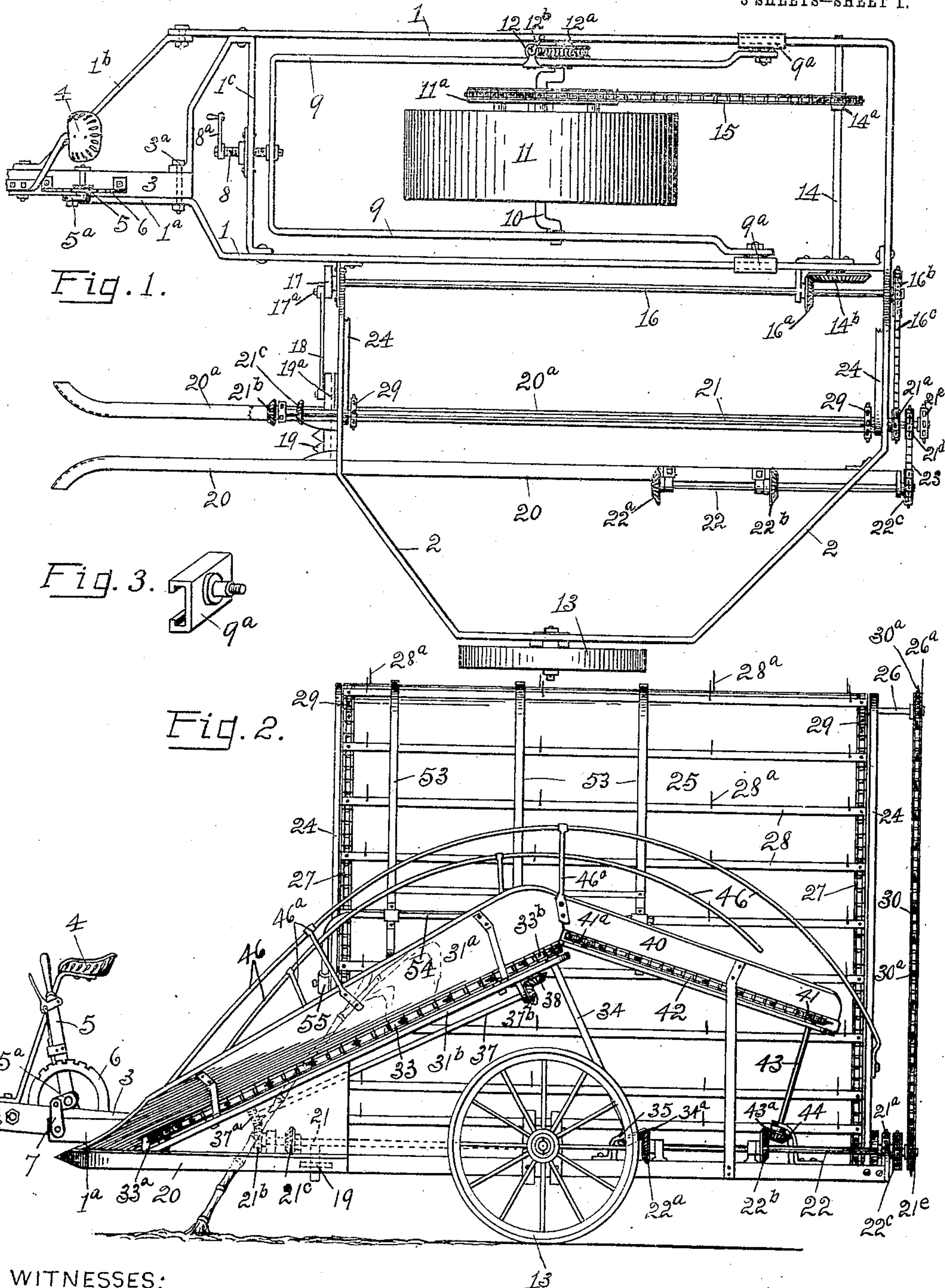


No. 865,360.

PATENTED SEPT. 10, 1907.

G. S. COFFMAN.  
CORN HARVESTING MACHINE.  
APPLICATION FILED NOV. 4, 1905.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 4.

