

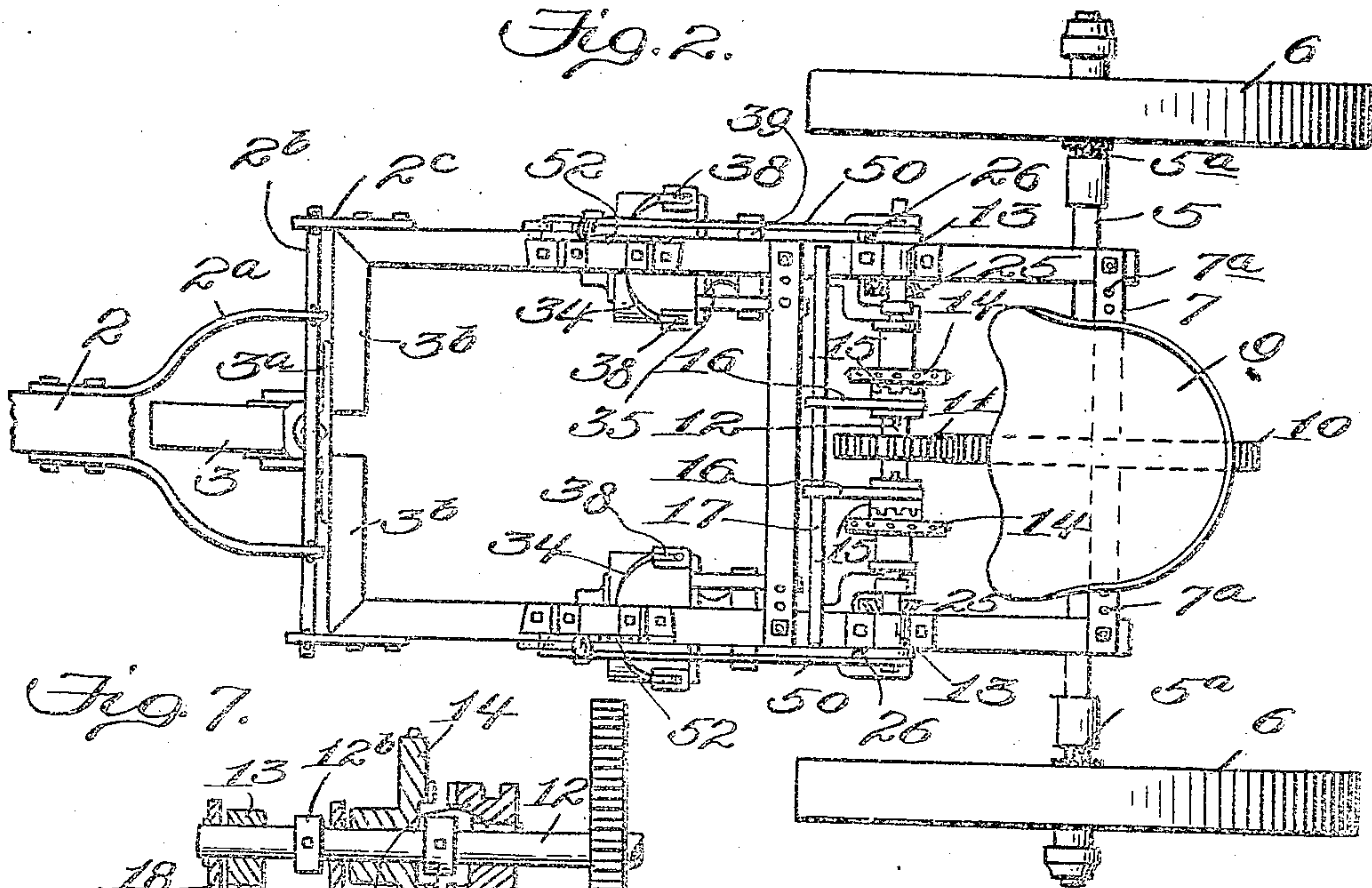
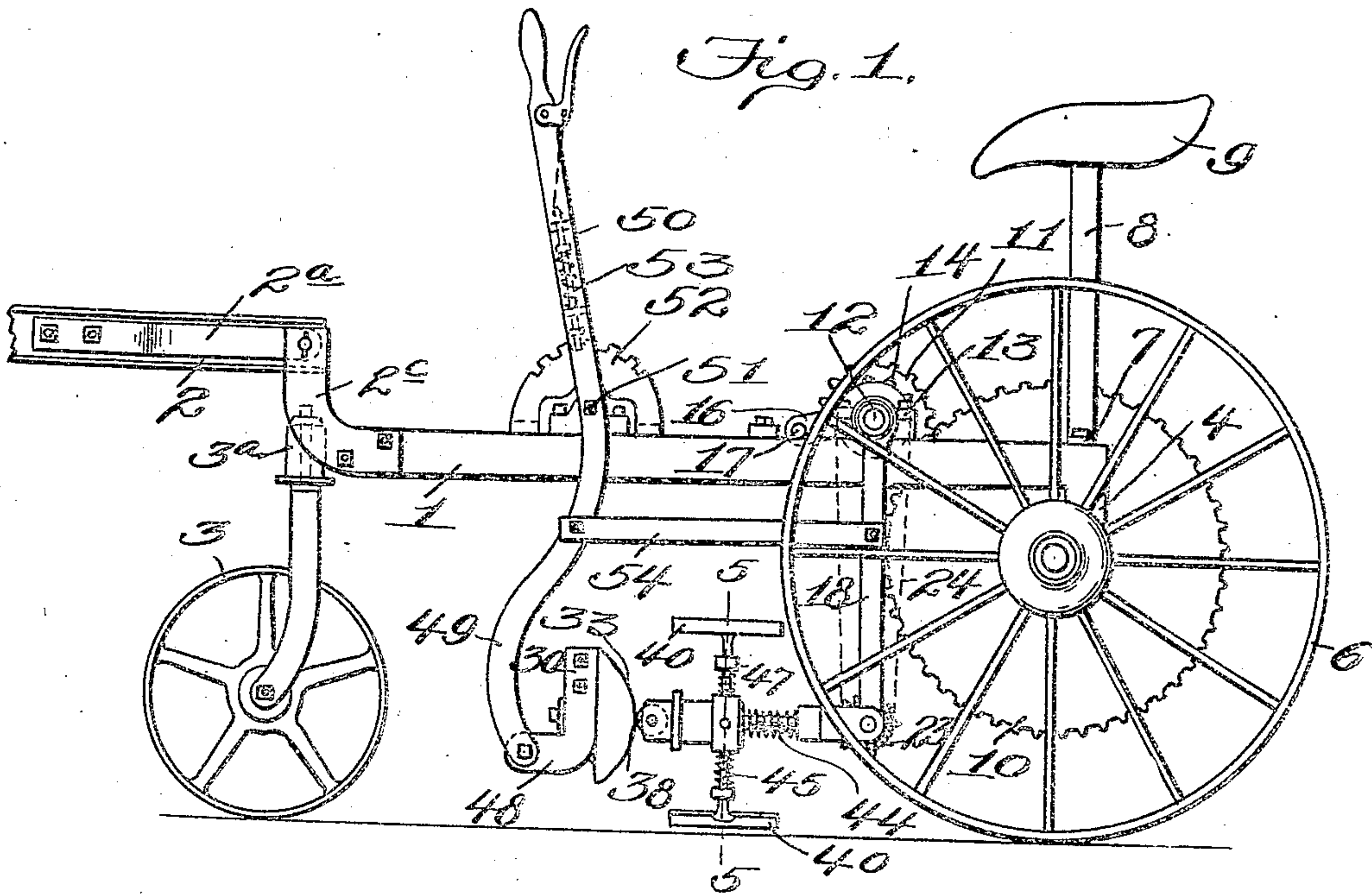
BEET BLOCKER.

