

(No Model.)

W. WARE.

JEWEL SUPPORT FOR THE BALANCE STAFFS OF WATCHES.

No. 294,168.

Patented Feb. 26, 1884.

Fig. 1

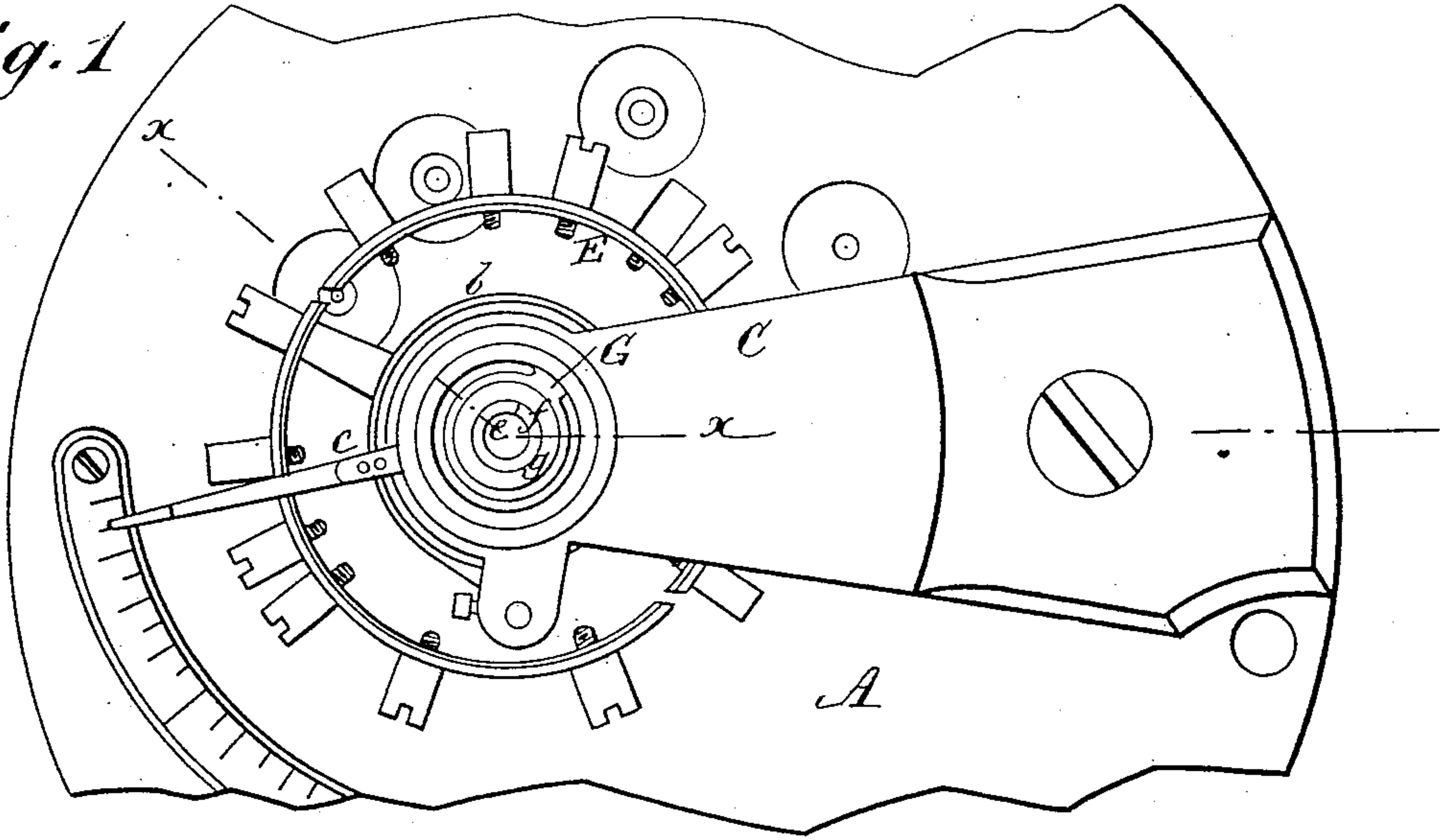


Fig. 2

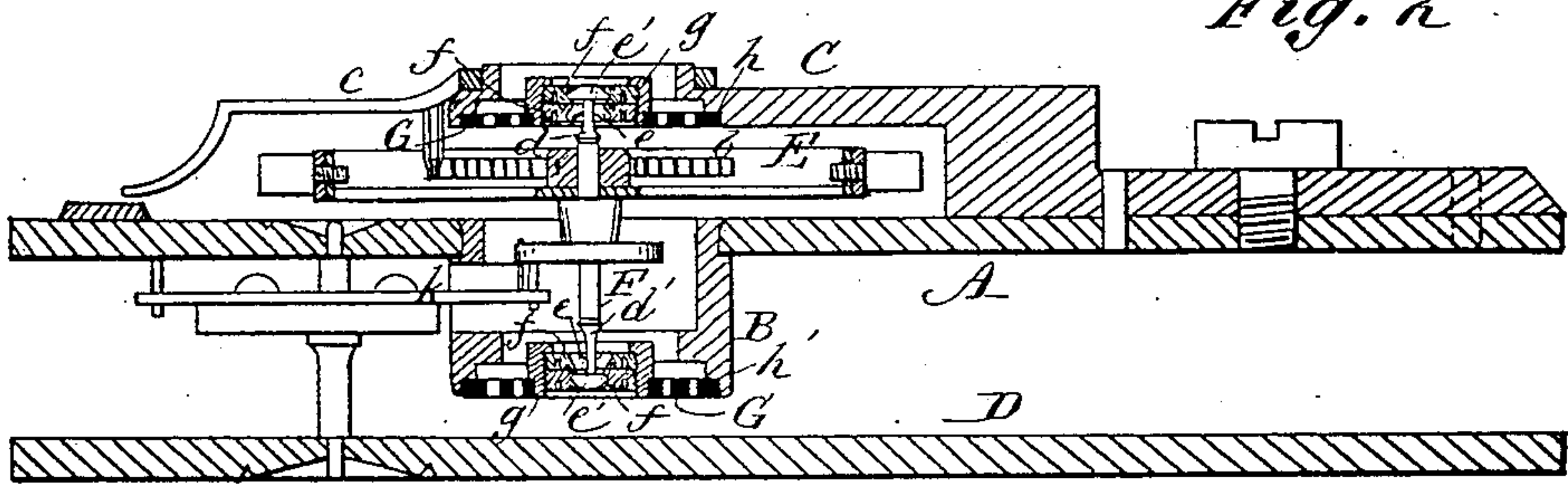
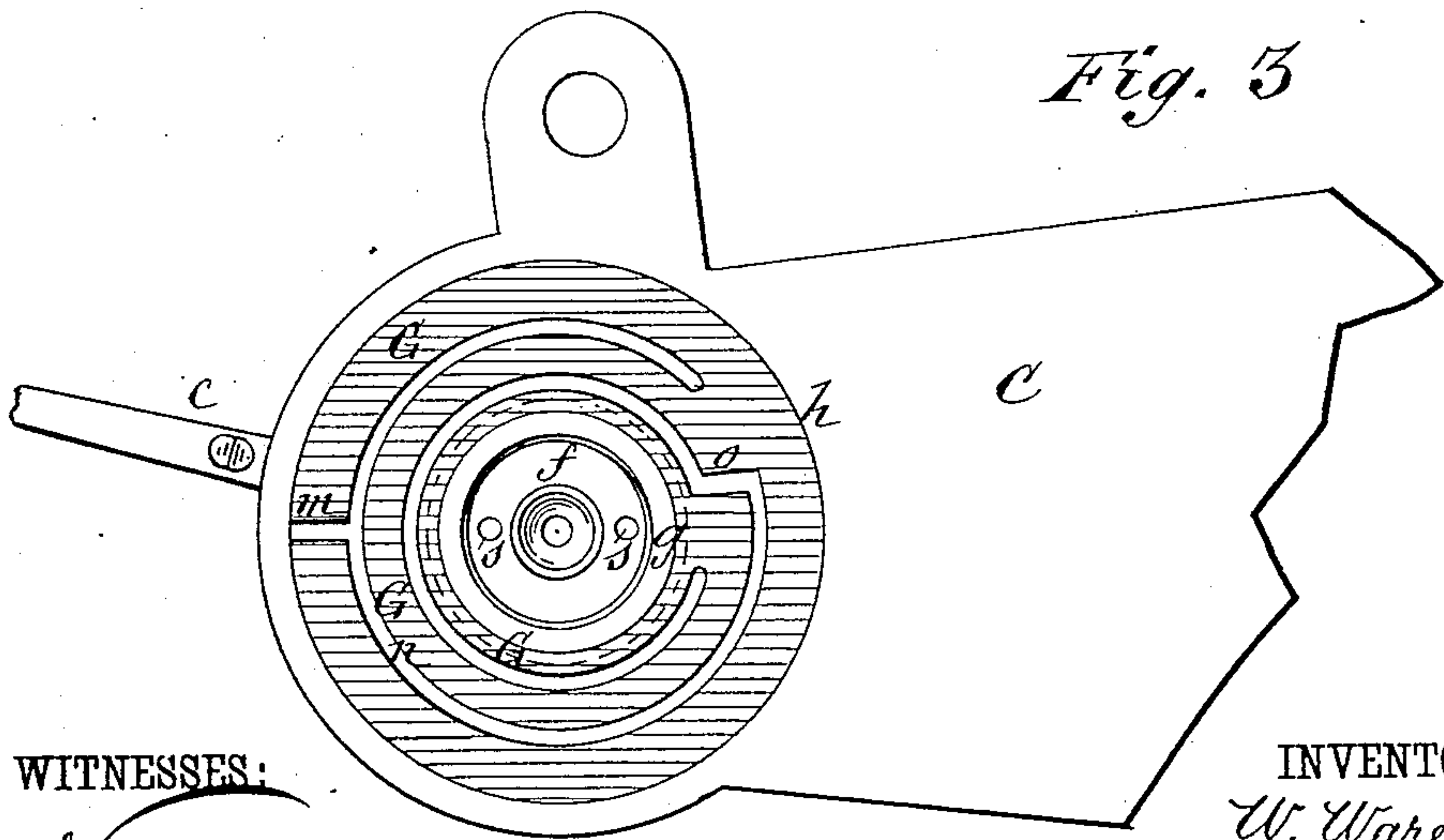