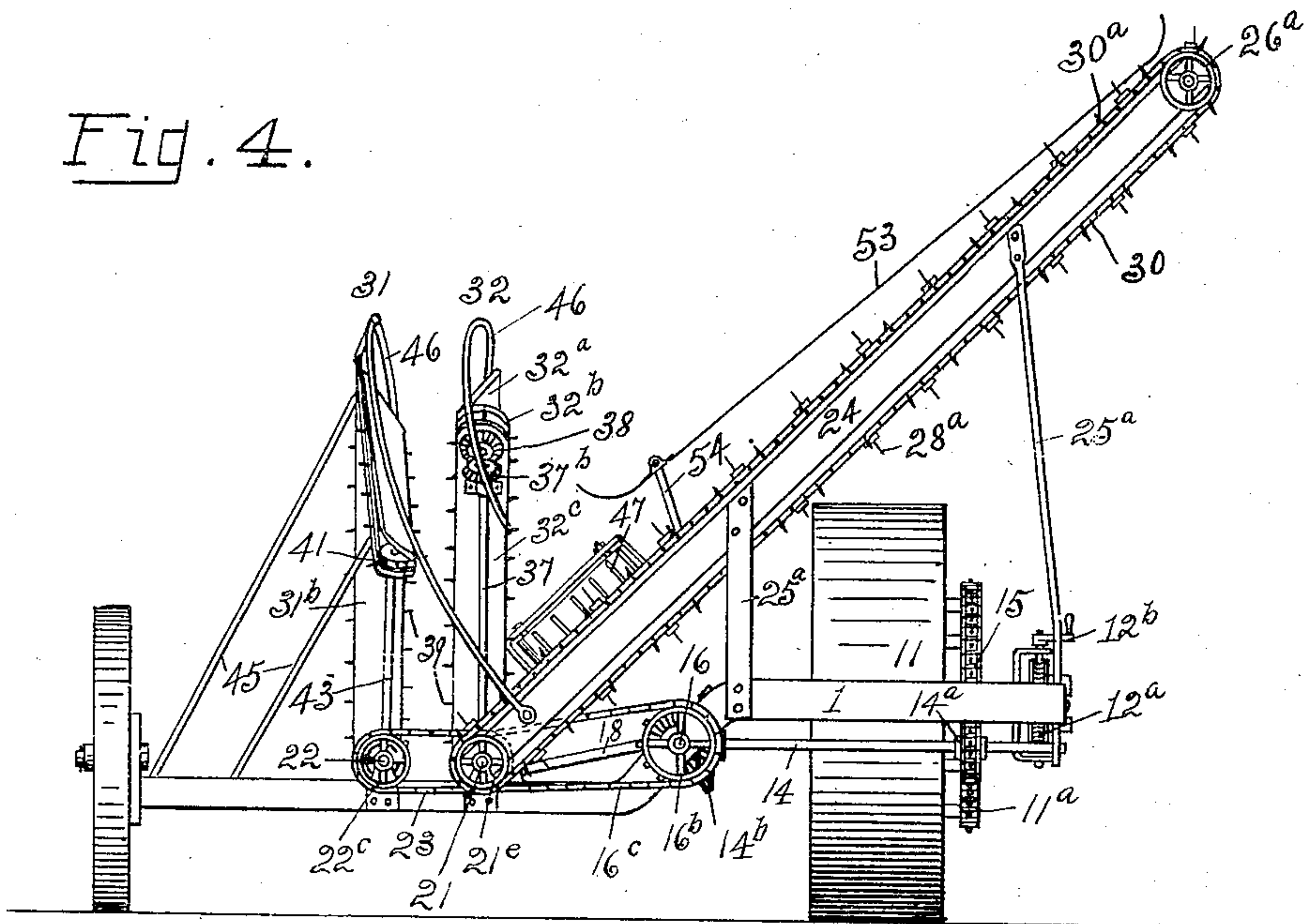


Fig. 5.

