

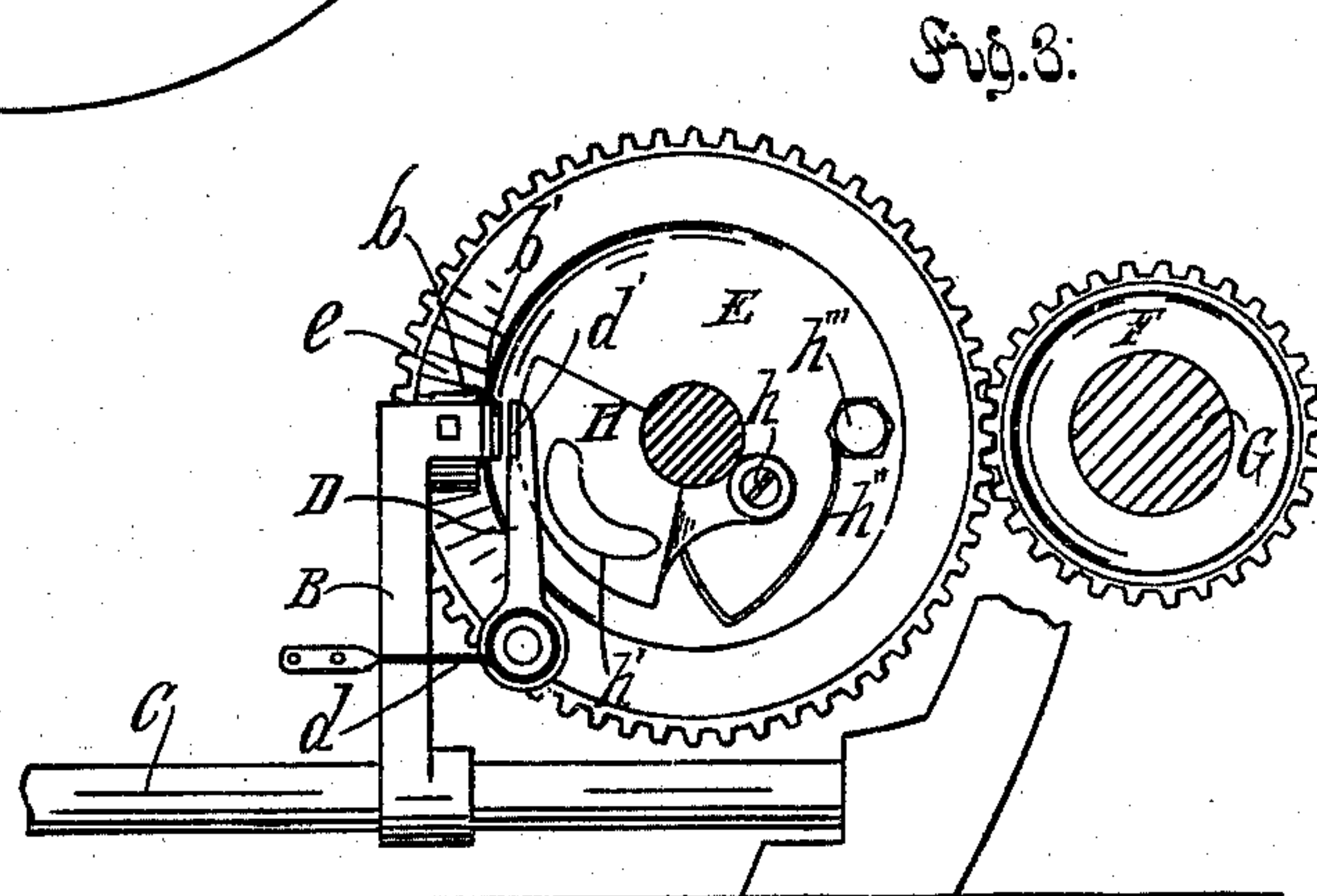
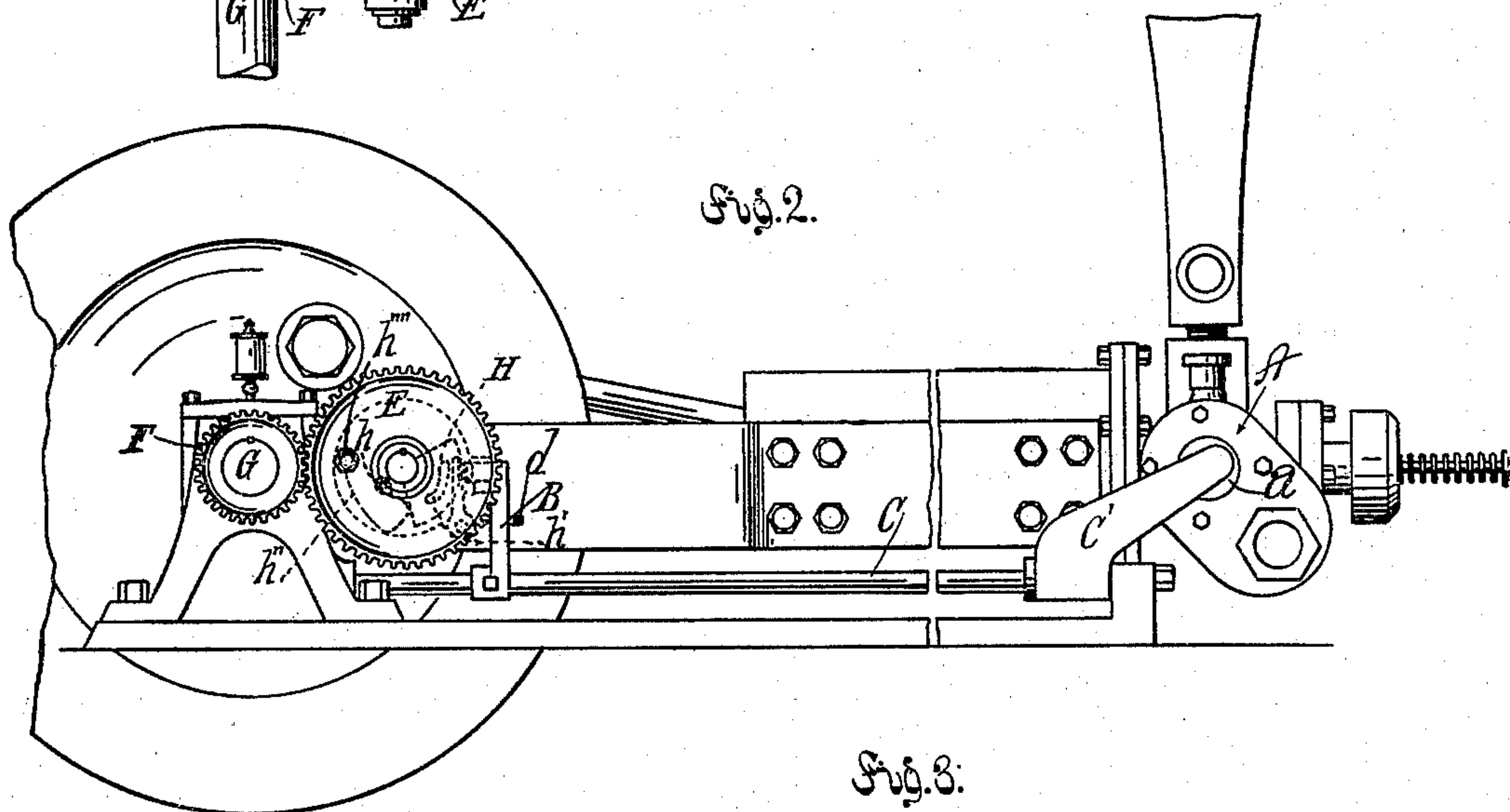
