

**No. 683,413.**

**Patented Sept. 24, 1901.**

**A. J. REYNOLDS.**  
**STREET SWEEPER.**

(Application filed Nov. 17, 1899.)

(No Model.)

**5 Sheets—Sheet 1.**

Fig. 1.

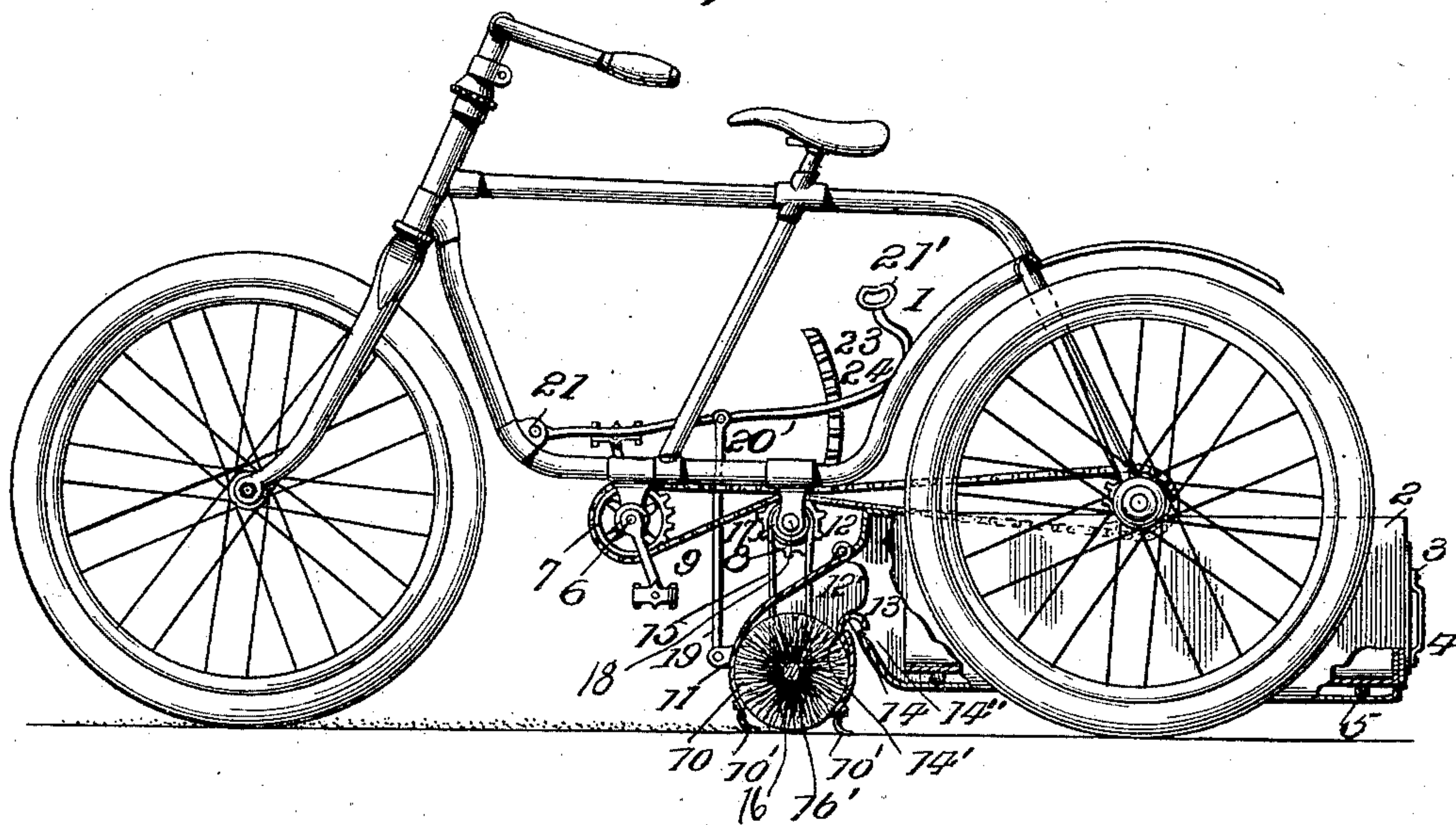
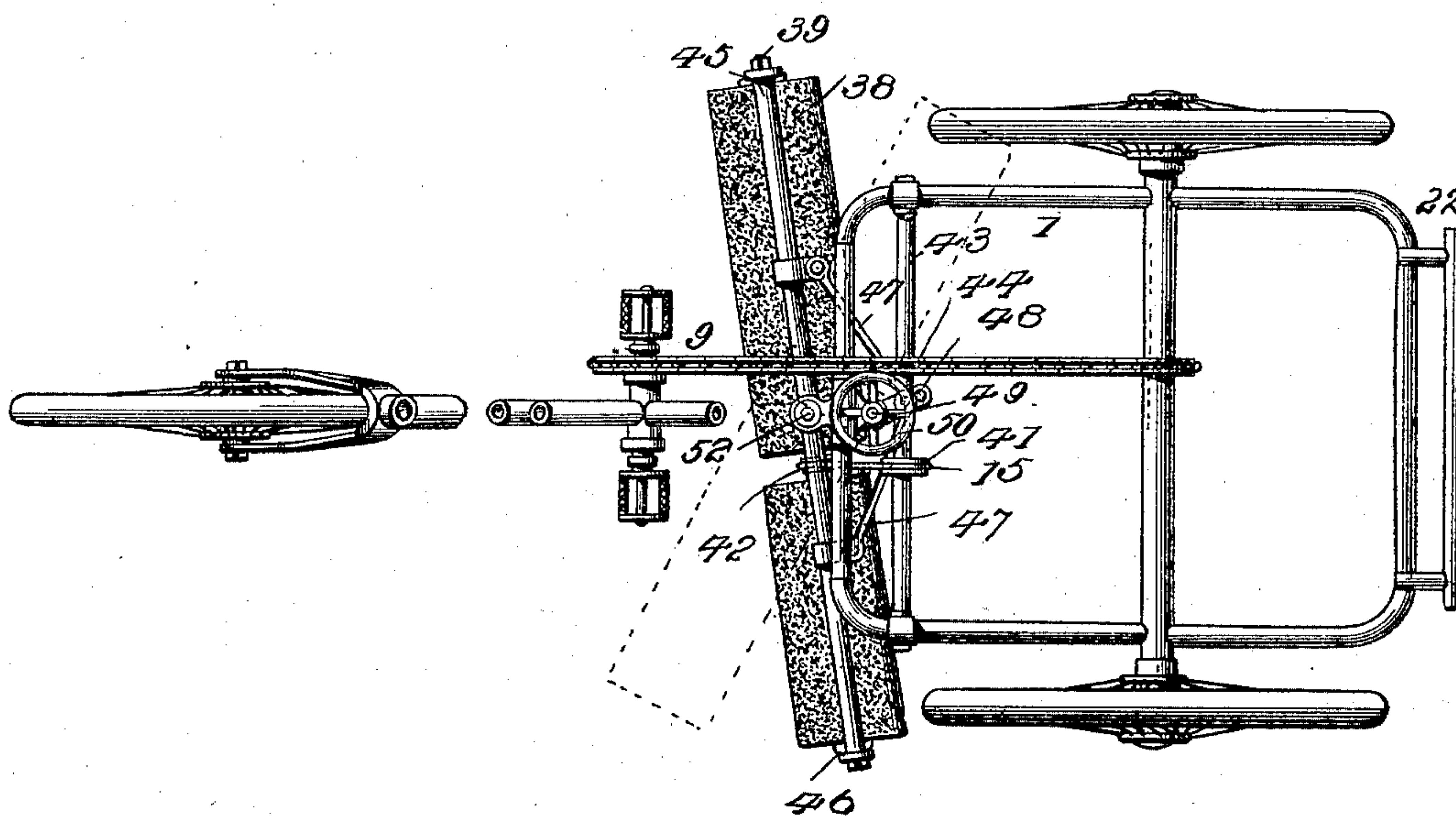