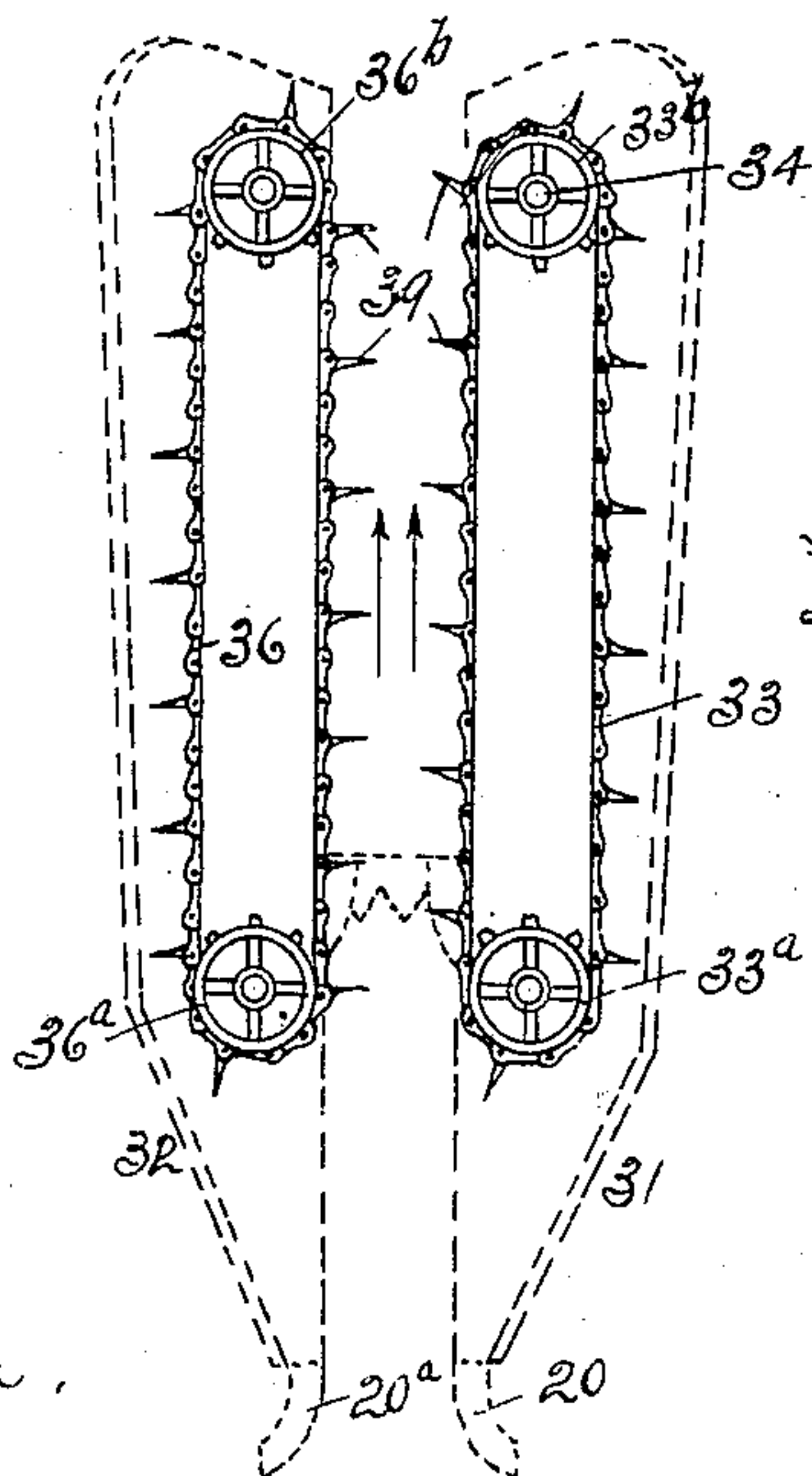
