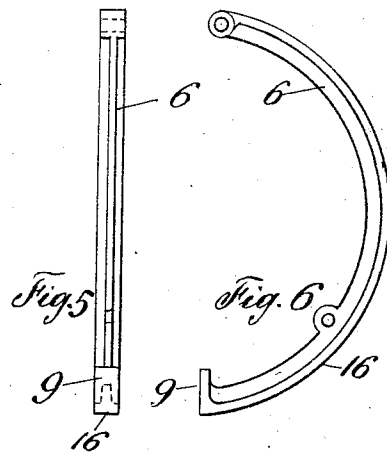
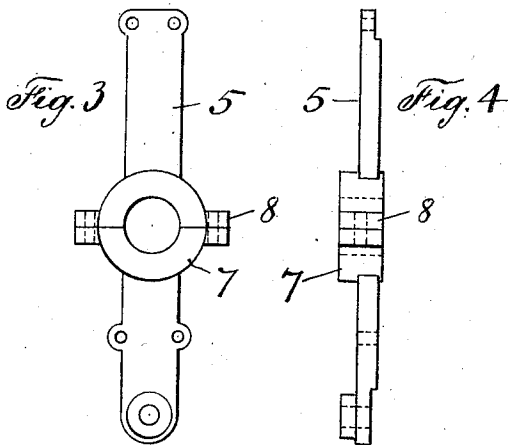
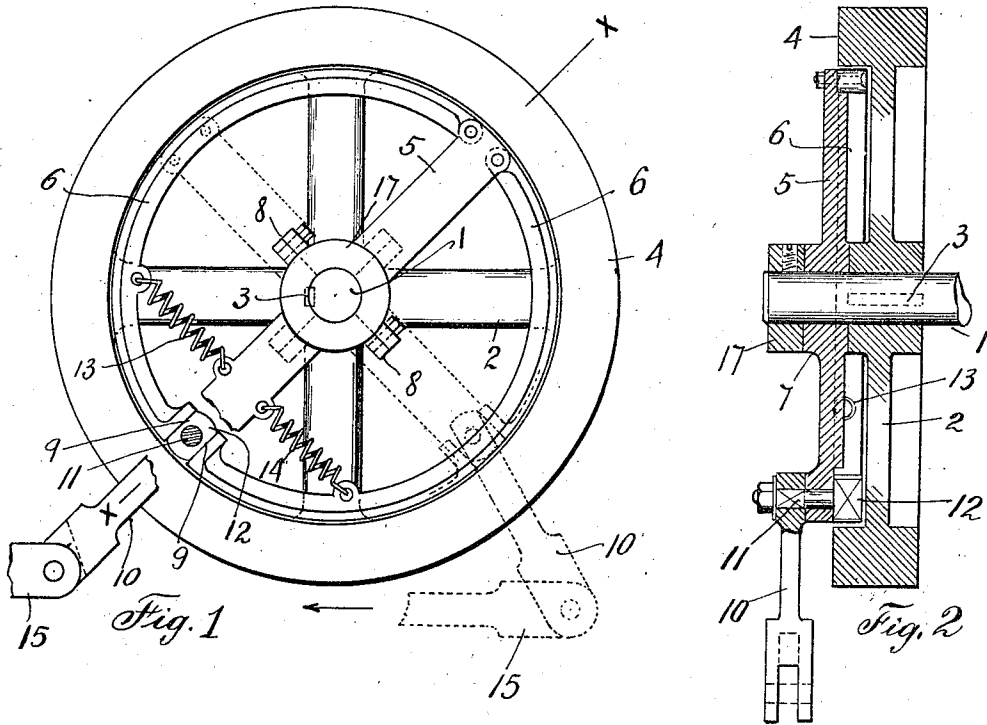


H. GLEN.
 STARTING DEVICE FOR EXPLOSIVE ENGINES.
 APPLICATION FILED DEC. 5, 1910.

1,001,016.

Patented Aug. 22, 1911



WITNESSES
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UNITED STATES PATENT OFFICE.

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STARTING DEVICE FOR EXPLOSIVE-ENGINES.

1,001,016.

Specification of Letters Patent.

Patented Aug. 22, 1911.

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To all whom it may concern:

Be it known that I, HOWARD GLEN, a citizen of the United States, and residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Starting Devices for Explosive-Engines, of which the following is a complete specification.

The main objects of this invention are to provide an improved starting device for explosive engines which is adapted to start the engine with the exertion of a minimum amount of force by the operator; to provide a starting device which is adapted to quickly and easily be thrown into engaging position; to provide a starting device which is adapted to operate in conjunction with the fly-wheel of the engine; and to provide a very cheap, durable and simple construction which will not readily get out of repair.

A specific embodiment of the invention is illustrated in the accompanying drawings, in which:

Figure 1 is a fragmentary front elevation of the starting device showing the parts in release position in full lines, and in gripping position in dotted lines. Fig. 2 is a section taken on line *x-x* of Fig. 1. Fig. 3 is a front elevation of the support-bar or hanger for the gripping jaws. Fig. 4 is a side elevation of the hanger. Fig. 5 is an inside elevation of one of the gripping jaws. Fig. 6 is a front elevation of one of the gripping jaws.

