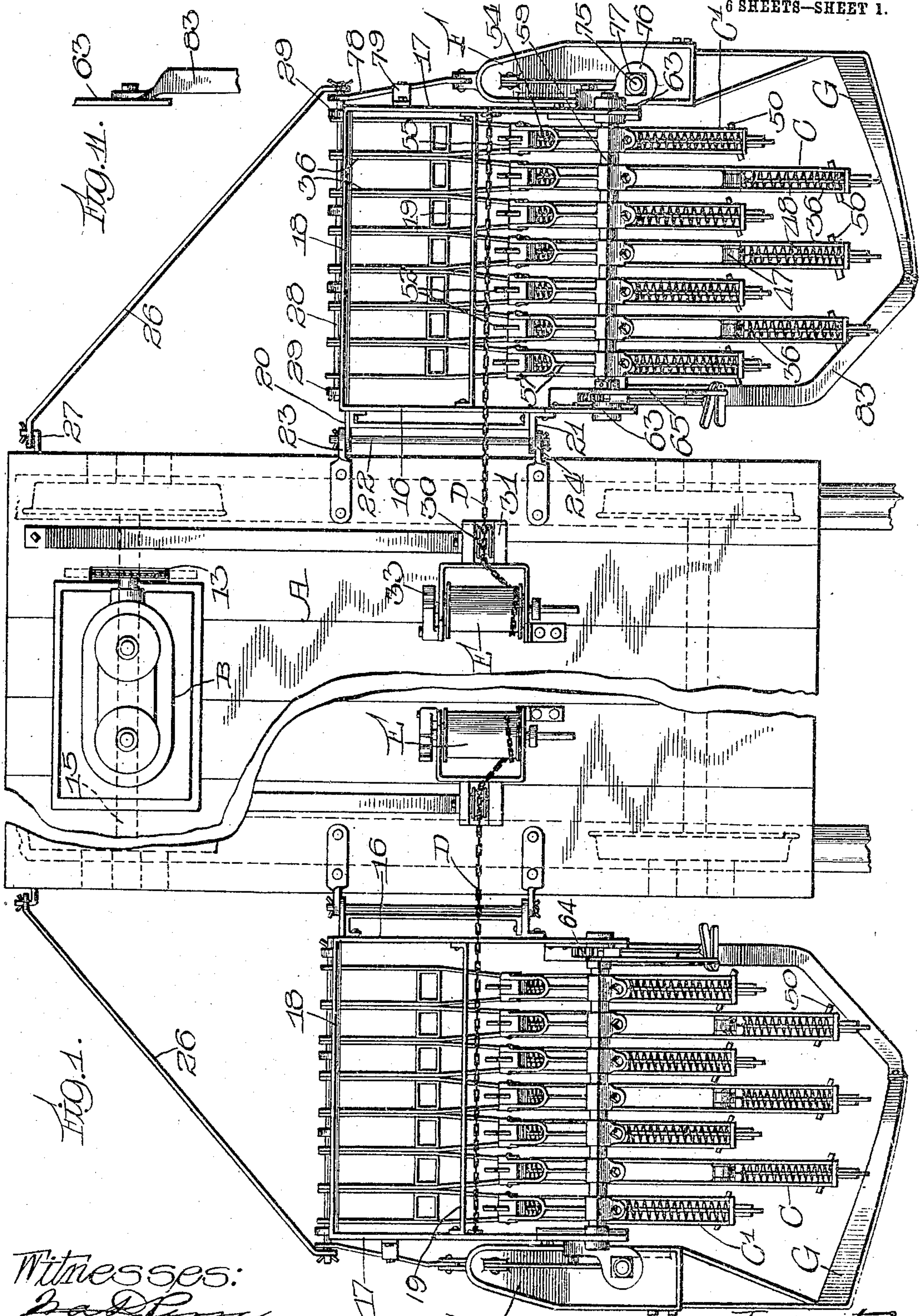


E. LAAS & R. WHITTY.
RAILWAY WEED CUTTER.
APPLICATION FILED DEC. 15, 1908.

952,204.

Patented Mar. 15, 1910.

6 SHEETS—SHEET 1.



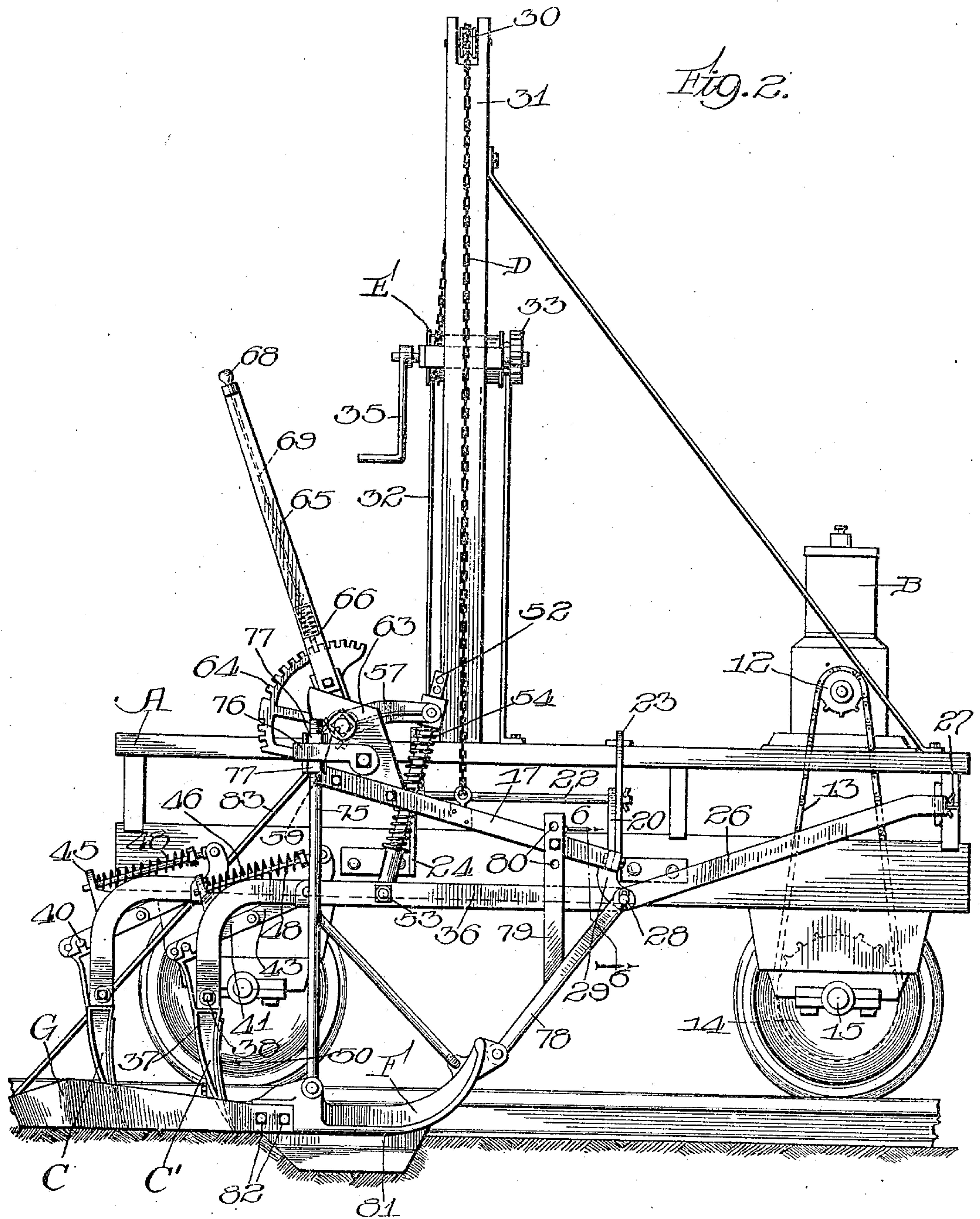
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6 SHEETS—SHEET 2.

