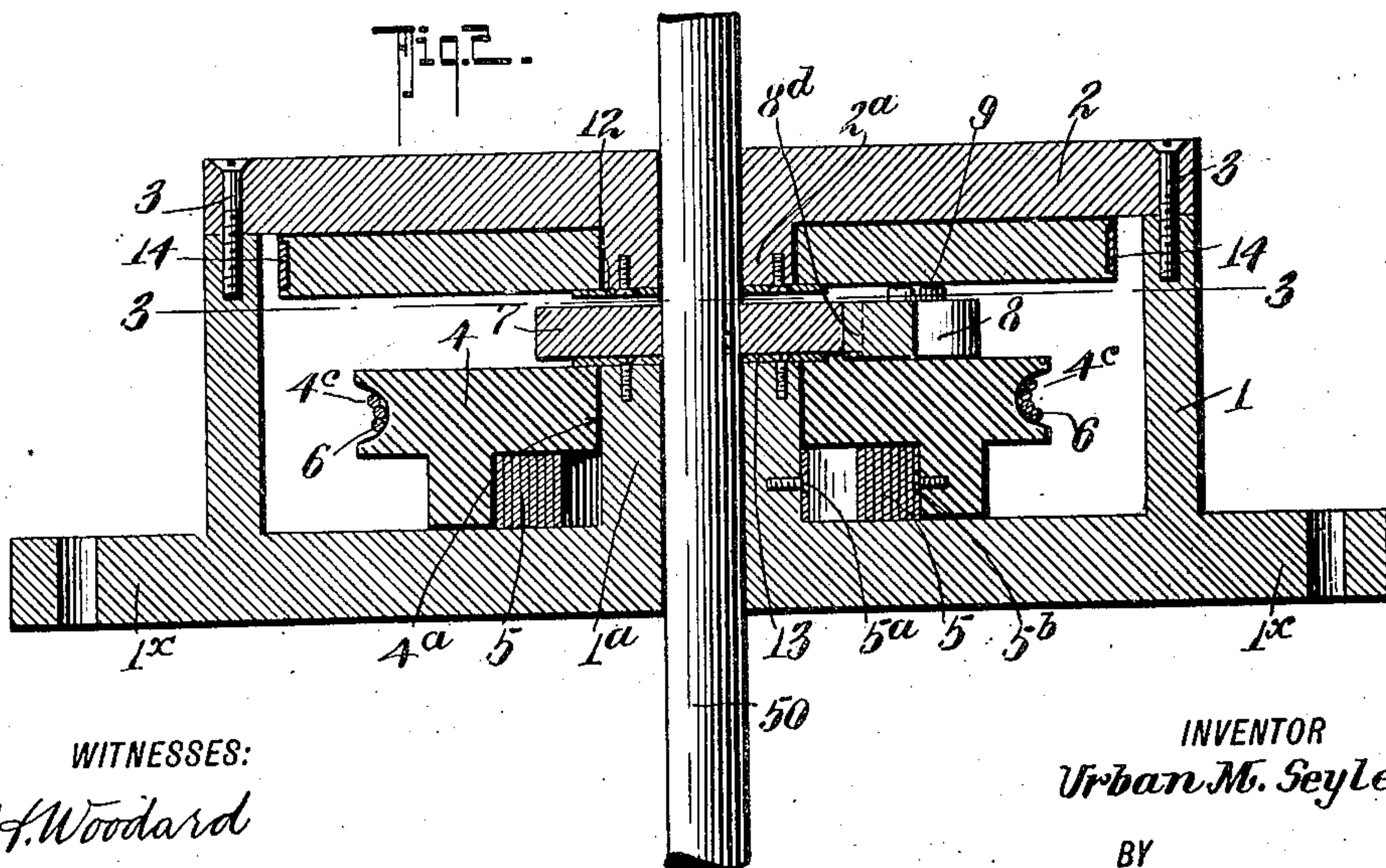
