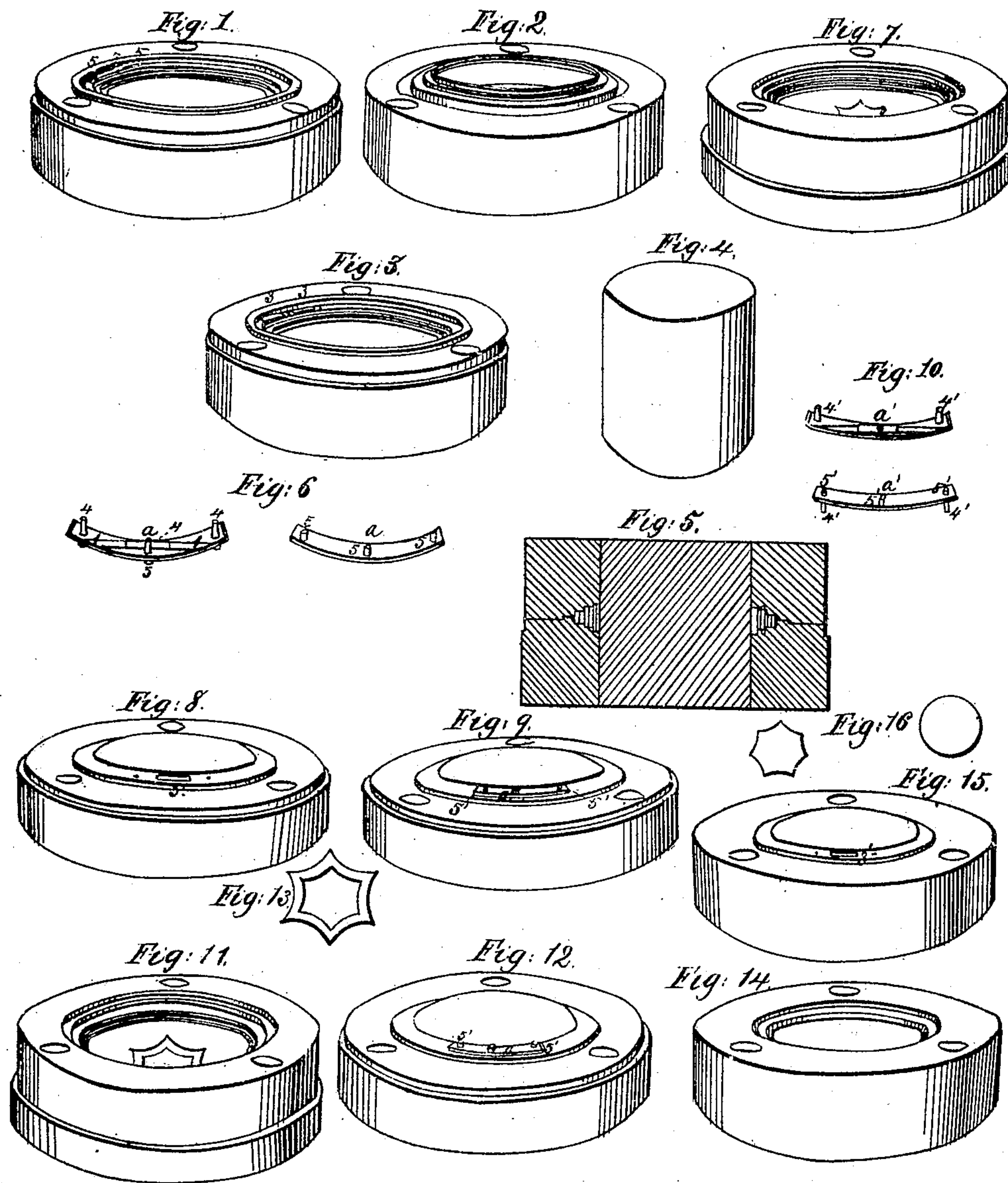


No. 81,082.

PATENTED AUG. 18, 1868.

W. H. HALSEY.
MOLDING WATCHCASES AND LOCKETS FROM HARD RUBBER.



Witnesses:

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Letters Patent No. 81,082, dated August 18, 1868.

IMPROVEMENT IN MOULDING WATCH-CASES AND LOCKETS FROM HARD RUBBER.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM H. HALSEY, of Hoboken, in the county of Hudson, and State of New Jersey, have invented a new and improved Mode or Process of Making Articles from Hard Rubber, and from other substances capable of being moulded, and inserting in and attaching thereto metallic and other plates for useful and ornamental purposes; and I do hereby declare that the following is a full, clear, and exact description thereof, and of its mode or manner of operation, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The method or process of forming and shaping, by means of moulds or dies, articles made from or composed of hard rubber, is well known, and has been extensively applied, and in a great variety of ways. When such articles, however, are so formed, the material or substance of which they are composed is only shaped by the moulds or dies, and the surfaces of such articles correspond with the configuration given to the dies.

