

A. SNYDER.

Improvement in Construction of Barges.

No. 125,700.

Patented April 16, 1872.

Fig. 4.

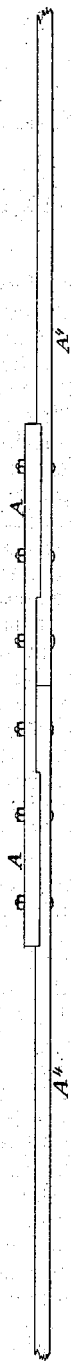


Fig. 5.



Fig. 7.

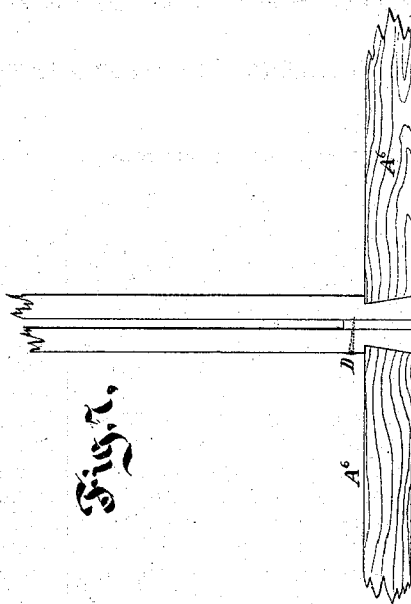
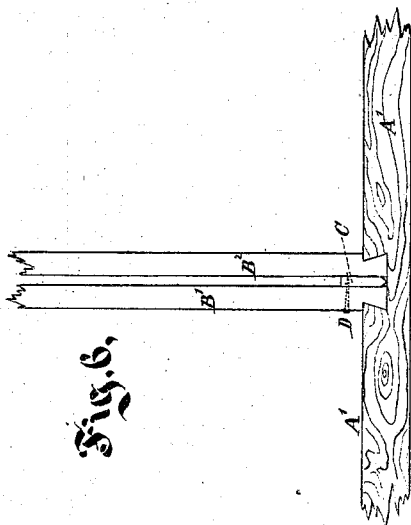


Fig. 6.



Witnesses,

A. Hoernum

C. C. Livings

Inventor,

Ante Snyder
by his attorney J. H. [Signature]

UNITED STATES PATENT OFFICE.

ANTES SNYDER, OF FREEPORT, PENNSYLVANIA.

IMPROVEMENT IN THE CONSTRUCTION OF BARGES.

Specification forming part of Letters Patent No. 125,700, dated April 16, 1872; antedated April 13, 1872.

To all whom it may concern:

Be it known that I, ANTES SNYDER, of the city of Freeport, county of Armstrong, State of Pennsylvania, have invented certain new and useful Improvements in the Construction of Flat-Bottom Boats, of which the following is a specification:

I have in my experiments applied the invention to the class of flat-bottom boats known in this vicinity as barges, and employed in the transportation of coal and other heavy material on smooth waters. I will describe it as so applied. My barge may be of the ordinary external form and proportions. The sides are plain and perpendicular, the bottom is flat in the main-body and rounded up at each end. It is constructed of timber with some fastenings of iron.

The invention relates to the mode of shaping and matching together the wood. It gives a greater degree of strength to resist some or all of the strains to which these structures are liable.

The following is a description of what I consider the best means of carrying out the invention. The accompanying drawing forms a part of this specification.

Figure 1 is a plan view of an entire barge. Fig 2 is a side elevation, and Fig. 3 is a cross-section on the line S S in Fig. 2. In all these the scale is one-eighth inch equal one foot. In Figs. 1 and 2 a part is supposed to be broken away so that the total length is undetermined. Fig 4 is a plan view of one of the strakes at and near the point where the timbers abut. Fig. 5 is a corresponding view of a modification. In both these the scale is one-fourth inch equal one foot. Fig. 6 is a horizontal section, showing the bottom strake and a portion of the peculiarly constructed and fastened floor-timbers. Fig. 7 is a corresponding view in the plane of the top-ties or cross-timbers near the top of the sides of the barge. The scale in Figs. 6 and 7 is one-half inch equal one foot.

Similar letters of reference indicate corresponding parts in all the figures.

A¹ A² A³ A⁴ A⁵ A⁶ A⁷ are the side strakes of timber, recessed and fitted together as represented—that is to say, each timber has a series of long rectangular notches, *a*, and these are so placed that the wood between the notches on the one stick matches into and

