No. 825,592. PATENTED JULY 10, 1906.

A. T. FISHER.

DEVICE FOR INFLATING PNEUMATIC TIRES.

APPLICATION FILED DEC. 5, 1904. RENEWED JUNE 14, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

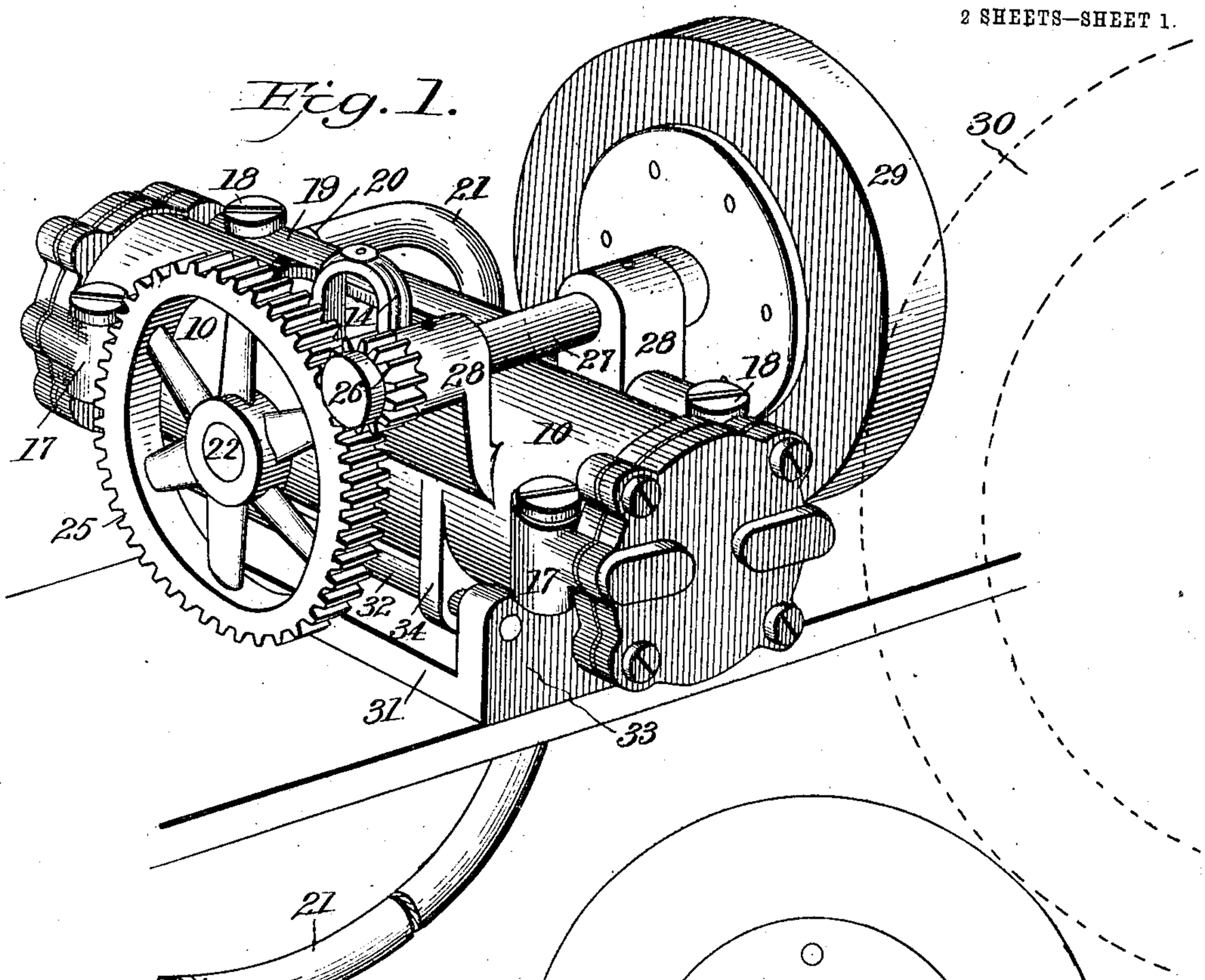
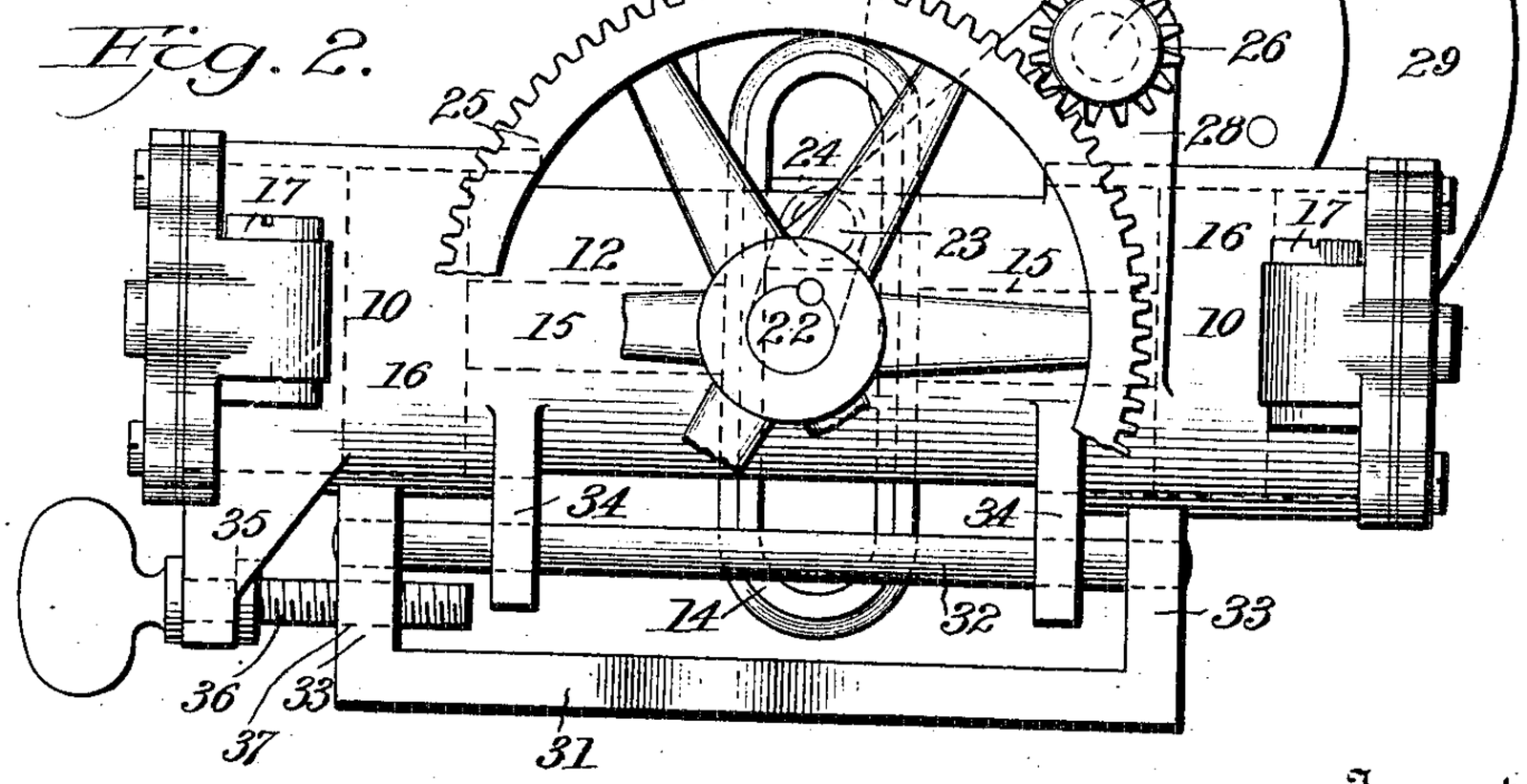


