

J. N. HANNA & D. K. WAUGH.

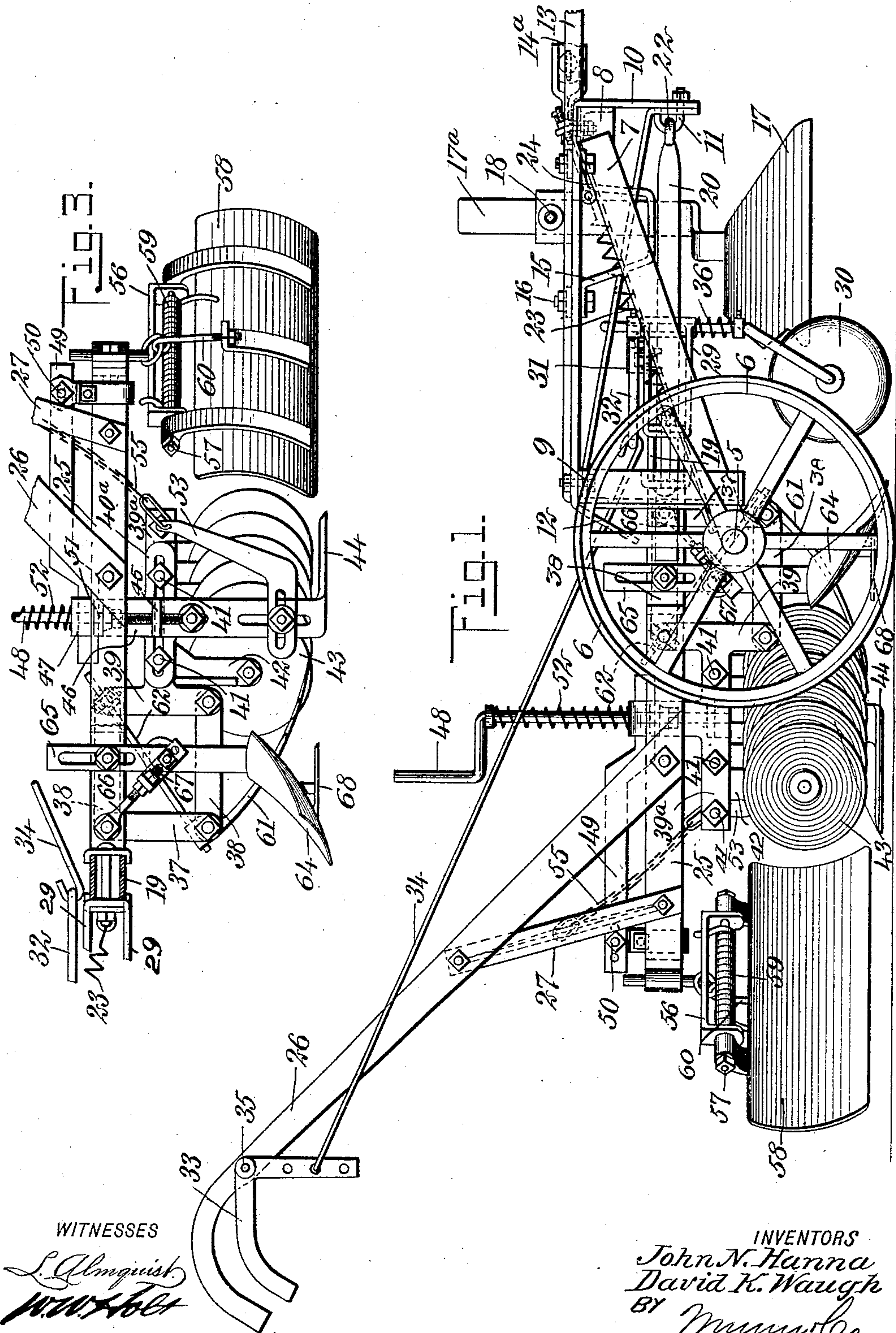
BEET TOPPING MACHINE.

APPLICATION FILED APR. 23, 1908.

908,254.

Patented Dec. 29, 1908.