Fig. 2.



Witnesses

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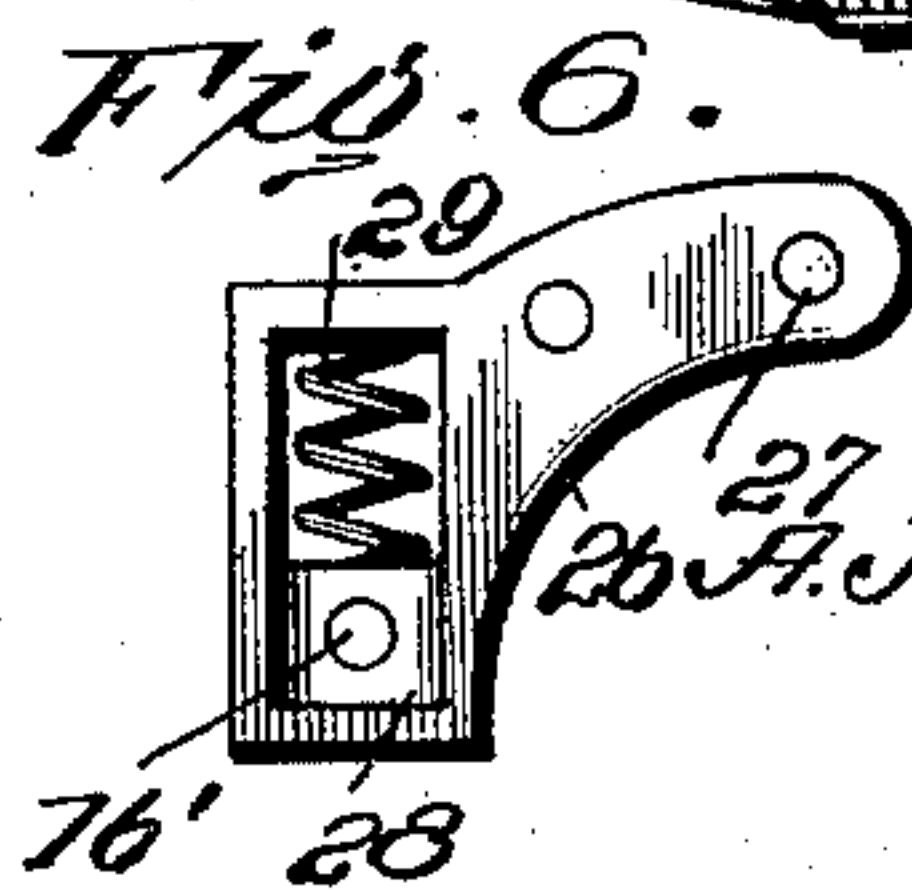
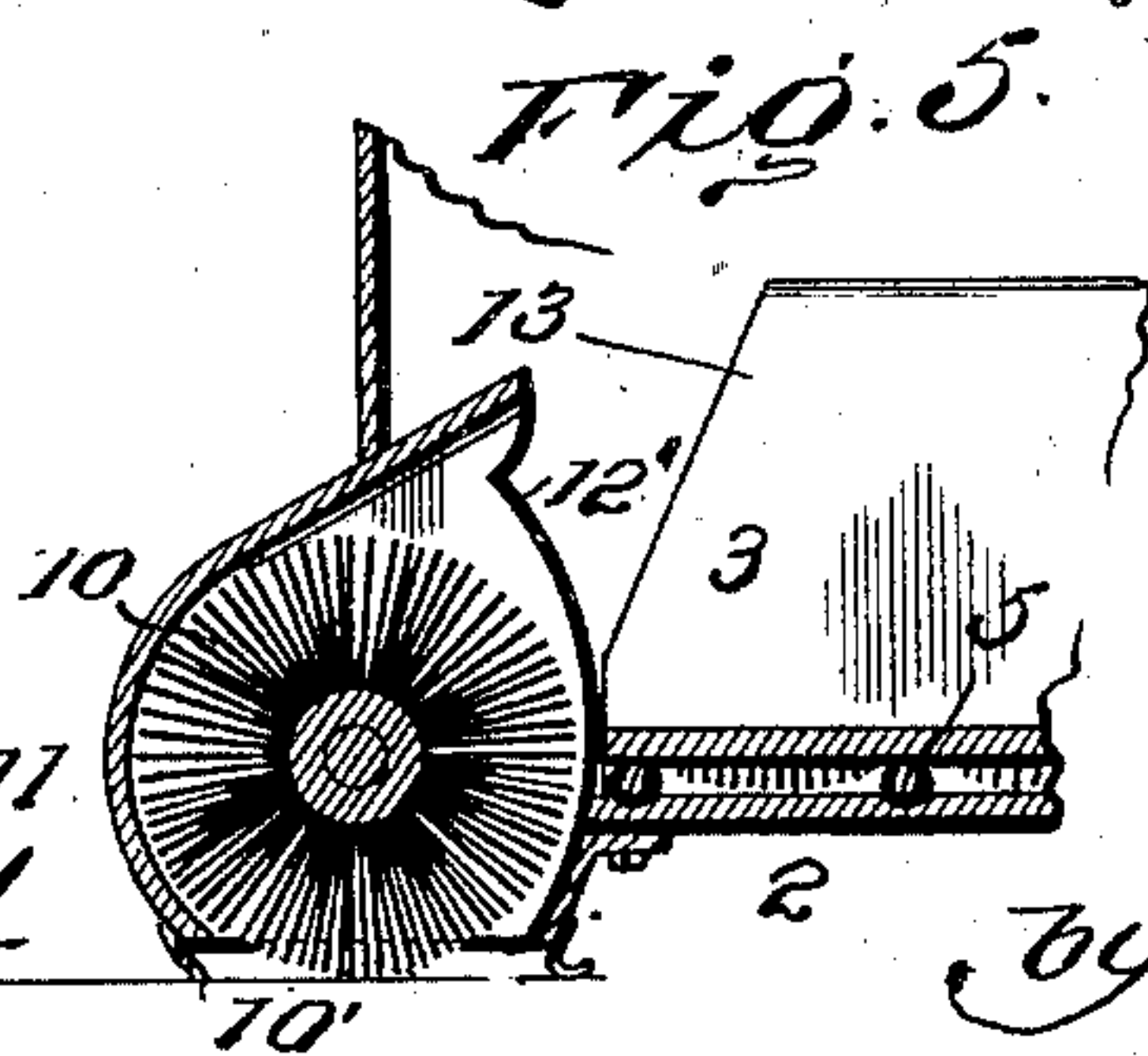
