F. O. WERDEN.

LUMBER PILER.

APPLICATION FILED SEPT. 6, 1916.

1,269,987.

Patented June 18, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

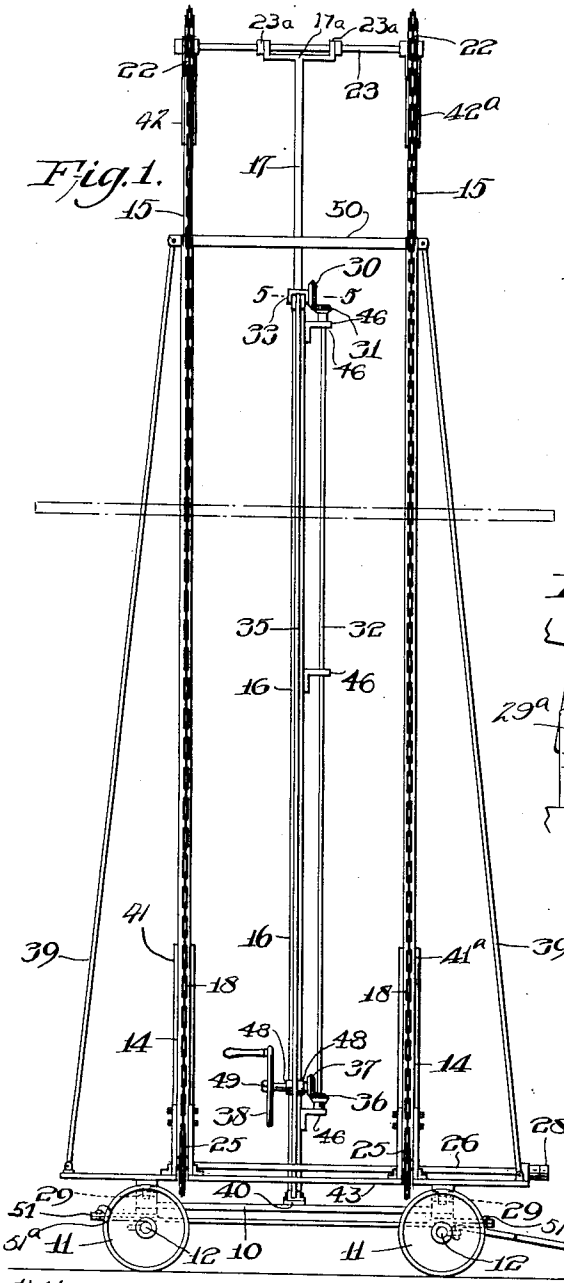


Fig. 3.

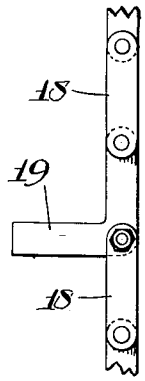


Fig. 4.

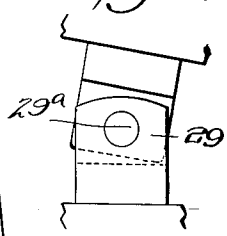


Fig. 2.

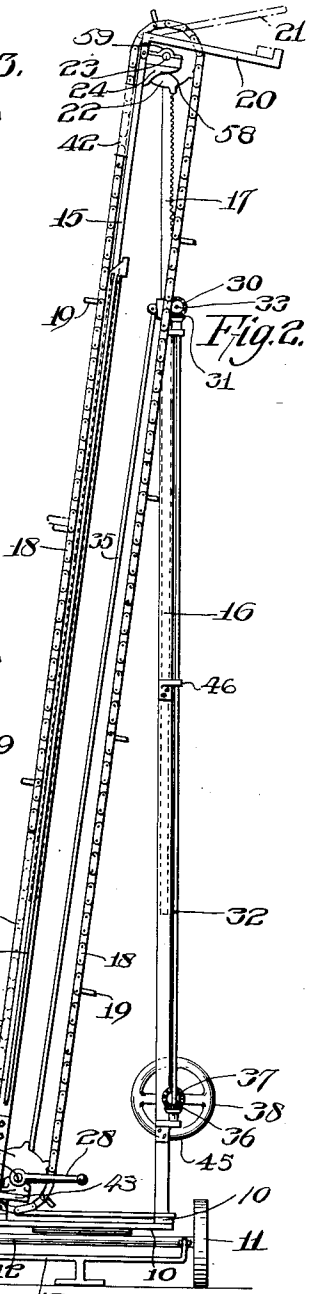
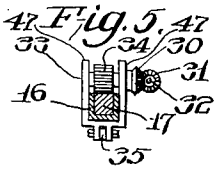