In the construction shown, the engine shaft 1 is provided with a fly-wheel 2 which is rigidly keyed to the shaft with a key 3 and has a laterally extending flange or rim 4 on its periphery. Loosely mounted on the shaft adjacent to the wheel 2 is the support-bar or hanger 5 for the gripping jaws 6. The hanger 5 is of a length slightly less than the internal diameter of the wheel rim 4, and, as shown, it is formed in two sections on the inner end of each of which is one half of the bearing 7 for the hanger. Said sections are secured together by means of bolts or pins passing through ears or lugs 8 on the abutting ends of the sections, though obviously the hanger may be formed in one piece if desired.

The gripping jaws 6 are curved longitudinally to a semi-circular form and are hinged at one end to one end of the hanger 5 and extend in opposite directions therefrom on the inner side of the circumference of the

wheel rim 4, and are formed on a slightly less radius than said rim so that they do not normally contact with said rim. The opposite or free ends of said jaws are spaced a slight distance apart and are provided with bearing or contact faces 9.

Pivoted to the end of the hanger 5 which is adjacent to the free ends of the jaws 6 is the jaw operating lever 10. The pivot pin 11 which connects the lever to the hanger is rigidly fixed in the lever and is journaled in the hanger. On the inner end of said pin is an elongated head 12 which fits between the bearing faces 9 of the jaws. When said lever is in alinement with the hanger the head 12 is directed radially of the wheel with its flat faces parallel with the bearing faces 9, in which position the jaws 6 are out of engagement with the rim 4. For the purpose of normally holding the jaws in that position, coiled springs 13 and 14 connect the free ends of the jaws with the hanger and exert sufficient tension on the jaws to hold them out of contact with the rim when there is no forward pressure applied to the lever 10. Connected to the outer end of the lever 10 is a bar or link 15 to which is connected a foot lever, not shown, but which is in convenient access to the operator.

The jaws are each provided on their outer sides with a friction face or shoe 16 of any suitable material capable of providing good frictional contact with the rim 4.

The hanger 5 may be retained on the shaft in any desired manner, but as shown, a collar 17 is rigidly secured on the shaft on the opposite side of the hanger from the wheel 2.

The operation of the construction shown is as follows: The foot lever may have connected to it a spring or weight of less tension than that of the springs 13 and 14 but sufficient to normally hold the hanger 5 in the position shown in dotted lines in Fig. 1. When sufficient force is quickly applied to the foot lever it forces the bar 15 in the direction indicated by the arrow in Fig. 1 and throws the lever 10 at an angle to the hanger and causes the head 12 to spread the jaws and throw them into engagement with the rim 4, as shown in dotted lines in Fig. 1. When the bar 15 has reached the limit of its movement and the foot lever is released the springs 13 and 14 draw the jaws out of engagement with the rim and the lever 10 is thrown back to its starting point by the spring or weight on the foot

lever. Should the engine backfire or kick during the starting operation, the foot lever is released and the springs 13 and 14 draw the jaws out of engagement with the rim.

5 Obviously the jaws are adapted to take a firm grip on the rim, and the leverage afforded makes it possible to start the engine with but slight application of force to the foot lever. Obviously also, there are but
10 very few parts to the construction and they are not subjected to wear except when in actual operation in starting the engine, and consequently the device is not liable to get out of repair.

15 While I have shown and described but one specific embodiment of my invention, it will be understood that many details of the construction shown may be varied or omitted without departing from the scope of the
20 claims.

I claim:

1. A starting device for explosive engines, comprising an engine shaft, a fly wheel rigidly engaged on the shaft, semi-circular
25 jaws lying adjacent to the inner periphery of the wheel, a hanger journaled on the shaft and extending diametrically of the wheel, said hanger having one end thereof pivoted to one end of each of the jaws, and means
30 pivoted on the opposite end of the hanger and adapted to force the adjacent ends of the jaws apart and throw the jaws into frictional engagement with the inner periphery of the wheel.

35 2. A starting device for explosive engines, comprising an engine shaft, a fly-wheel rigidly fixed on the shaft, and a pair of oppositely movable gripping jaws loosely
40 mounted on the shaft and pivotally connected at one end, a lever pivotally sup-

ported adjacent to the other ends of the jaws and adapted to throw the jaws into frictional engagement with the wheel and means acting normally to pull the free ends of the jaws together and hold them out of
45 engagement with the wheel.

3. An engine starter, comprising an engine shaft, a fly-wheel rigidly secured on the shaft, a pair of semi-circular jaws lying
50 closely to the inner periphery of the wheel, a bar journaled at its center on the shaft and pivoted at one end to one end of each of the jaws, a lever pivoted on the opposite end of said bar, means rigidly secured to the lever and projecting between the free
55 ends of the jaws, and means for operating the lever to force the jaws apart.

4. A starting device for explosive engines, comprising an engine shaft, a fly-wheel rigidly fixed on the shaft and having an
60 overhanging rim, a hanger loosely mounted on the shaft, a pair of curved jaws hinged on the hanger and adapted to lie close to the inner surface of the rim, springs connecting the opposite ends of the jaws with
65 the hanger and adapted to normally hold the jaws out of contact with the rim, a lever pivoted on the hanger adjacent to the free ends of the jaws, a head connected with said
70 lever and adapted to force the jaws into gripping engagement with the rim when the lever is moved in one direction, and means for operating the lever.

In witness whereof I have hereunto subscribed my name in the presence of two
75 witnesses.

HOWARD GLEN.

Witnesses:

CARL HAERTING,
ROBT. KLOTZ.