F. FLETCHER.

BEET HARVESTER.

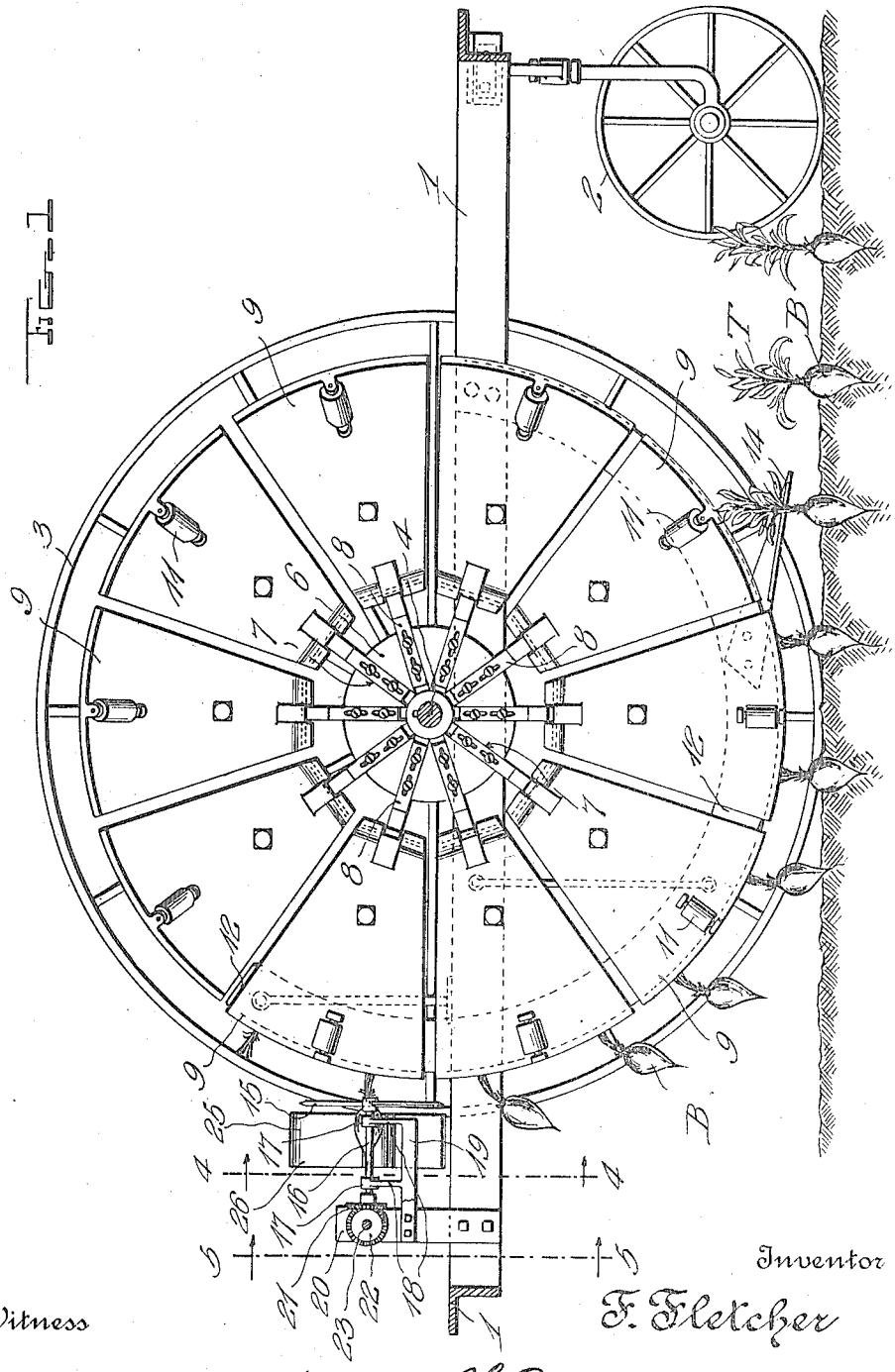
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1,207,889.