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 6

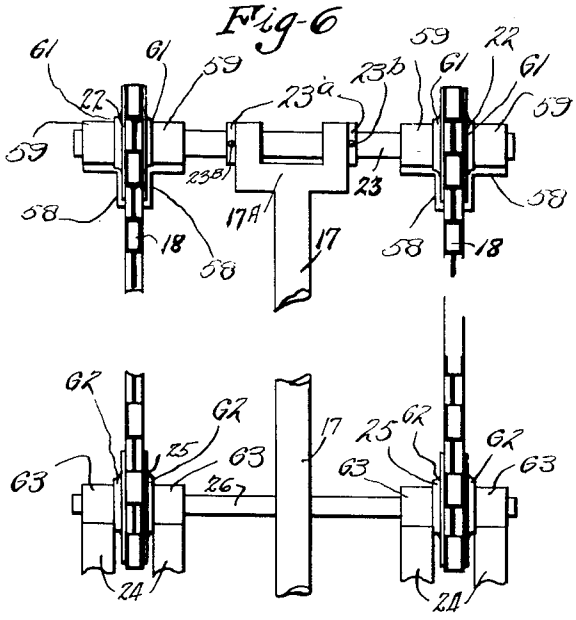


Fig. 7

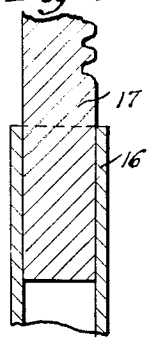


Fig. 11

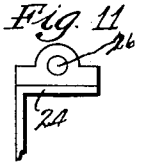


Fig. 8.

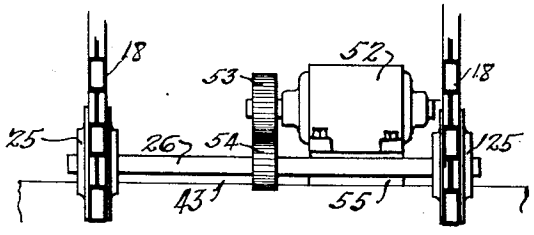


Fig. 9.

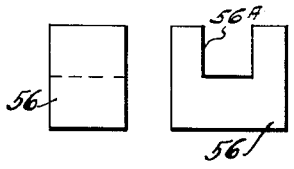
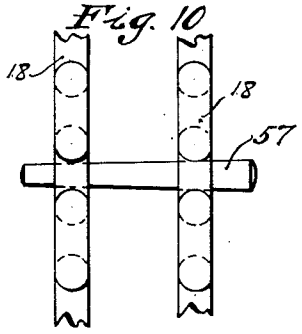


Fig. 10



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FREDERICK O. WERDEN, OF PHILADELPHIA, PENNSYLVANIA.

LUMBER-PILER.

1,269,987. Specification of Letters Patent. Patented June 18, 1918.

Application filed September 6, 1916. Serial No. 118,674.

To all whom it may concern:

Be it known that I, FREDERICK O. WERDEN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Lumber-Pilers, of which the following is a specification.

This invention relates to a new and improved device for piling lumber and is particularly adapted to be used when the stack has reached a height when it is inconvenient to continue the piling by manual labor.

The object of this invention is the provision of a tripod or derrick which is at all times balanced and which may be readily moved from place to place as occasion requires.

A further object is the provision of a novel adjusting mechanism whereby the derrick can be vertically extended.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate the preferred embodiment of the invention,

Figure 1 is a front view of the device in elevation, showing a section extended,

Fig. 2 is a side view of the device,

Fig. 3 is a detail view of a section of the chain, showing projection or carrier,

Fig. 4 is a detail view of the rocking arm or knuckle, and

Fig. 5 is a detail sectional view of a gearing on line 5—5 of Fig. 1.

