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W. LARSON.
LUMBER PILING MACHINE.
APPLICATION FILED JULY 19, 1912.

Patented Nov. 19, 1912.

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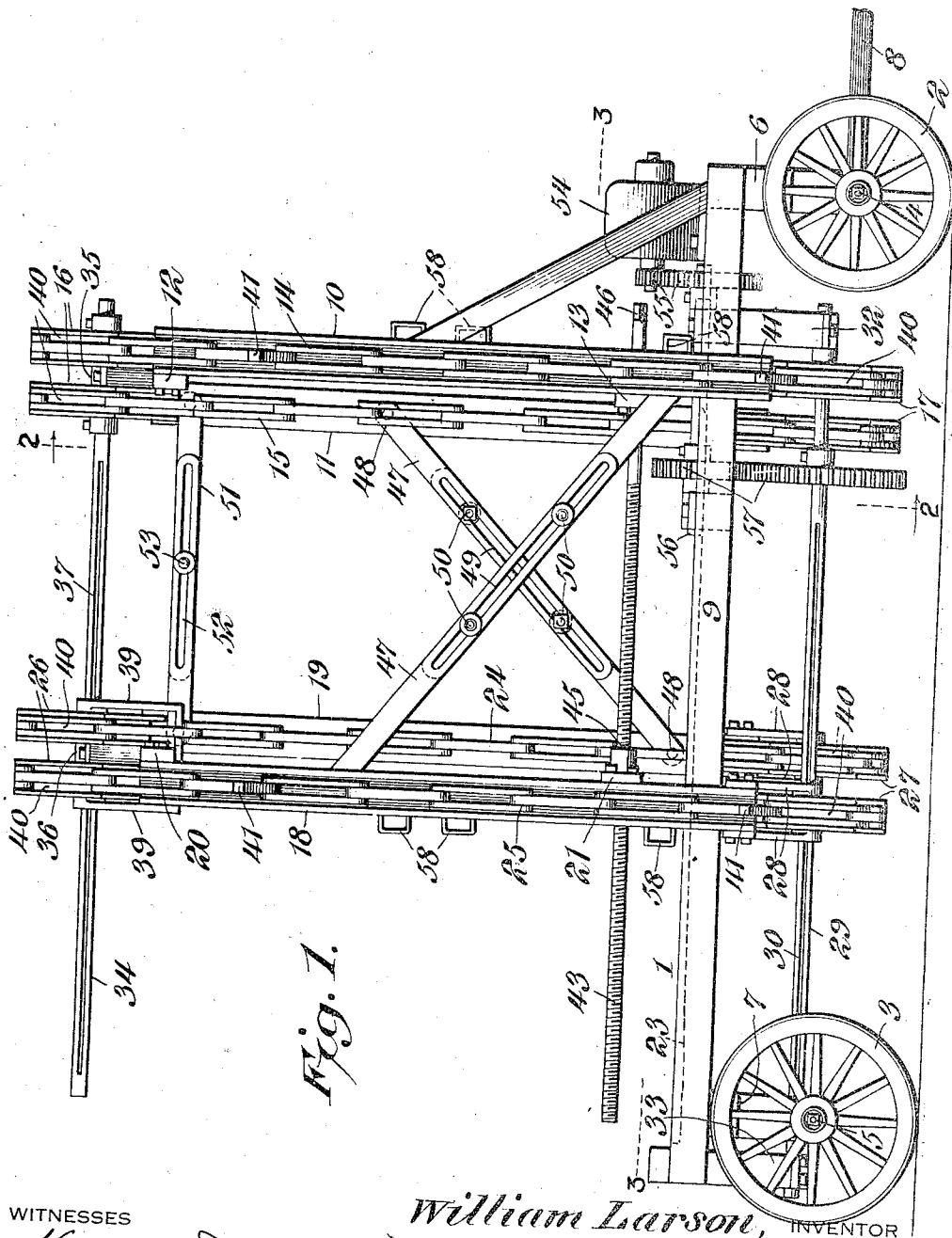


Fig. 1.

