(Model.)

2 Sheets—Sheet 1.

A. GRANDJEAN.

WATCH CASE.

No. 348,202. Patented Aug. 31, 1886.

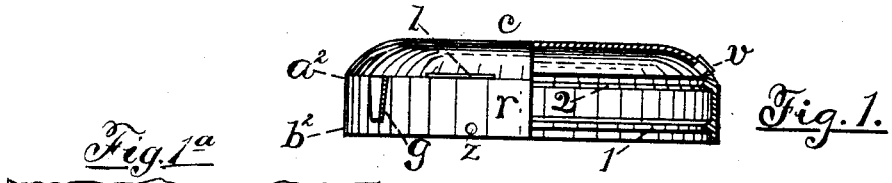
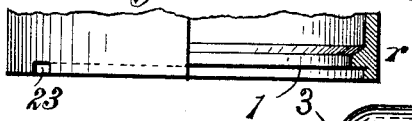


Fig. 1.

Fig. 1ª



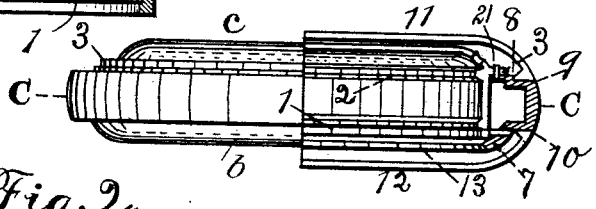


Fig. 2.

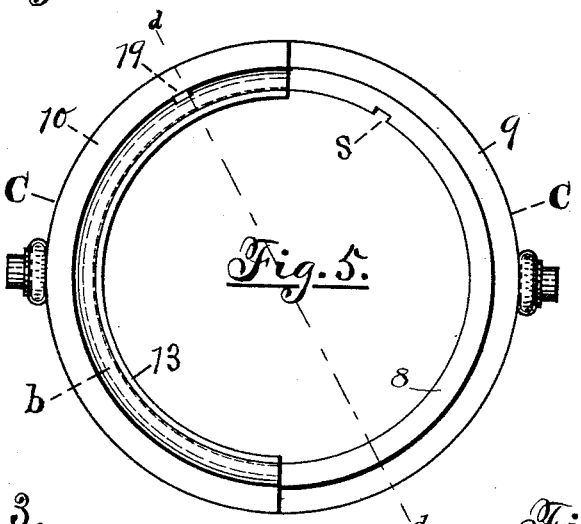


Fig. 5.

Fig. 3.

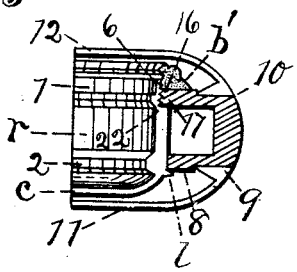
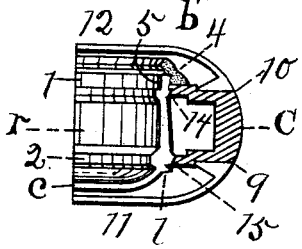


Fig. 4.



Witnesses:
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Inventor:
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per E. F. Robbins, M. E.,
Attorney.

(Model.)

2 Sheets—Sheet 2.

A. GRANDJEAN.

WATCH CASE.

No. 348,202. Patented Aug. 31, 1886.

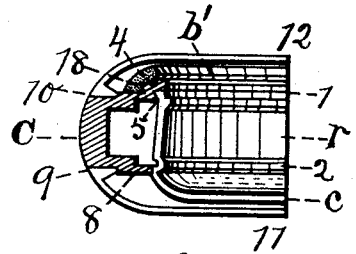

Fig. 6.

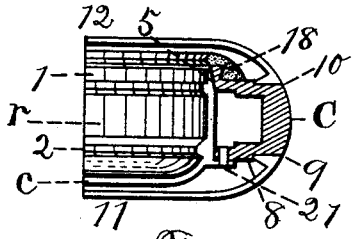

Fig. 7.

