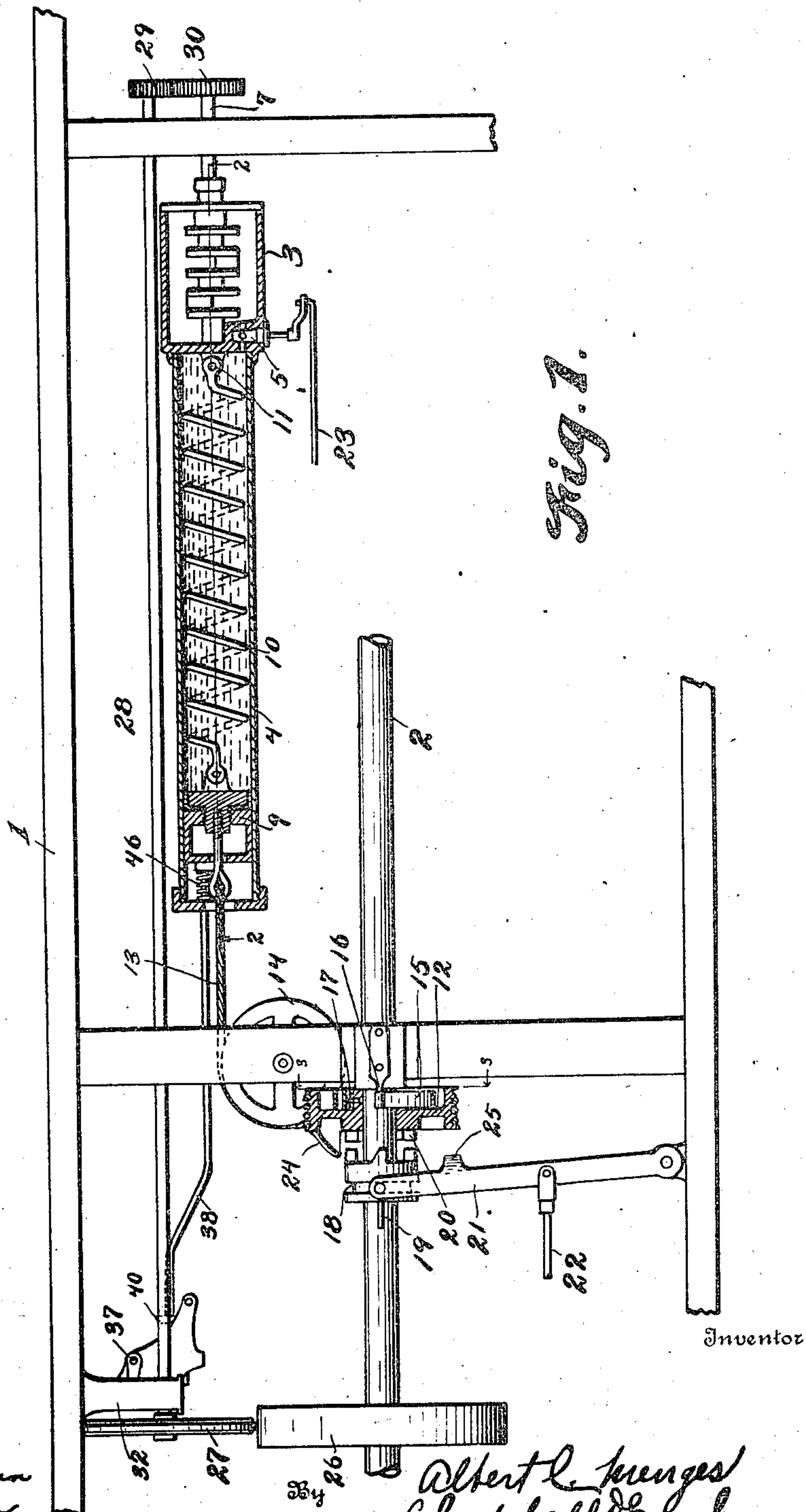


A. C. MENGES.
ENGINE STARTING DEVICE.
APPLICATION FILED FEB. 28, 1910.

Patented Jan. 17, 1911.