3 SHEETS—SHEET 1.



WITNESSES

L. Almquist
W. H. H. H.

INVENTORS

John N. Hanna
David K. Waugh

BY *Mumford*

ATTORNEYS

J. N. HANNA & D. K. WAUGH.

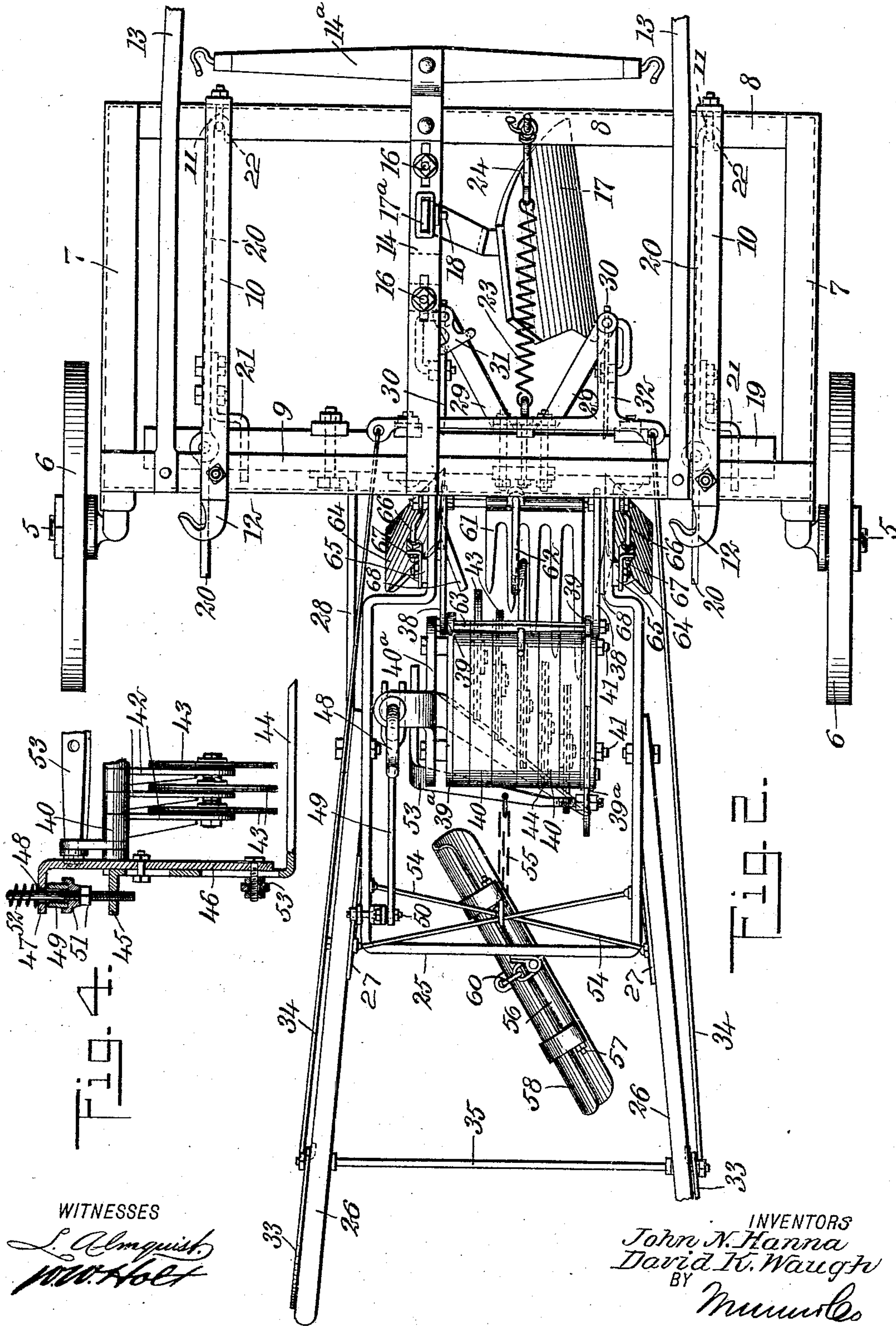
BEET TOPPING MACHINE.

APPLICATION FILED APR. 23, 1908.

908,254.

Patented Dec. 29, 1908.

3 SHEETS—SHEET 2.



WITNESSES
L. Almquist
W. H. H. H.