Fig. 3



WITNESSES:

C. Neveu
L. Sedgwick

INVENTOR:

W. Ware

BY

Munn & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WALTER WARE, OF WAVERLY, NEW YORK.

JEWEL-SUPPORT FOR THE BALANCE-STAFFS OF WATCHES.

SPECIFICATION forming part of Letters Patent No. 294,168, dated February 26, 1884.

Application filed July 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, WALTER WARE, of Waverly, in the county of Tioga and State of New York, have invented certain new and useful Improvements in Jewel-Supports for the Balance-Staffs of Watches and other Time-Pieces, of which the following is a full, clear, and exact description.

This invention—which is applicable both to watches and chronometers, and relates to the jewel-bearings for the balance-staffs thereof—has more particularly for its object the prevention of injury to the balance-staff pivots and to the jewels in and against which they run, as caused, for instance, by jar produced in the falling of the watch or time-piece, or by crushing of the parts induced by indentation of the case, or by the handling of careless or incompetent watch-makers entrusted with the cleaning or repairing of the watch, and who not unfrequently crack one or more of the jewels when putting the parts together, thereby presenting ragged overlapping edges, which cut the pivot of the balance-staff, or who place the balance-staff pivots or their jewels out of center when replacing them after injury, thus casting undeserved odium upon the original makers of the watch for its incorrect running in after years. To secure permanent accuracy for the watch after it leaves the maker's hands is accordingly very desirable.

To accomplish this result more effectually than has hitherto been done, and to secure more permanent accuracy for the watch or time-piece, my invention consists in setting the jewels or the settings which hold them at either or both ends of the balance-staff, but preferably at both ends, in a spring or springs constructed and arranged to provide for the yielding of the jewels both in directions which are transverse to the pivots of the balance-staff and in directions which are in line therewith, or either, whenever unusual pressure is brought to bear upon the jewels or the pivots, as caused—for instance, by a fall.

The invention also consists in a spring of special construction for such purpose, and which will occupy but little space and require only a slight and immaterial change of the bridge and potance.