Patented Dec. 12, 1916.

3 SHEETS—SHEET 1.

Fig. 1



Witness

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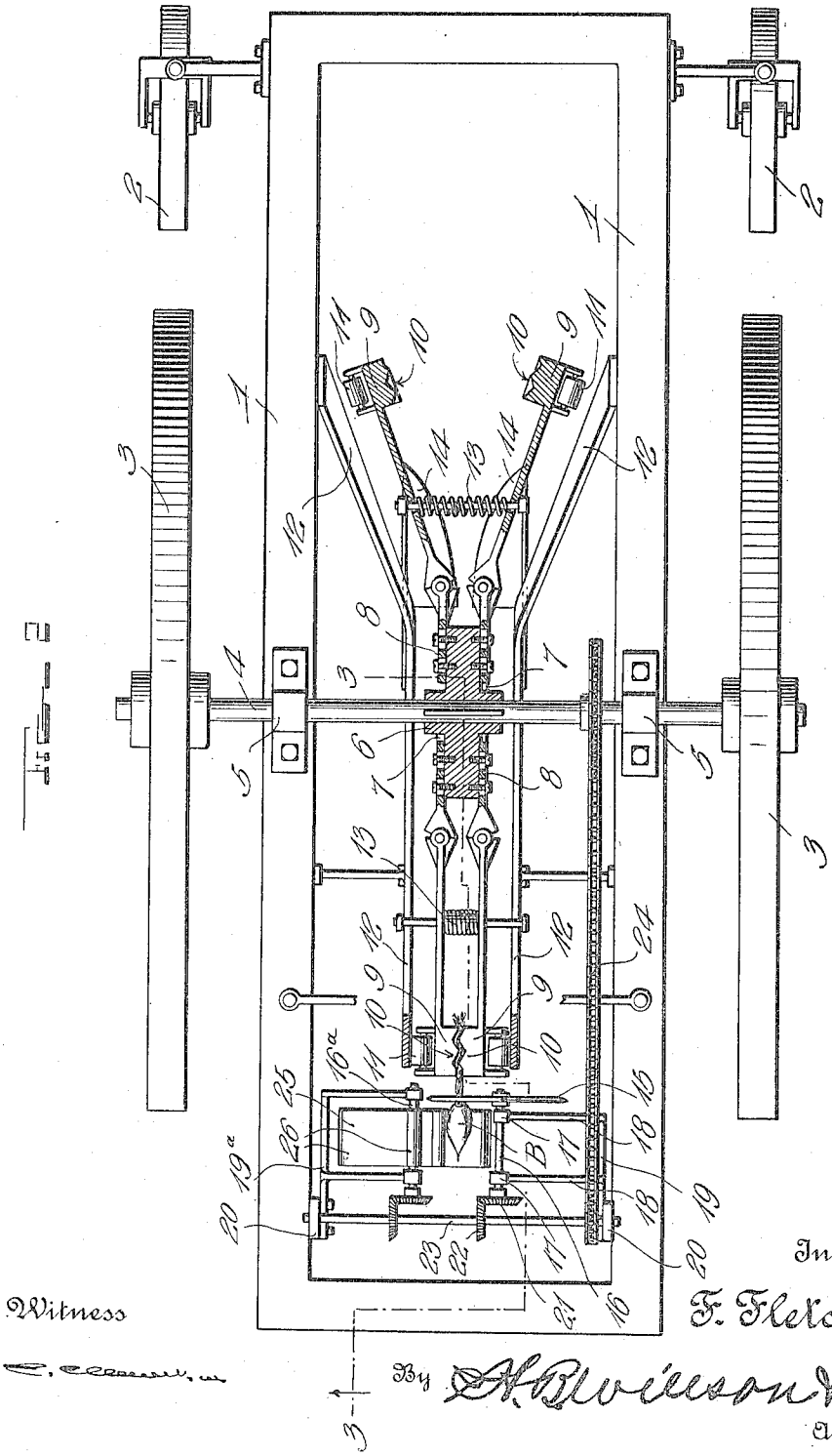
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

