

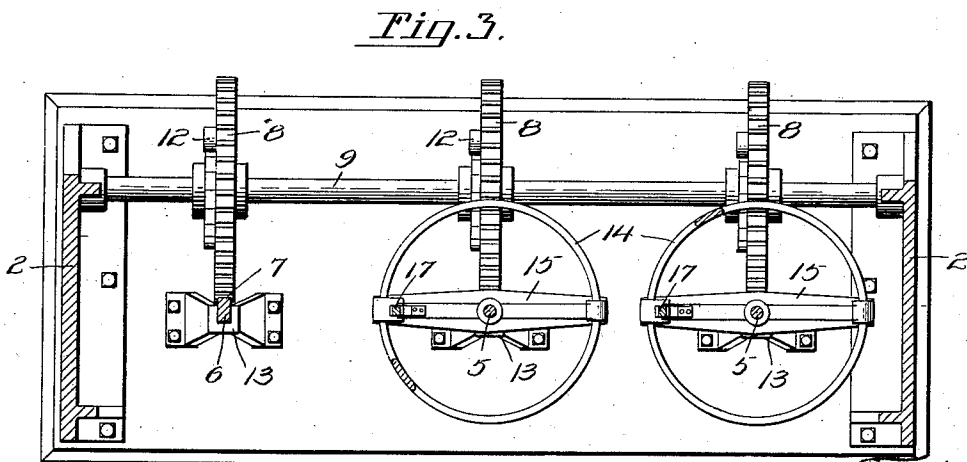
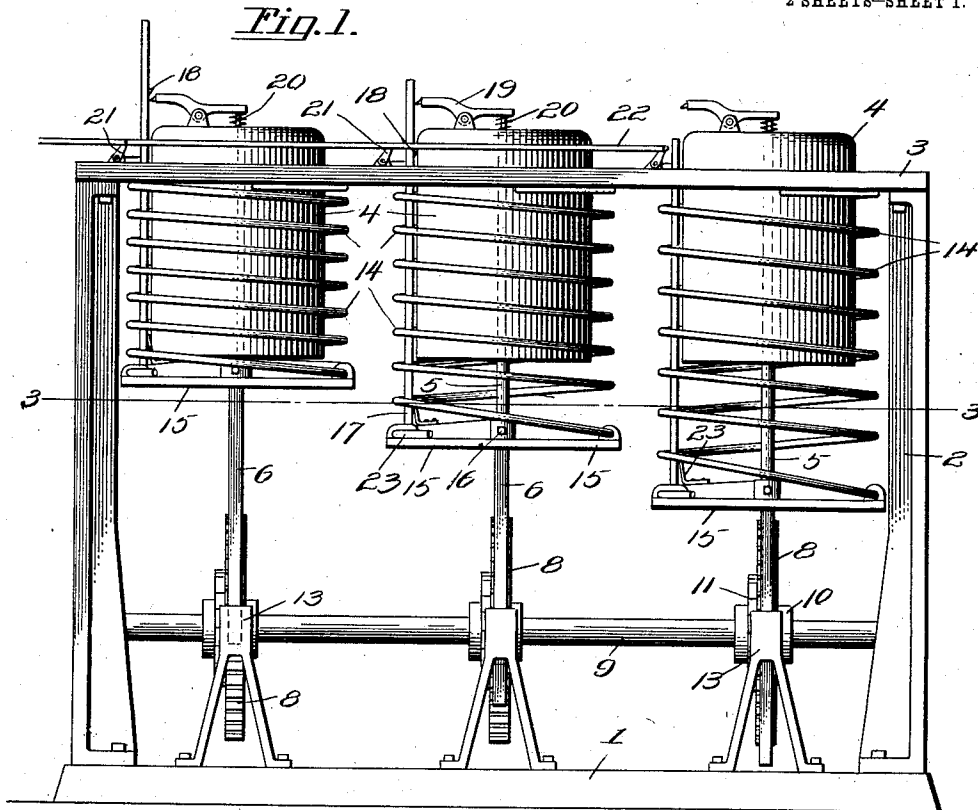
C. S. LANGTON.
 SPRING MOTOR.

APPLICATION FILED AUG. 26, 1910.

1,010,393.