Fig. 6 is a front elevation of the device, in section, illustrating in detail the means employed for preventing the sprockets and bracket from lateral movement on the upper shaft and the lateral movement of sprockets on the lower shaft.

Fig. 7 is a detail sectional view of the steel tubing used in the construction of the standards.

Fig. 8 is a detail view illustrating a motor in operative position on the device.

Fig. 9 is a sectional view of a locking device used to maintain the elevation of the device.

Fig. 10 is a sectional view illustrating the means employed for preventing the chain from dropping off the sprockets when changes are being made in the length of the chain, and

Fig. 11 is a side view of the bracket on the front rail supporting the journal for the lower shaft.

Similar reference characters refer to similar parts throughout the drawings.

Referring to the drawings,—A solid base preferably rectangular in form, consisting of a rear rail 10 and a front rail 43, firmly connected together by cross-arms and the bolsters 45, is mounted on any suitable conveyance, as here illustrated on the axles 12 of the wheels 11. By means of said bolsters 45 the front rail 43 is elevated slightly above said rear rail 10.

A tongue 13 is fastened to the axle 12 by means of eye bolts. Mounted on the cross arms connecting the said front and rear rails are fifth wheels. A novel provision of this device are these wheels, by the use of which the machine can be turned in its own length and moved in any direction by the locking of one or the other of said fifth wheels, which is accomplished by a pin 51^a passing through the wheel and the reach 51 firmly locking same. The tongue 13 is reversible so that it can be used for either end of device. The only occasion when it will be necessary to turn the machine is when it is desired to pile on the opposite side of the lumber alley.

Standards 14 are secured to the front rail 43, which is firmly secured to the rocking arms or knuckles 29, which in turn are securely fastened to the bolsters 45. These standards 14 are constructed of steel tubing adapted to receive the extendible sections 15. These extendible sections 15 are made of suitable material and are preferably solid. By the use of these extensions this machine can be constructed to carry lumber vertically from 5 feet to 40 feet.

A standard or hoisting bar 16, comprising the same material as the standards 14, and extending to about the same height, is firmly secured by means of suitable bolts, to the rear rail 10, and has an extendible bar or rack 17, of the same length as said hoisting bar 16, milled to fit pinion 34 as shown in Fig. 5, and is firmly secured at its top to the horizontal shaft 23, by means of the hoisting bar bracket 17^a as illustrated in Fig. 1.

Lumber conveying chains 18, being end-

less chains are riveted together in sections as particularly illustrated in Fig. 3. Said chain is riveted together in suitable lengths to make, by the addition or subtraction, of a section, an elevation or lowering of the whole comprising 5 feet, which is a suitable deviation of height to make it convenient, at its highest point, for workmen to remove the lumber from the receivers readily. These sections are bolted together and can be readily placed in position to change the elevation of the standards 14. At regular intervals on the chains, and integral therewith, projections or carriers 19, are provided, which act as carriers for the lumber. These carriers can be made in any length desired according to the length of link used.

The very obvious reason for making these chains riveted in sections is so that the chains will be absolutely the same length and the bolted connection of the sections will always bring the carriers directly opposite each other, as is necessary, and will maintain the same length of chain and the same tension no matter how many sections are added to or taken from the whole.

A receiver, consisting of receiving arms 20, of suitable material securely bolted to the extending standards 15, is for the purpose of receiving the lumber as the conveyers, or hoisting chains, 18, throw said lumber over the sprockets 22. These receiving arms are placed on the outside of standards 15 on either side, thus the lumber arrives on said arms within easy reach of the workmen and is at all times perfectly balanced relieving the workmen from the laborious part of balancing the lumber preparatory to laying it on a pile as will be very apparent to any manufacturer of lumber; this being a fact it is therefore obvious that the workmen can and will handle a much greater amount of lumber than is possible by the old mode of piling. Similar receiving arms 21 are made of suitable form and material, as shown in Fig. 2, and are bolted in like manner as the arms 20 to the standards 15, so that the workmen by sliding the lumber down these arms will place the said lumber on the carriers 19 on conveyers, at a point, where the conveyers, being reversed in their motion, will convey the lumber over the sprockets 22 and allow the lumber to be lowered as readily as it was previously shown the same could be elevated.