INVENTORS
John N. Hanna
David K. Waugh
BY *Munroe*
ATTORNEYS

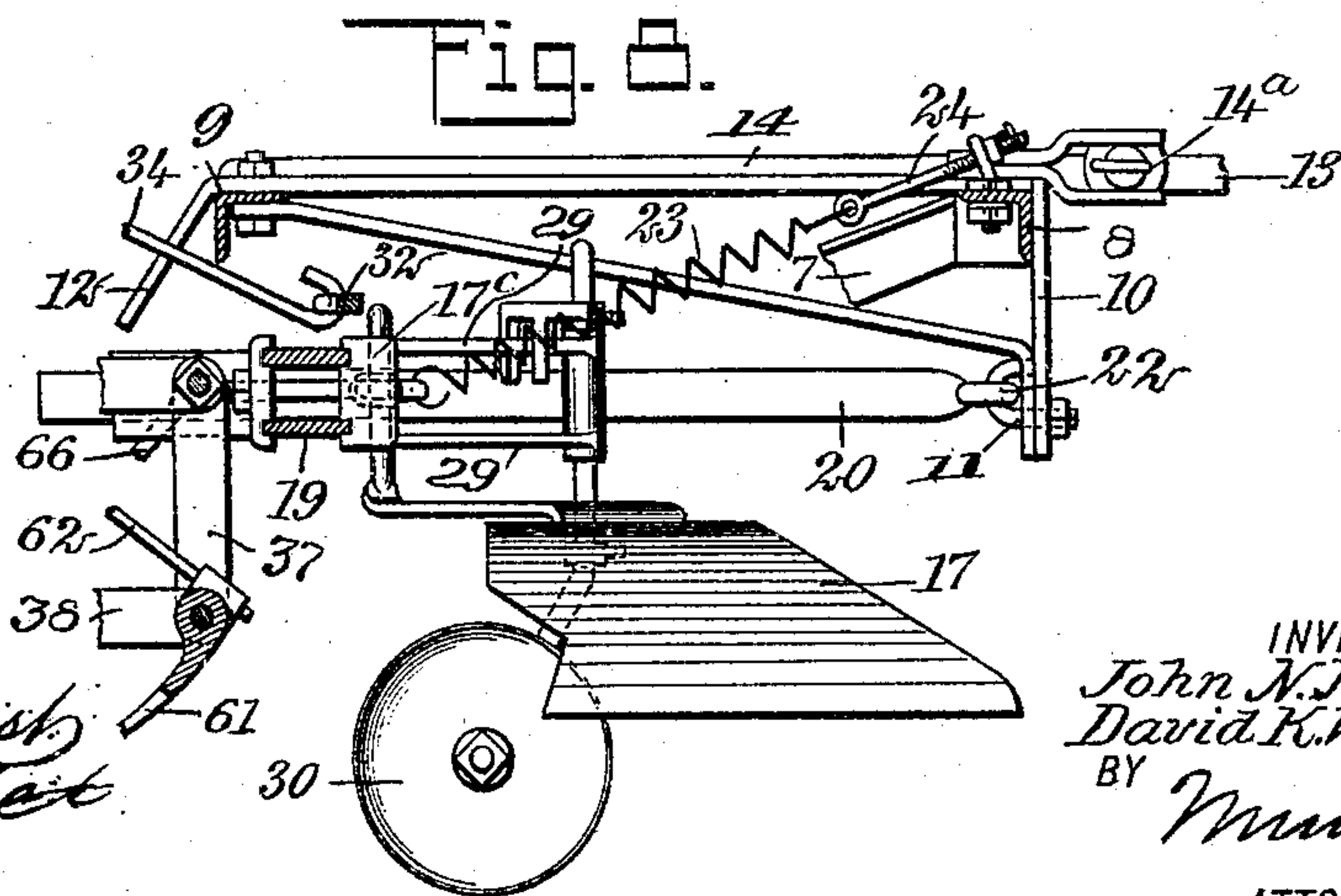