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

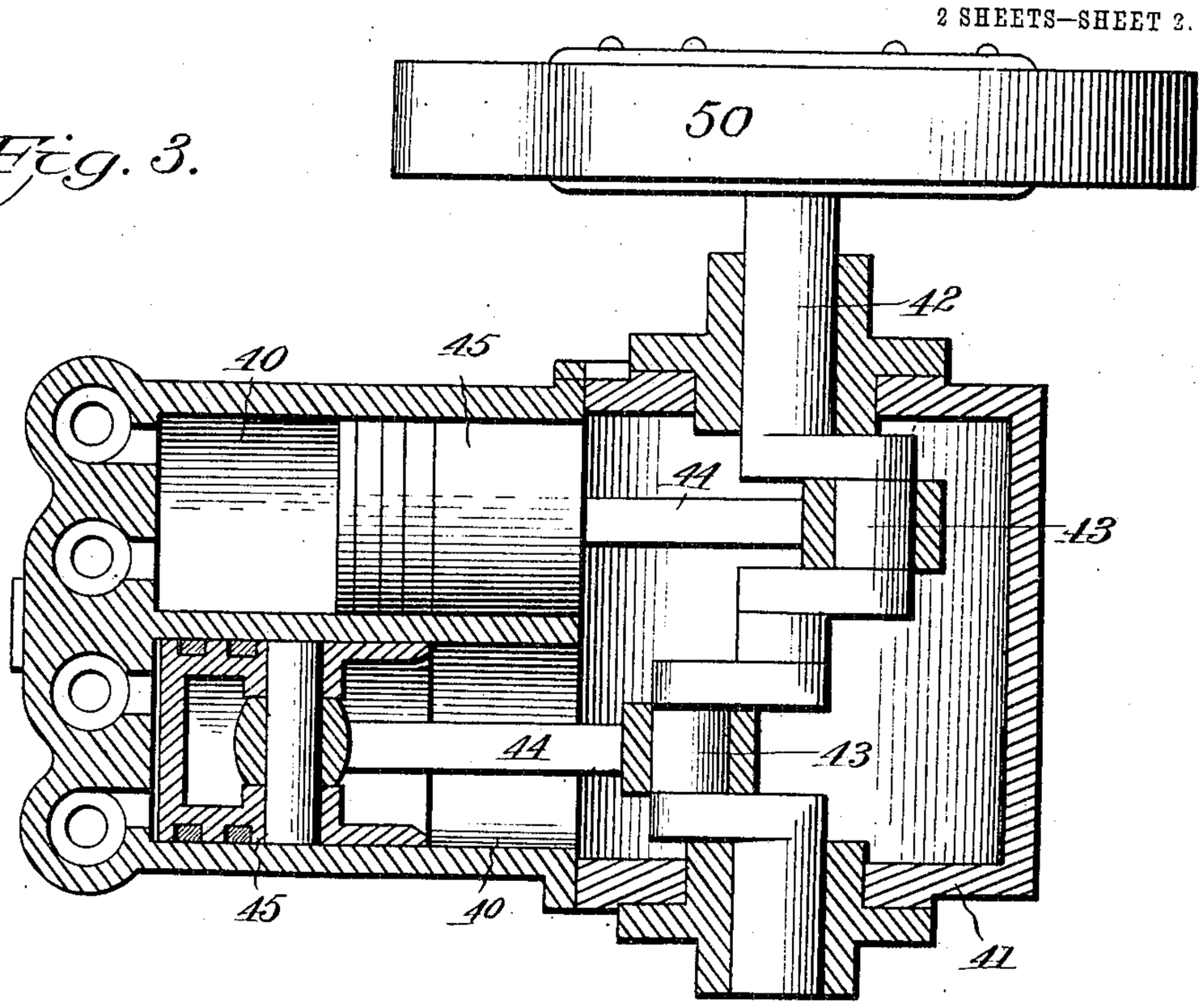
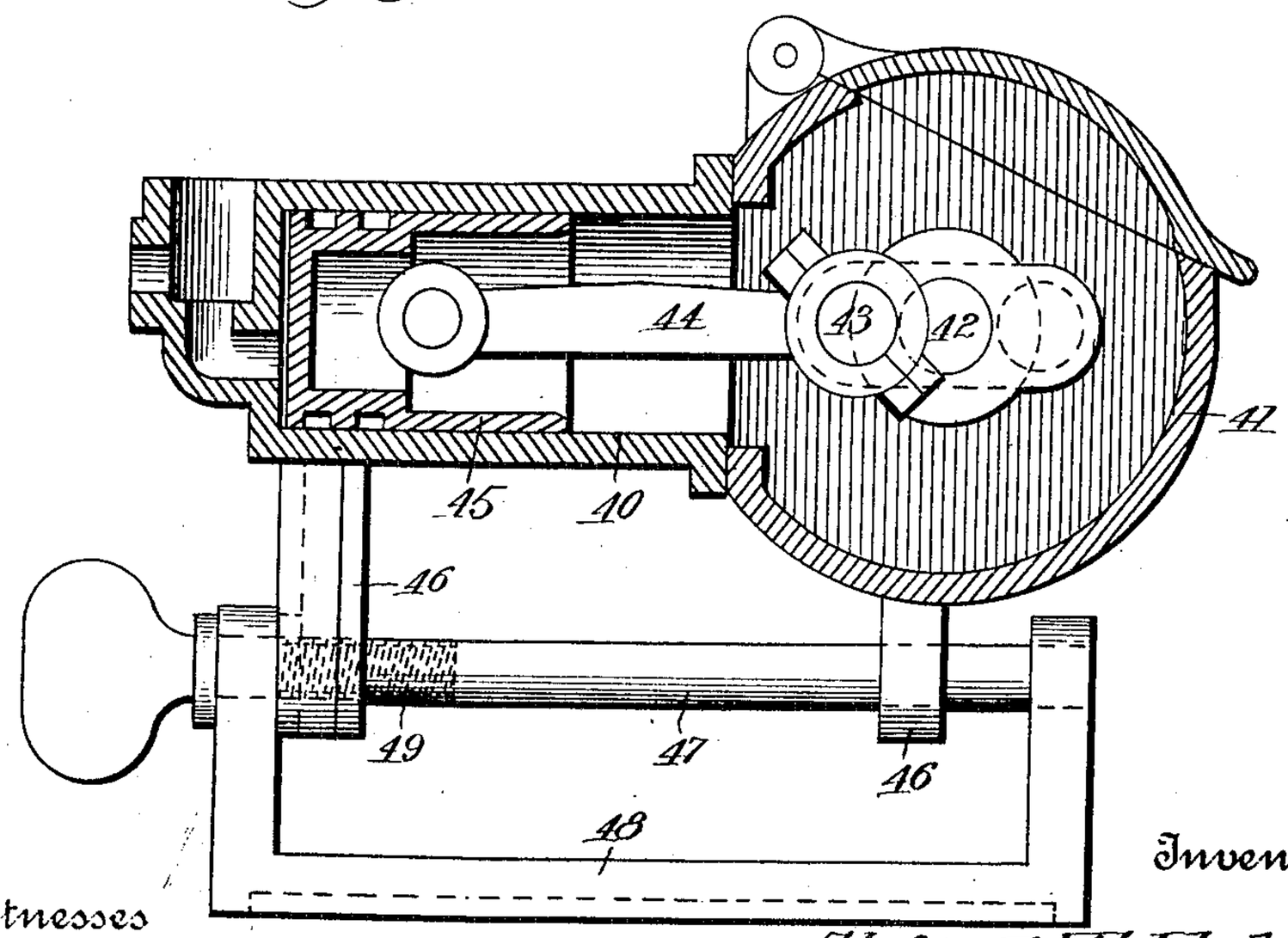


