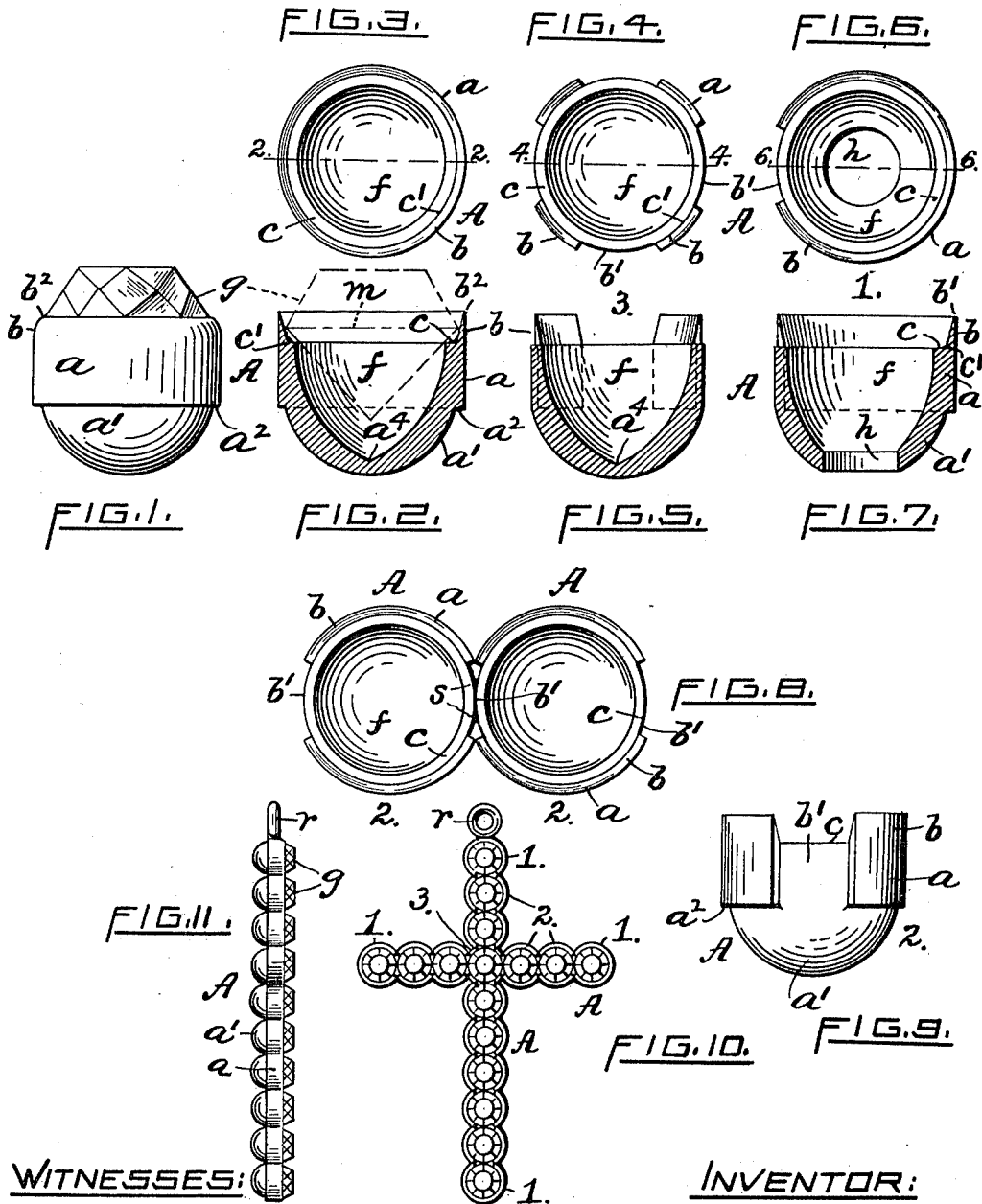


F. A. FAIRBROTHER.
SWAGED GEM SETTING.

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SWAGED GEM-SETTING.

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To all whom it may concern:

Be it known that I, FREDERIC A. FAIRBROTHER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Swaged Gem-Settings, of which the following is a specification.

My invention relates to gem-settings of the class formed integral from metal stock, and it consists in certain novel features of construction, all as hereinafter set forth and claimed.

The object I have in view is to produce, preferably by swaging, from suitable, comparatively thick, flat stock a cup-shaped setting or unit for securely holding a stone or gem therein. The units embodying my present improvement are, however, more particularly devised for use in "cluster work", so-called, wherein a plurality of units are disposed or arranged with relation to one another and then soldered together, thus producing various designs.

