(No Model.)

A. J. WRIGHT.

FLOAT.

No. 450,856. Patented Apr. 21, 1891.

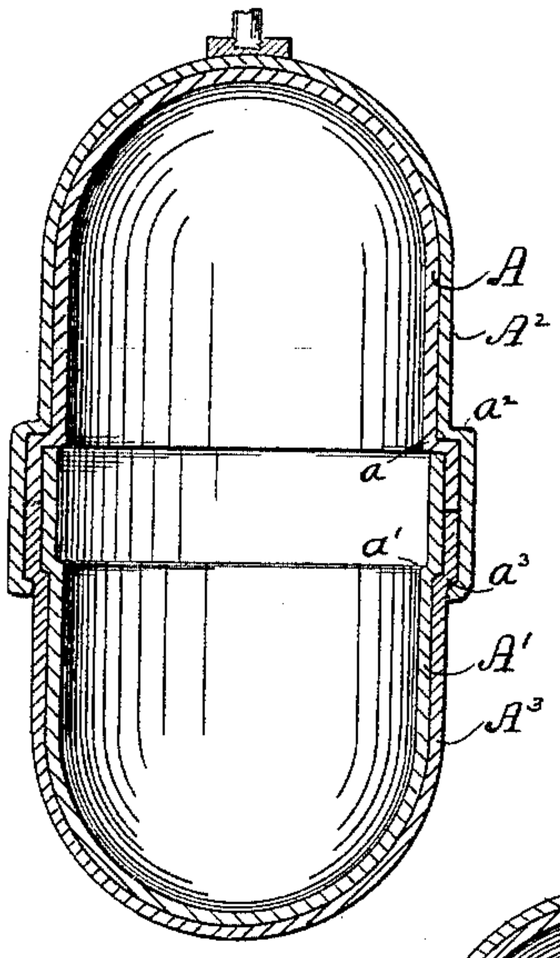

Fig. 1

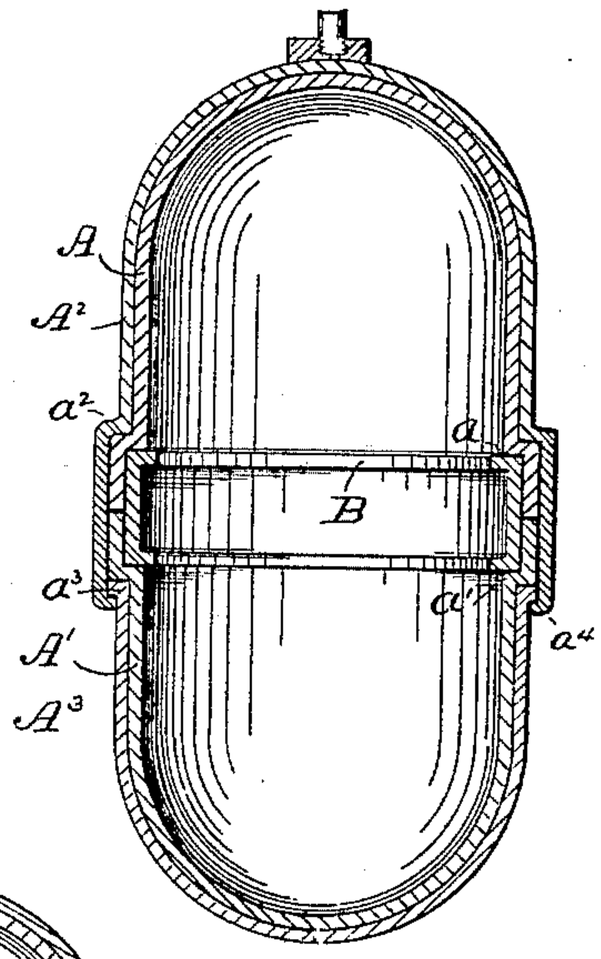

Fig. 2

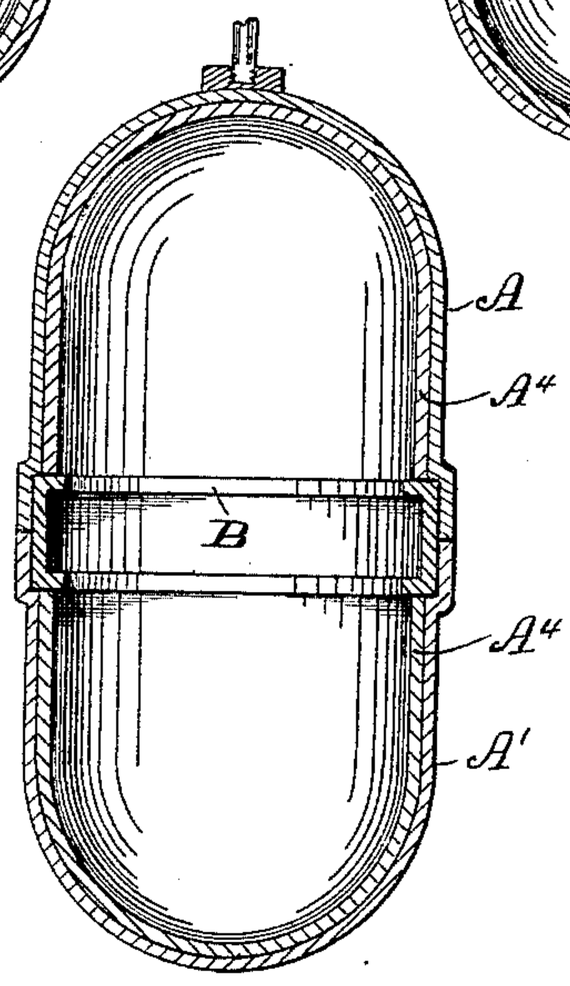

Fig. 3

WITNESSES

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ALLEN J. WRIGHT, OF CLEVELAND, OHIO.

FLOAT.

SPECIFICATION forming part of Letters Patent No. 450,856, dated April 21, 1891.

Application filed August 6, 1890. Serial No. 361,214. (No model.)

To all whom it may concern:

Be it known that I, ALLEN J. WRIGHT, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Floats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in floats the strength of which has heretofore been limited and in many cases unequal to the demands of modern mechanics; and it consists in the novel mode of construction whereby practically unlimited strength is obtained with the least possible increase in weight, while imperfections due to latent defects in the material are avoided and the expense of construction is lessened.

It has until the invention of my patent No. 340,534 been regarded as impracticable to manufacture floats capable of withstanding very high pressure, or even such pressure as is commonly carried on the boilers of ocean-steamers. Even in the manufacture of such floats as have been used it has been found necessary to use very thick metal in order to get the required strength, and in most cases this metal has been so heavy that it was impracticable to spin it, and the manner of constructing the float was to hammer it into form over wooden or other blocks, which, by the way, is the same primeval form of handling sheet-copper that was in vogue before the spinning process was discovered. This plan of constructing floats is extremely unsatisfactory in many respects. The process is a very slow, and hence expensive, one, requiring considerable peculiar skill and a great amount of labor, while the result is far from satisfactory, the floats being very heavy and weak, as compared with their weight, and lacking in buoyancy, while hidden defects in the metal have proven fatal to their usefulness. My invention obviates all this trouble, doing away with the waste of labor, increasing the buoyancy of the float, which is an important consideration, and giving it practically unlimited strength, while obviating all the trouble