

**No. 637,244.**

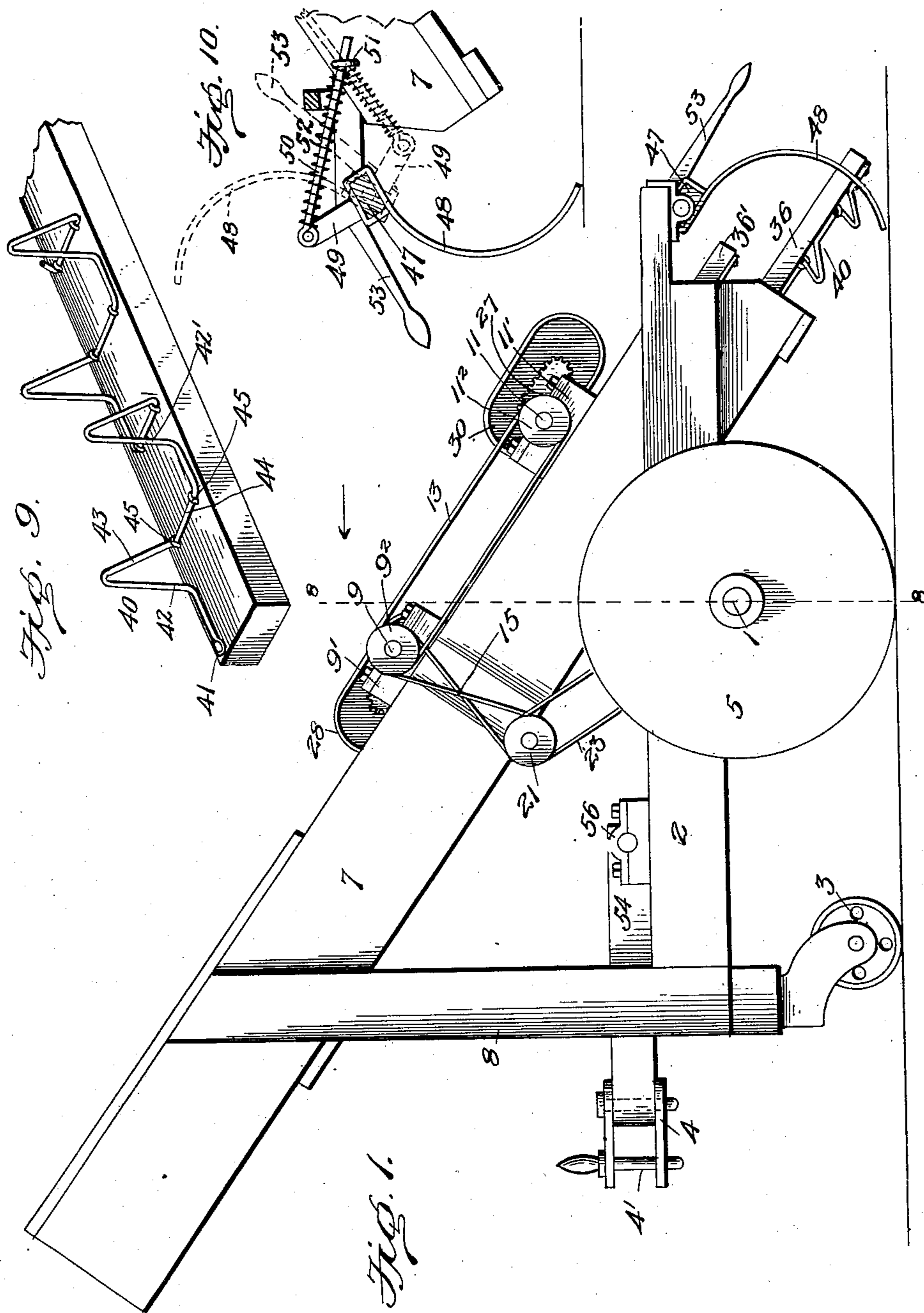
**Patented Nov. 21, 1899.**

**G. W. GOODRICH.