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DEVICE FOR INFLATING PNEUMATIC TIRES.

No. 825,592. Specification of Letters Patent. Patented July 10, 1906.

Application filed December 5, 1904. Renewed June 14, 1906. Serial No. 321,668.

To all whom it may concern:

Be it known that I, ALFRED T. FISHER, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Devices for Inflating Pneumatic Tires, of which the following is a specification.

This invention relates to certain new and useful improvements in mechanism for inflating pneumatic tires, and particularly to the class of air-pumps which are designed to be attached to or carried upon the motor-car or other vehicle proximate to a motor-driven member and normally out of contact with said member, but capable of being shifted into contact therewith, whereby rapid inflation and great compression are obtainable.

The invention consists, essentially, of a pump having a cylinder or cylinders movably mounted relative to a bed or frame and a driven member of the motor which furnishes the power necessary to propel the motor-car or other vehicle and means whereby the pump and its adjuncts may be shifted from a normal inoperative position out of contact with the driving connections of the vehicle into contact with said connections or some member thereof, whereby the power of the motor or other driver is transmitted to the pump to actuate the same and compress air and deliver the same to the tires when inflation is necessary or desired.

The invention also consists of the parts and the constructions and combinations of parts, which I will hereinafter describe and claim.

In the accompanying drawings, which serve to illustrate the invention, and in which similar reference-numerals indicate like parts in the several views, Figure 1 represents a perspective view of a double-acting air-pump mechanism and a portion of the driving-motor connection by which said pump may be driven. Fig. 2 is a side elevation of the same, showing parts broken away. Fig. 3 is a horizontal section, and Fig. 4 is a vertical section, of an air-pump of modified form.

In carrying out my invention I may use any desired or well-known form of air-pump, the pumps herein shown being only illustrative of two well-known forms which may be employed for carrying out the objects I have in view. In other words, I do not limit my invention to any particular form of pump, except that whatever pump construction be adopted it should have the shiftable cylinder or cylinders and means whereby the same is movable into and out of operative contact with some driving member, as the fly-wheel or other part of the motor with which the vehicle is supplied.

In Figs. 1 and 2 I illustrate a form of double-acting pump where the cylinders 10 10 are disposed axially in line, said cylinders being connected to or forming a part of a crank-case 12, open at top and bottom to provide for the movements of the crank 13 and the slotted yoke 14, to which the inner or adjacent ends of the piston-rods 15 are connected in the usual or any well-known and approved manner. These piston-rods carry pistons 16, which operate in the cylinders to compress the air required for inflating the tires, and that this object might be satisfactorily obtained I provide each cylinder with an air-inlet valve 17 and an air-outlet valve 18, which valves may be of any desired or well-known type, and therefore are not illustrated in detail, as they form no essential part of the claimed novelty of this invention. The outlet-valves 18 connect, by means of a casing or chamber 19, along one side of the cylinder-casing, and in this chamber the compressed air is admitted and thence delivered to the tires through an outlet 20 and a flexible hose or tube 21 with appropriate nipples or couplings for connection with the air-valve (not shown) of the tire, a pressure-gage being used, if desired, in connection with the hose or tube to indicate the air-pressure. Journaled transversely in the cylinder-casing is the crank-shaft 22, having a crank 23, the journal portion of which carries a box or bearing 24, which is slidably mounted in the slot of the yoke 14, which connects the two piston-rods, and on one end of the crank-shaft is a large gear-wheel 25, which is in mesh with and is driven by a pinion 26 on one end of a counter-shaft 27, extending transversely across the top of the cylinder-casing and mounted in bearings 28, rising from said casing. The opposite end of the counter-shaft carries a friction-wheel 29, which is adapted to be moved into contact with the fly-wheel 30 or other driven member of the motor which is employed to propel the vehicle, and which motor I do not illustrate, as its type and arrangement are immaterial and form no part of the present invention. It is sufficient to say, however, that my air-pump mechanism may be used with any rotating

part of the motor or connections driven thereby and that when the friction-wheel is placed in contact with such driving part the pump will be operated thereby and will rapidly compress the air, which will then be delivered to the tire or tires through the connections before described. As the cylinder-casing carries the friction-wheel, it will be manifest that in order to connect and disconnect the same with the driving member of the motor connections provision must be made for the longitudinal movement of the cylinders and friction-wheel and connections toward and from said member, and that this essential operation may be readily performed I mount the cylinder-casing upon a supporting bed-frame 31, which is bolted or otherwise fixed to some stationary part of the underframe or other fixed portion of the motor car or vehicle. The precise mounting of the bed-frame is immaterial as long as the same permits the cylinders to be moved to carry the friction-wheel toward and from the driver, whatever is the form and position of the latter. In the arrangement shown in Figs. 1 and 2 the bed-frame 31 is provided with longitudinally-extending guides, herein shown in the form of two rods 32, one along each side and carried by lugs 33 at the ends of the frame, and the cylinder-casing is also provided with rigid lugs 34 on its under side, which lugs 34 are bored to receive the guides or rods 32, whereby the cylinder or cylinders is slidably mounted relative to the bed-frame. In order to move the cylinder-casing and its adjuncts, and thereby adjust the same relative to the part which is to drive the same, I provide one end or head of the cylinder-casing with a lug 35, in which is rotatably fixed the journal portion of a screw 36, said screw operatively engaging a fixed nut or threaded opening 37 in one of the lugs 34 of the bed-frame. From this description it will be seen that whenever the pump is in its normal inoperative position—namely, when the friction-wheel is out of driven contact with the driver—and it is desired to start the pump to supply compressed air to the tires the operator will turn the screw 36, and thereby move the cylinder-casing and its adjuncts as a single structure relative to the bed-frame and the driver until the friction-wheel is brought into operative engagement with said driver, when the pump will be started. When the desired inflation of the tires has been accomplished, the turning of the screw in the opposite direction will move the cylinder-casing and its supporting parts, including the friction-wheel, away from the driving connections, and thus stop the operation of the pump.