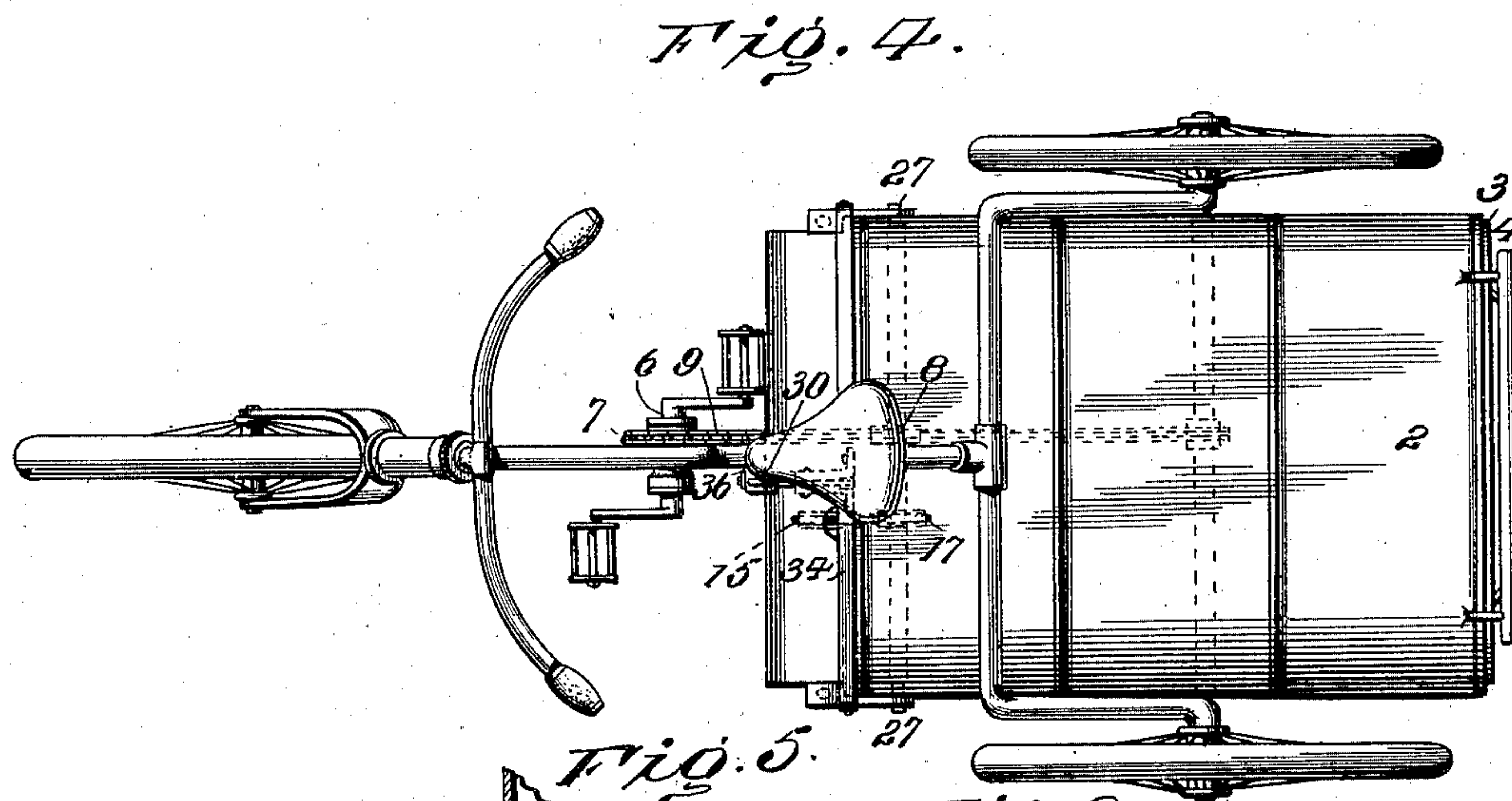
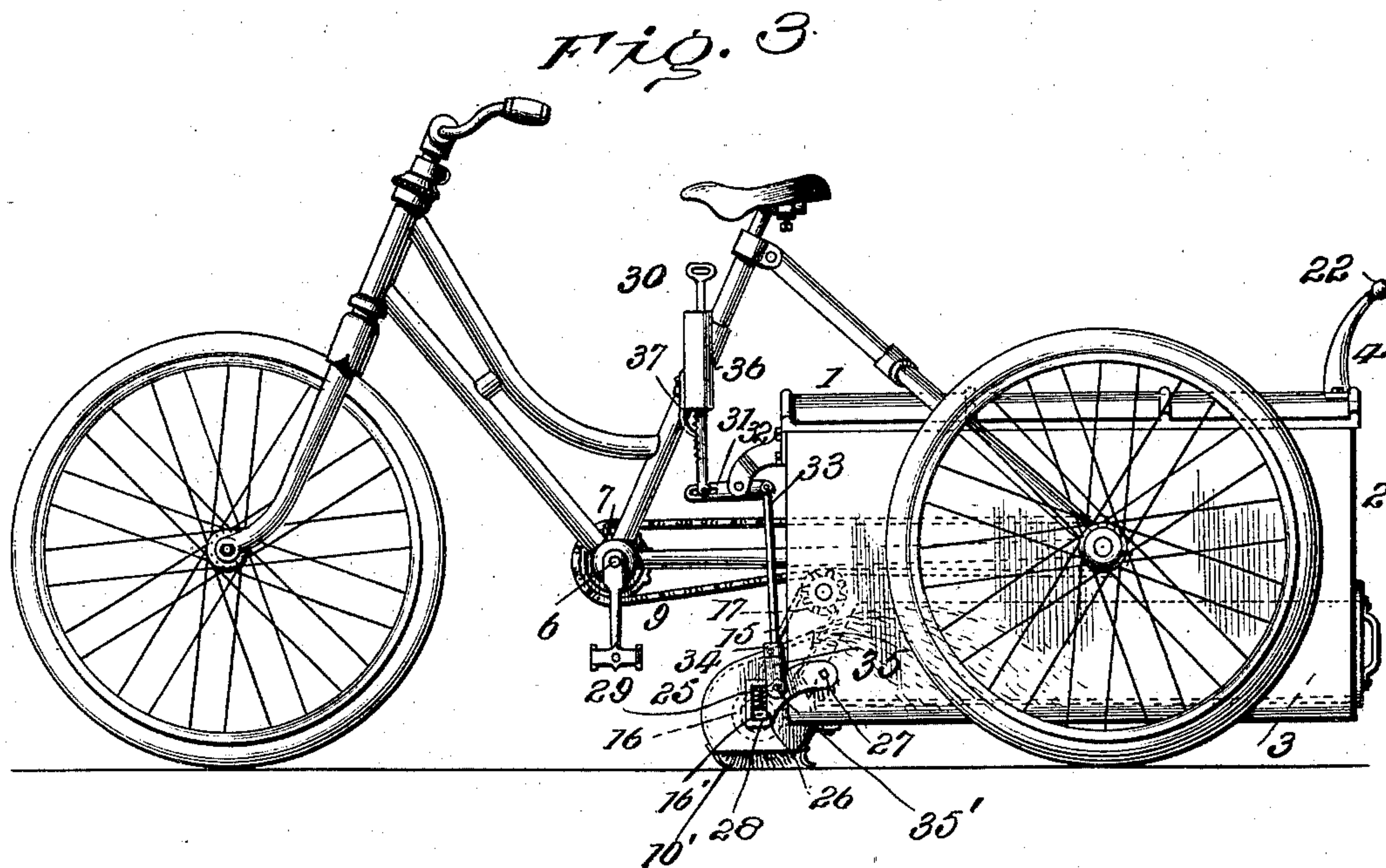
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**5 Sheets—Sheet 2.**



