

No. 777,090.

PATENTED DEC. 13, 1904.

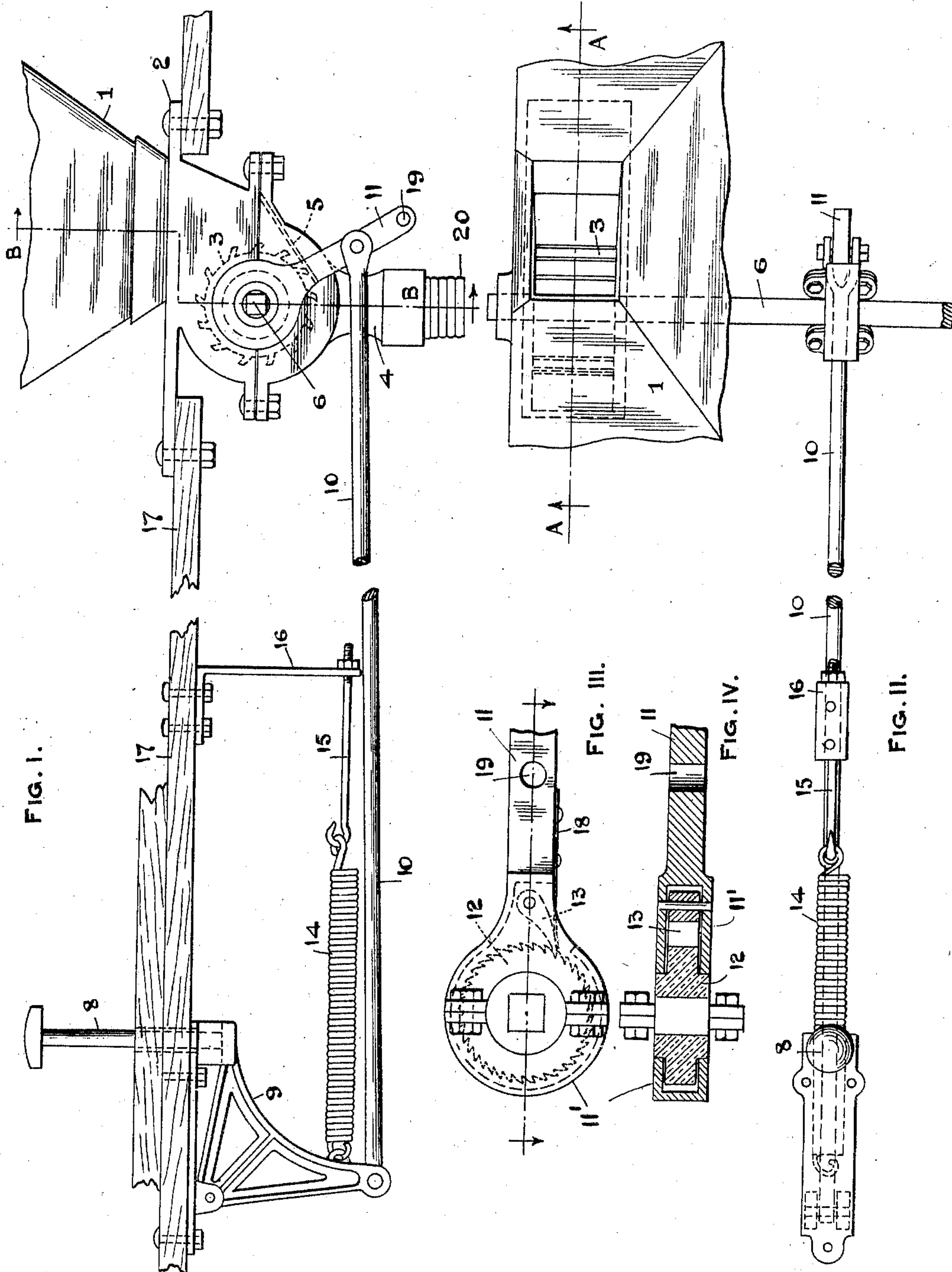
J. GRIFFITHS.

SAND HOPPER MECHANISM FOR TRAMWAY VEHICLES, &c.