**  
**HAY LOADER.**

(Application filed May 19, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses  
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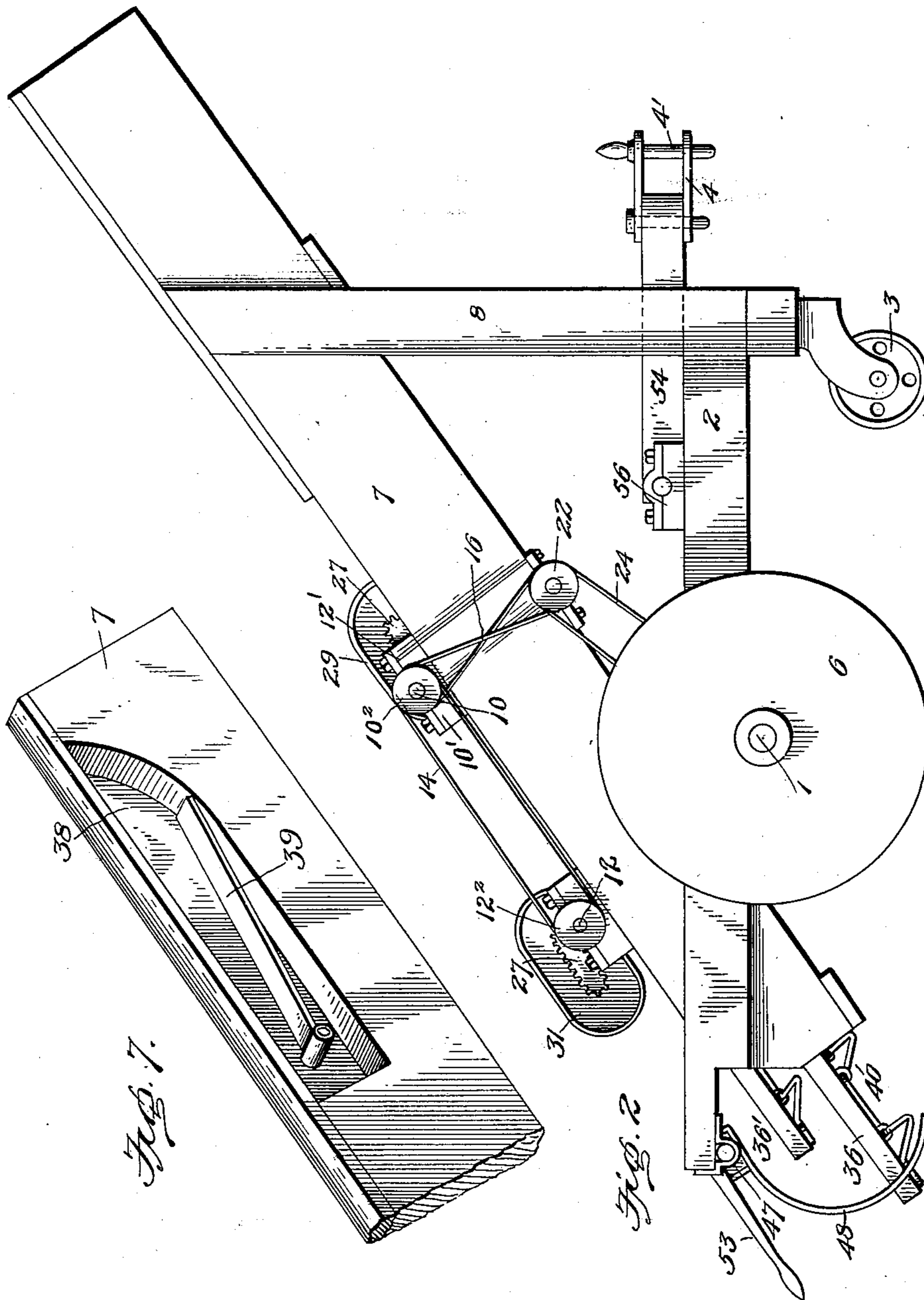