The foregoing results are also obtainable by the use of the pump shown in Figs. 3 and 4, which differs from the pump of Figs. 1 and 2 mainly in the arrangement of the pump-cylinders 40, which in said Figs. 3 and 4 are disposed side by side and connect with an end crank-case 41, across which is journaled the crank-shaft 42, whose cranks 43 connect with the rods 44 of the pistons 45, whereby said pistons are alternately operated in opposite directions to compress air substantially in the manner hereinbefore described. In this modified form of pump the cylinder-casing is provided with the lugs 46, which slidably fit the rods or guides 47, mounted in the cylinder bed-frame 48, as before described, the adjustment of the cylinders being accomplished, by means of the screw 49, in substantially the same manner as described for the pump of Figs. 1 and 2.

It is obvious also that I may dispense with the counter-shaft, pinion, and gear of the pump of Figs. 1 and 2 and place the friction-wheel directly on the end of the crank-shaft, as shown at 50 in Fig. 3, without departing from the spirit of my invention, which invention in its broader phase comprehends any form of pump cylinder or casing with its piston and actuating mechanism and mechanism by which said cylinder or casing and actuating mechanism are as a unitary structure adjustable toward and from a rotating member of a source of power, whereby the power of the latter is utilized to operate the pump to compress air for inflation purposes, it being understood, however, that the friction-wheel or primary driven member of the pump is carried on or by the pump-casing or some part connected thereto to move therewith. I also wish to state that I do not limit my invention to the screw mechanism described and shown for adjusting the cylinder or casing, as other forms of mechanisms for accomplishing the same purpose may be used, the screw only being shown as representative of a simple and effective medium for moving the cylinder or casing back and forth relative to the source of power of the motor-car or other vehicle.

In the form of pump shown in Figs. 3 and 4 the crank-case is a closed one and houses and incloses the crank-shaft and the piston-rod connections, and thereby protects these parts from dirt, dust, and foreign matter to which they are subject because of the location of the pump on the vehicle.

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

1. In a device of the character described, the combination with a rotatable member of a power-driven vehicle, of a casing including a pump-cylinder and a dust-proof crank-case, complementary air-compressing mechanism carried by the casing, a fixed guide for the casing, and means whereby the casing is movable on said guide toward and from said rotatable member.

2. In a device of the character described the combination with a bed-frame to be fixed to a stationary part of a motor-vehicle said frame provided with longitudinal guides; a pump including a cylinder, a piston, a piston-rod and a crank-shaft said cylinder slidably mounted on said guides; a friction-wheel carried by the cylinder-casing; and means whereby the cylinder and its adjuncts may be moved longitudinally to engage and disengage the friction-wheel with a rotatable part of the vehicle-motor mechanism.

3. In a device of the character described, the combination with a rotatable member of a power-driven vehicle, of a double-acting pump including a case having multiple cylinders and a connecting dust-proof inclosure a crank-shaft mounted in the inclosure, a piston for each cylinder, means connecting the pistons with the shaft, and means whereby the case itself and the mechanism which it carries are movable as a unitary structure toward and from said rotatable member.

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

ALFRED T. FISHER.

Witnesses:
S. A. FISHER,
FRANK H. FISHER.