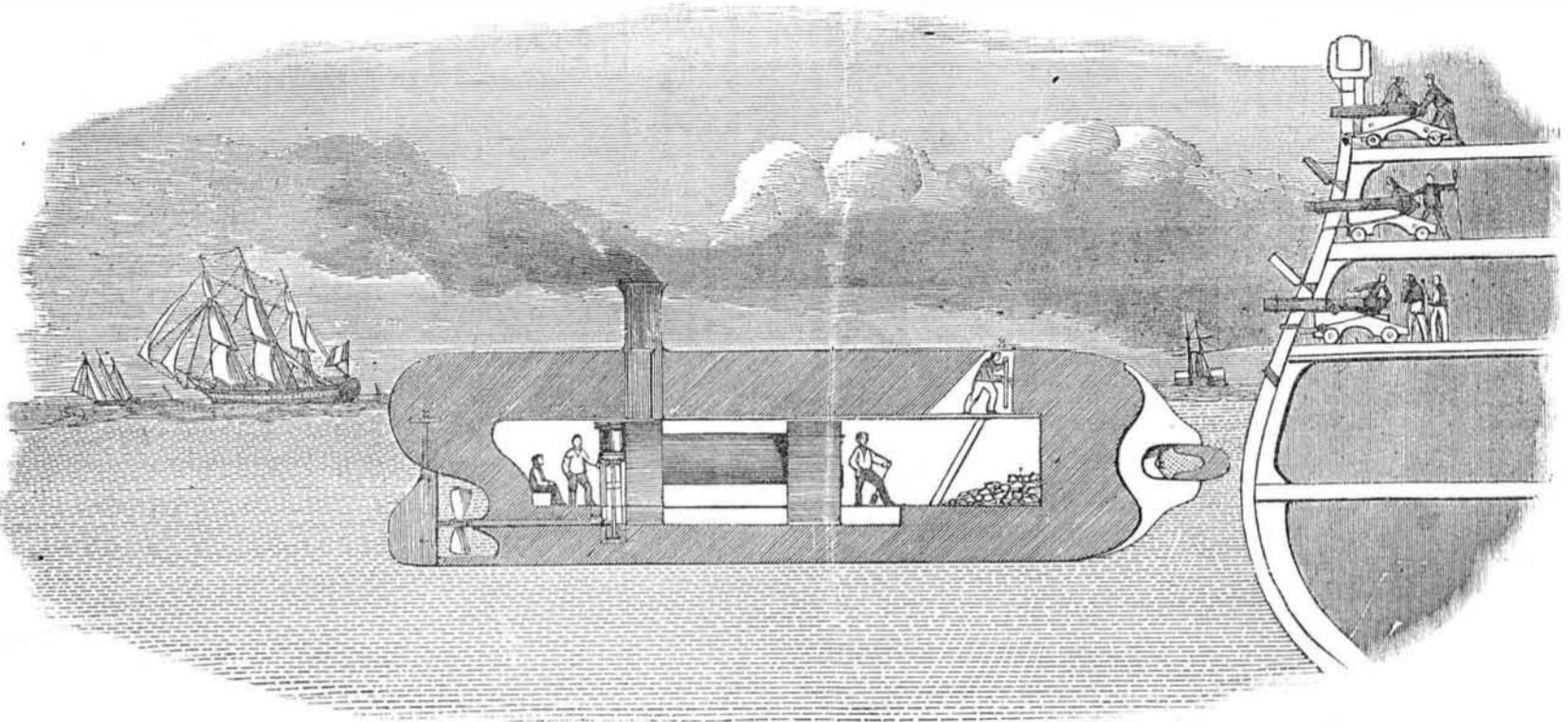


SUBMARINE MORTAR FRIGATE.---Figure 1.



The annexed engravings are views of a floating, partly submerged Propeller, Torpedo Vessel, proposed by James Nasmyth, of Patricroft, England, for destroying large ships of an invading fleet.