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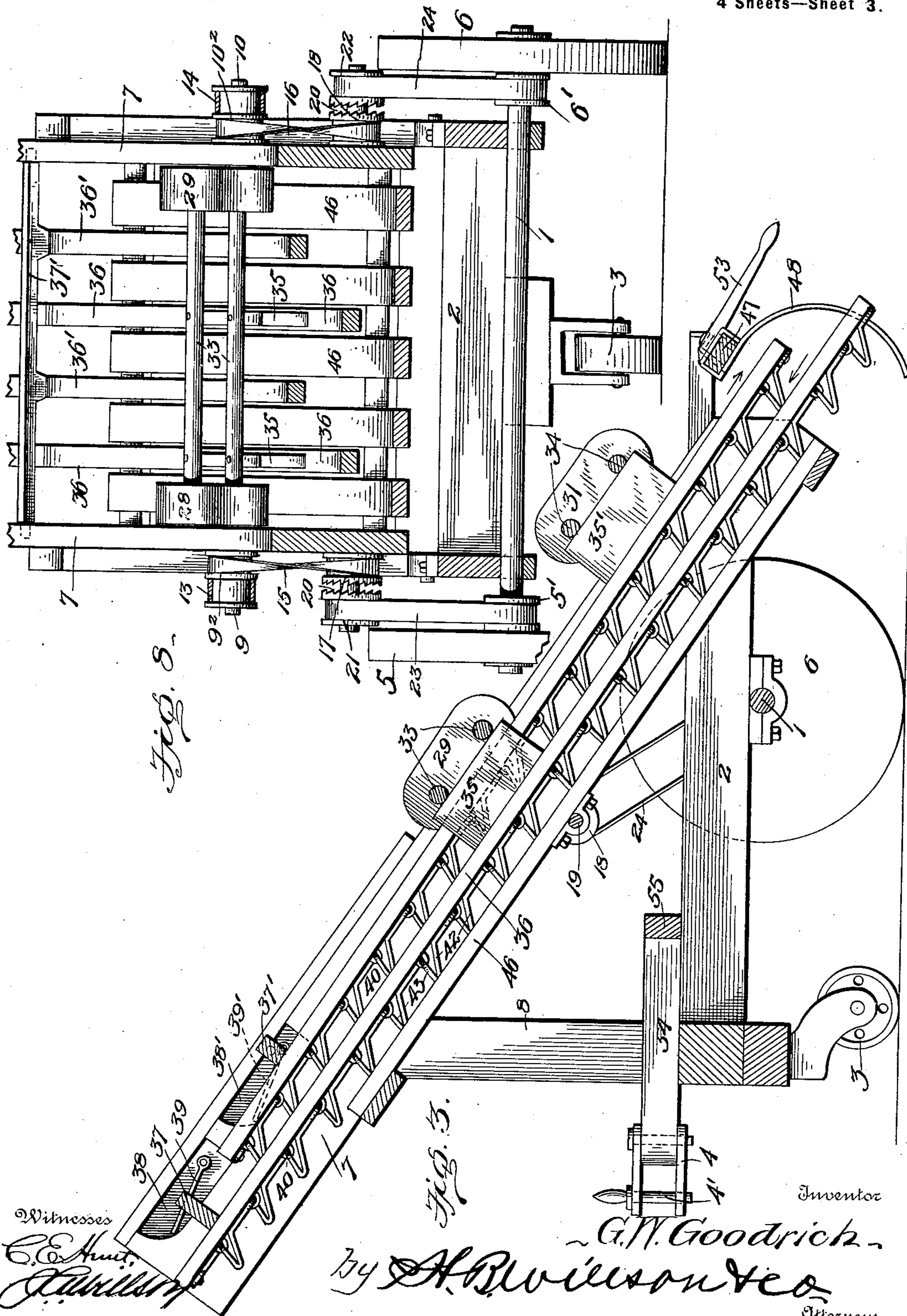
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