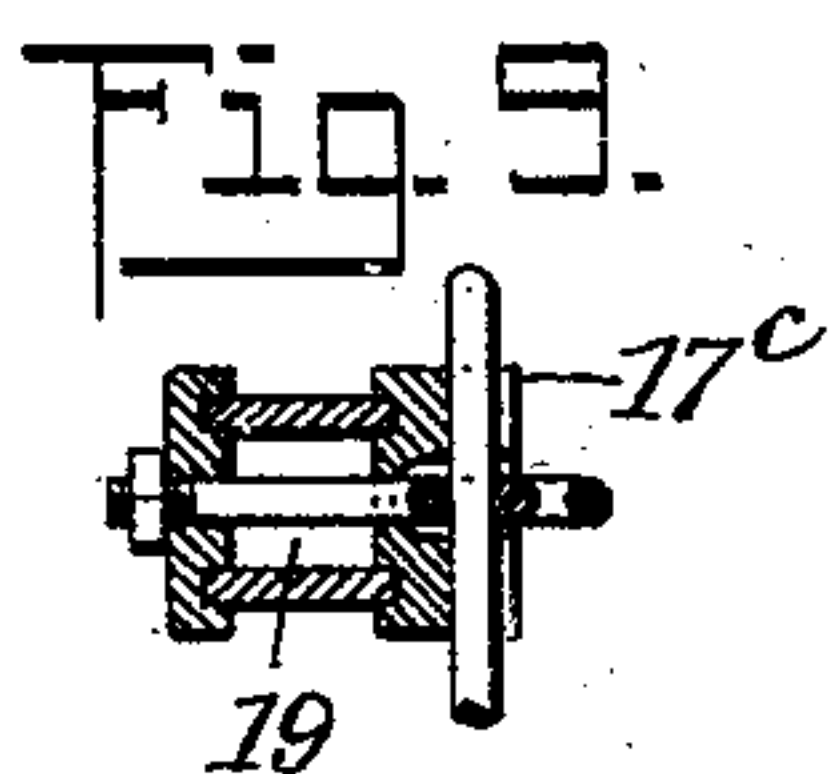
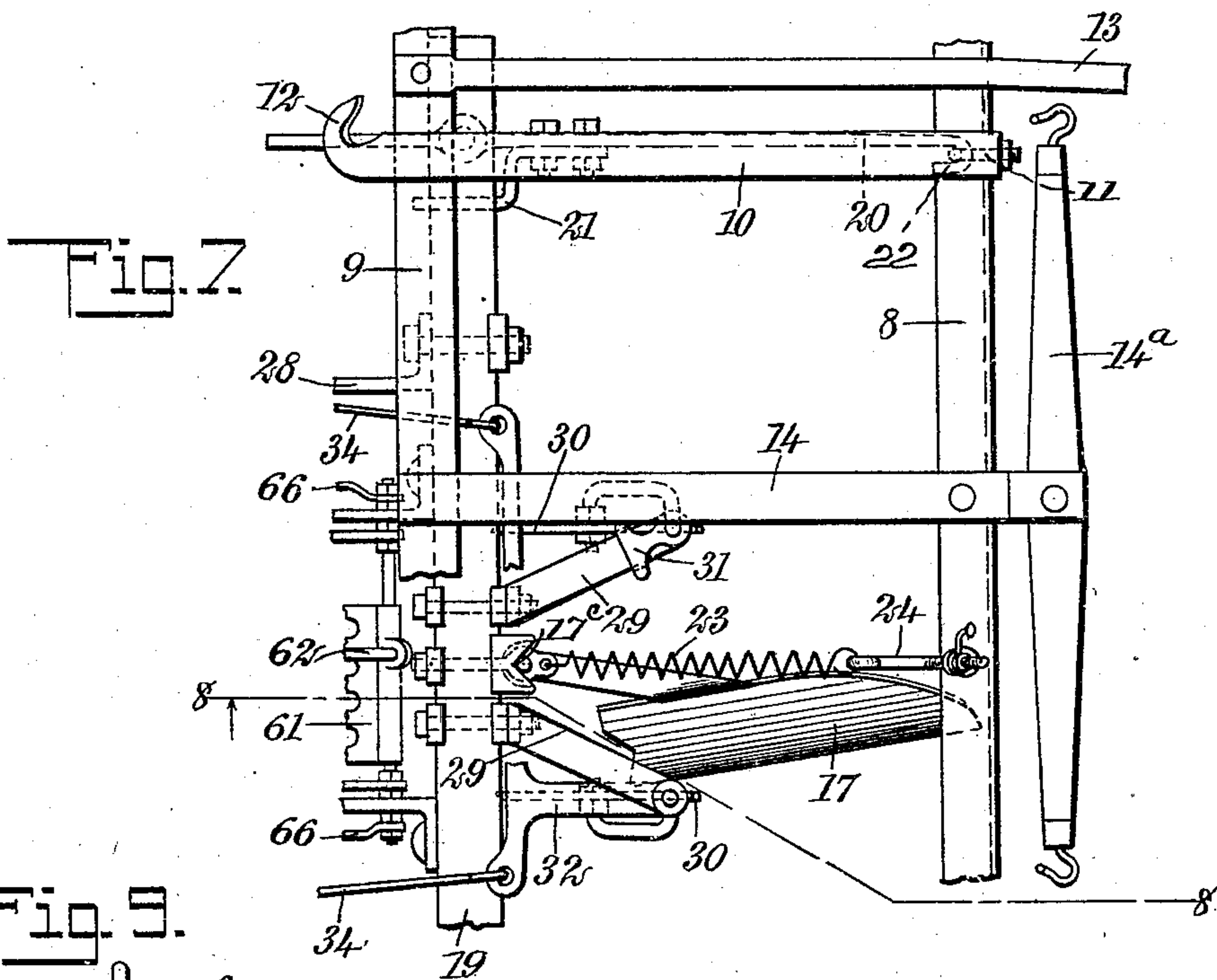
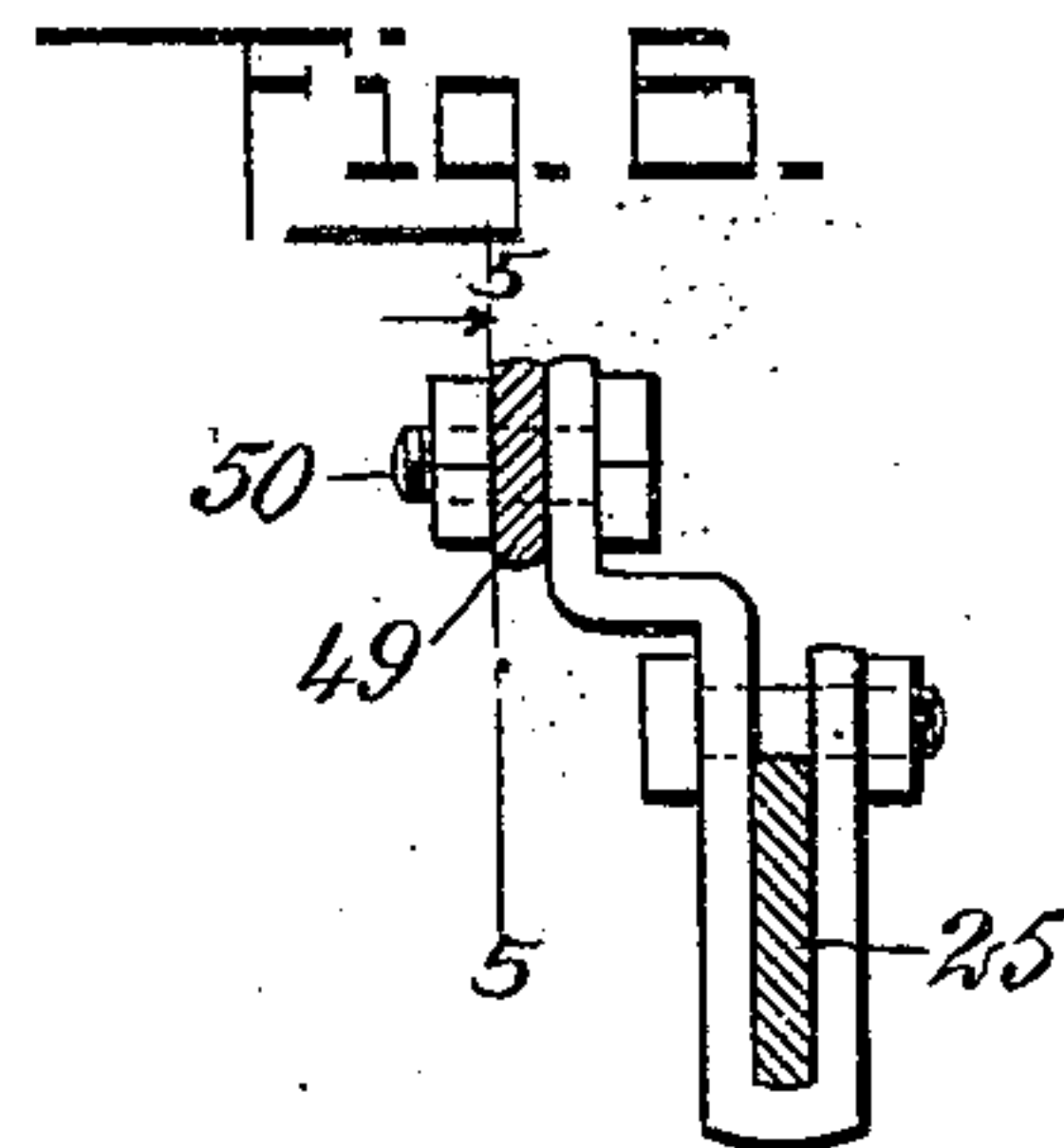
