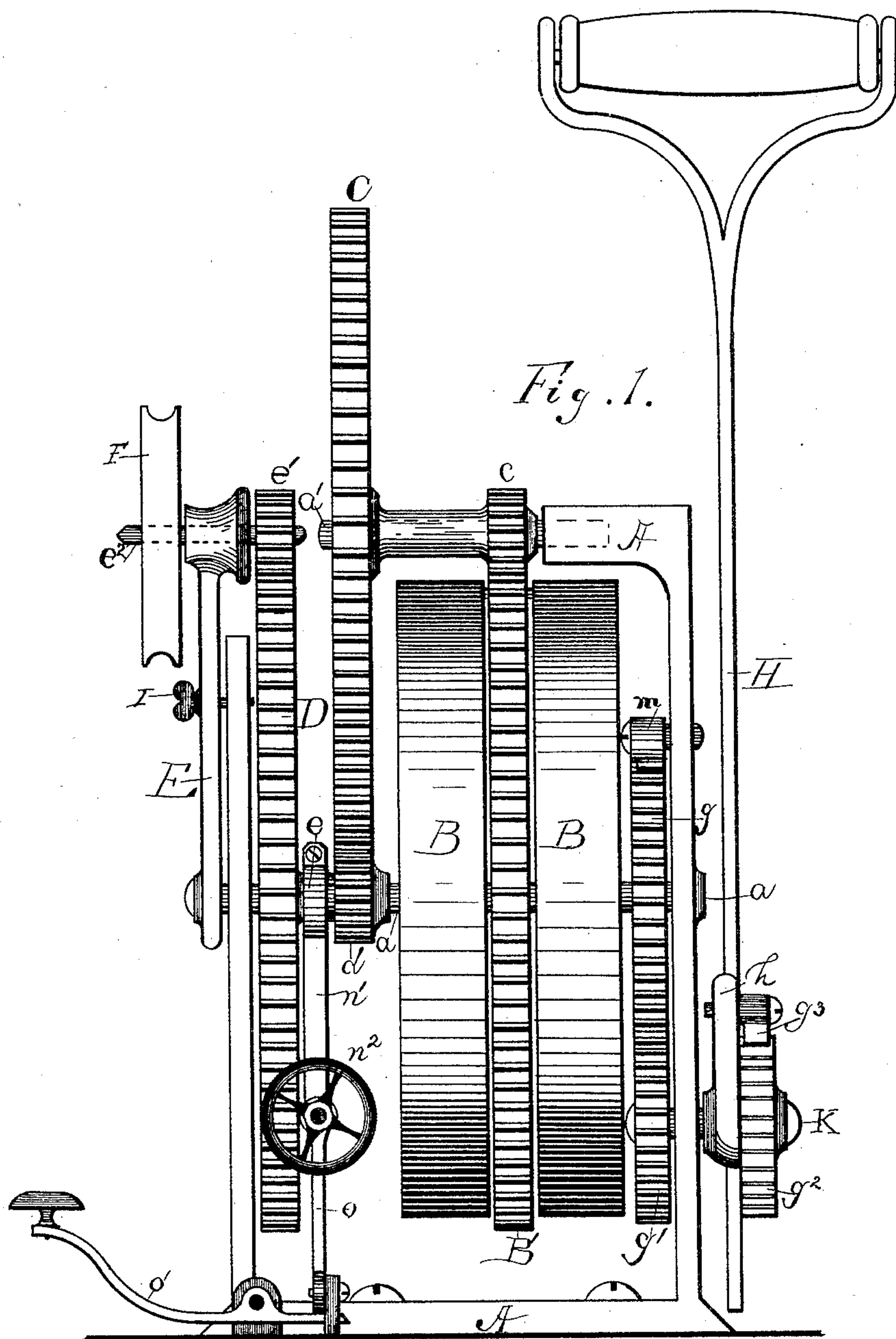


A. WIRTH.
SPRING MOTOR.

No. 433,668.

Patented Aug. 5, 1890.



