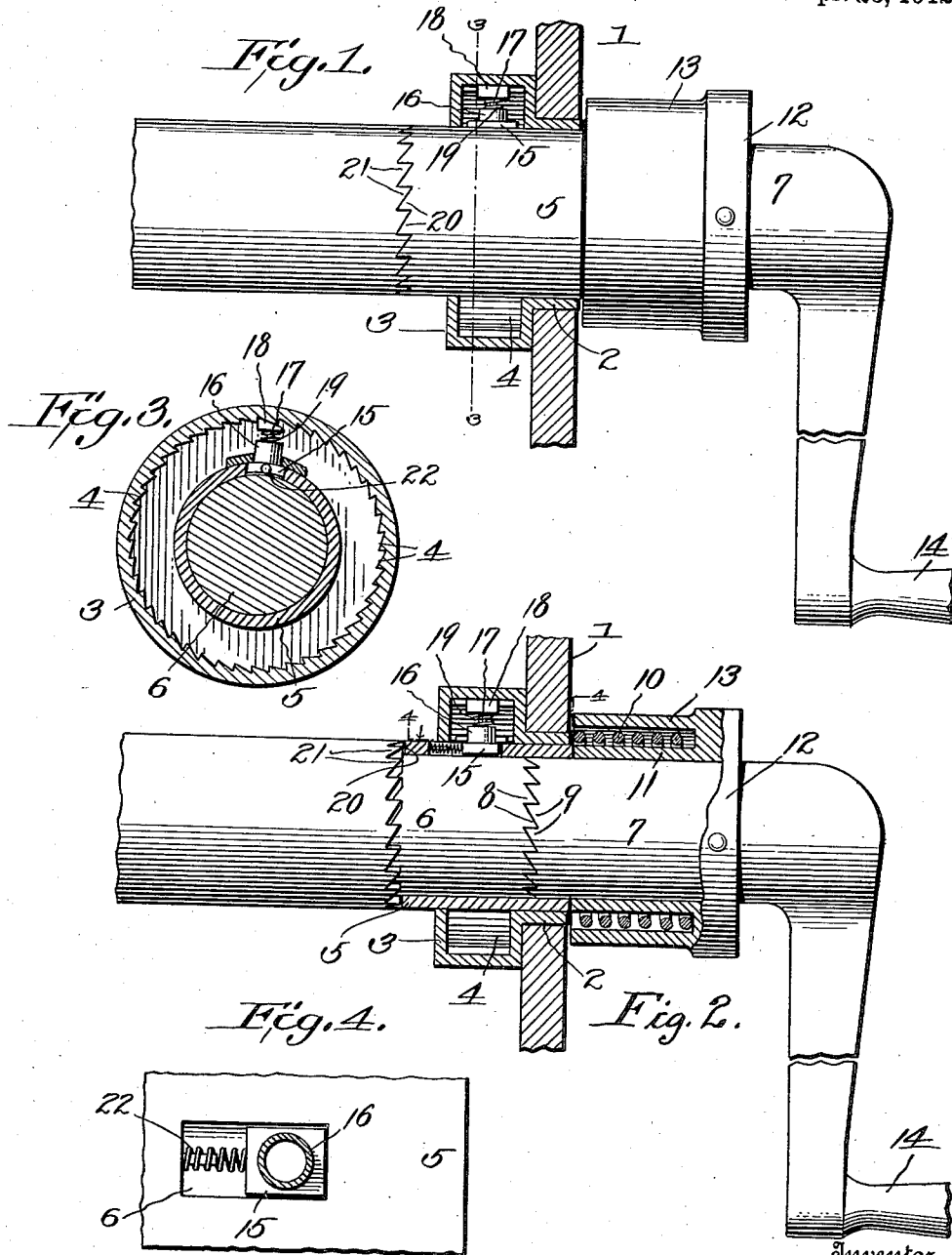


M. G. WORTH.
CRANKING DEVICE FOR INTERNAL COMBUSTION ENGINES.
APPLICATION FILED FEB. 23, 1911.

1,024,241.

Patented Apr. 23, 1912.



Witnesses

Oliver H. Holmes
John H. Wright

By

M. G. Worth,
E. B. Stocking
Attorney

UNITED STATES PATENT OFFICE.

MASON G. WORTH, OF NEW YORK, N. Y.

CRANKING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

1,024,241.

Specification of Letters Patent.

Patented Apr. 23, 1912.

Application filed February 23, 1911. Serial No. 610,156.

To all whom it may concern:

Be it known that I, MASON G. WORTH, a citizen of the United States, residing at New York, county of New York, State of New York, have invented certain new and useful Improvements in Cranking Devices for Internal-Combustion Engines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to certain new and useful improvements for cranking device for internal combustion engines, the object being to provide a device which will automatically disconnect the starting crank from the engine shaft whenever a back kicking occurs, caused by back firing of the engine, whereby all danger of the operator being injured is eliminated.

Another object of the invention is to provide a device which is simple and cheap in construction and one in which the disconnecting of the engine shaft from the crank shaft may be effected.

A further object of the invention is to provide means for moving the clutch faces of the respective shafts apart, said means being operated by a reversal of the engine shaft.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the drawing—Figure 1 is a horizontal section through my improved device partly in elevation; Fig. 2 is a similar view, the parts being broken away so as to show the interior construction of the device; Fig. 3 is a section taken on line 3—3 of Fig. 1; and Fig. 4 is a section taken on line 4—4 of Fig. 2.