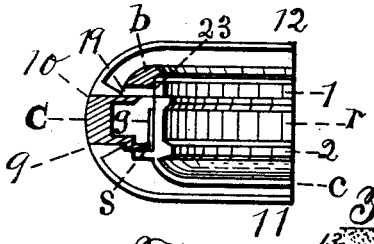

Fig. 8.

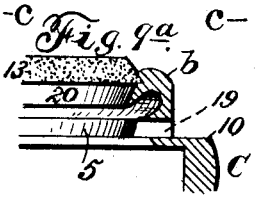

Fig. 9a.

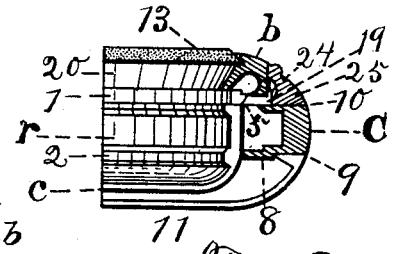

Fig. 9.

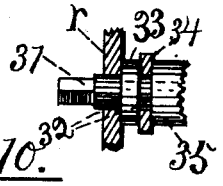

Fig. 10.

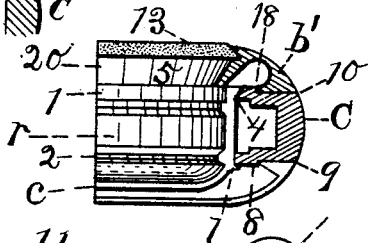

Fig. 11.

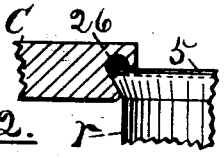

Fig. 12.

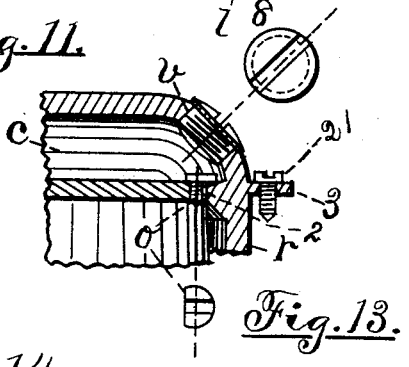

Fig. 13.

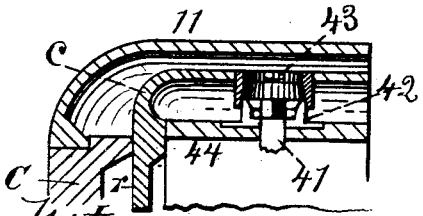

Fig. 14.

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UNITED STATES PATENT OFFICE.

ARTHUR GRANDJEAN, OF CINCINNATI, OHIO.

WATCH-CASE.

SPECIFICATION forming part of Letters Patent No. 348,202, dated August 31, 1886.

Application filed July 24, 1884. Serial No. 138,622. (Model.)

To all whom it may concern:

Be it known that I, ARTHUR GRANDJEAN, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Watch-Cases, of which the following is a specification.

My invention relates to the construction, arrangement, and fittings of the parts of a watch-case; and it consists, essentially, in the construction in one piece of the ring or rim which immediately surrounds, supports, and protects the movement and the cap which protects the back of the movement, and which I call the "movement ring" and "cap."

It also consists in the construction in one piece in a hunting-case of the center and the front bezel, and in means, as set forth, for insuring water-tight joints, and also for closing the key-hole in the back cap for a key-winding watch.

There is necessary a special means for regulating the watch when the case is constructed as herein set forth, which is intimately connected with this invention; but said means are not a part of this application. The Patent No. 211,584 for such means was granted to S. G. Parker, January 21, 1879, and assigned to me March 14, 1885.

The object of my invention is to produce a dust-proof case which shall be made of few and simple parts, which shall be attached in a simple manner, and above all to provide a case which shall be so adapted to the movement mechanism and the winding and regulating devices as not to require opening of the case at any time, and hence there will be no opportunities offered for the entrance of dust.

Inventors have succeeded in producing dust-proof open-faced watches; but previous to this invention, which has connected with it means for regulating without exposing the movement, no modern hunting-case could lay claim to being dust-proof.