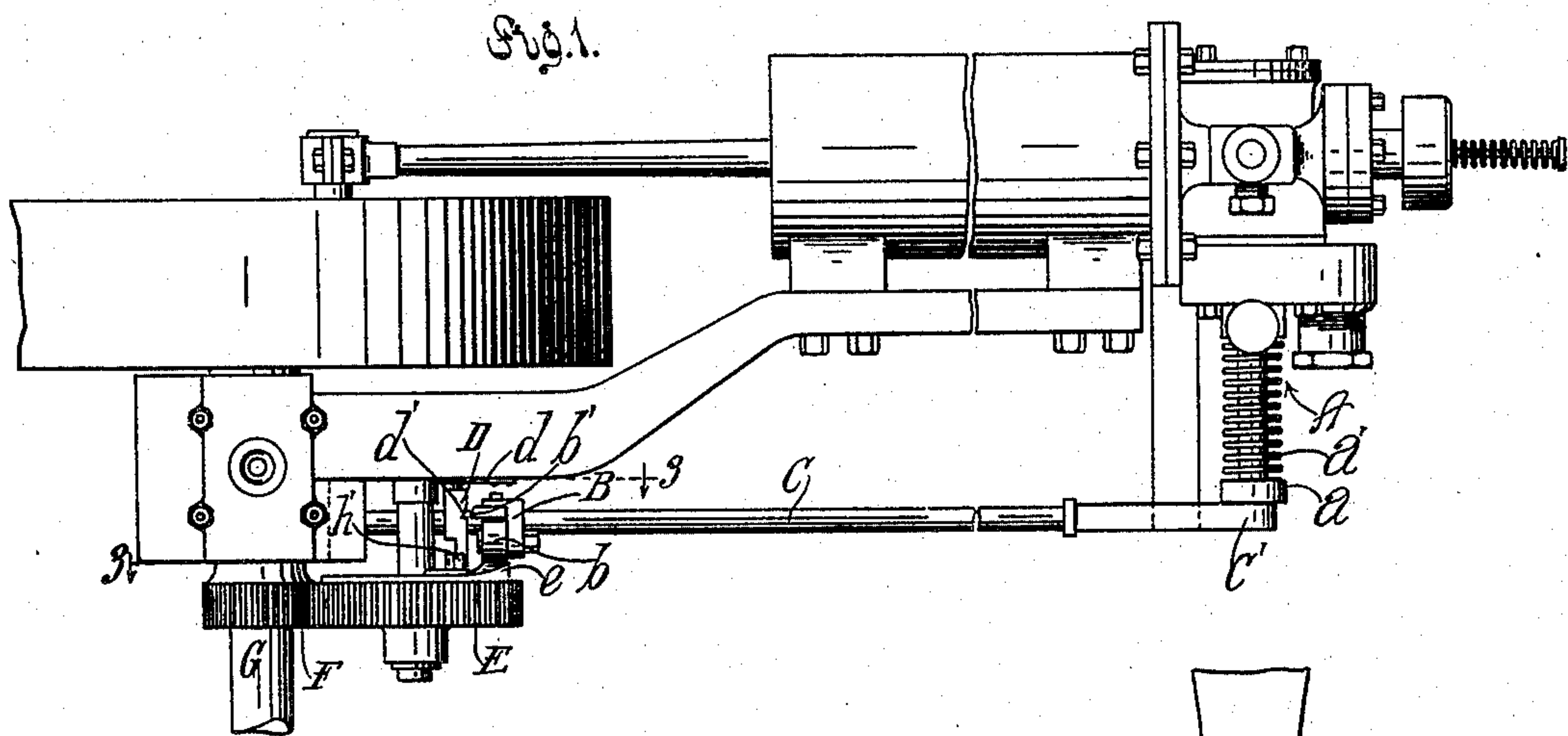
No. 640,971.