which has hitherto existed on account of the imperceptible flaws in the copper or other material. These flaws or imperfections have been one of the chief obstacles to success in making floats beyond the objectionable feature of soldering or brazing, as set forth in my patent No. 340,534. They arise from various causes—such as imperfect rolling, foreign substance on the sheet when being rolled, burning of tne metal in annealing, poor material, &c.—and are generally small and imperceptible to the eye, frequently existing below the surface, and generally escape detection when the sheet of metal is examined before making it up into floats. Nevertheless, when the completed float is subjected to pressure, as it usually is, the external pressure forces steam or causes water to "sweat" through the imperfect spots in the metal, as is well known, and this water or steam condensing and collecting in the float eventually loads it down and destroys its buoyancy. Furthermore, the pressure is more liable to collapse the float, if such defective spots exist, as the metal is correspondingly weak at such spots, and a float is no stronger than its weakest point. The importance of avoiding such leakage and weakness in floats will be appreciated when it is understood that for many purposes floats are required to withstand an external pressure of one hundred to one hundred and fifty pounds to the square inch of surface, and often in excess of these figures. I have recently had occasion to construct large floats, which when in use are required to sustain an average working-pressure of one hundred and sixty pounds to the square inch. In large floats—say of a diameter of twelve inches or upward—the pressure sustained is enormous and necessitates very great strength, while the buoyancy necessary to render them useful requires that they shall at the same time be light. The combined qualities of strength, lightness, and impermeability are secured by constructing the floats of sheet metal, copper being preferred on account of its tenacity and ductility, by employing more than one thickness of the metal. It is practically impossible that flaws or defective spots should occur at the same point in each layer, but to prevent water, steam, or other substance in which the float may be used from being forced through the outer shell, and thence through the successive

