F. KINZBACH.

MACHINE FOR CLEANING PIPE LINES.

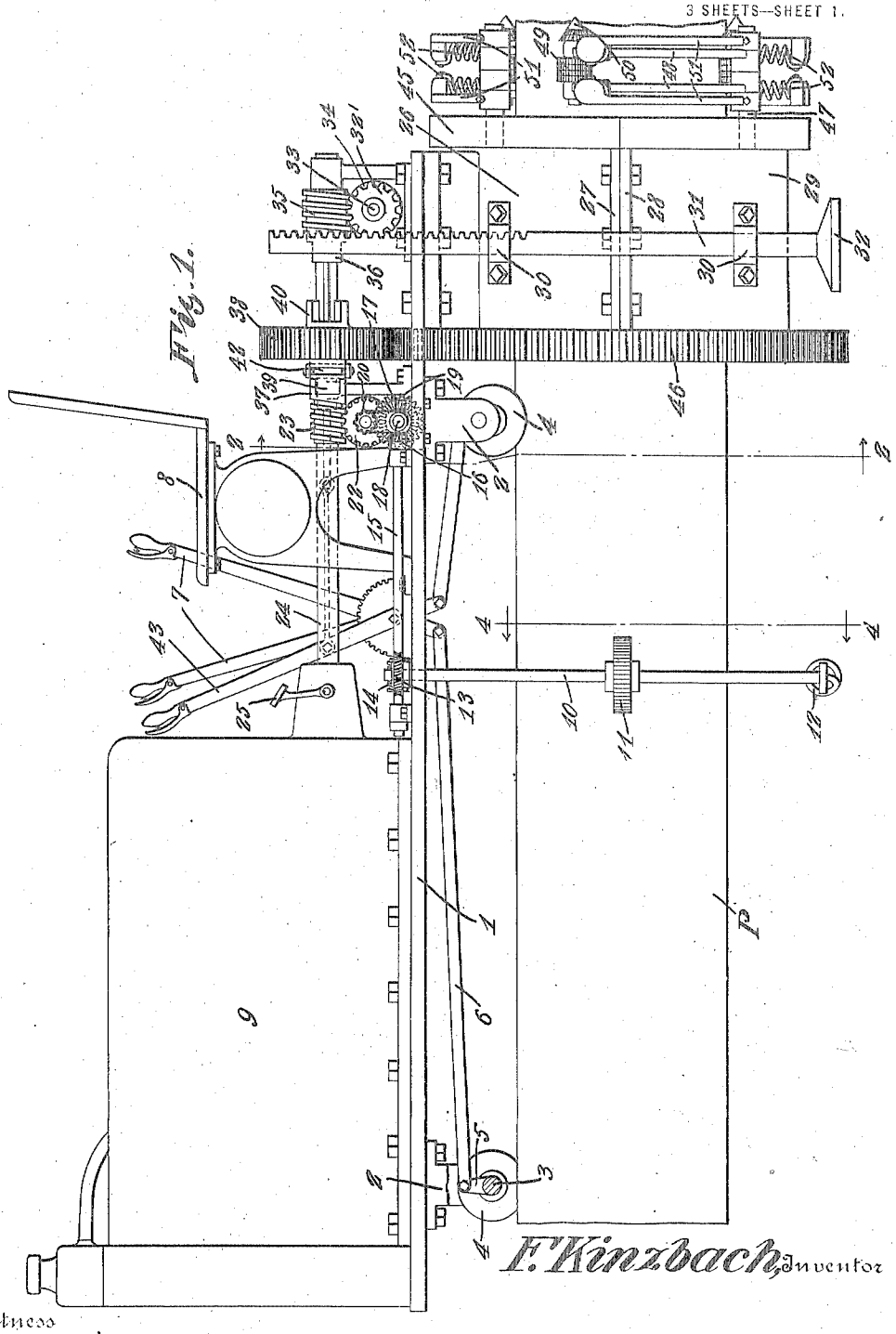
APPLICATION FILED JAN. 19, 1918.

1,308,081.

Patented July 1, 1919.

3 SHEETS—SHEET 1.

Fig. 1.



