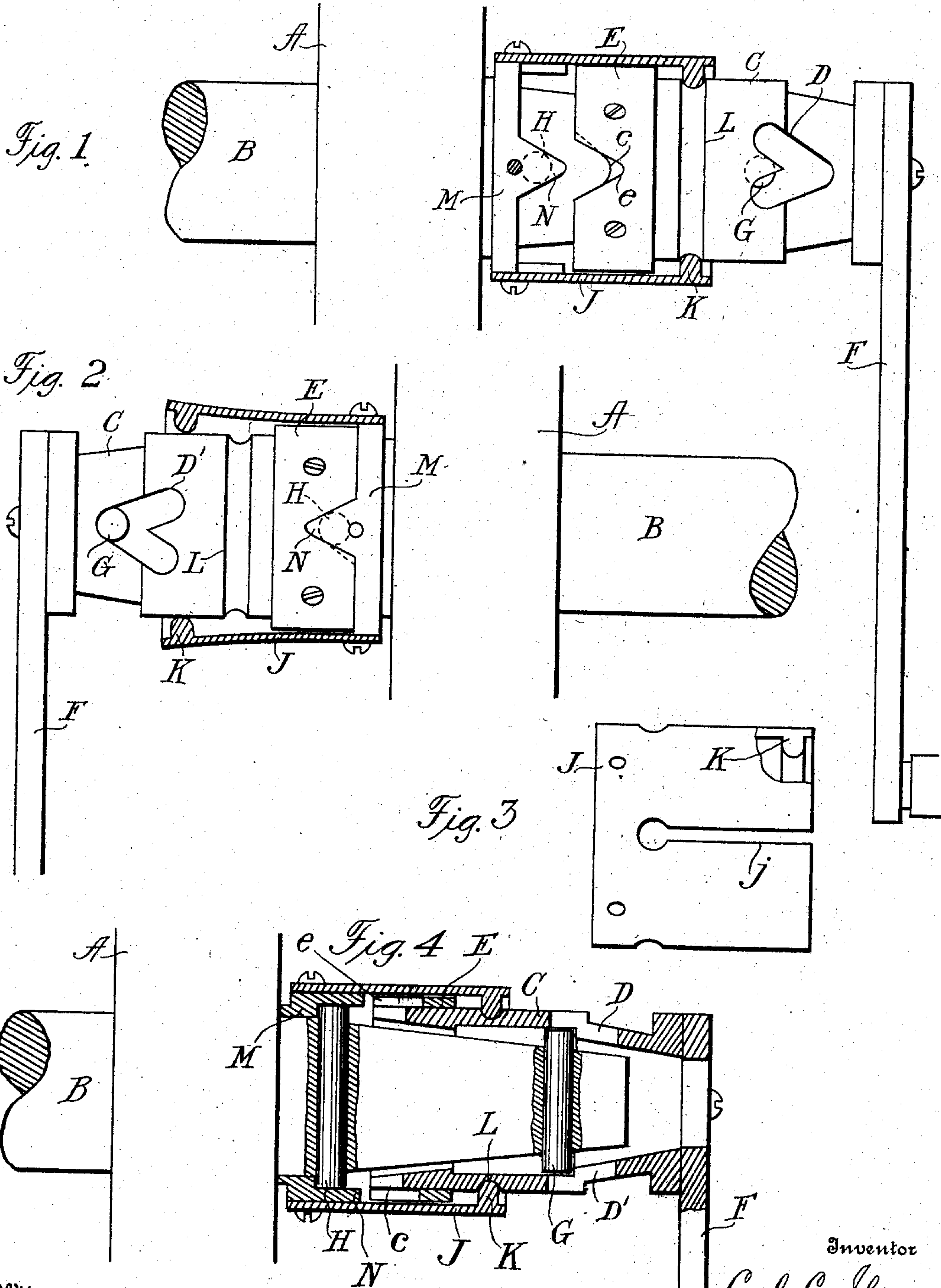


C. C. ILG.
SAFETY CRANK.

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939,027.

Patented Nov. 2, 1909.



Witnesses
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By

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UNITED STATES PATENT OFFICE.

CARL C. ILG, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO FRANCIS NAGY, OF NEW YORK, N. Y.

SAFETY-CRANK.

939,027.

Specification of Letters Patent.

Patented Nov. 2, 1909.

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To all whom it may concern:

Be it known that I, CARL C. ILG, citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Safety-Cranks, of which the following is a specification.

This invention relates to safety cranks for use in starting explosive engines, and provided with devices by which the crank is thrown out of engagement with the engine shaft whether the engine starts in the direction desired, or in the reverse direction by reason of "back fire."