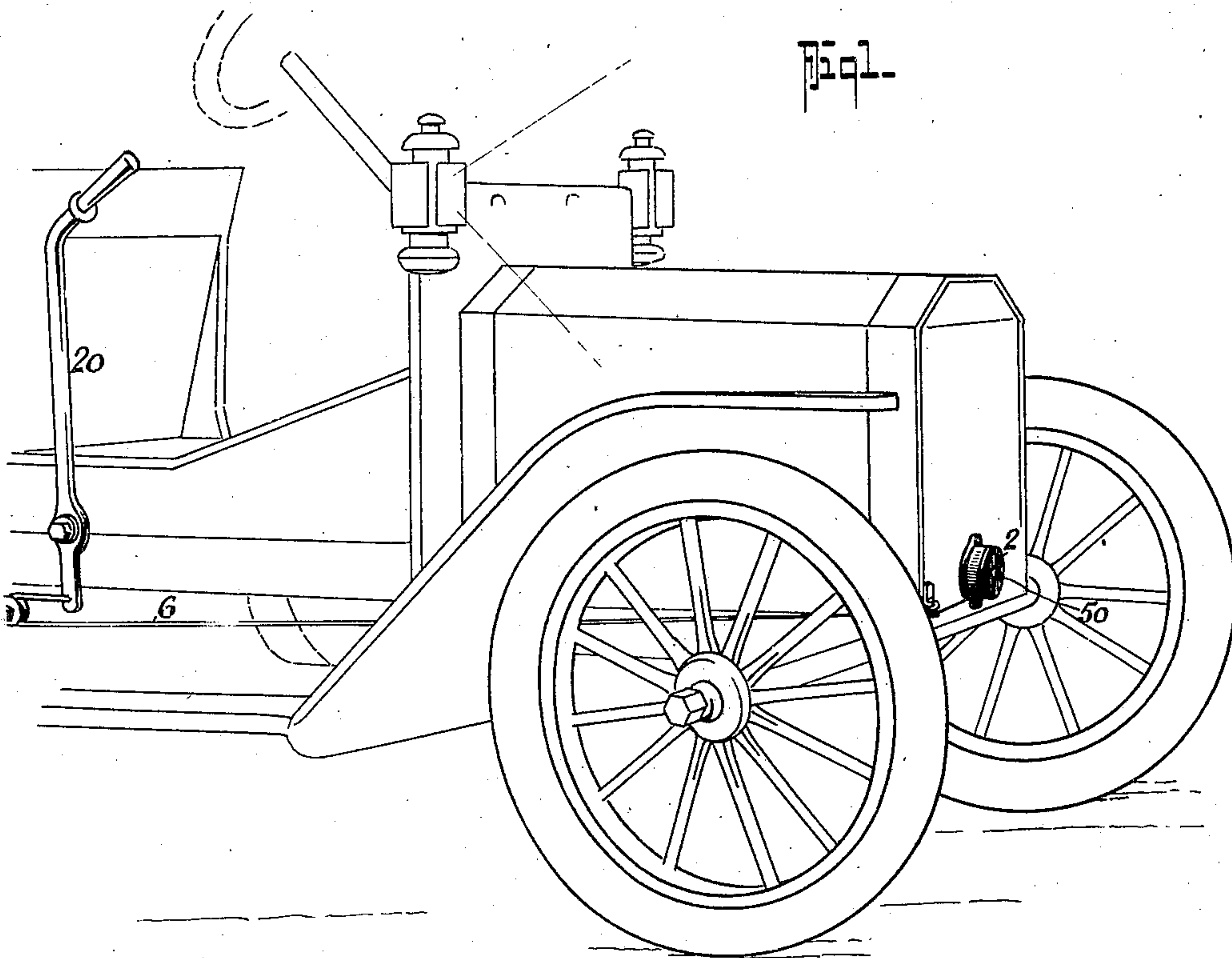


