2 Sheets--Sheet 1.

S. LEE.

Improvement in Marine-Locomotives.

No. 114,832. Patented May 16, 1871.

Fig. 1.

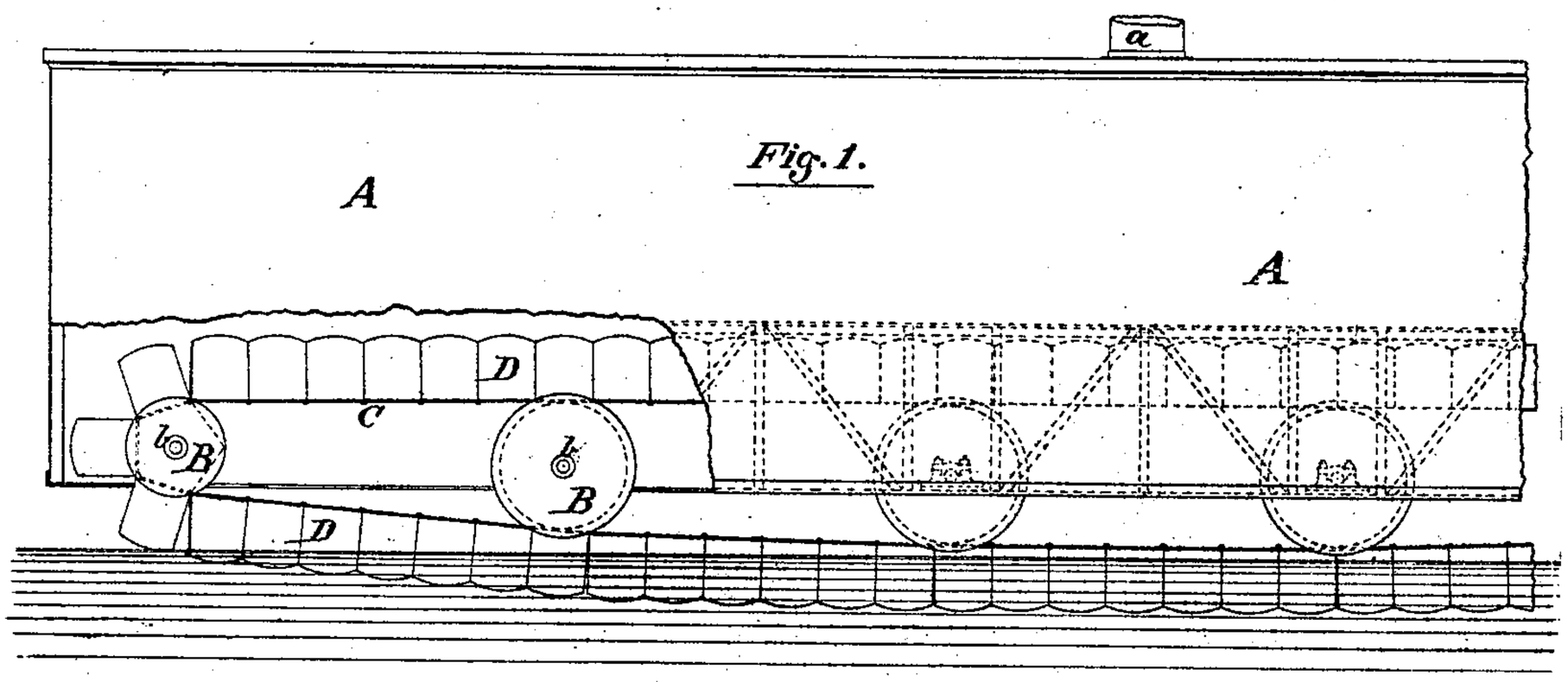


Fig. 2.