APPLICATION FILED JUNE 19, 1908.

939,715.

Patented Nov. 9, 1909.

3 SHEETS--SHEET 1.



Witnesses
C. H. K. S. S.

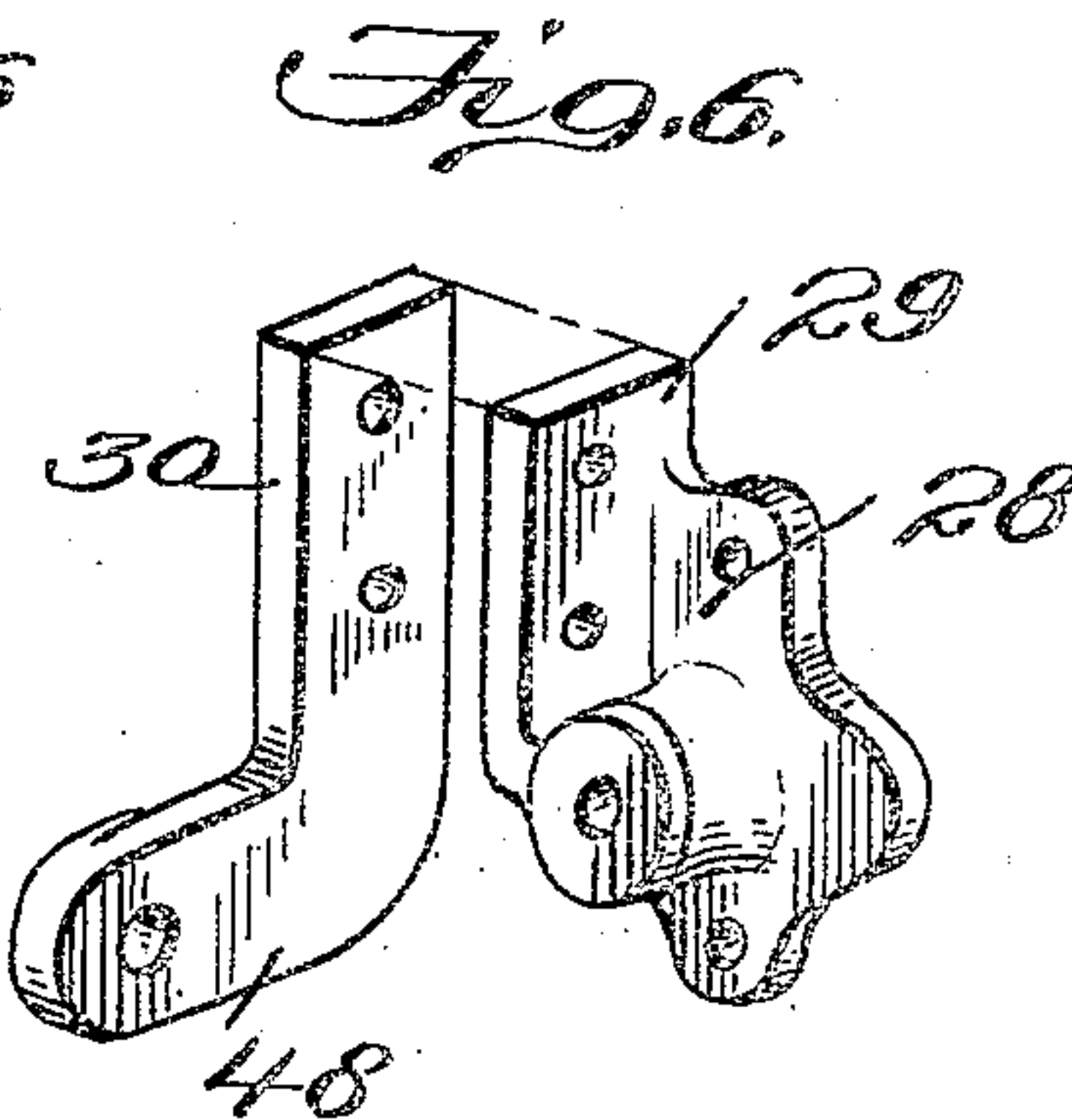
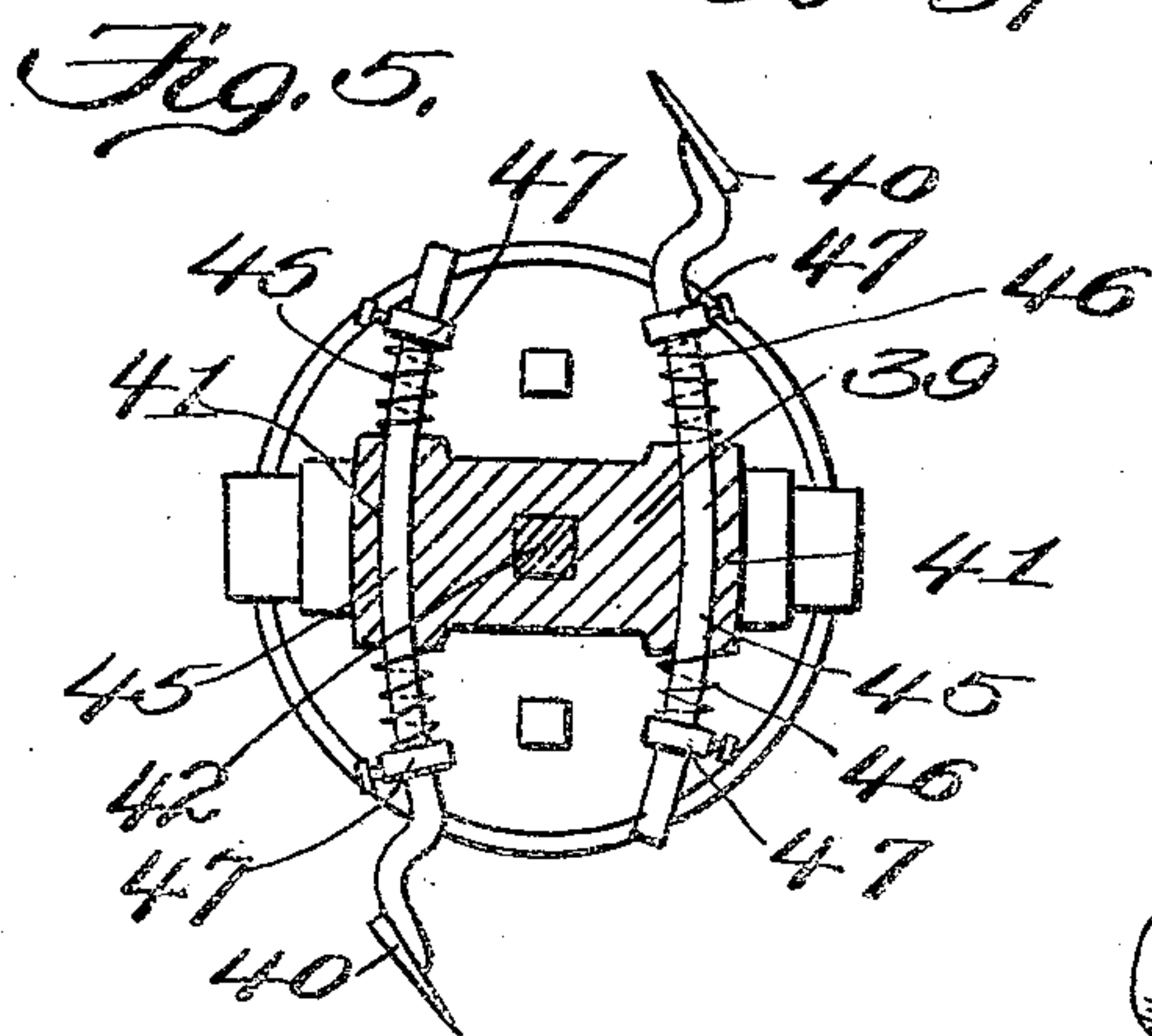