The same letters indicate the same parts in all of the figures, and the same numbers are used to designate the same or modified constructions of the same parts.

Figure 1 is a side elevation, partly in section, of the movement-holding ring and cap, the ring and cap being inverted as when introducing it into the case. Fig. 1ª is a broken elevation, partly in section, illustrating the position of the gap 23 shown in Figs. 2, 8, and 9; Fig. 2, a view similar to Fig. 1, showing also in section one-half of a case-center and the front and back covers. Figs. 3, 4, 6, and 7 are sectional views of the movement-holding ring and cap, the case-center, the front bezel, and the front and back caps. Fig. 5 is a plan view, the left half being a front view and the right half a back view of the case-center; Fig. 8, a sectional view showing the case-center formed with the front bezel, also showing the movement-holding ring and cap and the front and back covers; Fig. 9, a sectional view showing a modification adapted as an open-faced watch; Fig. 9ª, a detail view of parts of Fig. 9 on an enlarged scale; Fig. 10, a detail sectional view showing a part of the movement-holding ring and a portion of a stem-winding mechanism, also devices for preventing moisture and dust entering the ring at the key-hole; Fig. 11, a sectional view of the movement-holding ring and cap, a case-center, a back cover, and an open-faced bezel secured to the front of the center; Fig. 12, a detail view of part of the movement-holding ring and the case-center having a groove adjacent to the snap; Fig. 13, a detail sectional view showing means for securing the movement in and removing it from the movement-holding ring and cap; and Fig. 14, a detail sectional view showing portions of the movement back, case-center, movement ring and cap, and back cover, and means for preventing dust entering at the key-hole of a key-winding watch.

In the drawings the letter C indicates the case-center, and where the front bezel is integral therewith it is indicated by the letter *b;* but where the front bezel is a separately-attached piece it is indicated by the letter *b'*.

The back cover is indicated by the numeral 11, and the front cover by the numeral 12.

The movement-holding ring consists of an annulus or ring, *r*, and a cap, *c*, formed integral therewith, the whole constituting a cup-shaped body. The ring is provided at the front with a rabbet, 1, for supporting the front movement-plate, and near the back with an annular projection, 2, for the back of the movement to rest against. Such construction of move-

ment-holding ring will prevail under the several modifications of other parts illustrated in the several figures. The cap portion *c* is continuous, and when the movement-shell is used in a stem-winding watch and is provided with means for moving and viewing the regulator from the exterior of the cap *c* there is no passage communicating with the back or the sides of the movement through which dust can enter. The exterior of the ring may be so constructed at the position a^2 or at b^2, (see Fig. 1,) or at both places, as to adapt it to any of the known or desired ways of securing the said ring in any case-center in which it may be desired to use it.

A number of ways of securing the movement-holding ring and cap to the case-center are illustrated, and will now be described.

One method is illustrated in Fig. 2, which shows the movement-ring provided with a flange, 3, and shows a section of the center C and the bezel *b* integral therewith. The flange 3 may be secured to the ledge 8 of the case-center by means of small screws, as at 21, shown on an enlarged scale in Fig. 13.

Another method is illustrated in Fig. 3, where the movement-holding ring and cap has a screw-thread cut at the part 6 up to a shoulder, 22. The case-center front is threaded at 17 to receive the screw 6, and the ring and cap may be screwed in until the shoulder 22 abuts against the case-center. When the ring and cap is in position the front edge projects sufficiently above the case-center to allow the separate bezel *b'*, which is threaded at 16, to be screwed onto the same thread.

Another method is illustrated in Fig. 4, where the movement-ring is secured at its front to the case-center C by means of the snap 5, which snaps into the rabbet 14, and at its back by means of a snap which is snapped upon the case-center at 15. The front of the movement-ring projects above the front of the case-center, and the separate bezel *b'* is snapped into it, as shown.