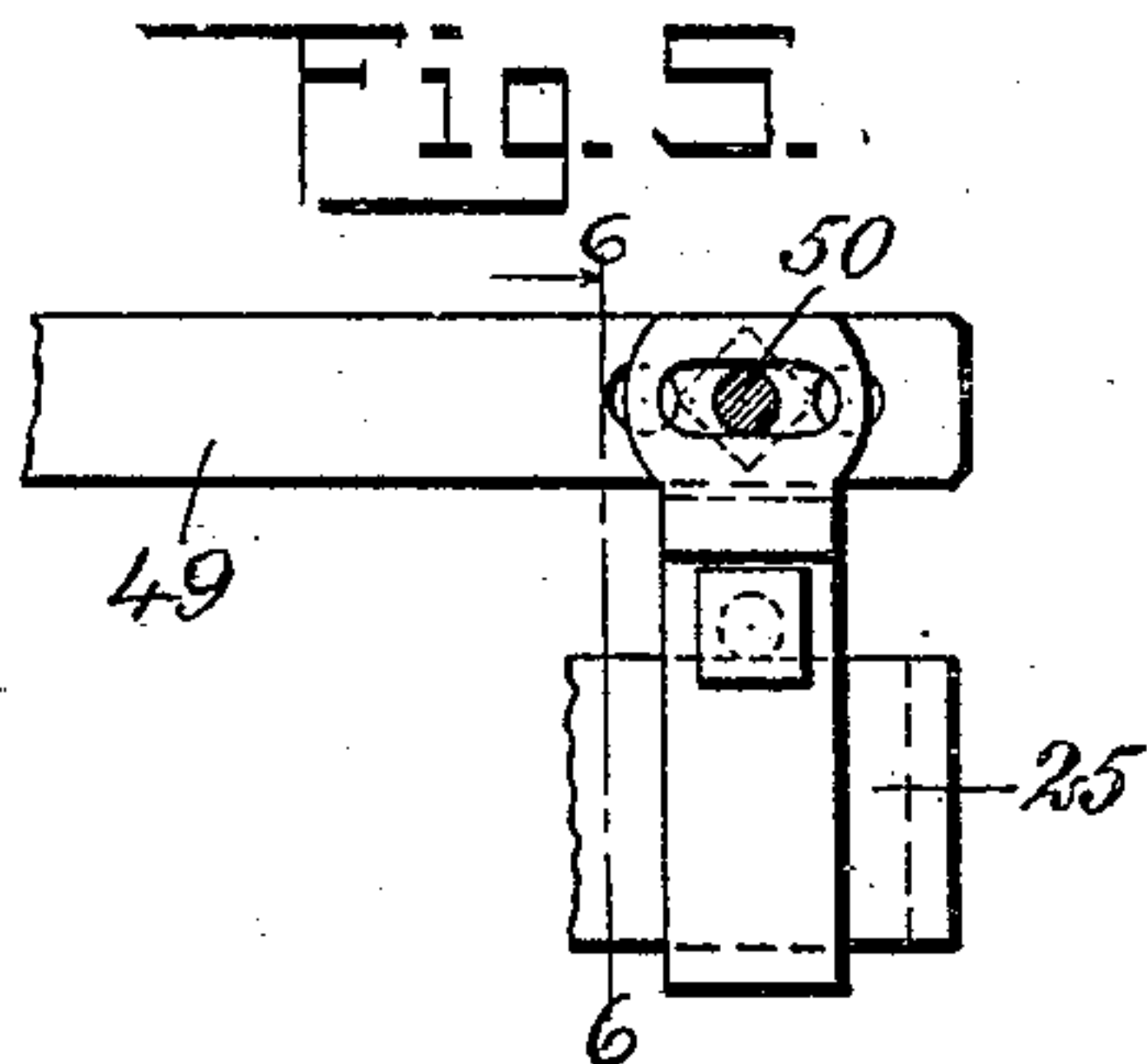
J. N. HANNA & D. K. WAUGH.
BEET TOPPING MACHINE.