WITNESSES

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William Larson, INVENTOR

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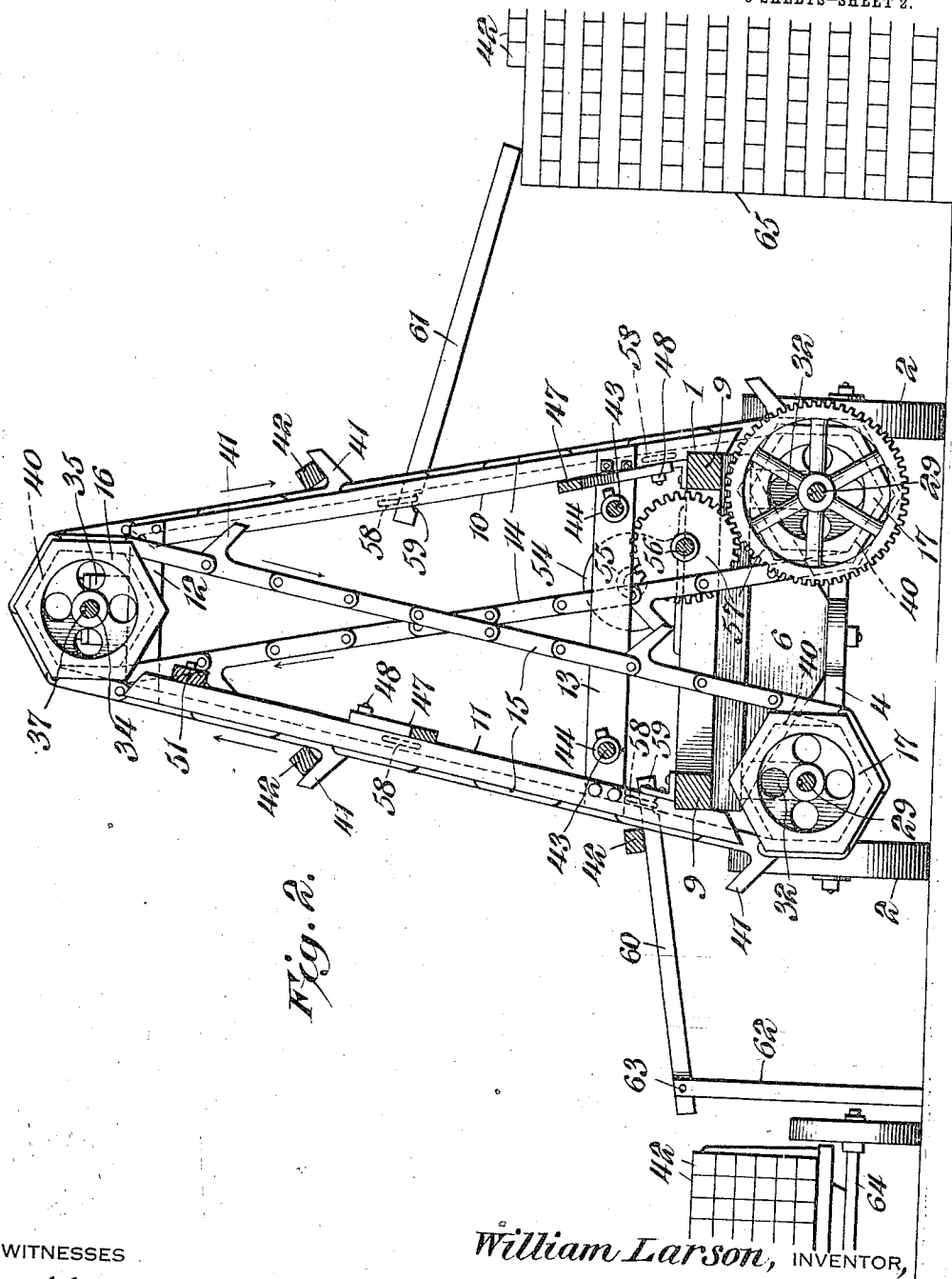


Fig. 2.

