May 19, 1931. A. R. DE WITT 1,805,812

BOAT SEAM SEALING METHOD

Filed Feb. 24, 1930

Fig. 1.

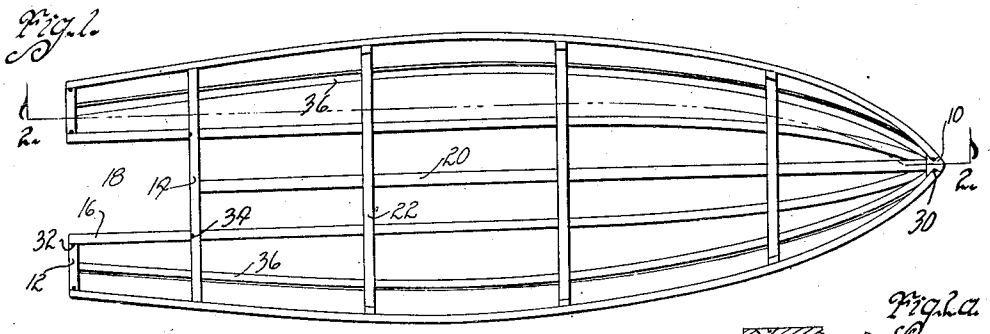


Fig. 1a.

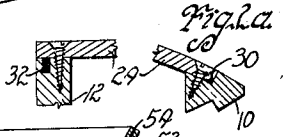


Fig. 2.

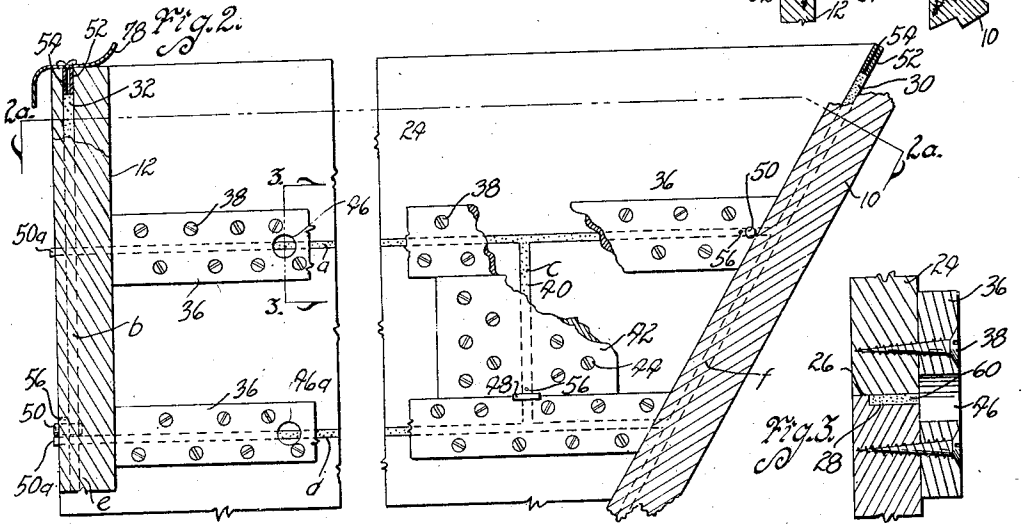


Fig. 3.

Fig. 4.

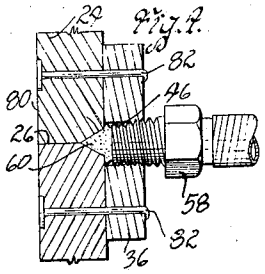


Fig. 5.

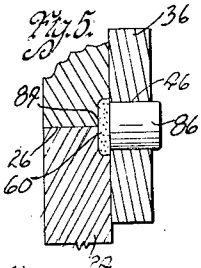


Fig. 6.

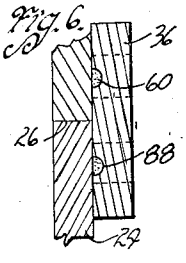


Fig. 7.

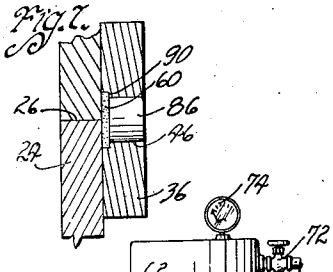


Fig. 8.

