

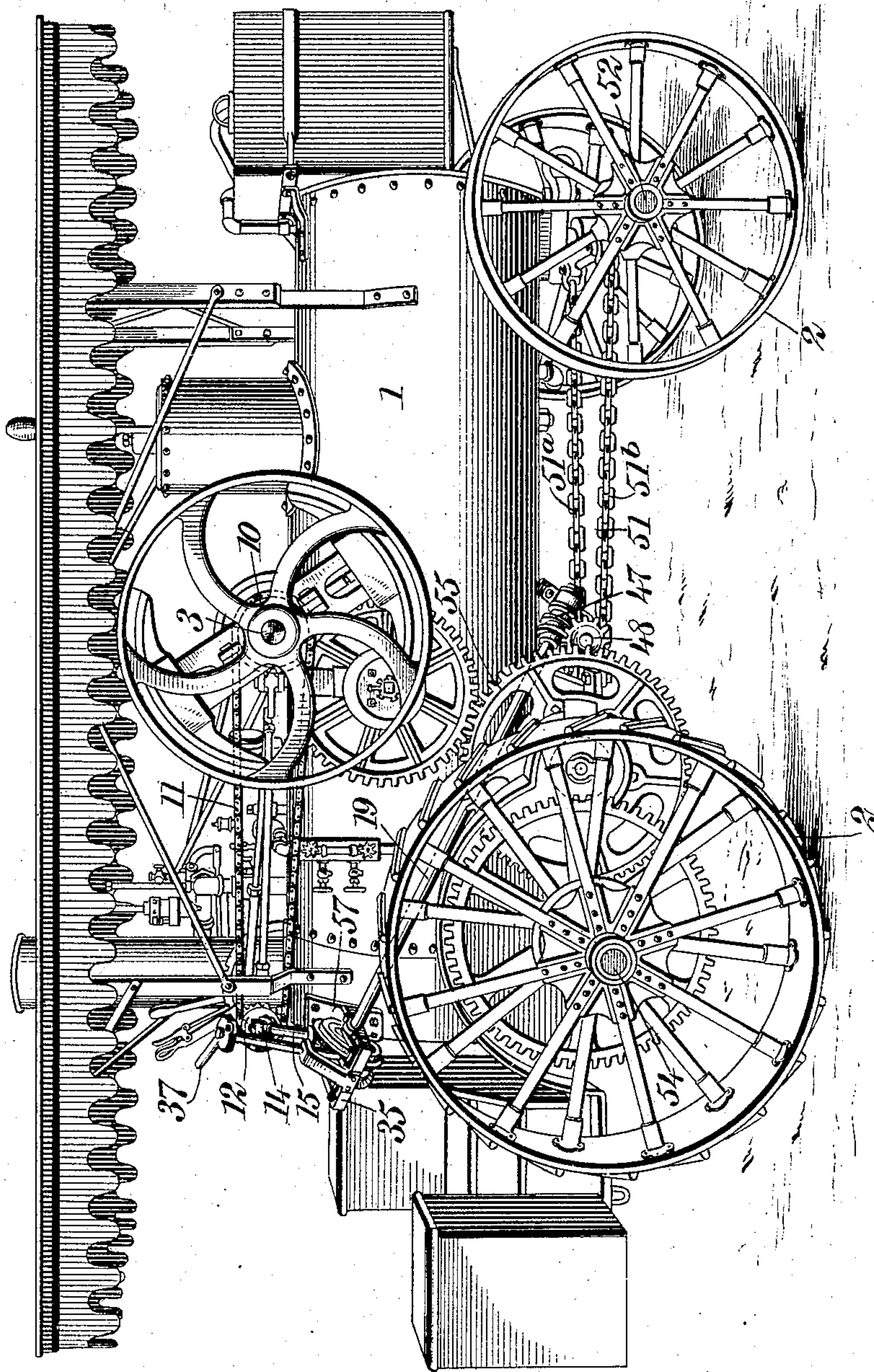
No. 788,285.