Figure 1 shows the Floating Mortar, steered by the man at the sight hole, X, and shown attacking the enemy. Figure 2 is an enlarged view of the Great Brass Mortar and Shell. The cap, C, explodes the instant it is brought in contact with the breech, R; this it does in consequence of the protruding end of the shell being crushed against the side of the enemy. The flange, S S, is just so strong as to resist any ordinary pressure, and is thereby made safe till crushed back by contact with the side of the enemy.

Figure 3 is a transverse section of the Mortar.

Mr. Nasmyth is the inventor of the steam hammer, which bears his name, and various other useful inventions, and besides he is a first rate astronomer and mathematician.—The following is his own account of the invention, which was sent to the "Illustrated News."

The principles on which the arrangement and construction of the floating mortar is based, consist in the first place of a monster self-exploding shell, so arranged as to explode on having its breech end crushed against the breech of the mortar, the self-exploding cap being situated there, as will be seen on reference to the engraving.

In order to enhance the destructive effect upon the enemy's ship, the shell is so far submerged as to tear its way into the enemy six feet under water-line.

Next, to protect the shell from the effect of the water while resting in the chamber of the mortar, it is rendered water-proof, by being inclosed within a perfectly water-tight copper case, which will so effectively secure it from the action of the water, as that it may remain, it need be, for years in the chamber of the mortar, submerged, as before said, six feet under water-line, and ready for service at any time.

The crush consequent on coming in contact with the side of the enemy is the agent whereby the monster shell is made to explode. A very moderate velocity of the Floating mortar would, when brought up against the side of the enemy, prove sufficient for this purpose; so much so, that, in order to obviate the chance of its explosion by accidental contact with any other object, I have so placed the flange joint of the copper case against the mouth of the mortar, that the crush against the side of the enemy, resulting from a speed of two or three miles per hour, shall be sufficient to overcome the resistance of this flange, and crush the self-exploding cap at the breech end of the shell against that of the mortar, and so cause it to explode and tear its

fearful way through the side of the enemy. Thus it will be evident that we can never fail to render the shell effective, in as much as that it is the very fact of contact with the side or hull of the enemy that brings the self-exploding agency into action. No ship that has ever been built, either wood or iron, could survive the fearful hole which a monster shell, exploded under such circumstances, would produce.

The next feature is the intimate union of our mortar with the hull of the screw steam-vessel, which transports it direct to the object which we desire to destroy. The mortar is (as will be seen on reference to the engraving) made part and parcel of the vessel, and so situated as to unite the most effective mechanical arrangement with the strongest position of the vessel—viz, "end on," so that the entire mass of our vessel (mortar and all) is brought into play, as the means whereby the concussion or recoil due to the explosion

of the shell is absorbed by the entire mass of the floating mortar, so that no sensible recoil or concussion would be experienced.

Next is the manner in which the crew who attend to the navigation of the floating mortar, together with the steam-engine, boiler, and screw, are protected from the action of shot, whether red-hot or cold. This object is attained by giving the vessel, in all directions where assailable, such a thickness of timber as that no shot, of whatever description can penetrate to the interior. To insure this, the hull of our floating mortar will be made at least ten feet thick, of poplar wood, which material is admirably adapted for the purpose, by reason of its lightness, toughness, and incombustibility. Red-hot shot might lodge in it, but would fail to set it on fire.—A red-hot shot would only char a few inches of the timber around it and cool at its leisure, and from the extent to which the hull would be submerged, the portion above water pre-

sents no surface favorable for the effective action of shot; whilst, as there will be most ample accommodation in the interior for a high pressure engine and boiler, with direct action screw-propeller, there is nothing to prevent our obtaining a velocity of eight or nine miles an hour, although for the actual objects of the vessel a speed of five or six miles would be ample. The draught of the engine furnace would cause perfect ventilation for the crew, which need not consist of more than three or four handy men.

I would observe, in conclusion, that as this class of vessel is chiefly designed for defence against invasion, and would not have to act against an enemy, probably, at greater distances than one or two miles from our shore, it could speedily return for another shell; the means for lodging which in the chamber of the submerged mortar are most simple, but not needful at present to describe. I conceive, however, that the total destruction of

Figure 2.