Like numerals of reference refer to like parts in the several figures of the drawing.

In the drawing, 1 indicates a support and, as shown, represents the cross-bar of a frame of an automobile, it of course being understood that the device may be used in connection with stationary engines of all kinds but is especially adapted to be used in connection with automobile engines.

The frame is provided with a circular opening in which is secured a neck portion 2 of a cylindrical casing 3 having internal ratchet teeth 4 for a purpose later described. Mounted within the casing 3 and neck portion 2 is a sleeve 5 through which extend the

abutting end portions of an engine shaft 6 and a crank shaft 7, said shafts being provided with co-acting clutch faces 8 and 9 which are adapted to be normally held apart by a coiled spring 10 surrounding the sleeve 11 carried by a collar 12 fixed on the outer portion of the crankshaft 7, said spring being inclosed by a casing 13. The crank shaft 7 is provided with a handle 14, of ordinary construction, for operating the same and it will be seen that the teeth of the clutch faces 8 and 9 are so constructed that when the crank shaft is pushed inwardly so as to interlock the clutch faces, the engine shaft can be rotated to start the engine. When the crank shaft is released, the spring normally holds the clutch faces apart.

The outer end of the sleeve 5 is formed square and is adapted to engage the inner end of the sleeve 11 carried by the collar 12 so that when the sleeve 5 is moved outwardly the crank shaft will be forced outwardly to disengage the clutch faces of the respective shafts. An elongated opening is formed in the sleeve 5 in which is mounted a spring actuated block 15 having tubular portions 16 forming a bearing for a stem 17 of a dog 18 which is adapted to be held in engagement with the internal teeth 4 of the casing 3 by a coiled spring 19 surrounding the stem 17, as clearly shown, the head of said dog being so shaped that it will ride over the teeth when rotated in one direction and will be locked into engagement with the teeth when rotated in a reverse direction in order to prevent the sleeve from rotating when back firing occurs.

The inner end of the sleeve 5 is provided with teeth 20 co-acting with teeth 21 formed on the enlarged portion of the engine shaft 8 and said teeth are formed in such a manner that when back firing occurs and the shaft is rotated in a reverse direction, the co-acting edges of the teeth riding upon one another will move the sleeve 5 outwardly, the same being prevented from rotating by the spring dog 18. As the sleeve is forced outwardly, the outer end thereof engages the sleeve 11 carried by the crank shaft and forces the crank shaft outwardly and disengages the clutch faces 8 and 9 whereby all danger of the crank shaft being moved backwardly by back firing is prevented. The spring 22, used for holding the block 15 within the elongated opening of the sleeve, allows the sleeve to be moved

by the co-acting teeth and, when released, draws the teeth back into engagement.

From the foregoing description, it will be seen that I have provided a cranking device with means for preventing the crank shaft from being kicked backwardly by the back firing of the engine, said means being so arranged and constructed that an exceedingly simple and efficient device is formed which will prevent a person from becoming injured when cranking an internal combustion engine having an attachment of the kind described.

Having described my invention and set forth its merits, what I claim and desire to secure by Letters Patent is—

1. In a cranking device for internal combustion engines, the combination with an engine shaft having a clutch face at its end, of a spring pressed crank having a clutch face co-acting with the clutch face of said engine shaft, a projection carried by said crank shaft, a sleeve revolvably mounted upon said engine shaft having teeth at one end co-acting with the clutch face of the engine shaft and provided with a slot, a spring pressed block mounted in said slot, a toothed stationary member, and a pawl carried by said block co-acting with the teeth of the stationary member for locking said sleeve upon the back firing of said engine whereby said sleeve will be forced outwardly into engagement with said projection to disengage said clutch faces.

2. In a cranking device for internal combustion engines, the combination with a supporting frame, of a casing provided with a neck secured in said supporting frame, said casing being provided with internal teeth,

a sleeve mounted in said casing provided with a dog for engaging said teeth, said sleeve being provided with teeth at one end, a shaft extending through said sleeve provided with co-acting teeth, a spring for normally holding said teeth in engagement, said shaft being provided with a clutch face, and a spring pressed shaft having a clutch face co-acting with the clutch face of said engine shaft for rotating said shaft in one direction, said clutch faces being disconnected by said sleeve when said shaft is rotated in a reverse direction.

3. In a cranking device, the combination with a support, of a cylindrical casing having a neck portion secured in said support, said casing being provided with internal teeth, a sleeve mounted in said casing provided with an elongated opening, a spring actuated block mounted in said opening, a spring actuated dog carried by said block co-acting with the teeth of said casing, an engine shaft extending into said sleeve provided with a clutch face at its end, said sleeve having teeth at one end, co-acting teeth carried by said engine shaft, a crank shaft having a clutch face adapted to engage the clutch face of said engine shaft, a spring surrounding said crank shaft for normally holding said clutch faces out of engagement, and a sleeve carried by said crank shaft adapted to be engaged by said first mentioned sleeve.

In testimony whereof I affix my signature in presence of two witnesses.

MASON G. WORTH.

Witnesses:

E. A. WHEELER,
M. H. LEARY.

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