

UNITED STATES PATENT OFFICE.

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ANTIRECOIL DEVICE FOR EXPLOSIVE-ENGINES.

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To all whom it may concern.

Be it known that I, DYCKE H. REIMERS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Antirecoil Devices for Explosive-Engines, of which the following is a specification.

As is well known, in starting explosive-engines, especially those of the type used on automobiles, a crank-handle is applied to the crank-shaft in order to give said shaft a few turns, thus setting the piston in motion. In this operation the explosion often occurs before the crank-arm to which the piston is connected passes the center, thus causing a reverse or recoil movement of the crank-shaft, which frequently results in serious injuries to the operator.

It is therefore the principal object of this invention to provide simple and efficient means for preventing the recoil or reverse movement or what is familiarly termed the "kick back" of the crank-shaft, which is more especially intended for use on hydrocarbon-engines of the class used on automobiles, but which is applicable to engines of other types and those employed for other purposes; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a perspective view of a portion of the crank-casing of an engine, showing my antirecoil device mounted on the crank-shaft. Fig. 2 is a view in side elevation thereof. Fig. 3 is an end view; and Fig. 4 is a view, partly in section and partly in elevation, of the outer or free portion of the crank-shaft, showing the handle for starting the same in place thereon and illustrating a portion of the improved device.

Like numerals of reference refer to corresponding parts throughout the different views of the drawings.

The reference-numeral 10 designates a portion of the crank-casing of an engine, which casing has on its outer surface an apertured

boss 11, in which the crank-shaft 12 is jour-
naled. The free end of the crank-shaft 12 is
provided with a clutch-face 13 to engage a
similar face 14 on the crank-handle 15 used for
starting the engine. Surrounding that portion
of the crank-shaft adjacent to the outer sur-
face of the boss 11 is a ring-like plate 16, which
has an upwardly-inclined arm 17, near the
outer end of which is pivotally secured a pawl
18, which is adapted to engage the teeth of
a ratchet-wheel 19, which is rigidly secured on
the crank-shaft outwardly, but by preference
resting against the plate 16, which in turn
rests against the outer surface of the boss 11,
as is clearly shown in the different views of
the drawings. Secured at one of its ends to
the casing 10 or to a stationary part near the
crank-shaft is a bracket 20, which extends in
parallelism with the crank-shaft and has its
outer portion turned toward the same, as is
clearly shown in Figs. 1 and 2 of the drawings.
This bracket has a transverse arm 21, which
extends toward the crank-shaft and may be
connected to the plate 16, thus supporting
the outer portion of the bracket. Ful-
crumed on the outer end of the bracket 20 is
a lever 22, the outer end of which is down-
wardly and inwardly inclined, as at 23, and
has near said inclined portion an enlarge-
ment 24, in the lower portion of which is
seated an antifriction-ball 25. The inner por-
tion of the lever 22 is bent laterally and then
inwardly, so as to project under and beyond
the pawl 18, so as to strike a pin or stop 26,
secured to the face of the boss 11 for the pur-
pose of restricting the movement of the inner
end of said lever. Secured at one of its ends
to the bracket 20 and at its other end to the
lever 22 is a spring 27, which will normally
hold the inner portion of the lever in such a
position as to raise the pawl 18 and hold it
out of engagement with the ratchet-wheel 19
on the crank-shaft.

The operation of the device is simple and
as follows: When it is desired to start the
engine, a crank-handle 15, having in its head
a clutch 14 to engage the clutch 13 on the
crank-shaft, is placed on said shaft, in which
operation the forward or free portion of the
head 28 will impinge the beveled portion 23
of the lever 22, and thus cause the outer end
of said lever to be elevated and its inner end
depressed, thus permitting the pawl 18 to
engage one of the teeth of the ratchet-wheel,

which, it is apparent, will prevent the backward movement of the crank-shaft, yet will allow it to be freely turned in the proper direction for starting the engine.

5 Having thus described my invention, I desire to be understood that I do not wish to be limited to the exact construction and arrangement of the parts herein disclosed, as it is obvious that various changes therein may
10 be made without departing from the spirit of my invention.

What I claim is—

1. The combination with the crank-shaft of an engine, of a ratchet-wheel mounted there-
15 on; a pawl to engage said wheel, a lever extending near the shaft and adapted at one of its ends to engage the pawl and having its other end downwardly and inwardly inclined and in position to be engaged and raised by

the application of a starting-crank, substantially as described. 20

2. The combination with the crank-shaft of an engine having a clutch-face on its outer end, of a ratchet-wheel mounted on said shaft, a pawl to engage the ratchet-wheel, a
25 lever extending near the shaft and adapted at one of its ends to engage the pawl and having its other end inwardly and downwardly inclined, and in position to be engaged and raised by the application of a
30 starting-crank having a clutch-face to engage the outer end of the crank-shaft, substantially as described.

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Witnesses:

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