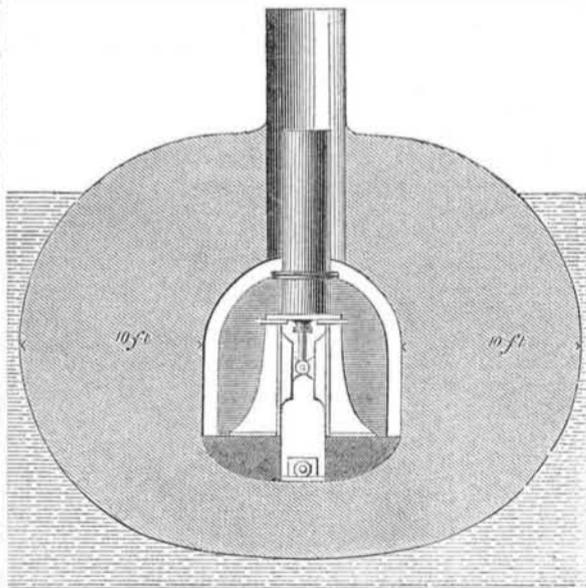
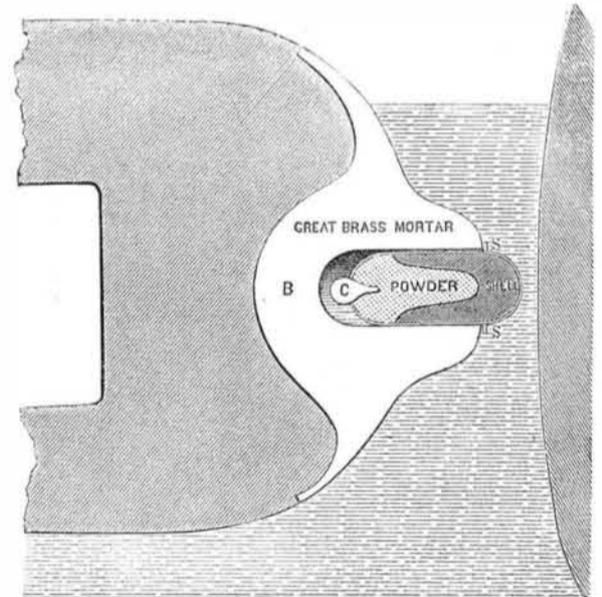


Figure 3.



one enemy's ship at each trip would be sufficient service.

Three or four such floating mortars, each of which sending to the bottom of the sea the largest ships an invading enemy might dare to bring towards our shore, would make such a demonstration as would strike terror into the largest fleet that molested a peaceful nation; and not fail to confirm the maxim, that the best way to prevent war is to render the results so terrible as that evil-disposed nations will think twice ere they face such wholesale destruction as our floating mortars would not fail to deal out to them.

[The fear of an invasion has been very strong in the minds of the people of Britain ever since Louis Napoleon became President

of France, and at present the excitement, we can perceive, is approaching fever heat. It was said once, that "a sight of the gray coat of Napoleon (the great we mean) was enough to set all Europe in an uproar." We must say that England seems afraid now in trusting in her wooden walls, and instead of terrifying her foes by keeping watch and ward on their coasts, as she once did, she is keeping a sharp look-out for the defence of her own coasts by such water hogs as this of Mr. Nasmyth. Prudence, no doubt, is the better part of valor, but we apprehend that this vessel could very easily be taken prisoner by a few boats before it was permitted to drive its snout against the side of an invading war ship. It no doubt could be used at night as

well as during day light; but at the same time, we must say that since Mr. Nasmyth has brought this subject before the public, invading ships will be prepared for it, as they now understand what it is.

Torpedo submarine vessels are not new; more than one has been invented in America, and for many years they formed a more interesting subject to Robert Fulton than his steamboat. He was furnished with means by Napoleon to blow up an English frigate, but failed, and after that Napoleon seemed to entertain a prejudice against him. Lord Cochrane invented a torpedo submarine vessel, but nothing of any consequence, so far as we are informed, resulted from it, and never will, we suppose.