

(No Model.)

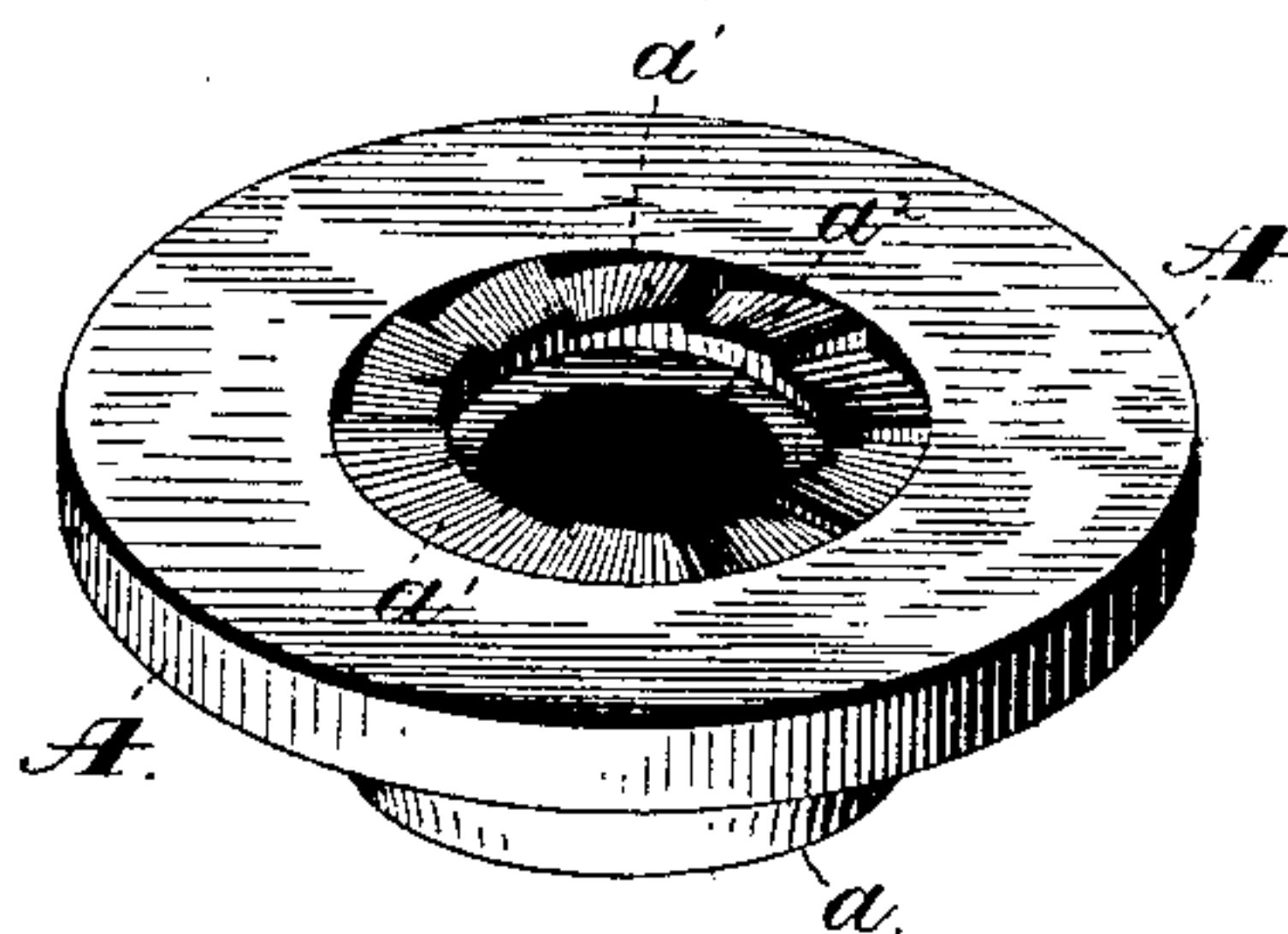
G. E. HART.

WINDING PINION AND RATCHET FOR WATCHES.