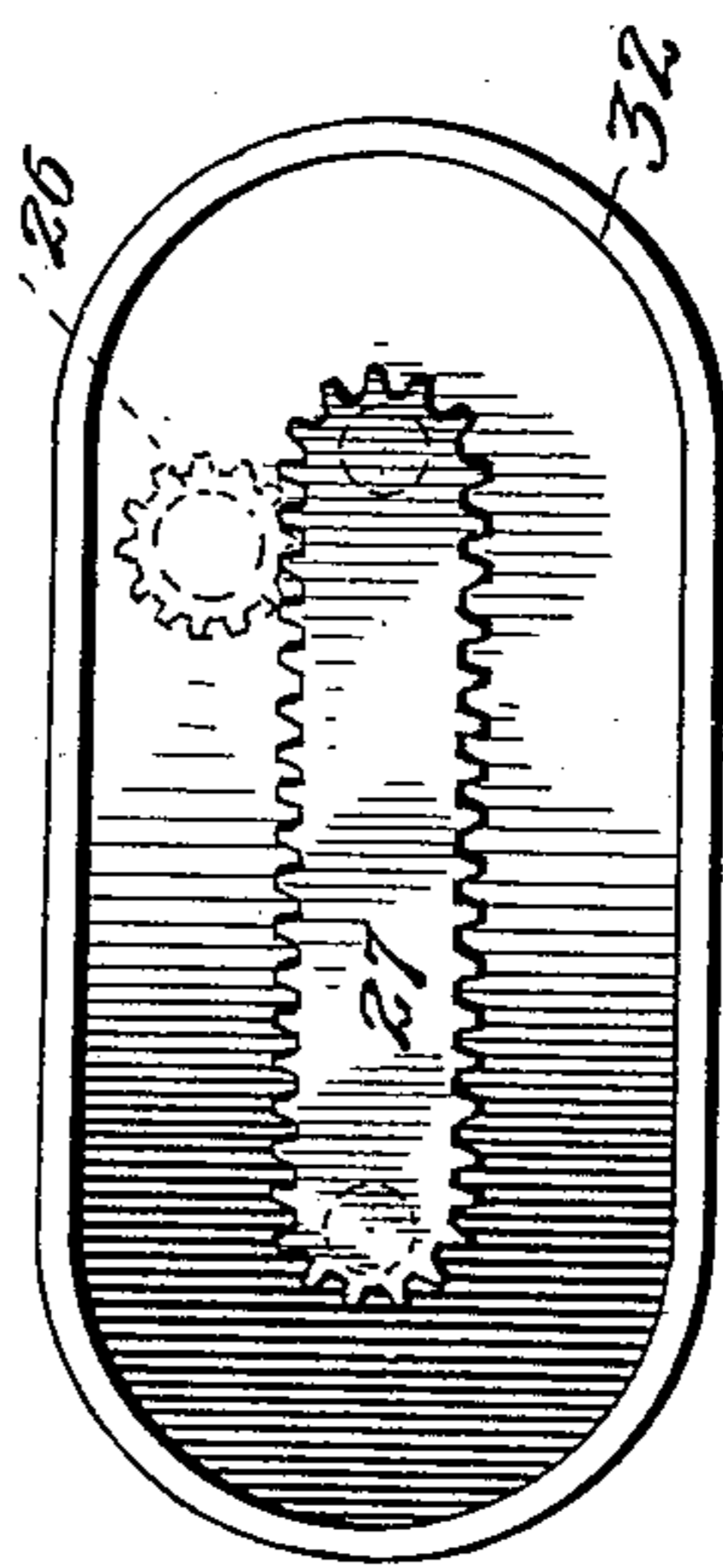
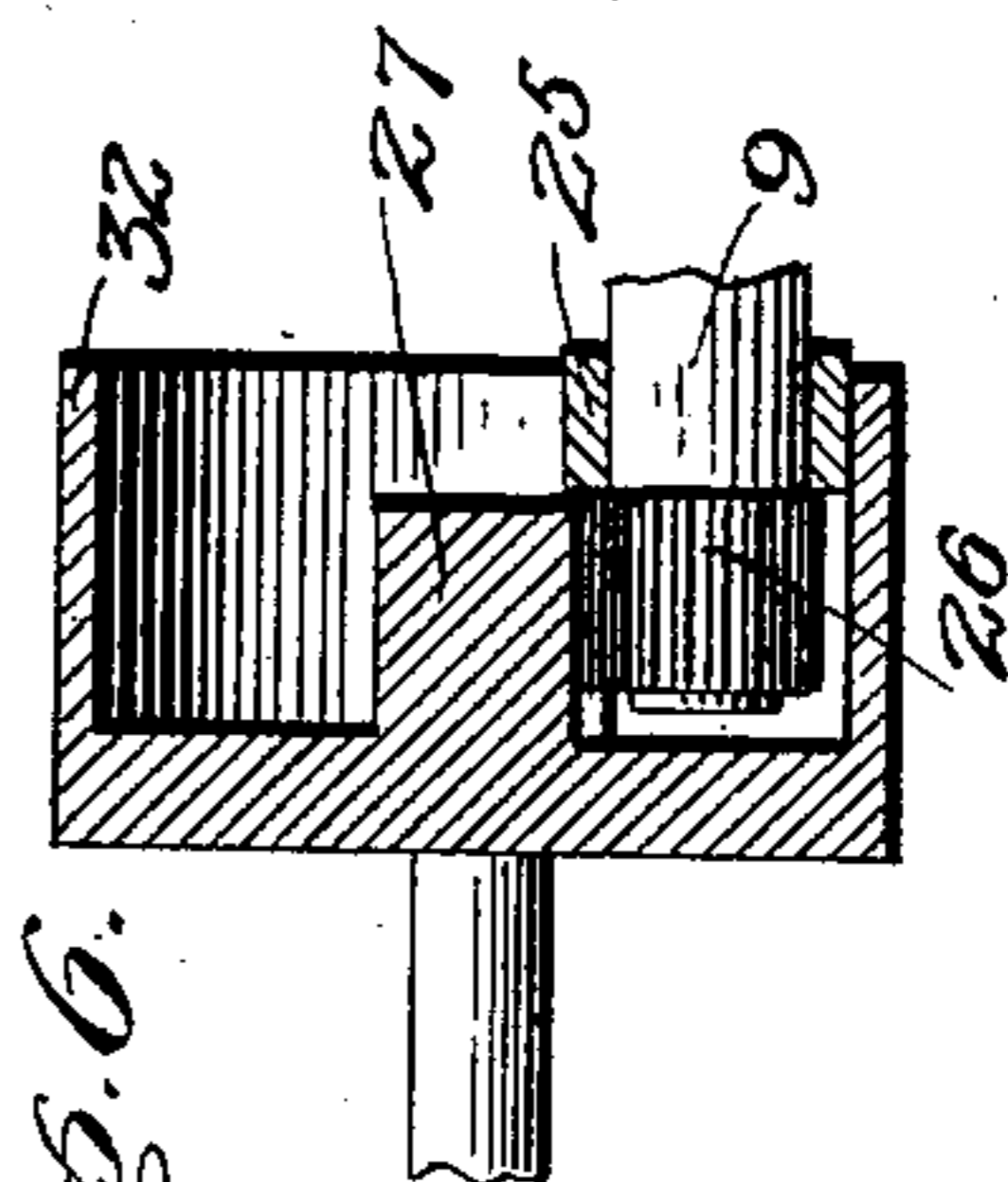
