A. F. Lewis.

Marine Drag.

No. 11,555. Patented Aug. 22, 1854.

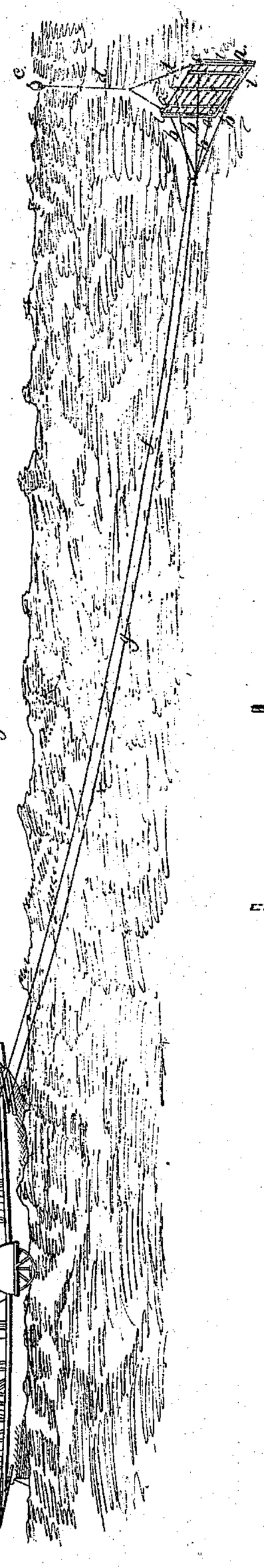

Fig. 1.

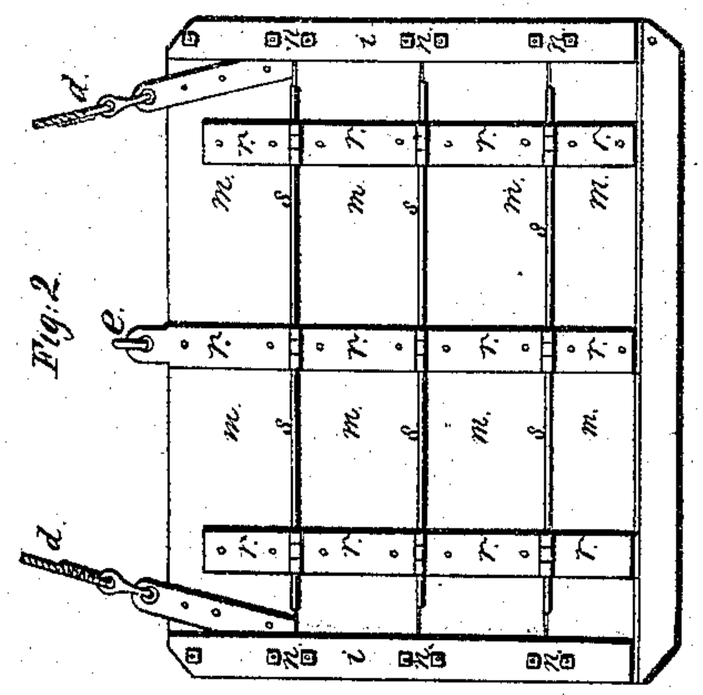

Fig. 2.

Fig. 3.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ABEL F. LEWIS, OF SHOPIERE, WISCONSIN.

IMPROVEMENT IN FLOATING DRAGS OR ANCHORS.

Specification forming part of Letters Patent No. **11,555**, dated August 22, 1854.

To all whom it may concern:

Be it known that I, ABEL F. LEWIS, of Shopiere, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Floating Drags or Anchors for Vessels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 represents a vessel "lying to" in a gale of wind held by one of my improved anchors, where it is supposed there are no soundings within the length of a common cable. Fig. 2 represents a side and Fig. 3 an edge elevation, the black lines showing the anchor in a vertical position and the red lines showing it in an inclined position.

This anchor may be made of any material possessed of the requisite strength and durability; but I prefer to make it of wood and metal in such proportions that the specific gravity of the anchor will be only so much greater than that of the water as is necessary to cause it to sink readily. It should be made of a size proportionate to that of the vessel for which it is intended, ten feet long and eight feet wide being about the proper dimensions for a vessel of seven hundred and fifty tons burden.

If the anchor were made wholly of metal or other similar weighty substance, it would require a buoy too large and cumbrous to keep it afloat.

In constructing the float I take several narrow planks—say twelve inches wide and from two to three inches thick—and I secure them together by metallic bars and hinges in such manner that any number of the planks could be readily removed, if desired, or the whole taken apart. Near each corner of the anchor an eyebolt *a* is secured, from which a brace-rope *b* extends to a thimble *t*, connected by a swivel-link to the end of a cable which reaches from the vessel. It is obvious that the anchor thus constructed and attached to the cable will, if the brace-ropes are of equal length, stand in a plane at right angles to the line in which the cable pulls, very much in the same manner in which a kite is held at right angles, or thereabout, to the direction in which it is pulled by the line. By thus arranging the brace-ropes, making them of equal length and causing them to meet opposite the middle of the side of the anchor, the whole forms, as it were, a skeleton pyramid, of which the anchor is the base, the hawser-ropes the angles, and the cable the axis.

