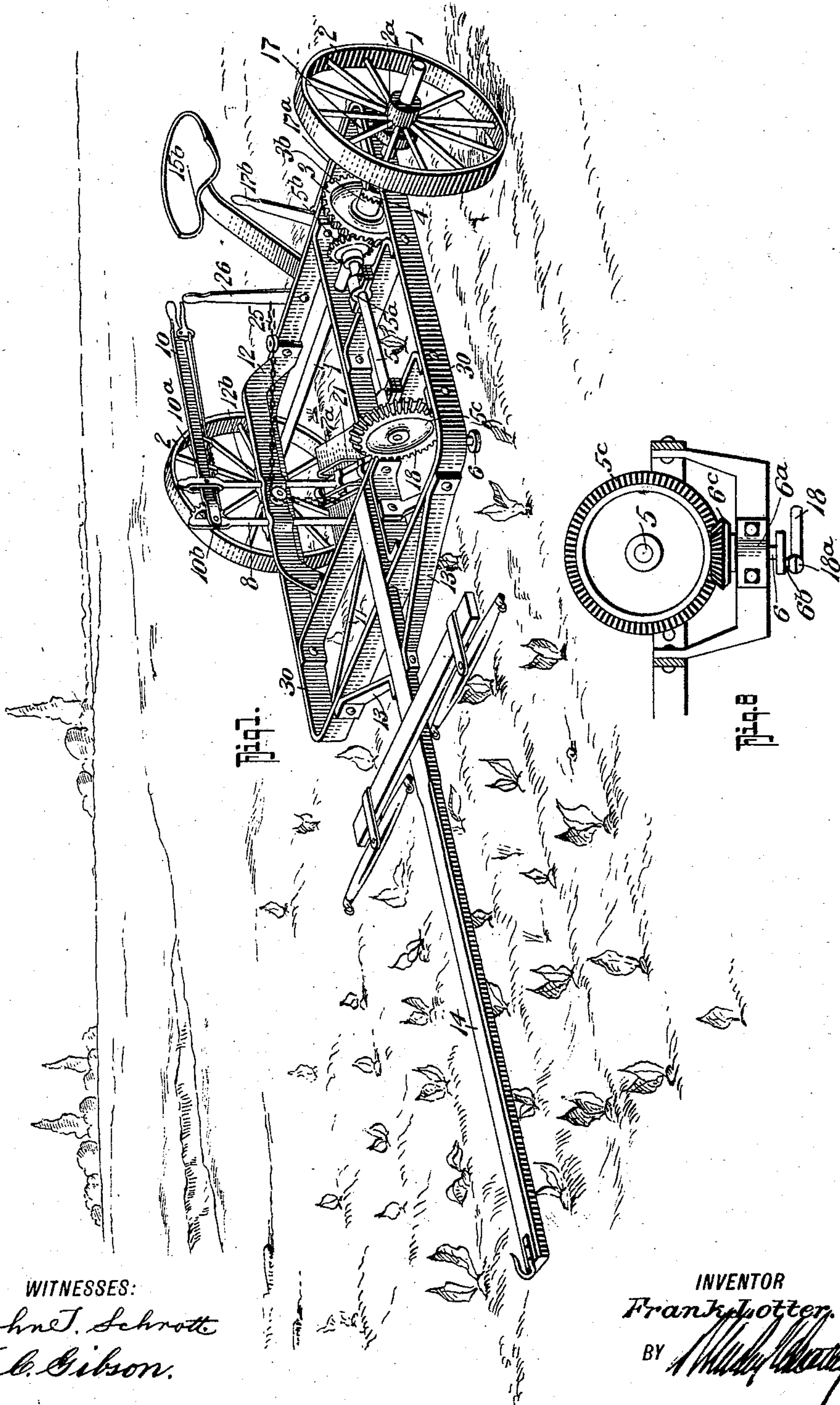


No. 859,958.

PATENTED JULY 16, 1907.