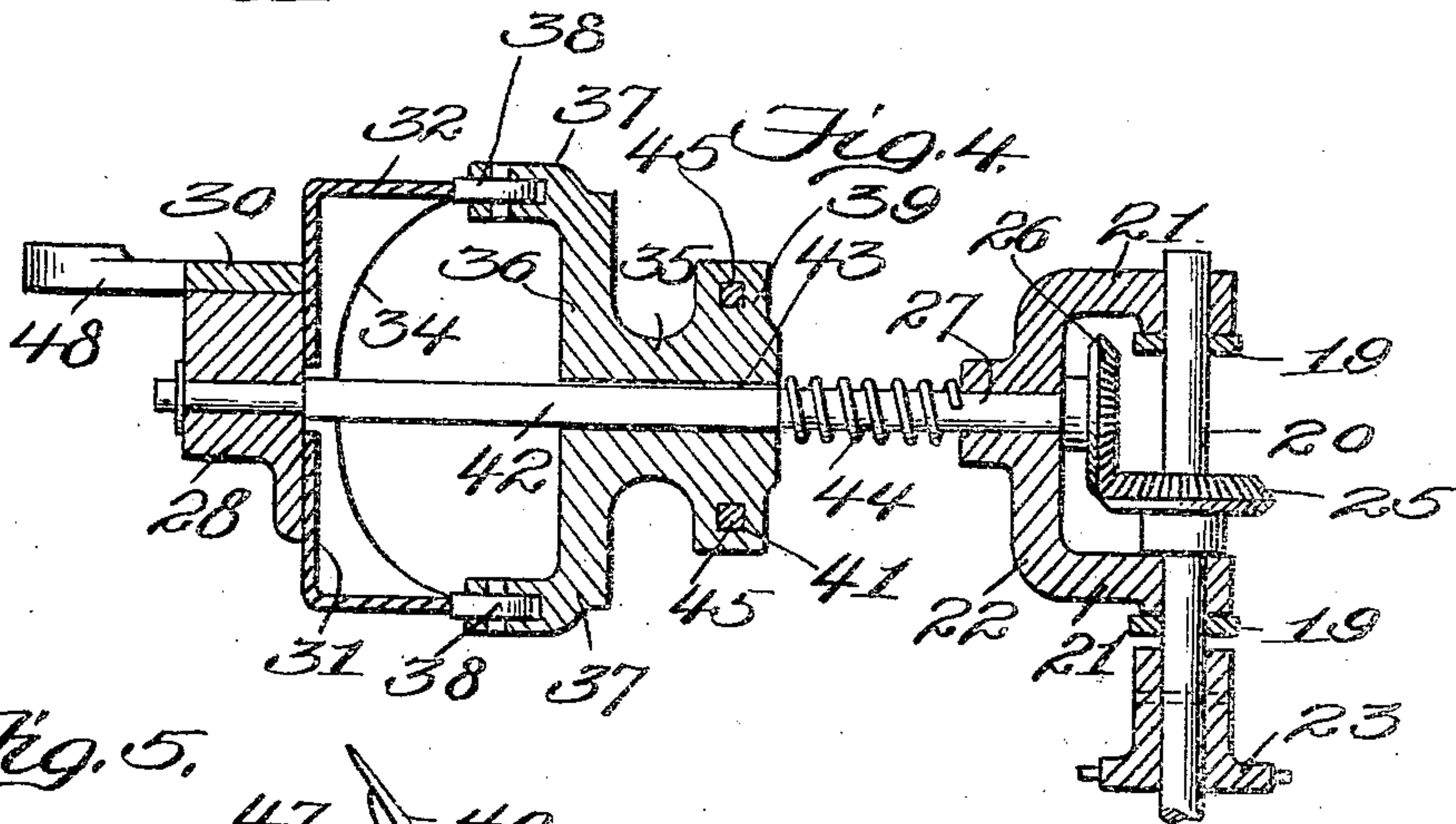
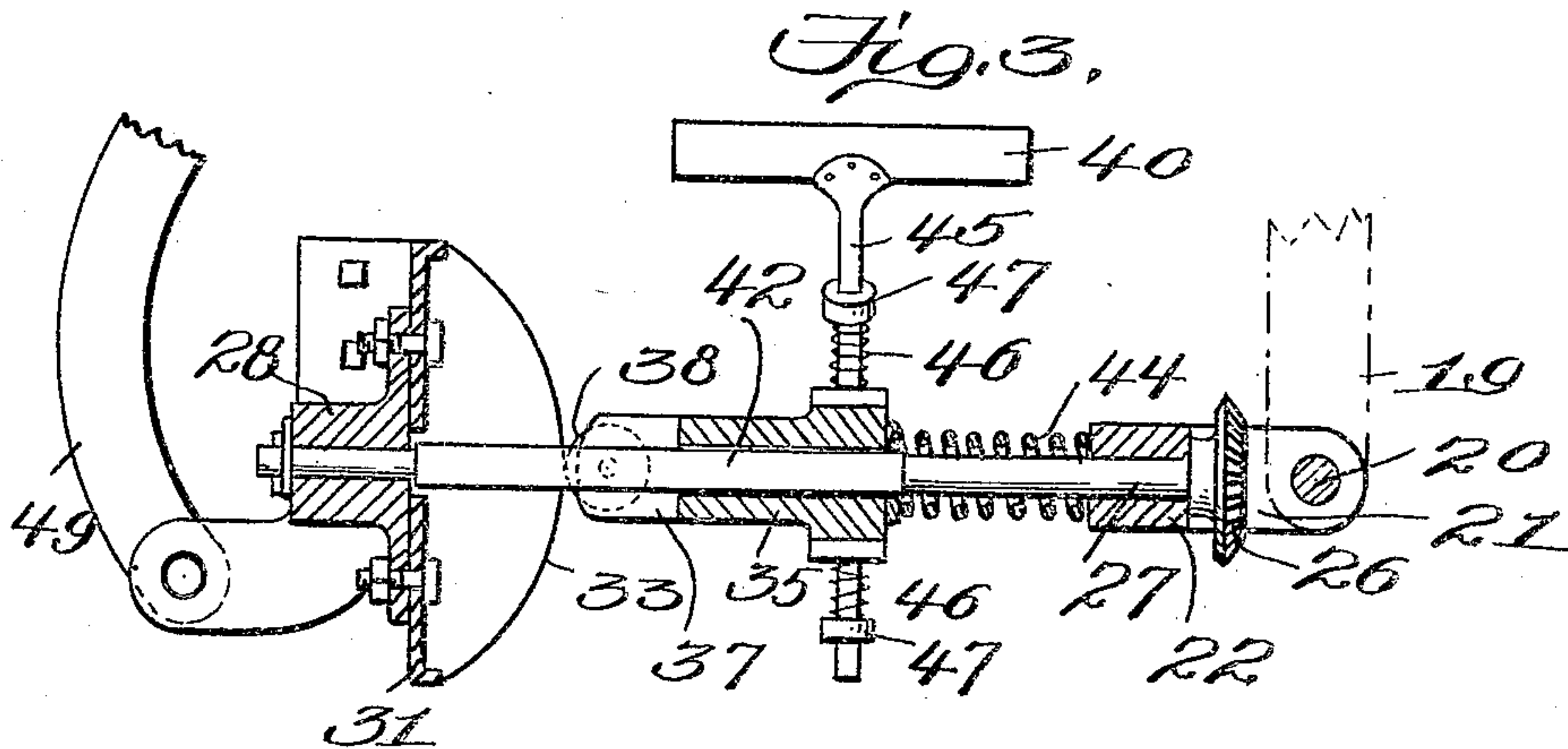
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Inventor
Ernest Kraatz
James L. Norris

