

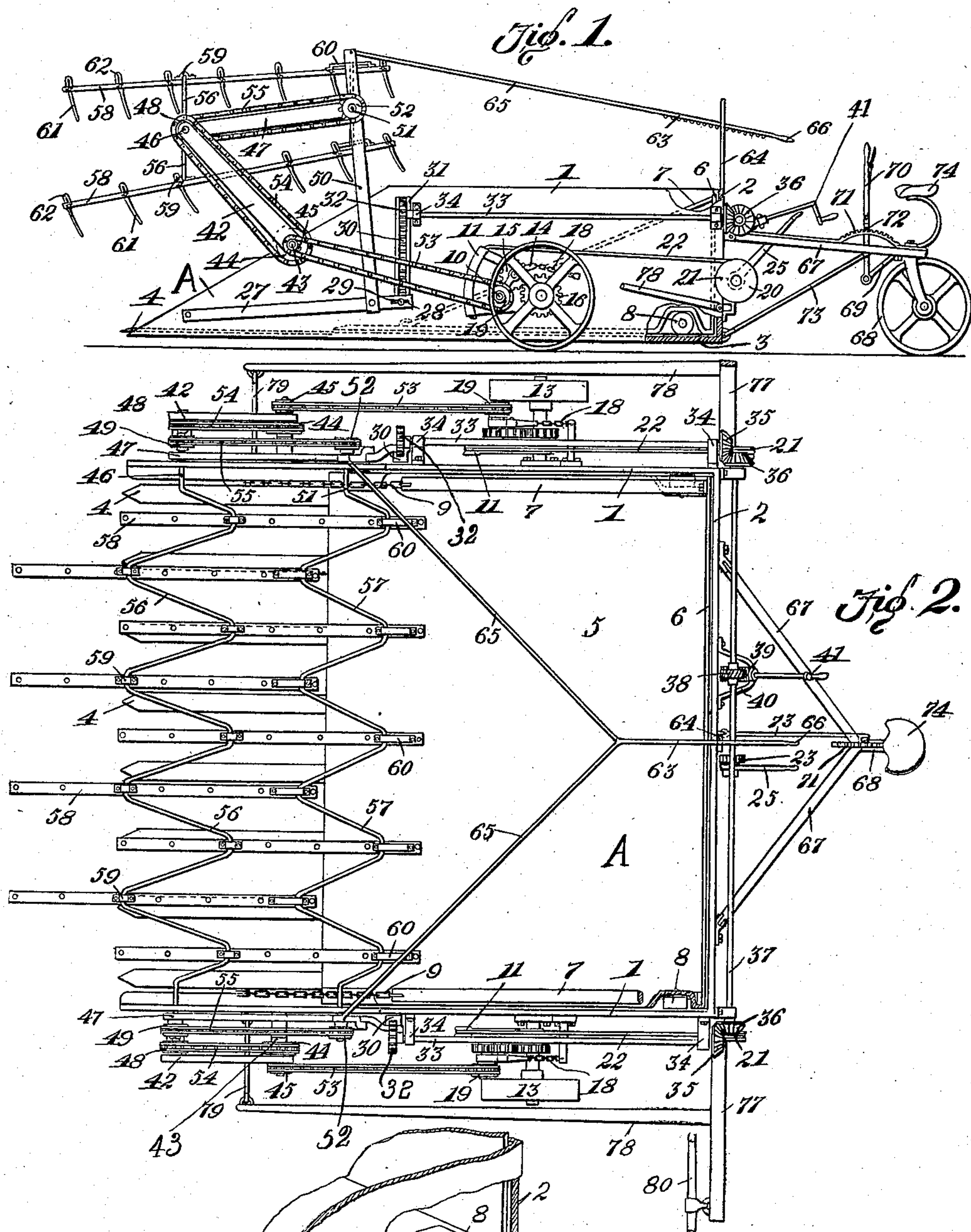
No. 868,027.

PATENTED OCT. 15, 1907.

G. W. SMITHSON.
GRAIN RAKE.

APPLICATION FILED MAY 18, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

E. V. Stewart
Hubert D. Lawson

George W. Smithson,
INVENTOR.

Fig. 8.

