No. 824,105. PATENTED JUNE 26, 1906.

G. H. ELLIS.

SPEED REGULATING MECHANISM FOR GAS ENGINES.

APPLICATION FILED JULY 10, 1905.

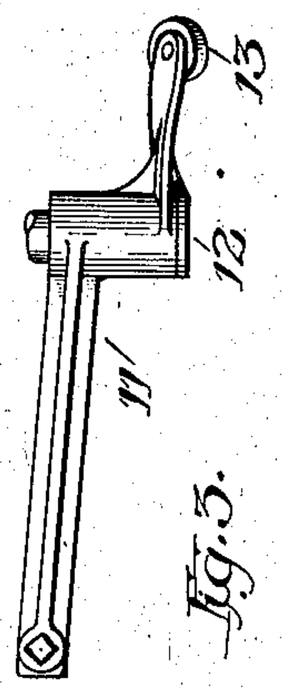

Fig. 3.

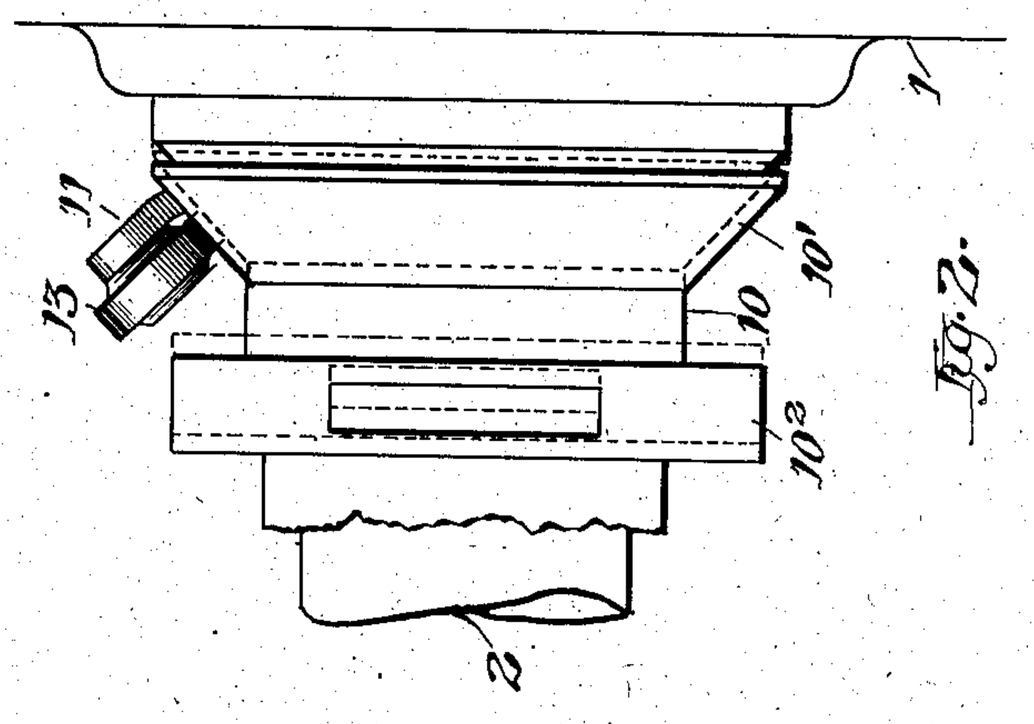

Fig. 2.

