

(No Model.)

2 Sheets—Sheet 1.

O. & W. SWENSON.  
HAY LOADER.

No. 546,602.

Patented Sept. 17, 1895.

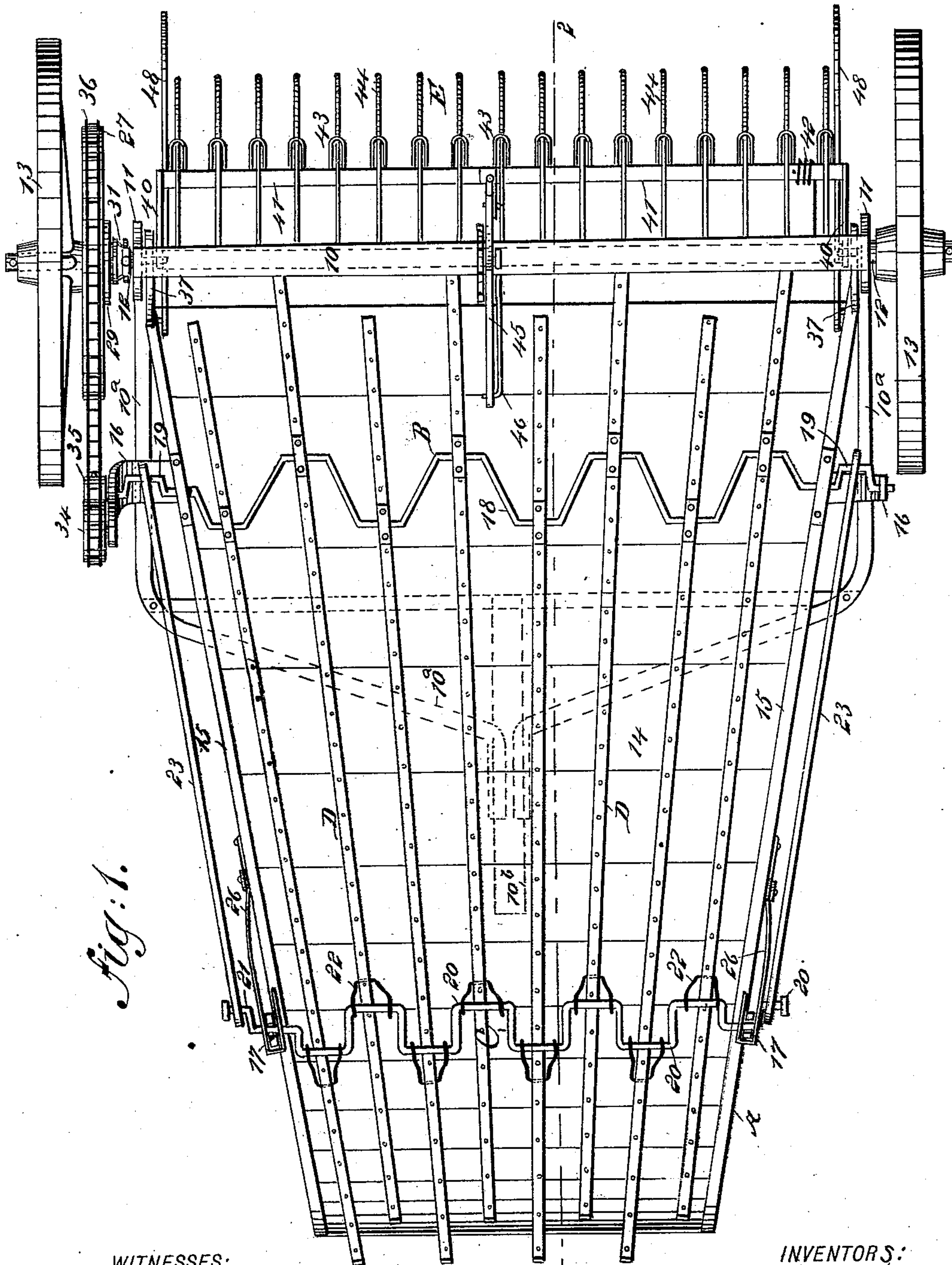


Fig. 1.