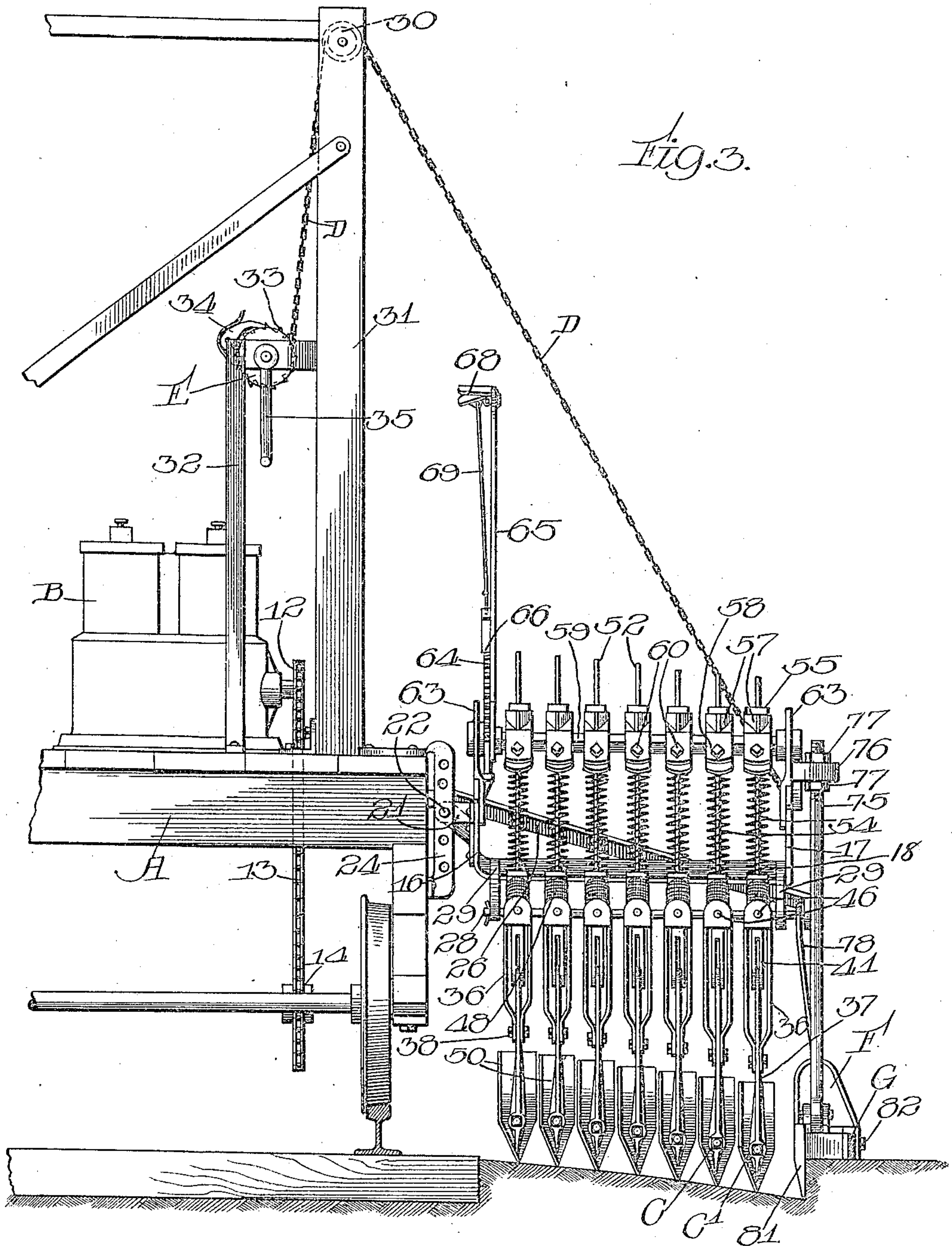


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6 SHEETS—SHEET 3.



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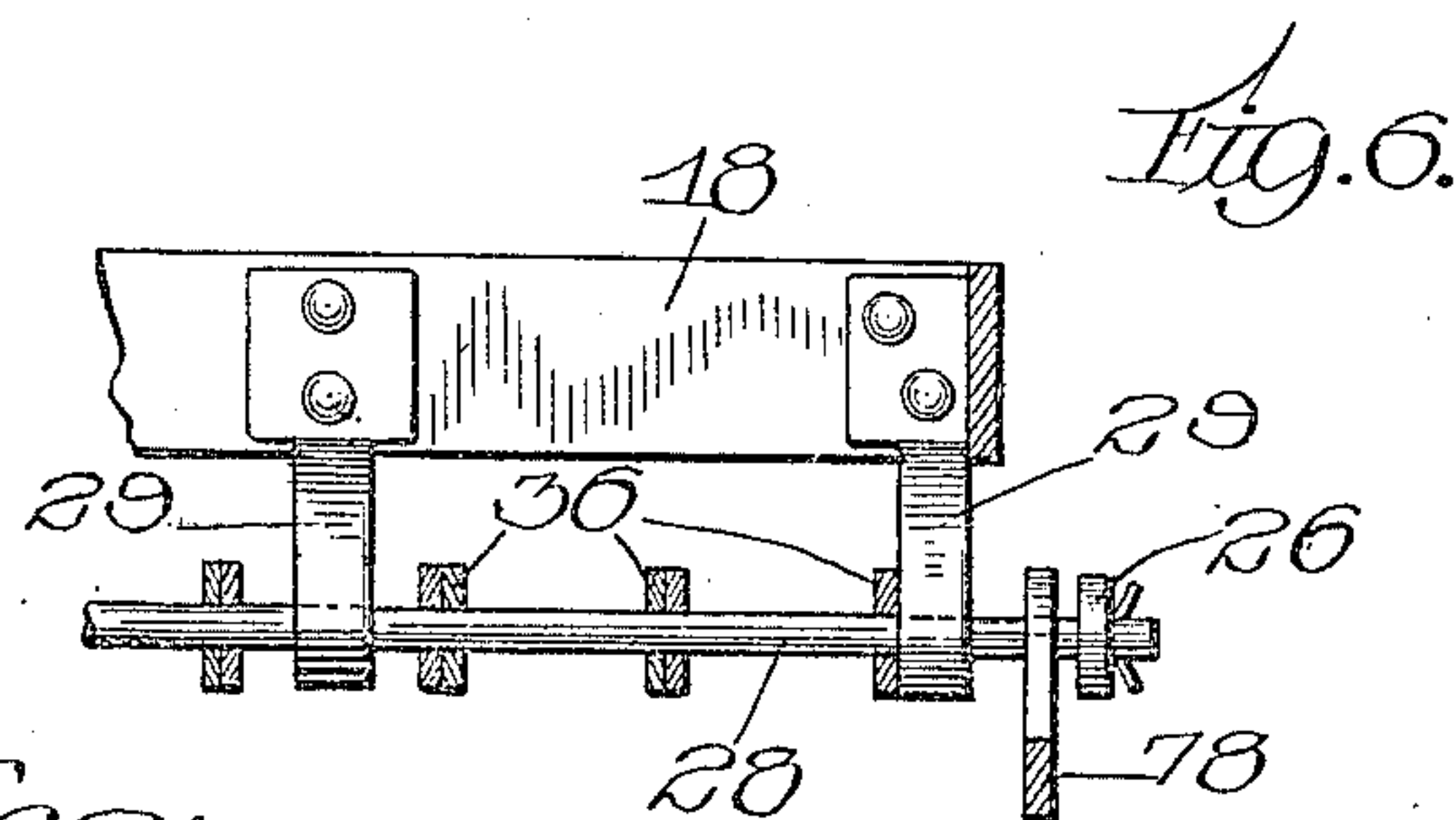
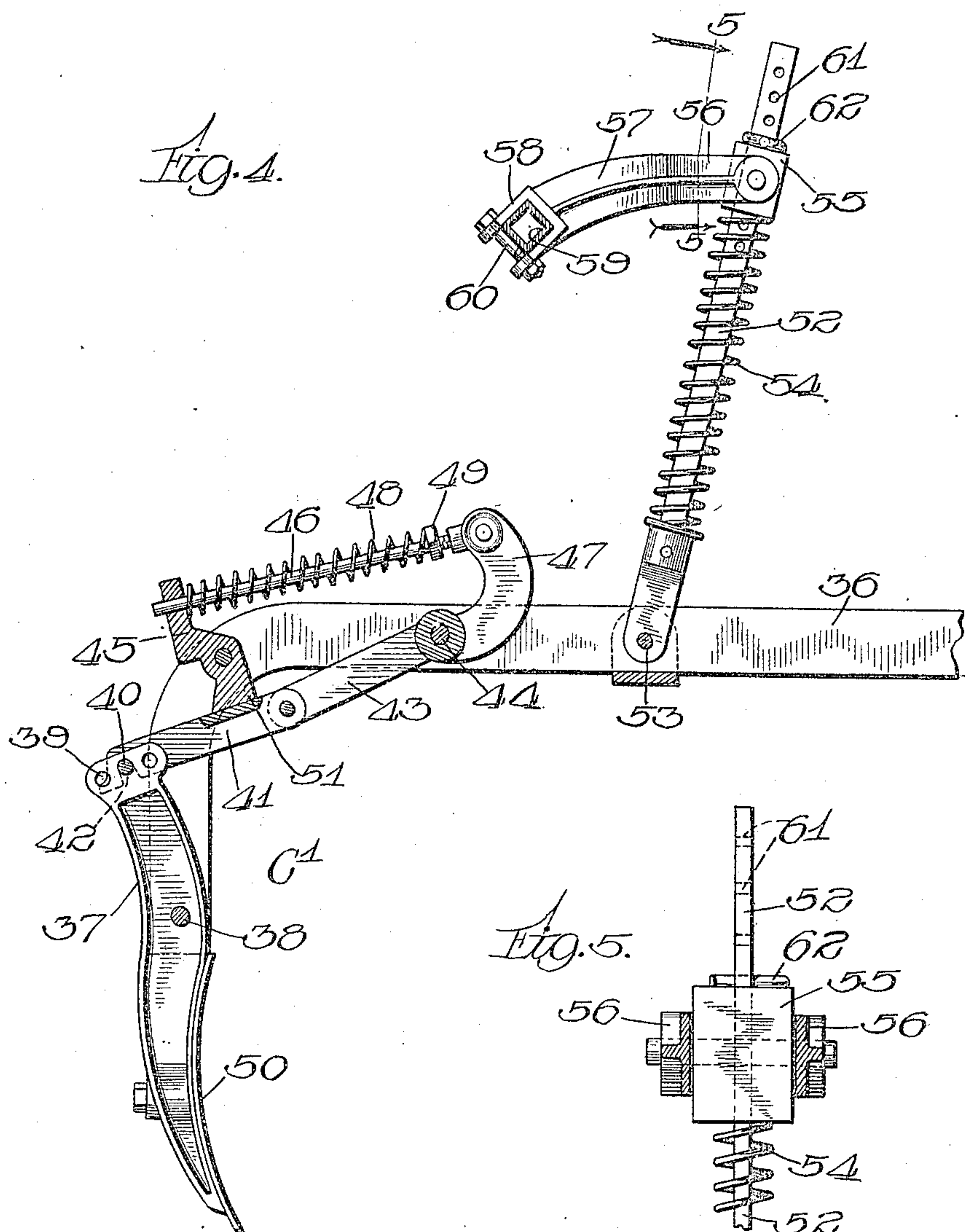
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6 SHEETS—SHEET 4.