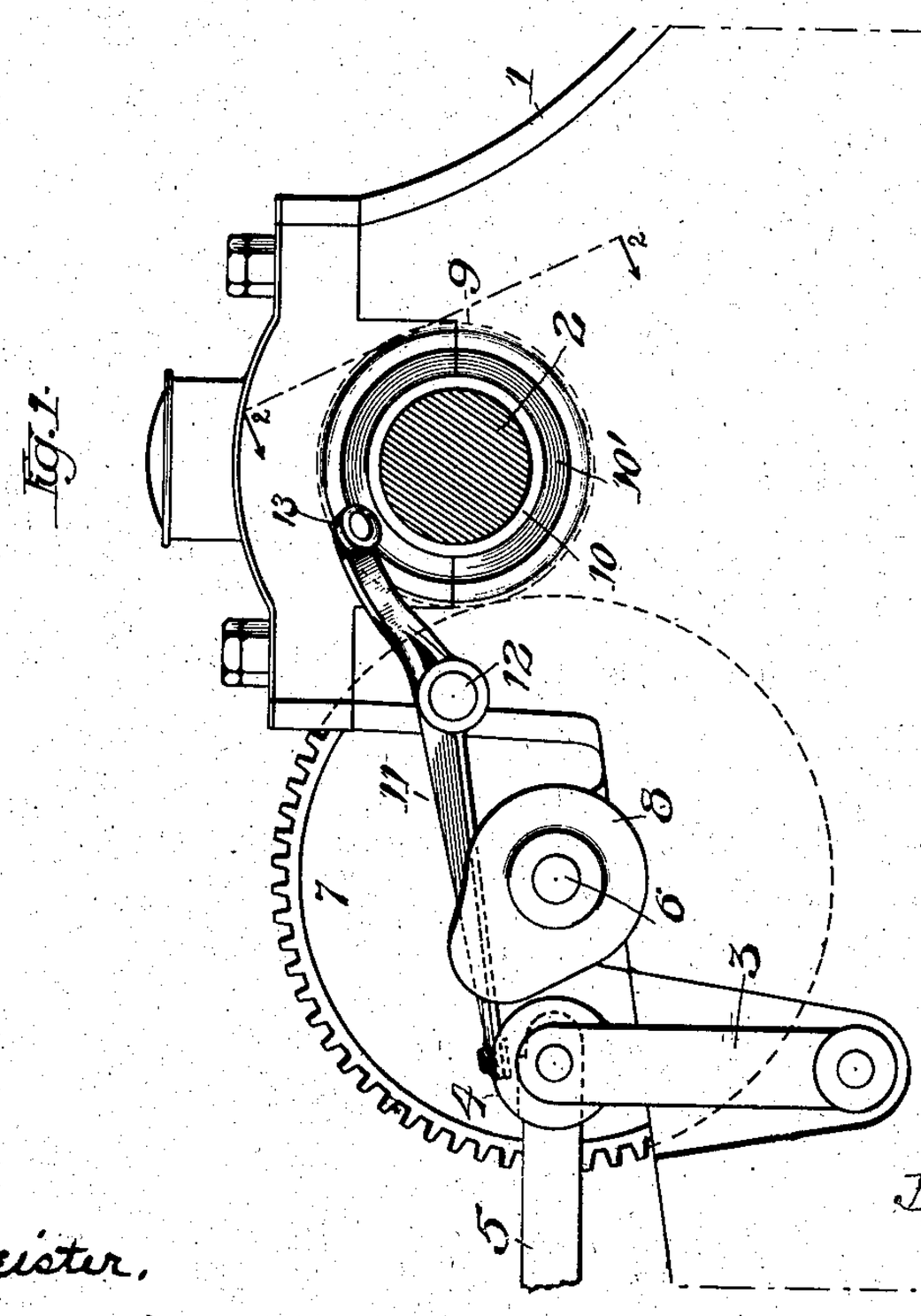

Fig. 1.

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UNITED STATES PATENT OFFICE.

GEORGE H. ELLIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

SPEED-REGULATING MECHANISM FOR GAS-ENGINES.

No. 824,105. Specification of Letters Patent. Patented June 26, 1906.

Application filed July 10, 1905. Serial No. 268,927.

To all whom it may concern:

Be it known that I, GEORGE H. ELLIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Speed-Regulating Mechanism for Gas-Engines, of which the following is a complete specification.

While this invention relates, broadly, to governors for gas-engines, it is more directly related to the cone-actuated detent-lever for controlling the valve mechanism thereof.