U. M. SEYLER.
ENGINE STARTER.
APPLICATION FILED OCT. 17, 1908.

934,576.

Patented Sept. 21, 1909.
2 SHEETS—SHEET 1.



WITNESSES:

J. H. Woodard
Charles H. Wagner

INVENTOR

Urban M. Seyler

BY

H. Winship Wheatley
ATTORNEYS

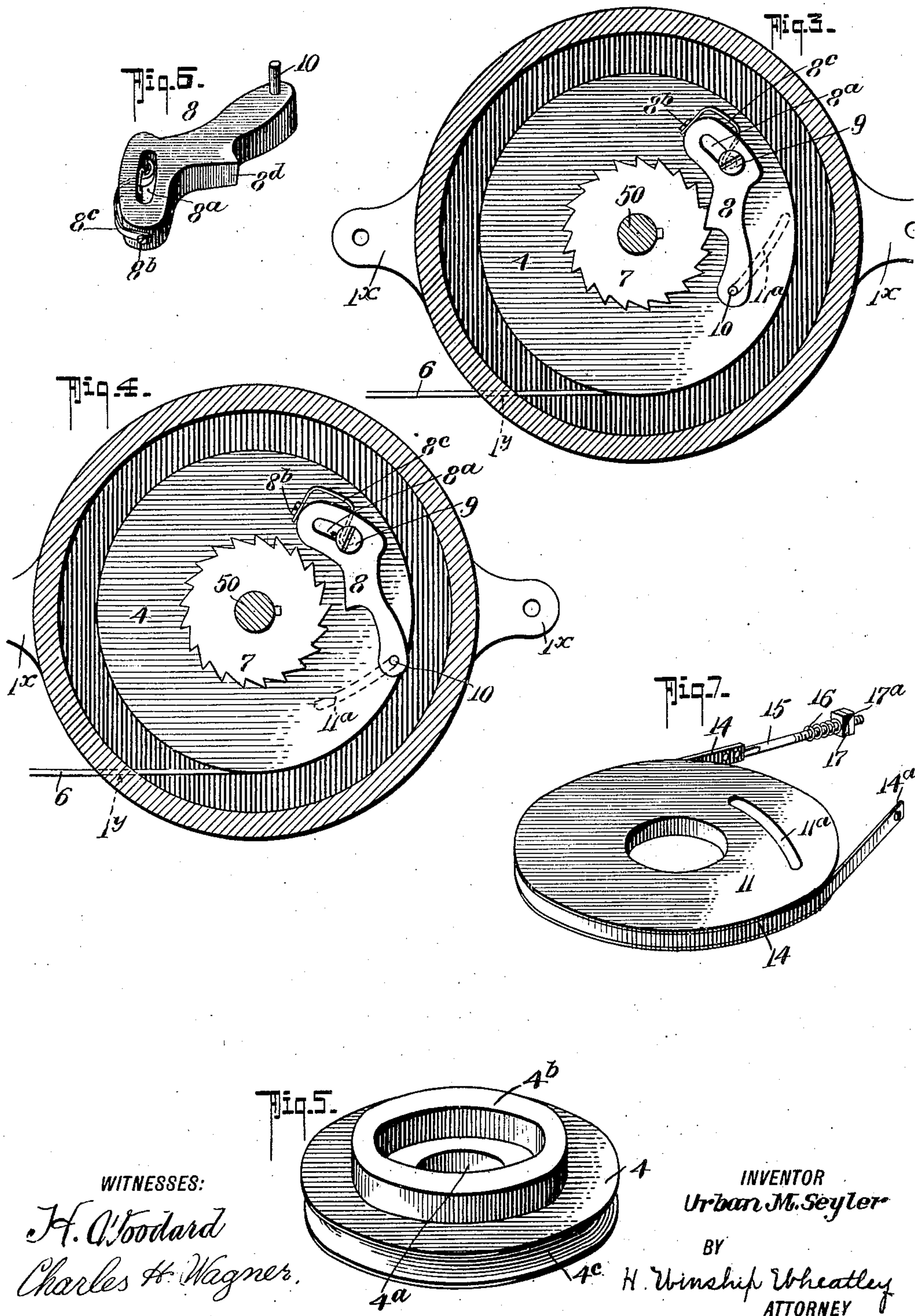
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ATTORNEY

UNITED STATES PATENT OFFICE.

URBAN MONROE SEYLER, OF NASHVILLE, ILLINOIS, ASSIGNOR OF ONE-THIRD TO
ROLLO R. SNYDER AND ONE-THIRD TO J. M. HASSINGER, OF NASHVILLE, ILLINOIS.

ENGINE-STARTER.

934,576.

Specification of Letters Patent. Patented Sept. 21, 1909.

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To all whom it may concern:

Be it known that I, URBAN MONROE SEYLER, residing at Nashville, in the county of Washington and State of Illinois, have invented certain new and useful Improvements in Engine-Starters, of which the following is a specification.

My invention, which relates to that class of engine starters, more particularly designed for use in connection with explosive engines of the gas and gasoline type, embodies a casing into which the engine shaft projects. Within the casing and fixed to the shaft to turn therewith is a ratchet disk that coöperates with a pawl which is mounted on a pawl carrying drum. The drum is turned in one direction by a cable, rope or chain under control of the operator and is moved in an opposite direction to wind up the cable by a coil spring. A tension disk coöperates with the pawl to cause it to automatically engage and disengage the ratchet disk.

The primary object of my invention is to provide an engine starting device that can be manipulated from the seat of the automobile, when used on such, and which will be constructed of few parts, simply arranged and effectual in their operation, so that should the engine "kick back" or reverse its direction of rotation in starting, as often occurs, the pawl will be automatically released from the ratchet and hence the danger to the operator will be eliminated.

