

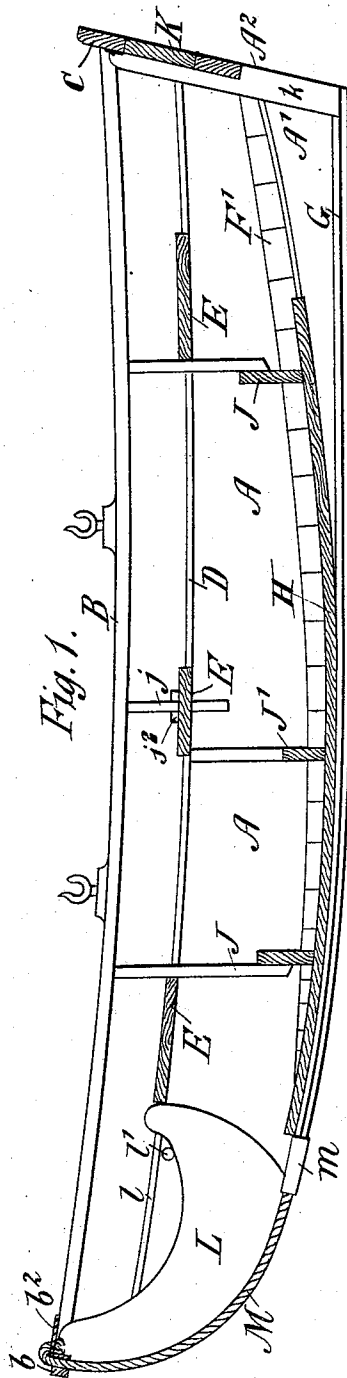
(No Model.)

2 Sheets—Sheet 1.

T. O. SMITH & H. FULLER.
COLLAPSIBLE BOAT.

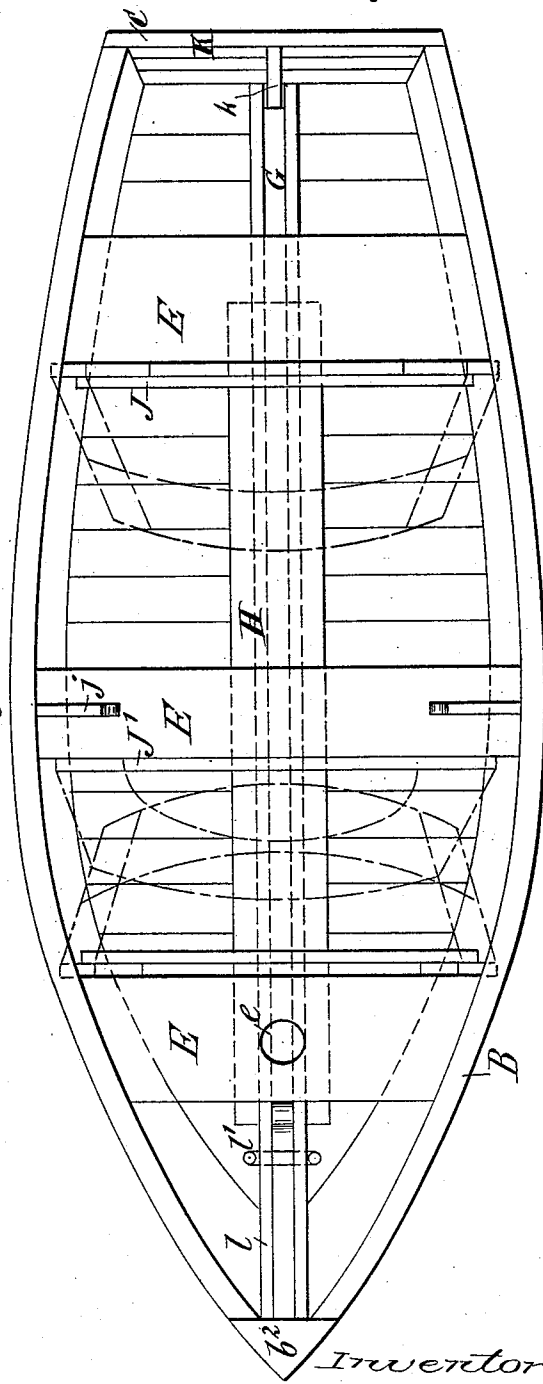
No. 538,749.