The anchor is kept floating by means of a buoy *c*, with which it is connected by a cord *d*, the lower part of which branches to the opposite ends of the upper edge of the anchor, where they are fastened to it by means of eyebolts and hooks or thimbles provided for the purpose.

If this anchor had to be hauled on board a vessel by the cable like a common anchor, it would be very difficult in all cases and in some almost impossible to effect the object, because of the great resistance which would be offered by the water to its movement broadside first, and from its great tendency to swing edgewise it would also be liable to stave the planking of the vessel's bow or be itself damaged by the concussion produced from this cause. To obviate this difficulty, I have attached to the upper edge of the anchor by an eyebolt *e* what I term a "canting," or "hauling-in" hawser, which passes through a thimble *t* near the swivel. Under this arrangement the first thing to be done in taking in the anchor is to tighten the hawser *f* and to slacken the cable *g*, which causes the anchor to cant and move edgewise toward the surface of the water. It can now be hauled in edge first with comparative ease and without liability to those dangerous lateral oscillations which would be developed if an attempt were made to haul it in broadside first.

The canting-line has another important use, which is to regulate the resisting power of the anchor to adapt it to different circumstances. The resistance which this anchor will oppose to the motion of the vessel, other circumstances being equal, will in all cases be inversely proportionate to the area which it opposes to the direction of the pull of the cable. This resisting area will have a maximum development when the side of the anchor is perpendicular to the pull of the cable. Its minimum resisting power will be when the anchor is drawn edgewise through the water and its side is parallel to the pull of the cable, and its resisting power will vary with every degree of obliquity at which the anchor stands to the cable between these two extremes. For the purpose of rendering this principle available it is only necessary to

tighten and slacken the hawser *f*. Suppose that a vessel thus anchored in a gale of wind should not ride easily in consequence of being held too firmly, by tightening the hawser, as shown in Fig. 3 by red lines, the anchor will be inclined with its upper edge toward the vessel, diminishing its effective area of resistance, and thus holding the vessel more easily and permitting her to drift faster. If the anchor were in shallow water, it would also pass over obstructions at the bottom with less danger of being broken or entangled when thus inclined than if it were hung in a perpendicular position. When it is necessary to increase the resistance, this is readily done by slacking out the hawser, the whole being thus regulated and controlled from the vessel and with the utmost convenience.

Preparatory to casting this anchor the buoy-line should be lengthened or shortened, according to the distance below the surface of the water at which it is required to suspend the anchor. This distance will vary with the roughness and violence of the sea, it being desirable to suspend the anchor at barely sufficient depth to avoid disturbance from the commotion of the water, because the nearer the anchor is to the surface the more direct will be the pull of the vessel upon it and the less the liability to the alternate tightening and slackening of the cable, which when occurring produce violent surges, strains, and injuries to the vessel, cable, and anchor.

When the anchor is lowered into the water, the buoy is thrown overboard and a sufficient length of cable let out to allow the vessel to ride easy.

When the anchor is raised from the water, it may be either hung at the ship's bow or, if it is likely that it will not soon be again required for use, it may be hauled aboard, taken to pieces, and the parts stowed away until the anchor is again likely to be wanted.

The anchor represented in the drawings is constructed of planks strengthened with bars *i* of wrought-iron, the whole firmly connected together by screw-bolts *n*, the bolts passing through both the planks *m* and iron bars. These planks are further strengthened by a series of iron cleats *r*, the adjacent ends of which may be made tubular and notched to interlap in the same manner as the two leaves of a butt-hinge, so that when a rod *s* is passed through these tubular ends of the cleats it will interlock those of adjacent planks. The whole of the cleats being thus connected, they will mutually support each other, and the anchor will be greatly strengthened without having its weight materially increased.

Among the numerous advantages connected with my improved floating anchor the following may be enumerated as the most prominent: It will keep a vessel's head to the wind when lying to—a most important desideratum. It will materially lessen the drifting of vessels in a gale of wind, thus avoiding in a great measure the danger of shipwreck on a lee shore. It may be employed to retard the change of position, if so desired, of fishing-vessels or of vessels discharging or taking in cargo. It will likewise often be found of great use in working vessels into harbors which have a narrow entrance and strong tidal currents. For example, suppose the current setting into a harbor to be three miles an hour and the wind blowing directly out of the harbor with a force sufficient to drift a sailing-vessel that wants to enter three and a quarter miles an hour, the mouth of the harbor being too narrow for the vessel to beat in. It is plain that with all ordinary appliances she could not enter; but by throwing overboard one of these anchors it would quickly tow her in by the force of the current acting upon it. In short its uses and advantages are manifold, and will not be fully developed until the instrument is brought into general use.

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

The arrangement herein described of the canting hawser-cable and floating anchor, whereby a vessel may be held with more or less power, as circumstances require, when ground anchorage is unattainable.

In testimony whereof I have hereunto subscribed my name.

ABEL F. LEWIS.

Witnesses:
P. H. WATSON,
F. G. FONTAINE.