F. LOTTER.
BEET TOPPING MACHINE.
APPLICATION FILED NOV. 21, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

John T. Schrott
F. L. Gibson

INVENTOR

Frank Lotter

BY

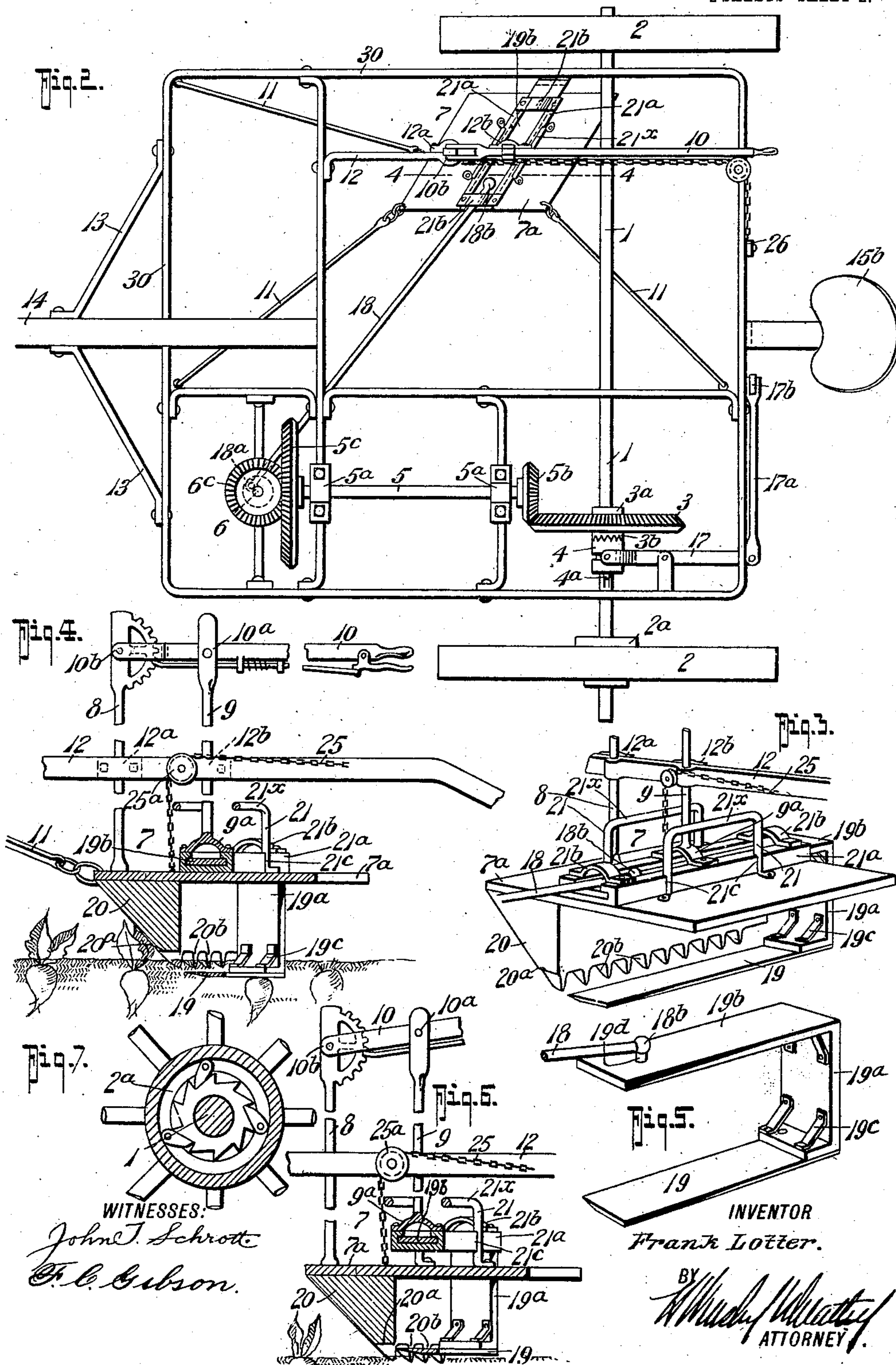
ATTORNEY

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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

FRANK LOTTER, OF ELKTON, MICHIGAN.