FIG. 3

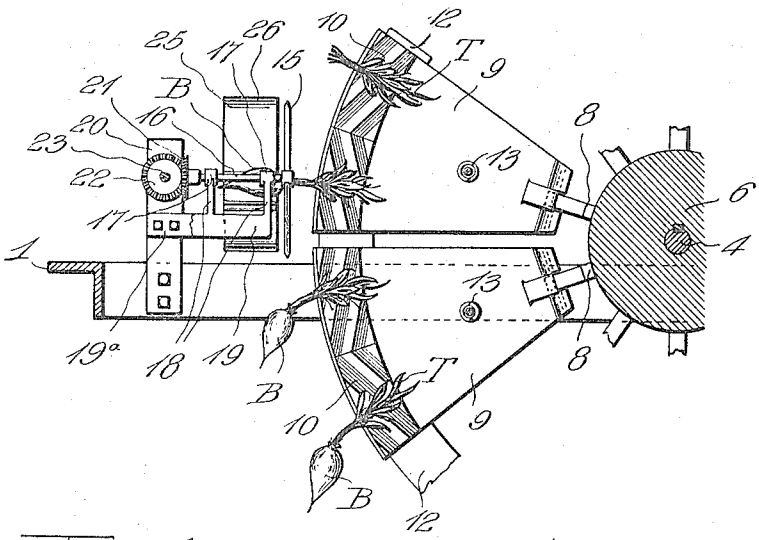



FIG. 4

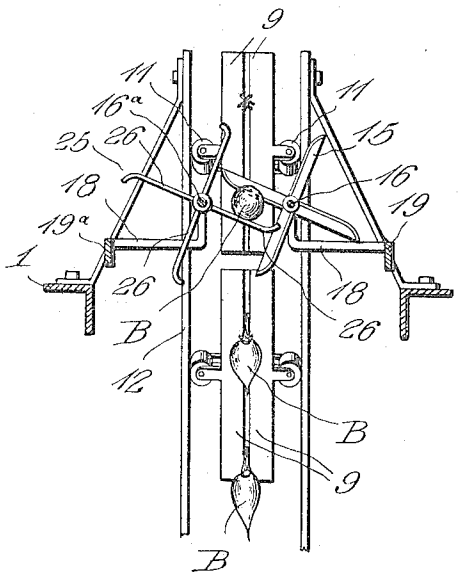
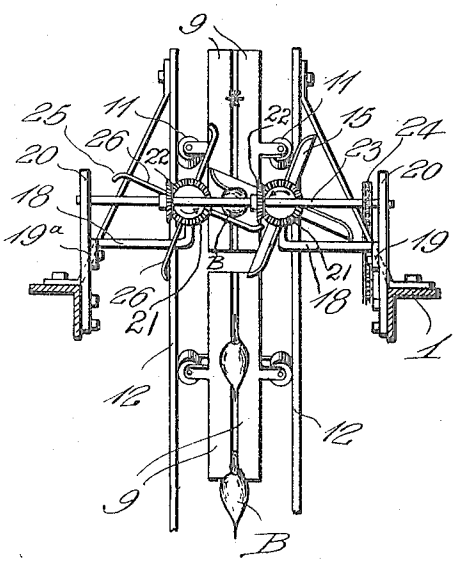



FIG. 5




Witness

C. [illegible]

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# UNITED STATES PATENT OFFICE.

FRANK FLETCHER, OF BOWLING GREEN, OHIO.

## BEET-HARVESTER.

1,207,889. Specification of Letters Patent. Patented Dec. 12, 1916.

Application filed January 6, 1916. Serial No. 70,666.

*To all whom it may concern:*

Be it known that I, FRANK FLETCHER, a citizen of the United States, residing at Bowling Green, in the county of Wood and State of Ohio, have invented certain new and useful Improvements in Beet-Harvesters; 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 which relates to improvements in beet harvesters has for its object to provide an extremely simple and inexpensive, yet highly efficient machine of this class having improved means for properly presenting the beets to a topping knife, whereby the latter may operate more effectively than otherwise.