Patented May 7, 1895.



Witnesses
Frank William Pattison
Albert Edward Allen

Fig. 2.

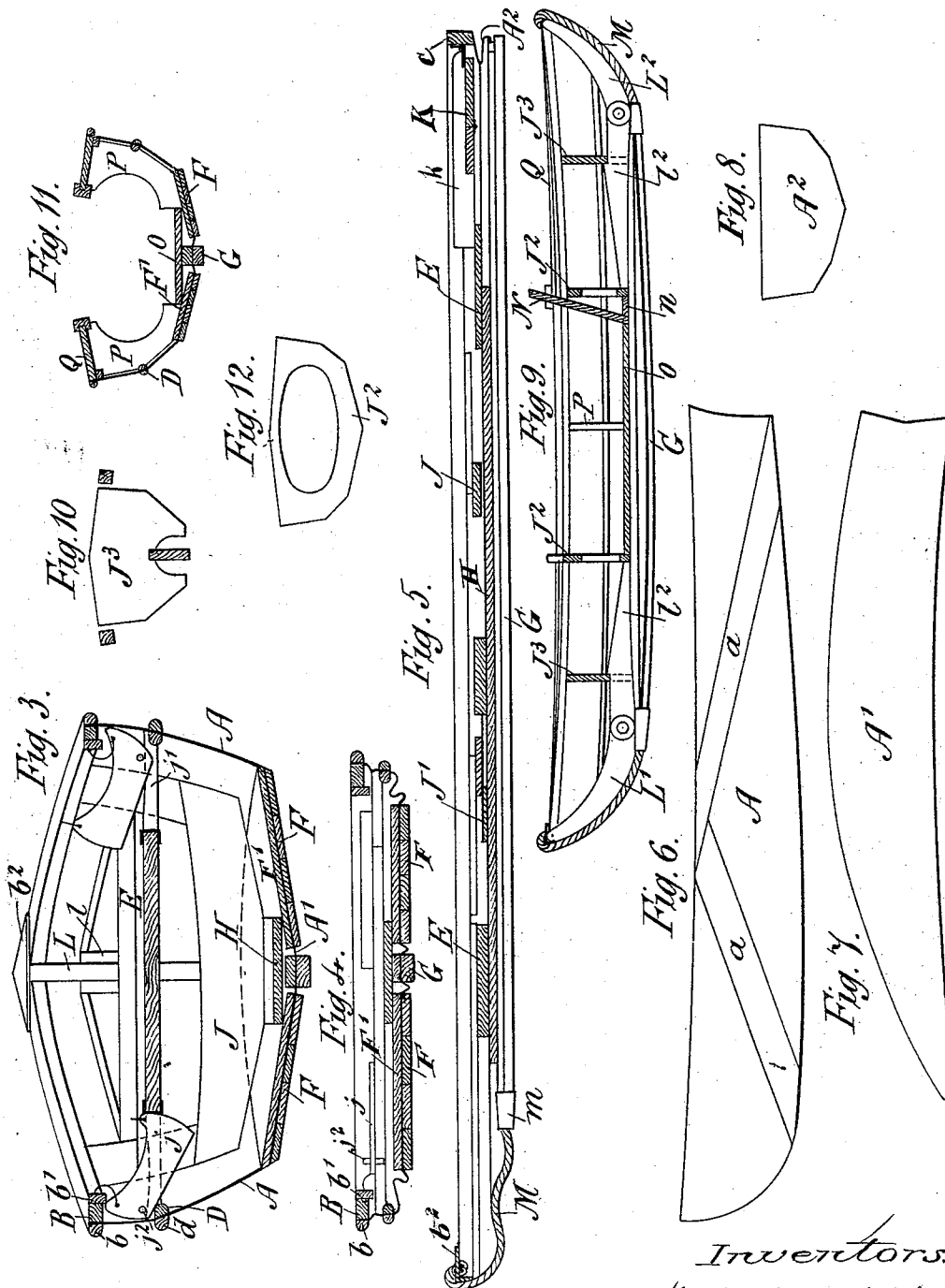


Inventors.
Theophilus Osborn Smith
and Horace Fuller
by their attorney
George Henry Payner

T. O. SMITH & H. FULLER.
COLLAPSIBLE BOAT.

No. 538,749.

Patented May 7, 1895.