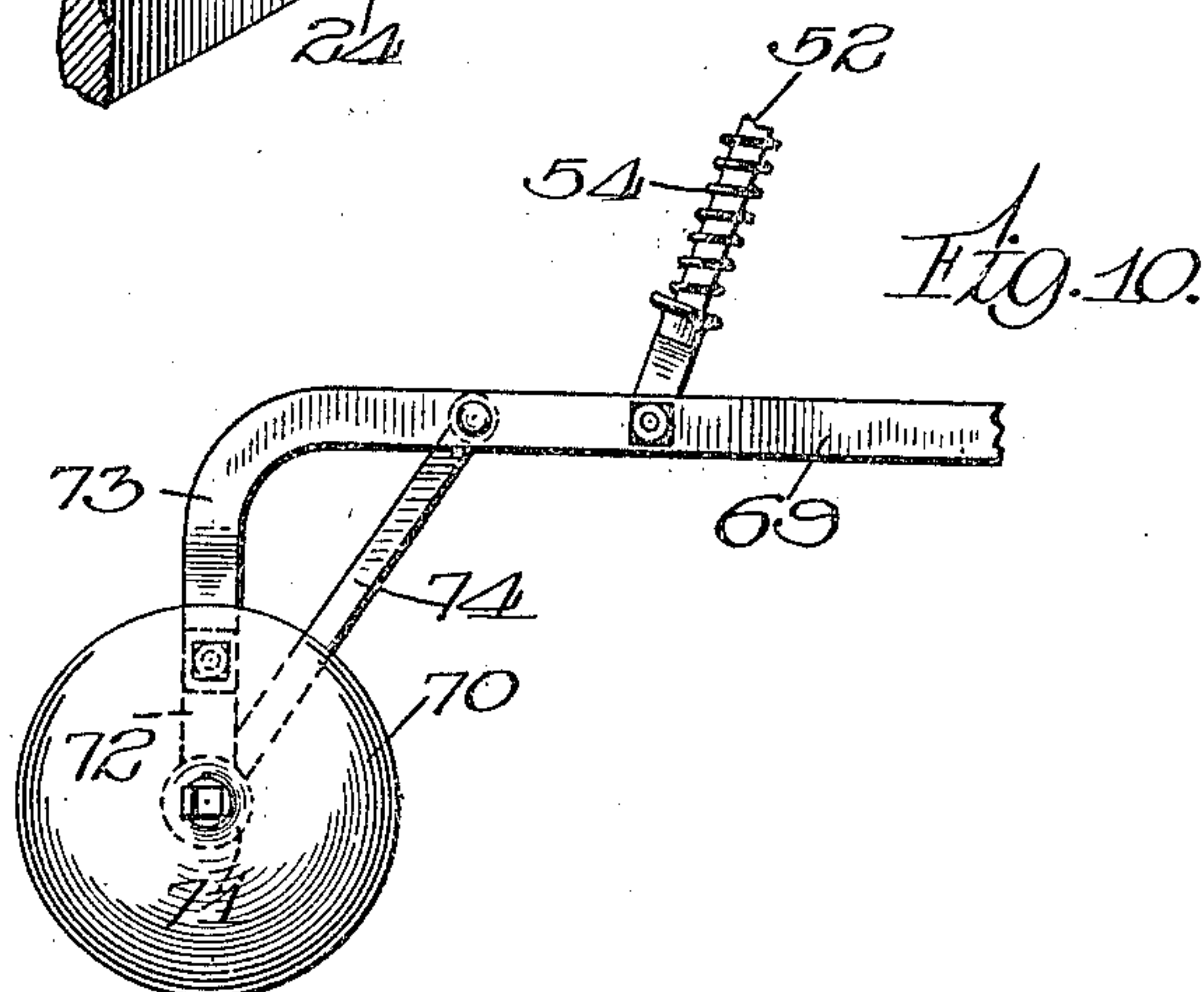
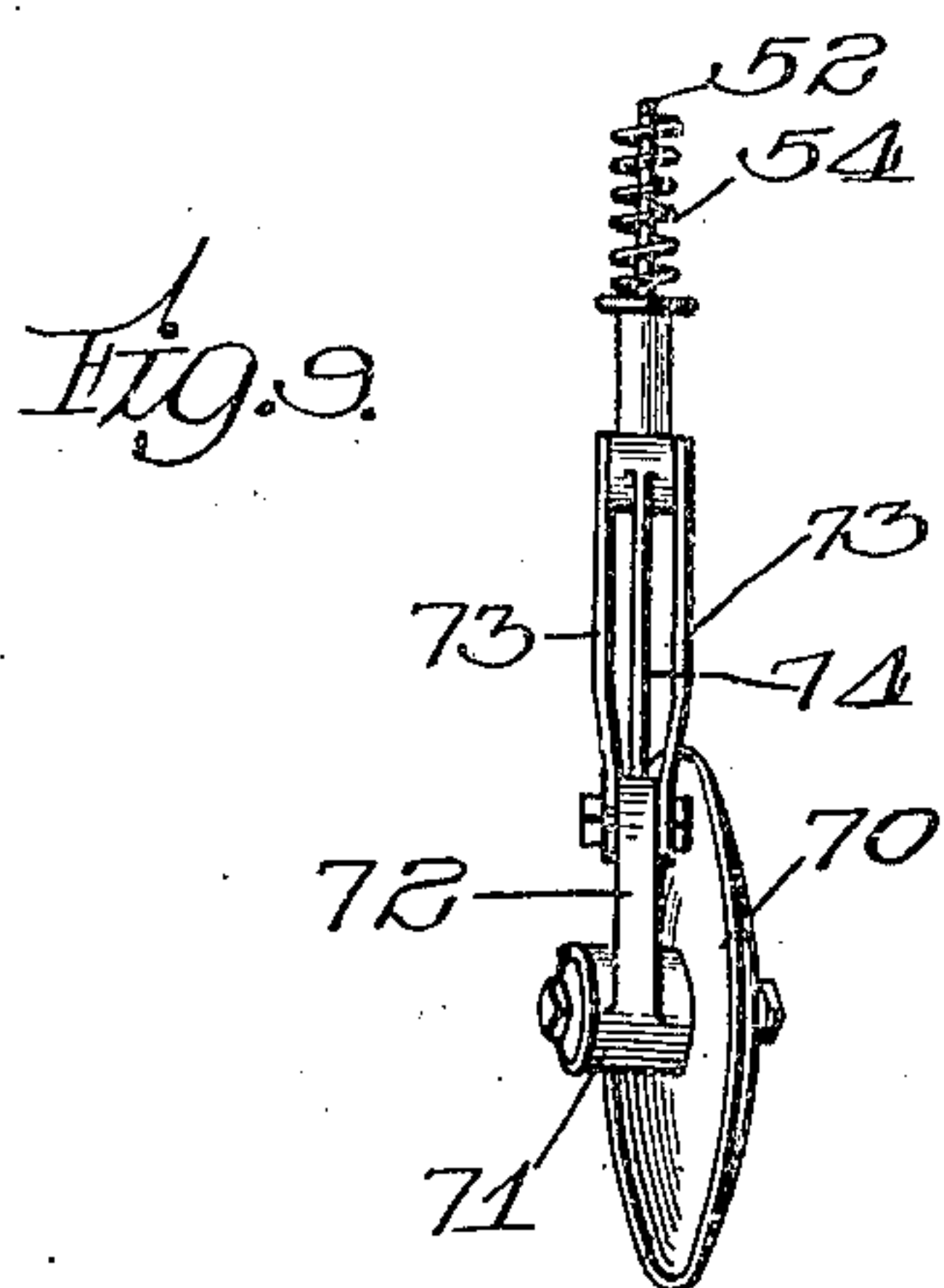
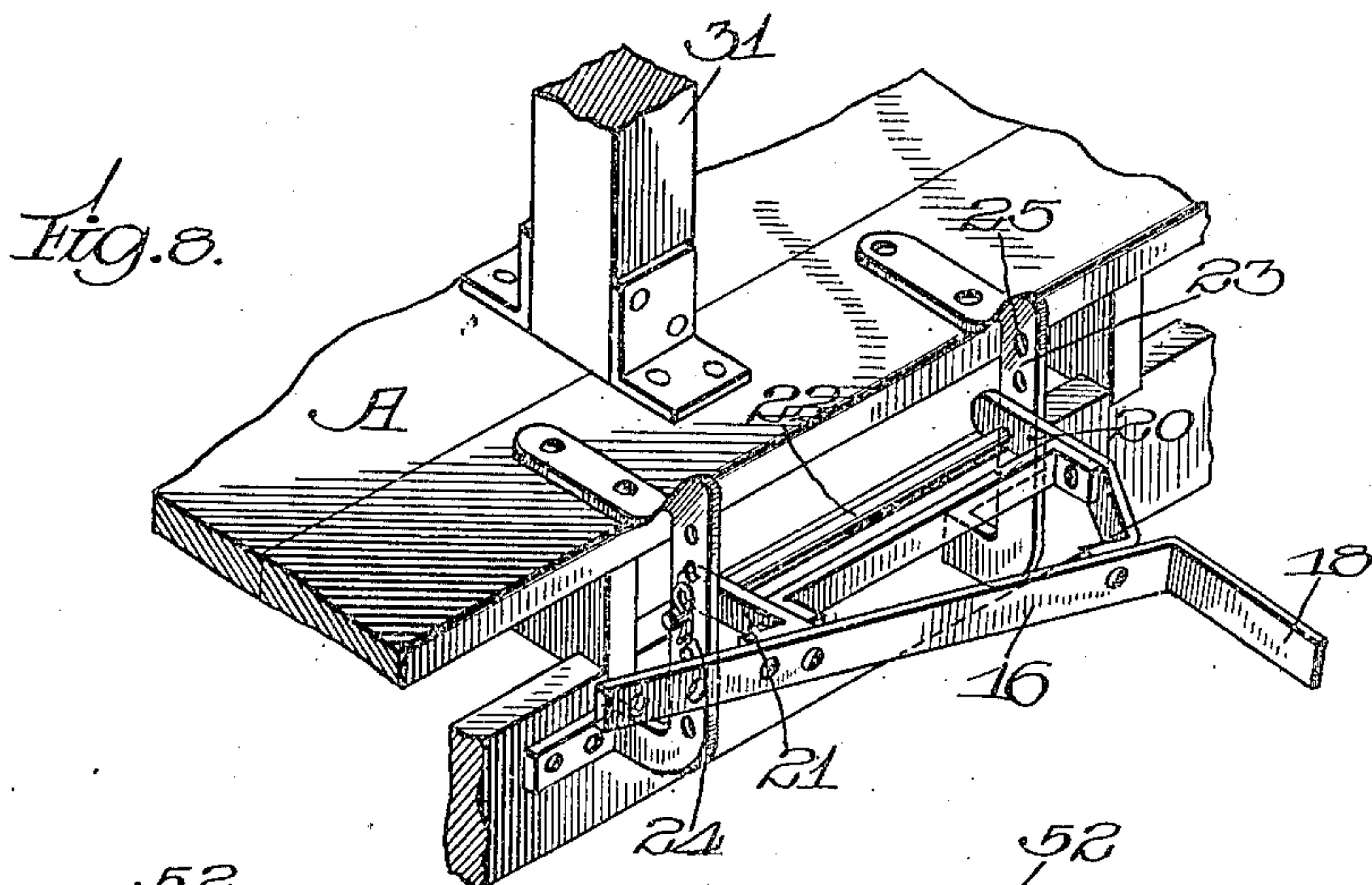