PATENTED APR. 25, 1905.

B. B. STAUFFER.
TRACTION ENGINE.
APPLICATION FILED DEC. 31, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



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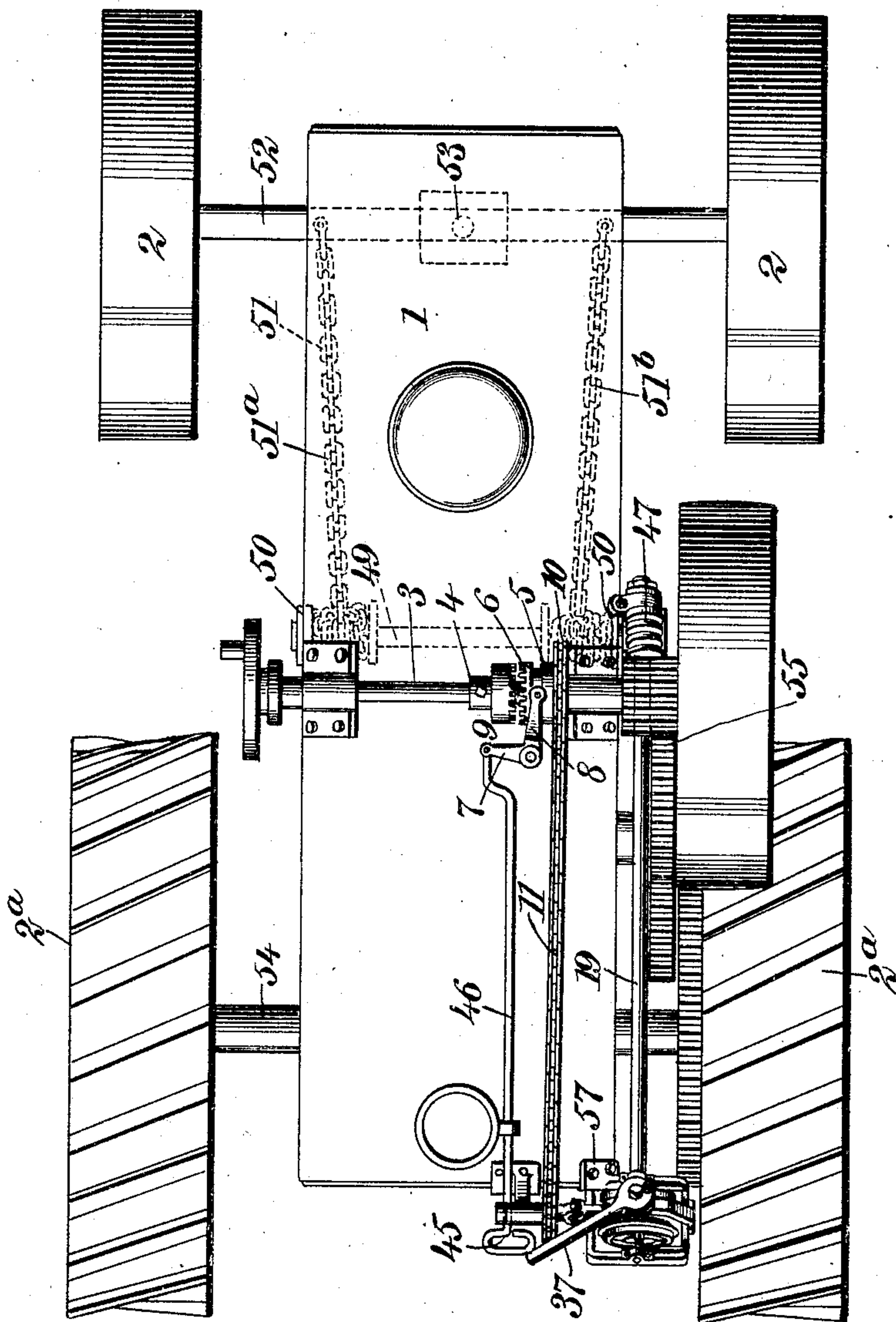
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3 SHEETS—SHEET 2.