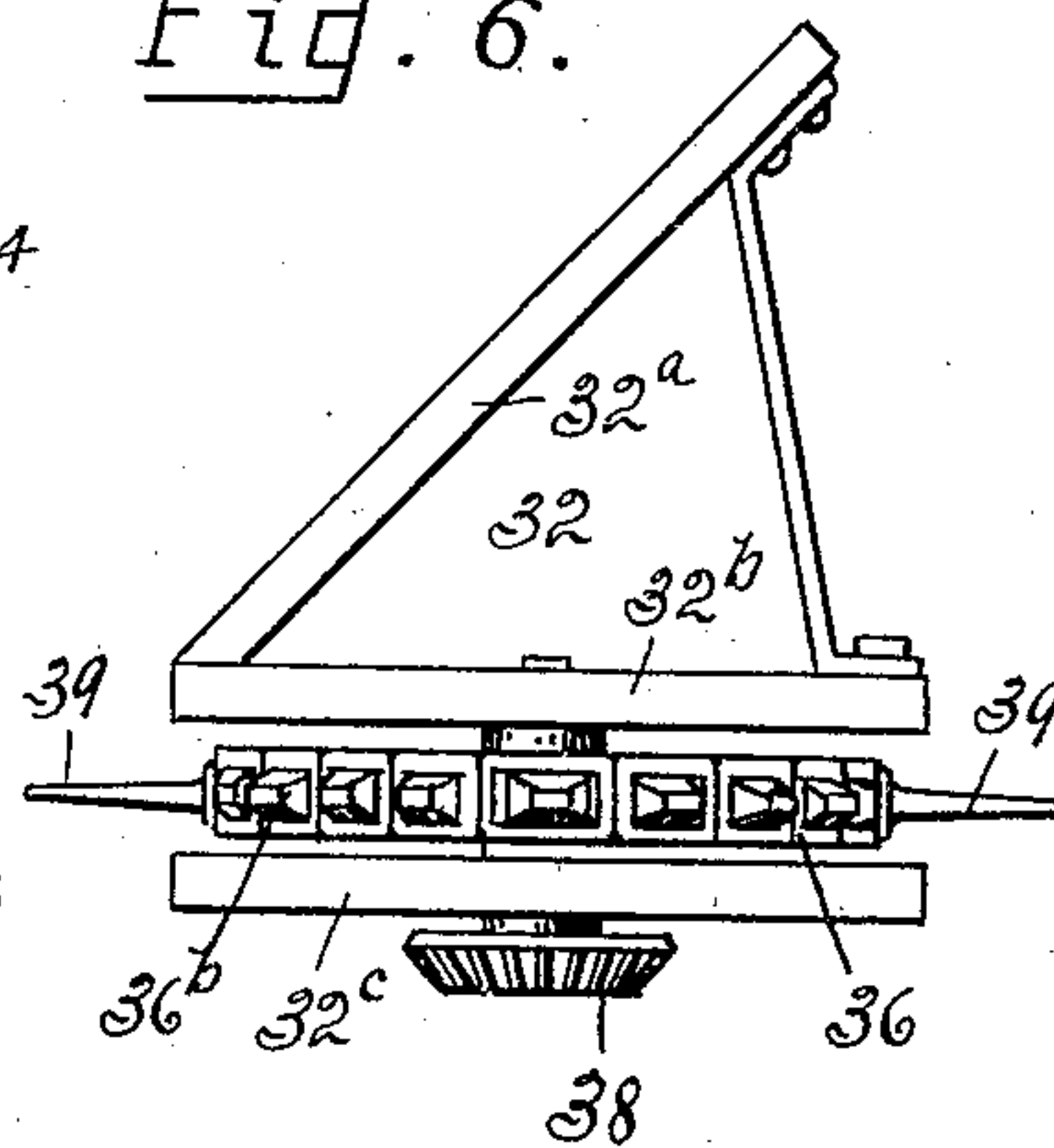