APPLICATION FILED JUNE 1, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

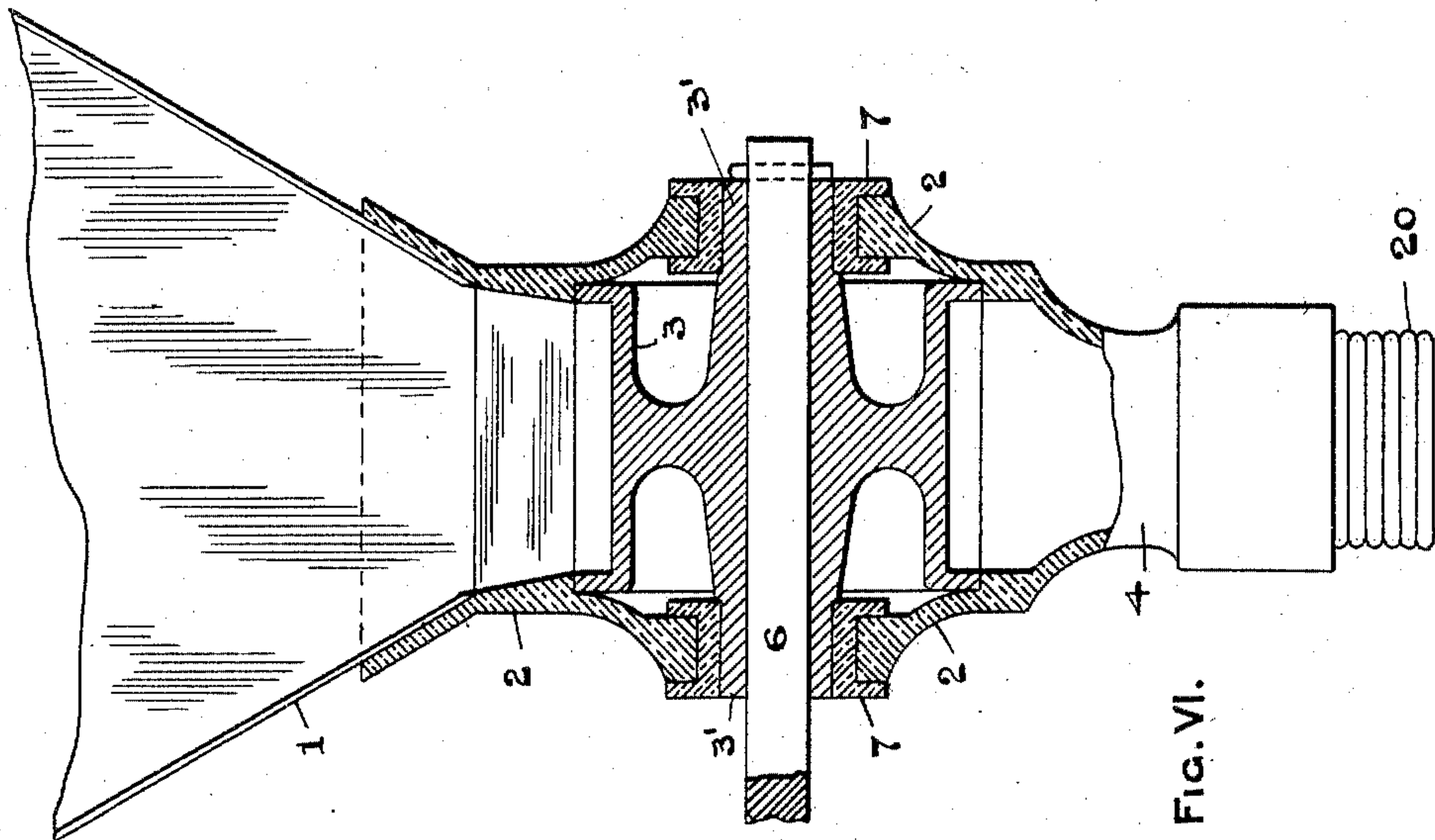


FIG. VI.