3 SHEETS—SHEET 1.

981,868.



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Witnesses

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Fig. 2.

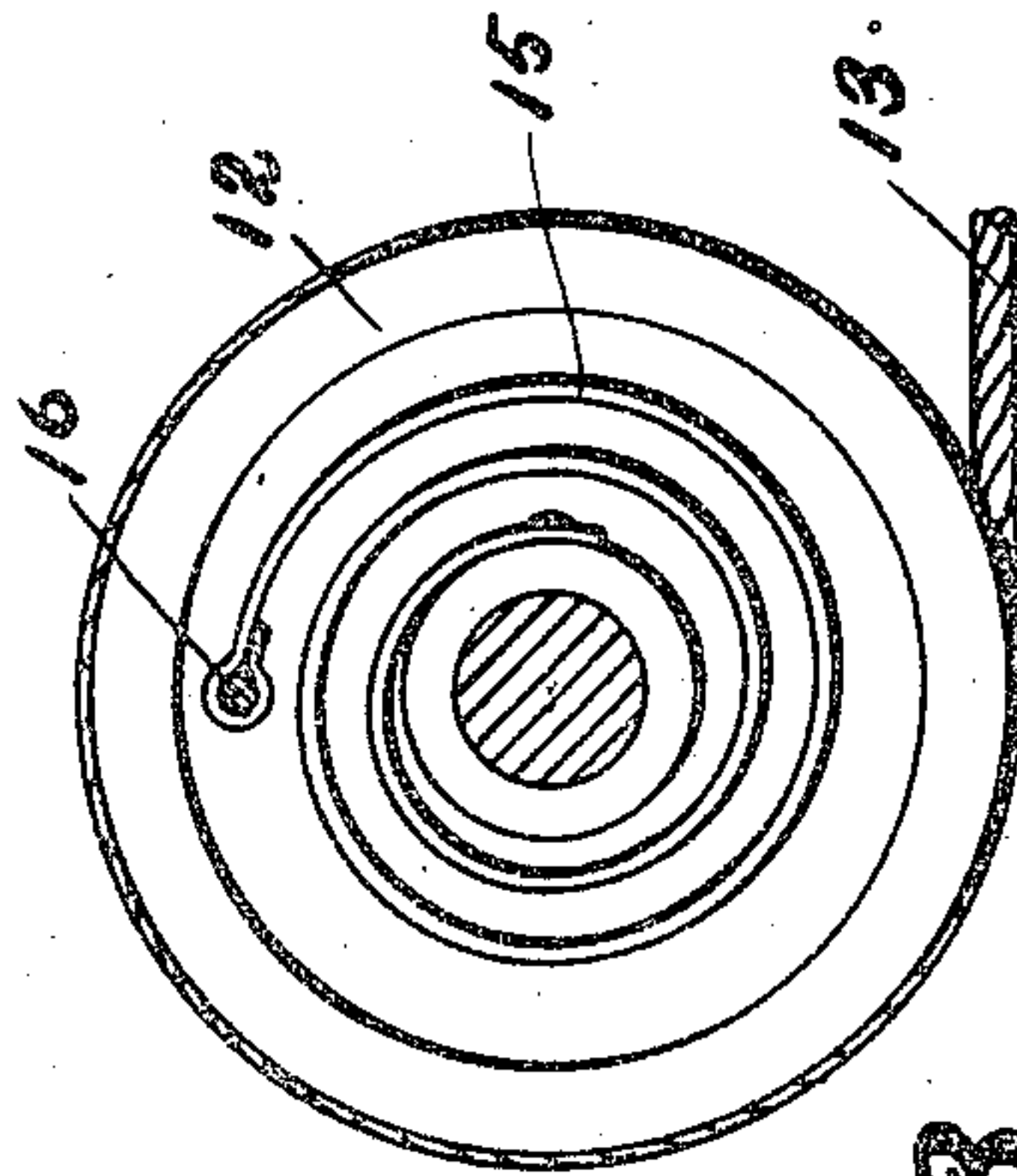
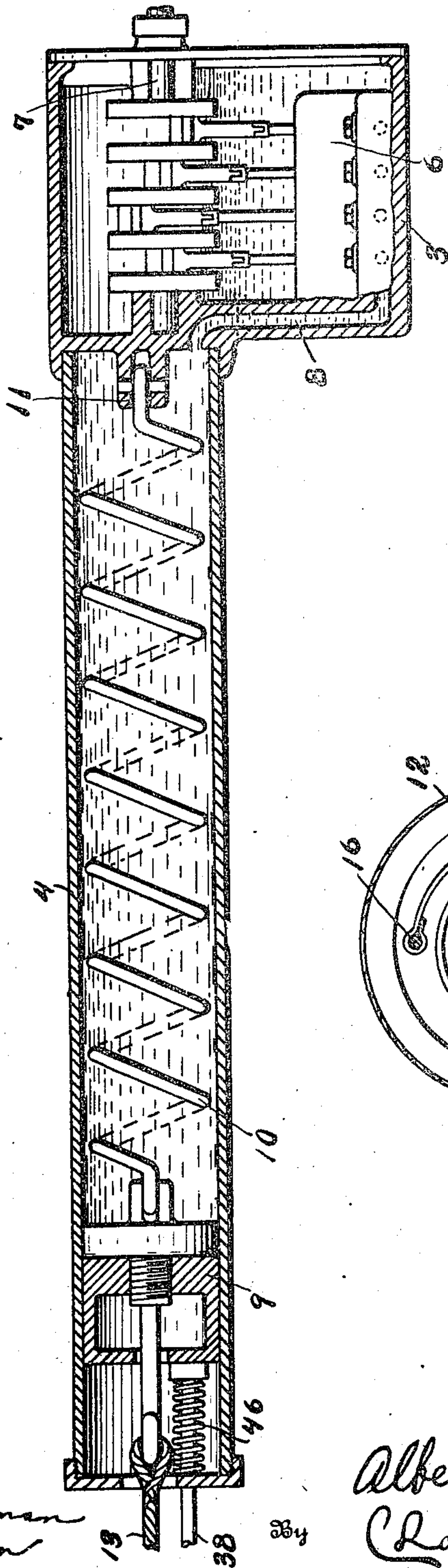