Fig. 2.



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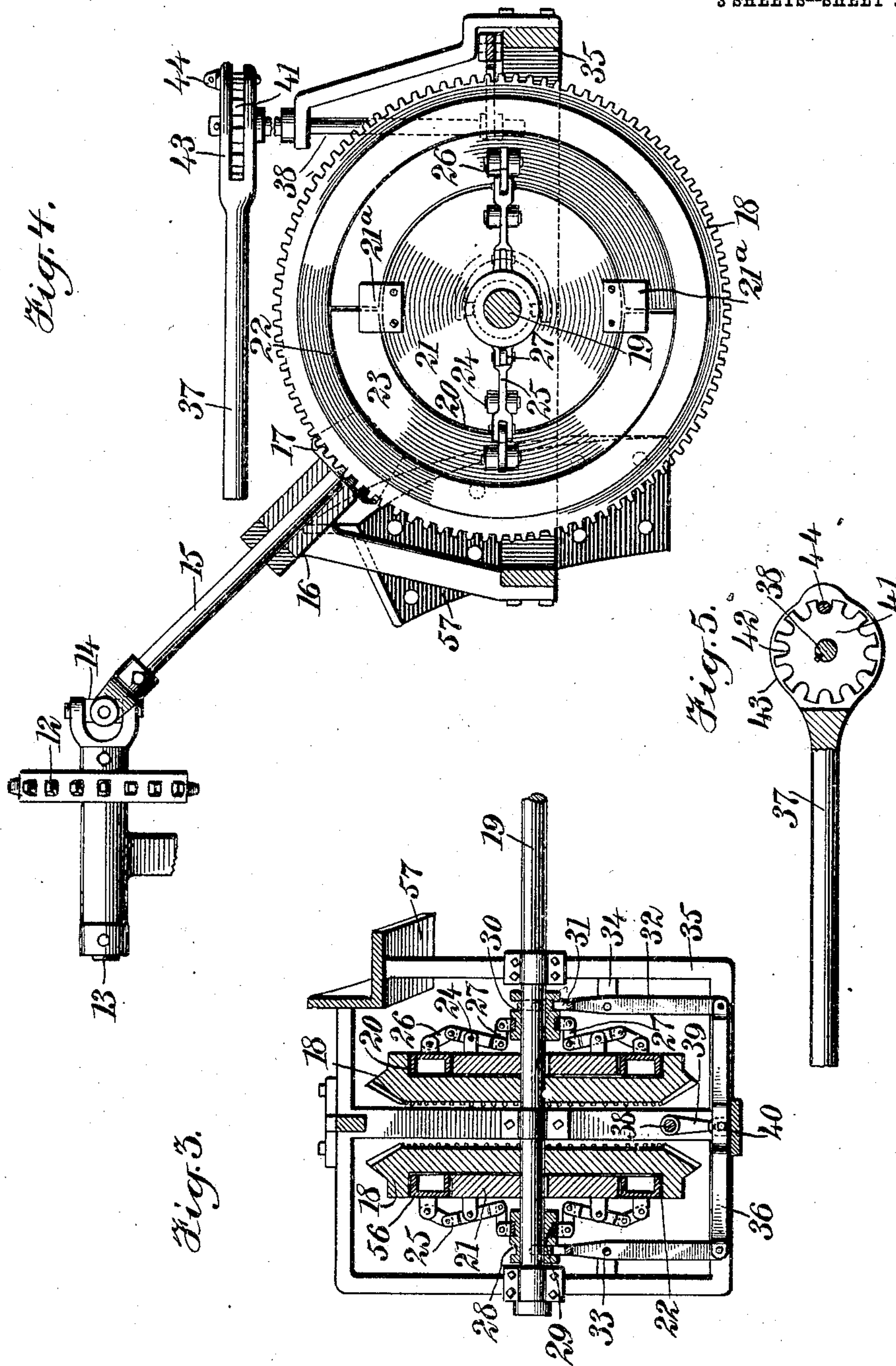
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

BENJAMIN BURNETT STAUFFER, OF KANSAS CITY, MISSOURI.

