No. 609,259. Patented Aug. 16, 1898.

I. H. ATWOOD.

COIN CONTROLLED APPARATUS FOR INFLATING TIRES.

(Application filed Mar. 26, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

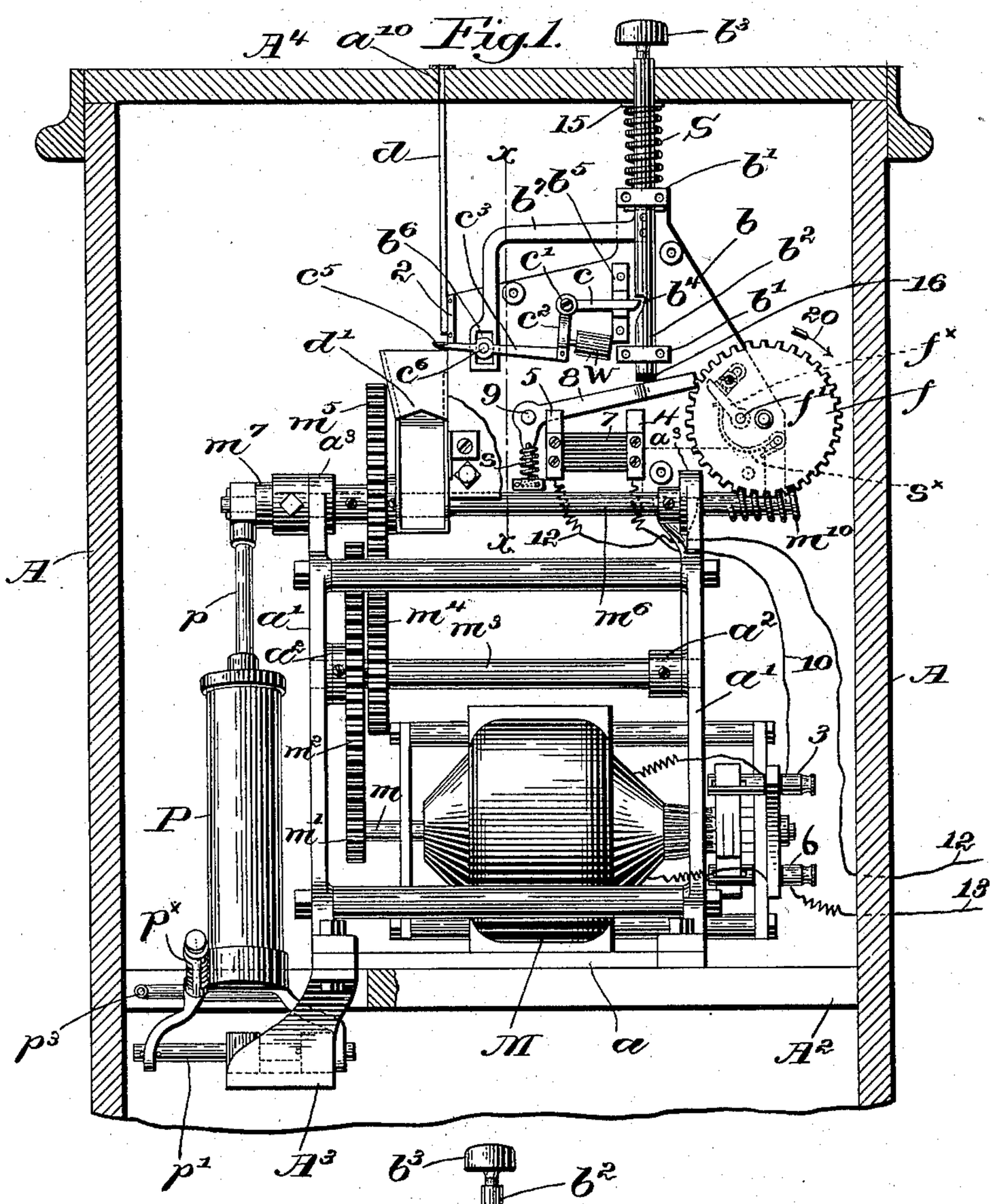

Fig. 3.