Witnesses
Frank William Pattison
Albert Edward Elton

Inventors.
Theophilus Osborn Smith
and Horace Fuller
by their attorney
George Henry Rayner

UNITED STATES PATENT OFFICE.

THEOPHILUS OSBORN SMITH, OF MEDLEY, AND HORACE FULLER, OF ST. AUBIN, ISLE OF JERSEY, ENGLAND.

COLLAPSIBLE BOAT.

SPECIFICATION forming part of Letters Patent No. 538,749, dated May 7, 1895.

Application filed February 8, 1894. Serial No. 499,560. (No model.) Patented in France February 16, 1894, No. 234,315; in England April 17, 1894, No. 2,264, and in Germany November 8, 1894, No. 77,821.

To all whom it may concern:

Be it known that we, THEOPHILUS OSBORN SMITH, boat-builder, of Medley-on-Thames, Oxford, and HORACE FULLER, of Vernon Lodge, St. Aubin, Isle of Jersey, England, subjects of the Queen of Great Britain and Ireland, have invented certain new and useful Improvements in Collapsible Boats, (for which foreign patents have been obtained in France, No. 234,315, dated February 16, 1894; in Germany, No. 77,821, dated November 8, 1894, [Theo. Smith only,] and in England, No. 2,264, dated April 17, 1894,) of which the following is a specification.

This invention relates to improvements in the construction of collapsible boats, and has for its object to provide a boat which can be collapsed within a very small compass and which can be fixed in extended position rapidly and securely.

In constructing the boat we employ canvas to form the sides and also to connect various parts, the canvas being put together first after shaping properly to give the required form to the boat. According to the construction we prefer to employ, the canvas is made in four main pieces, viz., two sides, the stern piece, and the bottom piece. The latter, however, is more conveniently made in two sections, connected together longitudinally. The two side pieces are connected together at the bow, and are roped or furnished with a cord or rope at the extreme end, in order to prevent the wear of the canvas which would come. After the parts are connected they are made waterproof and rotproof, thereby insuring that the stitches and connections be also waterproof.

The framework of the boat consists of a narrow decking or gunwale, a bottom formed in two main parts having a separate keel, a transom or stern and a stringer about midway between the bottom and gunwale carrying the thwarts. To the thwarts or other part of the framing are hinged the struts or supports for holding the boat in extended position. The bottom is divided longitudinally at the center, the two sides being sufficiently far apart to allow a keel to be attached to the canvas and supported loosely between them. The keel is

allowed a little play in order that it may project, when the boat is extended, below the bottom, especially toward the stern, taking the place of the deadwood in ordinary boats and preventing swinging, and when collapsed may lie flat between the two parts. Each section of the bottom is also double, one part being outside the canvas and the other on the inner side. The former is constructed of longitudinal planking and the latter of transverse. The transom or stern is hinged to the underside of the decking or gunwale, and is furnished with a hinged sternpost at the center, the sternpost when the boat is extended being fixed by abutting against the end of the keel which is notched to receive it. A separate locking piece may if desired be used, but in the simpler arrangement above described, the keel itself forms the locking piece. The bow is formed by means of a vertical plank curved at the front to give the proper curve to the bow, the plank being held in position by suitable guides, allowing it to be released whenever desired. The struts are hinged so as to lie flat when the boat is collapsed, and clear of the seat and other parts. The struts which hold the decking or gunwale at the proper height above the thwarts, may form part of the other struts, or may consist of separate pieces bearing against the under side of the gunwale and the thwart. The struts are so formed at the bottom as to give the bottom of the boat a shallow V form when extended.

When the boat is fully extended and the parts are fixed properly, the boat will have the usual curve from stem to stern in side elevation.

In order that the invention may be more clearly understood, reference is had to the accompanying drawings, in which—

Figures 1 to 5 show the general arrangement of a boat constructed according to our invention. Fig. 1 is a longitudinal section, and Fig. 2 a plan, of the boat in extended position; Fig. 3, a cross-section of the same; Figs. 4 and 5, respectively, a cross and longitudinal section, showing the boat collapsed. Figs. 6, 7, and 8 are views of the main pieces of canvas used in the building of the boat.

Fig. 9 is a longitudinal section of a canoe constructed according to our invention, and Figs. 10, 11, and 12 are detail views of the same.