Fig. 6.



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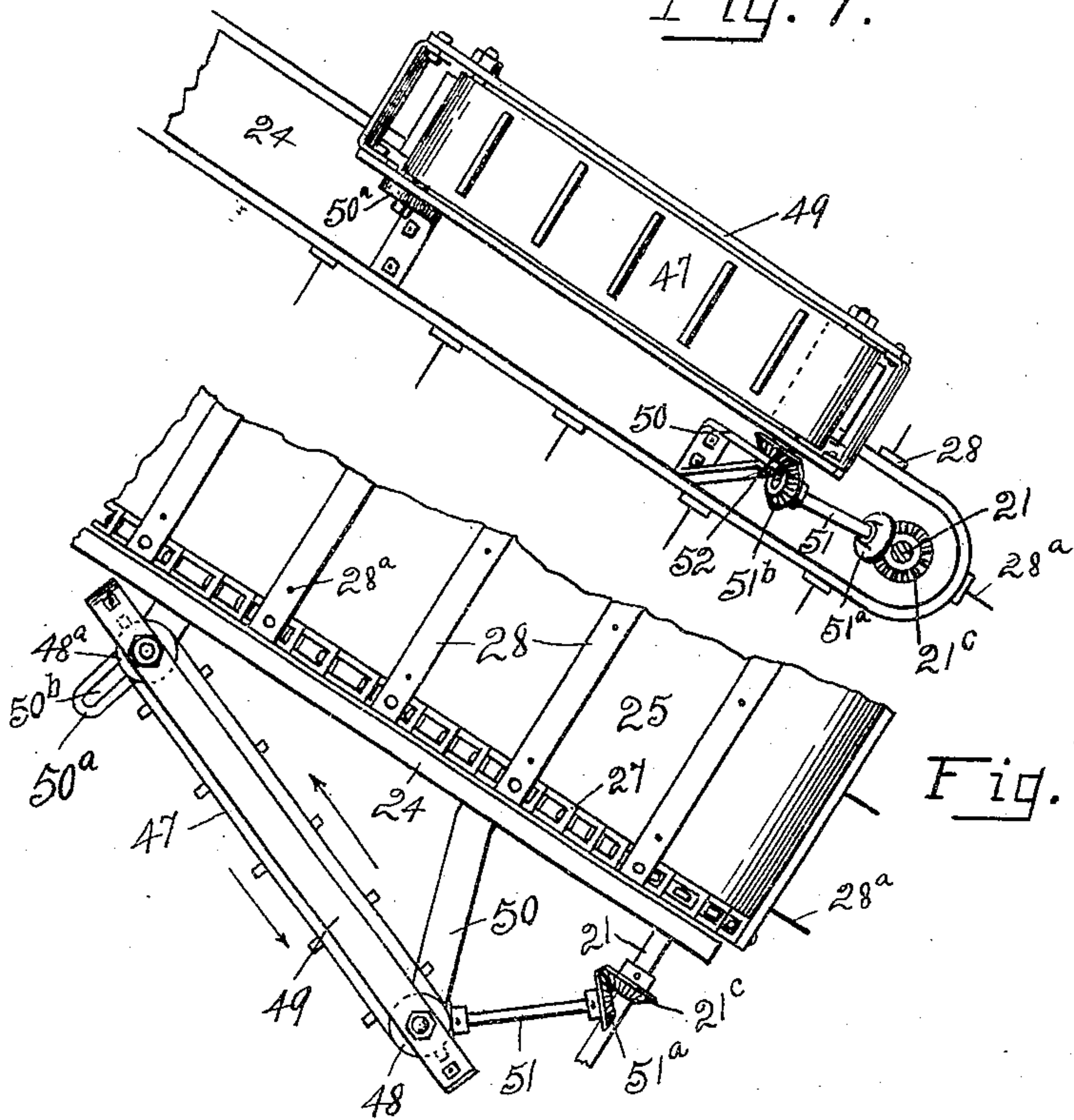
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3 SHEETS—SHEET 3.

*Fig. 7.*



*Fig. 8.*

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# UNITED STATES PATENT OFFICE.

GUVARIE S. COFFMAN, OF COLDWATER, MICHIGAN.

## CORN-HARVESTING MACHINE.

No. 865,360.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed November 4, 1905. Serial No. 285,942.

*To all whom it may concern:*

Be it known that I, GUVARIE S. COFFMAN, a citizen of the United States, and a resident of Coldwater, in the county of Branch and State of Michigan, have  
5 invented certain new and useful Improvements in Corn-Harvesting Machines; and I do hereby 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,  
10 reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to harvesting-machines, and is especially designed for harvesting corn; and it has for  
15 its object the provision of an improved machine of this class, whereby a more satisfactory and efficient cutting of the standing corn-stalks and elevating thereof for the purpose of loading upon a wagon driven beside the machine is effected than has heretofore been attained.

20 To this end the invention consists of certain novel features of construction, combination and arrangement of the parts, as will be hereinafter more fully described and finally claimed.