APPLICATION FILED APR. 23, 1908.

Patented Dec. 29, 1908.

3 SHEETS—SHEET 3.

908,254.



WITNESSES

L. Almqvist
W. H. H. H.

INVENTORS

John N. Hanna
David K. Waugh

BY

M. M. M.

ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN N. HANNA AND DAVID K. WAUGH, OF ORDWAY, COLORADO.

BEET-TOPPING MACHINE.

No. 908,254.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed April 23, 1908. Serial No. 428,732.

To all whom it may concern:

Be it known that we, JOHN N. HANNA and DAVID K. WAUGH, both citizens of the United States, and residents of Ordway, in the county of Otero and State of Colorado, have invented a new and Improved Beet-Topping Machine, of which the following is a full, clear, and exact description.

This invention is an improvement in beet topping machines of the character disclosed in Letters Patent granted us March 17, 1908, Number 882,465, wherein a wheeled truck is arranged forward of the beet topping mechanism and has a vertical and lateral movement relative thereto.

The present machine embodies not only the general construction of the first apparatus, but also contemplates the provision of swiveled rolling colters at the opposite sides, and in advance, of the guard wheels on the topping mechanism, primarily to cut off certain of the tops and trash at these points, also to assist in guiding the wheeled truck, the same having a controlling means operable from the handle bars of the topping mechanism; shovels arranged directly at the rear of the colters having landsides serving to throw the tops, etc., cut by the colters, to the outside of the topping mechanism; a spring-guard directly in front of the guard wheels of the topping mechanism, operating to gradually take the weight from these wheels as the guard passes over a high beet top, and thus prevent the wheels from abruptly striking the beet, which avoids the breaking of the high tops; and a mold-board cutter forward of the colters for removing to one side all rank tops standing upright.

The invention further resides in certain minor features of construction which will be hereinafter particularly described and set forth in the claims.

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

Figure 1 is a right-hand side elevation of a beet topping machine complete, embodying our improvements; Fig. 2 is a plan of the same; Fig. 3 is a fragmentary left-hand side elevation of the machine; Fig. 4 is a fragmentary view partly in vertical section, showing the knife-blade and adjacent guard wheels; Fig. 5 is a fragmentary sectional view of a detail of the construction on an

enlarged scale, substantially on the line 5—5 of Fig. 6; Fig. 6 is a section on the line 6—6 of Fig. 5; Fig. 7 is a plan of the forward portion of the machine, showing a different manner of supporting the mold-board cutter; Fig. 8 is a section on the line 8—8 of Fig. 7; and Fig. 9 is a cross-section of the cross-beam 19 at the point where the mold-board cutter is attached.

The machine consists of two principal parts; a wheeled truck and a beet topping mechanism, the wheeled truck comprising a forwardly-projecting elevated frame having stub axles 5 projecting at opposite sides, on which wheels 6 are journaled. The frame of the truck is preferably made up of upwardly and forwardly inclined side bars 7 connected together at their forward ends by a forward cross-bar 8, and a rear cross-bar 9 arranged at substantially the same elevation as the bar 8 and having downwardly-turned ends connecting with the side bars 7 at or near the stub axles. At each side of the center of the frame the cross-bars are rigidly connected together by a triangular bracket 10, the bases of the brackets being arranged adjacent to the cross-bar 8, where they are provided with eyes 11, and the opposite and rear ends of the brackets being extended to form depending hooks 12 at the rear of the cross-bar 9. Also attached to the cross-bars 8 and 9 are shafts 13 and an approximately centrally-arranged bar 14, the latter being forwardly extended to carry the swingle-tree 14^a, and having a stirrup 15 adjustably held on its under face by bolts 16, the latter passing through slots in, and running in the direction of the length of, the bar 14, as clearly shown in Fig. 2. The bar 14 is further slotted intermediate the bolts 16 for receiving the shank 17^a of a mold-board cutter 17, the said shank also passing through the stirrup 15, and being held against vertical movement by any suitable means, as the set-screw 18, which is threaded through an extended bearing forming a part of the bar 14. The mold-board cutter is forwardly and downwardly inclined as well as laterally inclined, and may be varied in forward inclination by shifting the stirrup 15 longitudinally, or may be adjusted vertically by the screw 18. This cutter operates to cut all rank beet tops in advance of the cutting mechanism, which are standing upright, and remove the same to one side.

The beet topping mechanism embodies in

its construction a cross-beam 19 arranged under the cross-bar 9, and consisting of two spaced plates or bars, as best shown in Fig. 3, between which, near the opposite ends of the beam, are pivoted on vertical pins, links 20. The bearing surface of the links between the cross-beams is extended by attaching to each beam an offset finger 21, and the forward ends of the links have hooks 22 engaging in the eyes 11. The links are also rearwardly extended beyond their connection with the cross-beam, where they are adapted to be engaged by the hooks 12 on the triangular brackets 10, which serves to hold the beet topping mechanism at the rear of the cross-beam above the ground, as when moving the machine from place to place when out of action. The connection between the cross-beam and the wheeled truck, afforded by the links, admits of the beet topping mechanism being moved laterally as well as vertically, the same, however, being normally retained centrally with respect to the truck frame by a spring 23, connecting the cross-beam 19 and the cross-bar 8 together. One end of the spring engages in an eye-bolt 24 preferably carried by the beam 8 and having a nut, as clearly shown in Fig. 2, by which the tension of the spring may be adjusted. Rigidly attached to the cross-beam 19 is an approximately rectangular frame 25, to which in turn are secured rearwardly and upwardly inclined handle bars 26, the connection between the frame and handle bars being reinforced by struts 27, and one of the handle bars being additionally secured to the cross-bar 19 by a bar 28.