Furthermore, the invention consists in se-

curing the jewel-bearings of the balance-staff, or rather the settings which hold them, within the springs which provide for the yielding of them, by screw-threads on their exterior, arranged to fit corresponding threads in boxes carried by the springs, whereby the jewels may be readily and securely inserted and be as readily and separately removed by a screw-driver applied to said setting, suitably constructed for the purpose.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a plan, upon an enlarged scale, mainly of the top plate of a watch, the bridge thereon, the balance-wheel, with the top jewels for the upper pivot of the balance-staff, and the spring within which the jewels are set; Fig. 2, a vertical section of the same and accompanying lower parts, upon the irregular line *xx* in Fig. 1; and Fig. 3, an inverted plan, upon a larger scale, of the bridge, upper jewel-bearing for the balance-staff, and a spring-carrier for said bearing.

A in the drawings indicates the top plate of a watch; B, the potance secured to the under side of said plate, and C the cock or bridge on the upper side thereof.

D is the bottom plate of the watch.

E is the balance-wheel; *b*, its hair-spring; *c*, its regulator; and F, the balance-staff, having the usual upper and lower pivots, *d d'*, the lower one, *d'*, of which has its jewels in the potance; but they might be in the bottom plate of the watch. The jewel-bearings for the pivots *d d'* are each composed, as usual, of a hole-jewel, *e*, and cap-jewel *e'*, the settings *f f*, however, of which jewels for the two pivots—or it might be for only one set of said jewels, but preferably for both of them—are set in springs G G—as, for example, by boxes *g g*, secured to said springs. These springs G G—the one of which is shown as arranged with a recess, *h*, in the under side of the bridge C, and the other as arranged within a like recess, *h'*, in the under side of the potance B—may be of various forms, and be made of different materials. Thus they might be coil springs with the jewels secured in the center of them; but the form of spring shown in the drawings and hereinafter described is prefer-

able. Said springs, as hereinbefore stated, are to provide for the yielding of the jewels whenever an unusual pressure is brought to bear upon them, and to attain this effect to the fullest extent it is desirable that said "spring-settings," as the springs may be termed, should be capable of yielding in all directions, both in transverse relation to the pivots of the balance-staff, which works in the jewels and in a longitudinal relation thereto, although a certain amount of protection would be secured by arranging them only to yield in one of such relations.

The springs G G shown in the drawings not only secure a yielding action for the jewels in every direction when unusual pressure is applied to them, and so prevent accident or injury to the pivots or jewels, and thereby impairing the accuracy of the watch, but they take up very little space and require only a slight enlargement of either the bridge C on the potence B, so as to present no interference with the regulator *c* or the escapement *k*. The peculiar construction of these springs G, as shown in Fig. 3, consists in each being made of a circular plate or disk of elastic material, divided at and near its outer circumference by a cut, *m*, which joins at its inner end a cut, *n*, through the plate of interrupted outer and inner concentric ring shape, meeting by a branch, *o*, upon the opposite side of the axis of the plate to that on which the cut *m* is arranged. If desired, there may be an increased number of these interrupted concentric cuts, with connecting branch cuts at their ends.

The jewels *e e'*, with their settings *f*, may be secured in the springs G or boxes *g*, attached thereto, by a spring collar or in any other way; but I prefer to secure them by a screw-thread formed on the peripheral exterior of the settings *f*, made to fit a corresponding thread on the interior of either box *g*, and to screw the same into their respective box *g* by means of

a screw-driver fitting holes *s* or other openings in the face of the setting *f* of each jewel. This provides for the ready and separate entry and removal of both the hole and cap jewels. As before stated, however, said jewels may be variously secured in their spring bearing or setting. Thus, instead of being screwed by their settings *f* into the box *g*, they may be simply slid into said box and be held there by a countersunk nut fitted to screw into the face or mouth of the box.

I do not abandon or dedicate to the public any patentable feature set forth herein and not hereinafter claimed, but reserve the right to claim the same either in a reissue of any patent that may be granted upon this application or in other applications for Letters Patent that I may make.

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

1. In a jewel-bearing for the balance-staffs of watches and other time-pieces, the combination, with the box *g*, in which the settings are secured, of the single spring G, to the center of which the box *g* is secured, substantially as herein shown and described.

2. In a jewel-bearing for the balance-staff of a watch, the combination, with the internally-threaded box *g*, of the exteriorly-threaded settings *f f*, substantially as herein shown and described.

3. An improved spring for supporting the jewel-bearings of the balance-staff of a time-piece, constructed of a plate of elastic material having a series of interrupted and connected concentric slots, and branch slot extending to and through the outer edge of the plate, substantially as herein shown and described.

WALTER WARE.

Witnesses:

JOHN POWERS,
H. R. BUNN.