

(No Model.)

G. E. HART.

METHOD OF MAKING ESCAPE WHEELS FOR WATCHES.

No. 540,546.

Patented June 4, 1895.

Fig. 1.

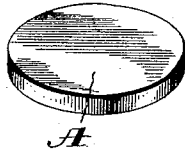


Fig. 2.

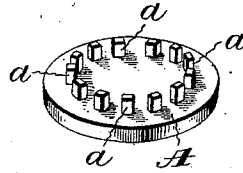


Fig. 3.

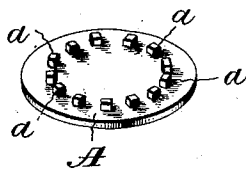


Fig. 4.

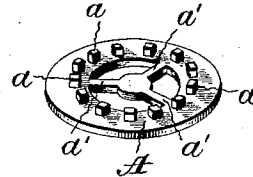


Fig. 5.

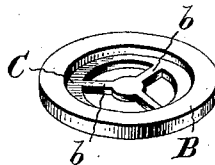


Fig. 6.

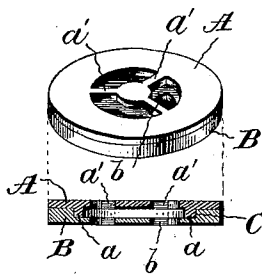


Fig. 7.

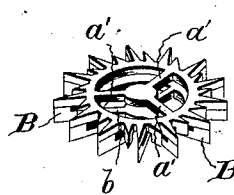


Fig. 8.



Witnesses:

Jas. C. Hutchinson.
Henry C. Hazard

Inventor.

George E. Hart, by
Kimball and Russell, his Attys.

UNITED STATES PATENT OFFICE.

GEORGE E. HART, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE
WATERBURY WATCH COMPANY, OF SAME PLACE.

METHOD OF MAKING ESCAPE-WHEELS FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 540,546, dated June 4, 1895.

Application filed August 9, 1894. Serial No. 519,816. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. HART, a citizen of the United States, and a resident of Waterbury, in the county of New Haven, and in the State of Connecticut, have invented certain new and useful Improvements in Methods of Making Escape-Wheels for Watches; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of the blank employed. Fig. 2 is a like view of the same after the blank impulse-teeth have been formed; Fig. 3, a similar view showing the blank after it has been reduced in thickness; Fig. 4, a perspective view thereof after the formation of the arms; Fig. 5, a similar view of the holder or protector that is applied to the blank when a stack of blanks is undergoing the tooth-cutting operation. Figs. 6 and 7 are like views of said protector and blank when combined, showing the same before and after the teeth have been cut, respectively; and Fig. 8 is a perspective view of the finished escape-wheel.

Letters of like name and kind refer to like parts in the several figures.

The design of my invention is to simplify the number of operations necessary in the manufacture of duplex escape wheels; and to enable both sets of teeth to be cut at the same time, thus cheapening the cost of making, and yet producing an accurate and durable wheel; and to this end my invention consists in the method employed, substantially as and for the purpose hereinafter specified.

In the carrying of my invention into practice, I employ a blank that consists of a disk stamped from sheet metal, or otherwise suitably made, and by the use of proper dies, swage the same to produce upon one side a circular series of studs or projections a and a' which extend parallel with the axis of the disk and constitute blanks from which the impulse teeth are to be formed. The side of the blank A opposite to the one having the studs or projections a and a' is next faced or dressed off to the thickness of the finished wheel, and then said blank is placed between

suitable dies, and the wheel arms a' and a' formed by cutting or piercing the blank at the proper points. Upon the blank thus far finished, there is placed a disk B which has arms b and b' similar to the wheel arms a' and a' , and corresponds in diameter to said blank; and within one side has a circular recess or cavity C of such diameter and depth as to enable the studs or projections a and a' to be contained therein. The bottom of the recess C engages the ends of said projections while the edge of said disk B engages the surface of the blank A around the line of projections. Protected and supported by the disk B, the wheel blank is now placed with a number of others upon an arbor, and all in the stack thus formed have their teeth cut by means of any of the usual cutting tools. In the one cutting operation both sets of teeth are formed, the proper size and shape being given the impulse teeth by the removal of such portions of the studs or projections a and a' , as are necessary. After the teeth have been cut, the disk B is removed, and the otherwise complete wheel is provided with a central hole for its arbor.

The wheel produced by my method is hard and is accurately formed. By the preliminary formation of the separated studs or projections a and a' for the impulse teeth, but a single cutting operation is required for the production of the teeth of both sets, instead of at least two, as heretofore; and there is the further advantage in respect to the cutting of the teeth of a number of wheels at one time, in place of working upon one at a time.

Having thus described my invention, what I claim is—

1. In the art of making duplex escape wheels, the method employed which consists in providing upon a suitable blank a circular series of parallel projections for the formation of the impulse teeth, and then removing portions of the blank to finish such teeth and to produce the resting teeth substantially as and for the purpose specified.

2. In the art of making duplex escape wheels, the method employed, which consists in providing upon a suitable blank a series of projections, for the formation of the impulse

teeth, and then cutting said blank to produce at one time teeth of both kinds, substantially as and for the purpose shown.

3. In the art of making duplex escape wheels, the method, which consists in providing upon a suitable blank, a series of projections for the formation of the impulse teeth, dressing such blank off to the thickness of the finished wheel, and then cutting the teeth, substantially as and for the purpose described.

4. In the art of making duplex escape wheels, the method, which consists in providing upon the side of a suitable blank a circular series of projections, and then with the latter protected by a suitable part, cutting the teeth of the wheel, substantially as and for the purpose specified.

5. In the art of making duplex escape wheels, the method, which consists in swaging a disk to form a series of projections upon its side, next dressing said disk down to the thickness of the finished wheel, next forming the wheel arms, and then, with a protecting device upon the side of the blank that has the projections, cutting the teeth of the wheel, substantially as and for the purpose shown.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of August, A. D. 1894.

GEORGE E. HART.

Witnesses:

GEO. S. PRINDLE,
LE ROY UPSON.