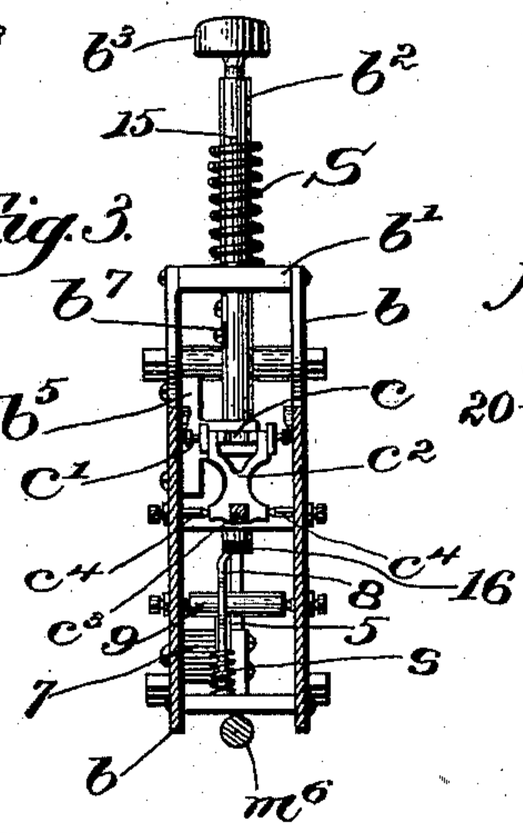

Fig. 4.

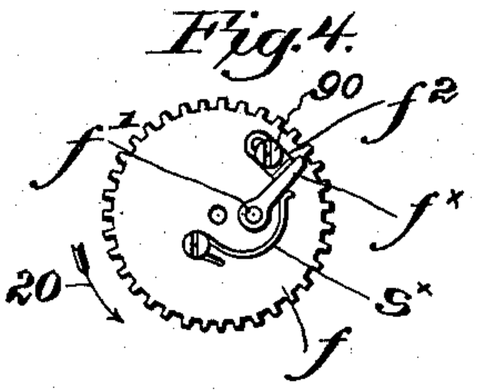

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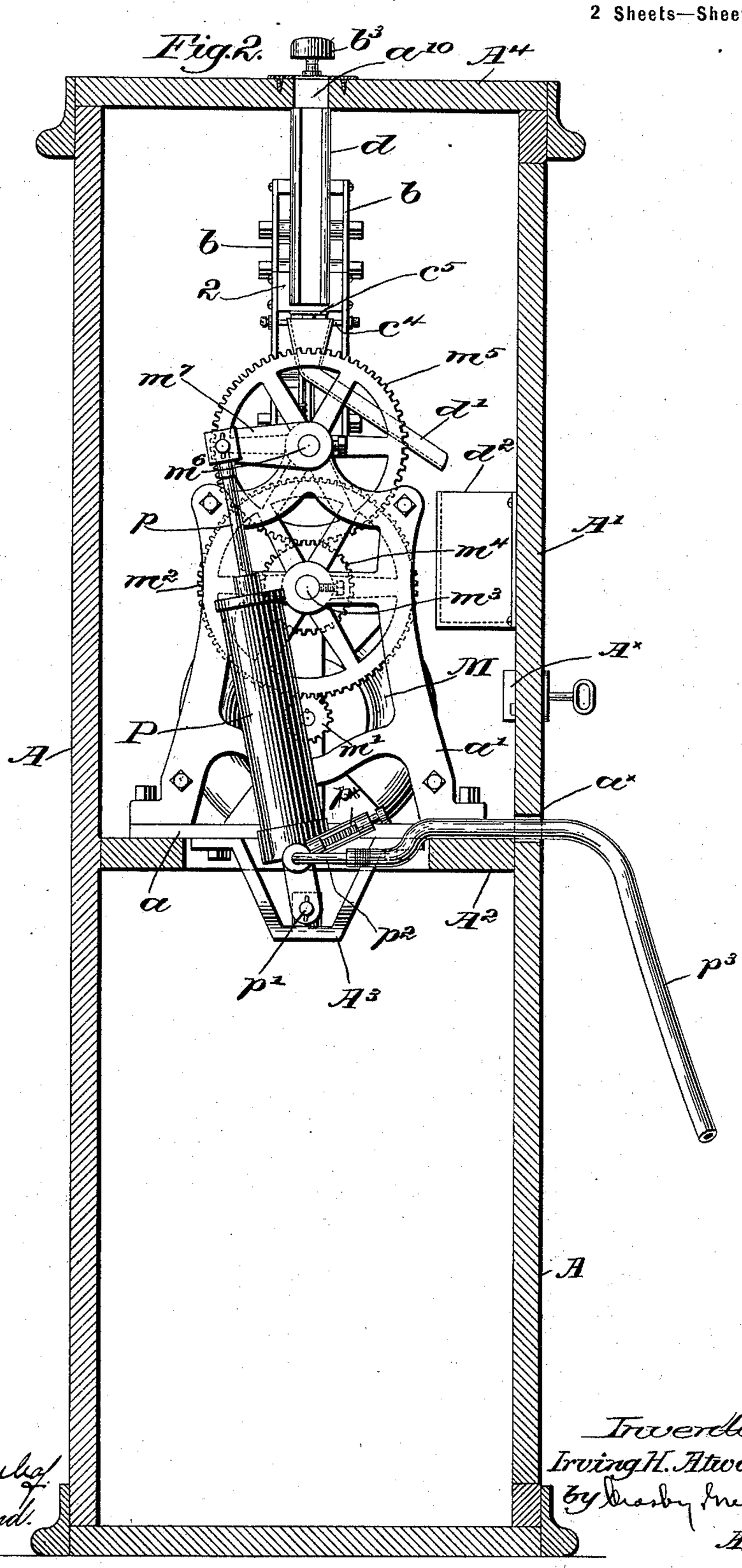
Fig. 2.