In my improved gem-setting, one of its novel features is to construct it so that when viewed from the side, its surface will present the appearance of solid, imperforate metal, and so that when a number of the units are soldered together they will present a continuous surface of metal. In lieu of providing the setting with the usual elongated individual prongs or "cramps", the upper perimeter or edge of the side wall, *i. e.*, the surface just referred to, terminates in a very thin or attenuated portion, having its inner side extending circumferentially downward therefrom a short distance and merging into a narrow, inwardly projecting, continuous circular flange, adapted to constitute the seat for the gem or stone to rest upon. As thus devised, the body proper of the setting is comparatively, but not uniformly, thick throughout, thus insuring strength and mass of metal at desired portions, and capable of being readily operated upon and not requiring additional "backing" when a plurality of units are joined together with solder.

The stone is secured in place by pressing inward the comparatively thin upper portion of the setting against the girdle of the stone and at the same time turning the said extremely thin upper edge of the setting slightly over and against the face of the stone, the operation being quite unlike the

bending of a prong of uniform thickness over a stone as in ordinary settings.

Thus, it will be seen that my improved gem-setting possesses a very strong and rigid body below the seat line and a minimum of metal above it, the construction being such as to permit a snug grouping of the units and present a continuous border of metal exterior of the stones held therein, the actual turned over rim or edge of each unit extending but slightly above the corresponding edge of the stone, as before stated. It may be added, that in my improved gem-setting the disposition of the metal forming the top edge flange is such that a minimum of pressure upon the extreme upper part of it will readily bend it and set it over inwardly against the edge of the stone sufficiently to hold the latter in position. As thus devised, it will be seen that the entire mass of metal in the flange is not bent bodily in securing the stone to the setting.

In the accompanying sheet of drawings, Figure 1 represents, in greatly enlarged scale, a side elevation of my improved gem-setting, showing a gem mounted therein, as produced by swaging from comparatively thick stock. In this form the unit is more especially adapted for use as a single or individual setting. Fig. 2 is a vertical sectional view of the gem-setting or unit before the gem is secured therein, the section being taken on line 2 2 of Fig. 3. Fig. 3 is a corresponding top plan view. Fig. 4 represents a top plan view of the unit, showing its gem-holding edge or flange, having a plurality of openings therein, or being non-continuous circumferentially, thereby adapting it to be employed in cluster work. Fig. 5 is a vertical sectional view, taken on line 4 4 of Fig. 4. Fig. 6 is a plan view of the unit, further modified. Fig. 7 is a sectional view of it, taken on line 6 6 of Fig. 6. Fig. 8 represents a top plan view of a pair of units, soldered together. Fig. 9 is a side elevation of one of the last-named units. Fig. 10 represents a front elevation of an article of jewelry, as a charm pendant, formed wholly from a series of my improved gem-carrying units, soldered together; and Fig. 11 is a corresponding side or edge view of it.

My improved gem-setting unit A is swaged integral from comparatively thick stock or plate; the tools or swaging means

employed being devised so that in producing it, the metal is disposed unequally. The barrel or body portion proper a of the unit is or may be cylindrical, or it may have any other shape cross-sectionally, the outer surface of its wall in a longitudinal direction being parallel with the longitudinal axis of the setting, thereby adapting it to present greater contact area when a plurality of the units are to be soldered together. The bottom or base end portion a^1 of the unit, as drawn, has a concavo-convex form cross-sectionally. The maximum diameter of the base part at its junction with the body part is somewhat less than the latter, thus forming a small, outer lateral peripheral rib or shoulder a^2 having one or more shallow grooves or breaks b^1 formed therein and extending longitudinally of the unit. The upper edge of the part a is provided with an inner circumscribing seat or end portion c adapted, when in use, to support a gem or stone thereon. It will be seen, referring, say to Fig. 2, that the thickness of the walls is not uniform, but is materially thicker where strength and rigidity are required. The metal at the bottom of the main or cup chamber f may be considerably thinner than the other portions of the walls; it also may have a self-centering form, as indicated at a^4 .

The metal of the body a is, during the swaging process, extended circumferentially upward a short distance from the said seat part c so as to produce a very thin rim b , terminating in the attenuated edge b^2 . The form of the rim cross-sectionally is substantially wedge-shape. The outer or exterior surface of the rim is a continuation of the corresponding surface of the said shoulder or rib part a^2 . The opposite or inner surface of the rim b extends downward and inward from the sharp edge b^2 and joins the seat c at c^1 , the included angle being very small or acute. I prefer to make the thickness of the rim b at its base equal to the offset part or width of said shoulder a^2 , the outer diameter of the parts a^1 and c being alike.

In securing a gem, as g , to the unit, the gem is placed in the cup chamber f and supported by the seat c —see corresponding position of the gem, indicated by dotted lines in Fig. 2, the girdle m of the gem then lying, say about midway of the depth of the thin circumscribing rim b . Now, upon pressing against the outer peripheral surface of the upper portion of the rim, its extremely thin edge part will be deflected inwardly and engage the adjacent upper surface of the gem, substantially as represented in Fig. 1.

