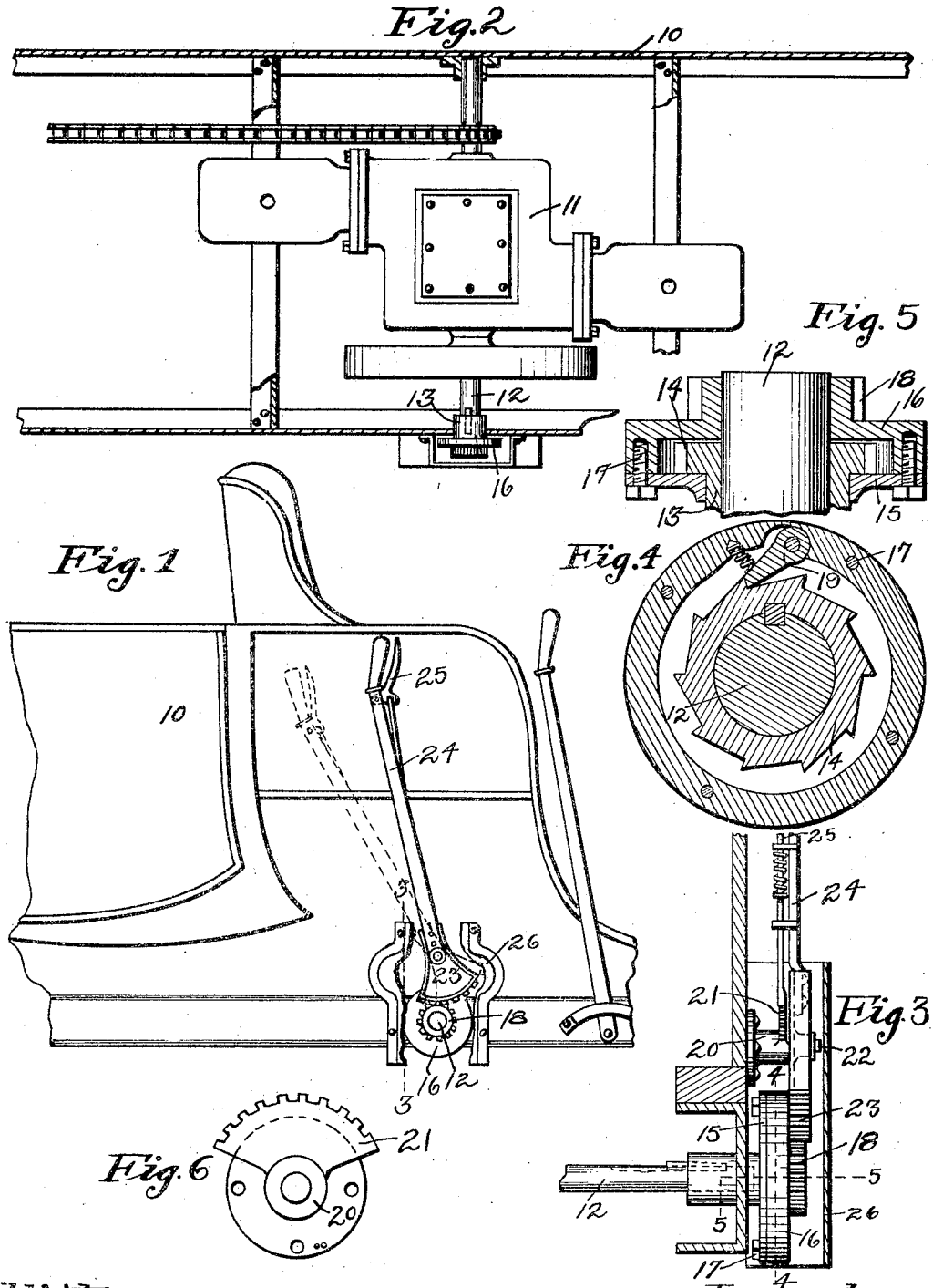


W. S. REGUR.
 STARTING DEVICE FOR EXPLOSIVE ENGINES.
 APPLICATION FILED SEPT. 10, 1909.

1,035,232.

Patented Aug. 13, 1912.



Witnesses
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UNITED STATES PATENT OFFICE.

WINFIELD S. REGUR, OF DES MOINES, IOWA.

STARTING DEVICE FOR EXPLOSIVE-ENGINES.

1,035,232.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed September 10, 1909. Serial No. 517,028.

To all whom it may concern:

Be it known that I, WINFIELD S. REGUR, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Starting Device for Explosive-Engines, of which the following is a specification.

The object of my invention is to provide a device of simple, durable, and inexpensive construction, especially adapted for use on automobiles having explosive engines whereby the operator may, while occupying a seat in the automobile, readily and easily turn the shaft of the engine one or more revolutions as required in starting the engine.