WITNESSES:

Frank Chrysler.
G. B. Hugen

INVENTOR

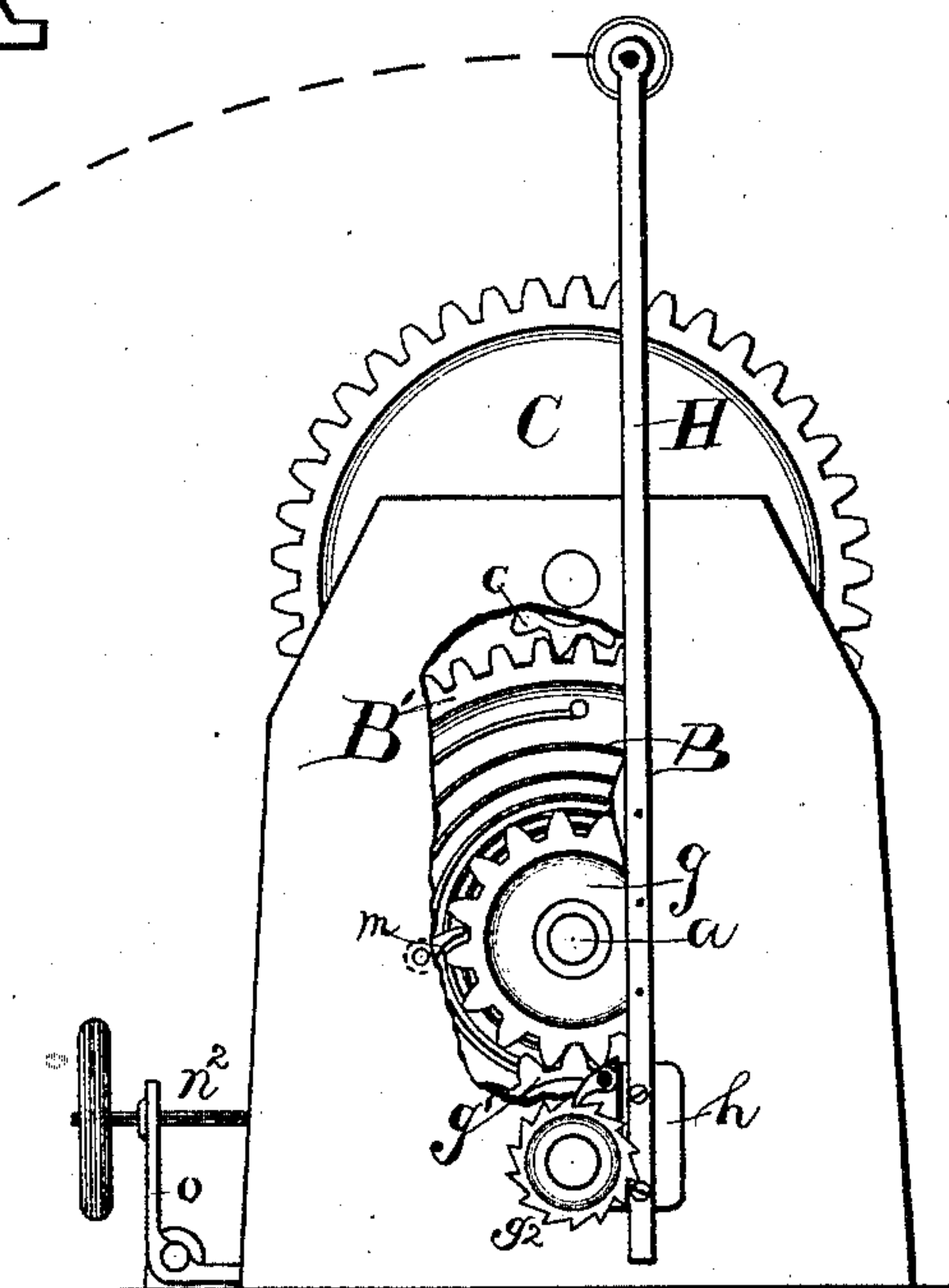