With other objects in view than have been specifically stated herein and which will be readily apparent to those skilled in the art to which the invention appertains, my starter also includes those novel details of construction, combination and arrangement of parts, all of which will be first described in detail, and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which:

Figure 1, is a perspective view illustrating my invention in use. Fig. 2, is a horizontal central cross section thereof. Fig. 3, is a vertical section on the line 3—3 of Fig. 2, showing the position of the parts when starting the engine. Fig. 4, is a similar view showing the position of the parts when a "back fire" of the engine occurs. Fig. 5, is a detail perspective view of the pawl carrying drum. Fig. 6, is a similar view of the pawl. Fig. 7, is a detail view of the tension

wheel and its brake or retarding mechanism.

Referring now to the accompanying drawings in which like letters and numerals indicate like parts in all of the figures, 1 designates the casing which incloses the moving parts of my invention. The casing 1 is provided with a hub 1^a to form a bearing for the engine shaft 50 that projects through the casing and through a bearing 2^a in the cap 2, the cap 2 being secured to the body 1 of the casing in any approved manner, and the casing 1 may be secured to a fixed support by bolts or other means passing through the lugs 1^x of the casing. The cap or cover 2 may be bolted to the body 1 by bolts 3, if desired.

Within the casing is a pawl carrying drum 4 which is provided with a peripheral groove 4^c to receive the cable, rope or chain 6, that passes through an aperture in the casing and connects with a suitable actuating lever 20, mounted in any suitable position to be grasped by the operator in starting the engine. The pawl carrying drum 4 is apertured at 4^a to receive the bearing 1^a of the casing 1 and is also provided with an annular projecting flange 4^b in which a coil spring 5 is located, the spring 5 being secured at one end 5^a to the casing 1 and at the other end 5^b to the flange 4^b of the drum 4. On the face of the drum 4 opposite the flange 1^a is a pawl 8 that is pivoted to a stud 9 carried by the drum 4, the stud 9 passing through the elongated aperture 8^a in the pawl 8 for a purpose which will hereinafter be more fully understood. In order to maintain the pawl 8 with the stud 9 normally at one end of the slot 8^a, a leaf spring 8^c is provided, the spring 8^c being secured as at 8^b to the pawl 8. The pawl 8 is provided with a tooth portion 8^d to engage a ratchet disk 7, which is keyed, or otherwise fixed to the shaft 50 to turn therewith.

10 designates a pin carried by the pawl 8 to project into a slot 11^a in the tension disk 11, the disk 11 being apertured to receive the bearing hub 2^a of the cap 2, and is retained by a washer 12 that is bolted or screwed to the hub 2^a to hold the tension disk on the cap 2 when the cap is removed from the casing. In a like manner the drum 4 is held on the casing by a disk 13 that is secured to the hub 1^a thereof in any suitable manner. The tension disk 11 has a peripheral groove to receive the brake band 14, the

band 14 being fixedly secured at one end 14^a, to the casing 1, and at its other end is secured to a bolt 15 that projects through the casing, which receives a coil spring 16 and adjusting and jam nuts 17—17^a, as clearly shown in Fig. 7, of the drawings. By loosening or tightening up the nuts 17—17^a the band 14 may be made to grip the tension disk 11 to a greater or less extent, as conditions may require.

In the practical application of my invention to automobiles and the like, the operating lever may be placed adjacent to the seat of the operator and as the operator moves the lever to pull on the cable 6, the drum 4 will be rotated in a clockwise direction, see Fig. 3. Since the rotation of the disk 11 is resisted by the brake band 14, it will lag and hence the pin 10, which operates in the slot 11^a, will be forced toward the center of the disk and thus bring the pawl 8 into active engagement with the ratchet 7, causing the ratchet 7 to turn with the drum 4 in the direction of the arrow. As soon as the operator releases the cable 6, the spring 5 will rotate the drum 4 in an opposite direction, and owing to the lag of the tension disk 11, the pin 10 will move to the other end of the slot 11^a and thus force the pawl 8 out of engagement with the ratchet 7.

Should a "back fire" of the engine occur when the operator is attempting to start the same, the provision of the elongated slot 8^a and the pin and slot connection 10^a will serve to permit the pawl 8 to release itself from engagement with the ratchet 7, should the ratchet 7 commence to turn the drum 4 backwardly, as would be the case should a "back fire" occur. The proper tension may be applied to the disk 11 to cause it to lag the required amount by means of the band 14 and the tension spring 16.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, operation and many advantages of my invention will be readily understood by those skilled in the art to which the invention appertains.