Rigid with, and extending forwardly from, the cross-beam 19 are diverging arms 29, each consisting of two spaced members having journaled in their forward ends the spindles or shanks of rolling colters 30. The portion of these spindles on which the colters are journaled is inclined to the vertical, as shown in Fig. 1, and the upper end of one of the spindles is attached to an arm 31 having depending fingers arranged at opposite sides of its respective arm 29, which operate to limit this colter in its swiveled movement. The upper end of the stem of the other colter has a T-shaped arm 32 secured thereto, the opposite ends of which are connected with bell-crank levers 33 by links 34, the links being in the nature of rods having hooked ends, which ends adjacent to the levers are adapted to engage in any one of a number of apertures formed therein, as shown in Fig. 1. The levers 33 are arranged adjacent to the handles of the handle bars and are pivotally supported on the opposite ends of a cross-bolt 35 which serves to connect these bars together. By pressing on one or the other of the levers 33, the connected colter may be thrown in reverse angular positions, and will operate to

guide the machine. The colters also serve to cut all the trash and tops at the sides of the topping mechanism, in which capacity they are adapted to move vertically to compensate for inequalities, against the action of springs 36 which are interposed between the arms 29 and collars on the lower ends of the shanks, as clearly shown in Fig. 1, and serve to press the colters to the ground.

The frame 25 has rigidly secured at opposite sides adjacent to the cross-beam 19, depending arms 37, as best shown in Fig. 3, to the opposite ends of which are pivoted links 38, which extend within the frame 25 and are pivotally connected to links 39 having rearwardly-projecting heads 39^a. Between these heads are secured on bolts 41, a number of slotted heads 40 having depending hanger arms 42 arranged one in advance of the other, and each carrying a revoluble guard wheel 43, which, in view of the disposition of the said hanger arms, likewise throw one of the wheels at the front or rear of the next adjacent wheel. At the rear of the guard wheels is a knife blade 44, likewise laterally inclined and having an upwardly-turned slotted shank provided with a laterally-extending ear 45, as best shown in Fig. 4. Through the slots of the shank of the knife blade pass bolts which also pass through a depending bar 46 likewise having an ear 47 at its upper end, and rigid with a slotted head 40^a, as best shown in Fig. 3, also carried on the bolts 41. Threaded into the ear 45 is the lower end of a crank 48 which passes through the ear 47 and through the forked inner end of an arm 49 arranged thereunder and pivotally supported on a pin or bolt 50 which passes through the upper slotted end of a bracket carried by the frame 25. The forked end of the arm 49 is held a suitable distance from the ear 47, as shown in Fig. 4, by lock nuts 51. A spring 52 is interposed between the upper face of the ear 47 and a collar on the crank 48, and supports the weight of the knife and attached mechanism. This construction admits of the knife having a slight vertical movement, which is of importance in that it effects its automatic adjustment in severing the tops of the beets protruding varying distances out of the ground.

As shown in Figs. 3 and 4, the bottom bolt passing through the bar 46 and the shank of the knife, also passes through a slotted brace 53, the opposite end of which passes to the rear of the guard wheels, as shown in Fig. 2, where it is made rigid with the extended head 39^a by threading it and binding the portion through which it passes with nuts, as shown. The center of the brace 53 is connected to the intersection of diagonally-arranged brace-bars 54 by a chain 55, the said brace-bars serving to rigidly connect the opposite ends of the struts 27 to the handle bars and to the

opposite sides of the frame 25. The chain 55 operates to limit the downward movement of the knife blade and guard wheels on the pivots at the opposite ends of the arms 37.

5 At the rear of the frame 25 the stem of a yoke 56 is vertically journaled, and in said yoke is pivotally supported on a shaft or pin 57, a scoop or blade 58 inclining forwardly and downwardly and also laterally to the same side of the machine as the knife blade and guard wheels are inclined. This scoop serves to discharge the beet tops to one side in the furrows, and is adapted to be swung rearwardly against the tension of a spring 59 which is spirally wrapped about its axis 57 and has its opposite ends respectively bearing against the yoke and against the rear face of the blade. The forward movement of the blade is limited against the action of this spring by an adjustable eye-bolt 60, as best shown in Fig. 3.

The bolt or pin pivotally connecting the lower links 38 to the arms 37 also serves as a pivot for a forked spring guard 61, the 25 tines of which are rearwardly and downwardly inclined, as shown in Figs. 1 and 3, toward the intervals between the several guard wheels. The fork is normally held in this position by a spring 62, which, as best shown in Figs. 2 and 3, has a coil at its center, and its opposite ends engaged in a lug projecting above the pivot of the fork, and a cross-bar 63, which, at its opposite ends, connects the upper links to 35 the heads 39^a. The forked guard operates to gradually take the weight off the guard wheels when the guard passes over a high beet top, by reason that when the guard moves upwardly on its pivot, the guard wheels and attached mechanism are 40 lifted by the action of the spring. At the opposite sides of the forked spring guard the frame 25 carries small shovels 64 which incline outwardly and rearwardly directly at the rear of the colters 30. The connection between the shovels and the frame 25 is effected by providing the former with shanks 65 having slotted upper ends through which bolts pass, and further connecting the shanks to the frame by eye-bolts 50 66 and angular brackets 67, the brackets being pivoted to the shanks, and the bolts pivoted to the frame and having a nut engaging the opposite sides of the angular portions of the brackets. By adjusting these nuts the inclination of the shovels may be varied, as also the elevation thereof, by the adjustment of the bolts passing through the slotted portions of the shanks. 60 The shovels are each provided with land-sides 68 arranged on their rear faces, and operate to discharge such tops, etc., to the opposite sides of the topping mechanism, as are cut off by the colters.

