

(No Model.)

H. HERWIG.
CLOCK.

No. 396,655.

Patented Jan. 22, 1889.

Fig. 1.

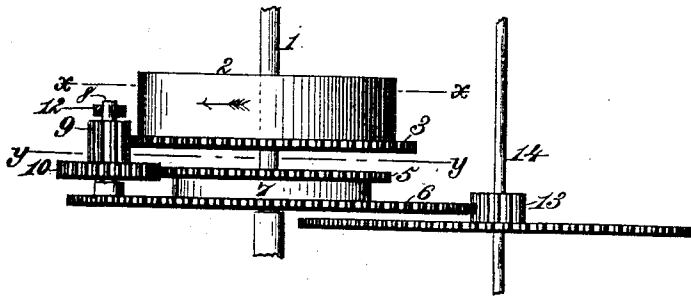


Fig. 2.

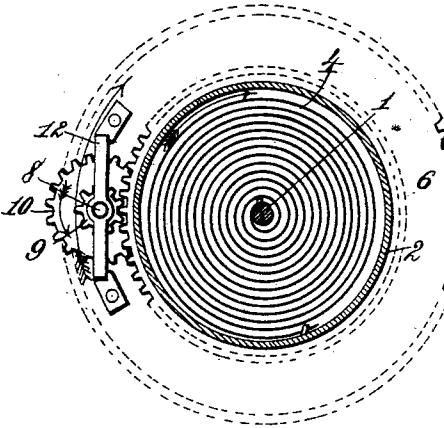
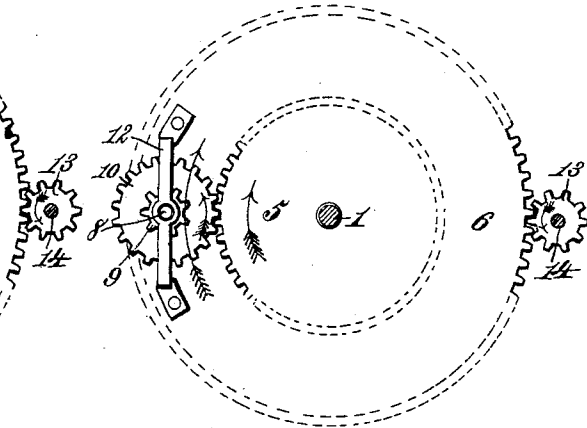


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

HERMANN HERWIG, OF MEDIA, PENNSYLVANIA.

CLOCK.

SPECIFICATION forming part of Letters Patent No. 396,655, dated January 22, 1889.

Application filed October 12, 1888. Serial No. 287,898. (No model.)

To all whom it may concern:

Be it known that I, HERMANN HERWIG, a subject of the Emperor of Germany, residing at Media, in the county of Delaware and State of Pennsylvania, have invented new and useful Improvements in Watch and Clock Movements, of which the following is a specification.

My invention relates to watch and clock movements, and the purpose thereof is to provide a simple combination of parts whereby I may derive an increased power from a spring of moderate tension, and by means of an arrangement of parts whereby a very material economy of space and a reduction of the number of mechanical elements is accomplished.

The invention consists in the several novel features of construction and new combinations of parts, hereinafter fully set forth, and then definitely pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a watch or clock movement embodying my invention. Fig. 2 is a horizontal section of Fig. 1 in the plane $x x$. Fig. 3 is a similar section of Fig. 1 in the plane $y y$.

In the said drawings, the reference-numeral 1 denotes a shaft or arbor upon which is loosely mounted a barrel, 2, having an attached gear, 3, and provided with a spring, 4, arranged in the barrel and connected thereto at its outer end, the inner end being fastened to the shaft. Upon the same shaft, below or behind the gear 3, is loosely mounted a wheel consisting of two gears, 5 and 6, of different diameter, rigidly connected together by means of a neck or other attachment, 7. Upon the flat face of the longer gear, 6, is mounted a stud, 8, having its axis parallel with the axis of the arbor 1. Upon this stud is journaled a pinion, 9, meshing with the gear 3 on the barrel and carrying a pinion, 10, which meshes with the gear 5. The upper end of the stud 8 is supported by a bracket, 12, mounted on the flat face of the gear 6. The gear 6 meshes with a pinion, 13, on the shaft 14, said shaft 14 carrying the minute-hand in the usual manner, and movement is transmitted to the other hand and to the seconds-hand, should one be employed, by any known combination of gear-

ing. The escapement also may be of any desired construction.

The operation of the parts described is as follows: The mainspring is wound by means of a key applied to the shaft 1 or by any desired form of stem-winding mechanism. The tension of the spring exerted upon the barrel 2 and its attached gear 3 produces revolution toward the right, as indicated in the drawings by arrows. This revolution being imparted to the pinions 9 and 10, meshing, respectively, with the gears 3 and 5, rotation is imparted to said pinions 9 and 10 upon their own axis, and at the same time a planetary motion is given to the pinions 9 and 10, whereby the gear 6 is carried in the same direction of rotation as the barrel 2 and gear 3, and this movement is imparted in turn to the wheel 13 and shaft 14. The relative diameter of the gears may be varied as circumstances require.

By this invention it will be seen that I provide a simple mechanism, occupying a comparatively limited space, in which the power of the spring is applied to the highest advantage. By the relative sizes of gears shown and with the arrangement pointed out a spring of medium strength and winding with five turns of the shaft will operate the movement for seven or eight days, or very nearly so, and the entire mechanism may be arranged in a watch-case very little, if any, larger than those ordinarily used.

With the ordinary mainspring now used in watches running thirty hours I am able to produce perfectly accurate operation extending over seven or eight days without rewinding.

The invention is applicable to clocks of all kinds as well as to watches.

What I claim is—

1. In a watch or clock movement, the combination, with an arbor, of a barrel carrying a rigidly-attached gear loosely mounted on said shaft or arbor, a wheel consisting of the gears rigidly connected together and of unequal diameter loosely mounted on the same arbor, a pinion journaled on a stud, projecting from the flat face of the larger gear of said wheel, said pinion meshing with the gear

carried by the barrel and carrying a pinion which meshes with the smaller gear of the wheel, substantially as described.

2. In a watch or clock movement, the combination, with an arbor, of a barrel and a gear rigidly mounted on said barrel, both loosely mounted on the shaft 1, a wheel composed of two unequal gears rigidly connected together, a pinion mounted on a stud projecting from the flat face of the longer gear, said pinion meshing with the gear carried by the barrel and having rigidly attached a pinion meshing with the smaller gear of the wheel, a shaft having a pinion meshing with one of the gears of the wheel, and a coiled spring connecting the barrel to the arbor, substantially as described.

3. In a watch or clock movement, the com-

20 bination, with the arbor 1, of a barrel, 2, carrying a rigidly-attached gear, 3, loosely mounted on said arbor, a wheel composed of two rigidly-connected unequal gears, 5 and 6, the latter being provided with a stud, 8, a pinion, 9, having a rigidly-connected pinion, 10, journaled on said stud, the former meshing with the gear 3 and the latter with the gear 5, a shaft, 14, having a pinion, 13, and a spring, 4, connecting the barrel 2 and arbor 1, substantially as described.

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

H. HERWIG.

Witnesses:

PERCY B. HILLS,

JAMES A. RUTHERFORD.