E. KRAAK.
BEET BLOCKER.
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3 SHEETS—SHEET 2.



Witnesses:
[Signature]
[Signature]

Inventor
Ernest Kraak
[Signature]
James B. Norris
[Signature]

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3 SHEETS—SHEET 3.

Fig. 8.

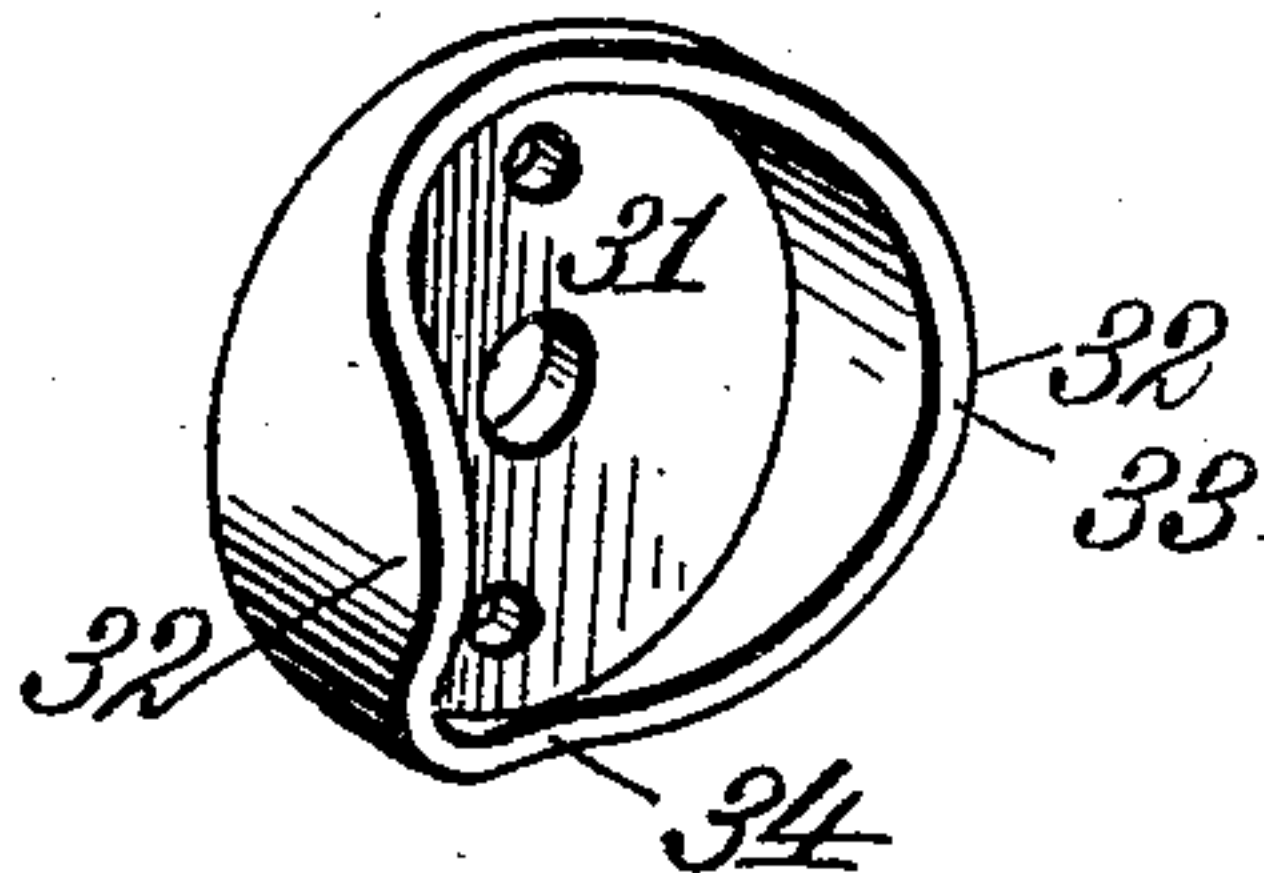


Fig. 10

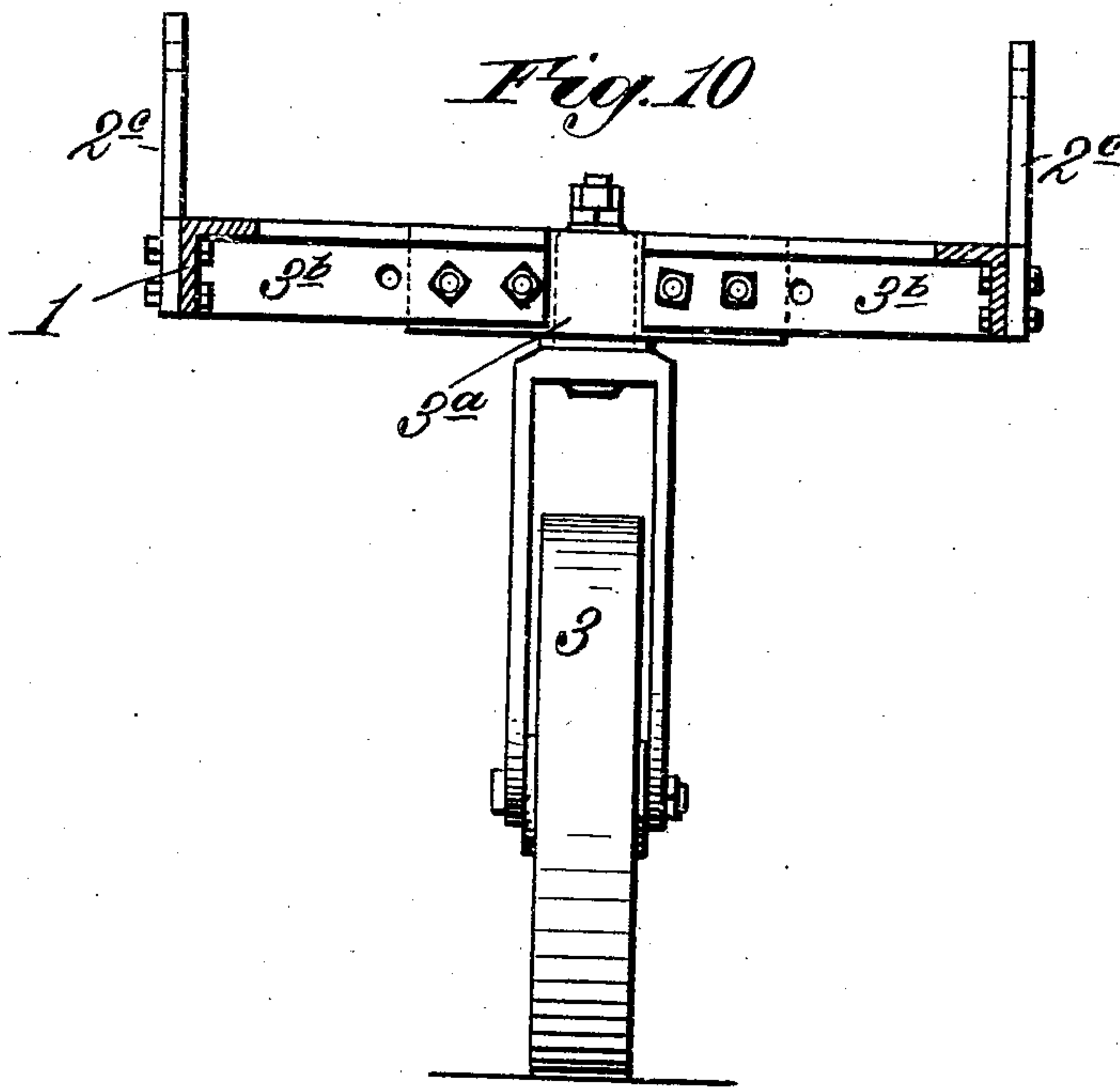
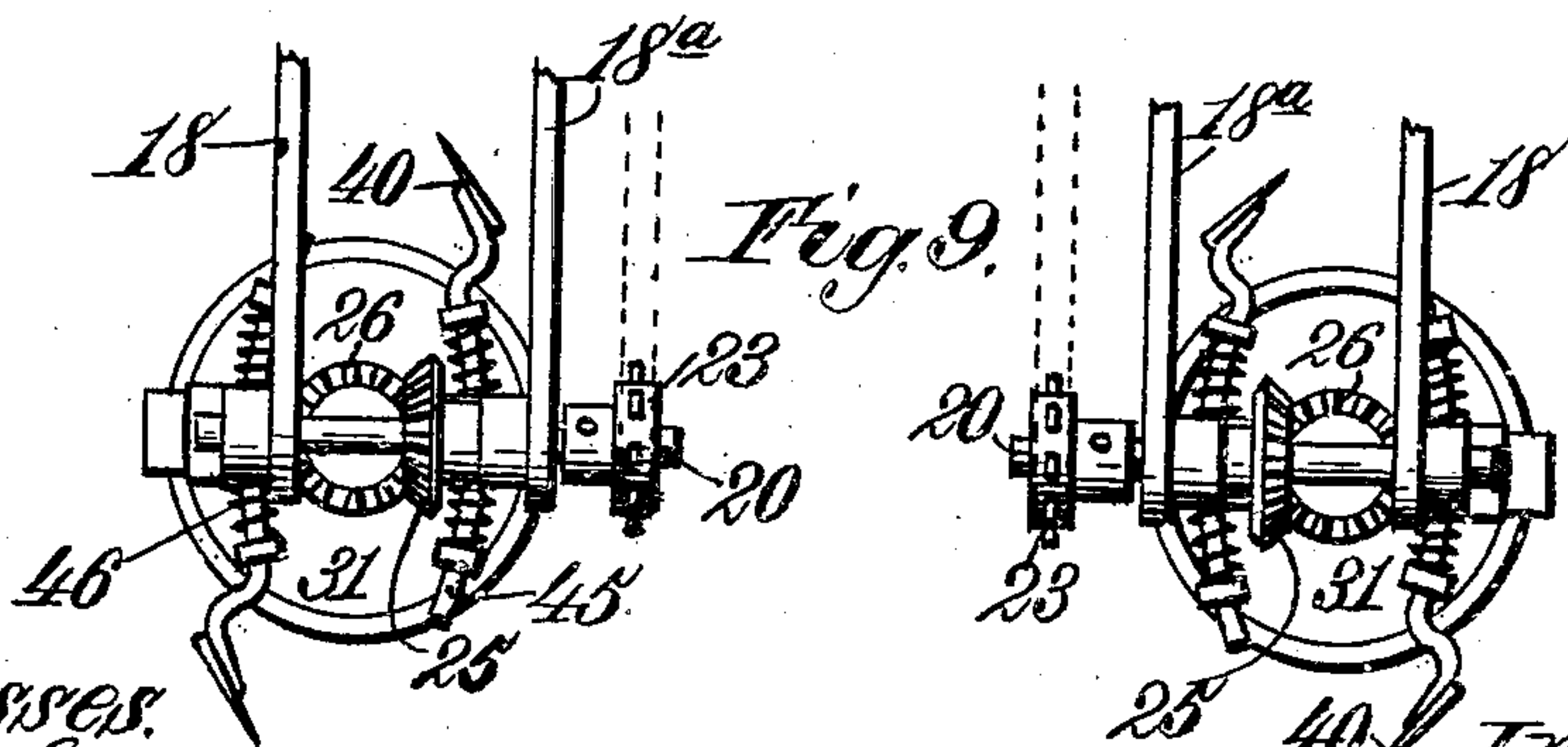