Heretofore in explosion-engines operating on the hit-and-miss principle and of the type in which the detent-lever is actuated by a cone-sleeve on the crank-shaft it has been the practice to either arrange the cone-engaging roller to operate in a plane parallel with the cone, as shown in Cook, No. 710,761, or in a plane at right angles thereto, as shown in Reynolds, No. 287,578. Such a construction is objectionable, however, owing to the undue friction resulting upon the bearing of the small rollers or between the contacting surfaces of said rollers, and it is this objection which my improvement seeks to overcome.

Referring to the accompanying drawings, Figure 1 represents a vertical longitudinal section taken through the crank-shaft of the engine adjacent to the detent-lever and associated parts, the view disclosing only such parts of a gas-engine as are deemed necessary to clearly illustrate the application of the improvement. Fig. 2 is a front and upper view showing the cone-sleeve on the crank-shaft and the roller of the detent-lever resting thereon, the view being taken as indicated by the line 2 2 in Fig. 1; and Fig. 3 represents a detail plan of the detent-lever.

In the drawings, 1 designates a portion of the engine-frame, 2 the crank-shaft suitably journaled thereon, and 3 a rocking arm pivotally supported at its lower end upon the engine-frame. The upper end of the arm 3 serves as a support and bearing for the roller 4 and the forward end of the reciprocating valve-controlling bar 5. Since the operation of the valve-controlling rod in this combination is well understood and as no claim to novelty is made thereto in the present application, a more complete disclosure and description of such part is deemed unnecessary.

On the small counter-shaft 6 is secured the gear-wheel 7 and the cam 8, the former being driven from the pinion 9 (indicated by dotted line in Fig. 1) on the crank-shaft 2 and the latter actuating the valve-controlling bar 5. A cone-sleeve 10 journals loosely upon the crank-shaft 2 and is longitudinally movable thereon. This cone-sleeve is provided with the cone portion 10′ and the slotted flanged extension 10^2, which is engaged and moved longitudinally on the crank-shaft by the governor-arms (not shown) in a manner well understood. A detent-lever 11 is interposed between the forward end of the valve-controlling bar 5 and the cone-sleeve 10, the said lever being preferably offset, as shown, and pivoted on the stud 12, the axis of which is arranged parallel with the axis of the crank-shaft and cone-sleeve. On the forward or cone-engaging end of the detent-lever 11 is journaled a roller 13, the axis of which is arranged parallel with respect to the contacting element of the cone-surface 10′ on the cone-sleeve or intersecting with respect to the axis of the said sleeve. The result of this arrangement will be to cause the pressure exerted by the cone-sleeve 10 upon the roller 13 to be received direct upon the axis of the latter, and thus avoid a binding tendency of said roller on its bearing. It has been found that when the roller and cone-sleeve were arranged to operate in parallel planes the side pressure and binding tendency on the small roller would be sufficient to prevent it from rotating on its bearing, and in consequence the skidding action would soon wear a flat spot on its tread, thereby destroying or rendering uncertain the adjustment of the governing mechanism; but by arranging the roller 13 as herein described this binding tendency is largely avoided and the above-mentioned difficulties are completely overcome.

The manner in which a direct pressure is exerted upon the roller 13 is illustrated in Fig. 2, in which is shown, respectively, in dotted and full lines the relative positions of the cone-sleeve and roller before and after a slight longitudinal movement of said sleeve.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a speed-controlling mechanism for gas-engines, in combination, a longitudinally-movable cone-sleeve, a valve-controlling bar, and a pivotally-mounted detent-lever provided with a sleeve-engaging roller on the end thereof, the pivotal axis of said lever par-

alleling and the pivotal axis of said roller intersecting the longitudinal axis of said cone-sleeve.

2. In a speed-controlling mechanism for gas-engines, in combination, a longitudinally-movable cone-sleeve, a valve-controlling bar, a pivotally-mounted detent-lever actuated by said cone-sleeve for locking against movement the said valve-controlling rod, the pivotal axis of said lever extending parallel with the longitudinal axis of said cone-sleeve, and a sleeve-engaging roller mounted on the said lever, the axis thereof extending parallel with the contacting element of the cone-sleeve.

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