Another method is shown in Fig. 6, where the movement-ring is shown snapped at 5 into a rabbet, 4, directly beneath the inner front edge of the case-center, and the rabbet 1 for the movement is cut flush with the inner edge of the front of the case-center, so that the top surface of the dial-plate comes even with the front of the case-center. The movement-ring at its back simply binds against the case-center, as shown. The bezel *b'* is snapped to the front of the case-center at 18, exterior to the rabbet 4. The projection 2 at the back of the ring (shown in Fig. 6) is produced by rolling against the outside of the ring to form a corresponding depression on the exterior.

Another method is illustrated in Fig. 7, where the front of the movement-ring is slightly conical externally and binds against and within a conical seat, 5, on the front of the case-center, and a flange, 3, on the rings seats upon the back ledge, 8, of the case-center, being secured thereto by means of small screws 21, in a manner similar to that described for Fig. 2.

Another method is illustrated in Fig. 8, which is a sectional view through the case-center and movement-ring at the setter-hole 19 of Fig. 5, and shows the setter-hole 23 in the front of the movement-ring directly opposite the hole 19 through the bezel, and also a guide-plug, *g*, soldered to the exterior of the ring part *r* and directly beneath the openings 19 23. The guide-plug *g* may be placed at any suitable position on the exterior of the ring *r*. By making the plug slightly wedge-shaped it may enter the notch *s* in the case-center, easily at first, and when the movement-ring is seated said plug may be made to bind within and tightly close the notch *s*. The object of the guide-plug *g* is to enable the movement-ring to be conveniently and accurately inserted within the case-center, so that the corresponding passage through the ring and center for the parts of the winding mechanism may always come directly opposite.

Another method is illustrated in Fig. 9, where the construction is adapted to the use of the combined center and bezel in an open-faced watch. In that kind of watch it is necessary to have a ring, 25, to fit down upon the seat 10 around the bezel *b*, so that it may cover the hole 19 and protect the setting device, or catch and fill out the otherwise irregular exterior of the front of the case-center. The ring 25 is hollowed out around the bezel, and bears tightly around the latter at its top, and is adapted to snap to the exterior of the bezel.

Another method is illustrated in Fig. 11, which is also adapted to an open-faced watch. The movement-ring is secured by being snapped at its back to the back ledge, 8, of the case-center, the separate bezel, *b'*, being also snapped to the front of the case-center, as shown in the same figure.

In Fig. 12 is an enlarged view of the front snap, 5, of the movement-ring, and the contiguous portion of the case-center in which it snaps, a groove, 26, being cut around the snap-rabbet to receive an elastic packing—as rubber—which will be embedded and is designed to be compressed in the groove between the case-center and the movement-ring.

In Fig. 10 a portion of the movement-ring *r* is shown at the key-hole, with provision for preventing the entrance of dust or moisture. The square key 31 is provided with the round stem 32, which bears and fits nicely within the hole in the ring *r*.

35 indicates the key-pipe, and 34 is the section of the cap-catch spring through which the round part 32 of the key passes.

33 indicates a rubber washer, which is interposed between the ring *r* and the spring 34. The washer 33 has bulk and elasticity sufficient to always be under compression between the ring *r* and the spring 34, so that it presses the ring around the stem 32, and prevents dust or

moisture from entering at the side of the stem 32, while permitting an easy motion of the spring 34 and stem 32. In an open-faced watch not having a catch-spring, the rubber washer 33 may abut against the key-pipe 35.

The movement is inserted into the movement-ring from the front, and the front plate rests within the rabbet 1, and the back is guided by the projection 2. It will be evident from an examination of the ring in Fig. 1, that the exterior of said ring may be so formed as to adapt itself to be inserted at the front in a center not having a bezel in common with it. When there is no flange 3 on the ring, it should have a thumb-piece or gap, *l*, for prying the ring from the center.

The movement is secured within the movement-ring by means of a small pin (not shown) entering a hole, Z, as seen in Fig. 1, and by means of a half-headed screw, *o*. (Shown clearly in Fig. 13.) The screw *o* is handled through the hole *v* in the part *c* of the movement-ring, which latter is closed by a short screw, as is also shown in the same figure.

The movement-ring, consisting of the annulus or ring *r* and the cap *c*, is to be stamped into shape, or to be formed by means of cutting-tools, or to be produced by both cutting and stamping.