In the accompanying drawing forming part of this  
25 specification, Figure 1 is a plan view of the supporting frame of the machine comprising my invention, together with the associated shafts and connecting means the conveying mechanism being removed. Fig. 2 is a side elevation thereof. Fig. 3 is one of the adjusting  
30 clamps of the frame. Fig. 4 is a rear end elevation of the machine. Fig. 5 diagrammatical plan view of the feed-chains and sprockets with the guards therefor and cutter shown in dotted lines. Fig. 6 is a rear end view of the guard or frame carrying the inner feed-chain,  
35 Figs. 7 and 8 are a top plan view and side elevation, respectively, of the butter apron and a portion of the elevation frame and conveyer to which it is attached.

Referring to the drawings, 1 represents a substantially rectangular frame of elongated shape to the left  
40 of which is provided a lateral extension or frame portion 2, the major portion of which is disposed on a plane below that of the frame portion 1.

Pivoted to the forward end of the frame portion 1, as at 3<sup>a</sup>, is the usual tongue 3, on which the driver's seat  
45 4 is shown as being positioned, and adjacent to which seat is secured a lever 5, the hand operated catch of which engages a quadrant 6. This lever connects with a forward extension or arm 1<sup>a</sup> of the frame 1 through the medium of an arm 5<sup>a</sup> on the lever shaft and link 7,  
50 which are adapted to cause a raising or lowering of the forward end of the tongue with respect to the machine frame as the lever may be oscillated in the proper direction. The tongue 3 is laterally strengthened or braced in opposition to the arm or extension 1<sup>a</sup> by a  
55 link or brace 1<sup>b</sup>, which connects the tongue with a

Mounted in a threaded bearing provided centrally of a frame-piece 1<sup>c</sup> disposed transversely of the forward portion of the frame 1 is a horizontally-disposed screw 8 carrying at its forward end a crank-handle 8<sup>a</sup>.  
60 The rear end of the screw is loosely mounted in a suitable bearing provided centrally in the forward end of a U-shaped frame-member 9, the arms of which extend rearward in parallel relation to the sides of the frame portion 1 and have their terminals equipped with  
65 members 9<sup>a</sup>, which slidably engage said sides, as shown in Fig. 1. The connection between the frame-member 9 and screw 8 is such that a longitudinal movement of the screw will impart a corresponding movement to the frame member.  
70

10 represents a cranked-shaft which has its cranked ends mounted in suitable bearings provided in the opposite arms of the frame-member 9 and carries a drive-wheel 11 on its intermediate portion, which wheel has a sprocket-wheel 11<sup>a</sup> fixed to one side thereof. An  
75 adjustment of the shaft 10 to effect a raising or lowering of the frame of the machine is accomplished by the provision of a worm 12 and meshing gear 12<sup>a</sup>, the latter being mounted on one end of the shaft 10 and the latter being carried by the contiguous arm of the member 9  
80 and provided with a crank 12<sup>b</sup> by which it is turned.

13 represents a small wheel, which is secured to the outer side of the frame portion 2 and is made vertically adjustable relatively thereto in any suitable manner.

A main drive-shaft 14, which is driven by a sprocket-chain 15 connecting a sprocket-wheel 14<sup>a</sup> thereon with the sprocket-wheel 11<sup>a</sup> on the drive-wheel, is mounted transversely of the rear end of the frame portion 1 and carries at its inner end a bevel-gear 14<sup>b</sup> which meshes with and drives a bevel-gear 16<sup>a</sup> on the counter shaft  
90 16, which is disposed in parallelism with the inner side of the frame portion 1 and is mounted in bearings provided in the front and rear ends of the frame portion 2.

On the front end of the shaft 16 is mounted a disk 17 having a wrist pin 17<sup>a</sup> to which is connected one  
95 end of a reciprocating pitman 18, the other end thereof being connected to a cutter 19, which operates between the parallel frame pieces 20 and 20<sup>a</sup>, within a guide or cross-head 19<sup>a</sup>. The frame-pieces 20 and 20<sup>a</sup> extend longitudinally of the frame portion 2 in spaced  
100 parallel relation and have their forward ends extending in advance of the cutter 19 and formed with diverging terminals to provide a widened mouth, as shown in Fig. 1.