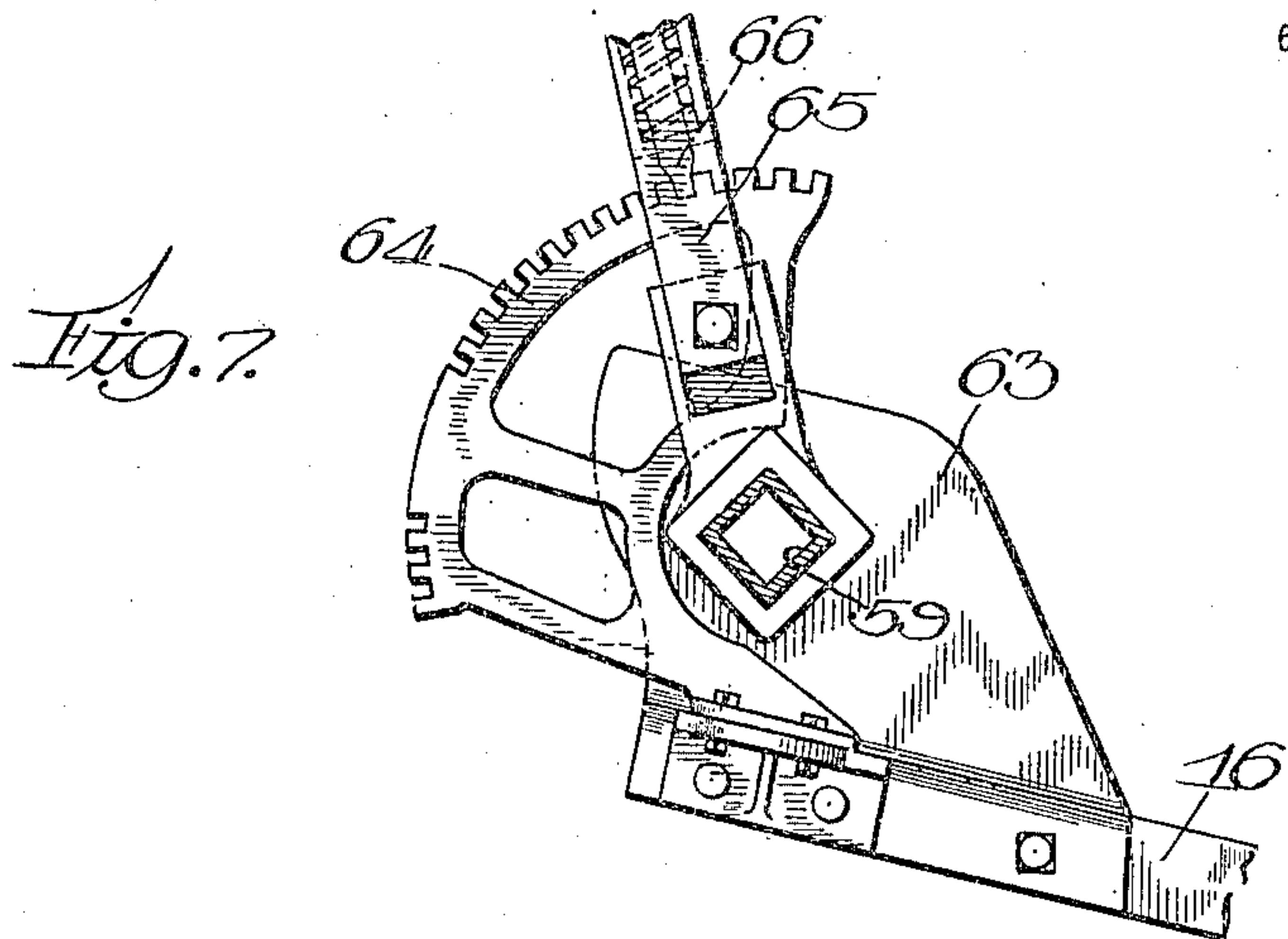
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RAILWAY WEED CUTTER.
APPLICATION FILED DEC. 15, 1908.