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Munn & Co.  
ATTORNEYS.

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Fig. 4.

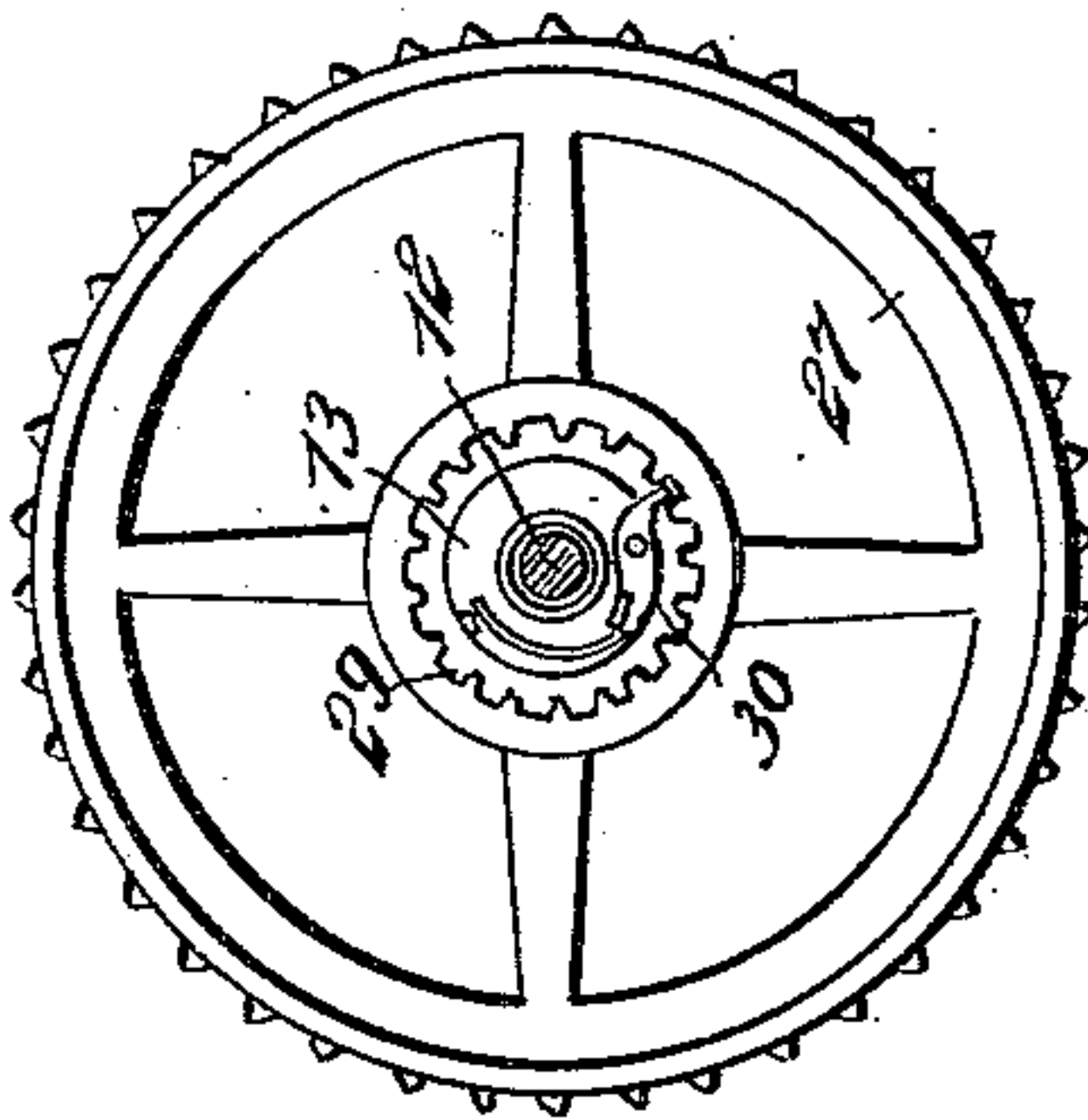


Fig. 2.