If, however, the article so produced has been of such a character, as a box or case, that it is required that one part should hinge to or turn upon another, and a metallic hinge is desired for this purpose, it has been necessary to attach the hinge thereto after such article has been moulded to the shape or pattern preferred, and then fasten the same by rivets or some equivalent manner; and such method of attaching a hinge also requires particular care, and greatly increases the cost of construction.

So, also, if it has been desired to inlay, emboss, or ornament the surfaces of any such article so moulded, with figures or designs in gold, or other metal, or other material, it has been necessary to so inlay or ornament the article after it has been moulded, and then to fasten therein or thereto the metallic or other figures or designs by rivets, screws, or in some equivalent manner.

My invention consists in such a method or process of making or forming watches-cases and lockets from hard rubber, that any attachment or device, such as a hinge, or any plate or figure or design made of metal, or any rigid material, can be firmly and securely attached to or inserted in the article or material moulded in and by the same process or operation by which such article or material is moulded, and without requiring the use of rivets or fastenings to be applied after the article is removed from the moulds or dies.

The figures represent a series of dies designed to form the different parts of a watch-case, and at the same time attach the necessary hinges thereto, and inlay the outer surfaces, if desired.

Figures 1, 2, and 3 represent a set of dies, used for forming the rim of a watch-case, and fixing thereto one part of a hinge.

Figure 4 shows the central part of such dies.

Figure 5 is a vertical section of such a die when the several parts are in position; and showing also the rim made from hard rubber.

Figure 6 is an enlarged representation of the part of the hinge fixed to such rim, showing the opposite sides of such plate.

Figures 7, 8, and 9 represent a set of dies for forming one of the outer caps of the watch-case, and fixing thereto the part of the hinge connecting with that part of the hinge fixed to the rim.

Figure 10 is an enlarged representation of the part of the hinge fixed to such cap, showing its opposite sides.

Figures 11 and 12 represent a set of dies for forming one of the outer caps of a watch-case, and inserting therein a metallic plate which shall be *in relief*.

Figure 13 is a full view of the plate partly shown in fig. 11.

Figures 14 and 15 represent a set of dies for forming the inner cap of a watch-case.

Figure 16 represents plates for inlaying.

The process of attaching a metallic hinge to a watch-case or locket made of hard rubber, or other material, while such article is being moulded, is substantially as follows: A plate of metal, *a*, is cut out, struck up, or otherwise formed, to correspond in form with the part of the article to which it is to be fixed. To such plate are soldered the two small tube-sections 1 1, to form one part of the hinge. A similar plate, *a'*, fig. 10, having

a single tube-section, 2, soldered thereto, and so placed thereon that when the two plates d and d' are brought together, the tube-section 2 will enter between the tube-sections 1 1, and such tube-sections, 1 2 1, forming a continuous tube, constitutes the other part of the hinge. In one of the dies, fig. 3, at the place where it is desired to fix the hinge in the article to be moulded, are cut two recesses or cavities, 3 3, of a size and depth a little greater than the hinge or tube-sections 1 1, so that when the plate d is placed on the die, and the tubes 1 1 enter the cavities 3 3, and pressure is applied to the dies, the material to be moulded being placed between or within the dies and over the plate d , the pressure will be upon and against the plate d , and the tube or hinge-sections 1 1 will be protected against being flattened, or in any manner injured.

Such plate, d , can be held more truly and firmly in position, during the operation of forming the article, by means of little pins, 4 4 4, which project from such plate on the same side with the tube-sections 1 1, and which enter into corresponding holes made in the die, as shown in fig. 3. Upon the opposite side of such plate d , on the side over and against which the material to be moulded is to be pressed, are fixed two or three, or any required number of blunt pins or projections, 5 5 5, figs. 1 and 6, over and around which the material will be forced when pressure is applied to the dies. Such projections 5 5 5 should be somewhat expanded at their ends, so as to form a sort of head to cause the uniting of the plate and moulded material to be more perfect, and the sides of such projections may also be made rough or barbed.

In articles in the use of which there is likely to be much tension or strain upon the metallic hinge, the heading and barbing of the projections 5 5 5 are more important. In small articles, such construction, particularly as to the barbs, is less necessary. The edges of such plate d , over which the material is intended to be pressed, may also be bevelled, so that a sort of dove-tailed joint will be formed by or between the metallic plate and the enclosing or covering-material, and the edges of the bevel may also be serrated.

Fig. 1 represents one of the dies for forming a watch-rim, with a plate, d , in position within it, and ready to receive the material to be moulded. Fig. 2 shows the complement die to fig. 1, with a watch-rim of India rubber resting within it. Fig. 3 shows the same die as fig. 1, previous to the plate d being placed in position. Fig. 4 is the central part of the die, and around which the watch-rim is formed.

In making an article, as the central rim of a watch-case, upon either side of which other parts are to be hinged, both the dies, figs. 1 and 2, will require to be cut or recessed, as shown in fig. 3, so as to receive a plate, d , and attach it to each side of the rim; but if a hinge is required upon but one side of said article, then only one of the dies will have to be recessed.