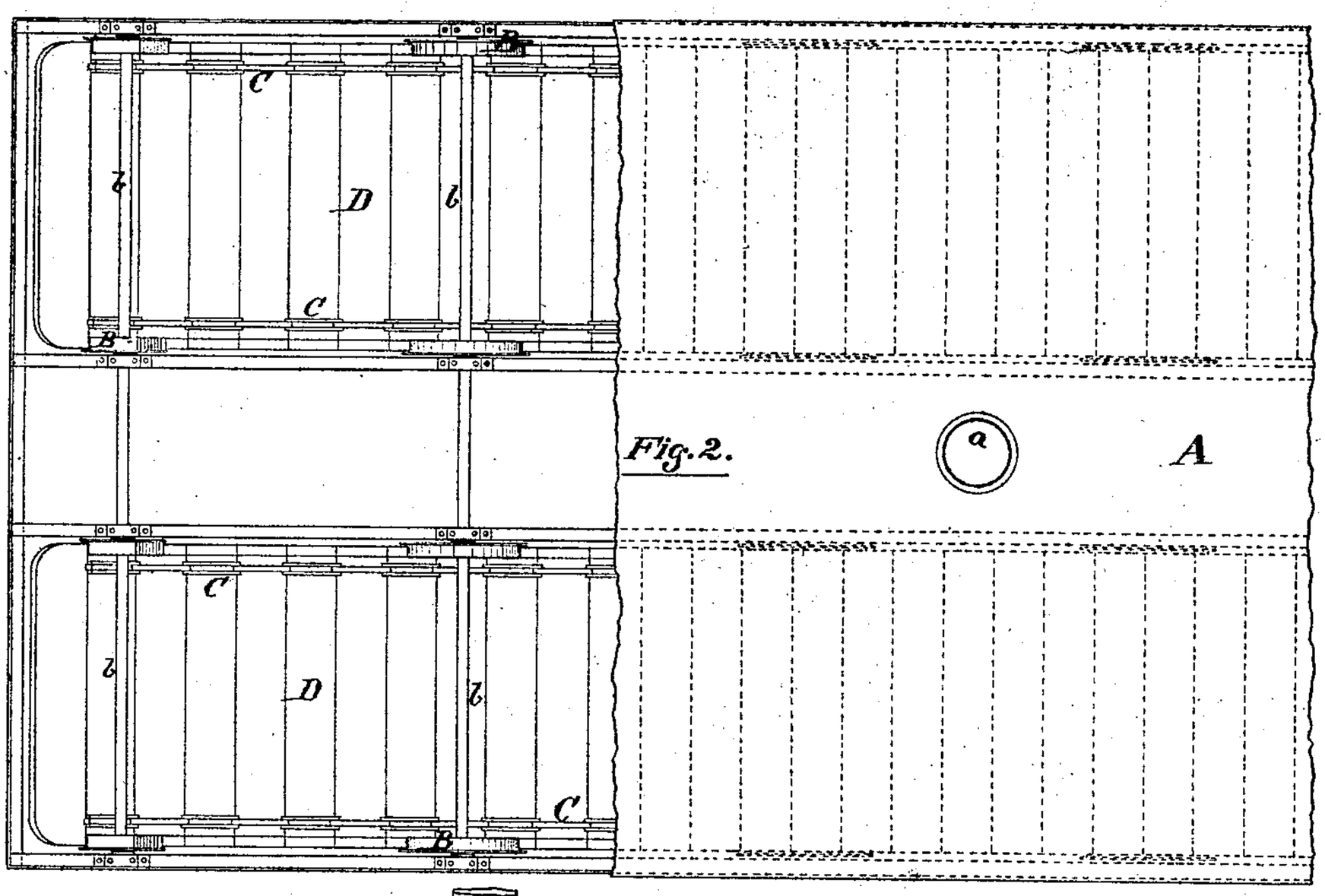
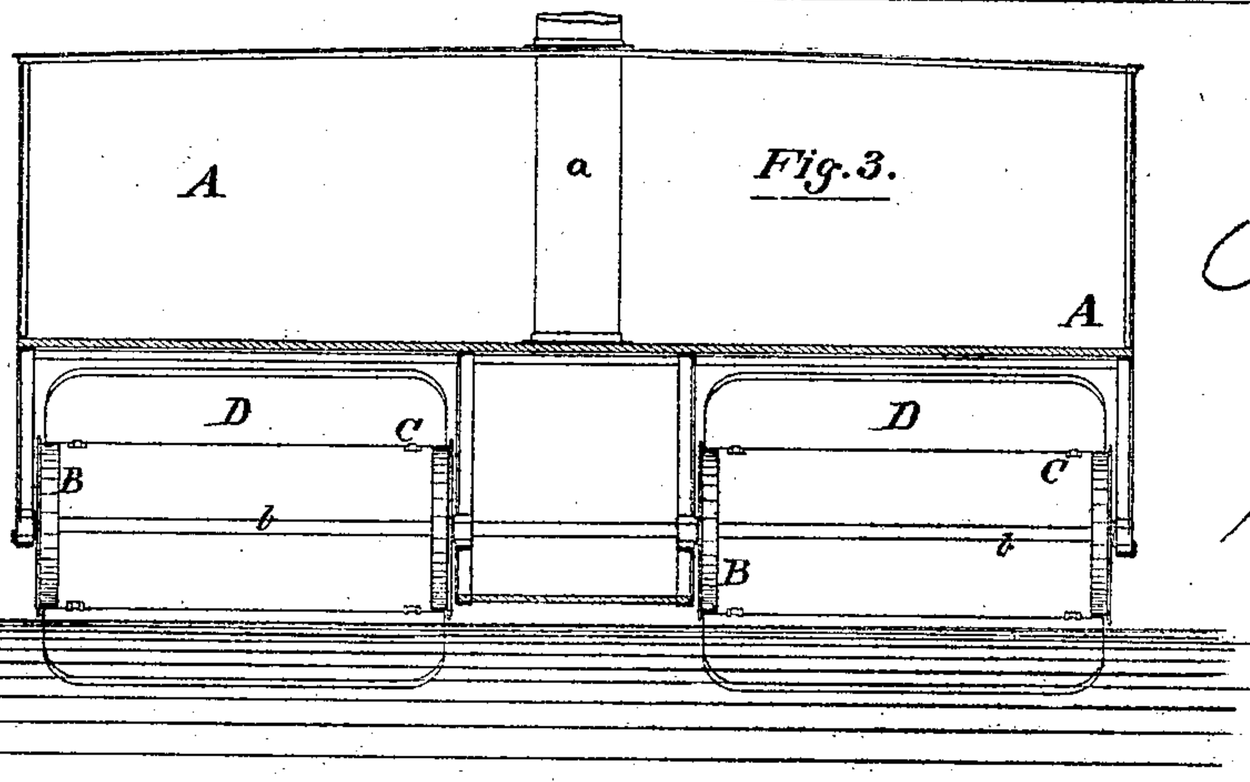