fills the notch in the adjacent piece of timber. Each strake is by reason of its length usually composed of more than one length of wood, in which case care is taken to distribute the butts, as represented, so that there shall be no vertical lines of weakness. This construction, with proper bolting, treenailing, doweling, and the like, imparts so much stiffness to the boat in the vertical direction that the usual internal truss-work of vertical and diagonal braces may in many cases and for many uses be dispensed with altogether; or, in case the internal bracing is retained, the strength of the boat or barge is greatly increased by reason of my construction of the sides. It will be understood that this construction is adapted alike to resist the common case of a heavy load of material in the center of the length, with a surplus of buoyancy at the ends; and, also, to resist the more unusual strain due to a heavy load at one or both ends with little or no load at the middle length. The ordinary truss-braces are very inadequate to resist this latter strain. The success of the structure is increased by the following means of guarding butts against being rent asunder by tensile strains. Referring to Fig. 4, A is a splice-piece fitted on the inner face of the timbers covering the butts, and recessed into the side of each timber and secured by screw-bolts. This construction being properly applied and tightly secured, holds the butts very strongly. It will be understood that in all these constructions the notches may be made a little wider than the projections in the adjacent pieces which are to fit into them, and keys may be driven between the shoulders to induce an initial strain on the timber—in other words, the tightness with which the work may be put together may by this means be increased at will. I propose to adopt this plan of keying, or an analogous one of drawing the work together with suitable bolts and nuts in every case where the strain is likely to be very great. It is most desirable on the upper and lower strakes of the side. The plan shown in Fig. 5 is a further elaboration of the same idea. Here the entire strake is double, and the work if applied together with the proper tightness is everywhere very strong to resist either tensile or compressive strains. In constructing the bottom I make the floor-timbers double. The inner faces or those which apply

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together of these double timbers are plain quite to the ends; the outer faces are dovetailed. I make corresponding dovetails somewhat wider in the bottom strakes of the side, and, inserting the ends of the double-floor timbers therein, force them apart by a key. The key may be inserted easily by springing apart the timbers and introducing the key and driving it outward into the dovetailed end. When in position it may be held by a spike driven transversely. Referring to Figs. 1, 2, and 6, the double-floor timbers are represented by $B^1 B^2$, the key by C, and the fastenings by D. The space between the double-floor timbers, and corresponding to the thickness of the key C, should be filled up over the whole or a portion of the breadth of the barge by a piece, b , held by a through bolt or other efficient means. The cross-timbers at the top should be constructed and applied in the same way as I have just described for the floor timbers. This promotes strength and facilitates the removal and replacing when necessary. The stanchions at the side are represented by G, and are secured by screw-bolts to each strake. I prefer that the butts should come at the side stanchions G, though this is not essential. I secure the strakes together by vertical drift-bolts, as is usually done, taking care, however, to put one drift-bolt close on each side of each butt—that is, I drive two bolts through the strake above, so as to pass through the strake in which the butt is made, about six inches on each side of the butt, and to take a strong hold in the strake below. It will be observed that I form each butt with a square butt-joint. This I deem the best, though other joints may be used with my invention. I prefer to make the square butt come in the middle of the notch. In securing the butts of the bottom strake A^1 , I drive a spike or bolt upward on each side into the second strake A^2 . It will be observed that the thickness of the key C should be just sufficiently great to allow its being driven home, and hold the dovetailed ends of the floor-timbers very tightly in their dovetail sockets. I finish the deck-work bulk-heads to protect the ends and the posts or timber-heads, which project above the sides to secure ropes, &c., as usual, and can provide longitudinal sticks below the bottom, sometimes known as streamers, in the usual manner. The

bottom planks may be also put on crosswise to the boat, and spiked to the streamers and sides of the boat, or they may be fastened by suitable posts and spikes to the work above.

The firm of Gillespie & Snyder, to which I belong, has had much experience in the construction of barges, flat-boats, and box-boats of all sizes. One of the most serious difficulties in these constructions, additional to the hogging strain before referred to, lies in the floor-timbers pulling out of the bottom strakes. The half dovetail usually employed is not sufficient to hold that, and the low price of the work will not usually allow elaborate iron fastenings. When the barge gets aground and bears near the center of its width, hanging force at each side, the strain forces the floor-timbers immediately above the middle bearing upward and tears it out of the side. In hurriedly unloading, the coal or other material is liable to be taken out at the middle and left at each side, inducing a like action. The double dovetail with a tight fit, induced by my construction, will be sufficient to hold the parts under all these strains, until the wood becomes so decayed as to effect its hardness and tenacity. I esteem it well to cover the space between the floor-timbers when I do not fill it up. This may be done by common one and one-half inch stuff or one inch stuff. There should be a bolt, or there may be several, inserted through the floor-timbers, (or top-ties when made thus double,) so as to confine the filling-piece b firmly in position.

I claim as my invention—

1. A flat-bottom vessel with the side strakes $A^1 A^2$, &c., notched into each other for mutual support against hogging strains, as specified.
2. A flat-bottom vessel with strakes of double timbers, substantially as shown in Fig. 5.
3. The double and distinct timbers $B^1 B^2$, made each with a half dovetail, and secured by a block, C, in a dovetail recess which extends up a portion of the distance through the timber A^1 , as shown in Fig. 6.

In testimony whereof I have hereunto set my name in presence of two subscribing witnesses.

ANTES SNYDER.

Witnesses:

R. H. BRUCE,
WM. MURPHY.