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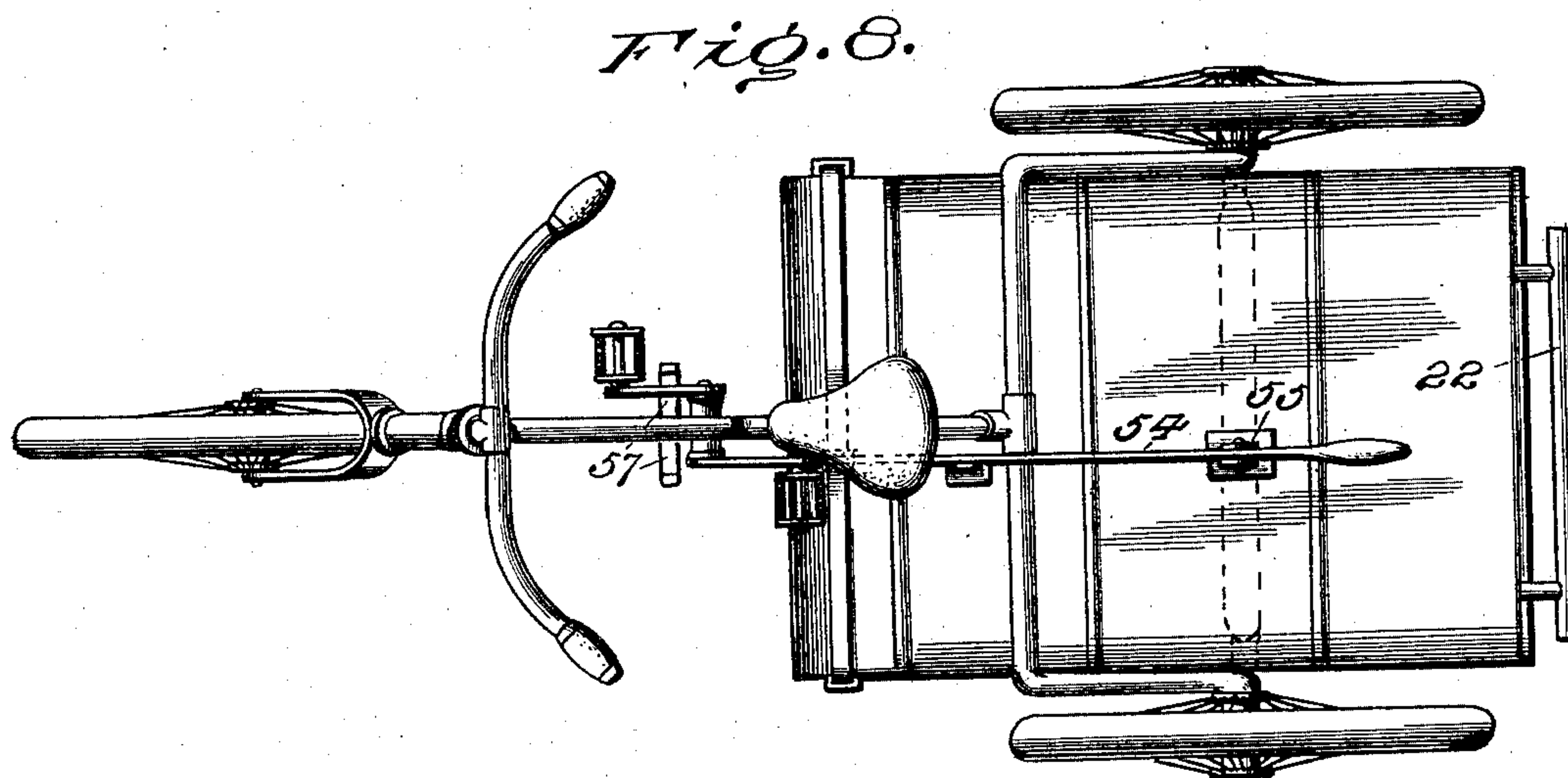
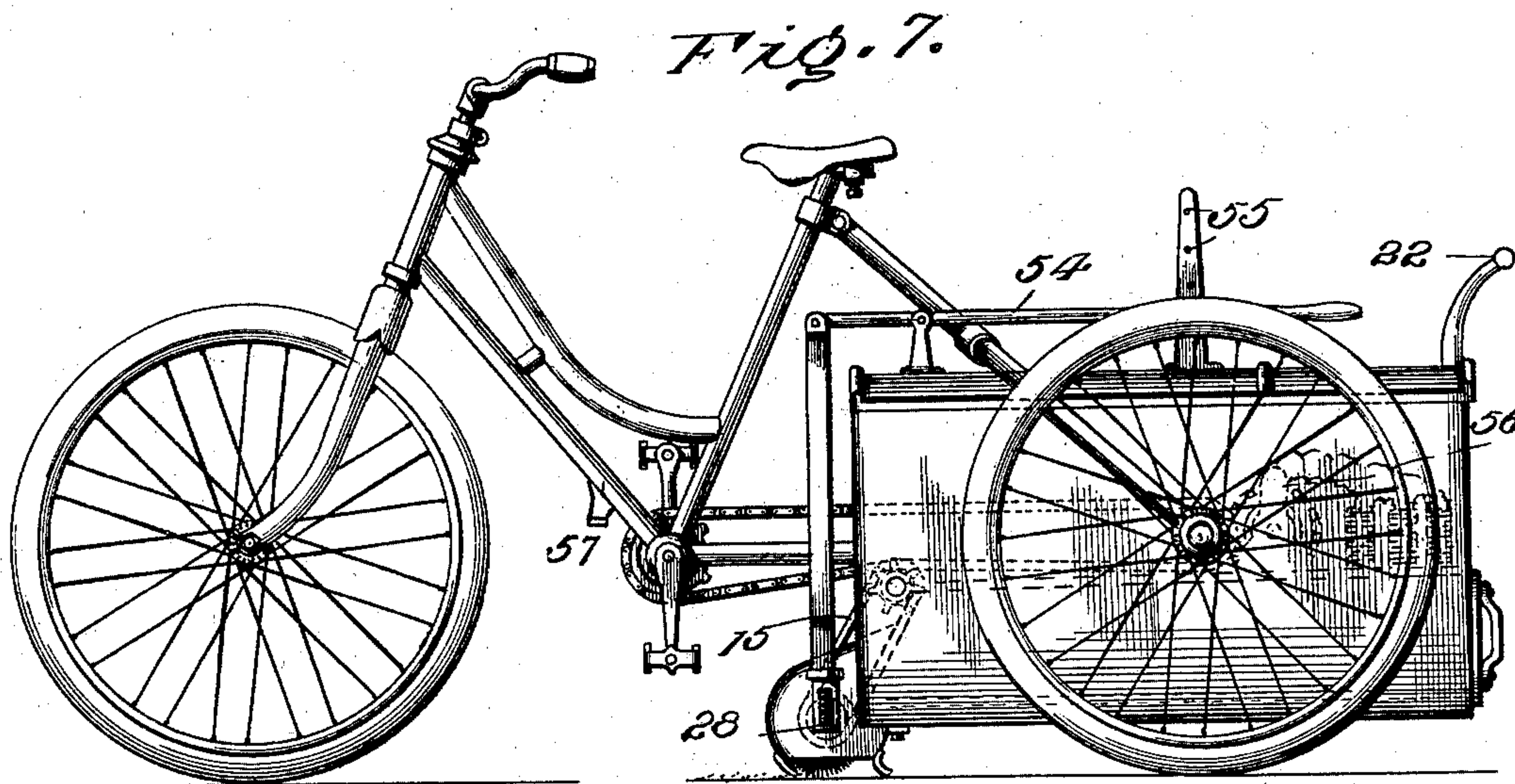
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5 Sheets—Sheet 3.