Fig. 3.

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3 SHEETS—SHEET 3.

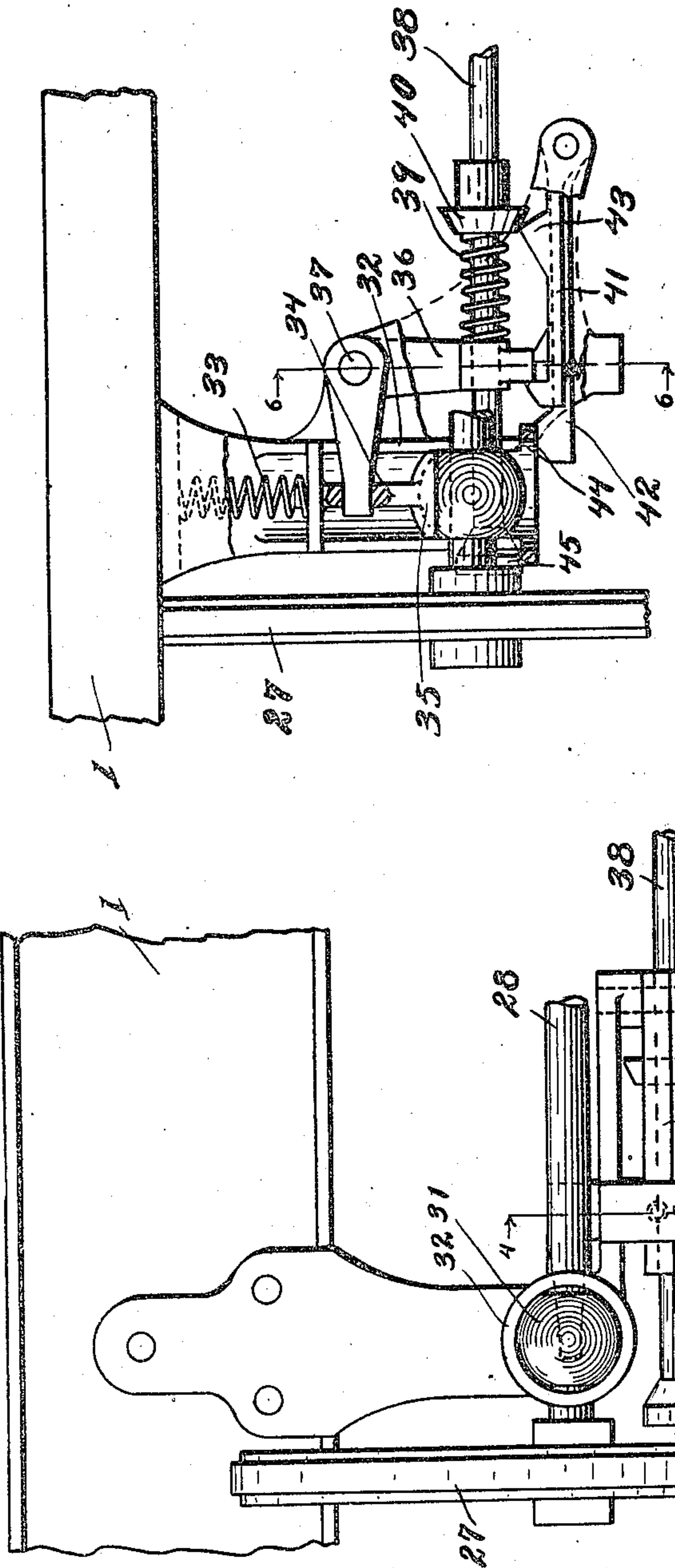


Fig. 5.