By

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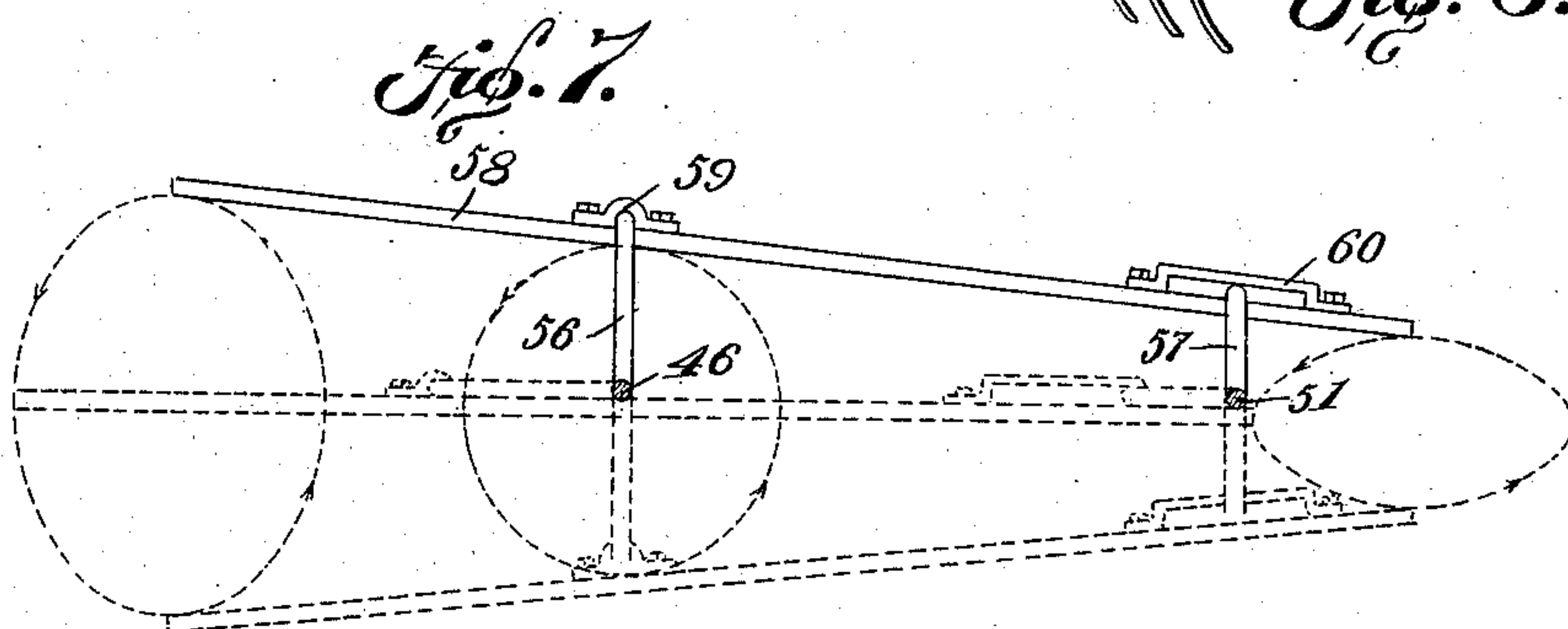
