F. N. PALMER.

HOLLOW METAL FLOAT.

APPLICATION FILED JUNE 4, 1908.

967,231. Patented Aug. 16, 1910.

Fig. 1.

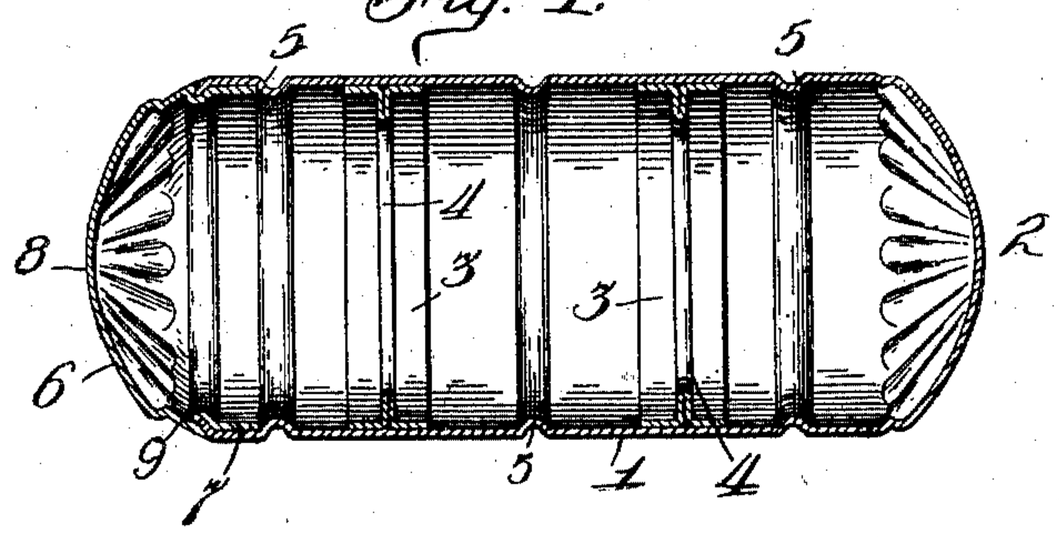

Fig. 2.

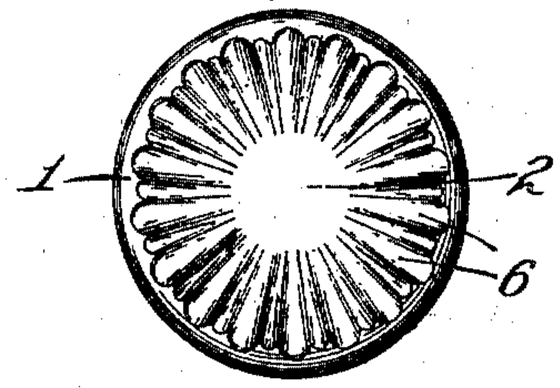

Fig. 3.

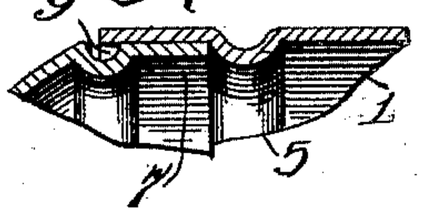

Fig. 4.

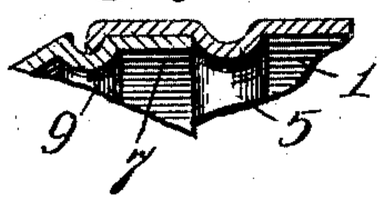

Fig. 5.

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UNITED STATES PATENT OFFICE.

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HOLLOW METAL FLOAT.

967,231.

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To all whom it may concern:

Be it known that I, FRANCIS N. PALMER, a citizen of the United States, residing at Kenosha, in the county of Kenosha and State of Wisconsin, have invented a certain new and Improved Hollow Metal Float, of which the following is a specification.

This invention relates to an improved hollow metal float, adapted for use in connection with fish nets and for analogous purposes.

Among the salient objects of the present invention are to provide a construction which will have a maximum strength to resist external or collapsing pressures with a given weight or thickness of metal; to provide a construction, the component parts of which may be formed from sheet metal by means of dies and therefore made both economically and accurately; to provide a construction in which the joint where the parts are united is easily and reliably made hermetically closed and at the same time of a strength fully equal to any other part of the float; to provide a construction in which the cylindric sides are internally reinforced at intervals, thus enabling a thinner gage of metal to be used for the device as a whole; to provide a construction which may be conveniently attached to the net by means of cords, and in general to provide an improved device of the character referred to.

In this particular art it has been found desirable to make these hollow metal floats from aluminum; this metal being peculiarly adapted for this purpose because it is non-corrosive, it is extremely light, and joints or openings can be spun together by the ordinary spinning operation in such manner as to produce a hermetical joint. Inasmuch as this metal is comparatively expensive, and quite soft in character, it becomes important to provide a construction which while sufficiently strong to resist collapsing pressure is nevertheless so made as to require a minimum amount of metal.

The invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims.

In the accompanying drawing—Figure 1 is an axial section of the completed float; Fig. 2 is an end elevation looking at the left-hand end of the device, as seen in Fig. 1; Figs. 3, 4 and 5 show on an enlarged scale fragmentary portions of that part of the float through which the joint extends; the several stages of the formation of the joint being shown in the three figures.

In carrying my invention into effect, and proceeding in the most approved manner, I first draw out an elongated cup-shaped member 1, having cylindric sides and a convex end 2, which latter is corrugated in radial lines, as indicated at 3, (Fig. 2). The operation of forming the cup is performed by the use of suitable drawing dies. I next trim off the open end of the cup-shaped blank evenly at right angles to its axis, and then insert and suitably space apart one or more reinforcing rings, as 3, 3. The construction of these rings constitutes one feature of the present invention. In forming the same I first provide a continuous band-like ring of the same external diameter as the internal diameter of the float, and about mid-width of this band I roll in or otherwise form a rather wide groove, and then by means of suitable tools compress the ring edgewise and thus form an integral inwardly extending double-thick flange 4. The ring when thus completed is of T-shape in cross section, which form obviously possesses great strength against collapsing pressure, while the exterior of the ring is broad, or band-like, and serves to support a substantial area of the side of the float. These rings are made to fit tightly within the float, and where more than one is used are suitably spaced so as to best support and strengthen the side walls of the float. I next proceed to roll into the side walls of the float a plurality of circumferential grooves,—there being three such grooves, designated 5, in the float shown. These grooves are conveniently formed by placing the shell on a suitable mandrel die of slightly less diameter than the smallest internal diameter of the reinforcing rings 3, circumferentially recessed to accommodate the several reinforcing rings and circumferentially grooved to correspond to the positions of the grooves, which are to be formed in the shell, and with a second external roller or mandrel die, provided with circumferential beads or ribs, roll the interposed shell into the grooved form shown. By means of suitable drawing dies I also form a cap 6, having cylindric sides 7 adapted to fit snugly inside the end of the main shell, and also provided with a convex corrugated end 8, substantially like the corrugated opposite end of the float, except that the corrugations terminate a short distance

radially inside the periphery of the cap, as seen clearly in Figs. 1 and 2. The axial length of the cylindric portion of the cap is such that when seated in the shell its inner end or edge rests against the internal bead of the groove 5 at that end of the float. Said cap is provided also with a circumferential groove 9, which is arranged coincident with the end margin of the main shell, so that the latter may be crimped into said groove, as shown most clearly in Figs. 3, 4 and 5. Having assembled the parts, I place the float in a suitable lathe and by means of a spinning tool first crimp the edge of the main shell into the groove 9, as seen in Fig. 4, and thereafter spin the metal of the cap forming the outer side wall of the groove 9 down over the in-turned edge of the main shell in such manner as to produce a smooth, uniform surface, practically identical with the corresponding portion of the opposite end of the float. By forming the joint, and uniting the parts in the manner described, no difficulty is experienced in producing a hermetically closed joint in which the union of the parts is undiscernable and is in fact practically integral.

It will be understood from the foregoing that all of the operations of forming the device are practically machine operations; that they may be performed very rapidly and with almost absolute uniformity and by labor of only moderate skill. Moreover, the construction possesses a maximum strength; the thinning of the wall of the cap at the point where the joint is spun together being located at a point where the float possesses maximum strength, and being furthermore reinforced by reason of the double thick wall immediately contiguous thereto. I find in practice that the use of the internal reinforcing rings enables me to make the metal much thinner over all, for securing a given strength against collapsing.

It will be obvious that the details of construction may be somewhat modified without departing from the invention.

I claim as my invention:

1. A hollow metal float comprising a pair of cylindrical cup-like bodies each closed at one end, and open at the other, and having telescopic engagement with each other, the inner telescoping member being provided at its outer side with a circumferentially extending groove opposite the edge margin of the outer member, said edge member and said inner member being spun into an integral union having a smooth exterior.

2. A hollow metal float comprising a cylindrical main body closed at one end, an end closure member having an annular flange adapted to telescope within said main body, and a continuous cap portion integral with said flange and provided at its lower end with a circumferentially extending groove, and the lower edge of said end cap portion spun or drawn over the end of said main body into a union having a smooth exterior surface, the end of said main body being first crimped into said groove.

3. A hollow metal float comprising a cylindric main body open at one end, an end closure member telescoping within said open end and provided exteriorly at points remote from its lower edge with a circumferentially extending groove into which the end margin of the main body is crimped, a series of circumferentially extending corrugations upon said main body, a plurality of reinforcing rings arranged within said float, and supporting the side walls against collapsing, each ring being of band like form and provided intermediate its edges with an annular flange extending at right angles to said band like portion.

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