Patented Jan. 9, 1900.

A. C. STEWART.
GOVERNOR FOR EXPLOSIVE ENGINES.

(Application filed Mar. 16, 1898.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

ALFRED CLEMENT STEWART, OF SANTA PAULA, CALIFORNIA.

GOVERNOR FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 640,971, dated January 9, 1900.

Application filed March 16, 1898. Serial No. 674,061. (No model.)

To all whom it may concern:

Be it known that I, ALFRED CLEMENT STEWART, a citizen of the United States, residing at Santa Paula, in the county of Ventura and State of California, have invented a new and useful Governor for Explosive-Engines, of which the following is a specification.

This invention relates to governors which operate by controlling the exhaust.

The objects of this invention are extreme simplicity of construction and extreme sensitiveness of action.

My invention comprises, in an explosive-engine, the combination, with the exhaust-valve mechanism, of a cam-arm, means connecting such arm with the valve to open the valve, a catch for holding the arm in open-valve position, a cam-wheel with cam to operate the arm, means for retracting the catch to release the arm when it is thrown by the cam, and a centrifugal block carried by the cam-wheel, to be thrown by speed above normal, to hold the catch in operative position to hold the arm when the cam leaves it, a spring for throwing the centrifugal block toward the center of rotation of the wheel, and a jam-nut on the post for adjusting the tension of the spring. By this arrangement when the speed of the engine exceeds the normal the governor is easily regulated. Thus to overcome the spring which presses the centrifugal block inward the block flies out and holds the catch in position to hold the exhaust-valve open after the cam has left the arm, so that the explosive charge will not be admitted into the explosive-chamber until the speed has fallen sufficiently to allow the centrifugal block to move back under the spring-pressure out of the way of the catch, so that the catch can again release the arm to allow it to permit the exhaust-valve to close.