Fig. 9.



Witnesses.
Robert G. Smith.

[Signature]

Inventor.
Ernest Kraak.

By James L. Norris
[Signature]
Atty.

UNITED STATES PATENT OFFICE.

ERNEST KRAAK, OF FREMONT, OHIO.

BEET-BLOCKER.

939,715.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed June 19, 1908. Serial No. 439,403.

To all whom it may concern:

Be it known that I, ERNEST KRAAK, a citizen of the United States, residing at Fremont, in the county of Sandusky and State of Ohio, have invented new and useful Improvements in Beet-Blockers, of which the following is a specification.

This invention relates to beet blockers, and consists in the preferred construction and arrangement of parts which will be hereinafter more fully specified.

The primary object of the invention is to provide a beet blocker of a comparatively simple and effective construction embodying features of adjustment to modify the gage of the machine in accordance with rows of different widths, and to remove the beets where they are too thick by a positive transverse cut while the machine is moving forward, the machine being specially adapted for coöperation with sugar beets. In addition to the adjustment of the machine to accommodate different widths of rows, it is also organized to cut out more or less plants in a row as the user may decide and find necessary.

The machine is equipped with a dual cutting organization so that two rows of beets may be thinned or blocked simultaneously.

In the drawings: Figure 1 is a side elevation of a beet blocker embodying the features of the invention. Fig. 2 is a top plan view of the same. Fig. 3 is an enlarged longitudinal vertical section taken through the cutting mechanism and a portion of the coöperating elements. Fig. 4 is a horizontal section of the mechanism illustrated by Fig. 3. Fig. 5 is a transverse vertical section on the line 5-5, Fig. 1. Fig. 6 is a detail perspective view showing the parts of the mechanism. Fig. 7 is a detail transverse section of a portion of the operating mechanism. Fig. 8 is a detail perspective view of one of the cams for operating the cutting mechanism. Fig. 9 is a rear elevation of the lower rear portion of the machine looking toward the front of the latter and particularly showing the operating mechanism for the counter-shafts. Fig. 10 is a detail view of the front portion of the frame showing the adjusting means for the latter.