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6 SHEETS—SHEET 5.



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APPLICATION FILED DEC. 15, 1908.

952,204.

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6 SHEETS—SHEET 6.

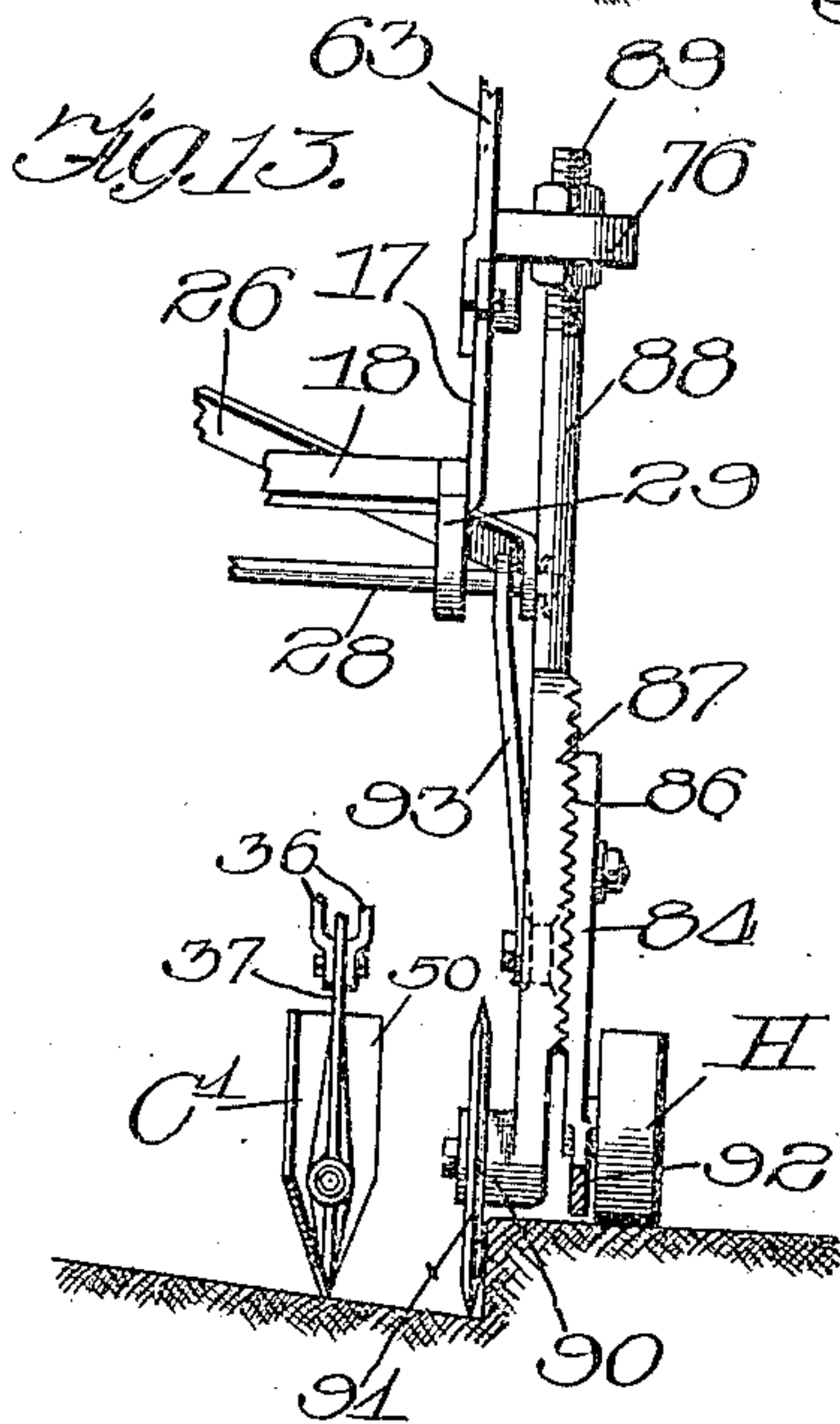
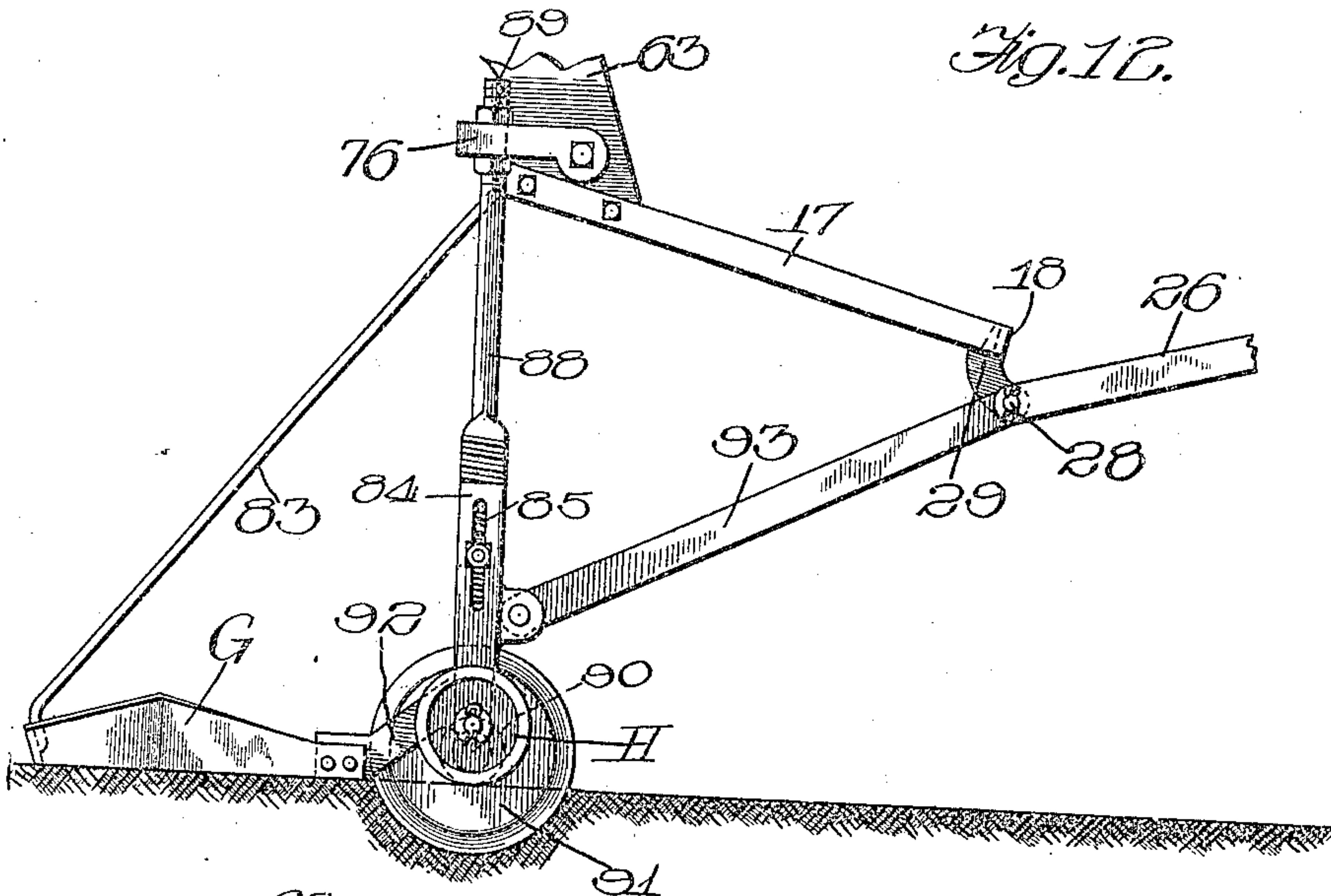


Fig. 14.