Sprockets 22, known as idlers, are mounted loosely on the horizontal shaft 23. This allows, in the elevation of the standards, the adjustment and equalizing of the tension of the conveyers at any and all points of elevation, which is very essential to the proper working of the device.

Brackets 58 are secured to the standards 15, as illustrated. Secured to said brackets 58, in any suitable manner, are boxes or journals 59 for the shaft 23, one on either side of each standard. Said sprockets 22 are positioned between said journals 59 and are provided with hubs 61 of such length that they fit snugly against the said journals 59, whereby they act as collars by means of which they maintain their positions on the said shaft 23. This construction prevents lateral movement of said sprockets 22 on said shaft 23. This construction is particularly illustrated in Fig. 6.

Collars 23^a are secured by set screw 23^b or pin on either side of hoisting bar bracket 17^a, thus rigidly holding the said shaft 23 in position at all times.

Sprockets 25, are secured to the shaft 26, and may be secured by key, pin or set screw, and are for the purpose of moving the chain conveyers in either direction.

A shaft 26 is journaled in boxes 63 on either side of said sprockets 25. These sprockets 25 have hubs 62, of similar construction to hubs 61 heretofore described, so that they fit snugly against the boxes or journals 63 and act as collars so as to maintain their position on the shaft 26. Said journals 63 are suitably secured on said shaft by means of brackets 24, securely fastened to the front rail 43, one on either side of the standards 14. This construction, which is fully illustrated in Fig. 6, prevents lateral movement of said sprockets 25 on said shaft 26. A handle 28 on end of shaft 26 to actuate the sprockets, is shown.

Rocking arms or knuckles 29 are provided as shown in detail in Fig. 4. These knuckles 29 consist of two parts, being cut away as shown to give them sufficient swing to allow them to act as knuckle joints. The axis of these knuckles is a shaft, bolt 29^a, or rivet passing through the two parts allowing the upper section to attain any angle that its duties should require. The bottom portion of this knuckle is securely fastened to the bolster 45. The top or upper portion of said knuckle 29 is securely fastened to the front rail 43. Therefore it is apparent that no matter what the elevation of the standards may be, said front rail must of necessity tilt itself either at one angle or another according to the height of the device. With the brackets, boxes and shaft all being firmly secured to said rail 43 it is obvious that at any elevation of the device the shaft, sprockets and the motive power, of any kind, fastened to said rail, will at all times be in perfect balance.

The hoisting bar or rack 16 and its extendible section 17 are operated by means of a perpendicular shaft 32 which is secured to standard 16 by means of brackets 46 thereon as illustrated.

A bevel gear 30 is securely fastened to

shaft 33 and is in mesh with a like bevel gear 31, which is securely fastened to the perpendicular shaft 32. The function of said bevel gear is to elevate and lower the section 17.

A guy rod 35, extends from upper part of standard 16, to which it is secured in any suitable manner, down to a permanent bracket as shown at 40, and being an integral part at the base of hoisting bar 16, as shown clearly in Fig. 2, has a tendency of retaining the perfect rigidity of said hoisting bar 16 and its integral parts.

It is obvious that with the knuckles 29 secured to the bolsters 45 which connect the front and rear rails, and the two standards 14 being secured to the front rocker rail 43, in the manner illustrated, and the standard 16 being rigidly secured to the rear rail 10, and supported by the guy rod 35, and the extendible sections 15 and 17 being firmly secured at their common apex on the horizontal shaft 23, by the means heretofore recited, that the equilibrium of the device is maintained at any height, the knuckles 29 keeping the standards 14 at all times in alinement and balance.

An additional bracket 47 as shown clearly in Fig. 5 acts as a journal bearing for shaft 33, with a pinion 34 securely fastened to said shaft 33. Said pinion 34 is operatively secured to the standard 16.

The numeral 36 represents a bevel gear securely fastened to bottom of shaft 32 and is in mesh with a like bevel gear 37 which is firmly fastened to shaft 49 by means of bracket 48, which is a two-way bracket and acts as journal boxes for said shaft 49. Secured to said shaft 49 is the hoisting wheel 38. It is apparent that by the operation of gears 30 and 31, 36 and 37, shaft 32, together with the pinion 34, the extending rack 17 may be raised or lowered by turning the wheel in either direction.