TRACTION-ENGINE.

SPECIFICATION forming part of Letters Patent No. 788,285, dated April 25, 1905.

Application filed December 31, 1904. Serial No. 239,115.

To all whom it may concern:

Be it known that I, BENJAMIN BURNETT STAUFFER, a citizen of the United States, and a resident of Kansas City, in the county of Jackson and State of Missouri, have invented a new and Improved Traction - Engine, of which the following is a full, clear, and exact description.

This invention relates to traction-engines or portable engines; and its object is to provide an improved steering mechanism by means of which the power of the engine may be utilized, if desired, for steering purposes.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a traction-engine with which my invention has been incorporated. Fig. 2 is a plan-view. Fig. 3 is a central section passing through a steering-clutch. Fig. 4 is a view upon an enlarged scale, showing substantially a rear elevation of the clutch shown in Fig. 3, together with contiguous mechanism; and Fig. 5 is a detail of a steering-lever, the head of which is broken away and partly shown in section, as will appear.

To refer more particularly to the parts, the traction-engine represented comprises a horizontal boiler 1 of any common type, which boiler is mounted upon wheels 2 2^a. Upon the upper side of this boiler a small engine is usually mounted, the main shaft 3 whereof is disposed usually horizontally transversely above the boiler, as indicated. In applying my invention I attach rigidly to this shaft 3 a collar 4, which is preferably a split collar, as will be readily understood, facilitating the application of the same without necessitating the removal of the shaft. Adjacent to the collar 4 I provide a loose collar 5, which is adapted to slide upon the shaft 3. To this end the collar 5 is provided with a circumferentially-disposed groove 6, which enables the position of the collar to be controlled through the medium of a bell-crank lever 7, one arm of this lever being formed into a yoke 8 for this purpose, and the extremities of the yoke

8 engage the groove 6 in a common manner, as will be readily understood. The adjacent faces of the collars 4 and 5 are formed with teeth, as indicated, which are adapted to interlock, so that the collars together constitute a clutch 9. Like the collar 4 the collar 5 is split, so that it may be applied to the shaft 3 without necessitating the removal of the shaft. Integral with the collar 5 a sprocket-wheel 10 is shown, and over this sprocket-wheel a chain 11 passes rearwardly to be received upon a driven sprocket-wheel 12. The sprocket-wheel 12 is mounted rigidly upon an arbor 13, which arbor connects, by means of a universal joint 14, with an inclined shaft 15. As shown, the sprocket-wheel 12 is located, preferably, near the extremity of the boiler.

Referring especially to Figs. 3 and 4, the lower extremity of the inclined shaft 15 is rotatably mounted in a bracket 16, and beyond this bracket it carries rigidly a bevel-pinion 17. This bevel-pinion is located between a pair of oppositely-placed bevel-gears 18, the teeth whereof are constantly in mesh with the teeth of the said pinion, as will be readily understood. These gear-wheels 18 are loosely mounted upon a worm-shaft 19, and their rear faces are formed with substantially circular recesses 20, for a purpose which will appear more fully hereinafter. Occupying the central portions of the recesses 20 disks 21 are provided, which are rigidly attached to the shaft 19 in any suitable manner. From this arrangement it follows that annular grooves or recesses 22 are formed at the rear faces of the gear-wheels 18. In these annular grooves shoes 23 are provided, the same being of substantially semi-annular form and fitting loosely in position, as will be readily understood. Upon the outer faces of the disks 21 posts 24 project outwardly, as shown, and in these posts levers 25 are fulcrumed, as indicated. The outer extremities of these levers 25 are connected, by means of links 26, with the aforesaid brake-shoes 23. The inner extremities of the levers 25 are connected, by means of links 27, with collars 28, and these collars are loosely mounted upon the shaft 19 and slide thereupon. The links 27 do not at-