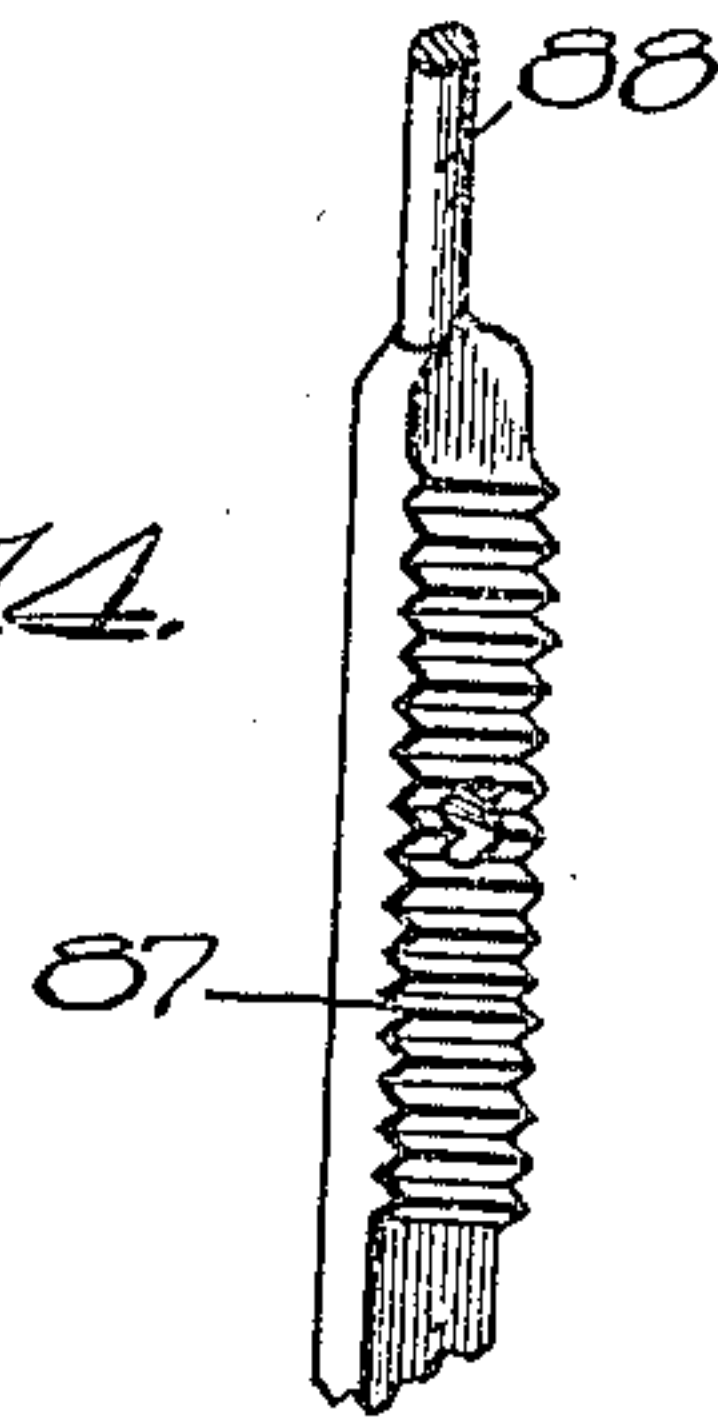
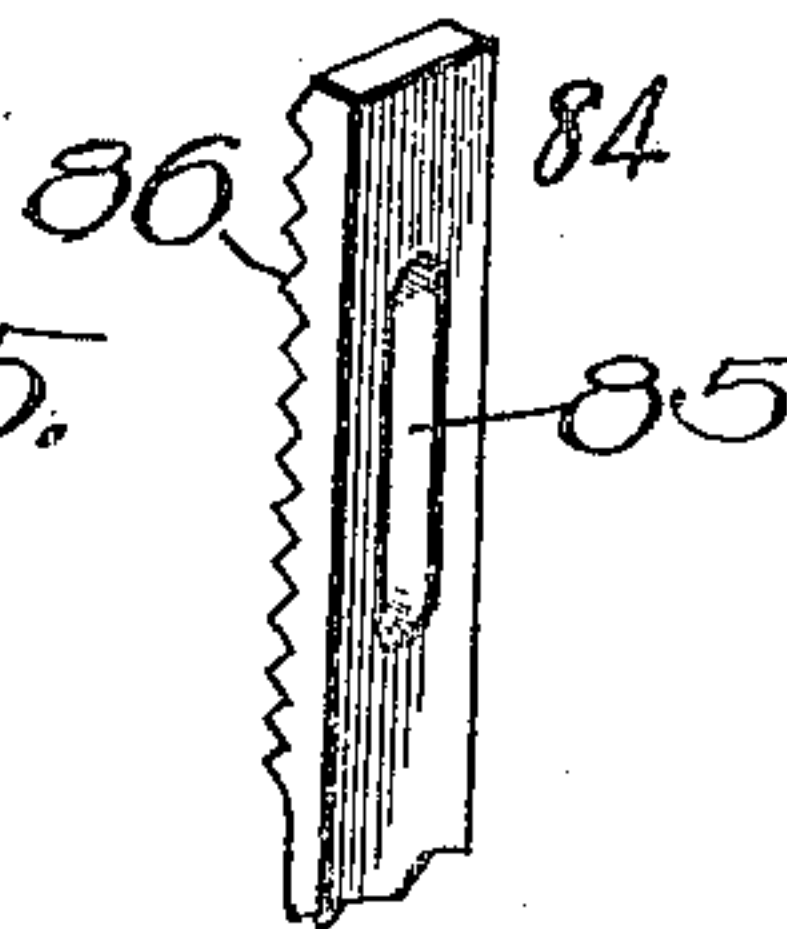


Fig. 15.



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UNITED STATES PATENT OFFICE.

EDWARD LAAS, OF CHICAGO, ILLINOIS, AND ROBERT WHITTY, OF HORICON,
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RAILWAY WEED-CUTTER.

952,204.

Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed December 15, 1908. Serial No. 467,686.

To all whom it may concern:

Be it known that we, EDWARD LAAS and ROBERT WHITTY, citizens of the United States, residing, respectively, at Chicago, in the county of Cook and State of Illinois, and at Horicon, in the county of Dodge and State of Wisconsin, have invented certain new and useful Improvements in Railway Weed-Cutters, of which the following is a specification.

Our invention relates to railway weed cutters and has for its object to provide apparatus for cutting the weeds and leveling and dressing the ground or shoulder along the side of a railway track, which will efficiently cut and uproot the weeds and also smooth the ballast along one or both sides of the track; and which may be carried upon and conveniently operated from a railway flat car, adjusted to work on shoulders of different slopes and contours, and in which the weed cutting devices may be quickly and easily raised to avoid obstacles.

More particularly, the invention has for its object to provide a car, either self-propelled or not, with a swinging frame which may be lowered and raised, and which carries a plurality of spring pressed, cutting devices operating to a certain extent independently of each other, so that the inequalities of the shoulder being operated upon will not affect the operation of the cutting apparatus as a whole nor throw the parts of it not in contact with such construction out of their working positions.

The invention has for a further object to make the several, separate cutting devices adjustable with respect to the frame, or equivalent device on which they are mounted, so as to conform the cutting apparatus to shoulders of different slope and contour.

A further object of the invention is to provide the cutting apparatus with a transverse leveler and cutter in the general form of a mold-board, which extends around and behind the cutter so as to cut down any weeds missed by the former and to smooth up the shoulder.

A further object is to provide a support for the outer edge of the frame carrying the cutters which will allow the frame, as a whole, to follow inequalities in the ground being operated upon and to associate with the same a substantially vertical cutting blade for cutting an even grass line.

A further object of the invention is to arrange the cutting means employed, of one kind or another, so that the material of the shoulder is worked upwardly and inwardly toward the ties, so as to thereby repair the washing away of the ballast from the ties or other damage to the shoulder caused by the action of the elements.

The invention has for further objects such other new and improved constructions in railway weed cutters as will be described in the following specification and particularly set forth in the claims appended thereto.