Similar characters of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates a rectangular frame or open body having a suitable draft

beam 2 secured to the front extremity by a yoke 2^a and an attaching bar 2^b movably held in brackets 2^c secured to the front ends of the side members of the frame. A guide wheel 3 is also connected to a bridge bar 3^a adjustably coupling the two members 3^b of the front end of the frame, said wheel occupying a central position with relation to the machine and preferably of the form of a caster wheel to facilitate changes in direction of movement of the machine. The frame 1 at the rear has depending extremities 4 provided with suitable bearings for a rotatable axle 5 having ground wheels 6 secured thereon to rotate therewith and spaced apart or having such gage as to travel outside of two rows of beets or to move in the troughs or spaces between said rows. The axle 5 and ground wheels 6 are provided with coöperating clutch means 5^a which insure rotation of the axle with the wheels when the machine is moving forward, but in backward movements the wheels 6 are permitted to turn freely on the axle without actuating the driving gear. The rear extremity of the frame 1 is also adjustably connected to a cross-bar 7 from which an upright 8 centrally extends and has a driver's seat 9 secured thereon. The cross-bar 7 has a plurality of openings 7^a to permit transverse reduction of the rear extremity of the frame.

Fixed on the drive-axle 5 is a gear wheel 10 held in mesh with a pinion 11 mounted on a power transmitting shaft 12 extending transversely across the frame 1 and disposed in suitable bearings 13 secured on the upper surface of the side members of the said frame. The power transmission shaft has sprocket wheels 14 shiftably mounted thereon on opposite sides of the pinion 11, and coacting with said wheels are clutches 15 also shiftable over elongated feathers 14^a on the shaft 12 and operable to throw the sprocket wheels in and out of gear through the medium of forwardly extending arms 16 connected to a transverse bar 17 which is movably disposed on the frame 1 in advance of the said power transmitting shaft, see Figs. 2 and 7. The clutches may be shifted by the feet of the operator to throw the cutter mechanism on either or both sides of the machine in or out of gear.

The clutches, sprocket wheels and hangers just described are adjustably held in place on the shaft 12 by set collars 12^a and 12^b

which are shiftable, and by adjusting this mechanism on the shaft 12 variations in the width of the frame may be accommodated without changing the gears 11 and 10.

5 Depending from the opposite extremities of the power transmitting shaft are outer shiftable hangers 18 which are free to swing forward and rearward on the shaft and each is connected at its lower extremity to cutter
10 operating mechanism. Each hanger 18 consists of a bar having a lower extremity 19, the extremities 19 supporting a counter-shaft 20 rotatably mounted in the arms 21 of a yoke 22 and the said counter-shaft has
15 thereon a sprocket wheel 23 in vertical alignment with one of the sprocket wheels 14 on the power transmitting shaft 12 and over the sprocket wheels 14 and 23 chain belts 24 are trained to drive the cutting mechanism
20 which is duplicated on opposite sides of the machine. Inner hangers 18^a are also shiftable mounted on and depend from the shaft 12 and engage the shaft 20 to effectively support the latter. It will be understood
25 that a counter-shaft 20 is disposed at each side of the machine to cooperate with the cutting mechanism which will be presently specified, and said counter-shafts are arranged as shown by Fig. 4. The outer and
30 inner hangers 18 and 18^a terminate at their lower extremities in forks 19, or, in other words, the said forks form a part of the hangers, the object in using two counter-shafts being to permit independent opera-
35 tion of the cutting devices at opposite sides of the machine. Within the arms 21 of the yoke 22 each counter-shaft 20 has a beveled pinion 25 keyed thereon and held in continual mesh with a beveled pinion 26 on the
40 rear end of a longitudinally extending cutter shaft 27 having bearing in the head of the yoke and projecting forwardly a suitable distance for a purpose which will be presently explained. The forward extrem-
45 ity of each shaft 27 has engagement with a bearing bracket 28 of the form shown by Fig. 6 and provided with a side attaching member 29 disposed in vertical position and to which an angular coupling arm 30 is se-
50 cured. The bearing bracket 28 has a cam head 31 secured thereto and provided with a rearwardly extending cam flange 32 presenting a bearing edge of compound curved contour formed with outwardly arranged
55 and regularly merging convex and concaved edge means 33 and 34, the said edge means being generally circular with the concaved portions or depressions therein at diametrically opposite points between the convex edge
60 portions, as clearly indicated by Figs. 3 and 4. The cutter shaft 27 extends through the cam head 31, and slidably mounted thereon is a cutter 35 provided with a cam engaging member or yoke 36 having angular arms 37
65 carrying antifrictional rollers 38 which are

held in contact with the cam edges of the head 31, as also shown by Figs. 3 and 4. The cutter 35 also has a rear cutter head 39, and therein are oppositely disposed cutters 40 arranged in reverse relation and movable
70 through arcuate openings 41 extending through the head 39 at equal distances from the center of the latter and whose curvature is defined from the center of the said latter head. The forward extremity of the shaft
75 27 is squared, as at 42, and the opening 43 through the center of the cutter is of similar contour so that the cutter is caused to rotate with the shaft, but free to move longitudinally thereon, and by this means the
80 reversely arranged cutting devices 40 are regularly thrown around into cutting position.

The cutter 35 as an entirety is pressed forward to insure engagement of the rollers
85 38 with the cam edge of the head 31 by a spring 44 surrounding the shaft 27 between the rear terminal of the cutter head 39 and the adjacent head of the yoke 22, the cutter 35 as an entirety moving rearwardly against
90 the resistance of the spring 44 when in engagement with the high portions or convex means 33 of the cam head 31, and pushed forward by said spring to set up an equally
95 forceful contact with the concave edge means 34 of the said cam head. This operation of the cutter as an entirety ensues without in the least interfering with its rotation and also takes place during the forward travel
100 of the machine with advantages in cutting out the beets, as will be presently specified.

The cutting devices 40 are carried by arcuate shanks or stems 45 which are adjustably mounted in the openings 41, the openings
105 and shanks being square so as to prevent the cutting devices from turning in the cutter head 39. The shanks or stems 45 have movement in the cutter head and on each shank or stem are springs 46 adjustable as to their
110 tension by set collars 47, said springs bearing at their opposite extremities against the set collars and adjacent portions of the cutter head and serve to cushion the shank so that when the cutting device 40 comes into con-
115 tact with an unresisting obstruction during the cutting operation it will yield without liability of breakage and after passing such obstruction will be immediately reset in operative position.

The arrangement of the cutting devices as
120 just explained is clearly shown by Fig. 5, and the advantage of the reverse disposition of said cutting devices is that each device becomes effective as a cutting means or will be
125 thrown around into cutting position with relation to the beet row at each half-revolution of the head 39.