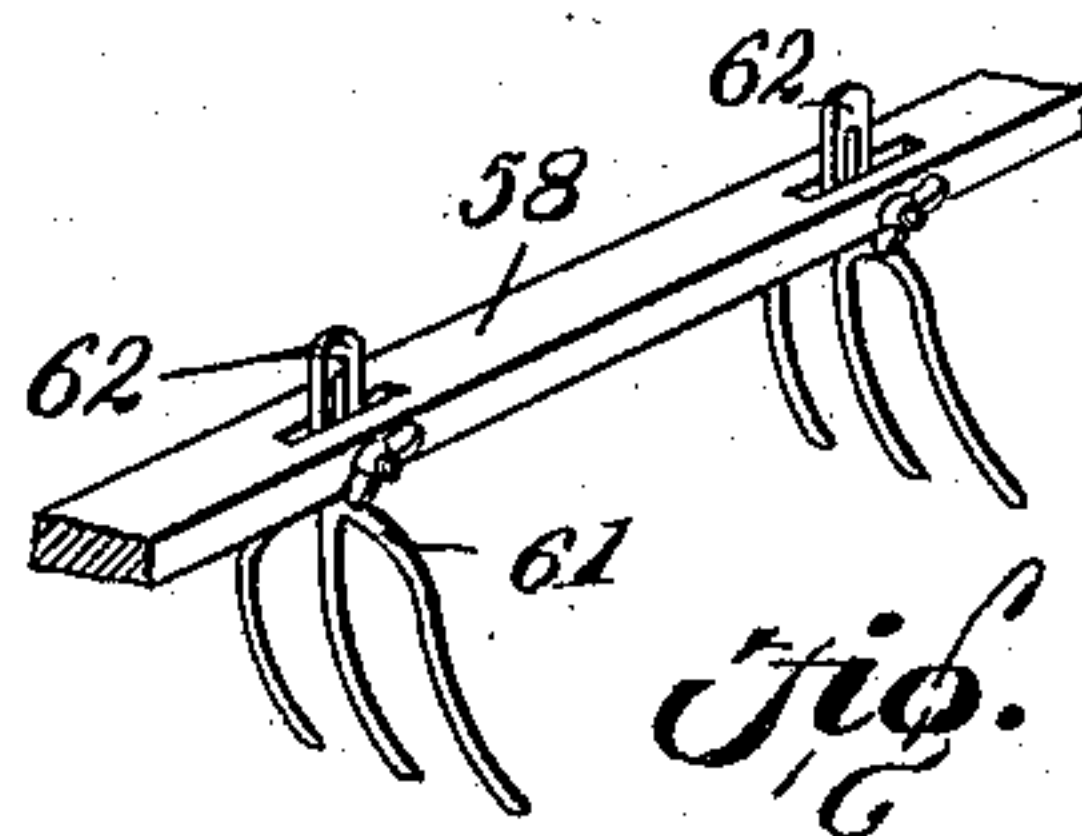
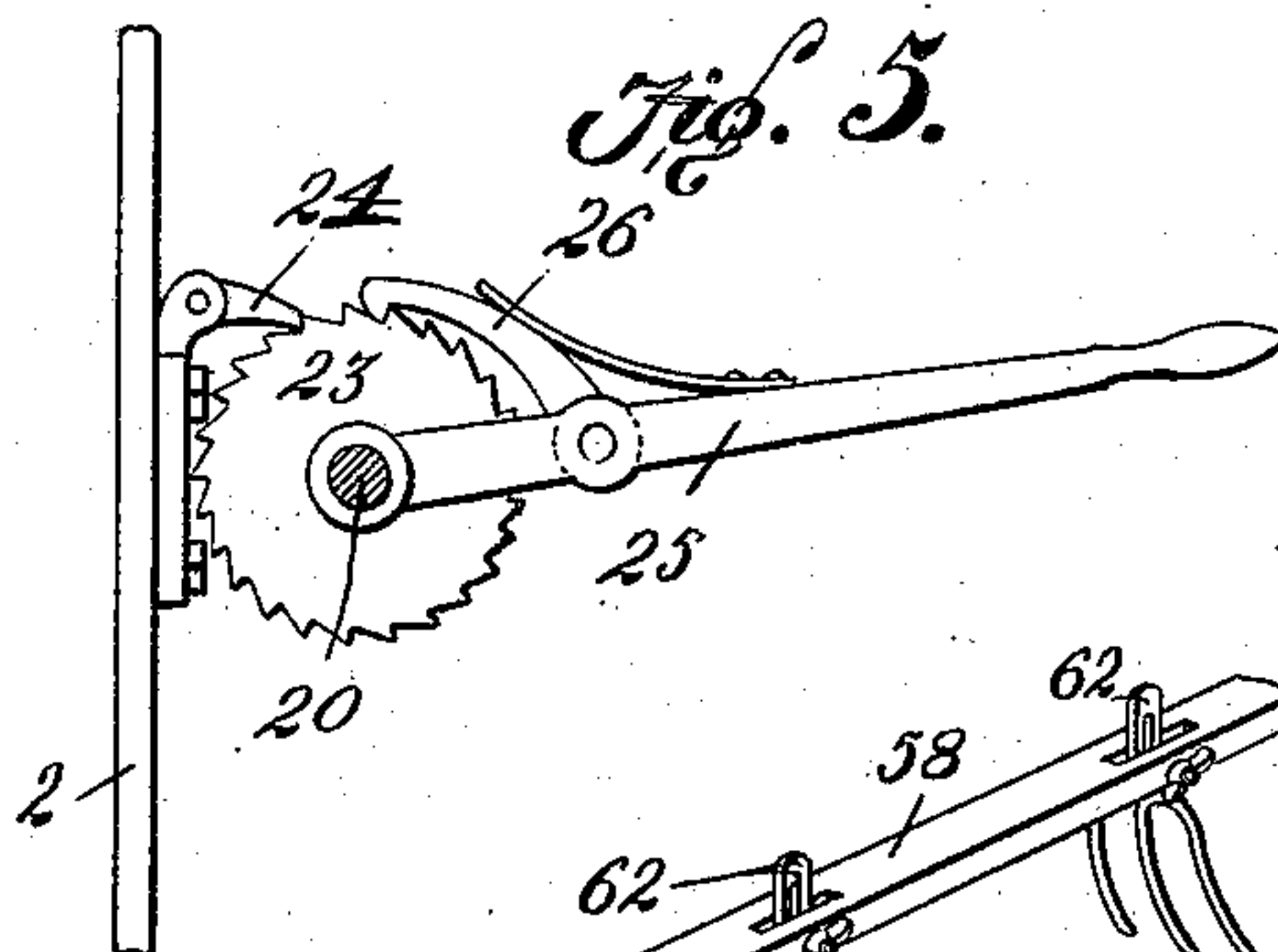