Referring to the canvas, A is the side piece two of which are employed, stitched to each other at the bow end, to the bottom pieces A' (Fig. 7) at their lower edges, and to the stern piece A² (Fig. 8) at the rear ends. In order that the side pieces may give the proper shape to the sides of the boat when the latter is extended, bands *a* of canvas are fixed on the inner side of the pieces A as shown in Fig. 6.

When used for canoes, the transom cloth A² will of course be dispensed with, and the stern end shaped the same as the bow.

The canvas is rendered rot proof by chemical treatment, and is dressed on the other side with elastic paint to make it waterproof.

The canvas is fixed to the gunwale B around its upper edges, chafing pieces *b* and inwale *b'* being furnished. The gunwale is shaped or sawed to the required shape, and the inwale afterward secured, the ends of her two gunwale pieces being next secured to the transom piece C, and at the bow end to the metal plate *b*², which binds the two ends together. The chafing pieces are fastened on together after the canvas is attached.

At about the middle of the boat when extended, the stringers D are fixed to the canvas sides, connected at the front end to each other by a small metal plate or other simple means. The outer beading *d* is fixed on the outside of the canvas over the stringers D. The stringers serve to carry the thwarts or seats E.

The bottom of the boat is formed in two main parts, each consisting of outer and inner pieces F and F'. The former are composed of longitudinal planking, and the latter of transverse. The bottom canvas is situated between these parts and a small space is allowed between each side in which the keel G is fitted to the central part of the canvas, that part being left a little loose to allow of the keel projecting a short distance when the boat is extended. The keel is formed of two strips, one fixed on the upper side of the canvas, and the other on the under side, the canvas being preferably connected at the center, the keel thus covering the joint. The longitudinal planks are of such a thickness as to readily allow of their taking up the curved form desired when the boat is extended or geared.

A central plank or keelson H is provided, which covers the joints of the bottom and keel and prevents them being injured from the inside, also serving to distribute any strain caused by the weight of the cargo or crew. This plank will carry the mast step if a mast be employed, the hole *e* in the front thwart allowing for its insertion.

J J' are the stretcher frames which in the arrangement shown are hinged respectively to the gunwale and to the central thwart, but

it is obvious that they may all be hinged to either gunwale or thwarts. The end stretchers J serve to extend the whole side of the boat, while J' only extends the lower part between the bottom and thwart. Separate pieces J'' are shown, connected with the central thwart which serve to support the gunwale. These consist of small curved boards or plates, the outer and upper end of which bears against the under side of the gunwale, the other curving and bearing against the end of slot *j'* in the thwart. A small pin *j*² projects on either side and bears on top of the thwart, supporting the block *j*, so that when the inner end is pressed down, the pin will slide over the thwart, which is slightly scooped at that part, and force up the outer end under the gunwale.

K is the transom made in the arrangement shown in two parts, hinged to one another, the upper one being hinged to the transom piece C. The stern post *k* is fixed to the lower one of these, and when the boat is geared rests in a notch in the end of the keel, which locks it securely in place at the same time allowing it to be pulled out from the top and collapsed as shown in Fig. 5.

The stem post L shown in side elevation in Fig. 1 consists of a plank with the front curved to give the proper shape to the bow. This post is held in place by a guide *l*, formed of two bars extending from the front thwart to the end of the boat, between which the post is retained. The rear end of the stem post is also curved as is the upper edge so that when pushed down at the rear, a cam action will take place, forcing the end in an upward direction, the nose being inserted in the socket formed by the plate *b* on the end of the gunwale. A loose pin *l'* is employed which is placed between the upper curved edge of the post, and the guide *l*, and which when the post is to be fixed in position, is forced to the rear, holding the post firmly in place. To release the post the pin is pushed forward and the rear end raised. The pin and post are both loosely attached to the framework of the boat by cords or otherwise, allowing the post to be laid flat when the boat is collapsed.

M is the rope or cord which is fixed at the extreme end of the boat, and is double sewed on both sides to the seam of the canvas covering. The upper end is knotted and pushed through a hole in the plate *b*², or is otherwise fixed in a simple manner, the lower end being inserted in a metal shoe which also serves as a connection between the keel and the sides of the bottom planking.