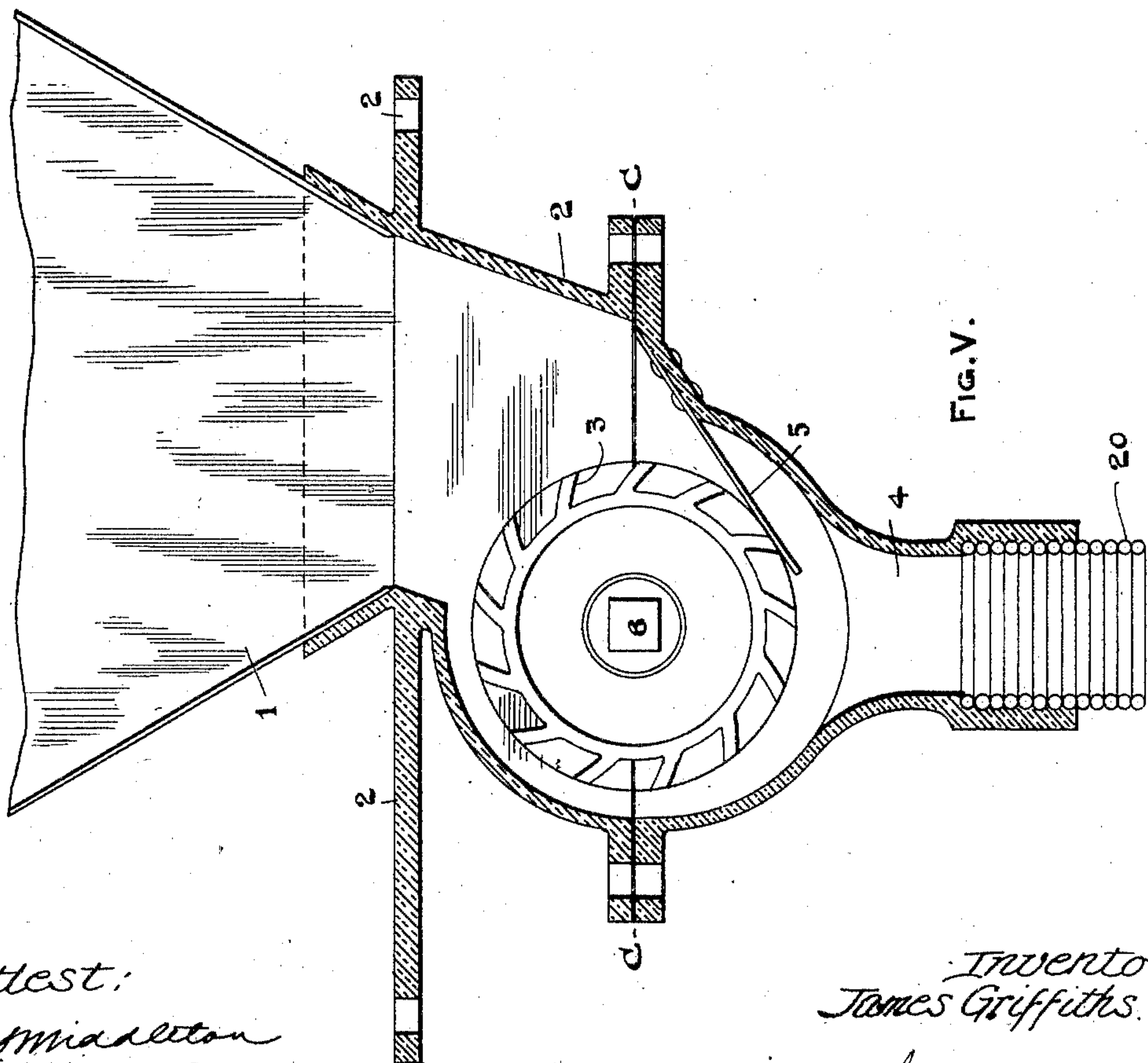


FIG. V.

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UNITED STATES PATENT OFFICE.

JAMES GRIFFITHS, OF LIVERPOOL, ENGLAND.

SAND-HOPPER MECHANISM FOR TRAMWAY-VEHICLES, &c.

SPECIFICATION forming part of Letters Patent No. 777,090, dated December 13, 1904.

Application filed June 1, 1903. Serial No. 159,676. (No model.)

To all whom it may concern:

Be it known that I, JAMES GRIFFITHS, a subject of the King of Great Britain, residing in Old Swan, Liverpool, in the county of Lancaster, England, have invented certain new and useful Improvements in Sand-Hopper Mechanisms for Tramway, Railway, and the Like Vehicles, of which the following is a specification.

This invention relates to an improved sand-hopper mechanism for use in connection with tramway, railway, or similar vehicles, where on account of the greasy condition of the rails under certain conditions it is found desirable to provide a ready means of directing a stream of sand onto the rail, so as to give the vehicle-wheels a better grip thereon.

In the sand-hoppers as at present in use I find that it is only by using special kinds of sand that satisfactory results are obtained and that in damp weather the sand clogs in the mouth of the sand-hopper, and so renders the apparatus inoperative or unreliable.

The object of my invention is to provide the hopper with a positive feed motion whereby the cheaper kinds of sand may be used with certainty even when in a moist condition.

I have illustrated my invention in the accompanying drawings, in which—

Figure I is an elevation of the general arrangement; Fig. II, a plan of the same; Figs. III and IV, an elevation and a section of the ratchet-gear; Fig. V, a section on the line A A, of Fig. II, to an enlarged scale, of the hopper; and Fig. VI, a sectional elevation on the line B B of Fig. I.

Throughout the drawings the same parts are indicated by the same reference-figures, and in the case of sections the direction in which they are viewed is indicated by the small arrows placed adjacent to the letters denoting the plane of section.

