

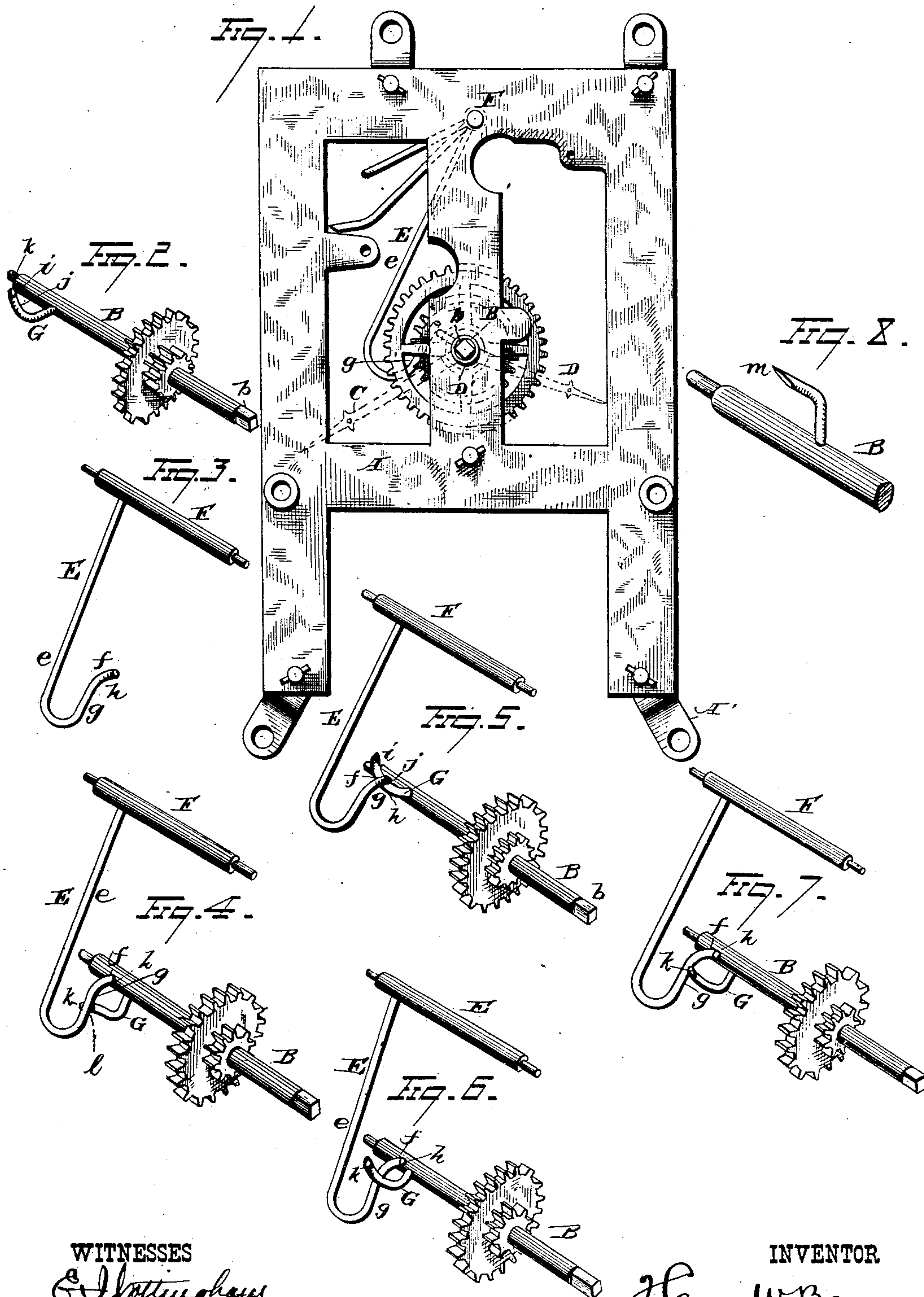
(Model.)

H. W. BARNES.

## Lock Work Attachment for Clocks.

**No. 234,941.**


**Patented Nov. 30, 1880.**



**WITNESSES**

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# UNITED STATES PATENT OFFICE.

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## LOCK-WORK ATTACHMENT FOR CLOCKS.

SPECIFICATION forming part of Letters Patent No. 234,941, dated November 30, 1880.

Application filed October 20, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, HARRY W. BARNES, of Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Lock-Work Attachments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in lock-work attachments for clocks.

Heretofore many different expedients have been resorted to in lock-work attachments, for the purpose of enabling the hands or pointers of the clock to be turned backward without injury to the strike-mechanism. Peculiar-shaped cams, either stationary or sliding, have been applied to the center shaft for accomplishing the purpose set forth. Again, trip-levers and extra lock-work have been interposed between the ordinary lock-work or lift-wire and center staple, to allow the latter to be turned backwardly. Again, swiveled center staples have been used. All such forms of lock-work attachments are objectionable, owing to the fact that they add to the number of parts, necessarily quite complicated, and increase the cost of manufacture; and, further, the parts are liable to become displaced or inoperative, and thus destroy the usefulness of the strike-mechanism. Again, the lift-hook has been flattened on its free end and bent into the form of a double incline, and the center staple made of the ordinary form and adapted to engage with the inclined flattened end of the lift-hook. This construction of lock-work attachment is defective and objectionable, for the following reasons: In the regular forward movement of the center staple the latter engages with the thin sharp edge of the flattened portion of the lift, and in the backward movement of the center staple its extreme end or point must engage with the flattened portion of the lift-hook and traverse nearly the length and the entire width thereof. As the staple must force the lift-hook laterally in order to pass by it, there is considerable pressure exerted on the thin flattened portion of the lift-

hook by the point of the staple, which sometimes operates to bend such flattened and weakened part of the lift-hook, thereby rendering it useless for any purpose; and, again, the point of the staple will gradually cut a groove across the flattened end of the lift-hook, and after a time the latter will break.