The object of this invention is the production of a safety crank having special construction and particular arrangement of parts, which do not include the customary spring pawl and ratchet contrivances that require the shaft to be turned for a greater or less distance before engagement occurs. During the interval necessary for the ratchet to operate, in those safety cranks with which I am acquainted, the crank is moved a distance sufficient to greatly endanger the person grasping it when "back fire" happens.

It is an object of my invention to provide engaging teeth and pins that cause the disengaging movement of the crank to begin coincidentally with the increase of speed when the engine starts in the desired direction, or upon the occurrence of contrary rotation resulting from premature explosion.

The preferred construction and arrangement of parts constituting and accomplishing the stated objects, is illustrated in the accompanying drawings, of which—

Figure 1 represents a side view of all parts assembled, and shows the teeth and pins disengaged. Fig. 2 is a side view of the other side of the invention from that set out in Fig. 1, and shows the teeth and pins engaged. Fig. 4 is a lengthwise section of all parts as illustrated in Fig. 1. Fig. 3 is a side view of the split sleeve.

Like letters are used to refer to the same parts in the description and drawings.

Through a suitable bearing A, the end of the engine shaft B passes. Upon the end of the shaft is placed a sleeve C, which has formed through it near its outer end the V-slots D and D'. At the other end the sleeve C is provided with notches *c*, which will be again mentioned. The notches *c* have the same form as the apex of the V-

slot D. A ring E, provided with notches *e*, is secured to the sleeve C exteriorly, and the notches *e* are arranged above the notches *c* in the sleeve C, as illustrated in Fig. 1.

The crank F is secured to the outer end of sleeve C. Parallel pins G and H are passed diametrically through the shaft B, and the ends of the pins project beyond the surface of the shaft as shown.

The outermost part of this mechanism is the split sleeve J, having one or more slots *j*, and the annular inwardly projecting portion K. The sleeve is constructed of elastic metal, and the projecting inward ring K engages the external groove L encircling the sleeve C. The split sleeve J is secured to a ring M, that is itself secured to the shaft B, and is provided with the teeth N, best shown in Fig. 2.

The operation of this invention may be explained as follows: Normally, the parts are situated as illustrated in Fig. 1. That is to say, the projection K is in engagement with the groove L of the sleeve C. Such engagement is not tight, but rather loose, in order that the split sleeve may rotate with the shaft B so long as the engine is working, without undue friction between the part K and the sleeve C. Let it be assumed that the shaft B is brought to rest and it is desired to again crank the engine. A smart blow delivered by the hand upon the top of the crank F and in the direction of the axis of the shaft will disengage the groove L and projection K, and will re-arrange the parts bringing them into the positions shown in Fig. 2. Now, the pin G engages the apexes of the V-slots D and D', and the pin H engages the similar notches *c* in the inner edge of the cylinder, at the same time the teeth N engage the notches *e* of the secured ring E. The operator presses the crank strongly inwardly, and the various engaged parts enable him to rotate the engine shaft in the direction desired. But, should the engine suddenly start and gain velocity in the desired direction, the shock, for which the operator is practically unprepared, bringing the pins and teeth against the inclined sides of the slots and the notches, throws the crank outwardly and reengages the projection K and groove, L. Exactly the same movement takes place when back fire occurs, but rather more quickly, as the shock is obviously more suddenly operative.

What I claim is—

1. In a safety crank, the combination with the shaft having the diametrically projecting pins, of the sleeve having the V-slots and V-shaped recesses adapted for engagement with the pins, a crank secured to the said sleeve, and means adapted to hold the sleeve movably upon the shaft and for limiting its out and in movement, substantially as described.

2. In a safety crank, the combination with a shaft having the diametrically projecting pins and wedge-shaped teeth, of the sleeve having the V-slots and V-shaped recesses, a crank secured to the said sleeve, and means for guiding and retaining the said sleeve upon the shaft, substantially as described.

3. In a safety crank, the combination with a shaft having diametrical projecting pins, of a sleeve having V-slots and V-shaped recesses arranged to engage the pins, the said sleeve having a portion of reduced diameter near one end and the said V-slots being

formed in part through the said portion of the sleeve, one of the said pins being shorter than the greater internal diameter of the said sleeve and adapted to engage the V-slots, substantially as described.

4. In a safety crank, the combination with a shaft having diametrical projecting pins and wedge-shaped teeth, of a sleeve having V-slots and V-shaped recesses arranged to engage the said pins and teeth of the shaft, the said sleeve having a portion of reduced diameter near one end and the said V-slots being formed in part through said reduced portion of the sleeve, one of the said pins being shorter than the greater internal diameter of the said sleeve, and adapted to engage the V-slots, substantially as described.

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

CARL C. ILG.

Witnesses:

VERA MOLLACH,
GEORGE DEFFAA.