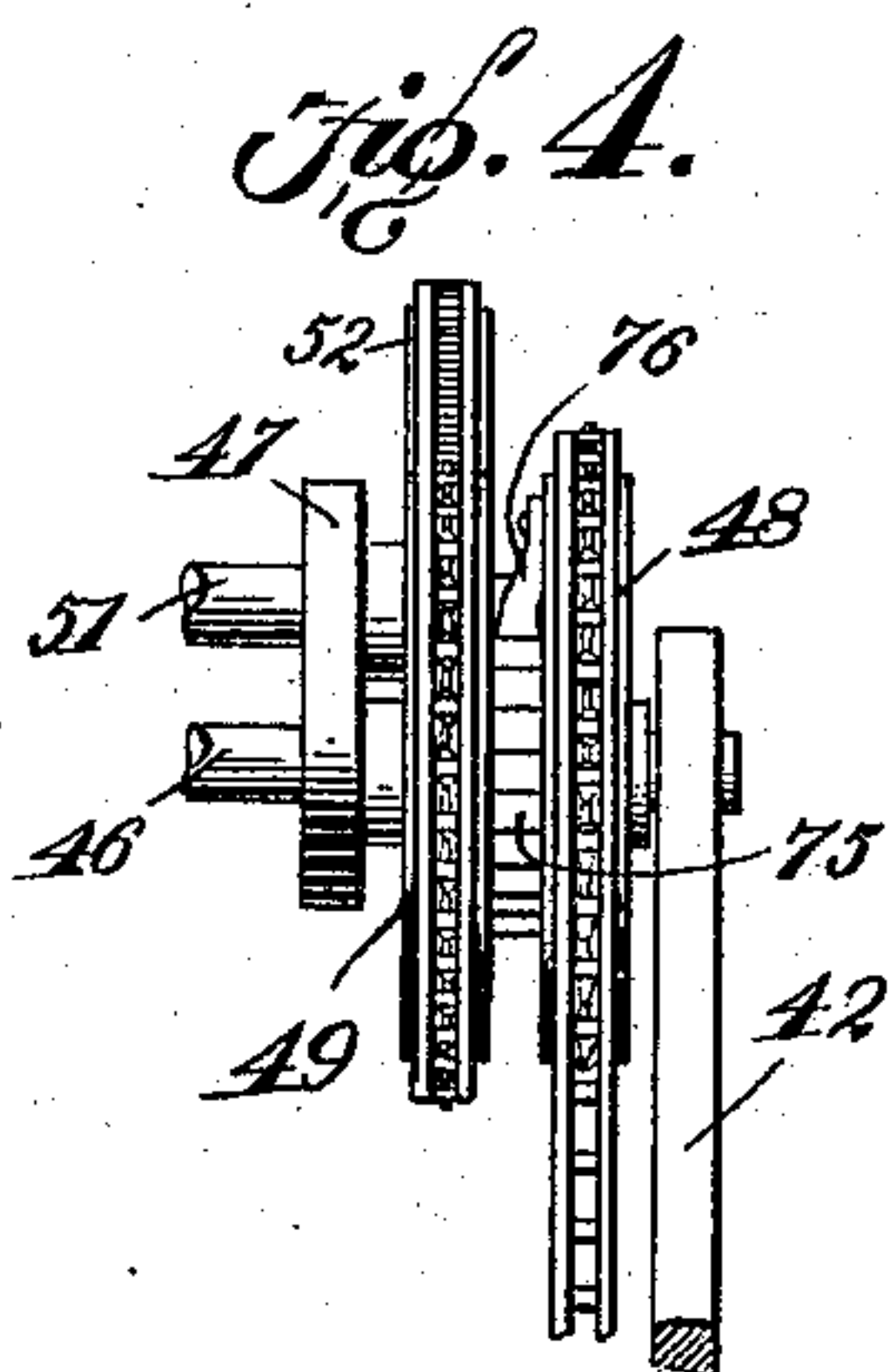
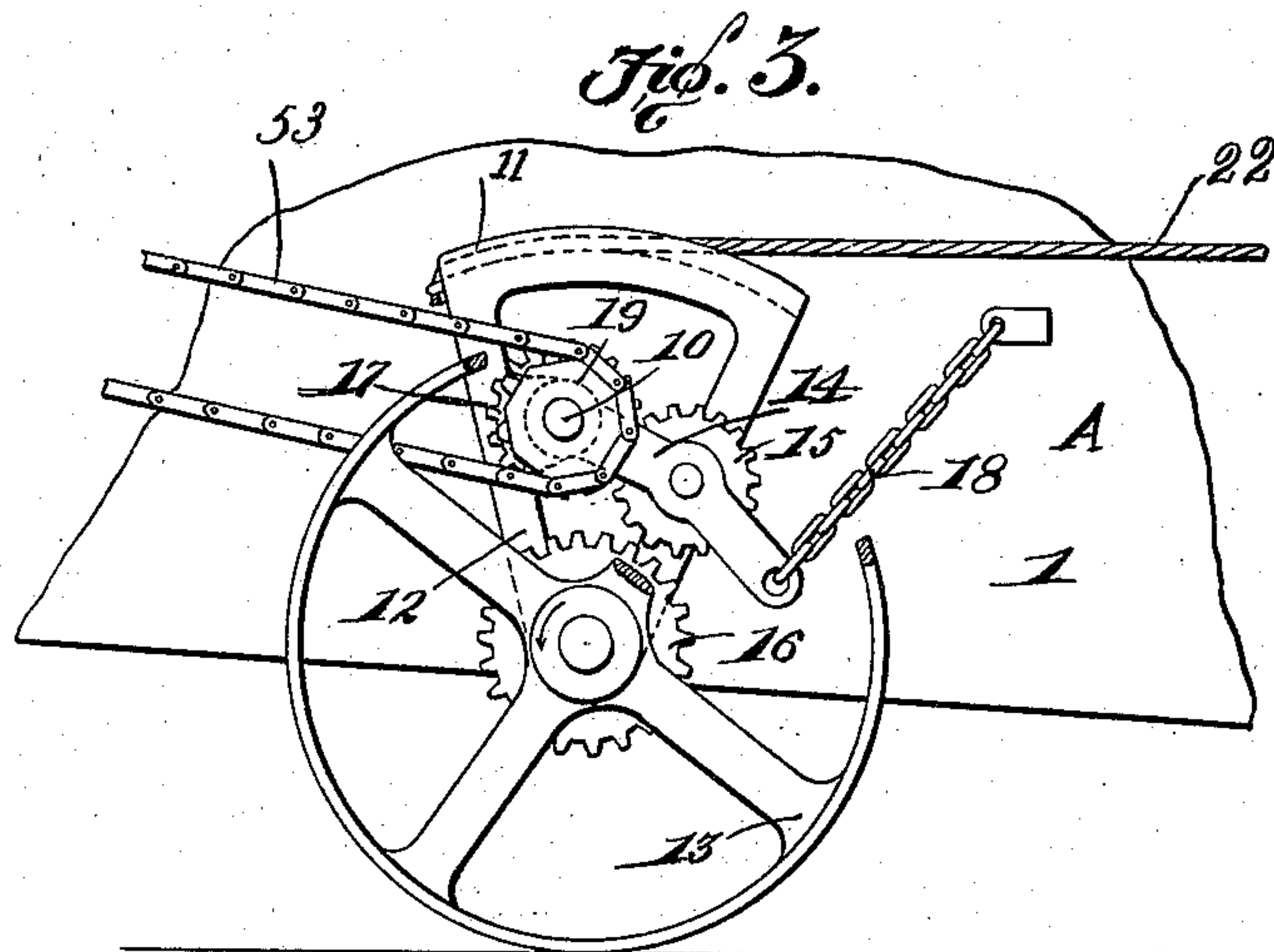
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Hubert D. Lawson.