The plate d' , fig. 10, upon which is the counterpart of the hinge, is constructed substantially as before described in respect to the supporting-pins 4' 4' and the projecting points 5' 5' 5', to take the moulded material, but as such plate carries but one tube or hinge-section, 2, the die in which such plate is to be laid will require to have made in it but one recess or cavity, 3', as seen in fig. 8. The plate d' is shown in fig. 9, placed in proper position in the die, and fig. 8 shows the same die before such plate is laid therein.

The hinge-plates d and d' , having been properly laid in the appropriate dies, the material from which the article is to be moulded is placed between the dies or moulds and pressure applied, and the article moulded as in ordinary cases. The pressure applied causes the moulded material to closely cover and very tightly surround the projecting pins 5 5', or set over and around the bevelled or other edges of the metallic plate, and after any such article is so moulded and removed from the moulds, such hinge-plates are found to be firmly and permanently connected to the material moulded, and even more firmly and closely than if riveted thereto. After the articles are removed from the moulds, the pins 4 4' are cut off, and the article is ready for use.

By such process the article is moulded, and the metallic hinge firmly and permanently attached thereto, by one and the same operation, and without expense or cost after the dies are once prepared, except merely to form the hinge-plates.

If it is desired to inlay the surface of the moulded material with metallic plates, figures, or devices, such as shown in fig. 16, or of any pattern or device, and so that the surface of the metal and the moulded material shall be uniform or smooth, the plate, figure, or design to be inlaid is laid on the surface of the proper die, as shown in fig. 7, and held therein, in its desired location, either by steadying-pins, like 4 4', or by means of a little varnish or suitable adhesive substance. When the plate to be inlaid is continuous, as shown in fig. 16, its edges may be bevelled, as before described, and it may also have upon it, if desired, projecting points, as 5 5', to enter the moulded material. The inlaying-plate or design having been properly secured, and the material placed between the dies and pressure applied, the material being moulded will be forced over and around such plate, figure, or device; and the latter will be firmly and tightly connected to the former.

If it is desired to inlay the surface of the moulded material, and have the inlaid figure or design be *in relief* in respect to the surface, the surface of the face-die is recessed or cut away in the shape of the figure or design desired to be *in relief*, to a depth equal to the extent or height to which the figure is to stand out in relief. The metallic plate, which is to be thus inlaid, having been fitted with projecting points to take the moulded material, or having had its edges bevelled or serrated, when these are considered necessary, is laid in such recess or seat, and the material to be moulded placed between the dies and pressure applied, as in other cases, by means of which the moulded material will be forced tightly around the inlaying-plate, and when the article is taken from the dies the inlaid figure will stand out from the surface as much as the depth of the recess in the die. Fig. 11 represents a die properly prepared for so inlaying a figure in relief, and fig. 13 is a full view of the figure in part seen in fig. 11.

By my process or invention, there are thus performed, and by one and the same operation, first, the moulding or shaping of the article heretofore done by one or the first operation; second, the shaping or configuring the surface to receive any inlaid or inserted plate or design, which has heretofore required a separate process or labor, and one to be performed after the moulding has been finished; and, third, the fastening the inlaid or

inserted plate, whatever its form or nature, which has also heretofore had to be done separately and distinct from the others. The fastening of the inserted plate is also effected without pins or rivets, and more permanently than by their use. The whole result is thus obtained, not only with much greater economy, but in a better manner.

As is well known, the surface of the moulded material can be embossed or figured according to any pattern or device prepared by engraving or sinking the surface of the mould or die; and it will be at once apparent that by combining these two processes of embossing and inlaying, whether *in relief* or otherwise, a new and greatly-improved and more beautiful style of ornamentation is at once introduced or rendered possible, and one which is capable of being varied to an almost unlimited extent.

By such process of inlaying, also, as it does away with the necessity of "letting in" the metallic figure into the moulded article, after it has been moulded, and also with the further operation of riveting or fastening such plate, after the surface has been fitted to receive it, and as the moulded material is made to perfectly embrace and closely fit around every point of the inlaid plate, a much more perfect and artistic operation or result can be obtained than when the metallic or other plate is inserted in or attached to the article after it is moulded and fastened by rivets, or by any artificial means.

The pressure requisite to cause hard rubber to take the form of any mould is sufficient to cause the same material to closely surround and tightly grasp or embrace any plate or device which it may be desired to permanently attach to or insert in it.

The plates or designs to be inlaid or inserted need not necessarily be of metal, but may be of any material which will bear a degree of heat greater than that required for pressing hard rubber, and firm and solid enough so that the substance moulded will be forced over and around the same.

What I claim as new, and what is desired to be protected by Letters Patent, is—

1. The dies, constructed with the cavities 3 3', when made in the form described and shown, for the purpose of moulding watch-cases and lockets of hard rubber, substantially as herein set forth.
2. As a new manufacture, watch-cases and lockets, when made of hard rubber, by means of the herein-described dies.

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Witnesses:

S. D. LAW,

FRED. B. SEARS.