The accompanying drawings illustrate my invention.

Figure 1 is a plan showing my newly-invented governor as applied to a gas-engine, a fragment of which is shown. Fig. 2 is a side elevation of the same with parts broken away to expose working mechanism. Fig. 3 is a fragmental detail looking downward from line 3 3, Fig. 1.

A indicates in a general way the exhaust-valve mechanism, which is the same as that

ordinarily in use in exhaust-valve-governed engines.

a indicates the exhaust-valve rod, and *a'* the spring which holds it out to close the exhaust-valve.

B indicates a cam-arm connected with a rock-shaft C, which carries the exhaust-valve rock-arm C' to open the exhaust-valve.

D indicates a catch-arm to be thrown into engagement for holding the cam-arm in open-valve position—that is, in a position to hold the exhaust-valve open.

E indicates a cam-wheel driven by a pinion F on the main shaft G of the engine and provided with a cam *e* to operate the cam-arm.

d indicates a spring for retracting the catch to release the cam-arm when it is thrown by the cam *e*. The spring *a'* of the exhaust-valve acting on the exhaust-valve rod *a*, the rock-arm C', and rock-shaft C affords means for yieldingly holding the cam-arm fully in the path of the cam, but the catch is arranged for holding the cam-arm only partially across the path of the cam. The catch comprises a pivoted arm with a shoulder *d'* on it to catch on a shoulder *b'* on the cam-arm toward and from which the catch-arm *d* plays.

b indicates an antifriction-roller on the cam-arm B, which receives the stroke of the cam *e*, and in practice when the catch holds the cam-arm the roller *b* is just within the path of the cam *e*, so that when the cam passes the roller it throws the cam-arm sufficiently to release the catch. The catch and shoulder are slightly hook-shaped to hook into each other, and the movement of the cam-arm when acted upon by the cam is sufficient to release the hook-faces. The shoulder *b'*, which catches in the notch of the catch-arm, is preferably a steel dog fastened to the cam-arm by countersunk screws. (Not shown.)

H indicates a centrifugal block pivoted at *h* to the cam-wheel E and provided with a curved face *h'*.

h'' indicates a spring the end of which is substantially L-shaped and bears against the outer edge of the centrifugal block to normally hold it toward the center of rotation of the wheel E, but adjustably arranged by means of a spring carrying-post *h'''* to give any desired pressure against the block H. The block is arranged so that when thrown out

against the action of the spring h'' the face h' engages the catch-arm D and holds it in position to catch the shoulder or dog b' when the cam has passed the roller, thus allowing the dog again to seat in the notch of the catch. By this means when the speed of the engine is sufficient to throw the centrifugal block out the cam-arm will be held by the catch in position to hold the exhaust-valve open, thus to prevent the air-pressure on the inlet-valve from working the valve to cause the admission of an explosive charge into the engine.

By securing the spring and the block upon the same side of the center of the wheel and providing the edge of the weight where the spring bears against it with a curve or shoulder the weight can be assembled with the other parts just as it comes from the mold and the spring can be formed from a suitable piece of spring metal having an eye at one end and a crook at the other, thereby making a very cheap and efficient construction.

The spring-post h''' screws through the cam-wheel and is held by a jam-nut h'''' on its opposite end. By this means the tension of the spring to hold the centrifugal block inward is adjustable, so that the governor can be set for a higher or lower speed by increasing or diminishing the tension of the spring.

Now, having described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In an explosive-engine, the combination, with the exhaust-valve mechanism; of means for operating the same; a catch for holding said means inoperative; a cam-wheel adjacent to the catch; a centrifugal block pivotally secured to the wheel to engage the catch; a spring secured to the same side of the center of the wheel as the block; the free end of the spring being formed into an L and engaging with the block; and means for adjusting the tension of the spring.

2. In an explosive-engine, the combination, with the exhaust-valve mechanism; of means for operating the same; a catch for holding said means inoperative; a cam-wheel adjacent to the catch and provided with a screw-threaded opening; a centrifugal block pivotally secured to the wheel to engage with the catch; a spring, one end of which is provided with an eye and the other end engages with the block; a bolt through the eye and the screw-threaded opening of the wheel for adjusting the tension of the spring; and a jam-nut for holding the bolt against movement after the spring has been adjusted.

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Witnesses:

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