BEET-TOPPING MACHINE.

No. 859,958.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed November 21, 1906. Serial No. 344,501.

To all whom it may concern:

Be it known that I, FRANK LOTTER, residing at Elkton, in the county of Huron and State of Michigan, have invented certain new and useful Improvements in Beet-Topping Machines, of which the following is a specification.

My invention relates to certain new and useful improvements in beet topping machines, and it particularly seeks to provide an apparatus of this character of a very simple and effective construction, which can be easily and cheaply manufactured and which will readily and effectively serve its intended purposes.

In its more subordinate features, my invention resides in an improved beet topping knife mechanism capable of adjustment to an ordinary mower and other similar machines.

Generically, my invention comprises an apparatus of this character including a supporting frame from which a knife mechanism and shoe is mounted. The knife mechanism comprises a top plate to the under side of which the shoe is attached, a slide-way on the top plate in which the cutter knife is arranged to slide, means for adjusting the top plate and shoe, and means for adjusting the cutter knife independently of the shoe, together with suitable driving means for the cutter knife.

In its more detailed nature, the invention comprises certain novel construction, combination and arrangement of parts, all of which will be first described in detail and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which:—

Figure 1, is a perspective view of my invention. Fig. 2, is a top plan view thereof. Fig. 3, is an enlarged detail, perspective view of the knife and shoe mechanism. Fig. 4, is a vertical longitudinal section on the line 4—4 of Fig. 2. Fig. 5, is a detail, perspective view of the knife. Fig. 6, is a similar view to Fig. 4, showing the manner of adjusting the knife mechanism. Fig. 7, is a detail section of the adjustable wheel hub. Fig. 8, is a detail view of a portion of my apparatus.

Referring now to the accompanying drawings in which like letters and numerals indicate like parts in all of the figures, it will be seen that upon a suitable supporting frame 30 formed of suitable material, such as iron, steel or wood, but preferably of steel, a main drive shaft 1 is mounted in suitable bearing apertures in the supporting frame. The drive shaft 1 carries a pair of drive wheels 2, similar in form to the ordinary mower wheels, and the wheels 2 are provided with an inside hub and ratchet 2^a, as shown. One of the drive wheels 2 (preferably the right hand wheel) is stationary on the end of the shaft 1, while the other wheel 2, is adjustable along the shaft to cor-

respond to the end width of rows, from say 20" to 28" apart. In practice, the whole length of the shaft is about 7 ft.

Mounted on the shaft 1, and turning loosely thereon, is a beveled cog wheel 3, the cog wheel 3 being held on the shaft by collars 3^a, as indicated, and is provided with a clutch face 3^b to cooperate with the sliding clutch 4 that is mounted on the shaft 1 to turn therewith by a key or spline 4^a, as indicated. The clutch 4 is shifted by a clutch lever 17, under control of the operator, through the medium of the operating lever 17^b, and the connecting rod 17^a, it being understood that the operating lever 17^b is disposed adjacent to the operator's seat 15^b which is secured to the main frame of the machine.

5 designates a countershaft mounted to lie in a horizontal plane in bearings 5^a in the main frame of the machine and the shaft 5 is provided with a cog pinion 5^b at one end to mesh with the cog wheel 3, and at the other end is provided with a cog wheel 5^c that meshes with the pinion or cog 6^c, carried on the upper end of a vertical shaft 6 which passes through bearings 6^a and carries a wrist pin 6^b at its lower end as shown. The wrist pin 6^b is formed with a ball head to receive the socket end 18^a of a pitman 18, hereinafter again referred to. The shaft 6 is upright or vertical and runs in bearing boxes attached to the frame, as before stated, and in practice, the wrist pin of the shaft 6 is disposed about from 1½" to 1¾" from the center of the shaft so as to give the pitman 18 a stroke from 2½" to 3" as the case may be.