Fig. 3.



Inventor:

Irene Lee

Witnesses:

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A. Hoermann.

2 Sheets--Sheet 2.

S. LEE.

Improvement in Marine-Locomotives.

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Fig. 4.

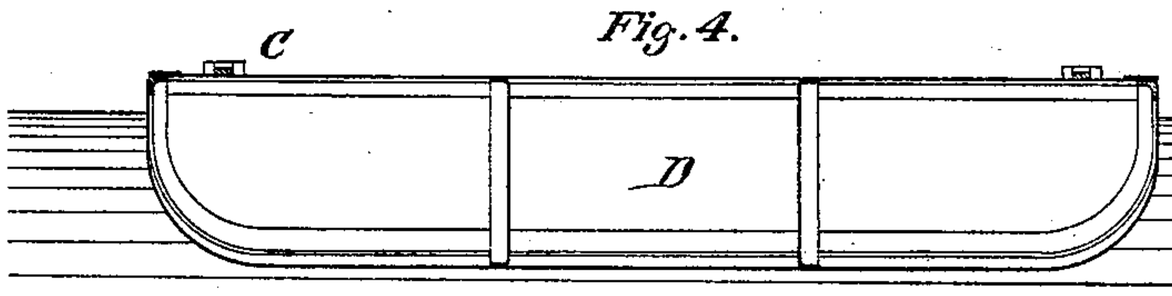


Fig. 5.

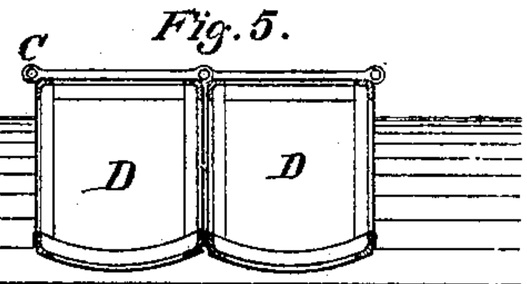


Fig. 6.