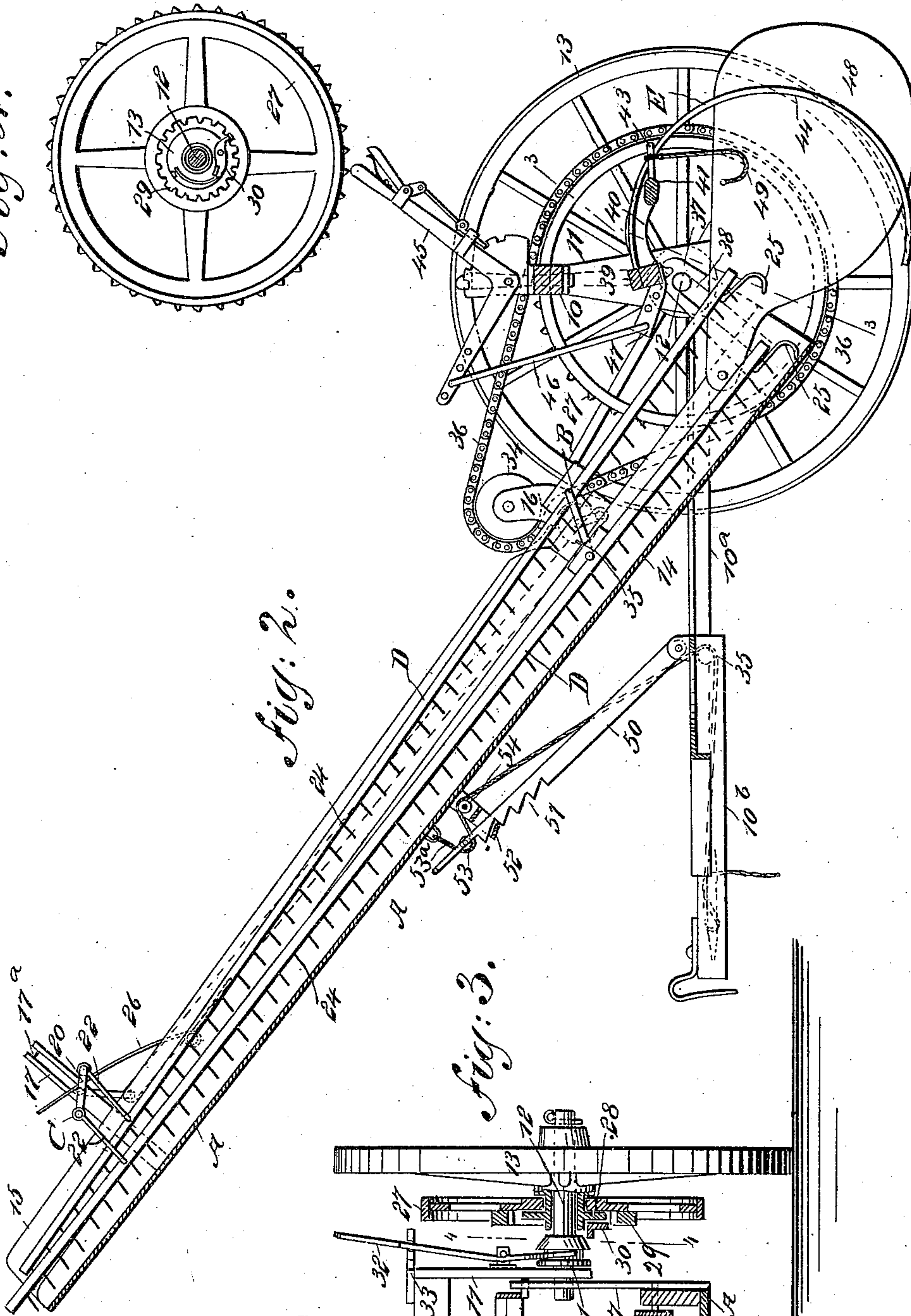