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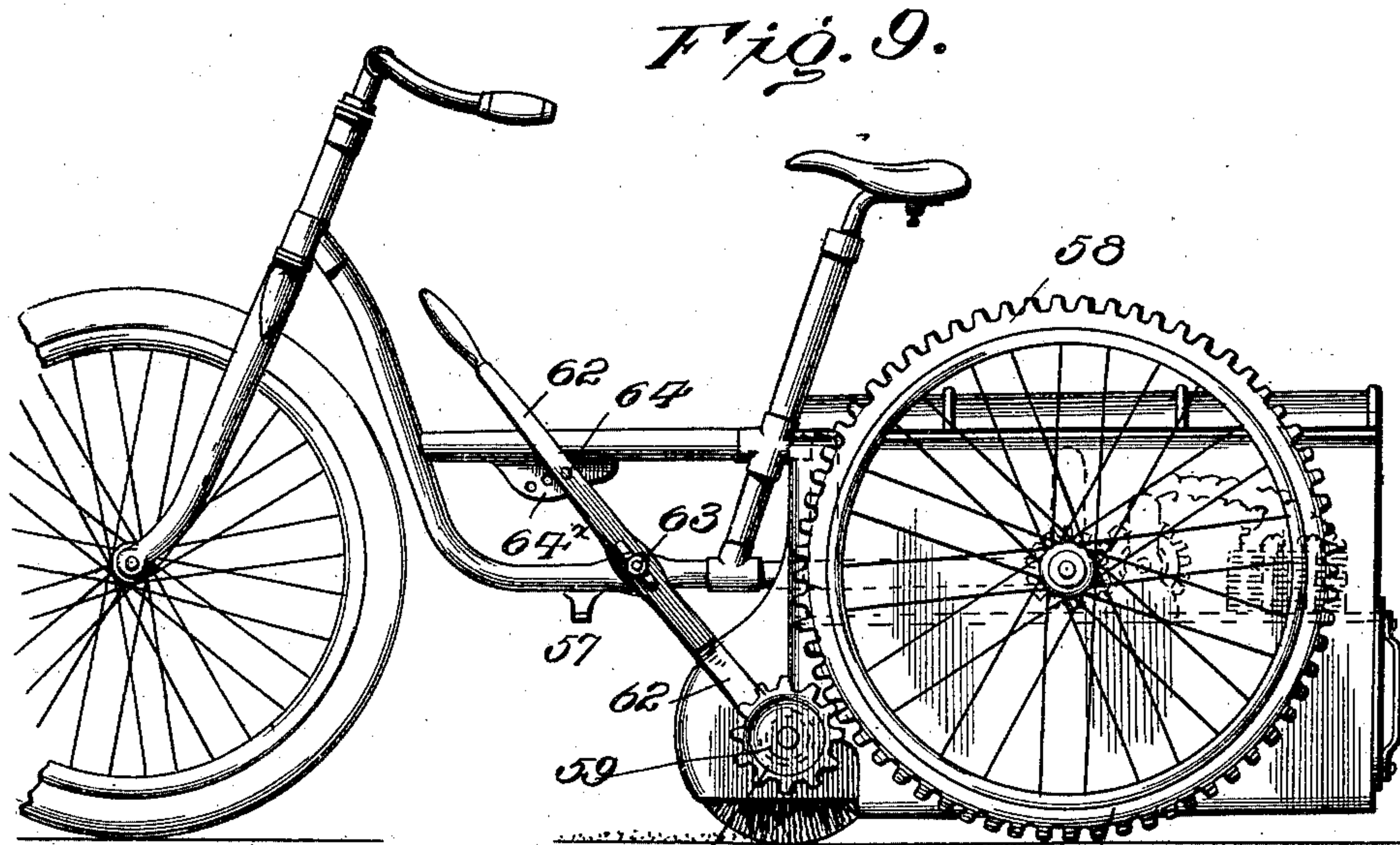
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STREET SWEEPER.