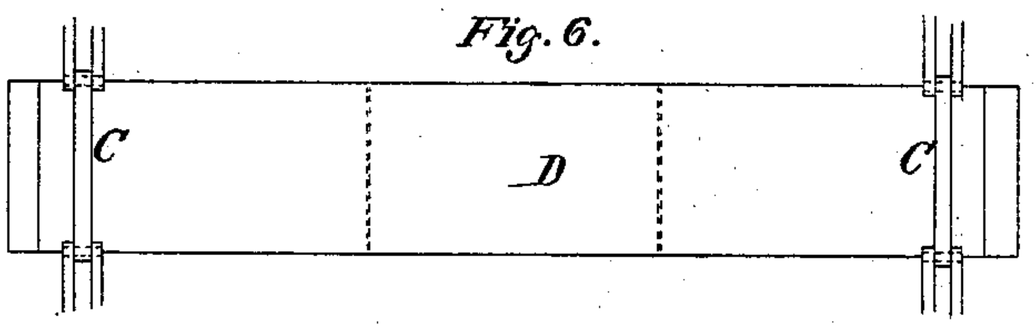


Fig. 7.

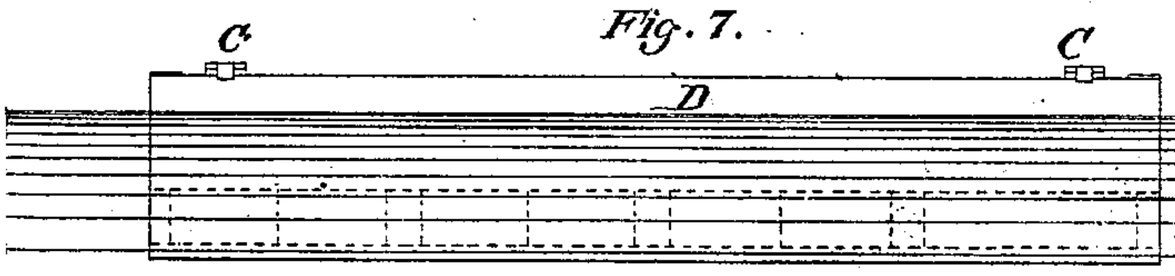


Fig. 8.

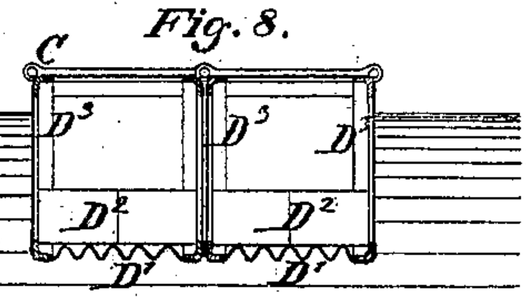


Fig. 9.

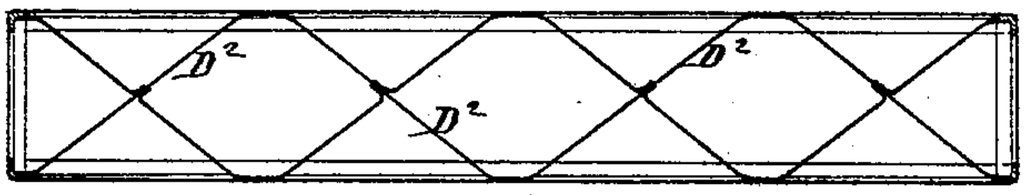


Fig. 10.

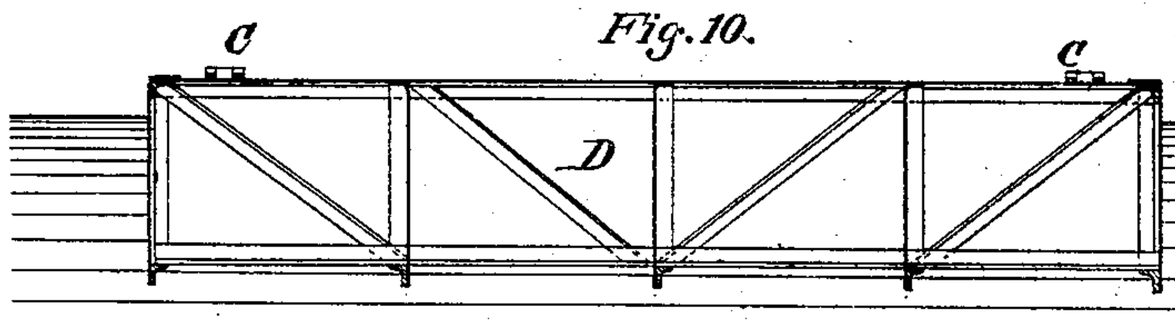


Fig. 11.