What I claim is:

1. In an engine starter, a ratchet on the engine shaft to turn therewith, a drum, a pawl carried thereby to engage said ratchet at times, a manually operated means directly connected with the drum whereby the drum may be moved in one direction to turn the engine shaft, and means independent of the drum and in engagement with the pawl for moving the pawl into engagement with the ratchet as the drum is moved in said shaft turning direction.

2. In an engine starter, a ratchet on the engine shaft to turn therewith, a drum, means mounted within the drum to normally

tend to turn the drum in one direction, another means for turning the drum in an opposite direction, a pawl carried by the drum to engage said ratchet when said drum is turned in said opposite direction, combined with means independent of the drum and ratchet and normally held in engagement with the pawl for moving the pawl into and out of engagement with the ratchet as the drum is turned.

3. In an engine starter, a ratchet on the engine shaft to turn therewith, a drum on the engine shaft, a pawl carried by the drum to engage said ratchet at times, a manually operated means directly connected with the drum whereby the drum may be moved in one direction, a friction disk independent of the drum and having a coöperative engagement with the pawl for moving the pawl into engagement with the ratchet as the drum is moved in one direction.

4. In an engine starter, a ratchet on the engine shaft to turn therewith, a drum on the engine shaft, a pawl carried by the drum to engage said ratchet at times, a manually operated means directly connected with the drum whereby the drum may be moved in one direction, a friction disk independent of the drum and having a coöperative engagement with the pawl for moving the pawl into engagement with the ratchet as the drum is moved in one direction, and means normally tending to move the drum in another direction, said connections between the friction disk and ratchet serving to release the pawl from the ratchet when the drum is moved in said other direction.

5. An engine starter comprising a housing having a central shaft bearing through which the engine shaft projects, a ratchet carried by the engine shaft, a pawl carrying drum mounted within the housing and having a flange, a coil spring within the flange for moving the drum in one direction, manually actuated means for moving the drum in an opposite direction, a pawl carried by the drum, and means for moving the pawl into and out of engagement with the ratchet as the drum is rotated in one direction or another.

6. An engine starter comprising a housing having a central shaft bearing through which the engine shaft projects, a ratchet carried by the engine shaft, a pawl carrying drum mounted within the housing and having a flange, a coil spring within the flange for moving the drum in one direction, manually actuated means for moving the drum in an opposite direction, a pawl carried by the drum, means for moving the pawl into and out of engagement with the ratchet as the drum is rotated in one direction or another, said last named means comprising a friction disk coöperatively connected with said pawl.

7. An engine starter comprising a housing having a central shaft bearing through which the engine shaft projects, a ratchet carried by the engine shaft, a pawl carrying drum mounted within the housing and having a flange, a coil spring within the flange for moving the drum in one direction, manually actuated means for moving the drum in an opposite direction, a pawl carried by the drum, means for moving the pawl into and out of engagement with the ratchet as the drum is rotated in one direction or another, said last named means comprising a friction disk coöperatively connected with said pawl, and means for causing said friction disk to lag in its rotation behind that of the drum.

8. An engine starter comprising a housing having a central shaft bearing through which the engine shaft projects, a ratchet carried by the engine shaft, a pawl carrying drum mounted within the housing and having a flange, a coil spring within the flange for moving the drum in one direction, manually actuated means for moving the drum in an opposite direction, a pawl carried by the drum, means for moving the pawl into and out of engagement with the ratchet as the drum is rotated in one direction or another, said last named means comprising a friction disk coöperatively connected with said pawl, means for causing said friction disk to lag in its rotation behind that of the drum, said last named means comprising a brake band

carried by the casing and engaging said friction disk.

9. An engine starter comprising a pawl carrying drum, a pawl mounted thereon, said pawl having a slot, said drum having a stud passing through said slot, means for normally holding said pawl with the stud at one end of the slot, said pawl adapted to be moved into and out of operative engagement with the engine shaft at times, and means for moving the pawl into and out of operative engagement with the engine shaft as the drum is rotated in one direction or the other.

10. In an engine starter, a ratchet on the engine shaft to turn therewith, a drum, means normally tending to turn the drum in one direction, manually operated means for turning the drum in an opposite direction, a pawl carried by the drum to engage said ratchet at times, combined with means independent of the drum and ratchet and normally held in engagement with the pawl for moving the pawl into engagement with the ratchet as the drum is turned, to turn the engine shaft in one direction and for automatically releasing said pawl from said ratchet when the engine shaft turns in an opposite direction.

URBAN MONROE SEYLER.

Witnesses:

GEORGE VERNOR,
JOHN SEYLER.