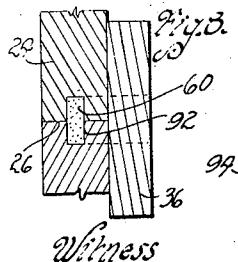


Fig. 9.

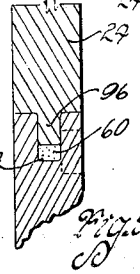
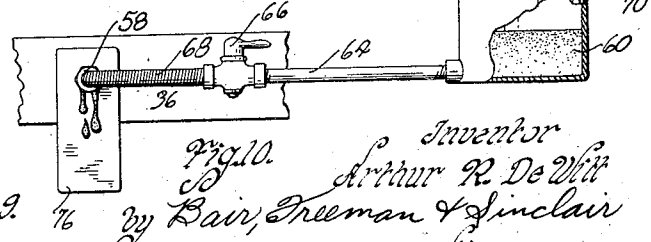


Fig. 10.



Witness
Edw. Seeley

Inventor
Arthur R. De Witt
By Bair, Freeman & Sinclair
Attorneys

Patented May 19, 1931 1,805,812

UNITED STATES PATENT OFFICE

ARTHUR R. DE WITT, OF HARBOR SPRINGS, MICHIGAN, ASSIGNOR OF ONE-HALF TO CARL L. WRIGHT, OF HARBOR SPRINGS, MICHIGAN

BOAT SEAM SEALING METHOD

Application filed February 24, 1930. Serial No. 430,499.

The object of my invention is to provide a method for sealing boat seams, such method being simple, durable and comparatively inexpensive to perform.

More particularly it is my object, in a boat having a plurality of planks, a stem, a stern or transom and wood members arranged in contact with each other to provide channeled seams between the various parts of the boat, these seams communicating with each other whereby a seam system results.

A further object is to force an elastic filling compound such as marine glue or the like into the seam system whereby the joints or seams between the members of the boat are efficiently sealed against the entrance of water.

A further object is to provide a seam filling method which may be quickly performed with a minimum amount of time and labor and one which eliminates all undesirable messiness of sealing compound being squeezed out of the seams, which will later have to be scraped from the boat

A further object is to provide channeled seams throughout the boat construction with a means for introducing a filling compound by force into one point of a seam with sufficient force to transmit the filling compound throughout the seam system whereby with a single operation, such a seam and all seams communicating therewith are filled.

A further object is to provide a sealing method for seams which when used will eliminate all possibility of leakage of the boat when the members swell or shrink, depending on the changing environments to which the boat is subjected.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of a boat in which my seam filling method is used.

Figure 2 is an enlarged sectional view on the line 2—2 of Figure 1.

Figure 2*a* is a sectional view on the line 2*a*—2*a* of Figure 2.

Figure 3 is an enlarged sectional view on the line 3—3 of Figure 2 and illustrates one of the seams of the boat.

Figures 4, 5, 6, 7, 8 and 9 illustrate other types of seams which have been filled by my seam filling method.

Figure 10 is a diagrammatic view showing one means for introducing the filling compound under pressure into the seam system of the boat.

On the accompanying drawings I have used the reference character 10 to indicate the stem post of a boat A. The reference numeral 12 indicates transoms in the stern of the boat. A partition 14 is illustrated spaced ahead of the transoms 12 and is connected with the transoms by walls 16 which form a well 18 for the reception of an outboard motor. My sealing method, of course, is adaptable for the type of boat having a stern wall extending completely across the rear end thereof and for other types of boats as well.

The keel of the boat A is indicated at 20 and the ribs thereof at 22. A plurality of planks 24 are secured to the outside of the ribs 22, to the stem post 10 and to the transoms 12. The planks 24 are butt-jointed as indicate at 26 in Figure 3 and one edge of each plank 24 is provided with a rabbet 28 whereby a channeled seam is provided. There is also a channeled seam between the stem post 10 and the planking 24 which may be made by beveling the edge of the planking as indicated at 30 in Figure 2*a*. A channeled seam is also provided between the transoms 12 and the planking 24 by means of grooves 32 formed in the transoms.

The grooves 32 also make a channeled seam between the walls 16 and the transoms, while channeled seams are provided between the walls 16 and the partitions 14 by grooves 34 formed in the partitions as in Figure 1.