My invention consists in the construction, arrangement, and combination of the various parts of the device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of a part of an automobile with my improved starting device applied thereto. Fig. 2 shows a plan view of a part of an automobile chassis with an engine contained thereon, and with a portion of my attachment applied to the engine shaft. Fig. 3 shows an enlarged, detail, sectional view on the line 3—3 of Fig. 1. Fig. 4 shows an enlarged, sectional view on the line 4—4 of Fig. 3. Fig. 5 shows an enlarged, detail, sectional view on the line 5—5 of Fig. 3, and Fig. 6 shows a detail, end view illustrating the sector and the fulcrum used for the operating lever.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate those portions of the automobile shown. 11 indicates an explosive engine mounted in the automobile frame and having a main driving shaft 12. These parts are all of the ordinary construction and of themselves form no part of my present invention, but are illustrated for the purpose of showing the manner in which my attachment is applied to an explosive engine in an automobile.

Keyed to one end of the driving shaft 12 is a sleeve 13 having a ratchet wheel 14 thereon. Rotatably mounted upon this sleeve 13 is a disk 15 which forms one side of a casing designed to inclose said ratchet wheel. The mating part of the casing is

indicated by the numeral 16 and it is connected with the disk 15 by the screws 17. Formed on the outer portion of the casing member 16 is a pinion 18, said pinion and casing being formed to rotate on the shaft 12. Said casing 16 is provided on its interior with a spring actuated pawl 19 normally in engagement with the ratchet wheel 14. By means of this arrangement of parts, it is obvious that when the pinion 18 is given an alternating, rotary motion, the said ratchet wheel 14 and the shaft 12 to which it is keyed, will be rotated intermittently in one direction only, and inasmuch as the engine shaft 12 rotates in one direction only, I have arranged the ratchet device in such a manner that it will turn the engine shaft in the direction in which the engine moves when in operation.

For operating the pinion 18, I have provided the following mechanism: Mounted upon the side of the automobile body is a sleeve 20 having formed on its upper portion a sector 21. This sleeve is provided with a shaft 22 on which is fulcrumed a segmental rack 23, which rack is in mesh with the pinion 18. These parts are so arranged that when the lever 24 is moved to its rearward limit, it will be thrown to position out of contact with the pinion 18 so that said pinion may freely rotate with its shaft without having the ratchet device connected therewith in continuous operation, such as would be the case if the said pinion 18 were held against rotation by the rack. Fixed to the rack 23 is a hand-lever 24 extended upwardly and provided with a spring-actuated pawl device 25, the latter being designed to engage the sector 21. The handle of the lever 24 is projected to position where it will be conveniently accessible to a person occupying the operator's seat of the automobile.

The reference numeral 26 indicates a protecting shield fixed to the automobile body to inclose the segmental rack and pinion.

In practical use and assuming that it is desired to start the explosive engine, the operator first grasps the spring-actuated ratchet device 25 to hold it out of engagement with the sector 21. He then moves the lever 24 forwardly and rearwardly thus imparting an alternating, rotary motion to the pinion 18. This will, in turn, impart an intermittent, rotary motion in one direction

only to the power shaft of the engine, and in this way the engine shaft may be operated sufficiently for starting purposes.

One of the advantages of my invention is 5 that the operator may impart to the lever 24, any length of stroke which is most convenient for him, and he may also apply to the upper end of the lever a comparatively light amount of power. This power is 10 greatly increased on account of the length of the handle end of the lever as compared with the length of the segmental rack, and, hence it may require a comparatively large number of reciprocations of the operating 15 lever to turn the power shaft a complete revolution. However, an advantage is gained in the fact that by this arrangement an engine having a comparatively high amount of compression and requiring con- 20 siderable power to turn, may be started with a comparatively light amount of power applied to the handle end of the lever

I claim as my invention:

- 25 1. A starting device for explosive engines, comprising a power shaft, a sleeve keyed to the power shaft, a ratchet wheel formed on

the outer end of said sleeve, a disk rotatably mounted on the sleeve, a casing member screwed to the disk, a pinion formed on the casing member and rotatably mounted on 30 the power shaft, a spring-actuated pawl carried by the casing to engage said ratchet wheel, a segmental rack fulcrumed above said pinion and in mesh with it, and a lever fixed to the segmental rack. 35

2. A starting device for explosive engines, comprising a power shaft, a sleeve keyed to the power shaft, a ratchet wheel formed on the outer end of said sleeve, a disk rotatably mounted on the sleeve, a casing member de- 40 tachably connected to the disk, a pinion formed on the casing member and rotatably mounted on the power shaft, a spring actuated pawl carried by the casing to engage said ratchet wheel, a rack in mesh with said pinion, and a lever for operating said rack. 45

Des Moines, Iowa, August 21, 1909.

WINFIELD S. REGUR.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."