The invention is illustrated in a preferred embodiment in the accompanying drawings, in which—

Figure 1 is a plan view of the weed cutting machine with the center part of the car broken out for the sake of compactness in illustration. Fig. 2 is a side elevation of the machine. Fig. 3 is a partial rear elevation showing the cutting apparatus on one side of the car. Fig. 4 is a sectional elevation illustrating one form of cutting device. Fig. 5 is a vertical, sectional view on the line 5—5 of Fig. 4, looking in the direction of the arrows. Fig. 6 is a similar view on the line 6—6 of Fig. 2, looking in the direction of the arrows. Fig. 7 is a detail elevation of the quadrant of the operating handle. Fig. 8 is a detail in perspective of the pivotal attachment between the frame and the car. Figs. 9 and 10 are edge and side elevations, respectively, of a modified form of cutter. Fig. 11 is a detail of one of the connections between the frame carrying the shoe and the frame upon which the cutting devices are mounted. Fig. 12 is a side elevation of a modified form of sod cutter. Fig. 13 is a rear elevation of the same; and Figs. 14 and 15 are details in perspective of parts of this device.

Referring to the drawings, A represents a railway flat car provided with a motor B, of any desired type, which propels the car. Motor B is shown as provided with a drive wheel 12, (see Fig. 3) over which is a belt 13 extending around a sprocket 14 on the front axle 15 of the car.

The letters C, C' represent cutting devices, these devices being in all respects the same, except that the cutters C are longer than the cutters C'. These cutters are preferably arranged in staggered relation, as

shown and are mounted in frames on one or both sides of the car. The parts as shown are the same on both sides of the car and description will, therefore, be given only of one set of apparatus.

The frame on which the cutters are mounted consists of the side pieces 16 and 17 and the front bar 18, the frame being reinforced by the strut 19. From the side bar 16 extend the brackets 20, 21, which are perforated for the pivot pin 22, which pivots the frame to the straps 23, 24 on the car (Fig. 8). The straps 23 and 24 are provided each with a series of perforations 25, so that the vertical position of the frame on the car may be varied in accordance with the slope of the shoulder. The frame is braced by a connecting rod 26, pivoted to a stanchion 27 on the forward end of the car and connected at the other end to a shaft 28, supported from brackets 29 on the forward member 18 of the frame, upon which rod turn the forward ends of the cutting devices, as will be described. The frame may be raised and lowered by means of a chain D, which is attached to the side bar 17 and extends over a pulley 30 on a post 31 and is wound upon a winch E mounted in a frame 32 and provided with the usual ratchet 33 and spring pressed pawl 34. The winch has a handle 35. Any suitable machinery might be employed for operating the winch.

Upon the swinging frame we mount a plurality of cutting devices arranged transversely and preferably staggered, and which are capable of movement independent of each other and preferably also capable of separate adjustment. This arrangement gives a flexibility to our device which has been wanting in weed cutting devices which have been heretofore designed and which, in such cases, has prevented the successful operation of the same. Preferably these cutting devices are pivoted to the frame and are forced into the ground by spring pressure. One form of cutting device is illustrated in detail in Figs. 1, 3, 4 and 5. This cutting device consists of a forked frame 36 pivoted at its forward end on shaft 28 and curved over at the rear end to receive the blade-carrying member 37, which is pivoted between the forks at 38. The upper end of member 37 is provided with three perforations 39, through one of which, according to the adjustment desired, extends a pin 40 which is engaged by the forked end of a link 41 provided for that purpose with a slot 42, which link connects with a lever 43 pivoted within the frame 36 at 44. A bracket 45 slidably supports a rod 46, the other end of which is pivoted to an extension 47 of lever 43. A spring 48 surrounds rod 46 and is adjusted by tension nut 49. This arrangement allows the blade or shovel carrying member, which is here shown as provided

with the blade or shovel 50, to trip when encountering obstacles, the spring 48, which in such case is put under tension, serving to carry the member 37 back to its normal position. The lower part 51 of the bracket 45 keeps the pivotal point between link 41 and lever 43 off the line of pivotal points 40, 44. Another form of device might be employed other than the self-tripping device shown. The frame 36 is supported by a rod 52 pivoted to the frame 36 at 53 and carrying a coiled spring 54. On the rod 52 is a sliding block 55 pivoted to which is the forked end 56 of a lever 57, the other end of which has the squared fork 58 which extends around a squared shaft 59, being clamped thereto by a bolt 60. Rod 52 is provided with a series of perforations 61. The block 55 may be forced down against the spring to give any desired adjustment of the cutting device as a whole and held in position by means of a cotter-pin 62, extending through one or other of these perforations.

It will be understood that all of the cutting devices are substantially alike, except that the frames of alternate devices are preferably of different lengths, as shown. All of the cutters are connected, as above described, to the squared shaft 59, this shaft having rounded parts at its ends and turning in bearings in plates 63 bolted to the side bars 16 and 17 of the swinging frame.

In order that the position of all of the cutters may be shifted, so as to lift them from the ground or carry them deeper into the ground, for example, we provide the shaft 59 with operating means by which it may be rotated. This apparatus is shown in detail in Figs. 2 and 7. On the side frame 16 is bolted a toothed quadrant 64. An operating lever 65 is rigidly secured to the squared shaft 59. The operating lever is provided with the usual spring pressed dog 66, which may be withdrawn from engagement with the teeth of the quadrant by a rod 67 operated by the hand grip 68. By throwing the operating lever 65 forward, levers 57 are rocked, and the cutting devices lowered or forced into the ground. A reverse movement will raise the cutting devices.

The shovels or cutting blades 50 are preferably set at an inclination, as shown in Fig. 1, so that they tend to carry the material of the shoulder inwardly and upwardly toward the ties, thus replacing the soil or gravel washed away by rain and the like.

In Figs. 9 and 10 we have substituted disks for the shovels shown in the preceding figures. The frame 69, for carrying such a disk, may be substantially the same as the frames of the other form of cutting device. The disk 70 is pivoted to a hub 71 having an extension 72 which is bolted be-

tween the forked end 73 of the frame. The frame may be reinforced by the diagonal brace 74. Preferably the disks, as shown, are set at an angle, so as to work the soil up the shoulder.

We do not limit ourselves to the particular form of cutting device described above, neither as to the particular arrangements for mounting upon the swinging frame nor as to the particular sort of cutter or cutting blade employed.

We preferably provide means for supporting the outer edge of the swinging frame and preferably associate with such means a device for cutting a straight grass line. Ordinarily a shoulder along a railroad track will have something of the conformation shown in Fig. 3, although the contour of the ground will, of course, differ considerably. In one construction the cutting apparatus is provided with a shoe, which will rest upon the grass or soil outside of the shoulder proper. This takes the strain off the chain D and allows the cutting apparatus to adjust itself, as a whole, to inequalities in the ground. The shoe, shown at F, is attached by a vertically adjustable frame to the swinging frame carrying the cutting devices. This adjustable frame comprises the upright rod 75, the upper end of which is screw-threaded and is held in position on a bracket 76 on the outer plate 63 by the set nuts 77; and the link 78 pivoted to the forward end of the shoe and to the shaft 28, this connection being reinforced by the brace 79, which has the series of perforations 80, so as to be adjustably connected with the side piece 17 of the swinging frame. The shoe is preferably provided with the substantially vertical blade 81, which cuts along the edge of the grass line. The vertical position of the shoe, and consequently of the blade 81 relative to the position of the swinging frame, may be adjusted in accordance with the height of the ground on which the shoe runs above the shoulder.

We also prefer to provide the cutting apparatus with a substantially transverse cutter something like a mold-board, which follows along after the cutting devices described, smooths off the ground and cuts down any weeds which may have slipped in between the cutting devices. This transverse cutter G may be connected to the shore, as by the bolts 82, and curved around behind the cutters, as shown in Figs. 1 and 2. The inner end of the transverse cutter is preferably connected to the swinging frame by means of a strap 83, pivotally connected to the inner one of plates 63 (Fig. 11). The shape and angular position of the transverse cutter are such that it carries the loose soil torn up by the cutting devices up the shoulder toward the ties. The side member of

this device prevents the soil torn up by the outer one of the cutting devices from spilling over on the grass beyond the grass line.

Figs. 12 to 15 inclusive illustrate a modified form of device for supporting the frame carrying the cutters and for cutting an even sod line. The shoe F is replaced by a caster wheel H mounted on a plate 84 slotted at 85 and notched at 86, so as to be adjustable on the notched end 87 of the standard 88, the threaded end 89 of which is adjustably connected with the bracket 76 as is rod 75 in the other construction. The standard 88 has a hub 90 on which turns a cutting disk 91, which cuts a straight sod line outside of the weed cutting devices C, C'. The mold-board G may be connected to standard 88 by the strap 92. The brace 93 may be provided for the standard, pivoted to the standard above the hub and turning on shaft 28. This arrangement allows the adjustment, generally speaking, of the frame carrying the sod cutter, caster wheel and mold board, this being done by the vertical adjustment of standard 88 in bracket 76; and also an adjustment between caster 88 and the sod line cutting disk.