George W. Smithson,
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UNITED STATES PATENT OFFICE.

GEORGE WRAY SMITHSON, OF MADELIA, MINNESOTA.

GRAIN-RAKE.

No. 868,027.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed May 18, 1906. Serial No. 317,620.

To all whom it may concern:

Be it known that I, GEORGE WRAY SMITHSON, a citizen of the United States, residing at Madelia, in the county of Watonwan and State of Minnesota, have invented a new and useful Grain-Rake, of which the following is a specification.

This invention relates to machines for gathering sheaves or bundles of grain whether or not the same be loose or in shocks and for conveying them to threshing machines or other places where it is desired to unload them.

The object of the invention is to provide a machine of this character which can be readily drawn over a field and which has means, operated by the movement of the machine, for engaging the sheaves and pulling them on to a removable holder which is carried by the machine.

A still further object is to provide novel means for adjusting the sheaf engaging devices to meet various conditions and for adjusting the entire machine so as to bring it into proper relation with the ground.

Another object is to provide means whereby the frame of the machine can be quickly raised to throw the mechanism out of operative relation with the supporting wheels and enable the machine to be drawn from place to place without the actuation of the mechanism carried thereby.

With these and other objects in view the invention consists of certain novel features of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings: Figure 1 is a side elevation of the complete machine; Fig. 2 is a plan view thereof; Fig. 3 is an enlarged side elevation of one of the supporting wheels showing the body of the machine raised and the mechanism out of operative relation with the supporting wheel; Fig. 4 is an enlarged front elevation of the pawl and ratchet connection between two of the sprockets of the transmitting mechanism; Fig. 5 is a detail view showing the means for operating the body raising and lowering mechanism; Fig. 6 is a detail view showing the means for connecting the forks to the arms; Fig. 7 is a view showing the direction of movement of the fork carrying arms during the operation of the machine; and Fig. 8 is a detail view showing a portion of the holder in position within the body.

Referring to the figures by characters of reference, A is the body of the machine the same consisting of side walls 1 and a rear wall 2, while from the bottom 3 of the body extends a series of gathering fingers 4 arranged close together and project into the front end of the body. The side walls 1 are beveled downward at their front ends and resting between these walls

and the bottom 3 is a holder 5 having an upwardly extending rear wall 6 which is rigidly held by means of brace rods 7. Rollers 8 are secured to the lower face of the holder 5 and mounted to travel on the body A. Chains 9 extend forward from the holder 5 and are for the purpose hereinafter stated.

A stud 10 extends laterally from each side of frame A and constitutes a pivot for a sector 11 which is mounted thereon at a point between its ends and has an arm 12 extending laterally from one end said arm constituting a bearing for one of the supporting wheels of the machine. An arm 14 is loosely mounted on the stud 10 and carries a gear 15 which is adapted to normally mesh with a gear 16 rotatable with wheel 13 and which constantly meshes with another gear 17 loosely mounted on the stud 10. A chain 18 is connected to arm 14 so as to limit the movement thereof, said chain being secured to the side of the body. A sprocket 19 is formed with or secured to the gear 17 so that the two will rotate in unison. The shaft 20 is journaled upon the rear of the body A and has a grooved wheel 21 at each end to which are secured cables 22 connected to the respective sectors 11. A ratchet wheel 23 is secured to the shaft 20 and is normally engaged by a locking dog 24 to prevent the shaft from turning in one direction. A lever 25 is fulcrumed upon the shaft 20 and has a spring pressed pawl for engaging the ratchet wheel 23 as shown at 26. It is obvious that by oscillating the lever 25 the shaft 20 can be rotated in one direction so as to wind the cables 22 on the wheels 21 and cause the sectors 11 to swing on their pivots and move the arms 12 so as to raise the body A in relation to the supporting wheels. Arm 14 and gear 15 carried thereby will swing downward by gravity until stopped by the chain 18 but the gear 16 will continue to swing downward until it has been removed from mesh with the gear 15. The machine can therefore be drawn backward or forward without causing the actuation of sprocket 19.