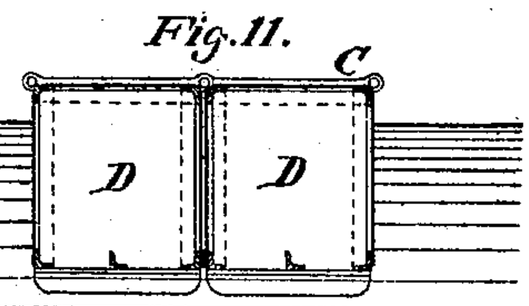
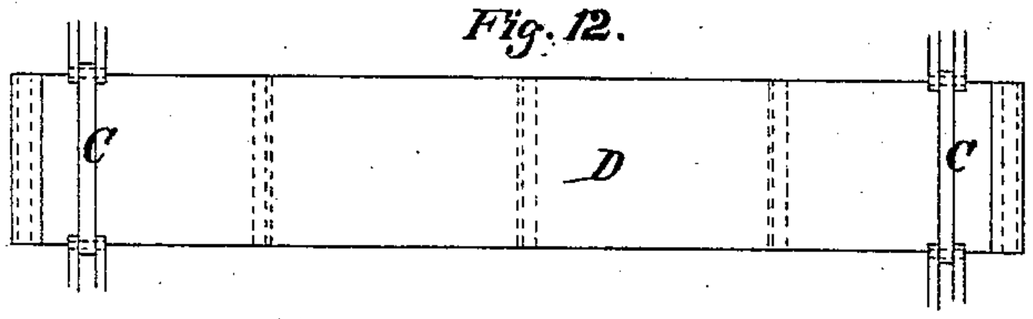


Fig. 12.



Witnesses:

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A. Hoermann.

Inventor:

Irene Lee,

United States Patent Office.

SVERRE LEE, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND JAMES D. REYMERT, OF SAME PLACE.

Letters Patent No. 114,832, dated May 16, 1871.

IMPROVEMENT IN MARINE LOCOMOTIVES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, SVERRE LEE, of New York city, in the State of New York, have invented certain new and useful Improvements in Marine Locomotives or structures for traveling upon water.

My marine locomotive is peculiarly adapted to traversing rivers or analogous navigation where the water is very shallow at some or all points. It can move for considerable distances over bars or the like, which may be entirely bare, and presents a large surface to bear upon mud or soft sand under such circumstances.

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 side elevation of a portion, which may be a little more than half of the structure. Some of the side is represented as broken away to better show the work in the interior.

Figure 2 is a plan view of the same parts, with some of the upper work broken away to show the running parts.

Figure 3 is a cross-section through the structure.

The remaining figures show several modifications of the details removed from the structure.

Figure 4 is an elevation;

Figure 5, a cross-section; and

Figure 6, a top view, showing a modification of the floats.

Figures 7 and 8 are corresponding views of the floats, which I esteem preferable, and shall describe as being the floats used for ordinary cases.

Figure 9 is a horizontal section of the same floats, showing more fully the nature of the internal bracing.

Figures 10, 11, and 12 are, respectively, an elevation, cross-section, and a plan view of a further modification.

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

Referring to figs. 1, 2, 3—

A is the body of the structure, which may be of wood, iron, or other material, made as light as is consistent with proper strength, and which may have one or more proper floors or decks arranged above the chain of floats, and may support one or more steam-boilers, engines, &c., in any position which may be found most convenient. The position of the chimney is indicated by *a* in the center of the structure.

B B, &c., are two series of wheels, which are in effect large light drums (and will, with this explanation, be hereafter referred to as drums) mounted on suitable axles *b*, supported in boxes in the structure A. These drums may be either smooth, or formed on their circumferences to match to corresponding rigid flat portions or roughnesses on the inside of the caissons or floats, or of the endless chains C which run around them, as represented. One or more of the drums B are turned forcibly by steam-engines, not represented.

