W. E. PORTER.

REGULATOR FOR CLOCKS.

APPLICATION FILED SEPT. 6, 1910.

975,793. **Patented Nov. 15, 1910.**

Fig. 1.

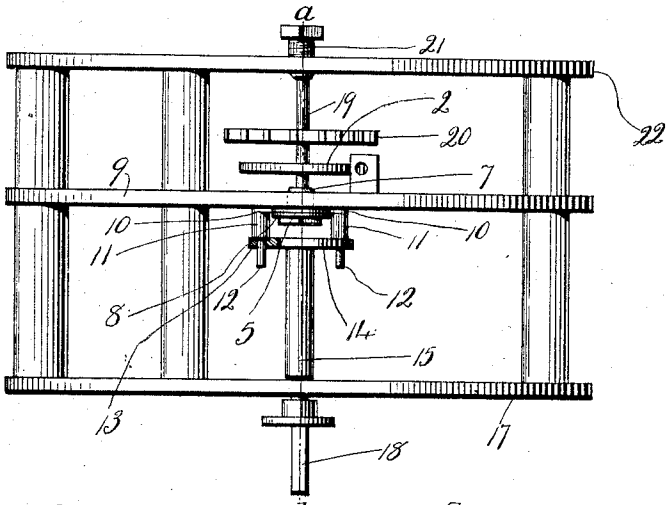


Fig. 2.

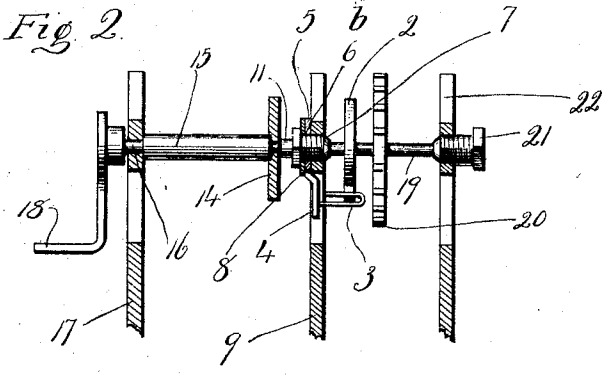


Fig. 4.

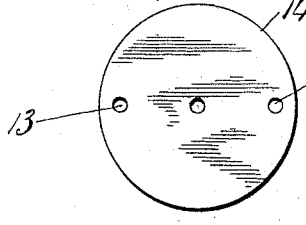
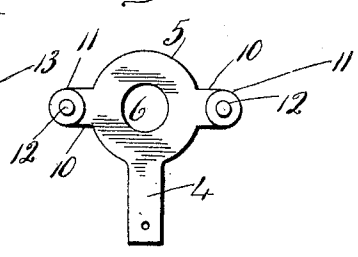


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

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REGULATOR FOR CLOCKS.

975,793. Specification of Letters Patent. **Patented Nov. 15, 1910.**

Application filed September 6, 1910. Serial No. 580,665.

To all whom it may concern:

Be it known that I, WILSON E. PORTER, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Regulators for Clocks; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a plan view of a clock provided with a regulator constructed in accordance with my invention, the other portions of the clock being removed. Fig. 2 a broken view in vertical section on the line *a*—*b* of Fig. 1. Fig. 3 a detached view in elevation of the regulator plate. Fig. 4 a similar view of the coupling-disk of the regulator.

My invention relates to an improvement in regulators for that class of clocks in which the point of regulation is removed at some distance from the point at which the regulator is manipulated, the object being to provide a simple and reliable means of operating the regulator and avoiding the use of parts liable to yield and thus prevent a close regulation of the valance spring.

With these ends in view my invention consists in certain details of construction and combination of parts as will be hereinafter described and pointed out in the claims.

In carrying out my invention, the outer coil of the hair-spring 2 is engaged by a regulator-loop 3 mounted in the lower end of the depending arm 4 of a regulator plate 5 having a central opening 6 adapting it to be mounted so as to oscillate upon the outer end of the balance-screw 7 which also carries a washer 8 which holds the regulator-plate 5 against the rear face of the intermediate or middle movement-plate 9. The said plate 5 is formed with horizontal arms 10 respectively carrying coupling-studs 11 projecting rearwardly and having their ends reduced in diameter to form coupling-pins 12 which pass through corresponding holes 13 in a coupling-disk 14 mounted upon the forward end of a regulator-shaft 15 the outer end of which is formed with a journal 16 providing a bearing for it in the rear movement-plate 17. As shown, the projecting rear end of the shaft 15 is furnished with a regulator-lever 18 which, however, may be replaced by some other form of operating device or indicator. The hair or balance spring 2 encircles the balance-staff 19 carrying a balance-wheel 20, the forward end of the staff 19 having bearing in a balance-screw 21 mounted in the forward movement-plate 22.

It will be seen from the foregoing that the connections between the lever 18 and the regulator-spring 13 are of a positive character, and that none of them will yield when the clock is being regulated. This is important since the amount of spring cannot be accurately determined and hence regulating devices which contain yielding parts are unsatisfactory because uncertain.

I claim:—

1. In a regulator for clocks, the combination with a balance-spring, of a regulator-loop engaging with the spring, an oscillating-plate in which the said loop is mounted, coupling-studs mounted in the said plate, a coupling-piece receiving the said studs, a shaft secured at its inner end to the said coupling-piece by means of which it is coupled with the regulator-plate, and means applied to the outer end of the shaft for operating the same.

2. In a regulator for clocks, the combination with a balance-spring, of a regulator-loop engaging with the said spring, an oscillating-plate in which the said loop is mounted, coupling studs mounted in the said oscillating-plate and formed with coupling-pins, a coupling-piece receiving the said coupling-pins, a shaft upon the inner end of which the coupling-piece is mounted, and means applied to the opposite ends of the shaft for oscillating the same.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

WILSON E. PORTER.

Witnesses:

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GEORGE D. SEYMOUR.