Pivotally connected to the forward portion of each side of the body A is a strip 27 having a slot 28 into which projects a pin 29 extending from one end of a rack bar 30 mounted in suitable guides 31. This rack bar is engaged by a gear 32 at the forward end of a shaft 33 journaled in bearings 34 on the sides of the body. Beveled gears 35 are arranged on the rear ends of shaft 33 and mesh with gears 36 on the ends of a shaft 37 journaled upon the rear of the body A. A worm gear 38 is secured to this shaft and is engaged by a worm 39 mounted in a bracket 40 and adapted to be rotated manually by means of a crank 41.

An arm 42 is pivoted to each side of the body A at a point above the strip 27 and upon a stud 43 which constitutes a bearing for a sprocket 44 which is connected to and rotates with a smaller sprocket 45. A shaft 46 is arranged at the upper end of arm 42 and has

a link 47 pivoted thereon. This shaft 46 also constitutes a bearing for two sprockets 48 and 49 which rotate together. A support 50 is pivoted to each strip 27 near its slotted end and has a laterally extending shaft 51 near its upper end on which the link 47 is pivoted, said shaft also constituting a bearing for a sprocket 52. A chain 53 extends from the sprocket 19 and around sprocket 45, another chain 54 is mounted on the sprockets 44 and 48, and a third chain 55 is mounted on the sprockets 49 and 52.

It is of course understood that the shafts 46 and 51 extend throughout the width of the front end of the machine, and the two shafts are provided with series of cranks 56 and 57, the cranks 56 on the shaft 46 being of greater extent than the cranks 57 on shaft 51. The cranks on the two shafts are arranged in alinement and a bar 58 is pivotally connected to each of the cranks 56 by means of an eye 59 or in any other desired manner. These eyes are disposed adjacent the centers of the bars 58 and arranged on said bars near their rear ends are straps 60 forming elongated slots in which the cranks 57 are adapted to work. These bars may be adjusted longitudinally in any desired manner as by shifting the positions of the eyes 59 and straps 60. Each bar 58 carries a series of gathering prongs 61 having shanks 62 which are pivotally mounted within the bars 58 and are adapted to lock therein in any position to which they may be swung.

A toothed rod 63 is slidably mounted within a standard 64 at the rear end of the body A and the forward end of this rod is connected by rods 65 with the upper ends of the supports 50. A handle 66 is arranged at the rear end of the rod 63 and by means thereof said rod can be slid longitudinally so as to swing the supports 50 on their pivots and carry the arms 42 and the links 47 therewith. The teeth on rod 63 are adapted to engage the standard 64 so as to lock the rod in adjusted position.

A frame 67 is pivotally connected to the rear wall of body A and is supported at its rear end by a caster 68 swiveled thereto. A bracket 69 extends downward from frame 67 and a lever 70 is fulcrumed thereon and adapted to be locked in adjusted position by means of a toothed bar 71 and a plunger 72. A rod 73 connects lever 70 with the lower portion of the rear wall 2 of the body, and, obviously, by manipulating the lever 70 the frame 67 can be swung to different angles in relation to the body so as to incline the fingers 4 toward or away from the ground. A driver's seat 74 is mounted on the frame 67 at a point where all of the levers as well as the handle 66 may be conveniently reached.

In order that the sprockets 48 and 49 may be caused to rotate together in one direction a ratchet wheel 75 is connected to one of the sprockets and is engaged by a pawl 76 on the other sprocket. The shafts 46 will thus be unaffected should sprockets 48 at the two ends of said shafts be rotated at different speeds as when the machine is turning. A draw bar 77 extends beyond the sides of the body A at the rear end and tongues 78 project forward therefrom and are connected to the front portion of the body by means of rods 79. Whiffletrees 80 are connected to the draw bar.