Referring to Figs. 9 to 12 showing the invention applied to a canoe, the stem and stern parts L' and L² are similar in form, and are locked in position by the locking pieces or deadwoods *l*², to which they are hinged by metal plates and bolts or in any other secure manner. The stretchers or frames J² are hinged to the upper part of the boat or gunwale, and are cut away as shown in Fig. 12 to

allow of access to the ends of the boat. The back rest N is inclined at an angle to the stretcher J² by means of a distance piece n hinged to the back rest, so that when collapsed it may be pulled flat. The bottom board O is placed between this back rest and the other stretcher J² holding the stretchers rigidly in extended position. The locking pieces l² abut against these stretchers and thus hold the stem and stern posts in place. The end, stem and stern stretchers J³ are retained in place by a shoulder on the locking pieces l² and are recessed at bottom to allow of the smaller end of the locking pieces passing through. They are connected to the stretchers J² by cords and the latter are also provided with cords at the bottom extending to the center of the boat, so that when the bottom board is removed, by simply pulling the cords, the stretchers are raised and the boat collapsed. The bottom board also serves to hold in place the side pieces P which support the sides and gunwale of the boat at the center as shown in Fig. 11. The usual decking is provided, the other parts of the canoe being practically the same as those already described in the ordinary boat, the shape and proportions being different.

According to the construction of boat described in this specification, the said boat can be collapsed into a flat form as shown in Figs. 4 and 5 of only a few inches in depth, all the parts of any greater depth lying horizontally. On the boat being raised or slung the bottom and stretchers will fall into their places and maintain the framework in open position, while the boat is being lowered, allowing it to be manned without further manipulation. When on board the crew can readily place the parts in their proper position, and fix them as above described.

This boat can fulfill all the purposes of an ordinary ship's boat or yacht tender, or of any other small or medium sized boat with the advantage that several can be stored in the space now occupied by one.

What we claim for our invention, and desire to secure by Letters Patent, is—

1. A collapsible boat comprising a complete shell of canvas, a gunwale fixed to the upper edges of the canvas, a plank bottom and stretchers or supports holding the parts open, the framework adapted to collapse vertically without folding and lie flat upon the bottom of the boat, substantially as specified.

2. A collapsible boat, comprising a complete shell of canvas, a gunwale fixed to the upper edges of the canvas a plank bottom, vertical stretchers or supports holding the framework open, stringers fixed on the sides of the canvas, and seats carried by the said stringers, the framework and seats adapted to collapse vertically without folding and lie flat on the bottom of the boat, substantially as and for the purposes specified.

3. In a collapsible boat, the combination with a shell of canvas, of a gunwale fixed to the upper edges of the canvas, a transom piece continuous with it, stringers parallel with the gunwale, thwarts carried by the said stringers, stretchers hinged to the frame and bearing on the bottom of the boat, a transom hinged to the transom piece and a stern post fixed to the transom, substantially as and for the purposes specified.

4. In a collapsible boat the combination with a shell of canvas, a gunwale fixed to the upper edges of the canvas, transom piece continuous with the gunwale, transom hinged to the transom piece and stretchers for extending the boat, of a stem post or plank curved at front to form the bow, guides holding the stem in vertical position, and locking piece fixing it in place, substantially as and for the purposes specified.

5. In a collapsible boat, the combination with a shell of canvas, a gunwale fixed to the upper edges of the canvas, transom piece, transom hinged to the said transom piece and stretchers for extending the boat, of a plank bottom divided at the center and formed of two sets of planking, one set of transverse planking fixed on the inside of the canvas, and the other set, of longitudinal planking fixed on the outside, as specified.

6. A collapsible boat in which a complete shell of canvas is employed, consisting of two side pieces united at the bow end to each other, at the stern to a transom piece and at the lower edges to a bottom piece or pieces, the whole being then rendered rot and water proof, in combination with a framing adapted to collapse vertically upon itself without folding, substantially as specified.

In witness whereof we have set our hands in presence of two witnesses.

THEOPHILUS OSBORN SMITH.
HORACE FULLER.

Witnesses to the signature of Theophilus Osborn Smith:

FREDK. P. THORNTON,
ERNEST A. BACON,
Both of County Hall, Oxford, Clerks to Thos. Marriott Davenport, Notary Public.

Witnesses to the signature of Horace Fuller:

JNO. DADE,
Station Master, St. Aubin.
PETER NOLAIS,
Porter, St. Aubin Station.