Ordinarily the butt jointed planks 24 are held assembled together by means of battens 36 held in place by screws 38. In the event

that the planking is spliced a channeled seam 40 is provided between the abutting ends of the spliced plank as shown in Figure 2 and the splice is covered with a splice block 42 held in position by screws 44.

I have found it somewhat impractical to fill the entire system of communicating seams with elastic compound from one opening, as the opening 46 in Figure 2, but have found it feasible to fill one longitudinal seam of the planking from such an opening and portions of the seams 30, 32 and 40 which communicate therewith. To insure that only such portions of the seam system shall be filled, I provide stoppers at various points, such as a strip of metal 48 or plugs 50 driven into position to block the channeled seams.

Open ends of the seams are then plugged with plugs 52 through which vent openings 54 extend, while vent openings 56 may be provided adjacent the stoppers 48 and 50.

It will now be obvious that the system of seams indicated by the reference characters *a*, *b* and *c* may be filled from the opening 46 by screwing into such opening a sleeve 58 or other suitable fitting through which the compound 60 may be introduced into the seam system under pressure. A block 50*a* may be inserted where desired to close up the end of a seam that communicates with other seams as shown at the left hand side of Figure 2.

In Figure 10 I have illustrated one way of forcing the compound into the seams which consists of a storage tank 62 to contain the compound, which communicates by means of piping 64, a shut-off valve 66 and piping 68 with the fitting 58. Air or fluid under pressure may be introduced into the tank 62 from a supply pipe 70 through a valve 72. A pressure gauge 74 may be used to indicate the pressure exerted on the compound 60 within the storage tank 62. It will be obvious that other types of pressure producing devices could be utilized for forcing the compound into the seams.

It is preferable before inserting the fitting 58 into the opening 46 to paste a piece of paper or the like 76 over the opening to act as a collector for any compound that might squeeze out around the fitting 58 and to also paste collectors 78 over the vent openings 54 of the plugs 52 and over the vent openings 56.

The collectors 78 are perforated so that when the compound begins squeezing out of the vent openings it will collect on the collectors 78 instead of getting on to the wood of the boat construction from which it would have to be later scraped. It may here be mentioned that the purpose of the vent openings 54 and 56 is to allow air to escape from the seam system and also to indicate when the seam is filled by the compound squeezing out of the vent openings, whereupon the vent may be plugged for thereafter retaining the compound in the seam system.

After the seam system *a*, *b* and *c* has been filled the plugs 48 and 50 may be removed, and the seam system *d*, *e* and *f* may be similarly filled through the opening 46*a* after the stoppers 48 and 50 have been removed. The opening left by these stoppers will then serve as vent openings.

As shown in Figure 4 the channeled seam may be made by beveling the edge of the planking 24 as indicated at 80 and the battens 36 may be secured in position by clinch nails 82, or other suitable means.

As shown in Figure 5 both the abutting edges of the planks 24 may be rabbeted as indicated at 84, for forming channeled seams. In this figure I have illustrated the opening 46 as having a plug 86 driven therein after the fitting 58 is removed. Where the planking 24 is exceptionally thin as shown in Figure 6 channeled sealing grooves 88 may be provided in the batten 36. In Figure 7 a single groove 90 is illustrated. In this figure the plug 86 is illustrated as being trimmed off flush with the batten 36 which is always done after the plug is driven snugly into position.

In Figure 8 central grooves 92 are cut in the planks 24 to form the channel grooves for compound 60, while in Figure 9 a tongue and groove joint is illustrated in which the groove 94 is deeper than the tongue 96 for forming the channeled compound groove. In the type of construction shown in Figure 9, battens can be dispensed with.

Heretofore it has been customary to seal the joints in a boat as the building progresses by gluing the batten to the planking whereupon tightening of the screws 38 caused the glue to squeeze out around the contacting edges of the batten and it was then necessary to scrape this glue away before the boat was finished with varnish or the like. This is a messy and time consuming job when compared with applicant's seam sealing method, in which the entire system of seams is quickly sealed after the building of the boat has been completed. By using the collectors 76 and 78 none of the compound gets on to the wood of the boat and consequently the removal of any drops of compound is facilitated.