In use the horses for drawing the machine are harnessed to the tongues 78 and whiffletrees 80 and are driven forward. If the body A has been raised in the

manner hereinbefore described the mechanism of the machine will not be actuated. If however, the body is in lowered position with gear 15 meshing with gears 17 and 16 rotary motion will be transmitted from the supporting wheels 13 through chains 53 and 54 to the sprockets 48. The pawl and ratchet arrangement which has been described will cause sprocket 48 to rotate the sprockets 49 and shaft 46 and rotary motion will be transmitted through chain 55 to sprockets 52 and the shaft 51. The two shafts 46 and 51 will thus be caused to rotate in unison and will reciprocate the bars 58. As the crank of the two shafts are of different sizes the ends of the bars will be oscillated and cause the forks to describe ellipses in vertical planes. As the machine moves forward the fingers 4 will engage the bundles or sheaves in the path thereof and the prongs 61 will grip them and pull them on to the holder 5. By manipulating the shaft 37 the two shafts 33 can be rotated so as to raise or lower the supports 50 and thereby adjust the angles of the bars 58 to the horizontal. Said prongs 61 can also be adjusted forwardly or rearwardly by means of the rod 63. After a desired quantity of grain has been collected upon the holder 5 the body of the machine is raised by means of lever 25 and the gathering mechanism thus thrown out of gear. The machine is then moved to the place where the contents are to be discharged and the supports 50 are raised by means of gears 32 after which said supports and the prongs 61 are pulled rearwardly and held by the rod 63. The chains 9 are subsequently fastened to fixed devices after which the entire machine is drawn backward and will cause the holder to roll from position upon the bottom of the body A. The contents of the holder can then be readily removed after which said holder can be quickly replaced and the operation above described may be repeated.

The preferred form of the invention has been set forth in the foregoing description but I do not limit myself thereto as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof. For example the holder 5 may be formed without a bottom so that the contents of the machine will come into direct contact with the bottom of the body 1. I therefore reserve the right to make this and such other changes as fairly fall within the scope of the claims.

What is claimed is:

1. In a machine of the character described the combination with a body, and wheels supporting the same; of a holder removably mounted within the body, rollers interposed between the holder and body, and means for directing sheaves upon the holder.
2. In a machine of the character described the combination with a body, supporting wheels adjustably connected thereto for swinging movement, and means for swinging the wheels to raise the body; of mechanism operated by the wheels for directing sheaves upon the body, and connections whereby the raising of the body throws the mechanism out of operative relation to the wheels.
3. In a machine of the character described the combination with a body, and supporting wheels therefor; of prongs carried by the body, mechanism operated by the wheels for imparting elliptical movement to the prongs, and means for adjusting the prongs longitudinally of the machine during the movement of the prongs.
4. In a machine of the character described the combination with a body, and supporting wheels therefor; of prongs carried by the body, mechanism operated by the wheels for

imparting elliptical movement to the prongs, and means for adjusting the prongs longitudinally of the machine and vertically during their movement.

5 5. In a machine of the character described the combination with a body, and supporting wheels therefor; of prongs carried by the body, mechanism operated by the wheels for imparting elliptical movement to the prongs, and independent manually operated means for adjusting the prongs longitudinally of the machine and vertically during their movement.

10 6. In a machine of the character described the combination with a body, and supporting wheels; of strips pivoted to the body, means for simultaneously swinging the strips in vertical planes, arms pivoted to the body, supports pivoted to the strips, links connecting the supports and arms, prongs movably mounted between and carried by said arms and supports, means for holding the arms and supports against movement, and mechanism operated by the wheels for actuating the prongs.

15 20 7. In a machine of the character described the combination with a body, and wheels supporting the same; of crank shafts, bearings therefor adjustable vertically and toward the front and rear of the machine, bars carried by the cranks, prongs depending therefrom, and mechanism operated by the wheels for rotating the shafts.

25 8. In a machine of the character described the combination with a body, and wheels supporting the same; of parallel crank shafts, the cranks of the two shafts being of different sizes, bearings for the shafts adjustable vertically and toward the front and rear of the machine, bars carried by the cranks of the two shafts, prongs suspended therefrom, and mechanism operated by the wheels for rotating the shafts in unison.

30 In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

GEORGE WRAY SMITHSON.

Witnesses:

JOS. J. KEBER,

H. C. GUNDERSON.