The object of my invention is to obviate the defects and objectionable features of lock-work attachments heretofore referred to, and to accomplish the desired result by slightly changing the form of the ordinary and simplest form of lock-work attachments now in use; and with these ends in view my invention consists, essentially, in the combination, with a center staple having its free end curved or beveled, of a lift-hook having its free end bent toward the center staple and arranged and adapted to intersect the curved or beveled end of the same.

My invention further consists in certain other details in construction and combinations of parts, as will hereinafter be described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of the frame of a clock-movement, showing my improved lock-work attachment in its position when the center shaft has raised the lift-hook. Fig. 2 is a detached view, in perspective, of the center shaft and staple. Fig. 3 is a similar view of the lift-hook. Fig. 4 is a view, in perspective, of the center staple in position for commencing to raise the lift-hook. Fig. 5 is a similar view, showing the lift-hook in its raised position and ready to drop from the center staple. Fig. 6 is a similar view, showing the center staple turned back until it strikes the lift-hook. Fig. 7 is a similar view, showing the staple turned back a sufficient distance to force the lift-hook laterally away therefrom and allow the center shaft to be turned backwardly a complete revolution. Fig. 8 is a modification.

A A' represent the front and back plates of a clock-movement.

B is the center shaft, the outer end, *b*, of which is squared for the attachment of the minute-hand C, the hour-hand D being secured to the socket D', which is sleeved upon the center shaft. These parts, as well as the time-and-strike train, are of ordinary construction,



and hence an extended explanation and illustration of the other parts of the clock-train are unnecessary.

E is the lift-hook, the long arm *e* of which is riveted to the shaft F, which is journaled at opposite ends in the front and back plates, thereby allowing the lift-hook to rise and fall by a slight expenditure of power. The free end *f* of the short arm *g* of the lift-hook is bent laterally, as shown at *h*, for a purpose hereinafter explained.

G represents the staple, which is made of wire, and driven through and secured to the center shaft in the ordinary manner. The free end of the arm *i* of the center staple is curved, as shown at *j*, while the extreme end of said arm is beveled, as represented at K.

Having described the construction and relative arrangement of the several parts of my improved lock-work attachment, I will now briefly describe its operation.

When the center shaft is turned to the right, which is the direction of its movement in the ordinary running of the clock, the beveled end *k* of the center staple engages with the short arm of the lift-hook at a point, *l*, thereon, and as represented in Fig. 4. The center shaft continues to revolve, and the curved end *j* thereof engages the under side of the hook until the latter is raised to its highest point, the curved end *h* thereof then resting on the straight portion of arm *i* of the center staple, from which it falls onto the center shaft. Thus it will be observed that the ordinary operation of the lift-hook and center staple is effected with minimum expenditure of power, as but slight friction results from the engagement of the smooth round surface of the center staple with the smooth round surface of the lift-hook, and the latter is raised and dropped with the same ease and uniformity as it would be if the parts were of the ordinary construction. After the lift-hook has dropped from the center shaft the latter may be then turned back nearly a quarter turn, allowing the minute-hand to be turned back on the dial a space equal to about fifteen minutes before the center staple engages with the lift-hook. This is also true of the ordinary lock-work attachment, but the latter cannot be turned backward any farther without injury to the lock-work. But in many other forms of lock-work attachment the center shaft cannot be turned backwardly any appreciable distance without its engagement with the lock-work, and hence the advantages of my improvement are obvious, as in my improvement it is unnecessary to cause the center staple to engage the lift-hook unless it is desired to turn the hands backward on the dial a space exceeding fifteen minutes, which operation is rarely ever required. But when the center shaft is turned backward a complete revolution, the under side of the curved por-

tion *j* of the center staple will strike the upper side of the straight portion of the lift-hook at the point *l*, as represented in Fig. 6, and as the center shaft is continued through its backward movement, said curved portion *j*, acting against the lift-hook, will operate to force the latter laterally away from the center staple, and allow the center staple to ride past the same without injury to any of the parts. This operation is attended with but slight friction or wear of the parts, because the engaging-surfaces of both the center staple and lift-hook are round and perfectly smooth, and the latter is gradually forced laterally so as to drop off from the end of the center staple.

In Fig. 8 I have shown a modified form of construction, which differs but slightly from that hereinbefore described. The lift-hook has a curve formed on its free end, while the center staple, instead of having its end curved or bent, is made straight and its end beveled, as shown at *m*.

The operation of this form of lock-work attachment is the same as has been hereinbefore set forth.

It will be thus observed from the foregoing that my improvement is the embodiment of simplicity of construction and economy in manufacture. No additional or peculiarly constructed parts are required.

The ordinary form of lock-work is or may be employed, it being readily adapted to subserve the desired end by simply bending the end of the lift-hook, and forming a curved or beveled surface on the end of the center staple.

It is evident that slight changes in the form or construction of the parts might be resorted to without departing from the spirit of my invention, and hence I would have it understood that I do not restrict myself to the exact form and construction of parts shown and described; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the center staple having its free end curved or beveled, of a lift-hook having its free end curved or bent laterally to its length, substantially as set forth.

2. The combination, with the center staple having its free end curved or beveled, of a lift-hook having its free end curved or bent laterally with respect to its length, and the point of the lift-hook beveled, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of October, 1880.

HARRY W. BARNES.

Witnesses:

S. P. NEWELL,  
F. N. CHAPIN.