Patented Nov. 28, 1911.

2 SHEETS—SHEET 1.



Inventor
 Charles S. Langton.

Witnesses
 F. L. Gibson.
 O. Edwards.

By Victor J. Evans
 Attorney.

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2 SHEETS-SHEET 2.

Fig. 2.

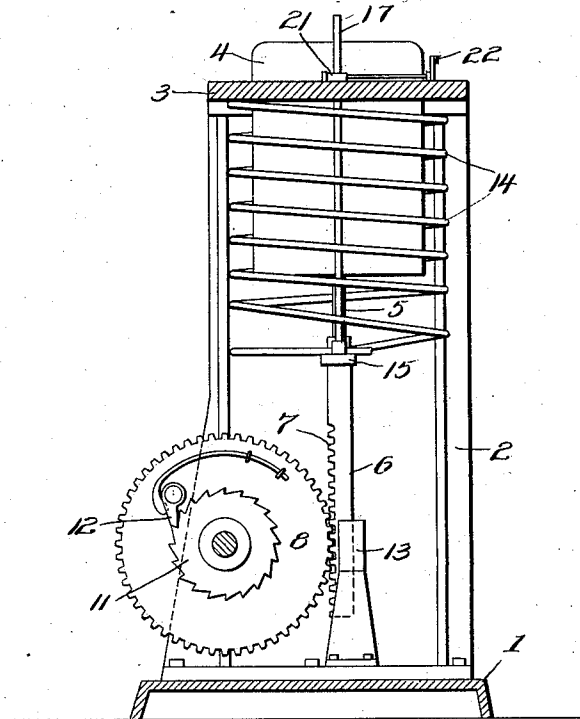
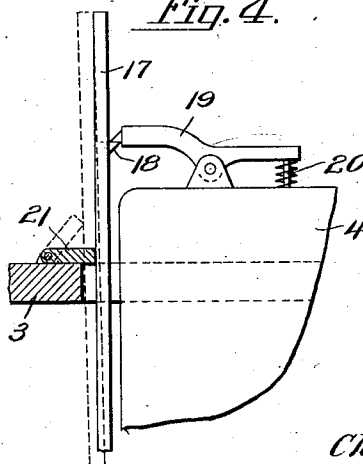


Fig. 4.



Inventor
Charles S. Langton.

Witnesses
F. L. Gibson.
Edw. W. L. J.

By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

CHARLES S. LANGTON, OF OLNEY, ILLINOIS.

SPRING-MOTOR.

1,010,393.

Specification of Letters Patent.

Patented Nov. 28, 1911.

Application filed August 26, 1910. Serial No. 579,014.

To all whom it may concern:

Be it known that I, CHARLES S. LANGTON, a citizen of the United States, residing at Olney, in the county of Richland and State of Illinois, have invented new and useful Improvements in Spring-Motors, of which the following is a specification.

This invention relates to motors and more particularly to spring motors.

10 The object of the invention is the provision in a motor of this character of means for automatically returning the springs from collapsed position to active position.

15 A further object of the invention is the provision of means utilized in connection with the springs of a plurality of internal combustion motors which automatically force the springs to active position and the provision of means whereby the active stroke 20 of the internal combustion motor performs no function in driving the driven shaft and whereby the springs are caused to drive the shaft in their active movement.

25 Further objects of the invention will appear as the following specific description is read in connection with the accompanying drawing which forms a part of this application, and in which:

30 Figure 1 is a side elevation. Fig. 2 is a vertical section taken through the device. Fig. 3 is a horizontal section on the line 3-3 of Fig. 1. Fig. 4 is a detail elevation with parts broken away.