A locking device, comprising a square piece of metal 56 has the slotted portion 56ª. This slotted portion 56ª is slipped over the shaft 49, said shaft 49 being flat on its four sides, when the desired elevation of the device is had and a leg or portion of said slotted portion is thus forced against the standard 16, securely maintaining said elevation.

The numeral 50 represents a supporting ribbon, of suitable material and permanently fastened to the standards 14, at their upper part, for the purpose of holding said standards at their top height the exact width of same at their lower ends, and having guy rods 39 fastened at either end extending down to and being securely fastened on front rail 43 as illustrated, their function being the support, if necessary, of the standards 14.

Guides 42 and 42ª short in length are provided on the upper part of the extendible sections 15 and like guides 41 and 41ª are provided on the lower part of the standards 14, as illustrated, for the proper guiding of the chains to the sprocket teeth; guides 41 and 41ª having for a further purpose the prevention of crowding the chains off the standards 14 by the workmen when placing lumber on the carriers.

Mode of operation.

With the derrick in place, the lumber is brought by any method of conveyance and dumped in a pile in front of the standards 14, said standards being placed about 5 or 5½ feet apart which would provide the proper width of the chains for any lumber 6 feet and longer in length. A workman, or workmen, places the lumber on the carrier 19. The motive power may be of any suitable kind, but having a reversible feature, and being capable of being geared to a determinate speed, but for the purposes of illustration hand power is here shown.

In case it is desired to operate the device by other means than hand power, a motor 52, provided with the gear 53 which meshes with a gear 54 on the shaft 26, may be positioned on a platform or base 55 secured firmly, in any suitable manner, to the front rail 43, as illustrated, without interfering with the equilibrium of the device. The handle is turned to the right causing conveyer to travel upward and over sprockets 22 and deposit the lumber, perfectly balanced, at the hand of the workman, at the top of pile on the receiving arms 20. These receiving arms 20 extend over the face of the pile to any length required or desired which would provide and allow a pile to be made perpendicular in front or what is termed over-shot. In the latter case operator would start pile at any point farther away from the base of machine that would provide for the desired amount of over-shot in face of pile.

As previously explained, when the pile has advanced to a height that makes it inconvenient for the workmen to take the lumber from receiver, additional sections of chain are added, each section making an extension of 5 feet. This is effected by breaking the chain, by the removal of one bolt on each side and the addition of another bolt to the section inserted. The wheel 38 is then turned causing the whole derrick standards to become extended to the added length of chain and so on until the desired height of pile is attained.

When making the change in the length of the chain, as above described, the insertion of a thin piece of steel or metal through the opening in the chain just above the sprocket shaft, as illustrated particularly in Fig. 10, will prevent the chain from dropping off the sprockets until the connection is made, after which it can readily be removed.

It is thought to be advisable to paint the carriers 19 in said chains which are controlled by bolt connections, a bright color, so that they may be readily discernible when stopping machine at a proper point to readily make the connection. The extra chains will be placed within suitable reach readily at hand so as to expedite any change of elevation.

I do not restrict myself to the exact details of construction, combination and arrangement herein set forth, it being obvious that minor variations thereof not involving the exercise of invention may be made by the skilled mechanic, and such departure from what is herein described and claimed not involving invention I consider as within the scope and terms of my claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a lumber piler, the combination with a solid base, of a front rocker rail and a fixed rear rail, paralleling each other, secured to said base, extendible standards secured to said front rocker rail, a standard rigidly secured to said fixed rear rail intermediate of the standards on said front rail, an extendible rack bar operatively secured to said intermediate standard, means for extending said extendible standards and said rack bar, a horizontal shaft journaled in said extendible standards and rack bar, bolsters, knuckles secured to said bolsters and to said front rail providing means to maintain the equilibrium of the device of various heights and means for maintaining the elevation of said extensible standards at various heights.

2. In a lumber piler, the combination with a base, preferably rectangular in form, of front and rear rails secured thereto, extendible standards mounted on said front rail, an intermediate standard rigidly mounted on said rear rail, an extendible rack bar operatively secured to said intermediate standard, means for extending said extendible standards and said rack bar, bolsters, rocker arms secured firmly to said bolsters and to said front rail, so that in conjunction with the rigidity of the intermediate standard on said rear rail, said rail being connected to the opposite portions of said bolsters, a balanced device is provided for various heights.