WITNESSES

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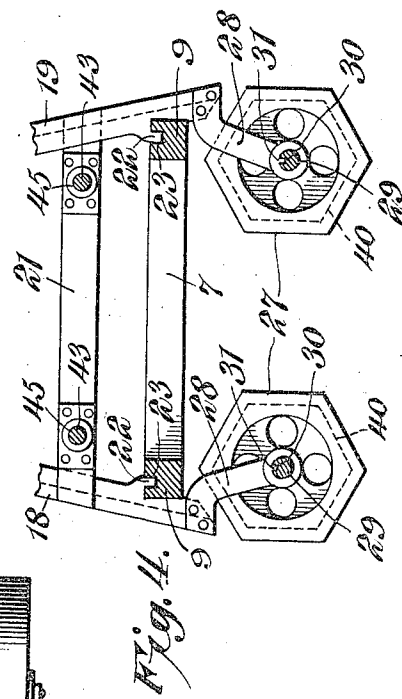
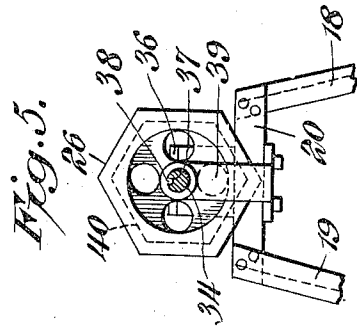
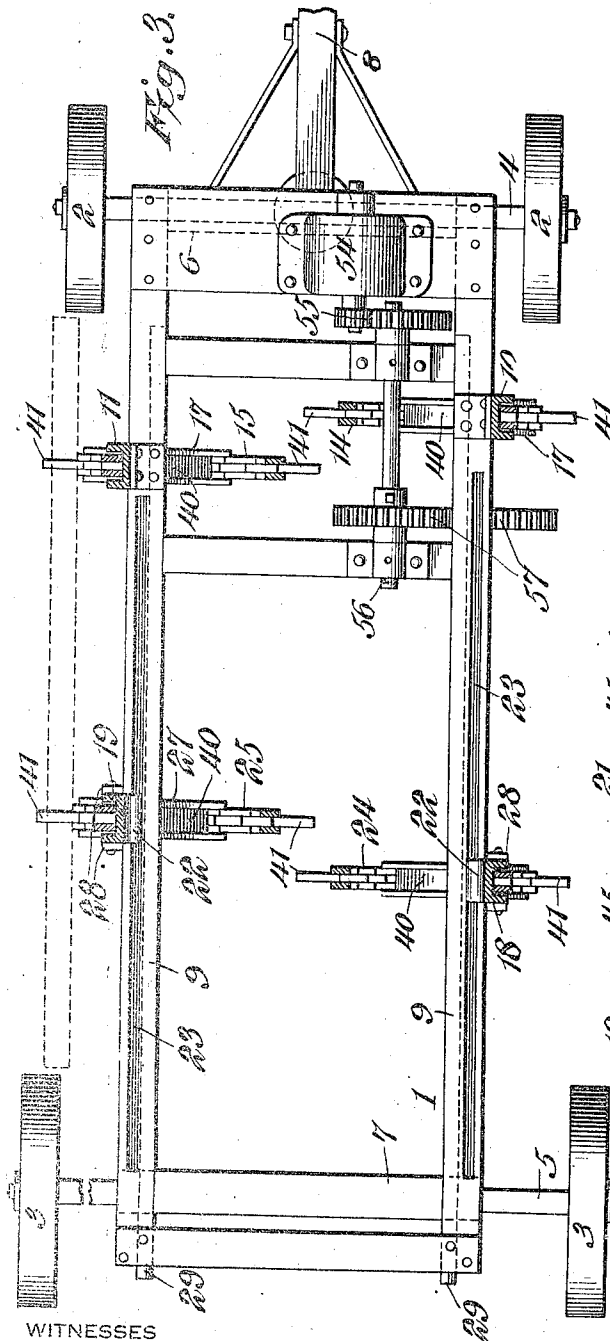
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WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM LARSON, OF BONNER, MONTANA, ASSIGNOR OF ONE-HALF TO WALLACE W. MARKLE, OF BONNER, MONTANA.