65 In Figs. 7, 8 and 9, we have shown a differ-

ent manner of supporting the cutter-board, wherein it will be observed the shank of this cutter is rearwardly offset and passes through the eye of the eye-bolt which is employed for securing one end of the spring 23; this bolt 70 operating to draw the shank of the cutter against the V-shaped front face of a block 17°, the said block being transversely slotted on its opposite and rear face for engaging with the plates composing the beam 19. 75

When the machine is in transit to the beet field, or not in operation, the rearwardly-extended portions of the links 20 are engaged with the hooks 12 to hold the topping mechanism above the ground, as hereinbefore 80 pointed out.

The order of operation of the several mechanisms of the machine when in action is as follows: The mold-board cutter strikes the rank tops standing upright, cutting the same off 85 the desired distance above the ground and throws them to one side. The swiveled rolling colters, next in order, cut off the trash and tops at opposite sides, which are removed by the shovels 64 on the further advance of the machine. As a high beet passes under the spring guard, the weight is gradually taken off the guard wheels, which prevents the latter from striking the beet abruptly and thereby breaking it off. The 95 tops after passing the spring guard pass between the guard wheels and are severed by the knife blade, to be thereafter discharged at one side in a furrow by the scoop 58. During the cutting action of the knife blade it 100 automatically moves up and down to compensate for the inequalities of the surface over which it travels, by reason of the particular mounting described, and the entire topping mechanism at the rear of the truck 105 may be swung laterally as well as vertically with respect thereto on the links 20, from the handle bars by the operator. The topping mechanism, will, however, have a tendency to return to its normal central position at the 110 rear of the truck under the influence of the spring 23.

Having thus described our invention, we claim as new and desire to secure by Letters Patent: 115

1. The combination of a top cutting mechanism, handle bars for controlling said mechanism, a swiveled rolling colter in advance of said mechanism, and means operable from said handle bars for throwing said colter to 120 and from an angular position.

2. The combination of a wheeled truck, a topping mechanism attached to said truck, having a lateral and a vertical movement with respect thereto and provided with handle bars, a swiveled rolling colter carried by the truck in advance of said mechanism, and means operable from said handle bars to move said colter to and from an angular position. 130

3. The combination of a wheeled truck, a frame having handle bars carried at the rear of said truck, and having a lateral and a vertical movement relative thereto, a topping mechanism carried by the frame, rolling swiveled colters carried by the truck at opposite sides and in advance of the topping mechanism, and shovels inclining forwardly and outwardly, arranged behind said colters and carried by the frame.

4. The combination of a wheeled truck, a frame connected to the truck and extending to the rear thereof, a knife blade carried by the frame, having a wheeled guard, rolling colters carried by the truck at opposite sides and in advance of said guard, forwardly and outwardly inclined shovels carried by the frame at the rear of the colters, and a spring guard tending to relieve the wheeled guard of weight when passing over high tops, arranged between said shovels.

5. The combination of a wheeled truck, a frame connected to and extending at the rear of said truck, having handle bars, a topping mechanism carried by the frame, rolling colters carried in advance and at the opposite sides of said topping mechanism, and means for moving one of said colters to and from an angular position from said handle bars.

6. The combination of a knife blade having a wheeled guard, rolling colters arranged in advance and at opposite sides of the wheeled guard, forwardly and outwardly inclined shovels at the rear of the colters, a spring guard in advance of the wheeled guard between said shovels, and a mold cutter board carried forward of and in advance of the colters.

7. The combination of a wheeled truck having a frame connected thereto and arranged at the rear thereof, provided with handle bars, hangers rigidly connected together and pivotally supported between the sides of said frame, each provided with a guard wheel, a depending bar rigid with the hangers and having a lug, a knife blade slidable on said bar, having a lug, a crank passing through the lug of the bar and having a threaded connection with the lug of the knife blade, an arm pivotally supported on the frame, having a slotted outer end receiving the crank between said lugs, means supporting the under side of the arm, and a spring normally forcing the crank upwardly.

8. The combination of a wheel-supported

truck, a frame connected to and extending at the rear of the truck, a topping mechanism carried by the frame, rolling colters arranged at opposite sides and in advance of the topping mechanism, carried by the truck, and shovels carried by the frame at the rear of the colters, having means for varying their elevation and inclination.

9. The combination of a wheeled truck, a frame connected to the truck and extending to the rear thereof, a secondary frame pivotally supported within the first mentioned frame, a topping mechanism carried by the secondary frame, and a spring fork carried by the secondary frame in advance of the topping mechanism.

10. The combination of a wheeled truck, a frame connected to and arranged at the rear of the truck, a secondary frame pivotally supported in the first mentioned frame, a wheeled guard carried by the secondary frame, a vertically adjustable knife blade carried by the secondary frame at the rear of the wheeled guard, a crank having a threaded connection with the knife and slidable relatively to the secondary frame, and a spring normally forcing the crank upwardly.

11. The combination of a wheeled truck, a frame connected to and arranged at the rear of said truck having depending arms arranged forwardly and at opposite sides, links pivotally supported on the opposite ends of said arms, links pivotally supported to the opposite and rear ends of the first mentioned links and having heads, hangers having heads secured between the heads of the links, a guard wheel journaled on each hanger, a depending bar rigid with said heads, a knife blade arranged at the rear of the guard wheels, adjustable on said bar, an auxiliary guard pivotally supported in advance of the guard wheels on the connection between the arms and the first mentioned links, and a spring having one end connected with the auxiliary guard, and its opposite end attached to the connection between the first mentioned and second mentioned links.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN N. HANNA.
DAVID K. WAUGH.

Witnesses:

W. A. GRAY,
E. P. JOHNSON.