With this general object in view, the invention resides in certain novel features of construction and in unique combinations of parts to be herein more fully described and claimed, the descriptive matter being supplemented by the accompanying drawings which constitute a part of this application and in which:

Figure 1 is a vertical longitudinal section of the frame of the improved machine showing the pulling and topping mechanisms in elevation; Fig. 2 is a top plan view with the beet pulling wheel in horizontal section; Fig. 3 is a detail longitudinal section taken substantially on the plane indicated by the line 3—3 of Fig. 2; and Figs. 4 and 5 are detail vertical transverse sections as seen on the planes indicated by the lines 4—4 and 5—5 of Fig. 1.

In specifically describing the construction shown in the drawings above briefly described, similar characters will be placed on corresponding parts throughout the several views and reference will be herein made to the numerous elements by their respective indices. To this end, the numeral 1 designates a rectangular horizontally positioned frame adapted to be drawn forwardly by any preferred means not shown. The front end of the frame is preferably supported by a pair of caster wheels 2, while intermediate its ends, said frame is upheld by a pair of comparatively large driving wheels 3 connected by any preferred means with a transverse axle 4 rotatably mounted in appropriate bearings 5 secured to the side bars of the frame 1.

Mounted on the center of the shaft 4 is a beet pulling wheel which includes a circular hub 6 having flat parallel ends provided at circumferentially spaced intervals with radially extending grooves 7, radially disposed bars 8 being adjustably secured in said grooves by the slot and screw connections shown most clearly in Fig. 2. Hinged to the outer ends of the bars 8, is a plurality of segmental jaw plates 9 provided on their inner opposed faces with corrugated jaws 10 disposed contiguous to the peripheries of said plates, the outer sides of the latter being provided with anti-friction rollers or the like 11 adapted to travel on the arcuate cam tracks 12 to move the jaws 10 toward each other at the proper time for gripping the tops T of the beets B, said jaws being spread from each other by coiled springs or the like 13 interposed between the numerous pairs of plates 9.

As clearly shown in the several figures of the drawings, the tracks 12 are disposed concentric with the beet pulling wheel, being rigidly secured and braced to the frame 1. The lower portions of these tracks serve to support a pair of forwardly extending fingers or the like 14 which are designed to raise the tops of the beets to properly position them for reception between the jaws 10.

When the machine constructed as so far described is drawn forwardly, the beets B will be pulled by the pulling wheel and lifted thereby as clearly shown at the left of Fig. 1. Obviously, however, the weight of the beets will cause them to be disposed at an incline in respect to the periphery of the pulling wheel. Were this not overcome, it would be difficult to obtain a knife which would properly sever the beets from their tops, but by the use of the construction now to be described, no difficulty will be encountered.

A rotary knife 15 is employed for topping the beets, said knife traveling in an upright plane disposed transversely of the frame 1 and being positioned immediately in rear of the pulling wheel. In the present embodiment of the invention, the knife in question is shown as secured to the front end of a horizontal longitudinally disposed shaft 16 mounted in bearings 17 on one end of a pair

of parallel transversely disposed angular arms 18 projecting laterally from a longitudinal bracket 19 which is secured to one of a pair of standards 20 rising from the rear end of the frame 1. The rear end of the shaft 16 is equipped with a bevel gear 21 meshing with a similar gear 22 which is keyed on a horizontal transversely disposed shaft 23 whose opposite ends are rotatably mounted in appropriate bearings carried by the aforesaid standards. The shaft 23 is driven by a sprocket chain 24 or the equivalent thereof from the shaft 4 as clearly illustrated in Fig. 2.