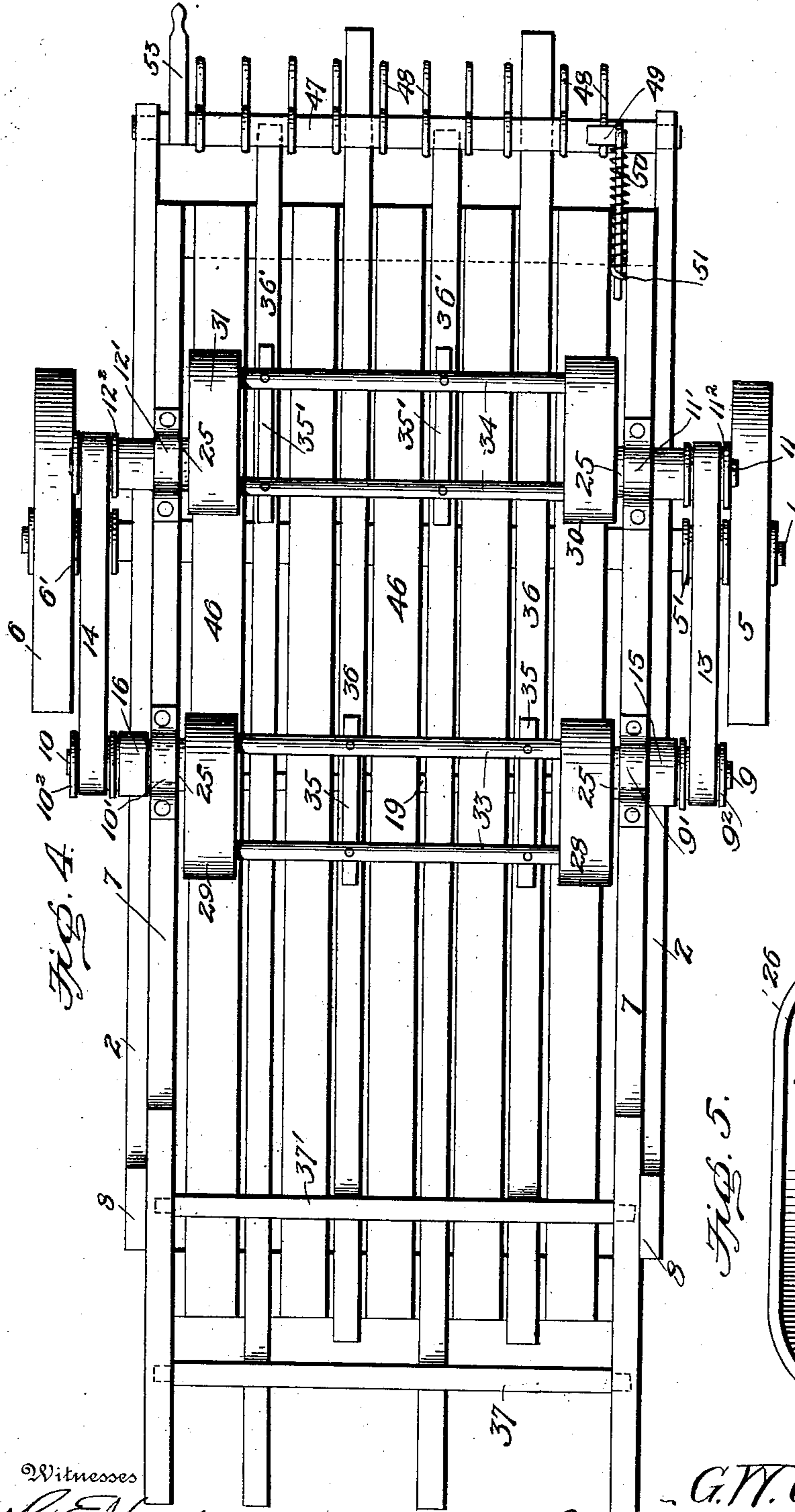
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# UNITED STATES PATENT OFFICE.