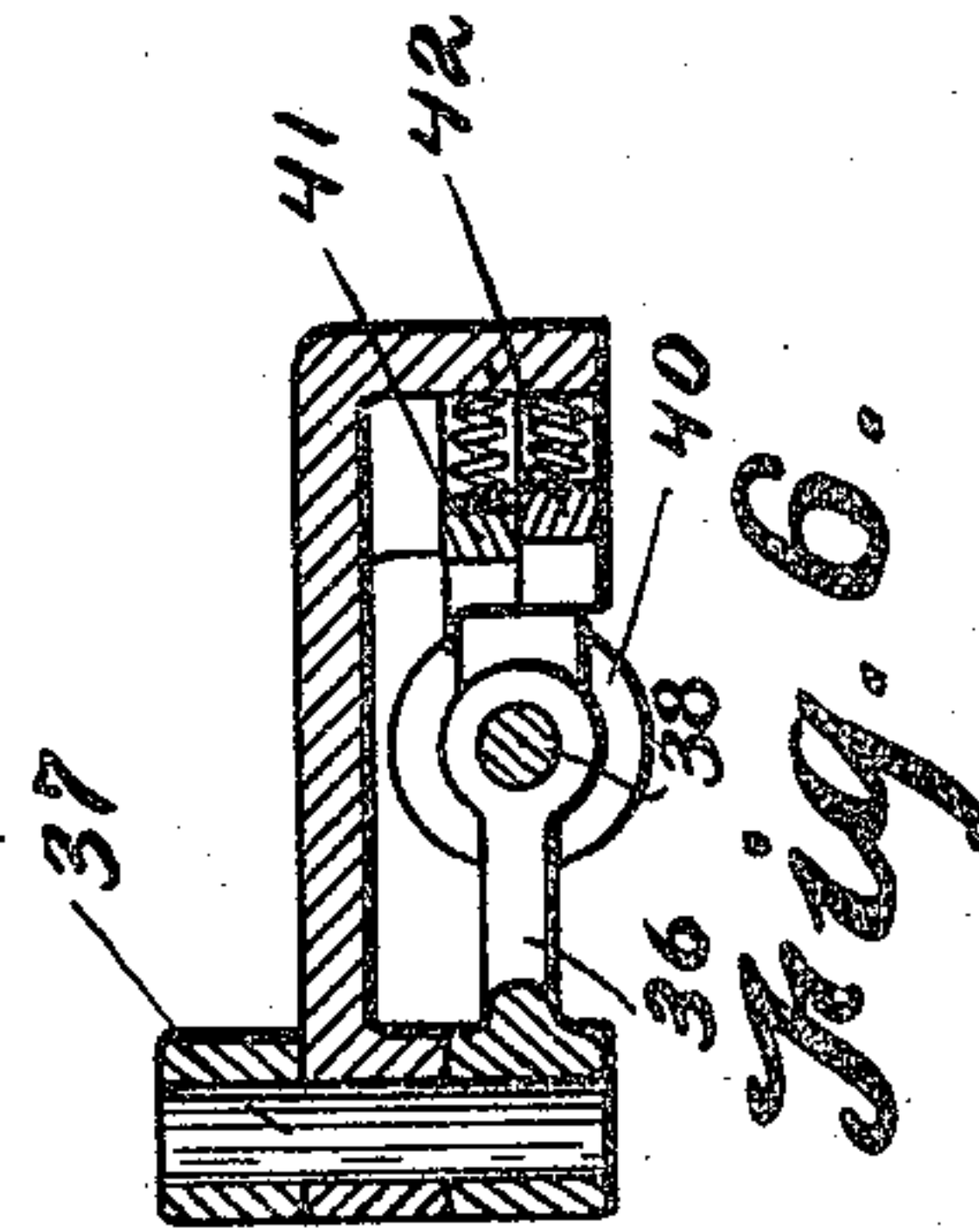


Fig. 6.

Fig. 4.

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UNITED STATES PATENT OFFICE.

ALBERT C. MENGES, OF MEMPHIS, TENNESSEE, ASSIGNOR TO SAMUEL R. CORBITT AND
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ENGINE-STARTING DEVICE.

981,868.

Specification of Letters Patent.

Patented Jan. 17, 1911.

Application filed February 28, 1910. Serial No. 546,557.

To all whom it may concern:

Be it known that I, ALBERT C. MENGES, a citizen of the United States, residing at Memphis, Tennessee, have invented certain new and useful Improvements in Engine-Starting Devices, of which the following is a specification.

This invention relates to improvements in engine starting devices.

The main objects of this invention are:

First, to provide an improved engine starting device in which the power is stored by the engine while in operation. Second, to provide an improved engine starting device in which the power is furnished by a spring which is put under tension by a pump operated from the engine. Third, to provide an improved engine starting device having the above-stated features in which the pump driving connections are automatically connected and disconnected, and the spring connections are automatically disconnected from the engine shaft when the engine is started.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The structure described constitutes one effective embodiment of my invention. Other embodiments would be readily devised by those skilled in the art.

The invention is clearly defined and pointed out in the claims.

A structure constituting an effective and preferred embodiment of the features of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure 1 is a detail plan view of a structure embodying the features of my invention, portions only of a motor vehicle being illustrated to show the operative relation of the parts of an improved starting device in use. Fig. 2 is an enlarged detail vertical section taken on a line corresponding to line 2—2 of Fig. 1. Fig. 3 is an enlarged detail section taken on a line corresponding to line 3—3 of Fig. 1, showing details of the drum 12. Fig. 4 is an enlarged detail plan showing the means for automatically connecting and disconnecting the pump driving connections. Fig. 5 is an enlarged detail plan of

the disconnecting mechanism of the improvement shown, parts being broken away to better illustrate the form and arrangement. Fig. 6 is an enlarged detail taken on a line corresponding to line 6—6 of Fig. 5.

In the drawings, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, 1 represents the frame of a motor vehicle and 2 the crank shaft of the engine, the engine not being here illustrated. Suitably supported upon the frame is a fluid tank 3 and a cylinder 4. This cylinder is connected at its inner end to discharge into the tank through a suitable valved opening, the valve 5 being shown in conventional form.

