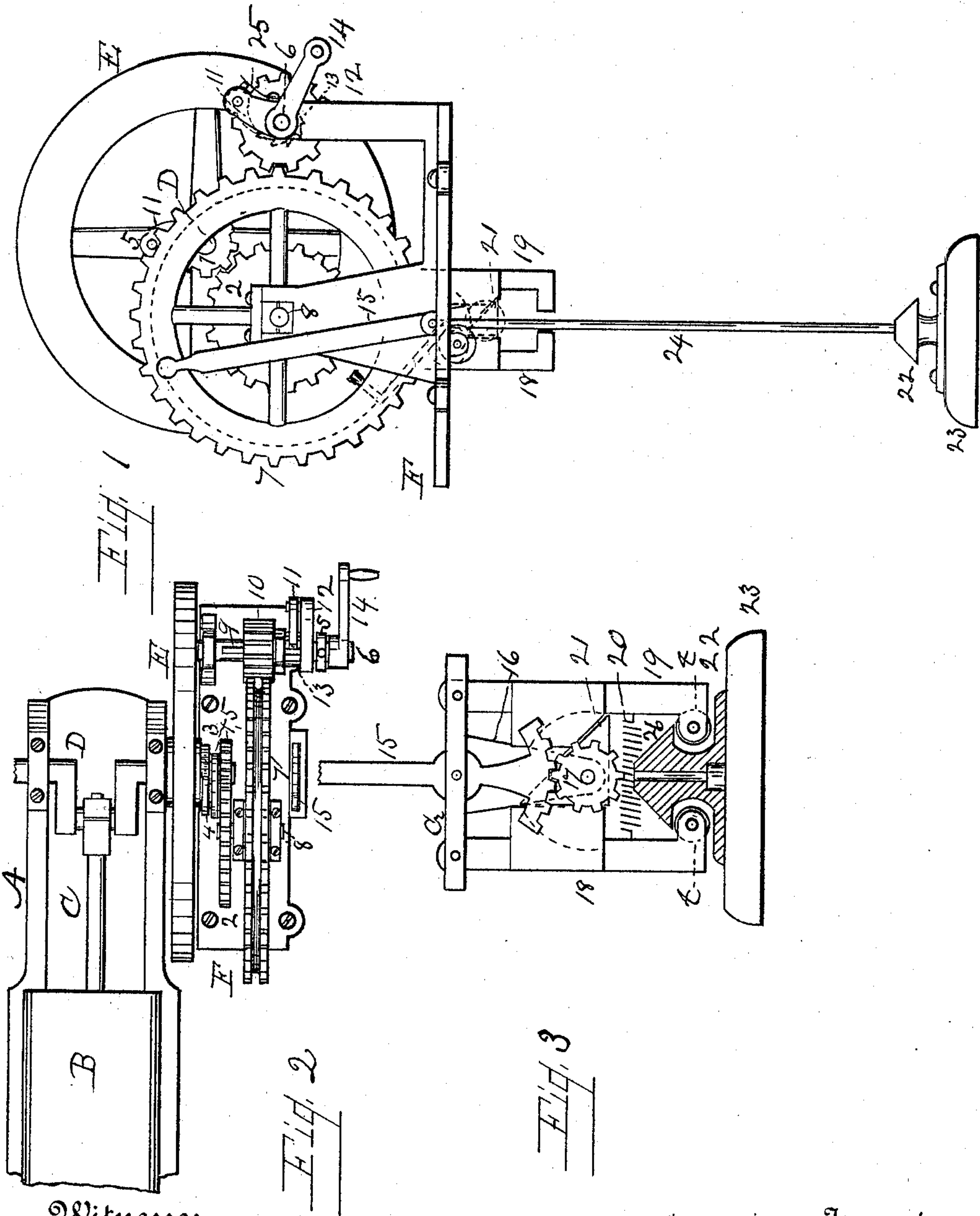


(No Model.)

S. COLLEY, Sr. & S. COLLEY, Jr.
STARTING MECHANISM FOR GAS ENGINES.

No. 585,952.

Patented July 6, 1897.



Witnesses

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UNITED STATES PATENT OFFICE.

SIMEON COLLEY, SR., AND SIMEON COLLEY, JR., OF SPRINGFIELD, OHIO.

STARTING MECHANISM FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 585,952, dated July 6, 1897.

Application filed February 27, 1897. Serial No. 625,263. (No model.)

To all whom it may concern:

Be it known that we, SIMEON COLLEY, Sr., and SIMEON COLLEY, Jr., citizens of Great Britain, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Starting-Machines for Gas-Engines; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and numerals of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in starting-machines for gas-engines, the features of which will be fully hereinafter described and claimed.