7 designates the cutting mechanism of the machine which consists of a diamond shaped flat plate 7^a, which in practice, is preferably 9" wide by 15" long and on the underside of the front end of this plate I secure a V-shaped shoe 20 having a flattened heel portion 20^a at its lower rear end from which a series of teeth or ribs 20^b project in vertical planes, spaced apart from one another. The shape of the shoe 20 permits the whole plate 7^a to rise over the beets, standing well up out of the ground and dropping into low places suddenly, the teeth on the bottom of the heel being about ¾" to 1" apart in practice, to aid the shoe in keeping a steady course and at the same time settling down through clods and lumps of dirt.

19 designates the cutter knife which is secured at one end to an upright support 19^a, that in turn is secured to a slide 19^b that lies parallel with the cutter knife 19, suitable braces 19^c being provided to give strength to the construction of the knife. Near one end the slide 19^b is provided with a pin 19^d whose end is formed into a ball to receive the socket end 18^b of the pitman 18 so that the movement of the pitman will be imparted to the knife. The knife 19 has its slide 19^b mounted in slideways 21^a that are connected together by a bridge member 9^a to which the knife adjusting rod 9 is se-

cured. The slideway 21^a is also braced near its end by bridges 21^b, as shown to form a rigid support. The slide-way 21^a is provided with grooves 21^c to receive the vertical supports 21 which are mounted at each side of the slideway on the top of the plate 7^a and form a guide along which the slideway 21^a can be vertically adjusted to vertically adjust the knife 19 independent of the plate 7^a. The vertical posts on the supports 21 are braced by beams 21^x, as shown.

8 designates an upright shoe guide that is rigidly secured at the bottom portion to the top plate 7^a, directly over the shoe 20 and the guide 8 passes through a bearing 12^a in a bridge member 12 carried by the main frame of the machine. The adjusting rod 9 for the knife mechanism also passes through a bearing 12^b on the bridge member 12, and is pivotally connected at 10^a to an adjusting lever 10 whose end 10^b is pivotally connected to the upright guide 8, as shown.

11—11 designates stay rods secured to the plate 7^a at suitable intervals and at suitable points to the main frame of the machine. A tongue 14 is secured to the main frame of the machine and supported by braces 13 and may carry the usual double-tree, as shown.

In the practical operation of my invention, the adjustable wheel 2 is moved along the shaft 1 to adapt the machine to the width of the rows operated upon, after which, the machine is drawn across the rows and the movement of the shaft is imparted through the gears 3, 5^b and 5^c, shaft 5, gears 6^c and shaft 6, pitman 18 to the cutter knife 19 which is reciprocated as the machine is drawn over the ground, thus topping the beets. Should it be desired to adjust the cutter knife to a lower or higher plane with respect to the bottom edge of the teeth 20^b it only becomes necessary to manipulate the lever 10 to raise or lower the rod 9, thus raising or lowering the knife slide and carrying with it the knife. As the machine is drawn over the field, the shoe 20 will adapt itself to the height of the beets operated upon, rising and lowering, as conditions may require, by reason of the support 8 and rod 9 being slidably mounted in the bearings 12^a—12^b respectively. It should be stated, that the knife 19 has its front edge tilted downwardly sufficient to work easily in the ground from $\frac{1}{2}$ " to 1". In practice, any other attachment desired can be used through the medium of the adjusting lever 10 and its connections with the knife and supporting plate 7^a.

By reason of the ball and socket connections between the pitman 18 and the wrist pin 6^b, the raising of the bottom of the plate 7^a will not jar and twist the parts but will permit an easy operation of the knife.

When the machine is to be moved from place to place or at any time when not working, the whole cutting mechanism may be raised from the ground through the medium of the chain 25 secured to the plate 7^a and passed over idler pulley 25^a on the bridge 12 and operated by a hand lever 26 secured adjacent the operator's seat 15^b. Furthermore, the cutting mechanism of my invention may be attached to any mowing machine desired, although I have shown a complete operative construction in the drawings of this application.

From the foregoing description taken in connection with the accompanying drawings it is thought the complete construction, operation and many advantages of

my invention will be readily understood by those skilled in the art to which it appertains.