Within the tank 3 are pumps 6, also shown in conventional form, a series of four pumps being shown, all connected to the same crank shaft 7. These pumps are connected to deliver to the inner end of the cylinder 4 through the passage 8.

Within the cylinder is a plunger 9, which is forced outwardly by the pumping of the fluid into the inner end of the cylinder. An actuating spring 10 is preferably arranged within the cylinder, as shown in the drawing, one end being connected to the plunger, and the other at the inner end of the cylinder, as at 11. On the shaft 2 is a drum 12, the drum being revolvably mounted on the shaft and connected to the plunger by means of the cable 13. This cable is arranged over a guide pulley 14. As the plunger is forced outwardly by the pumping of the fluid into the cylinder, the drum is rotated to wind up or take up the slack of the cable by means of the spring 15, one end of which is secured to the frame at 16, and the other to the hub of the pulley, at 17.

A clutch is provided for securing the drum to the shaft, the clutch member 18 being slidably connected to the shaft by the spline 19 so that it is revolved with the shaft while the drum is provided with a co-acting clutch member 20. The clutch member 18 is thrown into engagement with the clutch member on the drum by means of the lever 21 and rod 22 which is extended to any convenient point for operation, as is also the rod 23 through which the valve 5 is controlled. The clutch

is preferably automatically disengaged by providing the drum with a trip 24 adapted to engage the trip lug 25 on the lever 21 as the drum revolves to shift the clutch member 18 out of engagement with the drum so that the drum is freed when the engine starts.

The pumps are preferably driven from the shaft 2, the driving means comprising a driving wheel 26 on the shaft and a driven wheel 27, which is supported to be shifted into and out of driving engagement with the driving wheel, thus connecting and disconnecting the driving connections of the pump.

The wheel 27 is mounted on a shaft 28, which is connected through the gears 29 and 30 to the pump crank shaft 7. The means for starting the driving wheel, and the automatic engaging and disengaging means therefor are shown in Figs. 4, 5 and 6.

The bearing 31 for the swinging end of the shaft 28 is preferably spherical in form, as illustrated, and slidably mounted in the bracket 32. This bearing is held yieldingly outward to hold the wheels in engagement by means of the spring 33, which engages the arm 34 on the bearing engaging member 35, see Fig. 5. A bell crank lever 36 is mounted at 37, so that one arm engages the arm 34 on the member 35. This lever is actuated to shift the member 35 by means of a trip rod 38, one end of which extends into the cylinder to be engaged by the plunger and actuated to shift the lever 36, thus disengaging the driving connection.

The rod 38 is preferably arranged through one arm of the lever, as illustrated, and provided with a spring 39, one end of which engages the arm of the lever and the other the trip 40 on the rod, thereby providing a yielding connection. The lever is held in either position by means of a pair of catches 41 and 42, the catch 41 being adapted to hold the parts in their driving relation while the catch 42 holds the parts in their disengaged relation. The catch 41 is operated by the trip 40, which engages the cam 43 as the trip rod is shifted by the plunger. The catch 42 is provided with a tripping cam 44, which is engaged by the trip 45 on the rod as it is returned by the spring 46 when the plunger is released through the opening of the valve 5, the plunger being returned to its initial position through the actuating spring 46, as will be obvious. This arrangement secures a means for automatically connecting and disconnecting the driving connections for the pump. The clutch for the drum to the shaft is also automatically disconnected, so that the spring is always under tension to support the engine, and when the engine is started through the releasing of the plunger to permit the escape of the fluid from the cylinder, the pump connections are engaged so that the spring is re-set, and it is only necessary for the operator to engage the

clutch of the drum and release or open the valve, the valve being closed after the engine is started.

I have illustrated and described my improvements in the form preferred by me, although I am aware that it is capable of having considerable modification in structural details, and I desire to be understood as claiming the same specifically in the form illustrated, as well as broadly within the scope of the appended claims.

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

1. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to the inner end of said cylinder; a plunger; an actuating spring arranged in said cylinder and connected thereto and to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; a trip on said drum for said clutch; a spring for rotating said drum for winding said cable thereon; means for actuating said pump comprising a movably supported driven wheel; a coacting driving wheel on said shaft; means for engaging and disengaging said wheels comprising a lever, catches for said lever, and a plunger actuated trip rod adapted to act alternately on the said catches.

2. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to the inner end of said cylinder; a plunger; an actuating spring arranged in said cylinder and connected thereto and to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; a spring for rotating said drum for winding said cable thereon; means for actuating said pump comprising a movably supported driven wheel; a coacting driving wheel on said shaft; means for engaging and disengaging said wheels comprising a lever, catches for said lever, and a plunger actuated trip rod adapted to act alternately on the said catches.

3. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to the inner end of said cylinder; a plunger; an actuating spring arranged in said cylinder and connected thereto and to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; a trip on said drum for said clutch; means for actuating said pump

comprising a movably supported driven wheel; a coacting driving wheel on said shaft; means for engaging and disengaging said wheels comprising a lever, catches for said lever, and a plunger actuated trip rod adapted to act alternately on the said catches.

4. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to the inner end of said cylinder; a plunger; an actuating spring arranged in said cylinder and connected thereto and to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; means for actuating said pump comprising a movably supported driven wheel; a coacting driving wheel on said shaft; means for engaging and disengaging said wheels comprising a lever, catches for said lever, and a plunger actuated trip rod adapted to act alternately on the said catches.

5. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; actuating connections for said plunger to said shaft; means for actuating said pump comprising a movably supported driven wheel; a coacting driving wheel on said shaft; means for engaging and disengaging said wheels comprising an actuating spring, a lever for shifting said driven wheel to its inoperative position, catches for said lever adapted to hold said driven wheel in its operative and inoperative positions, a trip rod adapted to act alternately on the said catches as said rod is reciprocated, said rod being extended into said cylinder to be engaged by said plunger, a spring on said trip rod arranged to engage said lever, and a spring for returning said trip rod when released by said plunger.

6. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to the inner end of said cylinder; a plunger; an actuating spring arranged in said cylinder and connected thereto and to said plunger; actuating connections for said plunger to said shaft; means for actuating said pump comprising a movably supported driven wheel; a coacting driving wheel on said shaft; means for engaging and disengaging said wheels comprising a lever, catches for said lever, and a plunger actuated trip rod adapted to act alternately on the said catches.

7. In a starting device, the combination

with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; a trip on said drum for said clutch; a spring for rotating said drum for winding said cable thereon; driving connections for said pump; and means for automatically connecting and disconnecting said connections controlled by said plunger.

8. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; a trip on said drum for said clutch; driving connections for said pump; and means for automatically connecting and disconnecting said connections controlled by said plunger.

9. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; a spring for rotating said drum for winding said cable thereon; driving connections for said pump; and means for automatically connecting and disconnecting said connections controlled by said plunger.

10. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; driving connections for said pump; and means for automatically connecting and disconnecting said connections controlled by said plunger.

11. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; means for automatically disengaging

said clutch; a spring for rotating said drum for winding said cable thereon; driving connections for said pump; and means for automatically connecting and disconnecting said connections controlled by said plunger.

12. In a starting device, the combination with the shaft; of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; and a spring for rotating said drum for winding said cable thereon.

13. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; a clutch for connecting said drum to said shaft; means for automatically disengaging said clutch; driving connections for said pump; and means for automatically connecting and disconnecting said connections controlled by said plunger.

14. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder

to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; a drum revolubly mounted on said shaft; a cable connecting said plunger to said drum; and a clutch for automatically disengaging said clutch.

15. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; actuating connections for said plunger to said shaft; driving connections for said pump; and means for automatically connecting and disconnecting said connections controlled by said plunger.

16. In a starting device, the combination with the shaft, of a fluid tank; a cylinder; a valved discharge connection for said cylinder to said tank; a pump connected to deliver to said cylinder; a plunger; an actuating spring connected to said plunger; and actuating connections for said plunger to said shaft.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

ALBERT C. MENGES. [L.S.]

Witnesses:

JNO. J. FREEMAN,
N. F. LE MASTER.