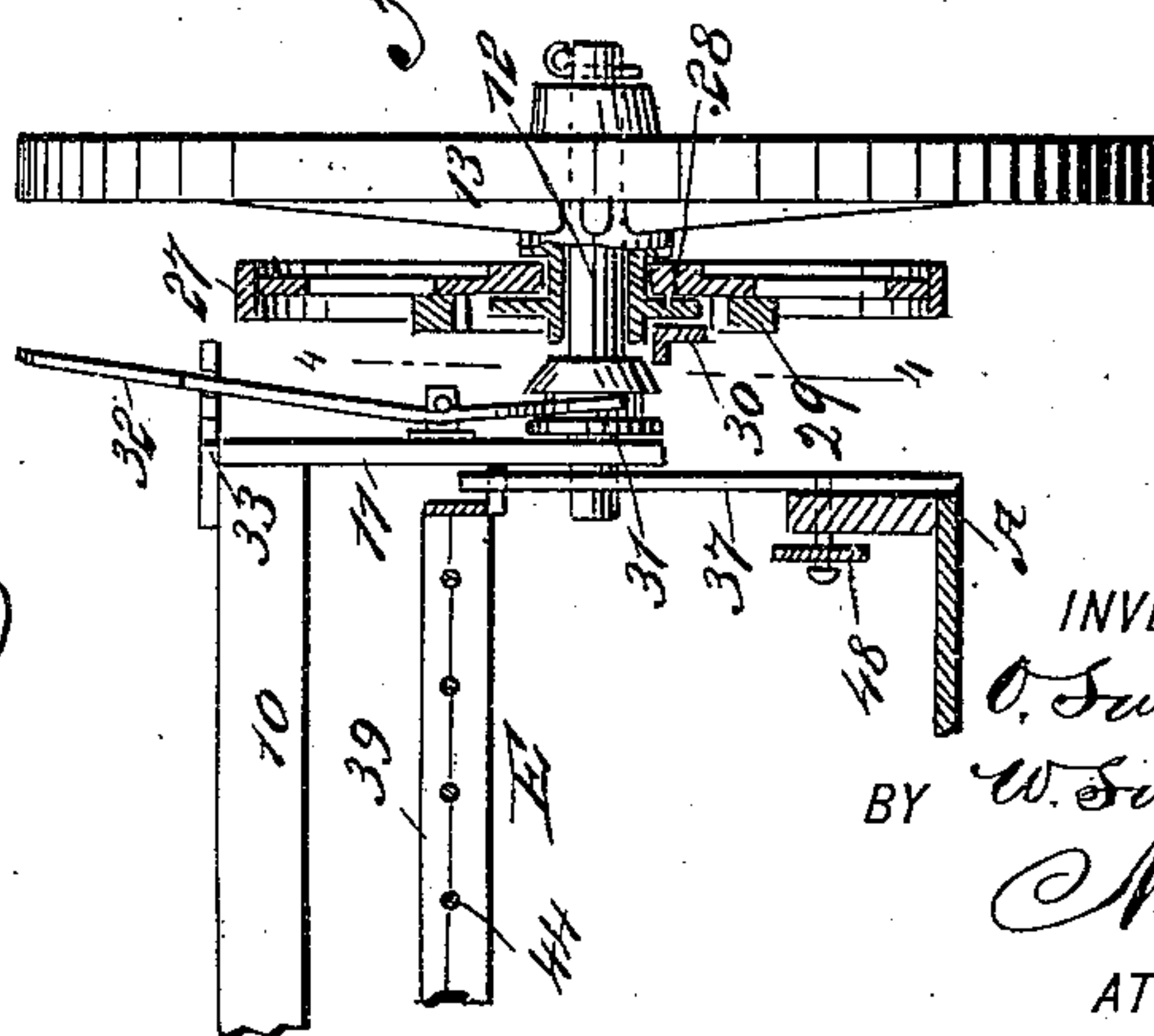