GEORGE W. GOODRICH, OF FIELDING, IOWA.

## HAY-LOADER.

SPECIFICATION forming part of Letters Patent No. 637,244, dated November 21, 1899.

Application filed May 19, 1899. Serial No. 717,422. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. GOODRICH, a citizen of the United States, residing at Fielding, in the county of Cherokee and State of Iowa, have invented certain new and useful Improvements in Hay-Loaders; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in hay-loaders, and more particularly to that class which are attached to and trail after a hay-wagon and which rake up the hay, elevate it, and discharge or load it on the hay-wagon; and the object is to provide a simple, inexpensive, and effective device of this character.

To this end the invention consists in certain features of construction and combination of parts, which will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a side elevation of my improved hay-loader. Fig. 2 is a similar view taken from the opposite side of the machine. Fig. 3 is a central longitudinal section. Fig. 4 is a top plan view taken at a right angle to the plane of the frame. Fig. 5 is an enlarged detail view of one of the elliptical gear-cases. Fig. 6 is a section of the same. Fig. 7 is an enlarged detail view of one of the track-pawls. Fig. 8 is a transverse section on the line 8 8 of Fig. 1 and looking in the direction of the arrow. Fig. 9 is an enlarged detail perspective view of the bottom face of one of the elevator-slats. Fig. 10 is a detail section of the rake, showing it in full lines when lowered for use and in dotted lines as it appears when elevated.

In the drawings, 1 denotes the axle on which the horizontal frame 2 is mounted, and its forward end rests upon a caster-wheel 3 and is provided with a coupling-jaw 4 and pin 4', by means of which it is coupled to the hay-wagon.

5 and 6 denote the carrying-wheels, mounted on the axle and provided on their inner faces with the band-pulleys 5' and 6'.

7 denotes the inclined frame, fixed at its rear end in the horizontal frame 2 and at its forward end by the standards 8 8, rising from the frame 2.

9 10 and 11 12 denote short shafts journaled

in suitable bearings 9' 10' and 11' 12' on the frame 7 and provided on their outer ends with corresponding pulleys 9<sup>2</sup> 10<sup>2</sup> and 11<sup>2</sup> 12<sup>2</sup>, the latter pulleys being provided with belts 13 and 14, which extend to the pulleys 9<sup>2</sup> 10<sup>2</sup>, and from these pulleys belts 15 16 extend to similar pulleys 17 18, fixed on the transverse counter-shaft 19, journaled in suitable bearings on the under side of the inclined frame, and clutch connections 20 are formed between the pulleys 17 and 18 and similar pulleys 21 22, loosely mounted on the outer ends of the shaft 19, and from these pulleys 21 and 22 belts 23 24 extend to the driving-pulleys 5' 6' on the carrying-wheels. The loose pulleys 21 22 are provided with the conventional clutch-levers, (not shown,) and by means of which they are conveniently thrown into and out of gear with the contiguous pulleys fixed on the shaft 19.

25 25 denote bearing-sleeves loosely mounted on the inner end of each of the short shafts 9 10 and 11 12, and 26 26 denote pinions on the same end of each shaft and which mesh with continuous elliptical gear-racks 27, formed in the elliptical hoods 28 29 and 30 31. These hoods and their coacting mechanisms are all identical in construction, and therefore the description of one will answer for the rest. Each hood is provided with a continuous elliptical flange 32, which has a bearing on the sleeve 25.

The hoods 28 29 are connected by the parallel braces 33 33 and the hoods 30 31 by corresponding braces 34 34, so that each pair of hoods move in unison and alternate with the other pair, so arranged that when one pair is moving forward the other pair is moving backward, and vice versa.

35 35 denote parallel brackets, of which there may be any number employed, corresponding to the width of the inclined frame, and they are secured to the braces 33, and at their lower sides are fixed the elevator-slats 36 36, the forward ends of which are fixed to a cross-brace 37, having a reciprocating movement in the guide-recesses 38 38, formed in the parallel side rails of the frame 7.

39 39 denote gravity-dogs pivoted at one end in the recesses 38, over the inclined faces of which the brace 37 rides to raise it in its backward movement. The ends of the brace

37 then ride upward and backward over the dogs, and when the ends of the brace arrive at the rear upper ends of the dogs they drop down on the lower walls of the recesses 38, along which they travel forward, riding under and raising the dogs, and on the return movement ride upward and backward over the dogs, as in the first instance.