tach directly to the collars, but are attached to loose rings 29, mounted in circumferential grooves in the collars 28. Arrangement is made for sliding the collars 28 longitudinally upon the shaft 19 in order to control the condition of the clutch. For this purpose the collars 28 are provided with other circumferential grooves 30, which are engaged by the bifurcated extremities 31 of levers 32. The levers 32 are fulcrumed, as indicated at 33, upon posts 34, extending from a substantially rectangular frame 35, which surrounds the entire clutch mechanism. The outer extremities of the levers 32 are connected by a link 36. Arrangement is made for shifting the link 36 longitudinally in either direction. To this end a clutch-lever 37 is provided. (Shown most clearly in Figs. 1, 2, and 5.) This lever is attached rigidly to a spindle 38, which extends down between the gear-wheels 18 and carries a rigid arm 39, which projects in the direction of the link 36, as illustrated. The extremity of this arm 39 is preferably bifurcated, so as to receive a pin 40, as shown most clearly in Fig. 3. The arrangement for attaching the lever 37 rigidly to the spindle 38 is preferably adjustable and is most clearly shown in Fig. 5. It consists in providing a spur-wheel 41, which is rigidly attached to the spindle in any suitable manner. The periphery of this spur-wheel is formed with a plurality of recesses 42, and the entire spur-wheel is concealed between oppositely-disposed plates 43, which constitute the head of the lever 37. These plates 43 are provided with alining openings which receive a removable pin 44. It being understood that the head of the lever 37 is loose upon the spindle 38, it will be evident that by removing the pin 44 the lever 37 may be rotated into any desired position or angle, so as to enable the pin 44 to be replaced in another one of the recesses 42. In a convenient position with respect to the lever 37 the handle 45 of a bar 46 is located, the inner extremity of the said bar being preferably offset, as shown, and attached to one of the arms of the bell-crank lever 7. This bar 46 affords means for throwing the clutch 9 in or out of operation.

Referring now especially to Figs. 1 and 2, the lower extremity of the worm-shaft 19 carries rigidly a worm 47, and this worm coöperates with a worm-wheel 48, which is rigidly mounted upon a drum-shaft 49, disposed transversely beneath the boiler, as indicated. This shaft 49 carries chain-drums 50 of any suitable construction, upon which cables or chains 51 wrap. As shown, the drums 50 are preferably disposed at equal distances from the central axis of the boiler, and the forward extremities of the chains 51 attach at opposite points to the forward axle 52, said forward axle being pivotally mounted at 53 upon a suitable king-bolt or fifth-wheel. It should be understood that the chains 51 wind upon

the drums in opposite directions, so that if one chain is taken up the other is paid out or slackened.

It should be understood that the shaft 3 is the same shaft that the traction-engine would be advanced by. For this purpose the shaft 3 would be connected with the rear axle 54 through a suitable gear-train 55, enabling the rear axle to be driven so as to rotate the driving-wheels 2^a in the usual manner.

The mode of operation of the devices will now be described.

It will be understood that the operator or engineer will stand at a position near the handle 45 and the lever 37. When he desires to throw the steering mechanism into operation, the clutch 9 will be closed by pulling upon the handle 45. Closing the clutch 9 of course operates to bring about the continuous driving of the chain 11. Movement would be imparted from the chain 11 through the bevel-gears 18, one of which would rotate continuously in one direction, while the other would rotate in the opposite direction. If it were desired to steer the traction-engine toward the left, the lever 37 would be moved toward the left. Moving the lever toward the left in this manner would operate to move outwardly one of the collars 28, and this movement of the collar would operate to force outwardly the brake-shoes 23 which corresponded with it. They would engage frictionally with the corresponding bevel-gear 18, so that the rotation of the bevel-gear would be imparted to the corresponding disk 21; but the disks 21, it will be remembered, are rigid upon the shaft 19, so that the rotation of the worm 47 will be produced. The worm of course rotates the shaft 49 in the proper direction to wind up the chain 51^a, which is at the left, and to pay out the chain 51^b, which is at the right.