Fig. 3.



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# UNITED STATES PATENT OFFICE.

OLE SWENSON AND WILLIAM SWENSON, OF CRESCO, IOWA.

## HAY-LOADER.

SPECIFICATION forming part of Letters Patent No. 546,602, dated September 17, 1895.

Application filed January 30, 1895. Serial No. 536,670. (No model.)

*To all whom it may concern:*

Be it known that we, OLE SWENSON and WILLIAM SWENSON, of Cresco, in the county of Howard and State of Iowa, have invented a new and Improved Hay-Loader, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in hay-loaders, and it has for its object to provide a hay-loader in which the body or elevator will be narrow at the top and the feed at the top be faster than that at the bottom.

Another object of the invention is to provide a means whereby the rake and the elevator of the hay-loader will rise simultaneously upon meeting an obstruction, and whereby also the rake may be elevated independently of the body or elevator of the loader when occasion may demand.

A further object of the invention is to so hang the body or elevator of the hay-loader that it may be raised from the wagon in which the hay is to be delivered, and whereby also the said elevator may be expeditiously and conveniently lowered from the ground and the pitch regulated.

Another object of the invention is to provide a novel and simple means for throwing the elevator in and out of gear with a ground-wheel of the machine.

The invention consists in the novel construction and combination of these several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the hay-loader. Fig. 2 is a longitudinal vertical section taken on the line 2 2 of Fig. 1. Fig. 3 is a section taken substantially on the line 3 3 of Fig. 2, and Fig. 4 is a section taken practically on the line 4 4 of Fig. 3.

In carrying out the invention, what may be termed the "frame" or "carriage" of the machine consists of a cross-bar 10, from which hangers or standards 11 are downwardly projected, and to each standard or hanger at its lower end a short axle 12 is secured, upon the outer end of which a ground-wheel 13 is jour-

naled, and a yoke 10<sup>a</sup> is secured to the said standards, being forwardly and horizontally projected, and said yoke is attached in any suitable or approved manner to the tongue or pole 10<sup>b</sup>, which may be and preferably is provided with a hook for attachment to a wagon in which the hay is to be loaded.

The elevator A consists of a body comprising a floor 14 and side pieces 15, and the body of the said elevator is made tapering, being made preferably about half the width at its upper end that it is at its base.

From each side of the elevator-body, near the base, an angled bracket 16 is projected, and at each side near the top a standard 17 is secured, provided with a longitudinal slot 17<sup>a</sup>, as shown in Fig. 2. In the lower brackets 16 a crank-shaft B is journaled, which extends across the elevator-body. This shaft is mounted to revolve, and its crank-arms 18 between the sides of the elevator-body are much larger than the crank-arms 19 at the ends of the shaft, and in the slotted portions of the upper standards 17 a rock-shaft C is journaled, the crank-arms 20 whereof correspond in number to the crank-arms of the rotary shaft B at the base of the elevator. The crank-arms 20 of the upper shaft C between the sides of the body of the elevator are full arms, while the arms 21 at the extremities of this shaft are simply quarter-cranks.

Each full crank-arm 20 has pivotally secured thereto a yoke 22, and the quarter-crank at each end of the upper or rock shaft C is connected by a pitman 23 with the smaller crank-arms 19 at the ends of the lower rotary crank-shaft B.

An elevator-arm D, consisting of a bar, is pivotally attached to each crank-arm 18 of the lower rotary crank-shaft B, and is likewise pivotally connected with a yoke 22 of a corresponding crank-arm on the upper rock crank-shaft C, as is best shown in Fig. 1; and the said elevator-arms D are of a length substantially that of the body of the elevator, or practically so. Each elevator-arm is provided upon its lower face with series of teeth 24, and at the lower end of each elevator-arm a hook-shaped tooth 25 is attached to its under face, and these teeth, as shown in Fig. 2, extend rearwardly beyond the arms.

The rock crank-shaft C is held in its bear-



ings and yet permitted to adjust itself to the bulk of hay upon the elevator by causing springs 26 to have constant bearing on the shaft at the standard 17, in which it is jour-  
 5 naled, the said springs being preferably secured to the side boards 15 of the elevator.