On the rear end of the shaft 16 is mounted a sprocket  
105 wheel 16<sup>b</sup>, which is adapted to communicate power through the chain 16<sup>c</sup> to a sprocket-wheel 21<sup>a</sup> on the shaft 21. The shaft 21 is disposed over the frame-piece 20<sup>a</sup> and has its bearings in the front and rear ends of the frame portion 2.  
110

Carried on the forward end of the shaft 21 are the bevel-gears 21<sup>b</sup> and 21<sup>c</sup>, while at the rear end of said



shaft are carried the two sprocket-wheels 21<sup>d</sup> and 21<sup>e</sup>. A short shaft 22 is mounted in parallelism with the shaft 21 in bearings provided on the rear portion of the frame-piece 20, and carries adjacent its inner end the oppositely beveled gears 22<sup>a</sup> and 22<sup>b</sup>, and at its outer end a sprocket-wheel 22<sup>c</sup>, which latter connects, through the medium of a chain 23, with the sprocket-wheel 21<sup>d</sup> on the shaft 21 by which it is driven.

24, 24 represent the side-bars of an elevator-frame 25, which is carried at its lower end by the shaft 21 and has its upper end extended upwardly and outwardly over the drive-wheel 11 or at right-angles to the direction of movement of the machine to any suitable height and is provided with a shaft 26, which is journaled in the upper ends of the side-bars. The elevator frame is supported at the proper elevation by supports or braces 25<sup>a</sup>, which connect with the frame of the machine, as shown in Fig. 4.

An endless conveyer is mounted for movement on the elevator frame 25, and consists of the sprocket-chains 27 and spaced connecting bars 28, which latter connect the chains and have their surfaces preferably provided with spurs 28<sup>a</sup>. The chains of the conveyer connect corresponding sprocket-wheels 29 on the shafts 21 and 26, and are driven by the shaft 21. 30 is a sprocket chain disposed at the rear of the elevator frame 25 and connecting the sprocket-wheels 21<sup>e</sup> and 26<sup>a</sup> on the rearwardly extended ends of the shafts 21 and 26, respectively. The chain is provided on its surface with equidistant spurs 30<sup>a</sup> and is designed to engage the tops of the cornstalks which project beyond the rear edge of the elevator frame 25 and to assist in the elevation thereof as they are cut and fall upon the conveyer.

Parallel guard-frames 31 and 32 extend rearwardly on an incline plane from the forward ends of the frame-pieces 20 and 20<sup>a</sup>, respectively, and the former comprises the angularly positioned bars 31<sup>a</sup> and 31<sup>b</sup>, and the latter the angularly positioned bars 32<sup>a</sup> and 32<sup>b</sup> and the bar 32<sup>c</sup>, which latter bar is disposed in spaced parallel relation to the bar 32<sup>b</sup>. A feed-chain 33 is mounted for movement in the outer guard frame 31 and is carried by the sprocket-wheels 33<sup>a</sup> and 33<sup>b</sup> disposed at opposite ends of the frame and is driven by a shaft 34, which has its upper bearing in the rear end of the guard bar 31<sup>b</sup> and carries the sprocket 33<sup>b</sup>, and has its lower end journaled in a bearing bracket 35 on the frame-piece 20 and provided with a bevel-gear 34<sup>a</sup> for meshing with the bevel-gear 22<sup>a</sup> on the shaft 22. A companion feed-chain 36 is carried by the sprocket-wheels 36<sup>a</sup> and 36<sup>b</sup>, which are mounted between the bars 32<sup>b</sup> and 32<sup>c</sup> of the inner guard-frame 32, and is driven by the shaft 37, which shaft is mounted in suitable bearings secured to the under side of the bar 32<sup>c</sup> and carries at its forward end a bevel gear 37<sup>a</sup> meshing with the bevel-gear 21<sup>b</sup> on the shaft 21 and at its rear end a bevel-gear 37<sup>b</sup> for meshing with a bevel-gear 38 on the shaft with the sprocket 36<sup>b</sup>, as shown in Fig. 2. These feed-chains are each provided with surface spurs 39, which project beyond the inner or contiguous edges of the guard-frames in position to engage the corn-stalks as they pass between the frame-pieces 20 and 20<sup>a</sup>, and are geared to travel in reverse directions and relatively faster than the movement of the machine over the ground, so as to cause

the cornstalks to assume a rearwardly inclined position before having contact with the cutter 19, as shown in Fig. 2.