LUMBER-PILING MACHINE.

1,045,045.

Specification of Letters Patent.

Patented Nov. 19, 1912.

Application filed July 19, 1912. Serial No. 710,508.

To all whom it may concern:

Be it known that I, WILLIAM LARSON, a citizen of the United States, residing at Bonner, in the county of Missoula and State of Montana, have invented a new and useful Lumber-Piling Machine, of which the following is a specification.

The invention relates to improvements in lumber piling machines.

The object of the present invention is to improve the construction of lumber piling machines, and to provide a simple and comparatively inexpensive portable machine, designed for handling both lumber and other heavy material, such as logs, rails, timbers and the like, and capable of enabling the same to be readily transferred from a wagon to a stack and vice versa, and adapted to be advantageously employed for loading and unloading cars, boats and various other vehicles.

A further object of the invention is to provide an extensible lumber piling machine of this character, adapted to be varied in length to arrange it for handling different kinds or lengths of material.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a side elevation of a lumber piling machine, constructed in accordance with this invention. Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1. Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 1. Fig. 4 is a detail sectional view, illustrating the manner of slidably mounting the rear adjustable upright frame on the wheeled supporting frame. Fig. 5 is a detail view, illustrating the manner of mounting the central top shaft.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

In the accompanying drawings in which

is illustrated the preferred embodiment of the invention, 1 designates a supporting frame equipped with front and rear wheels 2 and 3 mounted on front and rear axles 4 and 5. The front and rear axles are connected with front and rear bolsters 6 and 7, secured to one side of the horizontal supporting frame, but any other suitable running gear may be employed, and the machine is equipped with a pole or tongue 8 to enable draft animals to be attached to it for hauling it from one point or place to another.

The supporting frame, which is horizontal, is composed of spaced side sills 9 and transverse connecting bars or beams, and it has mounted on it front and rear upright frames, which taper upwardly. The front upright frame, which is fixed to the supporting frame, is composed of oppositely inclined guiding standards 10 and 11, constructed of channeled metal, or other suitable material and rigidly secured at their lower ends to the side sills and connected at their upper ends by a top cross piece 12. The oppositely inclined standards 10 and 11, which are also connected at their lower portions by a lower transverse bar 13, are provided at their outer faces with longitudinal grooves or channels, located between the side flanges of the standards and receiving the outer flights or stretches of oppositely inclined endless conveyer chains 14 and 15, arranged on upper and lower polygonal chain or sprocket wheels 16 and 17. The channeled standards and the endless conveyer chains are arranged in different transverse planes, as clearly illustrated in Figs. 1 and 3 of the accompanying drawings, and the upper and lower transverse connecting bars or pieces 12 and 13 are located between the transverse planes of the standards and the conveyer chains and are secured to the adjacent faces of the standards, the latter being located at opposite sides of the transverse connecting bars or pieces.