The elevating arms are rotated preferably from the right-hand axle of the frame, and the connection is substantially as follows: A  
 10 chain-wheel 27 is loosely mounted upon the hub of the right-hand ground-wheel, as shown in Fig. 3, being prevented from slipping therefrom by means of a flange 28, formed on the said hub; and the chain-wheel 27 has a  
 15 ratchet-wheel 29, formed upon its inner face around the hub of the ground-wheel, as shown in Fig. 4, the teeth of the ratchet-wheel being internally placed. These teeth are normally engaged by a spring-pressed dog 30, also best  
 20 shown in Fig. 4, and likewise in Fig. 3, and this dog is pivoted upon the hub of the ground-wheel. Therefore, normally, the chain-wheel will turn with the right-hand ground-wheel; but it may be made to turn loosely on the hub  
 25 of this ground-wheel through the medium of a shifting device, which preferably consists of a conical bushing 31, mounted to slide on the right-hand axle 12, and is operated through the medium of a shifting-lever 32, en-  
 30 gaging near its upper end with recesses in a rack 33, secured to the frame or carriage of the machine. When this shifting-bushing is out of engagement with the dog 30, the chain-wheel and right-hand ground-wheel will move  
 35 together; but when the bushing is forced outward it will ride upon the spring-controlled end of the dog and compress that end, therefore carrying the opposite end out of contact with the teeth of the ratchet-wheel 29. Con-  
 40 sequently at this time the chain-wheel will not be operated by the ground-wheel, and the elevating-arms will not be operated.

A grooved pulley 34 is journaled upon the upper end of the right-hand bracket 16 of the  
 45 elevator, and a small chain-wheel 35 is secured upon the right-hand extremity of the lower or rotating crank-shaft B, while a driving-chain 36 is made to pass over the large chain-wheel 27 around the pulley 34 and en-  
 50 gages with the smaller chain-wheel on the said lower shaft B. The driving-chain engages with the upper peripheral surface of this wheel.

Owing to the upper shaft C being a rock-  
 55 shaft and the lower shaft B a rotating shaft, at each forward or rearward movement of the upper crank-arms 20, the elevator-arms will be given a full movement, either forward or rearward, and the hay will consequently be  
 60 fed faster at the upper or contracted end of the elevator than at the base or wider portion, and owing to this fact the elevator may be safely and successfully given this tapering form.

65 The elevator is supported from the carriage

in a peculiar manner. It is provided at each side of its base portion with an upwardly-extending hanger 37, preferably inwardly curved at its upper end in order that the  
 70 hangers may be hung upon the inner ends of the axles 12. Each elevator-hanger 37 is provided with a longitudinal slot 38, through which the axle passes. Therefore, when the elevator meets with any obstruction at its  
 75 base it will ride upward automatically to clear the same, and even when so doing or when the elevator is being raised or lowered the driving-chain 36 will remain stretched and operative. Furthermore, this peculiar  
 80 mounting of the elevator on the carriage enables a person standing upon the load or upon the vehicle to be loaded to readily elevate the upper end of the elevator.

A rake E is located at the rear of the elevator, and the head 39 of the rake is pivotally  
 85 mounted in the upper ends of the elevator-hangers 37. Consequently, when the lower end of the elevator is raised for any purpose the rake will be likewise elevated.

A rearwardly and downwardly curved  
 90 bracket 40 is projected from each end of the rake-head, and a tension-bar 41 is pivoted in the rear ends of these brackets or arms 40, being provided at one or at both ends with an  
 95 attached spring 42, the said spring being likewise secured to the head, and the spring so acts that when the tension-bar is rotated upwardly and forwardly and tension is removed therefrom the spring will cause the said bar  
 100 to turn backward to its normal position, and when in this position a series of eyes 43, secured on the tension bar, will be in horizontal position.

The rake-teeth 44 are of a spring material, as is usual, and are curved in the customary  
 105 manner, each tooth being passed through one of the eyes 43. Therefore, when a tooth or a series of teeth is forced upward said tooth or teeth will carry the eyes 43, through which  
 110 they pass, in the same direction, and the tension-bar 41 will be forwardly rotated, and as soon as the obstruction which forced the teeth upward is passed the bar will restore the teeth to their normal position.