What I claim is:—

1. A beet topping machine comprising a supporting frame, a cutting mechanism mounted thereon, said cutting mechanism comprising a top plate, a shoe secured to the underside thereof, a cutting knife slidably held on said plate, and means for reciprocating said cutting knife, substantially as shown and described.

2. A beet topping machine comprising a supporting frame, a cutting mechanism mounted thereon, said cutting mechanism comprising a top plate, a shoe secured to the underside thereof, a cutting knife slidably held on said plate, means for reciprocating said cutting knife, and means for adjusting said cutting knife with respect to said shoe, substantially as shown and described.

3. A main supporting frame, a wheeled shaft journaled therein, a countershaft connected with said wheel shaft, a pitman operating shaft connected with said countershaft, a pitman having a ball and socket connection with said operating shaft, a knife mechanism supported from said main frame for vertical movement therein, said knife mechanism including a shoe and a reciprocating knife cooperating therewith, said pitman connected with said reciprocating knife, and stay rods connecting said knife mechanism with said supporting frame, substantially as shown and described.

4. A main supporting frame, a wheel shaft journaled therein, counter shaft connected with said wheel shaft, a pitman operating shaft geared with said countershaft, a pitman having a ball and socket connection with said pitman operating shaft, a knife mechanism supported from said main frame for vertical movement therein, said knife mechanism including a shoe, and a reciprocating knife cooperating therewith, said pitman connected with said reciprocating knife, stay rods connecting said knife mechanism and supporting frame, and vertical supports for said knife mechanism vertically slidable in bearings in the supporting frame.

5. A main supporting frame, a wheel shaft journaled therein, a countershaft connected with said wheel shaft, a pitman operating shaft geared with said countershaft, a pitman having a ball and socket connection with said pitman operating shaft, a knife mechanism supported from said main frame for vertical movement therein, said knife mechanism including a shoe and a reciprocating knife cooperating therewith, said pitman connected with said reciprocating knife, stay rods connecting said knife with said supporting frame, vertical supports for said knife mechanism vertically slidable in bearings in the supporting frame, and means for independently adjusting the knife.

6. The combination with a wheeled supporting frame, of a cutting mechanism comprising a diamond shaped plate, a shoe secured to the underside thereof, and having teeth on its lower edge, a reciprocating cutter knife held adjacent said shoe, said cutter knife including a parallel slide, slideways in which said slide is mounted, means for adjustably moving said slideways on said diamond plate, means for supporting said diamond plate, in the main frame of the machine for vertical movement, stay rods connecting said diamond plate with the main frame, and a means operable by the drive shaft for reciprocating said knife, substantially as shown and described.

7. The combination with a wheeled supporting frame, of a cutting mechanism comprising a diamond plate, a shoe secured to the under side thereof, and having teeth on its lower edge, a reciprocating cutter knife held adjacent said shoe, said cutter knife including a parallel slide, slideways in which said slide is mounted, means for adjustably moving said slideways on said diamond plate, means for supporting said diamond plate in the main frame of the machine for vertical movement, stay rods connecting said diamond plate with the main frame, means operable by the drive shaft for reciprocating said knife, and means connected with said slideways to adjust the knife, substantially as shown and described.

8. The combination with a wheeled supporting frame, of

a cutting mechanism comprising a diamond plate, a shoe secured to the underside thereof, and having teeth on its lower edge, a reciprocating cutter knife held adjacent said shoe, said cutter knife including a parallel slide, slideways
5 in which said slide is mounted, means for adjustably moving said slideways in said diamond plate, means for supporting said diamond plate in the main frame of the machine for vertical movement, stay rods connecting said diamond plate with the main frame, means operable by the
10 drive shaft for reciprocating said knife, means connected with said slideways to adjust the knife, said last named

means comprising a knife adjusting rod connected with said slideways and passing through bearings in the supporting frame and an upright shoe guide passing through bearings in the supporting frame, together with an adjusting lever
15 pivotally connected to the upright shoe guide and the knife adjusting rod, substantially as shown and described.

FRANK LOTTER.

Witnesses:

W. L. DOYLE,

K. E. M. STEPHENS.