Witness

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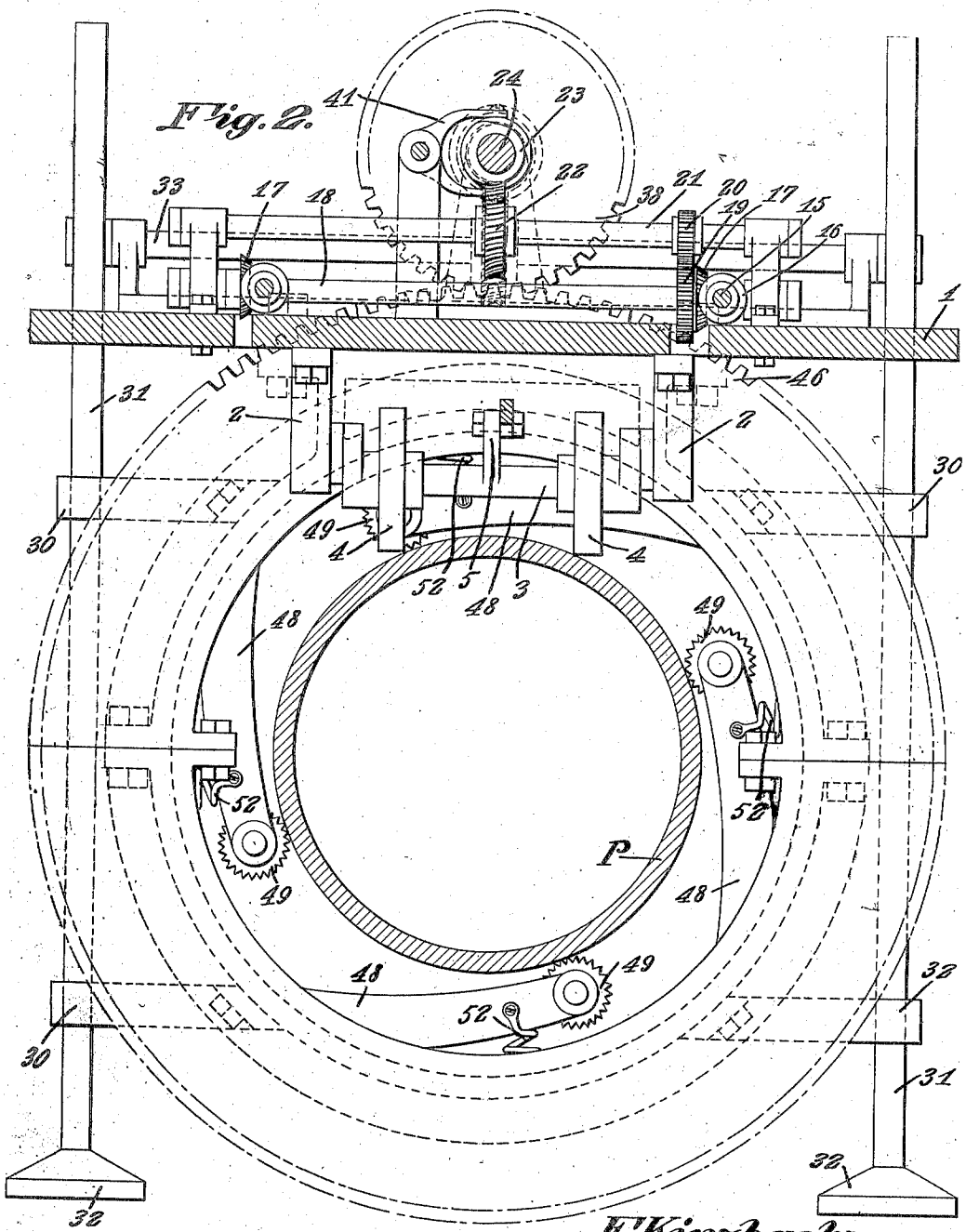
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