3. In a lumber piler, the combination with a solid base, of a front and a rear rail secured thereto, a plurality of standards mounted on said front rail, said standards being adapted to receive extendible sections, extendible sections, preferably solid, a horizontal shaft journaled on said extendible sections at their upper ends, a standard rigidly mounted on said rear rail, intermediate of said standards on said front rail, bolsters, rocker arms secured to said bolsters and to said front rail, said intermediate standard extending vertically about the same height as the standards on the front rail and being adapted to receive an extendible rack, an extendible rack operatively secured to said intermediate standard, a vertical shaft suitably secured to said intermediate standard, a pinion operatively connected to said shaft said extendible rack being milled to fit said pinion, a bracket secured to said horizontal shaft, said extendible rack being secured to said bracket and means for rotating said vertical shaft.

4. In a lumber piler, the combination with a solid base, of a front and a rear rail secured thereto, a plurality of upwardly extending standards mounted in spaced relation on said front rail, said standards having extendible sections, a horizontal shaft journaled in said extendible standards, a standard mounted on said rear rail intermediate of said standards on said front rail having an extendible rack, a bracket on said rack in which said horizontal shaft is also journaled, collars secured rigidly on said horizontal shaft to prevent lateral movement of said brackets, a vertical shaft, brackets secured on said intermediate standard and in which said vertical shaft is journaled, gearing operatively secured to opposite ends of said vertical shaft, a pinion operable by the upper gearing, said extendible rack being milled to fit said pinion, providing means for the elevation or lowering of said extendible sections of standards on the front rail and said extendible rack on the intermediate standard and means for maintaining the elevation of said standards.

5. In a lumber piler, the combination with a solid base, of front and rear rails thereon, a plurality of standards on said front rail having extendible sections, means for elevating and lowering said sections, a shaft journaled in said sections, said standards and their extendible sections providing supports for a lumber conveyer, a lumber conveyer operable over said shaft comprising chain links riveted together to form sections, said sections being bolted together to form an endless chain, so that by the addition or subtraction of a section an elevation or lowering of the device may be permitted and means for holding said chain in position when additions or subtractions are being made thereto.

6. In a lumber piler, the combination with a solid base, of front and rear rails thereon, a plurality of standards on said front rail having extendible sections, means for elevating and lowering said sections, a horizontal shaft journaled in said sections, said standards and their extendible sections providing supports for a lumber conveyer, a

lumber conveyer comprising chain links riveted together to form sections, said sections being bolted together to form endless chains, a horizontal shaft journaled on said front rail and connected to a suitable source of power, sprockets secured to said shaft and actuated thereby, idler sprockets loosely mounted on the upper horizontal shaft, said conveyer chain being mounted on said sprockets, brackets secured to said extendible sections, journals secured to said brackets and on said horizontal shafts, said sprockets being provided with hubs, said hubs fitting snugly against said journals thereby preventing lateral movement of said sprockets on said shafts and means secured to said extendible sections to receive the lumber, either for piling or returning.

7. In a lumber piler, the combination with a solid base, of front and rear rails thereon, a plurality of standards on said front rail having extendible sections, means for elevating and lowering said sections, a horizontal shaft journaled in said sections, said standards and their extendible sections providing supports for a lumber conveyer, a lumber conveyer comprising chain links riveted together to form sections, said sections being bolted together to form endless chains, a horizontal shaft journaled on said front rail and provided with a gear, a platform secured to said front rail providing a base, a motor on said base provided with a gear which meshes with the gear on said horizontal shaft to rotate said shaft, sprockets secured to said shaft and actuated thereby, idler sprockets loosely mounted on the upper horizontal shaft, said conveyer chain being mounted on said sprockets, brackets secured to said extendible sections, journals secured to said brackets and on said horizontal shafts, said sprockets being provided with hubs, said hubs fitting snugly against said journals thereby preventing lateral movement of said sprockets on said shafts and means secured to said standards and their extendible sections for guiding said chains to the said sprockets and for the prevention of crowding the said chains off the said standards.

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

FREDERICK O. WERDEN.

Witnesses:

MAHLON VAN BOOSKIRK,

E. M. BOWEN.