The rake is raised or lowered by means of  
 115 a lift-lever 45, mounted upon the cross-bar 10 of the frame and provided with the usual latch-lever and rack. The lift-lever is usually of the elbow pattern, and its forward member is adjustably connected by a rod 46 with an  
 120 arm 47, forwardly projected from the central portion of the rake-head. A shield 48 is pivotally connected with each side board of the elevator at its base, and the shields are adapted  
 125 to trail upon the ground and are also supported by cables or chains 49, attached to them and to the outer eyes on the rake. These shields prevent the hay from being drawn into the wheels and likewise facilitate the hook-teeth  
 130 at the bottom of the elevator-arms grasping



the hay; and these hook-teeth, two of which are usually placed upon each elevator-arm, materially assist in quickly delivering the hay from the rake to the elevator, since they

are capable of carrying forward large bunches.

The elevator is given desired inclination through the medium of a bar 50, pivoted upon the pole 10<sup>b</sup> or the yoke 10<sup>a</sup>, the bar having a series of notches 51 produced in its under edge at its free end, and the notched portion of the bar is made to pass through a keeper 52, secured to the central under portion of the elevator-body. A cord or chain 53<sup>a</sup> is secured to the elevator-body forward of the keeper 52, and is passed around a pulley 53, located in an eye formed at the free end of the notched bar 50, the said cord or chain being then passed over a pulley 54 above the keeper 52, and thence downward over suitable guide-pulleys 55, located at the junction of the bar and the frame. Under this construction it will be observed that the elevator will be raised or lowered conveniently and easily from the ground.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a hay loader, a tapering elevator having slotted bearings at its contracted end, a rock shaft provided with crank arms journaled in said bearings, springs normally holding the shaft in its bearings, permitting the shaft to adjust itself to the amount of hay on the elevator, a rotatable crank shaft journaled near the base end of the elevator, elevator arms pivotally connected with the corresponding crank arms of the two shafts, and a driving connection between the rotatable shaft and the rock shaft, as and for the purpose set forth.

2. In a hay loader, the combination with an elevator having slotted bearings at its upper end, of a rock shaft journaled in said bearings and provided with crank arms, springs engaging the rock shaft and holding it in the said bearings, yokes pivoted on the cranks of the said shaft, a rotatable crank shaft journaled near the base or lower end of the elevator, elevator arms pivotally connected with the crank arms of the rotatable shaft and with the yokes of the rock shaft, a driving connection between the said shafts, and means

for operating the rotatable shaft, substantially as described.

3. In a hay loader, the combination with the drive wheels, and their axles, of an elevator having its lower end loosely suspended from the axles, and provided with reciprocating feed arms, and means for operating the feed arms from one of the drive wheels, substantially as described.

4. In a hay loader, the combination, with the carriage thereof, and the elevator, of slotted hangers connecting the carriage with the elevator, whereby the said elevator may have movement on the said carriage to clear an obstruction, as and for the purpose set forth.

5. In a loader, the combination, with a carriage and the elevator thereof, of a slotted hanger secured at each side of the base of the elevator and loosely mounted on the axle of the carriage, the axle passing through the slots of the hangers, as and for the purpose set forth.

6. In a hay loader, the combination, with the carriage and the elevator, of slotted hangers attached to the elevator, by means of which the elevator is mounted upon the carriage, and a rake pivotally connected with the said hangers, whereby the rake and the elevator will be simultaneously raised in passing an obstruction, as and for the purpose specified.

7. In a hay loader, the combination with a supporting frame, axles carried by the frame, drive wheels on the axles and a sprocket wheel mounted on the hub of one of the drive wheels and having a pawl and ratchet connection therewith, of an elevator having slotted hangers at its lower end through which the axles pass, crank shafts mounted in the elevator, feed arms pivotally connected with the crank shafts, a sprocket wheel on the lower shaft, a guide pulley, and a chain passing around the guide pulley and sprocket wheel of the drive wheel and over the sprocket wheel of the crank shaft, substantially as described.

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WILLIAM SWENSON.

Witnesses:

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