35' 35' denote parallel brackets fixed to the corresponding braces 34, so as to alternate with the brackets 35. 36' 36' denote the slats which are secured to said brackets 35', and their forward ends are fixed to a cross-brace 37', also having a reciprocating movement in the guide-recesses 38' 38' in the frame 7, and 39' 39' denote gravity-dogs pivoted in said recesses and coacting with the brace 37', as in the first instance.

40 40 denote the forwardly-projecting teeth fixed to the under side of the slats, and the entire series of teeth on each slat is formed of a single continuous piece of wire, the lower end of which is formed with an eye 41, by means of which it is secured to the slat. From the eye the wire extends along the slat and is then turned upwardly to form the curved brace 42, thence downwardly and rearwardly to form the tooth 43, (see Fig. 3,) thence transversely to form the base 44, thence forwardly and upwardly, as in the beginning, to form the curved brace 42', and so on the entire length of the slat. Those portions of the wire which come into direct contact with the face of the slat are fixed thereto by the staples 45 45.

46 46 denote the bed-slats, fixed to the inclined frame and on which the hay travels while being elevated.

47 denotes the rake-bar, journaled in brackets fixed to the rear end of the inclined frame, and it is provided with the usual curved spring-wire teeth 48 48, which project between the rear ends of the elevating-slats, with their free ends trailing along the ground.

49 denotes a lateral arm on the rake-bar, to which is pivoted a rod 50, the forward end of which has a sliding engagement with a guide 51, and 52 denotes a coacting spring encompassing the rod to hold the teeth in retractile contact with the ground.

53 denotes the hand-lever for raising the rake-teeth clear of the ground, and to accomplish this the lever 53 is thrown upward until the rod 50 passes the center, when the tension of the compressed spring is exerted to press the arm 49 rearwardly in its reversed position to retain the teeth in the elevated position shown in dotted lines in Fig. 10.

The axle and carrying-wheels are provided with the conventional form of differential gear to permit the machine to turn corners in either direction, and instead of the pulleys and belts for operating the carrier-slats

sprocket-wheels and sprocket-chains may be substituted as the driving means.

It will be noted that the coupling-jaw 4 is fixed on the forward end of the tongue 54, fixed to the bar 55, which is journaled in the brackets 56 56, fixed to the horizontal frame, to permit the loader being conveniently coupled to wagons of different heights. It will be understood that the hoods cause the alternating slats to rise and fall while they are traveling in opposite directions, one set advancing while they are near to the bottom of the carrier-frame and the alternate set retreating while it is at its farthest point from the carrier.

In operation the loader is attached to and trails behind the hay-wagon, and as the rake-teeth are drawn over the ground they collect the hay, which is then caught by the teeth on the lower ends of the elevator-slats first and then by the remaining teeth afterward and carried up and discharged on the wagon from the elevated end of the inclined frame.

It will of course be understood that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a hay-loader, the inclined frame 7, the aligned shafts 9 10 and 11 12 journaled in said frame, a pinion fixed on each shaft, and a bearing-roller loosely mounted on said shafts, the elliptical hoods connected by the parallel braces, the elliptical racks fixed in said hoods and in mesh with said pinion, the toothed slats fixed to said parallel braces, and means for rotating said aligned shafts by the forward movement of the machine, substantially as and for the purpose set forth.

2. In a hay-loader, the combination with the inclined frame and the toothed elevator-slats, of the rake-teeth projecting between said slats and fixed to the rake-shaft, a lateral arm fixed to said shaft, a rod pivoted at one end to said arm and having a sliding engagement with a fixed guide-eye on said frame, and a coacting spring encompassing said rod and adapted to support said rake-teeth in a raised or lowered position, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

G. W. GOODRICH.

Witnesses:

L. O. KRON,

THOS. A. HANGRUE.