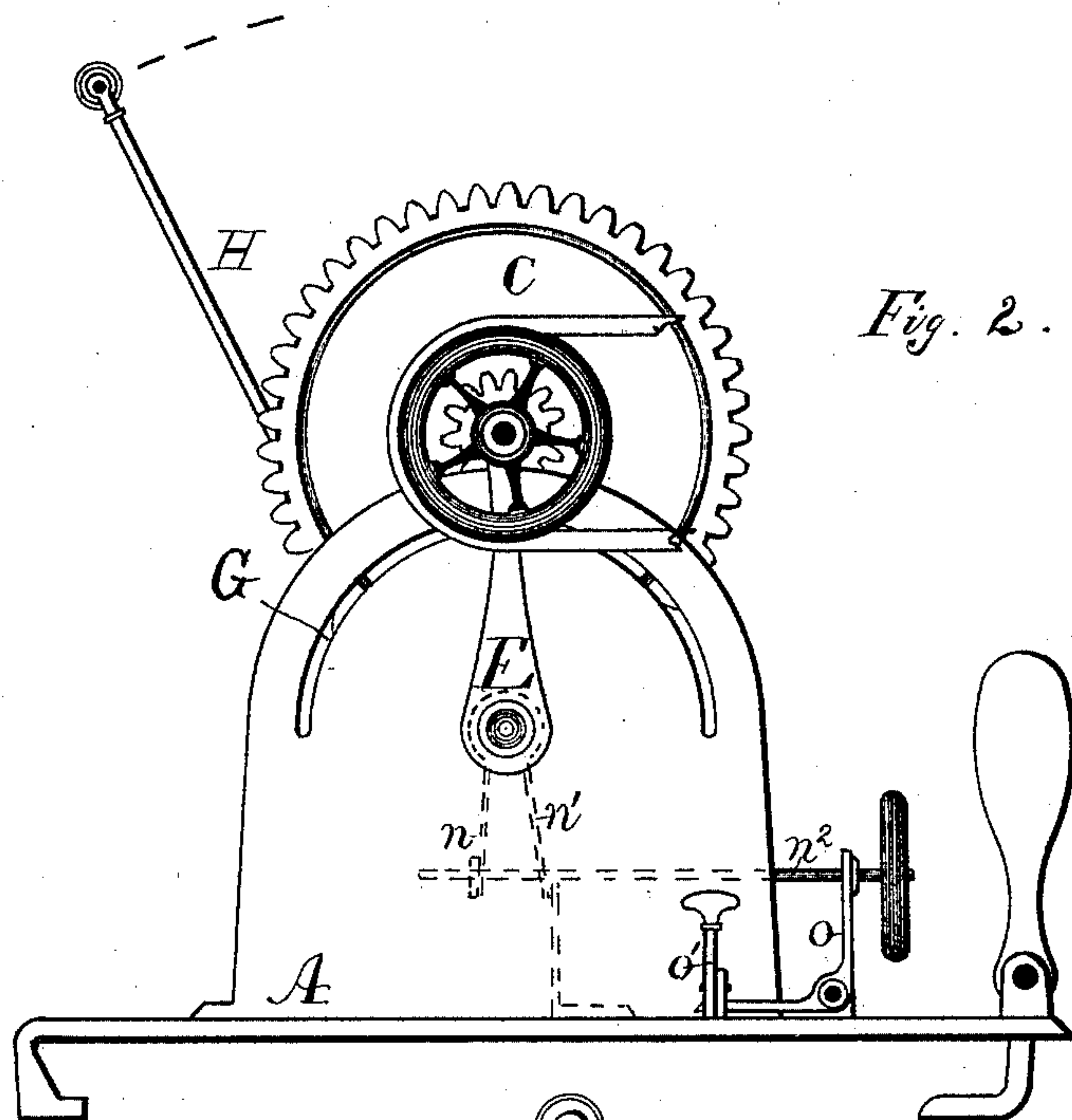
Alexander Wirth
BY G. M. Sues.