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UNITED STATES PATENT OFFICE.

IRVING H. ATWOOD, OF AMESBURY, MASSACHUSETTS.

COIN-CONTROLLED APPARATUS FOR INFLATING TIRES.

SPECIFICATION forming part of Letters Patent No. 609,259, dated August 16, 1898.

Application filed March 26, 1898. Serial No. 675,262. (No model.)

To all whom it may concern:

Be it known that I, IRVING H. ATWOOD, of Amesbury, county of Essex, State of Massachusetts, have invented an Improvement in Coin-Controlled Apparatus for Inflating Vehicle-Tires, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention has for its object the production of apparatus for inflating the tires of bicycles or other vehicles, the operation of the apparatus being controlled by the insertion of a coin in a suitable opening in the casing inclosing the apparatus. By means of this apparatus, one form of which will be hereinafter described, pneumatic tires may be readily pumped up or inflated without any manual exertion in a rapid and effective manner.

Figure 1 is a front elevation of an apparatus embodying my invention, the front wall of the casing being removed. Fig. 2 is a left-hand elevation of the mechanism shown in Fig. 1, with the casing in section. Fig. 3 is a vertical sectional detail of a part of the operative mechanism of the apparatus, taken on the line $x\,x$, Fig. 1, looking toward the right; and Fig. 4 is a side view of the device for stopping the motor, showing the side opposite to that illustrated in Fig. 1.

The essential parts of the apparatus comprise a pump, a normally inoperative motor therefor, coin-controlled means to effect the starting of the motor, and an automatic stopping device for the latter, the whole apparatus being inclosed in a casing, a connection adapted to be attached to the tire to be inflated passing through the casing to the pump-outlet.

I have herein shown an inclosed casing A, provided with a door A′, having a suitable lock $A^{\times}$, the casing having a transverse partition A^2 therein, on which the apparatus is mounted.

The motor M herein shown is an electric motor mounted on a frame comprising a base a and sides a', the rotatable shaft m of the motor having fast thereon a pinion m', in mesh with a large gear m^2, fast on a shaft m^3, supported in bearings a^2 on the frame. A pinion m^4 on said shaft is in mesh with a large gear m^5 on a second shaft m^6, extended through bearings a^3 on the frame and beyond the latter at each end. One end of said shaft m^6 has a crank-arm m^7 thereon, connected with the piston-rod p of the pump P, of any suitable construction, the pump-barrel being pivotally mounted at p' on a stand A^3, attached to the partition A^2, so that the pump will oscillate during the operation of the motor.

The pump-outlet p^2 is attached to a flexible tube p^3, which is extended through an opening $a^{\times}$ in the casing, the free end of the tube being attached to the valve of the tire to be inflated.