For properly presenting the beets to the knife 15, a rotary lifter 25 is provided, said lifter being here shown as equipped with four radiating paddles 26, since the rotary knife 15 is provided with four radiating blades. However, if the number of blades on the knife be increased, the number of paddles 26 will correspondingly increase in number. The lifter 25 rotates in overlapping relation in respect to the knife 15 as depicted clearly in Figs. 2 and 3, said lifter and knife being rotated in synchronism. To attain this end, the lifter 25 is keyed to a shaft $16^a$ driven in the same manner as and at the same speed of the shaft 16. The shaft $16^a$ is revolubly mounted in an appropriate bracket member $19^a$ of identically the same formation as the support for the shaft 16, said bracket being secured to one of the standards 20 as shown. Preferably, though not necessarily, the ends of the paddles 26 are curved toward their direction of travel as shown in Figs. 4 and 5, this being desirable in order that they may more readily raise the beets to the horizontal position shown in Figs. 1 and 3, in which position the knife 15 will sever the tops from the beets. The removed tops obviously will be released the moment the jaws 9 are separated by disengagement of the rollers 11 with the tracks 12.

In operation, any preferred means are employed for propelling the machine across the field with the jaws 9 straddling the rows of beets, the fingers 14 now serving to raise the tops T in position to be gripped between said jaws as they are contracted by the cam tracks 12. Thus, the beets will be pulled from the earth and will be moved upwardly toward the knife 15. Before engaging the latter, however, the paddles 26 will raise the beets to a horizontal position and will present them in this manner to the knife 15 which may therefore effectively accomplish the topping operation. The beets may now be deposited into an appropriate receptacle, (not shown) and if it is desired to save the tops, any preferred means may be employed to this end.

From the foregoing description, taken in connection with the accompanying illustration, the construction, manner of operation and numerous advantages of the improved machine will be understood without requiring a more extended explanation. In conclusion, I will state that although certain specific details of construction have been shown for accomplishing probably the best results, numerous changes may be made within the scope of the invention as claimed.

I claim:—

1. A beet harvesting machine comprising a portable frame, a beet topping knife mounted thereon, a beet pulling wheel mounted in advance of the knife and having jaws at its periphery adapted to grip the tops of the beets and convey said beets to the knife, and a beet lifter in rear of said wheel and knife for properly presenting said beets to the latter.

2. A beet harvesting machine comprising a portable frame, a beet topping knife mounted thereon, beet pulling means in advance of the knife and having jaws adapted to grip the tops of the beets and convey said beets to the knife, and a beet lifter in rear of said means for properly presenting said beets to the knife, said lifter having a plurality of vertically moving paddles traveling in close proximity to the path of the jaws and adapted to lift the beets to proper positions in respect to the knife.

3. A beet harvesting machine comprising a portable frame, a beet topping knife mounted thereon, beet pulling means in advance of the knife and having jaws adapted to grip the tops of the beets and convey said beets to the knife, and a beet lifter in rear of said means for properly presenting said beets to the knife, said lifter having a plurality of vertically moving paddles traveling in close proximity to the path of the jaws and adapted to lift the beets to proper positions in respect to the knife, the ends of said paddles being curved toward their direction of travel to readily engage the beets.

4. A beet harvester comprising a portable frame, a rotary beet topping knife mounted thereon and traveling in an upright plane disposed transversely thereof, a beet pulling wheel mounted on the frame in advance of the knife and having jaws at its periphery adapted to grip the tops of the beets and convey said beets to the knife, and a rotary beet lifter traveling in an upright plane parallel to the aforesaid plane and spaced in rear thereof, said lifter having a plurality of flat radiating paddles adapted to raise the beets and properly present the latter to the knife.

5. A beet harvester comprising a portable frame, a rotary beet topping knife mounted thereon and traveling in an upright plane extending transversely of the aforesaid frame, a beet pulling wheel mounted in advance of the knife and having at its pe-

riphery a plurality of jaws adapted to grip the tops of the beets and to convey the latter to the knife, the latter comprising a plurality of spaced radiating blades, a rotary beet lifter revolving in an upright plane parallel to and spaced in rear of the knife, said lifter having a plurality of flat radiating paddles equaling in number the number of blades, such paddles being adapted to raise the beets to properly present them to such blades, the ends of said paddles being curved toward their direction of movement to readily engage the beets.

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

FRANK FLETCHER.

Witnesses:
FLOY BLINN,
GLADYS BLINN.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**