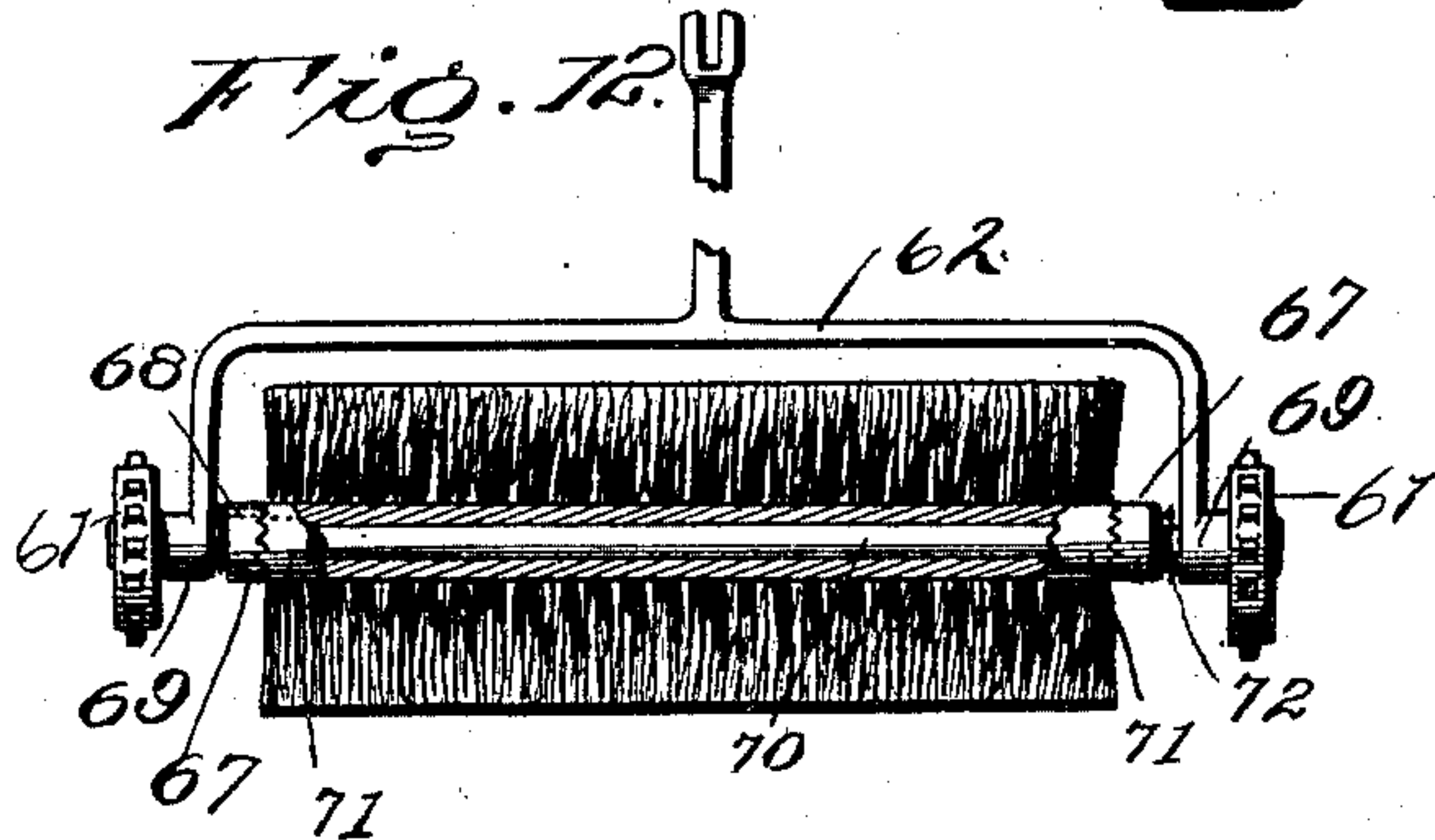
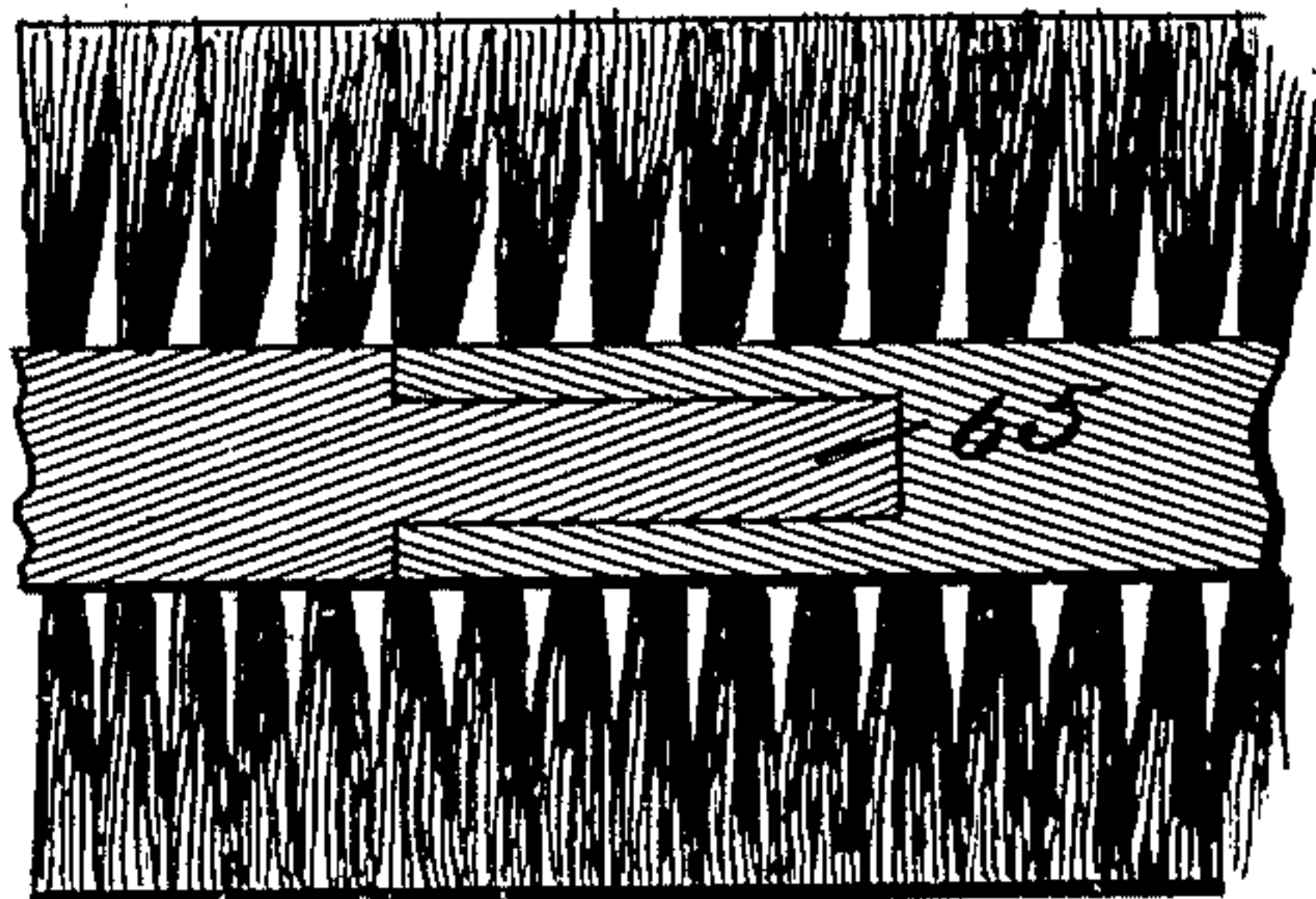
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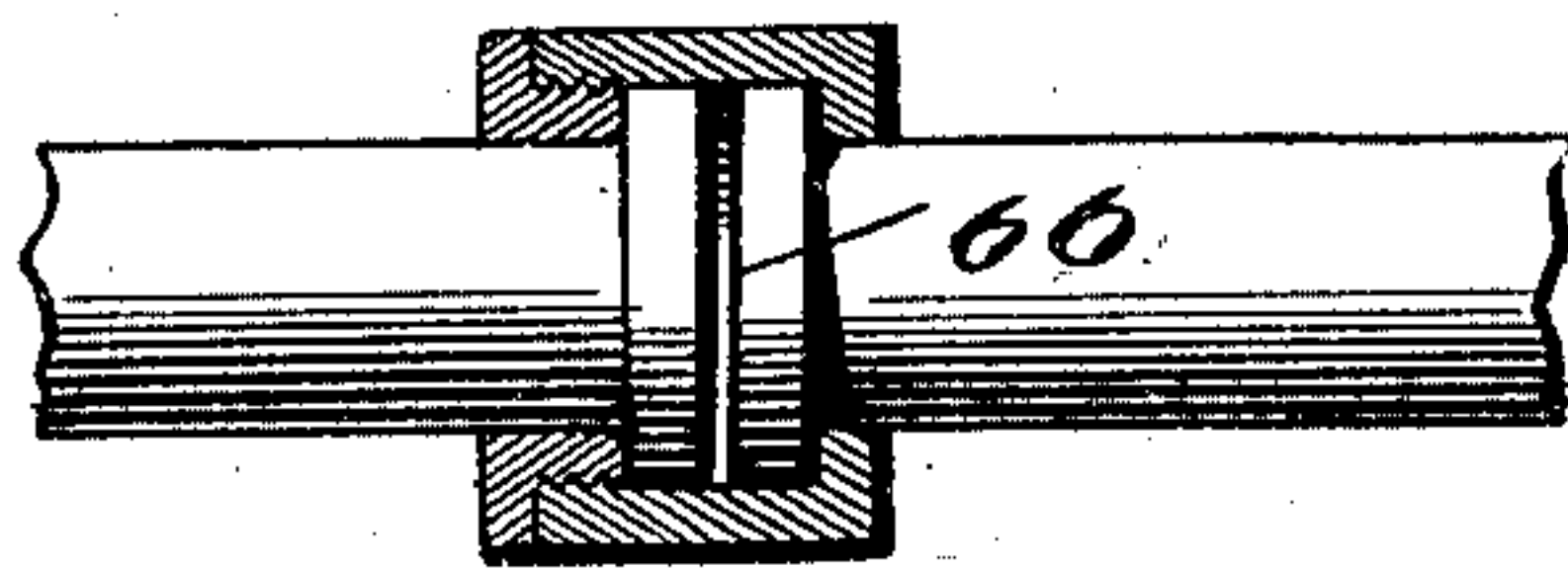
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*Fig. 10.*