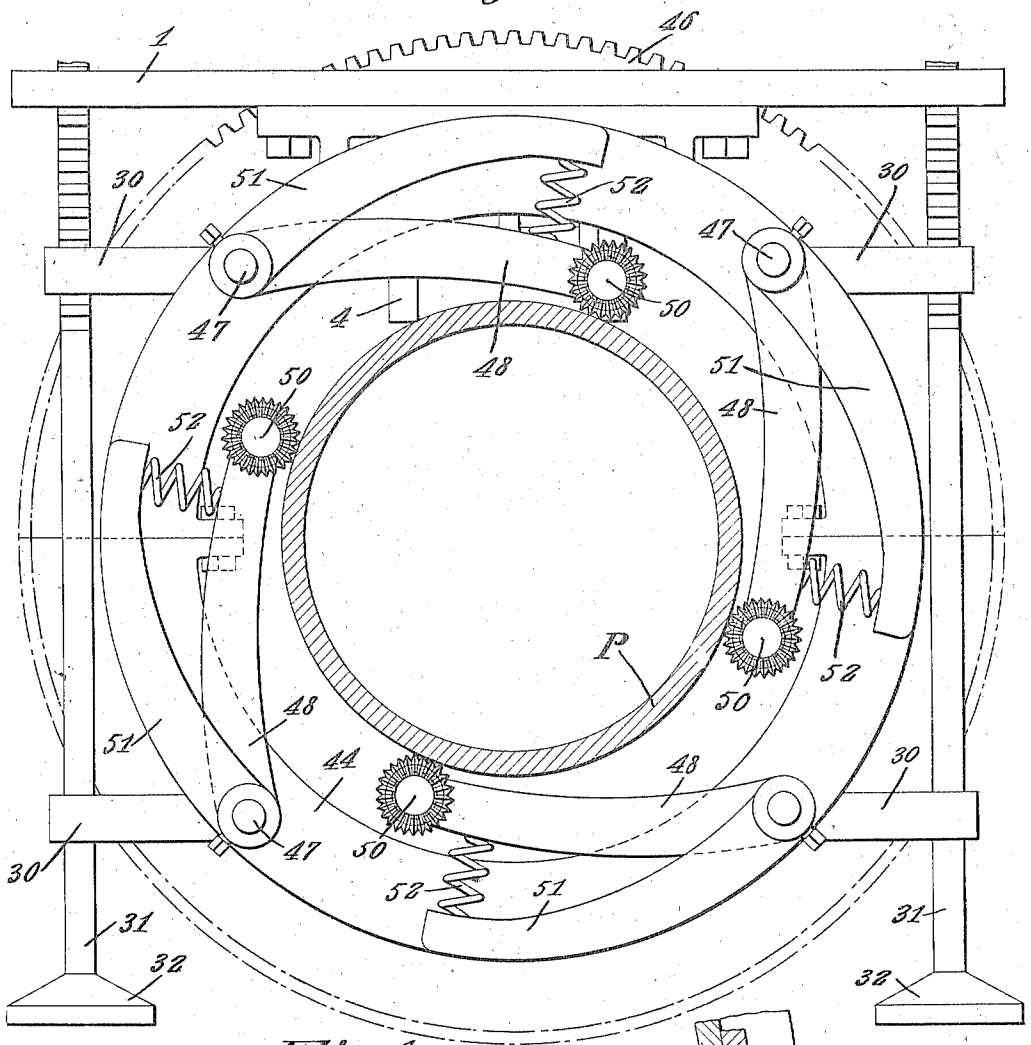


Fig. 4.

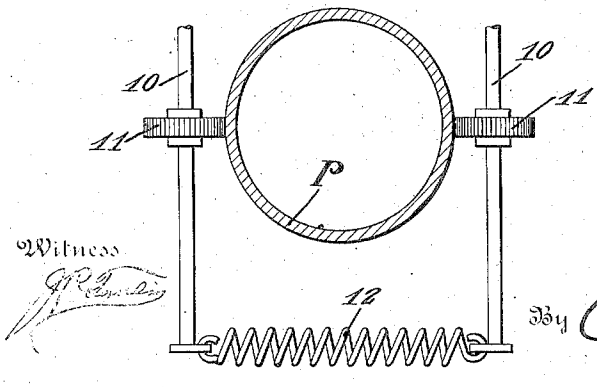
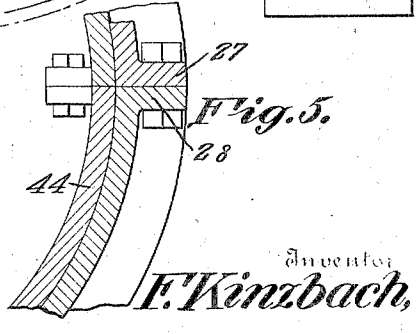


Fig. 5.