The rear upright frame, which is adjustable along the horizontal supporting frame, is composed of oppositely inclined guiding standards 18 and 19, connected by a top transverse bar or piece 20 and a lower transverse bar 21 and having their lower ends fitted against the outer faces of the side sills 9 of the wheeled frame and provided

with approximately hook-shaped lugs or flanges 22, projecting inwardly and downwardly from the rear faces of the standards 18 and 19 and extending into and engaging longitudinal guide grooves 23 in the upper faces of the side sills 9. By this construction the rear upright frame is slidably connected with the supporting frame. The inclined standards 18 and 19 of the adjustable frame are preferably constructed of channeled metal, and are provided at their outer faces with longitudinal guiding grooves for the reception of the outer flights of oppositely inclined endless conveyer chains 24 and 25, arranged on upper and lower sprocket wheels 26 and 27. The endless conveyer chains 24 and 25 and their guiding standards are located in different planes, and the said standards 18 and 19 are secured to the transverse connecting bars 20 and 21 at the opposite faces thereof.

The lower ends of the standards 18 and 19 are equipped with downwardly and inwardly extending bearing arms 28, arranged in pairs and secured to the side faces of the standards 18 and 19 at points below the sills 9 and consisting of inwardly extending horizontal portions and depending inclined portions extending downwardly and inwardly from the horizontal portions. The horizontal portions of the bearing arms 28 extend to points beneath the sills 9 in slightly spaced relation with the same but in close proximity thereto to prevent the hook-shaped lugs or flanges 22 from being accidentally lifted out of engagement with the longitudinal grooves 23. The bearing arms 28 are also located at opposite sides of the lower sprocket wheels 27, and they are adapted to slide the latter along a pair of lower longitudinal shafts 29, provided with longitudinal grooves 30, which are engaged by keys 31 of the lower polygonal chain or sprocket wheels 27. The shafts 29, which are located below the side sills of the supporting frame, are journaled in front and rear bearings 32 and 33, depending from opposite sides of the frame at the front and back thereof, as clearly shown in Fig. 1 of the drawings. The lower front endless chain or sprocket wheels 17 are keyed or otherwise suitably fixed to the front portions of the lower shafts 29, and the upper polygonal chain or sprocket wheels are mounted on an upper centrally arranged shaft 34, journaled in suitable bearings 35 and 36 of the top connecting bars of the front and rear upright frames. The front upper chain or sprocket wheels are keyed or otherwise fixed to the front portion of the upper shaft 34, which is provided with a longitudinal groove 37 to receive keys 38 of the upper rear chain or sprocket wheels, whereby the latter are slidably interlocked with and are adapted to move longitudi-

nally of the upper shaft 34 when the rear upright frame is adjusted backwardly or forwardly. The rear upright frame is equipped at the top with arms 39, which, as clearly illustrated in Fig. 1 of the drawings, are spaced apart to receive the upper rear chain or sprocket wheels between them, and they cause the same to slide on the shaft 37 when the rear upright frame is adjusted to arrange the front and rear endless conveyer chains the proper distance apart to suit the lumber or other material operated on.

The polygonal chain or sprocket wheels are grooved to receive the links of the chains, which are arranged between the peripheral side flanges or walls of the grooves, and the said wheels have straight polygonal faces 40 at the bottoms of the grooves corresponding with the length of the links of the conveyer chains. The conveyer chains, which form a carrier or conveyer, are provided at intervals with angularly disposed projections or arms 41 inclined upwardly and outwardly while traveling at the outer flights of the endless conveyer chains, and adapted to support pieces 42 of lumber or similar material to convey the same upward at one side of the machine and downwardly at the opposite side for loading and unloading material either to convey the same from cars, boats, etc., to wagons or for transferring the material from wagons to a lumber pile or stack. The outer flights of the conveyer chains at one side of the machine travel upwardly while the outer flights of the conveyer chains at the other side of the machine travel downwardly and the arms are at a position so that when the arms at one side of the machine carry the material over the top, the arms of the chains at the opposite side of the machine will be in position to receive the material. The chains are oppositely inclined, as clearly shown in Fig. 2 of the drawings and the lumber carrying arms or projections are inclined downwardly and outwardly while traveling along the inner flights of the conveyer chains.