*Fig. 11.*



Witnesses

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# UNITED STATES PATENT OFFICE.

ANDREW J. REYNOLDS, OF BOSTON, MASSACHUSETTS.

## STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 683,413, dated September 24, 1901.

Application filed November 17, 1899. Serial No. 737,336. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW J. REYNOLDS, a resident of 73 Tremont street, Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Tricycle-Sweepers; and I do hereby 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 pertains to make and use the same.

The invention relates to self-loading street and sidewalk sweepers, and has for its general object to increase the efficiency and simplify the construction of such machines. It has for its further objects to support and operate the brush in such manner that it automatically adjusts itself to inequalities of ground-surface and provide for changing its speed as desirable, according to variations in the amount and condition of the sweepings, and to secure these and other advantages in a simple and efficient machine whether driven by hand or by a motor.

The invention consists in the construction hereinafter described and pointed out.

In the accompanying drawings, Figure 1 is a broken elevation of the sweeper. Fig. 2 is a plan of a modification. Fig. 3 is an elevation showing modified details. Fig. 4 is a plan of the same. Fig. 5 is an enlarged section showing rollers under dust-box. Fig. 6 is an elevation of a bracket with bearing for brush-shaft. Fig. 7 is an elevation showing a modified arrangement of brush-adjusting devices. Fig. 8 is a plan of the same. Fig. 9 is an elevation showing a modification of elastic driving mechanism. Fig. 9<sup>a</sup> is an elevation of a brush-shaft bearing. Figs. 10 and 11 are enlarged partial sections indicating sectional brush-shafts and couplings therefor. Fig. 12 is a view, partly in section, on a scale smaller than that of Figs. 10 and 11, showing a clutch device to provide for independent rotation of brush-shaft sprocket-wheels and concentric shaft-sections. Fig. 13 is an elevation, partly in section, of the machine, showing apparatus for driving by steam. Fig. 14 is a plan of devices for varying the speed of the sweeper.

Numeral 1 denotes a tricycle-frame supporting a box or frame 2, in which is removably held a dust-drawer 3. Said drawer has

a handle 4 and runs on rollers 5, situated in suitable depressions in the box-bottom.

6 indicates a pedal-shaft. 7 is a driving-wheel on said shaft, and 8 an intermediate wheel over which runs the driving-chain 9.

10 denotes a roller-brush having bearings in a case 11, hinged at 12 to the drawer-frame 2.

10' indicates flexible curtains situated at the bottom edges of the brush-case. This brush-case 11 communicates with the dust-drawer through openings 12' and 13, situated in said case and drawer, respectively.

If desired, a cover 14, preferably elastic, may be made to inclose the joint between the case and drawer on the lower side. It is fastened at 14' to the case, and its edge 14'' is free to spring past the adjacent edge of the drawer when the latter is moved in or out.

15 denotes elastic belts running over pulleys 16 and 17, fixed on the brush-shaft 16' and on shaft 18 of wheel 8, respectively.

19 denotes a rod pivoted to the hinged brush-case and also to a spring bar or lever 20. Said lever has a pivotal connection with the machine-frame at 21 and has a handle 21'.

23 denotes notches in a post 24, which are adapted to receive and hold the handle end of the spring-lever 20. By means of this lever the brush and its case can be lifted above the operative level, and, further, when in use the pressure of the brush on the pavement can be varied thereby. The brush is thus held to its work in a yielding manner. The elastic belts will normally be held under some tension by the spring-lever 20 and cooperate with it to insure a smooth and efficient action of the brush on rough or irregular surfaces, and this feature is deemed important.

22 denotes a bar (see Fig. 2) whereby the machine can be pushed either solely or in cooperation with a rider operating pedal-cranks of usual or of any desired construction.