40 represents a forwardly inclined extension on the outer guard-frame 31, and is provided with sprocket-wheels 41 and 41<sup>a</sup> carrying a feed-chain 42 which travels at the same rate of speed as the chains 33 and 36. The sprocket 41 is carried at the upper end of the vertically-disposed shaft 43, which has its lower end journaled in a bearing-bracket 44 secured to the frame-piece 20 and provided with a bevel-gear 43<sup>a</sup> for meshing with the bevel-gear 22<sup>b</sup> on the shaft 22. Braces 45 assist in supporting the outer guard-frame in proper position above the machine frame.

46 represents guide-rods, which are secured at their forward ends to the forward ends of their respective guard-frames and extend longitudinally over said frames, as shown, the outer rod being longer than the inner and secured at its rear end to the lower portion of the rear side-bar 24 of the conveyer-frame. These rods are supported above the guard-frames by supports or braces 46<sup>a</sup>.

47 represents what I term a "butter-apron", which is disposed at an angle to the lower forward portion of the elevator-frame 25, and has for its purpose to even the stalks of the corn as they fall upon the conveyer and are elevated thereby.

53 represents a series of spaced packing-members which extend over a portion of the surface of the elevator-frame longitudinally thereof, and have their ends preferably bent up as shown. These members are loosely pivoted adjacent their rear ends to a rod 54 extending transversely of the elevator-frame near its lower portion and have their upper ends loosely resting against the surface of the conveyer, whereby the cornstalks as they pass under them are held to the conveyer. The rod 54 has its forward end bent at right angles to its major or horizontal portion and mounted in a socket 55 on the forward side bar 24 of the elevator-frame 25.

The operation of the machine is as follows:—As the stalks of a row of corn successively pass between the forward ends of the frame-pieces or guides 20 and 20<sup>a</sup> they are engaged by the spurs of the feed-chains 33 and 36 and caused to be bent rearward so that their tops hang over the elevator before a severing thereof is effected by their contact with the cutter 19. As the stalks are severed they are forced over upon the lower portion of the elevating conveyer, at right angles to the line of movement of the conveyer and in parallelism with the bars 28 thereof, by the speed and arrangement of the chains 33, 36 and 42 and guided by the bent rods 46, and as they are elevated by the conveyer their butts come in contact with and are forced rearwardly and evened by the angularly-disposed butter-apron 47, which is geared to travel at the same rate of speed as the conveyer. As the stalks are elevated they pass under the packing members 53, by which they are retained on the conveyer-bars, and are discharged over the upper end of the elevator at right angles to its movement and lengthwise upon a receiving wagon which is driven at the side of the machine for that purpose.

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

1. In a machine of the character described the combination with a portable frame having a cutter; of a laterally



- extending upwardly inclined conveyer in rear of and to one side of the cutter, means for directing material upward from the cutter and depositing it upon the conveyer, packing members pivotally mounted above the conveyer, and extending longitudinally thereof, the free ends of said members loosely resting upon the conveyer, and an endless top engaging device movable in unison with the conveyer at the rear of the machine and spaced from said conveyer.
2. In a machine of the character described the combination with a portable frame having a cutter; of a laterally extending upwardly inclined conveyer at one side and in rear of the cutter, oppositely disposed feed chains for directing material upward from the cutter, a downwardly and rearwardly inclined extension adjacent the upper end of said feed chains for directing material onto the conveyer, a feed chain carried by said extension, curved rods extending from points adjacent the front ends of the feed chains to the rear of the extension, and mechanism operated by the movement of the machine for actuating the feed chains and the conveyer.
3. In a machine of the character described the combina-

tion with a portable frame having a cutter; of a laterally extending upwardly inclined conveyer at one side and in rear of the cutter, oppositely disposed feed chains for directing material upward from the cutter, a downwardly and rearwardly inclined extension adjacent the upper end of said feed chains for directing material onto the conveyer, a feed chain carried by said extension, curved rods extending from points adjacent the front ends of the feed chains to the rear of the extension, mechanism operated by the movement of the machine for actuating the feed chains and the conveyer, an endless flexible member spaced from but movable in unison with the conveyer, and means carried by said member for engaging rearwardly projecting tops.

In testimony whereof, I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

GUVARIE S. COFFMAN.

Witnesses:

W. GLENN COWELL,  
DANIEL C. CARD.