The rear upright frame of the machine is adjusted by means of a pair of longitudinal screws 43, located at opposite sides of the machine and journaled at their front portions in bearing openings 44 of the lower transverse connecting bar 13 of the front upright frame and engaging threaded openings 45 of the lower transverse connecting bar 21 of the rear upright frame. The front ends 46 of the adjusting screws are squared and are adapted to receive a crank handle or other suitable means for rotating them to slide the rear upright frame along the wheeled supporting frame. The adjusting screws 43, which are held against longitudinal movement in the bearing openings 44 of the front transverse bar 13, are adapted

when rotated to slide the rear upright frame backwardly or forwardly according to their direction of rotation.

The rear upright frame is braced and secured in its adjustment by oppositely inclined braces 47, composed of overlapped sections pivoted at their outer ends 48 to the upright frames and having inner overlapped portions provided with longitudinal slots 49 for the reception of bolts 50, or other suitable fastening devices for securing the overlapped sections in their adjustment. The upper portions of the upright frames are also connected by a horizontal brace 51, composed of overlapped sections connected at their outer ends to the upright frames and having inner overlapped portions provided with longitudinal slots 52 and secured in their adjustment by a bolt 53, arranged in the said slots 52. The inclined braces are located at opposite sides of the machine, and the horizontal brace connects the frames at the side of the machine at which is arranged the inner flights of the outer endless conveyer chains. By this arrangement the upper horizontal brace is placed clear of the conveyer chains. Any other preferred arrangement of braces may, of course, be employed.

The endless conveyer chains may be operated by a motor 54 of any preferred type, or any other suitable means. The motor shaft is connected by spur gearing 55 with a short counter shaft 56, journaled in suitable bearings of the wheeled frame and connected by spur gearing 57 with one of the lower longitudinal shafts, motion being communicated by the conveyer chains at that side of the frame to the conveyer chains at the opposite side, and when the chains are driven in either direction, the outer flights at one side of the machine will move upwardly while the outer flights at the other side of the machine will move downwardly.

The upright frames are equipped at the outer sides of their standards with loops 58, arranged at different elevations and adapted to receive the hooked terminals 59 of skid bars 60 and 61. The skid bars 60, which are adapted to extend downwardly at an inclination from the lower portions of the upright frames, are preferably supported at their outer ends by legs 62, pivoted at their upper terminals to the outer portions of the skid bars 60 by bolts 63, or other suitable fastening means, which will permit the legs and the skid bars 60 to be folded when not in use. The skid bars 61, which are arranged at an inclination, are adapted to extend downwardly and outwardly from the loops at the lumber pile, as clearly illustrated in Fig. 2 of the drawings. The hook-shaped terminals and the loops permit an adjustment of the skid bars to enable them to rest properly on the lum-

ber pile as the latter increases in height. The arrangement of the skid bars in Fig. 2 of the drawings permits lumber to be taken from a lumber wagon 64 and transferred to a lumber pile 65. The lumber from the wagon is placed on the skid bars 60 in the path of the inclined carrying arms of the conveyer chains, and is carried upwardly at one side of the machine to the top thereof by one set of conveyer chains and is then carried downwardly at the opposite side of the machine by the other set of conveyer chains, which deposit the lumber automatically on the inclined skid bars 61. The material is then placed on the lumber pile.

The machine is adapted for handling lumber and various other material, such as heavy timbers, rails and logs, and it may be constructed of any size and strength to adapt it to the character of the material to be handled.

What is claimed is:—

1. A lumber piling machine comprising a wheeled supporting frame, upright frames mounted on the supporting frame and having upwardly and inwardly inclined sides, and oppositely inclined endless conveyer chains located at opposite sides of the wheeled frame and having outer flights traveling upwardly at one side of the frame and downwardly at the opposite side thereof, said conveyer chains being arranged to carry the material upwardly at one side of the machine and over the top thereof and downwardly at the opposite side of the machine.