In Figs. 3, 4, and 5 is shown a modification in which the brush-case 25 is fixed to the dust-drawer frame, and the brush-shaft has bearings supported in arms 26, pivoted at 27 to said frame. The bearing-blocks 28 are held in yielding manner by springs 29. The brush is raised or depressed by a handle 30, pivoted to a lever 31, having a fulcrum in a frame-bracket 32. Said lever is loosely connected to the brush-shaft-supporting arms 26 by a



rod 33 and cross-bar 34, having ears 35 pivoted at 35' to said arms 26. An elastic belt is denoted by 15. A guide for handle 30 is denoted by 36, and 37 indicates a spring-pawl and rack for holding the handle when adjusted to hold the roller in any desired situation, whether operative or inoperative.

In Fig. 2 is shown a modification of the machine capable of general use, but well adapted for sweeping side and other walks. The brush 38 on shaft 39 is driven by a single elastic belt 15 by means of pulleys 41 and 42, fixed, respectively, on the shaft 43 of the sprocket-wheel 44 and on the brush-shaft. The pulley 42 is situated between two brush-sections, as shown. 45 denotes a brush-frame provided with suitable bearings 46 for the brush-shaft and connected by rods 47 with an arm 48, rotatably supported on a post 49. 50 denotes a hand-wheel fixed to said arm and rotating with it about post 49. 51 denotes a slot in the arm, which loosely receives the ends of rods 47. The brush-frame is pivoted to the machine-frame at 52. The hand-wheel when rotated turns the brush about 52 as a center by means of the rods 47, whereby the brush can be adjusted to any desired inclination to the path of the machine.

In Figs. 7 and 8 is shown an arrangement of the brush-adjusting devices wherein a lever 54 extends rearwardly to near the handle 22 and is adapted to be engaged by any one of a series of pins 55. An electric or other motor is indicated by broken lines and denoted by 56. An elastic belt 15 and spring-pressed bearings 28 are employed. In this form of the machine, if desired, the pedals may be omitted and foot-rests provided, such as indicated at 57 in Fig. 9. In the latter figure a motor 56 is indicated. Instead of elastic belts gear-wheels 58 and pinions 59, having elastic and compressible teeth, are employed. Such teeth may be formed integral with rubber tires 60 and rubber pinion-rims 61. The tires may be either solid or tubular. The brush-shaft has spring-pressed bearings 28. The brush-frame lever 62 is adjustable about a pivot 63, and 64 denotes a pin for holding it under any adjustment. The teeth are made long, as indicated, and being elastic and compressible they permit the brush to rise and fall to a limited extent without disengagement of the pinions and gear-wheels. The frame-lever can be lowered and fixed by the pin in the lower hole of the series 64<sup>x</sup>, and the brush thereby lifted from the ground-surface and then readjusted to the position shown, so as to sweep the surface, these adjustments being effected without throwing the pinions out of gear. The elastic compressible teeth provide for the occasional incidental rise and fall of the sliding bearing-blocks 28, such as shown in Fig. 6, to permit the brush to pass over uneven surfaces, and the elastic driving connection coöperates under such circumstances by yielding without disconnection. To facilitate

the movements of the brush in turning a corner, its shaft may be made in sections, coupled as indicated at 65 and 66 in Figs. 10 and 11, respectively. By either of these constructions the brush-sections may be rotated independently, as desirable in sweeping a short curve.

In Fig. 12 a clutch mechanism is indicated to provide for sweeping a short curve. 67 indicates clutch members, which are splined at 68 upon shaft 70, the respective ends of which carry fixed sprocket-wheels 61. The shaft 70, on which the brush is adapted to turn freely, is supported in bearings 69 of the hanger 62, as shown. The clutch members 67 are normally held in engagement with clutch members 71 of the brush by springs 72. The construction is such that the sprocket-wheels may be driven at different speeds, as required in turning a corner.

It will be understood that any and all subsidiary devices shown which are appropriate to either form of the machine can be adapted in such form, though not specifically described in connection therewith.

In Fig. 13 is shown an apparatus for driving the sweeper by steam. A indicates one of two or more steam-cylinders, and B is a throttle-valve controllable by handle B'. C denotes a boiler; D, a water-tank; E, a gasoline-tank; F, an eccentric, and G a cylinder-exhaust. Suitable pipe connections are employed, all the parts hereinbefore described being of usual construction and arrangement in vehicles of this class, and particular description thereof is deemed unnecessary. The brush has spring-held bearings and an elastic driving-belt, and a brush-case is combined with a removable dust-drawer, as in other cases herein set forth.

In the machine shown in Fig. 13 and in others having a driving-pulley at each end of the brush-shaft the brush may be driven from one pulley at a time, and these pulleys may be driven by gears of different sizes, respectively, to vary the speed of the brush as desirable under varying conditions.

Referring to Fig. 14, H indicates two clutch members having a spline connection with the shaft I and adapted to connect either the pulley K or K' with said shaft in manner to operate the brush by the medium of a corresponding belt L. The pulleys being of unequal size, the speed of the brush may be varied by suitably moving the clutches, which is effected by means of the clutch-shifting bar M.

Having thus described my invention, what I claim is—

1. In a tricycle-sweeper, a framework, the driving-chain for the tricycle, the intermediate gear-wheel driven by the chain, a brush carried by a rotating shaft mounted in the framework, and an elastic belt between said brush-shaft and the shaft of the driven gear-wheel, said brush-shaft being supported in pivoted arms.



2. In a tricycle-sweeper, a framework, the driving-chain for the tricycle, the intermediate gear-wheel driven by the chain, a brush carried by a rotating shaft mounted in the framework, and an elastic belt between said brush-shaft and the shaft of the driven gear-wheel, said brush-shaft being supported in pivoted arms, and a handle for raising or lowering the arms and brush.

3. In a tricycle-sweeper, a framework, the driving-chain for the tricycle, the intermediate gear-wheel driven by the chain, a brush carried by a rotating shaft, and an elastic belt between said brush-shaft and the shaft of the driven gear-wheel, said brush-shaft being supported in pivoted arms, a handle for raising or lowering the arms and brush, and devices for holding the brush and its shaft in either an operative or an inoperative situation.

4. In a sweeper, a framework, the driving-chain, the intermediate shaft driven directly by said chain, a brush carried by a rotating shaft mounted in the framework, said brush-

shaft being supported in pivoted arms, an elastic belt between said brush-shaft and the driven shaft, and means for varying the speed of the brush without changing the speed of the driven shaft.

5. In a sweeper, a framework, the driving-chain, the intermediate shaft driven directly by said chain, a brush carried by a rotating shaft mounted in the framework, said brush-shaft being supported in pivoted arms, an elastic belt between said brush-shaft and the driven shaft, belt-wheels of different sizes loose on said driven shaft and operating to drive said brush-shaft, and means for fixing either of said wheels to the driven shaft at will.

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

ANDREW J. REYNOLDS.

Witnesses:

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JOHN A. SULLIVAN.