The gearing between the pump-actuating shaft m^6 and the motor-shaft m serves to properly reduce the speed of the latter to suitably operate the pump.

One of the poles of the motor is connected, as at 3, Fig. 1, by an insulated wire 10 with a fixed terminal 4 of a circuit-controller, a second fixed terminal 5 thereof being connected by a wire 12 with the circuit outside of the casing A, and the other pole 6 of the motor is connected with the circuit by a wire 13. The terminals 4 and 5 are mounted on a block of insulating material 7, attached to the frame of the coin-controlled starting means for the motor, (to be described,) a movable circuit-controller or switch 8 being shown in Fig. 1 as pivotally mounted at 9 and normally held by a spring s in the position shown between the ends of the terminal 5 and out of engagement with the terminal 4, said terminals being preferably of the well-known split type to receive the movable member 8 between them.

A metal frame consisting of suitably-connected side pieces $b\,b$ is mounted on the frame a', one of the side pieces b being broken out in Fig. 1 to show clearly the parts behind it, bearings b' being provided for a sliding plunger b^2, extended through the top A^4 of the casing and provided with a suitable handpiece b^3. Between a pin 15 on the plunger and the top bearing b' a spring S is interposed, surrounding the plunger and normally tending to maintain it in the position shown in Fig. 1. A notch b^4 in the plunger is normally entered by a locking-dog c, supported by and adapted to slide in a bracket b^5, attached to

one of the sides *b*, Figs. 1 and 3, said dog preventing depression of the plunger, the latter being so located relatively to the circuit-controller that inward movement of the plunger when the dog is withdrawn will move the switch member 8 into engagement with the terminal 4, closing the motor-circuit and starting the latter to operate the pump, the friction of the terminals 4 and 5 retaining the member 8 in engagement therewith until it is positively removed therefrom.

The dog *c* is pivotally connected at *c'* with the yoke-like end c^2 of a bell-crank lever c^3, fulcrumed between the sides *b* on hardened-steel bearings c^4, supported in the sides, the outer end of the lever having a lateral enlargement or coin-support c^5. This coin-support c^5 is held just below the end of a coin-chute *d*, registering with a receiving-slot a^{10} in the casing, a counterpoise *w* on the bell-crank lever holding the latter in the position shown in Fig. 1 against a stop 2, the coin-support c^5 being so near the open bottom of the chute that a coin therein cannot escape, but the weight of the coin on the support will be sufficient to tilt the lever c^3 far enough to withdraw the dog *c* from the notch b^4 of the plunger and permit inward movement of the latter. A transversely-extended pin c^6 on the lever enters a slot b^6 in an overhanging arm b^7, attached to the plunger, which latter is the manually-operated actuator effecting the starting of the motor, the slot b^6 permitting the tilting of the lever by the coin to unlock the actuator b^2. When said actuator is thus unlocked and manually moved operatively to start the motor, the arm b^7 is also moved and acts on the lever c^8, depressing its free end sufficiently to permit the coin to drop out of the chute *d* into a trough *d'*, from which the coin passes into a receptacle d^2 on the inside of the door A' of the casing, as herein shown, the spring S returning the actuator to normal position, while the counterpoise *w* moves the lever c^3 into normal position, the dog *c* being returned thereby into locking position.

Having described the means for starting the motor, means will now be described for stopping it when it has run a desired length of time—sufficient, for instance, to inflate a tire.

The pump-actuating shaft m^6 has formed upon it beyond the frame *a'* a worm m^{10}, in mesh with a worm-wheel *f*, mounted to rotate between the sides *b*, said wheel having pivoted thereon at *f'* a trip $f^\times$, normally held by a suitable spring $s^\times$ (see Fig. 4) against an adjustable stop f^2, also on the worm-wheel, said stop being shown as slotted to receive the attaching-screw 90, so that by loosening the screw the stop may be moved longitudinally to thereby adjust it. The free end of the movable member 8 of the circuit-controller is, when the circuit is closed, in the path of movement of the outer end of the trip $f^\times$, the worm-wheel being rotated in the direction of the arrow 20, Figs. 1 and 4. As the trip is brought into engagement with the switch member 8 the trip will at first turn on its pivot *f'* against the spring $s^\times$ until the compression of the latter increases its force sufficiently to move said switch member out of engagement with the terminal 4, the spring *s* completing the movement of said switch member to break the circuit and stop the motor. The yielding action of the trip prevents a sudden stoppage of the motor, and thus obviates shock to the apparatus. In the construction shown the lower end of the actuator b^2 is insulated, as at 16, to prevent passage of the current thereto from the switch member 8 in starting the apparatus. A relief-valve $p^\times$ is applied to the pump-outlet to prevent undue pressure in the tire being inflated. By means of the adjustable stop f^2 for the trip $f^\times$ the point at which the latter will engage the contact member 8 in the rotation of the worm-wheel *f* may be varied to increase or decrease the duration of the operation of the motor.