The object of our invention is to connect with the shaft of a gas-engine mechanism to which a weight is attached to give the initial revolutions necessary to provide the explosive charge to the cylinder by which the engine obtains its start. The machine is to obviate the necessity of applying muscular power to the balance-wheel, as is the custom.

The mechanism is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a plan of the same attached to the crank-shaft of a gas-engine. Fig. 3 is a side view of the grappling or holding device.

The letters and numerals designate like parts throughout the several views.

The starting-machine is preferably connected to the near end of the crank-shaft of a gas or gasoline engine, and no change in the same is involved. To exhibit the relation of the parts, broken parts of an engine are shown in Fig. 2, in which A is the bed; B, the cylinder; C, the piston-rod; D, the crank-shaft, and E the near balance-wheel. To the end of the crank-shaft is rigidly attached the ratchet-wheel 3, and loosely held on said crank-shaft is the arm 5, which carries the pawl 4, and said arm is rigidly attached to the side of the pinion 1, likewise held on the end of said shaft. The pawl engages said ratchet-wheel only when the arm is above the

axis of the crank-shaft, as it drops into engagement only by gravity. Said pinion gears with the wheel 2, held on the shaft 8 in bearings of the standards of the base F, and on which shaft is held the cog-wheel 7, which is provided with an annular groove central between the two series of cogs on its face. On the standards of the base to the right in bearings is supported the shaft 6, on which shaft is loosely held the pinion 10, which is carried by the feather 9, engaging a groove in said pinion. This pinion gears with the cog-wheel 7. To this shaft is rigidly attached the ratchet-wheel 13, which is engaged by the pawl 11, held on a pivot in the upper end of the near standard 12, and is held in engagement by the flat spring 25. (See Fig. 1.) Outside of the near standard is the collar S, and outside of said collar is attached the crank 14. The cable 24 is attached within the groove of the wheel 7, and to the lower end is attached the grip-guide 22, and to which is attached the weight 23.

The part of the machine heretofore described is for the purpose of raising the operating-weight. By turning the crank to the left the weight is raised as the cable is wound up, and when elevated it is held by the grappling or holding device. This device comprises the supporting-bar G, the arm or hanger 16, in which the pinion 17 has its bearings, the jaws 18 and 19, pivoted to said bar, the triangular cam 21, and the disengaging-lever 15, pivoted in said bar. The triangular cam is rigidly attached to said pinion. The detaching-lever has a segmental gear engaging said pinion, by which it and its cam can be partially rotated, and when thus rotated the jaws are opened. The jaws are held together by the spiral spring 20. The friction-rollers *t t* are held in the lower ends of the jaws, and these may be dispensed with.

The operation is thus: By turning the crank to the left the weight is carried up. When it reaches the jaws, the guide presses them apart, and when the head is passed the projections of the jaws pass beneath, and the weight is thereby held. Now to make the weight effective to move the engine, the pawl falls into the ratchet-wheel on the engine-

shaft. Then by moving the operating-lever the jaws are thrown apart, thereby disengaging the weight, which rotates the engine-shaft sufficiently to obtain the requisite explosive mixture to start the engine. Before moving the lever it is necessary to move the sliding pinion 10 aside, and thereby out of gear. The ratchet-wheel with its pawl serves to hold the weight from descending until it is secure within the jaws of the holder.

Having fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a gas-engine starter the combination of the ratchet-wheel rigidly attached to an engine-shaft, the pawl to engage said ratchet-wheel, the pinion, the arm fixedly attached thereto and to which said pawl is pivoted, the cog-wheel engaged by said pinion, provided with a groove for the cable, the weight attached to said cable, the sliding pinion 10 on shaft 6, the ratchet-wheel on said shaft, and

pawl pivoted to the standard, these several parts being supported on a suitable frame, substantially as described.

2. The combination of the ratchet-wheel 3 on the engine-shaft, the pawl 4 and pinion held loosely on said engine-shaft, the cog-wheel 2 gearing with said pinion, the grooved cog-wheel 7, the sliding pinion 10 on shaft 6, the ratchet-wheel 13 with pawl, the crank to move said parts; the frame G, pivotal jaws 18 and 19, the triangular cam 21 abutting said jaws, the pinion 17 on the cam-shaft and the disengaging-lever 15, substantially as described.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

SIMEON COLLEY, SENR.
SIMEON COLLEY, JNR.

Witnesses:

B. PICKERING,
GEO. W. OZIAS.