inner ones, as might occur if the various layers of metal were not in perfectly-close contact throughout, a cement or obstructing substance may be used, which when hardened by time will successfully resist all such action and at the same time form a perfect contact between the shells, thereby greatly strengthening the float.

The important quality of tightness, so far as it relates to the joint, I have secured by my invention described in Letters Patent No. 340,534 and by an improvement thereon which is the subject-matter of my application for patent filed concurrently herewith and designated as Case B, Serial No. 361,215.

In the drawings, Figures 1 and 2 represent central vertical sections of a float constructed according to my invention, while Fig. 3 is a similar view showing a slight modification of the construction.

A A′ A^2 A^3, &c., represent the respective parts of the shell of the float.

B represents a flanged ring sometimes used in constructing the float, while a a' a^2 a^3 represent shoulders or offsets formed on the several pieces for the purpose hereinafter set forth.

In the drawings I show the forms of making the joint after the manner covered by Letters Patent granted to me; but it is obvious that the invention which is the subject of this specification and application is equally applicable to floats of the ordinary construction.

I prefer to make these floats, in so far as this invention is concerned, in the following manner: The inner shells A A′ are first formed in the desired shape in the usual way and joined together. To add the successive layers of metal the float thus formed may be used as a former, the successive layers being spun down over it, taking care to have their edges sufficiently overlapped to form a tight joint with or without the aid of a cement substance. To guard against any possible displacement and add to the strength, I prefer to form shoulders a a' in the inner layer, to which the other layers are made to conform by spinning down shoulders a^2 a^3, &c., thereon, the outer layer being spun down at its edge over the shoulder below it, as shown at a^4, Fig. 2, although this is not essential except where the requirements are exceptionally exacting. It is also possible to construct a float on this principle by forming separate shells, which are inserted into each other so as to come into close contact, or by spinning the different layers down on each other before putting the float together, the latter being then regarded and treated as a single part. In making these floats after either plan the cement substance referred to may be brought into use by coating one or more of the layers therewith before spinning or or otherwise bringing them into contact.

Although but two layers are shown in the drawings and are sufficient in most cases, I do not limit myself to the number of layers shown, as I employ as many as may be found desirable.

In the manner before described I have constructed large floats which have withstood a pressure of upward of three hundred pounds to the square inch, which, I believe, is far in excess of what any float otherwise constructed has sustained, and it is certain that these floats are very much lighter, and consequently of greater lifting capacity, and hence greater value to mechanics than any heretofore made capable of standing even ordinarily high pressure. Furthermore, by the process covered by this invention it is practical to make floats capable of withstanding any pressure that is at all likely to be desired, there being practically no limit to the strength which can in this manner be given to a float.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A float composed of a shell having layers made to conform to each other by pressure, substantially as described.

2. A float composed of layers of metal superposed on each other by spinning, substantially as described.

3. A float composed of layers of metal successively applied by spinning over the preceding layer, substantially as described.

4. The herein-described methed of forming floats, consisting in applying successive layers and forcing each into close contact with the preceding layer, substantially as described.

5. In a float, the plurality of layers previously shaped and made to conform to each other by pressure, substantially as described.

6. In a float composed of layers, a cementing or obstructing substance between them, substantially as and for the purposes described.

In testimony whereof I hereto affix my signature in presence of two witnesses.

ALLEN J. WRIGHT.

Witnesses:
W. H. NEWTON,
L. PRENTISS.