The coupling member 30 connected to each bearing bracket 28 and in turn to the shaft
130 27 and parts cooperating therewith has a

lower forwardly extending angular foot 48 to which the lower curved extremity 49 of a shifting lever 50 is movably attached, the said lever 50 being fulcrumed on the frame 1 as at 51, and adjacent to the fulcrum of this lever a toothed segment 52 rises from the frame for coöperation with the usual spring-actuated catch dog or locking means 53. The lower curved extremity 49 of the lever 50 is attached to the adjacent hanger 18 by a connecting bar 54. By shifting the lever 50 rearwardly the hanger 18 will swing forwardly with the lower extremity 49 of the said lever and elevate the cutting mechanism out of operative relation with respect to the ground surface, and a reverse movement of the lever 50 will dispose the cutting mechanism in operative relation to the ground surface. It is also possible to adjust the lever 50 to such a degree as to operatively elevate the cutting mechanism to conform to the height of beet rows when the latter are above the surface on which the ground wheels 6 may travel, and it will be observed that the connecting bars 54 uniformly swing the hangers 18 and 18^a with the movement of the shifting levers 50. Another adjustment that may be adopted is to shift one lever 50 at one side of the machine to a different position from that occupied by the lever at the other side of the machine to compensate for inequalities of the ground surface, as for instance, a slope or when working on a hill-side.

In modifying the width of the machine, the side bars of the frame are moved closer to each other or spread apart within the maximum adjustment by releasing the bridge bar 3^a and the cross bar 7 and subsequently securing said bars to their coöperating frame bars or members, the sprocket wheels 14, clutches 15, hanger bars 18 and 18^a and set collars 12^a and 12^b being all correspondingly moved and carrying the cutting mechanism below therewith. It is obvious that when the hanger bars 18 and 18^a are shifted longitudinally on the shaft 12, the counter-shafts 20 as well as the cutting mechanism driven by said shafts and suspended beneath the machine frame are simultaneously moved or shifted a distance corresponding to the movement or adjustment of the side beams of the frame. By this means the machine may be adjusted to accommodate beet rows of different widths without detaching any of the driving devices for the cutting mechanism.

The machine is propelled forward with the cutting devices 40 arranged to engage the beet rows, and when the sprocket wheels 14 are thrown into operative relation to the shaft 12, the counter-shafts 20 are actuated and revolve the shafts 27. As hereinbefore indicated, the cutters 30 rotate with the shaft and cause the cutting devices to block out or sever the tops of the beet plants in an in-

ward direction, and while the machine is traveling forward the cutters slide backward a certain distance owing to the use of the cam means and in view of the forward movement of the machine as an entirety the cutting devices will be caused to alternately cut squarely through the plants at intervals and skip or pass over a portion of the plants while the cutting devices are in a horizontal position. This operation ensues in a similar manner on opposite sides of the machine and the beet rows are thus expeditiously blocked or thinned out at intervals.

Having thus described the invention, what is claimed as new, is:

1. In a beet blocker, a frame, a drive axle having ground wheels, a power transmitting shaft geared to the drive axle, cutting mechanism on opposite sides of the machine operated from the power transmitting shaft and consisting of cutters carrying reversely arranged cutting devices, shafts on which the cutters are longitudinally movable, cam means for moving the cutters longitudinally on their shafts during the progress of the machine, and means for adjusting the cutting mechanism.

2. In a beet blocker, a frame, a power transmitting shaft, means for operating said shaft, and cutting mechanism connected to said shaft and having longitudinal movement automatically imparted thereto during the progress of the machine.

3. In a beet blocker, a frame, cutting mechanism supported by the frame and including rotatable cutters, and means for operating the cutting mechanism and also for automatically moving the latter longitudinally during the progress of the machine.

4. In a beet blocker, a frame, ground engaging devices supporting the frame, cutting mechanism at opposite sides of the frame including longitudinally extending rotatable shafts, means operatively connecting the mechanism to the frame, means for actuating said shafts, cutting devices including cutters rotatably mounted on and longitudinally movable over the shafts, resilient means for holding the cutters normally in a forward position, and cam means with which portions of the cutting devices are held in continual engagement.

5. In a beet blocker, a frame adjustable to various widths, cutting mechanism at opposite sides of and suspended from the frame and including rotatable cutters, and mechanism for operating said cutting mechanism and including a counter-shaft for each cutting mechanism at the opposite sides of the frame, the said operating mechanism including the counter-shafts being adjustable to compensate for the adjustment of the frame.

6. In a beet blocker, a frame, cutting mechanism at opposite sides of and suspended from the frame and including rotatable

cutters having longitudinal movement automatically imparted thereto at intervals during the progress of the machine, the cutters operating to block the beets squarely in a transverse direction, and means for operating the said cutting mechanism.

7. In a beet blocker, a frame, cutting mechanism at opposite sides of the frame including rotatable cutters having longitudinal movement imparted thereto at intervals during the progress of the machine, means for adjusting the cutters at varying elevations on opposite sides of the machine, and means for operating the cutters.

8. In a beet blocker, a frame, cutting mechanism at opposite sides of the frame and including rotatable cutters having longitudinal movement automatically imparted thereto at intervals, the cutters being moved longitudinally during the travel of the machine in a forward direction, and means for operating the said cutting mechanism.

9. In a beet blocker, a frame, cutting mechanism held by the frame and including rotatable cutters comprising yielding members, the cutters being automatically moved longitudinally at regular intervals during the progress of the machine, and means for operating the said cutting mechanism.

10. In a beet blocker, a frame, cutting

mechanism supported by the frame and including rotatable double cutters, and having longitudinal movement automatically imparted thereto at intervals each cutter operating to block the beets at every half-revolution of the cutting mechanism, and means for operating the said cutting mechanism.

11. In a beet blocker, a frame, cutting mechanism at opposite sides of the frame including rotatable cutters which have a longitudinal movement imparted thereto as the machine progresses, means for adjusting the cutters at varying elevations on opposite sides of the machine, means for operating the cutters, and means for rendering either one or both of the cutters inactive.

12. In a beet blocker, a frame, cutting mechanism held by the frame and including rotatable cutters, the cutters being movably supported and automatically shifted longitudinally at regular intervals during the progress of the machine, and means for operating the cutting mechanism.

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

ERNEST KRAAK.

Witnesses:

T. L. PARKER,

F. R. FRONIZER.