C are endless chains formed in links or otherwise, so as to be strong and flexible.

D are floats or caissons fixed thereon, and adapted to lie closely together when traversing on the under or upper side, and to open as indicated in making the quick turn around either of the end drums. These caissons D are of sheet metal, but the details of their construction are not indicated in these figures.

Referring to figs. 7, 8, 9, which represent the same caissons, it will be observed that the corners are made with angle iron, the bottoms of corrugated iron, and that a portion of the interior is strongly braced with sheets of iron placed vertically and crossing each other, so as to effectually stiffen the structure without adding very largely to its weight.

The several parts are marked D^1 D^2, &c.

D^1 is the corrugated bottom.

D^2 is the diagonal bracing, which is here represented as extending up only a portion of the depth of each caisson, but it may equally extend quite to the top, if preferred.

D^3 is the angle-iron employed to stiffen the metal along the several angles or corners.

C represents the chains as in the preceding figures.

The corrugated bottom affords a rough bearing to take hold on the water, and also gives an elastic character to the caisson in case any springing of the endless chain shall cause the caissons to be strongly pressed against each other. The corrugations allow them to yield or compress horizontally without permanently changing the form. The diagonal bracing also yields sufficiently to allow such compression and greatly stiffens the caissons, to enable them to bear the great weight in passing over a rock or other hard place on a shallow or bare portion of the river.

The operation of my marine locomotive is very similar in theory to many which have been before proposed. The upper portion of the structure, as also, if preferred, the space between the upper and lower parts of the endless belt C, are available for stowage of fuel and for the freight and passengers.

The power generated in the steam apparatus imparts a continuous motion to the drums B, which would of themselves carry the structure over bare ground, and would, if sufficiently enlarged and lightened, carry the structure on water.

The caissons D serve to some extent as paddles or floats in taking hold of the water, and serve very efficiently as bearers to give a large immersed volume, and thus to support and float up the structure.

The endless chain C runs around on the drums B in the same manner as an endless belt in driving ma-

chinery, and the caissons carried thereon perform their useful function while traversing along the lower sides of the drum, and return idly above.

The employment of the floats D, arranged in a close series, as represented, forms a more efficient support than any other known to me. It renders available the whole surface or nearly the whole surface of the bottom.

The end drums may be lowered so as to immerse the caissons D to the same depth near the ends of the structure as along the middle, if preferred; but I esteem it better to immerse them deepest in the middle, as shown. I attach much importance to the corrugated bottom and the bracing of the interior of the caissons for the reasons above explained.

Angle-irons or other projections can be employed on the bottoms and ends of the caissons to allow more roughnesses for taking hold of the water, if desired.

Figs. 10, 11, and 12 represent angle-irons thus placed on the bottom.

Fig. 10 also represents a further internal bracing analogous to the truss-work of bridges, which increases the stiffness of the caissons. This mode of bracing may be employed at each side of each caisson without interfering with the diagonal bracing shown in figs. 7, 8, and 9.

By my peculiar arrangement of the drums, as shown, the end drums are so much higher than the middle ones that the caissons are immersed and lifted gradually. This greatly reduces the resistance of the water. I greatly prefer this arrangement, and believe that with it I accomplish better than ever before the great desideratum of removing the resistance due to the friction of the water without involving any increase, but rather, if properly proportioned, a decrease in the other principal element of resistance, to wit, that due to the inertia of the water.

I claim—

1. The internal bracing D^2 of the floats or caissons D, when the latter are arranged in the series on an endless belt C, traversed around in the bottom of a structure A, as specified.

2. The corrugated bottom D^1, in combination with the internal bracing D^2, tending to strengthen the caissons D and enable them to take a better hold on the water to better support the weight of the structure in passing over bare or shallow places, when operated by an endless chain under a vessel or traveling structure A, as specified.

3. The within-described arrangement of the end drums at such levels that the caissons D shall be immersed, and again lifted gradually, so as to not only avoid the friction of the water, but also involve but a very slight resistance from the inertia thereof, as herein specified.

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

SVERRE LEE

Witnesses:

A. HOERMANN,

C. C. LIVINGS.