From the foregoing description the operation of the apparatus will be obvious, the pump connection p^3 being first attached to the tire-valve and then the coin of the required denomination is put into the slot a^{10}. The starting means is thus unlocked, and the operator moves the actuator or plunger b^2 to start the motor, which continues to run and operate the pump until automatically stopped by the motor-stopping device. Should the actuator be held depressed after the motor starts, the stopping device will forcibly return the actuator to normal position unless sufficient force is opposed to break the apparatus.

The apparatus is very convenient and does away entirely with the manual labor of inflating tires, and it can be placed in any suitable position, its services being called into operation when desired by the insertion of the proper coin.

While I have shown herein an electric motor, it will be obvious that my invention is not restricted thereto, as any suitable form of motor may be used. A spring-motor could be employed, and in such case the manual movement of the actuator would release any suitable detent instead of operating a circuit-controller, as herein shown, the coin-controlled locking means and the automatic stopping device being substantially as herein shown.

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

1. In an apparatus of the class described, a pump, a motor to operate it, a manually-operated actuator to effect the operation of the pump by the motor, coin-controlled locking means for said actuator, and means to automatically stop the pumping operation.

2. In an apparatus of the class described, an inclosed casing, a pump therein having a connection with its outlet led through the casing and adapted to be attached to the tire

to be inflated, a motor to operate the pump, a manually-operated actuator to start the motor, locking means for said actuator moved into inoperative position by the insertion of a coin into the casing, and a device to automatically stop the motor after the pump has been operated for a predetermined length of time, and also to act upon and insure positive return of the actuator to normal position.

3. In an apparatus of the class described, an inclosed casing, a pump therein having an exterior connection with its outlet, an operating-motor for the pump, a manually-operated actuator adapted to start the operation of the pump by or through the motor, a locking device for said actuator movable into inoperative position by the insertion of a coin in the casing, and a stopping device for the motor connected with and operated by the latter to automatically stop the motor after a predetermined movement.

4. In an apparatus of the class described, a motor, a pump operatively connected therewith, a manually-operated actuator to inaugurate the operation of the pump, and coin-controlled means to normally lock the actuator from operation.

5. In an apparatus of the class described, a motor, a pump operatively connected therewith and having a connection adapted to be attached to the tire to be inflated, an inclosing casing having a coin-receiving channel, a manually-movable actuator to effect the operation of the pump by the motor, a locking device for the actuator movable into inoperative position by the insertion of a coin, and means operable by the movement of the actuator to effect release of the coin from engagement with said locking device.

6. In an apparatus of the class described, a pump, a motor operatively connected therewith, coin-controlled means to effect the operation of the pump, and a device to automatically and gradually stop the operation of the pump, said device including a yielding trip, and an adjustable coöperating stop.

7. In an apparatus of the class described, a pump, an electric motor to operate it, a circuit-controller adapted to throw the motor into or out of circuit, a manually-operated actuator to effect movement of the circuit-controller, locking means for said actuator, movable into inoperative position by the insertion of a coin, to thereby permit closure of the motor-circuit by the actuator, to start the motor and pump, and independent means including a moving, yielding trip to automatically move the circuit-controller to break the motor-circuit.

8. In an apparatus of the class described, a pump, a motor to operate it, a manually-movable plunger to effect the starting of the motor, a locking device for said plunger, means to withdraw the locking device from engagement with the plunger to normal position, operative movement of said plunger acting to release the coin from engagement with the locking device, and a moving trip actuated by the motor to effect the stoppage of the latter automatically.

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

IRVING H. ATWOOD.

Witnesses:
ROBERT G. PATTEN,
ALF J. SAUNDERS.