The hopper is preferably formed of a sheet-metal container 1, mounted on a cast-metal base 2, in which is housed the pocket-wheel 3 and below which the outlet 4 is formed. The pocket-wheel 3 is located below the opening in the container 1, and the contour of the base 2 is so formed that on one side it follows the contour of the pocket-wheel, while on the

other side a space is left opposite the opening in the container by which the wheel 3 is fed with sand. A spring 5 bridges across this space and makes contact with the periphery of the teeth of the wheel. Thus as the latter is caused to rotate it carries past the spring and delivers positively to the outlet 4 a quantity of sand which depends upon its rotation and upon the capacity of its pockets. I prefer to use a wheel with teeth of the shape shown; but of course the shape of the pockets may be varied to suit the requirements of particular cases. The wheel is operated through a shaft 6, which is preferably made square and is carried on journals formed in the prolongations of its boss 3'. These journals rotate in bushes 7, formed in the sides of the base 2, which is split across the line C C in order that the wheel and bushes may be inserted in place.

The shaft 6 is operated by the foot-rod 8, the lever 9, the rod 10, ratchet-lever 11, ratchet 12, and pawl 13, and the lever 9 is controlled by the tensile spring 14, connected by the adjustable rod 15 to the L-plate 16, carried from the car-frame 17, to which also the hopper-base 2 and the lever 9 are attached.

The ratchet 12 has a square hole which fits the shaft 6, and the end 11' of the lever 11 is made in the form of a split casing, which almost completely houses the ratchet and in which the pawl 13 is pivoted. The pawl 13 is pressed into engagement with the teeth by the plate-springs 18.

It will be seen then that as the ratchet-lever is oscillated by the depression of the driver's foot through the gear described it rotates the pocket-wheel through a definite angle and feeds the sand. The return stroke effected by the spring 14 is inoperative to rotate the pocket-wheel, so that the latter is intermittently rotated each time the foot-rod 8 is depressed, and the amount by which it rotates may be regulated according to the distance of the point of attachment between the rod 10 and the lever 11 from the center of the pocket-wheel, and a series of holes 19 may be provided for this regulation.

I find that a tube 20, formed of spring-steel or other wire wound into a close spiral, is best

adapted to guide the sand from the outlet 4 onto the rails.

I usually provide one hopper for each wheel, and I operate the hoppers for a pair of wheels 5 on the same axle by a common shaft 4, actuated by the one ratchet and gear. In the case of, say, a tram-car there would be two pairs of hoppers and two sets of operating-gear, one at each end of the car. If desired, of 10 course the four hoppers could be operated by the one gear by connecting the shafts 6 together by sprocket-wheels and chain.

Having now fully described my invention, what I claim, and desire to secure by Letters 15 Patent, is—

1. In a rail-sanding device, in combination; a hopper the lower part of which is shaped to house a pocket-wheel on one side thereof and provided with a plate making contact with the 20 periphery of the pocket-wheel and extending to the other side of the hopper; a pocket-wheel and means for rotating the pocket-wheel; substantially as described.

2. In a rail-sanding device, in combination; 25 a hopper the lower part of which is shaped to house a pocket-wheel on one side thereof and which is provided with a plate making contact with the periphery of the pocket-wheel and extending to the other side of the hopper, said hopper being divided across a plane 30 containing the axis of the pocket-wheel; a pocket-wheel; and means to rotate the pocket-wheel; substantially as described.

3. In a rail-sanding device; in combination 35 with the hopper and the pocket-wheel; the means for rotating the pocket-wheel consisting of a ratchet-wheel on the pocket-wheel shaft, a lever provided with a pawl adapted to

oscillate about the center of the said shaft, a foot-rod and mechanism to convey the move- 40 ment of the said foot-rod to the ratchet-lever; substantially as described.

4. In a rail-sanding device in combination with the hopper and the pocket-wheel; the ratchet-wheel on the pocket-wheel shaft; a le- 45 ver, provided with a pawl, adapted to oscillate about the center of the said shaft and the end of which is shaped to house the said ratchet, and means for oscillating the said lever; substantially as described. 50

5. In a rail-sanding device, in combination, the hopper adapted to house the pocket-wheel, divided across a plane containing the axis of the pocket-wheel and provided with a plate 55 making contact with the periphery of the pocket-wheel, and with bushes to form bearings for the pocket-wheels; a pocket-wheel the boss of which is journaled in said bushes, and means operated by a foot-rod for rotating the pocket-wheel; substantially as described. 60

6. In a rail-sanding device a series of hoppers, a series of pocket-wheels, and means for rotating the pocket-wheels consisting of shafts connecting opposite pairs of pocket-wheels, and connected together and operated by a 65 ratchet-wheel, pawl, lever and foot-rod connected to the latter lever; substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing 70 witnesses.

JAMES GRIFFITHS.

Witnesses:

J. E. LLOYD BARNES,
JOSEPH E. HIRST.