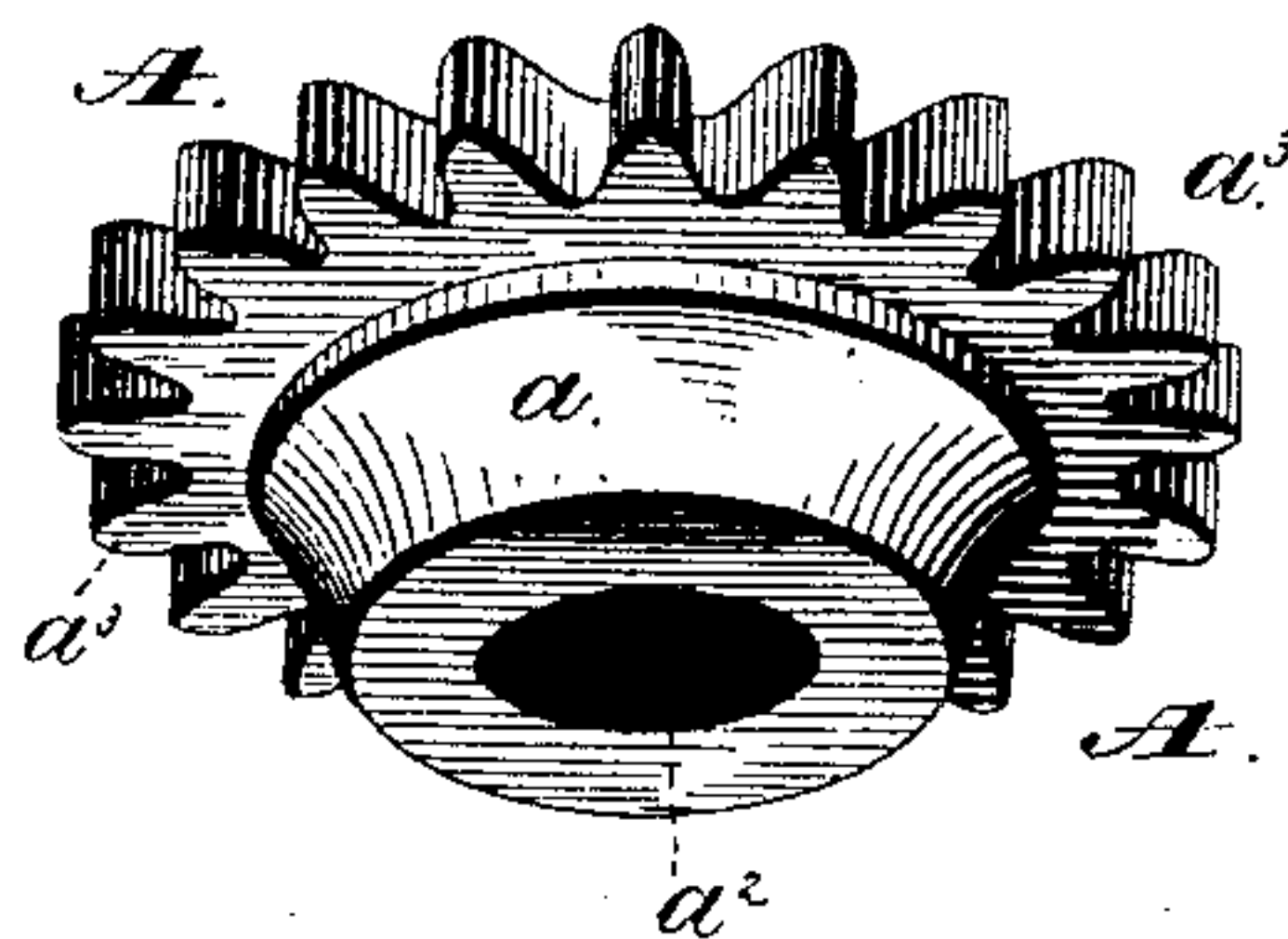
No. 345,588.

Patented July 13, 1886.