Any suitable compound may be used, such as Kuhl's elastic seam compound or marine glue. This material has the quality of being elastic so that when the boat seam swells or shrinks the compound fills the seam at all times and hence this seam method is especially desirable for boats subjected to varying environments. Life boats, for instance are most of the time on the deck of the ship and do not come in contact with water. The

planking consequently shrinks and the boat leaks when placed in water, while with applicant's sealing method the seams will be water tight at all times.

This seam method is especially desirable on high speed motor boats where vibration, caused by waves hammering against the boat, tends to loosen the seams and causes them to leak. The seam method enables a fine cabinet-like joint between the planks and that is very desirable in racing craft where the hull of the boat must be particularly well finished to reduce friction to a minimum. My convenient method of sealing the seams of the boat greatly facilitates the construction and quality of a boat and in general is much better than the methods at present employed. After the elastic compound has been forced into the seams, no further caulking is necessary. This is a difficulty encountered by other methods of construction.

Sometimes it is desirable to use a somewhat solid compound which can be reduced to a liquid form by heating before being introduced into the seam system. In such event, hot air may first be introduced into the seam system for heating the wood adjacent the seams, after which the hot compound can be forced through and will flow freely from the introduction opening to the far ends of the seams.

This sealing method may be employed by arranging parts of the boat construction in slightly different ways from the arrangement shown on the drawings without departing from the real spirit and purpose of my invention and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. A boat seam sealing method comprising the construction of a boat with channeled seams, the forcing of heated air thru the seams and the forcing of a sealing compound into the seam at one point under sufficient pressure to force the compound throughout the length of the seam.

2. A boat seam sealing method comprising the construction of a boat with channeled intercommunicating seams, the forcing of heated air thru the seams and the subsequent forcing of a sealing compound reduced to a plastic state by heat into a seam at one point under sufficient pressure to force the compound throughout the length of said seam and the intercommunicating seams.

3. A boat seam sealing method comprising the construction of a boat with channeled intercommunicating seams, the forcing of hot air thru the seams and the forcing of a sealing compound reduced to a plastic state by heat into a seam at one point under sufficient pressure to force the compound throughout the length of said seam and the intercommunicating seams, the open ends of said seams being vented to permit expulsion of heated air and of the compound from the ends of the seams when the seams are completely filled with compound.

4. A boat seam sealing method comprising the construction of a boat with a system of channeled intercommunicating seams, the pasting of collectors over the open ends of said seams, said collectors having openings registered with the channeled portions of the seams, the forcing of a sealing compound into one of the seams at one point under sufficient pressure to force the compound throughout the system of seams, the removal of said collectors after the system of seams has been filled with compound and the plugging of the ends of the seams to prevent further escape of compound from the seams.

5. In a boat construction, a plurality of members contacting with each other, battens covering the seams at the contacting points and channels between the members and battens, said channels being filled with a sealing compound forced into them after the boat is built.

6. In a boat construction, a plurality of members contacting with each other, battens covering the seams at the contacting points and channels between the members and the battens, said channels communicating with each other, and being filled with a sealing compound forced into the seams at one point after the boat is built, the force applied to the compound being sufficient to convey the compound thru the seam into which it is forced and into the communicating seams.

7. In a boat construction, a plurality of members contacting with each other, battens covering the seams at the contacting points, channels between the members and the battens, said channels being in communication with each other and terminating in open ends, said open ends being plugged and vented, means to force sealing compound into a channel at one point, through said channel and through the communicating channels to the plugged and vented ends thereof, said vented ends being thereafter closed against the escape of the compound from the channels.

8. In a boat construction, a plurality of members in contact with each other, battens over the seams between the members, a channel seam system between said battens and said members, an inlet opening into one point of said channel system, outlet vent openings at the far ends of said channel system, means for forcing elastic sealing compound under pressure into said inlet opening for filling the entire channel system with compound and means for thereafter plugging said inlet and outlet vent openings.

9. A boat seam sealing method comprising the construction of a boat with a channeled, intercommunicating seam system, the plugging off of a portion of said system, the forcing of a sealing compound into said portion of the system and the subsequent plugging off of other portions of the system and the forcing of sealing compound into said other portions.

Des Moines, Iowa, February 11, 1930.

ARTHUR R. DE WITT.