In connection with the brake-shoes 23 it should be said that they are preferably constructed with wooden facing-strips 56, (indicated most clearly in Fig. 3.) Facing the shoes in this manner increases the frictional resistance which they offer to the bevel gear-wheels 18.

It is clear that the construction described affords a very simple arrangement for applying the driving power to control the direction of advance, and attention is called especially to the fact that my improvements can be attached to traction-engines of ordinary construction without necessitating the removal of different parts. This is effected principally by reason of the use of the split collars referred to and described fully above.

The arrangement of the worm-shaft 19 shown in my invention is substantially the same as the corresponding shaft which is now used for applying hand-power to rotate the worm. Hence if an accident should occur to the power steering mechanism the traction-

engine could still be steered by hand, as before. It will be seen that the frame 35 referred to above is formed, as indicated in Fig. 2, with a foot 57, which adapts the same for attachment to the rear extremity of the boiler, as will be apparent. Thus the frame 35 constitutes a readily-attachable bracket.

In connection with the disks 21 I provide clips 21^a, which consist of plates secured so as to project, as shown, over the ends of the brake-shoes 23. These clips prevent the ends of the shoes from turning up, which they tend to do when force is applied at their middle points through the links 26.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a traction-engine, in combination, a shaft by which the engine may be advanced, a clutch carried on said shaft, a sprocket-wheel carried coaxially by one of the members of said clutch, a chain passing over said sprocket-wheel, a second sprocket-wheel receiving said chain, steering mechanism, and means for driving the same through said second sprocket-wheel.

2. In a traction-engine, in combination, a main shaft adapted to advance the engine, a clutch mounted upon said shaft, a worm-shaft, a second clutch in connection with said worm-shaft and adapted to drive the same in either direction, and means for driving said second clutch through said first clutch.

3. In a traction-engine, in combination, a transversely-disposed main shaft, a clutch carried by said shaft, a lever adapted to close said clutch, a bar attached to said lever and projecting rearwardly therefrom, a second clutch adapted to be driven through said first clutch, a lever controlling said second clutch and disposed near the extremity of said bar, and steering mechanism driven through said second clutch.

4. In a traction-engine, in combination, a main shaft, mechanism driven thereby for advancing said engine, a collar rigidly carried by said shaft and constituting a clutch member, a second collar loosely carried by said

shaft and constituting a clutch member co-operating with the aforesaid clutch member, a sprocket-wheel rigid with said loose collar, a chain driven by said sprocket-wheel, a second sprocket-wheel driven by said chain, a clutch driven by said second sprocket-wheel, a shaft driven by said second clutch, a lever controlling the direction in which said second clutch drives said last-named shaft, and steering mechanism driven by said last-named shaft.

5. A steering-clutch, comprising, in combination, a shaft, a pair of oppositely-disposed wheels loosely mounted thereon, means for continuously driving said wheels in opposite directions, disks carried rigidly by said shaft, levers having fulcrums on said disks, mechanism operated respectively by said levers for causing frictional connection between said disks and said wheels, a link connecting said levers, and a third lever for controlling said link.

6. In a steering mechanism, in combination, a spindle, a lever having a head loosely mounted upon said spindle, a spur-wheel attached rigidly to said spindle and presenting circumferentially-disposed recesses, and a removable pin carried by said head and adapted to occupy one of said recesses.

7. In a steering mechanism, in combination, a spindle, a lever having a head loosely mounted upon said spindle and presenting a pair of oppositely-disposed plates, a spur-wheel mounted between said plates and rigidly attached to said spindle, said spur-wheel having a plurality of circumferentially-disposed recesses, and a removable pin disposed across the space between said plates and adapted to occupy one of said recesses.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJAMIN BURNETT STAUFFER.

Witnesses:

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