In producing the units to be employed in cluster work, the swaging and forming dies are constructed so as to produce in the

outer surface of the body part a a rib a^2 in which is formed one or more comparatively wide, parallel, longitudinal grooves b^1 , extending through and forming corresponding gaps or openings in the rim b . These combined grooves and openings, it may be observed, are produced in the unit simultaneously with the act of forcing or punching it from the stock or blank. The base of each groove is coincident or concentric with the outer circle of the portion c , all as clearly represented.

In the assembling and joining of the units A to produce cluster work, as for example the article of jewelry shown in Figs. 10 and 11, the outer or end units, designated 1, have each only one groove and gap in its surface; the center unit 3 four, and the intermediate units 2 two. The width of these openings is such that when the units are assembled and connected or joined together in any figure or design, the body parts a will present the appearance of an unbroken or continuous metal surface—see Fig. 11. Moreover, as thus constructed, the contiguous metal of each pair of units at the bottom of the grooved parts affords a comparatively large and true surface for the joining solder, as shown at s Fig. 8; the solder itself being wholly concealed when viewed from the front and side. The gems themselves are thus brought into close contact with one another, thus presenting a more brilliant and ornamental effect. In some cases the bottom of the units may, if desired, be pierced with a hole, as h , Figs. 6 and 7, to permit the passage of light rays.

I am aware that gem-settings, or "box-settings", as they are sometimes termed, have been produced from tubular or annular stock, the unit in such case having its upper portion reduced in diameter both exteriorly and interiorly to form a thin annular flange or neck adapted to be bent inward to contact with the stone or gem. While such former units may be assembled, arranged and soldered together in a "cluster" form, it is obvious that comparatively large open spaces and distances must necessarily intervene between the adjacent outer edges or girdles of the thus grouped gems, although the contiguous sides or walls of the body part of the metal units, or gem-settings, are in immediate contact with one another and united by solder. My improved unit differs greatly from such former construction in that it actually permits the gems to be grouped together without any space whatever between them (see Figs. 10 and 11), in fact the outer peripheral edges of the gems touch one another, the outer surface of the body portion a of the respective units at the same time also engaging one another and being joined by solder. By means of my improved units gems may be arranged in

the closest proximity to one another to form a cluster having correspondingly greater brilliancy and in which none of the metal whatever will be visible, when viewed from the front face of the cluster, except alone the tip edges of the rim *b*, and these members may if desired be made very narrow.

I claim as my invention:

1. As an improved article of manufacture a swaged one-piece gem-setting unit adapted for use in cluster work, the same comprising a cup-shaped body or barrel part proper having the upper end of its wall provided with a substantially continuous unobstructed circumferential seat, adapted to support thereon a stone or gem whose maximum diameter is the same as that of the said barrel part, said seat portion being uniform in width or thickness throughout and substantially uniform with the thickness of said wall, and an integral circumferential rib having one or more breaks or grooves in its periphery, said rib extending longitudinally of and projecting laterally from the barrel part and also upwardly beyond and independently of the said seat.

2. As an improved article of manufacture a swaged one-piece gem-setting unit adapted for use in cluster work, the same comprising a cup-shaped body or barrel part proper having the upper end of its wall provided with a substantially continuous unobstructed circumferential seat, adapted to support thereon a stone or gem whose maximum diameter is the same as that of the said barrel part, said seat portion being uniform in width or thickness throughout and substantially uniform with the thickness of said wall, and an integral circumferential rib having one or more breaks or grooves in its

periphery, said rib extending longitudinally of and projecting laterally from the barrel part and also upwardly beyond and independently of the said seat, the said part of the rib above the seat being substantially wedge-shape transversely and terminating in an attenuated edge.

3. In an article of jewelry, the combination of a plurality of cup-shaped gem-settings arranged in cluster form having the sides of contiguous units in actual contact with one another and united by solder, each of said gem-setting units having at its upper end a narrow unobstructed annular flange uniform in thickness throughout its circumference adapted to form a seat for a gem or stone, an integral circumferential rib having one or more shallow breaks or grooves in its periphery, said rib extending longitudinally of the body portion of the setting and projecting both laterally and upwardly beyond the said seat or flange part and terminating in an attenuated edge, constructed and arranged whereby when the outer surfaces diametrically of the body portion proper of the contiguous units are in actual contact and soldered together the outer peripheries of the flanges or seats thereof at said contacting points are also in engagement, thereby producing a cluster setting in which gems may be grouped together without any space between them at the said points where the units are joined.

In testimony whereof, I have affixed my signature in presence of two witnesses.

FREDERIC A. FAIRBROTHER.

Witnesses:

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CALVIN H. BROWN.