Referring more particularly to the drawing 35 ing 1 represents the base or other suitable support which has extending from its opposite ends the supporting uprights 2 upon which is mounted the cylinder supporting plate 3. This plate is apertured throughout 40 its length so as to receive a plurality of internal combustion cylinders 4 which are supplied with a gaseous inflammable fuel in any suitable manner, not shown. It will be understood that the cylinder mounting 45 arrangement may be varied in many respects, a simple arrangement being shown herein for the purpose of illustration. The cylinders 4 depend slightly from the plate 3 and have mounted therein suitable piston 50 rods, each provided with an extension 6 upon which a rack bar 7 is formed. These rack bars are adapted to mesh with suitable pinions 8 loosely mounted upon the driving shaft 9 between a collar 10 keyed to the shaft 55 on one side and a ratchet wheel 11 keyed to the shaft upon the opposite side. Each gear

wheel 8 has mounted thereon a spring-pressed pawl 12 which engages the ratchet wheel in such a manner that the outstroke of the piston rod acts to idly rotate the gear wheel 8 upon the shaft 9, but upon its in- 60 stroke causes the ratchet wheel and the shaft to rotate with the gear 8 as will hereinafter be described. Suitable guides 13 extend up from the base 1 and engage the 65 outer ends of the rack bars 7 so as to prevent any lateral movement thereof and the consequent disengagement of said rack bars with the gears 8.

Surrounding the cylinders and connected 70 at one end to the cylinder mounting plate 3 are spiral springs 14 which are connected at their opposite ends to cross heads 15 adjustably mounted upon the extensions 6 by means of the set screws 16. 75

Hinged to one end of the cross heads 15 and passing up through the coils of the spring which surrounds each cylinder are tripping rods 17 which are provided ad- 80 jacent their upper ends with laterally extending teeth 18 adapted to trip the spark lever 19 and operate a sparker rod 20. These trip rods are normally held in the path of the spark levers 19 by means of 85 bell crank levers 21 which are pivoted upon brackets carried by the mounting plate 3 and are simultaneously controlled by means of a connecting rod 22 which is pivoted to 90 all of the levers. When this rod is operated, the tail end of the bell crank levers is raised out of engagement with the trip rods and the latter are thrown out of the path of the spark levers by means of springs 23 which 95 are mounted upon the cross heads 15 and act to normally throw the trip rods away from the cylinders.

It will be clearly understood that the springs 14 may be connected to the pistons in any suitable manner other than sur- 100 rounding the cylinders in the manner shown, the particular position illustrated being merely illustrative of a simple and convenient manner of mounting the same.

In the operation of the device it will be assumed that all of the piston rods have 105 been depressed to their full extent of movement and that the springs 14 are acting to force the piston rods into cylinders. At a predetermined point in the rise of the pistons rods or the collapse of the steam a 110 tooth 18 engages the tripping lever 19 and the sparking rod 20 is operated to produce

a spark in the cylinder as is customary in hydrocarbon engines, it being of course understood that upon the downward or outward movement of the piston rods a fresh charge of gas has been sucked into the cylinders. The piston rods are then propelled outwardly and the springs 14 placed under tension. During the outward movement of the piston rods the rack bars 7 operate upon pinions or gears 8 and rotate them to the right and the pawls 12 rest idly over the ratchet wheels 11 which are keyed to the shaft 9. Upon the inward movement of the piston rods the rack bars operate the gears in the reverse direction and the pawls 12 positively engage the ratchet wheels and rotate the shaft with the gears. When it is desired to interrupt the action of the machine the rod 22 is pulled to the left and the bell crank levers 21 released from the tripping rods 17, which are then thrown to a position by the springs 23 whereby the teeth 18 on said rods will be out of the path of the sparking levers 19.

Having thus described the invention, what is claimed is—

1. A device of the class described comprising a support, a shaft journaled therein, a plurality of ratchet members upon the shaft, a plurality of springs carried by the

support, a plurality of internal combustion engines carried by the support and having pistons engaging and adapted to idly operate said ratchet members, means connecting the springs to the piston rods whereby the springs will actively operate the shaft upon the return movement of the piston rods, and means for automatically operating the combustion engines upon collapse of the springs.

2. A device of the class described comprising a support, a shaft journaled therein, a plurality of ratchet members upon the shaft, a plurality of internal combustion engines carried by the support and having pistons engaging and adapted to idly operate said ratchet members, a plurality of springs connected to the support, and to the piston rods, and adapted to positively return the piston rods and to actively operate the shaft, devices carried by each piston rod for automatically operating the combustion engines upon collapse of the springs, and means to simultaneously render inoperative all of said last named devices.

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

CHARLES S. LANGTON.

Witnesses:

E. EDMONSTON, Jr.,

K. ALLEN.