In all the modifications described the back side, S, of the case-center is provided with a seat, 9, for the back cover, 11, and it may be adapted to receive a flange of the movement-ring, or to have the ring screwed or snapped into or onto it, as is already described.

In Fig. 14, 44 indicates the back movement-plate; 41, the key; 42, the key-socket; C, the case-center; *r c*, the movement ring and cap, and 11 the back cover in a key-winding watch. By attaching a short tube, 43, in a suitable manner to the part *c* of the movement-ring it may be arranged to fit down closely upon or within the key-socket 42, or by making it slightly conical within it may be fitted closely to the exterior of the socket, and the opening through it being large enough for the key, the latter may be inserted within the socket, and hence there will be no occasion for removing the cap part *c* for the purpose of winding a key-winding watch. The use of the tube 43 in connection with the the cap part *c* of my movement-ring adapts the latter to a key-winder.

As shown in Fig. 5, the case-center is integral with the front bezel, *b*. The left half of the figure is a front view, and the right half a back view, of the case-center. The case-center is provided with an annular seat, 10, for the front cover, 12, and the bezel sets inside of this seat, rises above it, and extends inward and is provided with the hole 19, just large enough for the end of the setting device or catch to pass through.

Having thus described my invention, what I claim is—

1. A movement-holding ring consisting of an annulus to receive and support the movement, and a cap formed integral with the annulus to cover and protect the back of the movement, said annulus being provided with a rabbet, 1, at the front to receive and hold the front movement-plate, and an inner projecting ledge or shoulder, 2, for guiding the back of the movement, the whole adapted to enter and be secured in the case-center, substantially as described.

2. A movement-ring consisting of an annulus, and a back cap formed integral therewith, the annulus having an inner rabbet, 1, at the front for receiving and holding the front movement-plate, and an inner projecting ledge or shoulder, 2, for guiding the back of the movement, in combination with the case-center, the back cap provided with a hole, *v*, and a screw for closing the said hole, substantially as described.

3. A movement-holding ring consisting of the annulus formed integral with the cap *c*, the annulus having an inner rabbet, 1, at the front for receiving and holding the front movement-plate, and an inner projecting ledge or shoulder, 2, for guiding the back of the movement, the front edge of the annulus having an external snap, 5, which is snapped directly into engagement with a rabbet or groove in the front of the case-center, substantially as described.

4. A watch case center formed in one piece with a bezel located thereupon inside of an annular seat, 10, upon the center for a cap or cover, said bezel having the transverse through-opening 19 for the setting device or catch, substantially as described.

5. A movement-ring consisting of the annulus formed integral with the back cap, *c*, in combination with a case-center formed with a bezel located inside of an annular seat, 10, on the center for a front cover, said bezel having the transverse opening 19 for the setter, the movement-holding ring being adapted, as set forth, to receive and secure the movement and to be secured within the case-center, substantially as described.

6. A movement-ring consisting of the annulus formed integral with the cap *c*, in combination with a case-center formed with a bezel set within a seat for a front cover and having an opening, 19, for the setting device or catch, the ring 25, located upon said seat at the outside of the said bezel and to protect the setter, catch, and opening, the movement-ring being adapted, as set forth, to receive and secure the movement and to be secured within a case-center, substantially as described.

7. The combination, with a case-center, and the movement-holding ring consisting of the annulus *r*, formed integral with the movement-covering cap *c*, of the square key 31, having the round stem 32, fitting a hole in the annulus *r*, the key-pipe 35, the cap-catch spring 34, and the rubber disk 33, interposed between the surface of the annulus and the catch-spring, substantially as described.

8. The combination, with a case-center and the movement-holding ring comprising the annulus *r*, formed integral with the movement-covering cap *c*, of the square key 31, having the round stem 32, fitting a hole in the annulus *r*, the key-pipe 35, and the rubber disk 33, interposed between the surface of the annulus and the end of the key-pipe, substantially as described.

9. The combination, with the front exterior snap on the movement-ring, of an adjacent annular groove within the case-center front and packing material secured within said groove, substantially as described.

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