The operation of our device is as follows: The car A is propelled along the track, either by its motor or by a separate engine, or otherwise. Before start is made, the swinging frame is lowered to the proper angle, the pivotal points of the frame being adjusted on the straps 23, 24, so as to give the cutting apparatus an angular position nearest in conformity to the slope of the shoulder. The shoe and the blade 81 are adjusted to the proper vertical position with regard to the frame, and the several cutting devices C, C' are given their separate adjustment, so as to conform to the general contour of the shoulder, as is best shown in Fig. 3. The car being set in motion, the operator, by manipulation of the operating lever 65, which can be conveniently reached from the car, forces the cutting devices into the ground and sets the operating lever 65 at the proper position on the quadrant. The cutting devices dig up the ground and, being set close together, uproot and cut down practically all the vegetation. The cutting devices have sufficient independence of operation so that irregularities in the contour of the shoulder will not cause the whole cutting apparatus to be thrown out of operation. Railroad weed cutters as they have been designed heretofore, not having this flexibility, have not proven a success. In machines where all of the cutting devices are arranged on a single shaft or a single swinging frame, a slight change in the slope of the shoulder or some inequality in its contour has inevitably resulted in the throwing out of operation of part or all of the cutters. Our invention overcomes this difficulty. If

the movable cutting devices fail to destroy any of the weeds, as, for example, if they should slip in between the cutting devices, which is likely to happen if the weeds are
 5 very tall and strong, such weeds are caught by the transverse cutter which, from its shape and position, gives them a shearing cut and which preferably runs along a trifle under the surface of the ground, thus reach-
 10 ing the roots of the weeds. This device assists in carrying the loose earth or other material of the shoulder inwardly toward the ties. When an obstruction is reached, such as a fence or cattle guard, or the like, the
 15 swinging frame carrying the cutting devices may be turned up into a vertical position, and with it, of course, the shoe and transverse cutter.

We do not limit ourselves to all of the
 20 particular devices, constructions and arrangements shown and described, as modifications will easily suggest themselves which will be within the scope of our invention as defined by the claims.

25 We claim:

1. In a railway weed cutter, the combination with a railway car, of a frame movably connected with the car, and a plurality of cutting devices independently and movably
 30 connected to the frame.

2. In a railway weed cutter, the combination with a railway car, of a frame movably connected with the car, and a plurality of cutting devices arranged transversely of the
 35 shoulder being operated upon and independently and movably connected to the frame.

3. In a railway weed cutter, the combination with a railway car, of a frame movably connected with the car, and a plurality of
 40 cutting devices pivoted independently to the frame.

4. In a railway weed cutter, the combination with a railway car, of a frame movably connected with the car, a plurality of
 45 cutting devices on the frame, and elastic means for maintaining the same in contact with the ground.

5. In a railway weed cutter, the combination with a railway car, of a frame movably
 50 connected with the car, and a plurality of cutting devices on the frame, said cutting devices being constructed so as to carry the material of the shoulder upwardly and inwardly toward the ties.

55 6. In a railway weed cutter, the combination with a railway car, of a frame movably connected with the car, and a plurality of cutting devices on the frame, said devices being independently movable in operation and
 60 independently adjustable so as to conform to different contours of shoulder.

7. In a railway weed cutter, the combination with a railway car, of a frame movably connected with the car, of a plurality of cut-
 65 ting devices connected with the frame so as

to be independently movable in operation, and common operating means by which all of the cutting devices together may be raised or lowered independently of said frame.

8. In a railway weed cutter, the combina- 70
 tion with a railway car, of a frame movably connected with the car, a plurality of cutting devices independently pivoted to the frame, and elastic means for maintaining
 75 said cutting devices in contact with the ground.

9. In a railway weed cutter, the combination with a railway car, of a frame movably connected with the car, a plurality of cutting devices mounted on said frame, sup- 80
 porting means for the outer edge of said frame, a substantially vertical cutter associated therewith for cutting a grass line, and means for giving an independent, vertical
 85 adjustment to said supporting means and cutter.

10. In a railway weed cutter, the combination with a railway car, of a frame pivoted to the car, a plurality of cutting devices in-
 90 dependently movable in operation, means for raising and lowering the frame, and means for varying the vertical position of the frame on the car.

11. In a railway weed cutter, the combination with a railway car, of a frame con- 95
 nected with the car by a vertically adjustable pivotal connection, and a plurality of weed cutting devices elastically mounted upon said frame.

12. In a railway weed cutter, the combination with a railway car, of a frame 100
 connected to the car by a vertically adjustable pivotal connection, and a plurality of cutting devices on said frame, said devices being independently movable in operation 105
 and independently adjustable so as to conform to different contours of shoulder.

13. In a railway weed cutter, the combination with a railway car, of a frame con- 110
 nected to the car by a vertically adjustable pivotal connection, a plurality of cutting devices on said frame, said devices being independently movable in operation and
 115 independently adjustable so as to conform to different contours of shoulder, and a sod line cutter adjustably mounted on said frame.

14. In a railway weed cutter, the combination with a railway car, of a frame con- 120
 nected with said car by a vertically adjustable pivotal connection, a plurality of elastically mounted cutting devices on said frame, and adjustable means for supporting
 125 the outer edge of said frame on the ground.

15. In a railway weed cutter, the combination with a railway car, of a frame movably connected with said car, a plu-
 130 rality of cutting devices on said frame, said devices being independently movable in

operation and independently adjustable so as to conform to different contours of shoulder, and means for raising and lowering said frame.

5 16. In a railway weed cutter, the combination with a railway car, of a frame movably connected with the car, a plurality of cutting devices on the frame, said devices being independently movable in operation and independently adjustable so as to conform to different contours of shoulder and an adjustable support for the outer edge of said frame.

15 17. In a railway weed cutter, the combination with a railway car, of a frame movably connected with the car, a plurality of cutting devices on the frame, said devices being independently movable in operation and independently adjustable so as to conform to different contours of shoulder and an adjustable support for the outer edge of said frame, said support being provided with a sod line cutter.

25 18. In a railway weed cutter, the combination with a railway car, of a frame connected to the side of the car, and a plurality of elastically mounted cutting devices on said frame, which cutting devices are independently adjustable so as to conform to different contours of shoulder.

30 19. In a railway weed cutter, the combination with a railway car, of a frame movably connected with said car, a plurality of cutting devices on said frame, said devices being independently movable in operation and independently adjustable so as to conform to different contours of shoulder, and means for throwing said cutting devices in or out of operation without moving said frame.

40 20. In a railway weed cutter, the combination with a railway car, of a frame connected to the car by a vertically adjustable pivotal connection, means for supporting the outer edge of said frame upon the ground, a sod line cutter associated with said means, a plurality of weed cutting devices elastically mounted upon said frame, said devices being independently movable in operation and independently adjustable so as to conform to different contours of shoulders, and means on the car for raising and lowering said frame.

21. In a railway weed cutter, the combination with a railway car, of a frame 55 pivoted to the side of the car, a plurality of weed cutting devices elastically mounted on said frame, and means for raising and lowering said frame.

22. In a railway weed cutter, the combination with a railway car, of a frame 60 pivoted to the side of the car, a plurality of weed cutting devices elastically mounted on said frame, means for raising and lowering said frame, and means for varying the depth of cut of said cutters. 65

23. In a railway weed cutter, the combination with a railway car, of a frame pivoted to the side of the car, a plurality of weed cutting devices pivoted to the forward end of said frame, means to which the several weed cutting devices are connected, whereby the depth of cut of weed cutting devices, as a whole, may be varied, and means for raising and lowering said frame. 75

24. In a railway weed cutter, the combination with a railway car, of a frame pivoted to the side of the car, means which movably supports the outer edge of the frame on the ground, means for raising and lowering said frame, a plurality of weed cutting devices which are pivoted to the forward end of the frame, and means with which the several weed cutting devices are connected, whereby the depth of the cut of said devices may be varied. 85

25. In a railway weed cutter, the combination with a railway car, of a frame pivoted to the side of the car, means which movably supports the outer edge of the frame on the ground, means for raising and lowering said frame, a plurality of weed cutting devices which are pivoted to the forward end of the frame, and means with which the several weed cutting devices 95 are connected, whereby the depth of the cut of said devices may be varied, said weed cutting devices being independently adjustable so that said devices may be made to conform to different contours of shoulders. 100

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