Witness

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UNITED STATES PATENT OFFICE.

FRANK KINZBACH, OF SOURLAKE, TEXAS.

MACHINE FOR CLEANING PIPE-LINES.

1,308,081. Specification of Letters Patent. Patented July 1, 1919.

Application filed January 19, 1918. Serial No. 212,807.

To all whom it may concern:

Be it known that I, FRANK KINZBACH, a citizen of the United States, residing at Sourlake, in the county of Hardin and State of Texas, have invented a new and useful Machine for Cleaning Pipe-Lines, of which the following is a specification.

This invention relates to machines for cleaning the exterior surfaces of pipe lines.

One of the objects of the present invention is to provide a machine adapted to travel along a pipe line, said pipe line being used as a track for the machine, and the said machine carrying a cleaning structure which extends around the pipe supporting the machine and is adapted to rotate for the purpose of removing deposits from the pipe.

A further object is to provide a machine which is compact, can be easily placed on or removed from a pipe line, and which is constantly under the control of an operator carried by the machine.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—

Figure 1 is a side elevation of the machine in position upon a pipe line.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a rear elevation of the mechanism.

Fig. 4 is a section on line 4—4 of Fig. 1.

Fig. 5 is a vertical transverse section through a portion of the pipe receiving ring and the pipe driving sleeve.

Referring to the figures by characters of reference 1 designates the platform of a carriage having bearings 2 thereunder in which are journaled axles 3 having their intermediate portions offset and engaged by supporting wheels 4. Crank arms 5 are provided on the axles and are connected by links 6 to separate adjusting levers 7. These levers extend upwardly from the platform and are provided with any suitable means for locking them in any position to which they might be adjusted. The levers can be reached conveniently by the occupant of a seat 8 arranged on the platform 1 and back of the motor 9. The wheels 4 are adapted to bear upon the pipe line indicated generally at P, thus to support the platform. By having the wheels mounted upon the offset intermediate portions of the axles 3, said wheels can be raised to permit them to pass readily over the pipe joint without correspondingly raising the platform 1. Extending downwardly from each side portion of the platform 1 is a shaft 10 carrying a toothed wheel 11. The lower ends of the two shafts are connected by a spring 12 which serves to bind the wheels 11 upon opposed portions of the pipe P. The upper end of each shaft 10 has a worm wheel 13 adapted to receive motion through a worm 14 from a longitudinal shaft 15. Two of these shafts are provided and each has a bevel gear 16 meshing with a bevel gear 17 at one end of a transverse shaft 18. A pinion 19 receives motion, through a gear 20, from a transverse shaft 21 having a worm wheel 22 meshing with and adapted to be driven by a worm 23. This worm is secured to a shaft 24 driven by the motor 9 and which can be coupled to or uncoupled from the motor by a clutch under the control of a foot lever 25.

Secured to the rear end portion of the platform 1 is the upper half of a bearing sleeve 26 having outstanding terminal flanges 27 to which are detachably secured corresponding flanges 28 extending from the end of the lower section 29 of said sleeve. Brackets 30 extend outwardly from the upper and lower sections of the bearing sleeve and constitute guides for rack bars 31. Each of these rack bars has a foot 32 at its lower end while its upper or toothed end portion engages a gear 32′. Both of the gears 32 are secured to a transverse shaft 33 and between these gears 32 and secured to the shaft 33 is a worm gear 34 meshing with a worm 35 which is loosely mounted on the shaft 34 and has a clutch member 36 at one end thereof. The worm 23 is also

loosely mounted on the shaft 24 and has a clutch member 37. Mounted on the shaft and between the two worms 23 and 35 is a drive gear 38 having oppositely extending clutch members 39 and 40 projecting from the hub portion thereof. A yoke 41 projects into a groove 42 formed in the clutch member 39 and this yoke is adapted to be shifted by a lever 43 so as to move gear 38 to a desired position. It will be understood that when the gear 38 is in the position shown in Fig. 1 the clutch members 37 and 39 are in engagement with each other so that the worm 23 is thus coupled to the shaft 24. When the gear 38 is moved to its other extreme position, however, the worm 23 becomes uncoupled from its shaft and the clutch member 40 engages the clutch member 36 thus to couple the worm 25 to the shaft 24 and cause motion to be transmitted to the rack bars 31 through the gears provided therefor.

