

(No Model.)

G. E. HART.

MANUFACTURE OF COMBINED WHEELS AND PINIONS.

No. 338,962.

Patented Mar. 30, 1886.

Fig. 1.

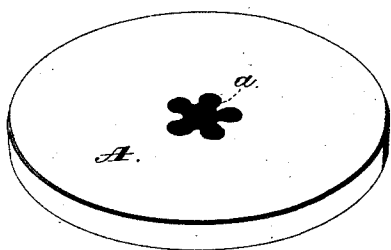


Fig. 2.

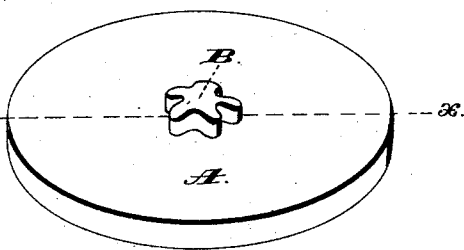


Fig. 3.

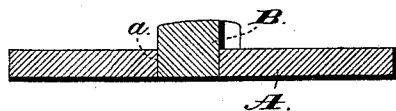


Fig. 4.

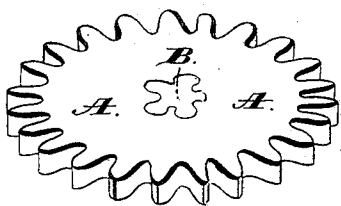


Fig. 5.

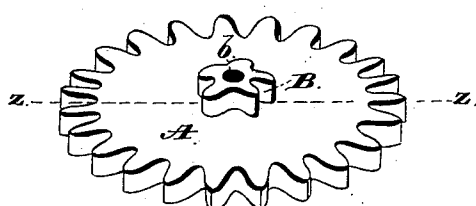
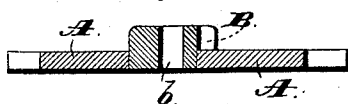


Fig. 6.



Witnesses:  
Jas. Hutchinson.  
Henry C. Hazards

Inventor.  
Geo. E. Hart, by  
Cindle & Russell, his Attys

# UNITED STATES PATENT OFFICE.

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

## MANUFACTURE OF COMBINED WHEEL AND PINION.

SPECIFICATION forming part of Letters Patent No. 338,962, dated March 30, 1886.

Application filed July 30, 1885. Serial No. 173,055. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE E. HART, of Waterbury, in the county of New Haven, and in the State of Connecticut, have invented certain new and useful Improvements in the Manufacture of Combined Winding Wheel and Pinion; 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 my wheel-blank after having been prepared for the reception of the pinion-blank. Fig. 2 is a like view of the same after the insertion of said pinion-blank. Fig. 3 is a section upon line *xx* of Fig. 2. Figs. 4 and 5 are respectively perspective views of the rear and front sides of the combined wheel and pinion united and completed, and Fig. 6 is a section upon line *zz* of Fig. 5.

Letters of like name and kind indicate similar parts in each of the figures.

The design of my invention is to lessen the labor and expense required for producing combined wheels and pinions; and to this end said invention consists in the method employed for constructing the same, substantially as and for the purpose hereinafter specified.

In the carrying of my invention into practice I employ a round disk of sheet metal, A, which has substantially the diameter and thickness of the finished wheel, and at its axial center punch or form in any usual manner an internally-toothed opening, *a*, that corresponds in transverse shape and dimensions to the like features of the desired pinion. From another and a considerably thicker sheet of metal I now punch a pinion-blank, B, which corresponds in transverse size and

shape to the opening *a*, and by any suitable means then press one end of said blank into and cause it to closely fill said opening. The length of said pinion-blank B should be sufficient to give to its outer portion the required projection when its inner end is flush with the rear face of said wheel-blank. The wheel and pinion blanks being thus firmly united, the whole is completed by providing the former with peripheral gear-teeth and the latter with an axial opening, *b*, for the reception of an arbor, axial bearing, &c.

When constructed in the manner shown, the wheel and pinion are accurately and firmly united and are not liable to become separated, and can be produced and combined at a much less expense than by any usual method.

Having thus fully set forth the nature and merits of my invention, what I claim is--

The hereinbefore-described method of constructing a combined gear wheel and pinion, consisting, first, in forming at the center of a wheel-blank an internally-toothed opening which corresponds in size and shape to the like transverse features of the desired pinion, next punching or otherwise forming a pinion-blank which has a length greater than the thickness of said wheel-blank, next pressing said pinion-blank into said opening, and, lastly, forming at or around the periphery of said wheel-blank gear-teeth and within said pinion-blank an axial opening, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 18th day of July, 1885.

GEORGE E. HART.

Witnesses:

CHARLES S. CHAPMAN,  
GEO. E. TERRY.