2. A lumber piling machine comprising a wheeled supporting frame, front and rear upright frames having upwardly and inwardly inclined standards forming guides, and a conveyer including oppositely inclined endless conveyer chains having outer flights traveling along the guides formed by the said standards and moving upwardly at one side of the machine and downwardly at the other side and arranged to carry the material over the top of the machine.

3. A lumber piling machine including a supporting frame, spaced upright frames having upwardly and inwardly inclined standards forming guides, oppositely inclined endless conveyer chains supported by the upright frames and having outer flights traveling upwardly at one side of the machine and downwardly at the opposite side and arranged to carry the material over the top of the machine, and means for adjusting one of the upright frames to vary the distance between the frames.

4. A lumber piling machine including a supporting frame, spaced upright frames mounted on the supporting frame, lower horizontal shafts located at opposite sides of the supporting frame, an upper centrally arranged horizontal shaft supported

by the upright frames at the top thereof, upper and lower wheels mounted on the said shafts, and oppositely inclined endless conveyer chains arranged on the said wheels and having outer flights traveling upwardly at one side of the machine and downwardly at the opposite side of the same and arranged to carry the material over the top of the machine.

5. A lumber piling machine including a supporting frame provided at opposite sides with lower longitudinal shafts, fixed and adjustable upright frames carried by the supporting frame, the adjustable upright frame being slidable along the said supporting frame, an upper longitudinal shaft supported by the upright frames, front and rear upper and lower chain wheels mounted on the said shafts, the rear chain wheels being slidably interlocked with the same, oppositely inclined endless conveyer chains arranged on the said wheels with their outer flights traveling upwardly at one side of the machine and downwardly at the opposite side of the machine, and means for sliding the adjustable frame along the supporting frame.

6. A lumber piling machine including a supporting frame provided at opposite sides with longitudinal grooves, spaced upright frames, one of the upright frames being fixed to the supporting frame and the other upright frame being provided with means for slidably engaging the said grooves, endless conveyer chains supported by the upright frames, and opposite longitudinal adjusting screws journaled on the fixed upright frame and connected with the adjustable upright frame and adapted when rotated to slide the same along the supporting frame.

7. A lumber piling machine including a supporting frame, spaced upright frames, one of the upright frames being fixed to the supporting frame and the other being slidable along the same, endless conveyer chains supported by the upright frames, a longitudinal adjusting screw journaled on the fixed upright frame and connected with the adjustable frame and adapted when rotated

to slide the same along the supporting frame, and adjustable braces composed of sections connected at their outer ends with the upright frames and adjustably secured together.

8. A lumber piling machine comprising a supporting frame, upright frames mounted on the supporting frame, a conveyer including oppositely inclined conveyer chains supported by the upright frames and having outer flights traveling upwardly at one side of the machine and downwardly at the opposite side of the machine, and skids extending outwardly from the upright frames for supporting lumber in the path of the conveyer chains at one side of the machine and for receiving lumber for the conveyer chains at the opposite side of the machine.

9. A lumber piling machine comprising a supporting frame, upright frames mounted on the supporting frame, a conveyer including oppositely inclined conveyer chains supported by the upright frames and having outer flights traveling upwardly at one side of the machine and downwardly at the opposite side of the machine, loops mounted on the upright frames, and skid bars having terminal hooks for engaging the loops and extending from the upright frames at opposite sides of the machine.

10. A lumber piling machine comprising a supporting frame, upright frames mounted on the supporting frame, a conveyer including oppositely inclined conveyer chains supported by the upright frames and having outer flights traveling upwardly at one side of the machine and downwardly at the opposite side of the machine, skid bars extending from the upright frames at opposite sides of the machine and detachably connected with the same, and foldable legs supporting the skid bars at one side of the machine.

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

WILLIAM LARSON.

Witnesses:

WALLACE W. MARKLE,
ROBERT S. WILSON.