Arranged within the bearing sleeve 26 is a tubular drive member 44 made up of upper and lower connected sections. One end of this tubular drive member has an outstanding flange 45 adapted to bear against the rear end of the sleeve 26, as shown particularly in Fig. 1. The other end of the tubular drive member carries a gear 46 adapted to receive motion from the gear 38 when said gear is in its normal position as shown in Fig. 1.

Extending outwardly from the tubular drive member 44 are bearing pins 47. On each of these pins are journaled arms 48 arranged in pairs and constituting bearings for toothed cutters 49. One or both ends of each cutter can be tapered as shown at 50 in Fig. 1. Secured to each of the pins 47 so as to be fixed relative thereto, are fingers 51 and interposed between these fingers and the arms 48 are springs 52 which press inwardly upon said arms 48 so as to hold the cutters 49 yieldingly against the pipe P.

It is to be understood that when the machine is not in use the gear 38 can be out of mesh with the gear 46 and the feet 32 can be in engagement with the ground. By shifting the clutch member 40 into engagement with the clutch member 36, the racks 31 can be raised inasmuch as motion will thus be transmitted from the rotating shaft 24 to the worm gearing controlling the operation of the rack bars. After the rack bars have been elevated, the gear 38 can be shifted into mesh with the gear 46, thus simultaneously coupling said gear 46 to the shaft 24 and coupling the worm 23 to said shaft. As a result the tubular driving member 44 will be rotated within the sectional bearing member 26—29 and motion will be transmitted through the gearing to the propelling wheels 11. Thus the machine will be caused to move forwardly and, during said movement, the gear 46 and the parts connected thereto will be rotated about the pipe. It will cause the cutters 49, which are pressed against the pipe, to loosen any incrustations thereon so that they will thus be removed and the pipe left in a clean condition. As the machine approaches a joint, the wheels 4 can be successively raised by means of their levers 7 so they can pass over the joint without correspondingly elevating the platform 1.

It will be understood that by disconnecting the flanges 27 and 28, the sections of the tubular member 44 can be detached and removed from the pipe. By having the bearing member 26 and tubular transmission member 44 made of upper and lower sections, said members can readily be placed on or removed from the pipe P.

It has been found that by utilizing a machine such as described, a pipe line can be thoroughly cleaned by machine and a great saving of time thus effected.

By providing the cutters with tapered ends, said cutters will ride readily over the pipe joints. By referring particularly to Fig. 2 it will be noted that the inner side edges of the treads of the wheels 4 engage the outer surface of pipe and tend to bite thereinto, thus holding the machine properly centered on the pipe so that it will not slide laterally thereon.

What is claimed is:—

1. A machine for cleaning the exterior surfaces of pipe lines, including a carriage, a motor thereon, a cleaner connected to the carriage, motor operated means for rotating the cleaner about a pipe to clean the same, and wheels mounted on said carriage and having their edges biting the said pipe to movably support the carriage and hold it against rotation thereon.

2. A machine for cleaning the exterior surfaces of pipe lines, including a carriage, a motor thereon, a cleaner connected to and below the carriage, means operated by said motor for rotating the cleaner about a pipe to clean the pipe, said carriage being movable along the pipe being cleaned and being supported thereby, propelling wheels engaging the opposed portions of the said pipe and driven by the motor, and means for pressing said wheels yieldingly against the said pipe.

3. A machine for cleaning the exterior surfaces of pipe lines, including a carriage having supporting wheels for engaging a pipe being cleaned and holding the carriage against rotation thereon, a motor on the carriage, a cleaner carried by and extending below the carriage and extending around the pipe on which the carriage is mounted, means operated by said motor for actuating

the cleaner, and means operated by the motor for propelling the carriage along the pipe being cleaned, said propelling means and the supporting means coöperating with the pipe being cleaned to prevent the carriage from moving about the pipe.

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

FRANK KINZBACH.

Witnesses:
LEE WILKINSON,
P. S. DUDLEY.