ATTORNEY.

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UNITED STATES PATENT OFFICE.

ALEXANDER WIRTH, OF PARSONS, KANSAS.

SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 433,668, dated August 5, 1890.

Application filed June 3, 1890. Serial No. 354,185. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER WIRTH, a citizen of the United States, residing at Parsons, in the county of Labette and State of Kansas, have invented certain new and useful Improvements in Spring-Motors; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 of reference marked thereon, which form a part of this specification.

This invention has relation to new and useful improvements in spring-motors.

The object of this invention is to provide a neat, compact, and efficacious spring-motor that will combine lightness with great power and be adapted to furnish the motive force for the lighter class of special machinery, such as sewing-machines, dental engines, churns, &c.

The invention consists in the arrangement and combination of a system of gearing with suitable supporting and regulating effects, as will be described more fully hereinafter.

Figure 1 represents an end elevation of my motor; Fig. 2, a front view showing clamp for fastening the motor, and Fig. 3 illustrates a rear view showing parts broken away to illustrate the arrangement of gears and springs.

Centrally and transversely within a suitable standard A is mounted a main driving-shaft *a*, which works within bearings of the front and rear plates of said standard, as shown in Fig. 1. To this shaft are secured two coil-springs B B, between which is mounted a main driving-gear B', which works loosely upon the shaft *a*, and to which the springs B B are secured at their outer ends. Immediately above the main shaft *a* is fixed a stub-shaft *a'*, which is secured to a suitable projection of the standard, as shown. This stub-shaft carries a special gear, which is provided with a body portion between which one of the driving-springs works, as shown, and comprises the gear C and pinion *c*, which are held upon said stub by means of a collar. The pinion *c* meshes with the main driving-gear B', while the gear C is connected with the pinion *d*, forming part of the compound gear D, which works loosely upon the shaft *a*. This gear is provided with a suitable groove in which a

brake-collar *e* works, and by means of which the speed of the train of gearing is regulated.

Without and loosely mounted upon the shaft *a* is the crank-arm E, which is provided at the free end with an enlargement which forms a journal for a pointed transmission-shaft *e*², which is provided with a crank-pinion *e'*, meshing with the compound gear D, as illustrated, while upon the outside the transmission-shaft is further provided with a belt-pulley F or othersuitable means for the transmission of power. So as to give the driving-belt any desired tension, I provide the front standard-plate with a curved slot G, within which a thumb-screw I works and by means of which the crank-arm E may be locked at any desired angle, so that the crank-pinion *e'* may be fixed at any point within a radius of one hundred and eighty degrees, the pinion *e'* being free to travel upon the gear D, as will be understood by referring to the drawings. Upon the rear portion the main shaft *a* is provided with a gear *g*, which is fixed to said shaft and which meshes with the winding-gear *g'*, supported upon a suitable stub-shaft K below the driving-shaft *a*. This shaft is provided without with a ratchet-wheel *g*², which is engaged by the pawl *g*³, pivoted to the collar *h*, and which works loosely upon the said stub-shaft. The collar *h* has a rectangular stock, to which is secured the actuating-lever H, by means of which the springs B B are wound. To lock the gearing in winding, I provide the gear *g* with a pawl *m*, fixed to the standard and which prevents any loss of motion.

The actuating-lever H may be adjusted any desired height by means of a suitable screw, as shown in Fig. 3.

The brake-collar *e* (shown in dotted lines in Fig. 2) is similar to and operates in the manner of an ordinary eccentric-strap. The strap is provided with two depending arms *n n'*, the one marked *n* being provided with a threaded eye, which is engaged by the adjustment-screw *n*², which works within an angular rocker-bar *o*, which is pivoted to the base or bed plate, as shown. The lower horizontal arm of the rocker-bar *o* rests upon the shorter arm of a pivoted key-lever *o'*, and any pressure brought to bear upon the key-lever will force the lower arm of the rocker-bar upward, and thus carry forward the adjusting-screw

n^2 , and this screw in turn will force the depending arm n of the brake tightly upon its bearing, and thus by means of the friction check the speed of the wheels. The train of gearing is stopped and started by means of the adjustment-screw n^2 .

Having thus described my said invention, what I claim as new, and desire to secure by United States Letters Patent, is—

10 1. In a spring-motor, the combination, with a main driving-shaft and two coil-springs, of a main driving-gear working loosely upon said shaft and connected to said coil-springs, a compound gear mounted above said main
15 shaft and meshing with said driving-gear and the pinion of a second compound gear working freely upon said main driving-shaft, and an adjustable crank-arm movably connected to said main shaft and having a pinion mesh-
20 ing with the said free gear, and suitable supporting, winding, and checking devices, all arranged substantially as shown and described.

2. In a spring-motor comprising a main driving-shaft and main driving-gear loosely
25 mounted upon said shaft and secured to a suitable coil spring or springs, the combina-

tion of a compound gear meshing with said driving-gear and the pinion of a compound gear upon said driving-shaft, said compound gear meshing with a pinion working within
30 an adjustable crank-arm, said crank-pinion being provided with a pointed stub-shaft adapted to transmit the rotary power from said train of gearing, and an adjustable actu-
35 ating-lever by means of which said springs are wound, all arranged and adapted to operate substantially as shown and described.

3. In a spring-motor comprising a set of springs and a train of gearing, a checking device comprising a collar working within a
40 groove of one of said gears of said motor, two depending arms, an adjusting-screw for engaging said arms, a suitable rocker-bar, and a key-lever arranged to check the speed of
45 said spring-motor, all adapted to work substantially as shown and described.

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

ALEXANDER WIRTH.

Witnesses:

F. E. ROBERTS,
G. W. SUES.