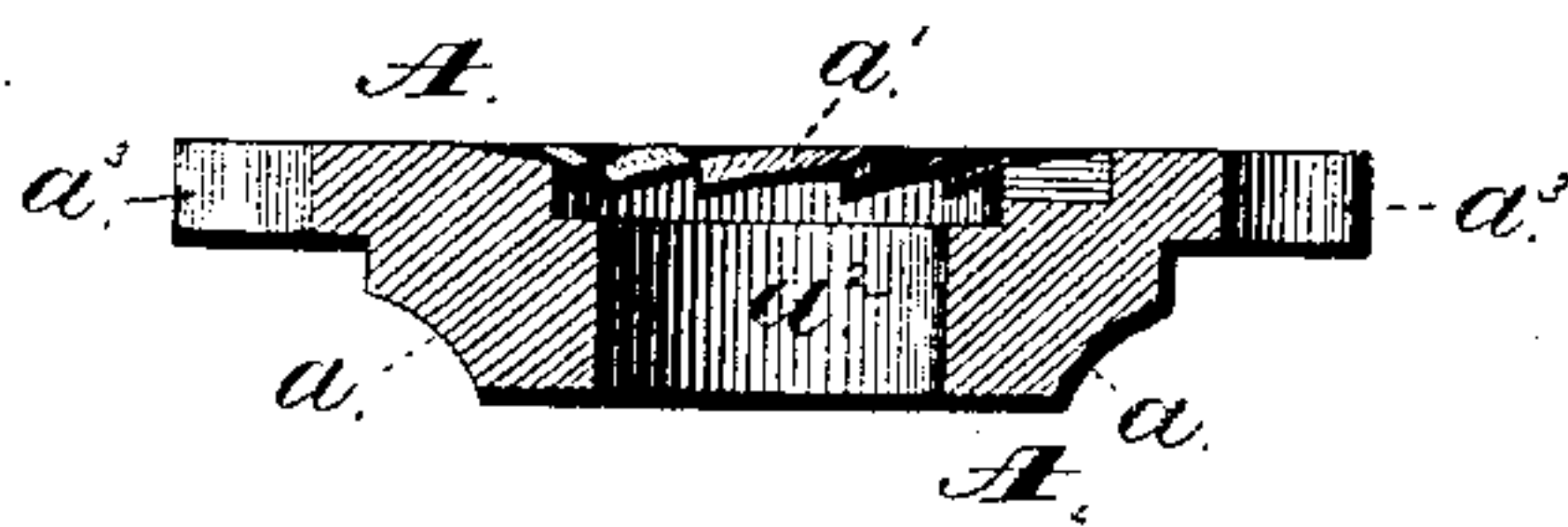
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:  
Jas. E. Hutchinson.  
Chas. J. Williamson.

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

# UNITED STATES PATENT OFFICE.

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

## WINDING PINION AND RATCHET FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 345,588, dated July 13, 1886.

Application filed July 7, 1885. Serial No. 170,883. (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  
5 certain new and useful Improvements in Combined Winding Pinion and Ratchet; 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—

10 Figure 1 is a perspective view of my blank from the ratchet side after having been operated upon by the swaging-dies. Fig. 2 is a like view of the same from the opposite side  
15 completed, and Fig. 3 is a central section of the same upon an axial line.

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

20 The object of my invention is to simplify and lessen the expense of construction, and to increase the efficiency and durability of combined winding pinions and ratchets; to which end said invention consists, as a new article of manufacture, in a spur winding-pinion having  
25 a hub and central orifice, and an annular depression or recess in its face adjacent to said orifice, the surface of such recess being formed into ratchet-teeth facing outward, all made in one piece, substantially as and for the purpose  
30 described.

35 In carrying my invention into practice I employ a disk of metal, preferably steel, which has the required diameter and thickness, and subject the same to pressure between two dies, one of which is the reverse of the rear face and the other of the front face of the finished pinion, such pressure being sufficient to cause

said faces to assume the desired form. The result is a pinion-blank, A, that has upon its rear face a hub, *a*, and within its front face a  
40 concentric ratchet, *a'*, the teeth of which latter are just flush with or below the remaining portion of said face. The wheel is next provided with an axial opening, *a''*, and with peripheral  
45 teeth *a'''*, which complete it. If desired, said axial opening may be formed before the dies are used, in which event it would form a centering-guide for the same.

The pinion described possesses much more strength and durability than could otherwise  
50 be secured, as its material is compressed and made far more dense than in its normal condition. The ratchet is as perfect as though produced separately by a cutting-engine, and far more perfect than would be obtainable if, as  
55 has heretofore been necessary, said ratchet had been cut by hand.

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

60 As a new article of manufacture, a spur winding-pinion having a hub and central orifice, and an annular depression or recess in its face adjacent to such orifice, the surface of such recess being formed into ratchet-teeth facing  
65 outward, all made in one piece, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of June, A. D. 1885.

GEORGE E. HART.

Witnesses:

GEO. S. PRINDLE,  
HENRY C. HAZARD.