sides of said arms, and a wheel-supported frame rigidly connected with the follower.

8. In a hay-stacking device, a skid, a pusher or follower including a cross-bar having rounded bearing portions, arms connected pivotally with the skid near the lower end of the latter, means for supporting the free ends of said arms normally above the adjacent portions of the skid, hook members upon the under sides of said arms adapted to engage the rounded portions of the cross-bar of the follower, an operating-frame rigidly connected with the latter, and rotary supporting means for said operating-frame.

9. In a hay-stacking device, a skid-frame including a pair of curved bars, means for supporting said bars in an inclined position, a cross-bar at the upper ends of said curved bars, a rib or stop upon said cross-bar, a plurality of transverse bars supported upon the curved bars, and slats supported upon the said transverse bars and abutting at their upper ends upon the rib of the upper cross-bar.

10. In a hay-stacking device, a skid-frame including a pair of curved bars, means for supporting said bars in an inclined position, a cross-bar at the upper ends of said curved bars, a plurality of transverse bars supported upon the latter, slats supported upon said

transverse bars, and guide-bars of a greater thickness than said slats supported upon the ends of said transverse bars.

11. In a hay-stacking device, a skid-frame including a pair of curved bars, means for supporting said bars in an inclined position, a cross-bar at the upper ends of said curved bars, a rib or stop upon said cross-bar, a plurality of transverse bars supported upon the curved bars, slats supported upon said transverse bars and abutting at their upper ends upon the rib of the upper cross-bar, and guide-bars of a greater thickness than said slats supported upon the ends of the transverse bars and the upper cross-bar.

12. In a hay-stacking device, a skid-frame, vertical shafts supported at the rear end of said skid-frame and having cranks at their lower ends, wheels journaled upon said cranks, cranks at the upper ends of said shafts, a bar connecting said cranks, and a suitably-supported lever having pivotal connection with said bar.

13. In a hay-stacking device, a skid-frame,

supporting and guiding wheels at the rear end of said frame, a pusher-frame, supporting-wheels for said pusher-frame, and hook members connected with the skid-frame and adapted to engage the wheel-carrying axle of the pusher-frame.

14. In a hay-stacking device, a skid-frame, a pusher or follower, arms connected pivotally with the skid-frame, means for supporting the free ends of said arms in a position normally raised above adjacent portions of the skid-frame, hook members upon the under sides of said arms adapted for engagement with the pusher when the latter descends upon the skid-frame, and retracting-springs for said arms.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HERMAN BERGMAN.

Witnesses:

DAVID P. HOLLAWAY,
RALPH L. ABRAHAM.