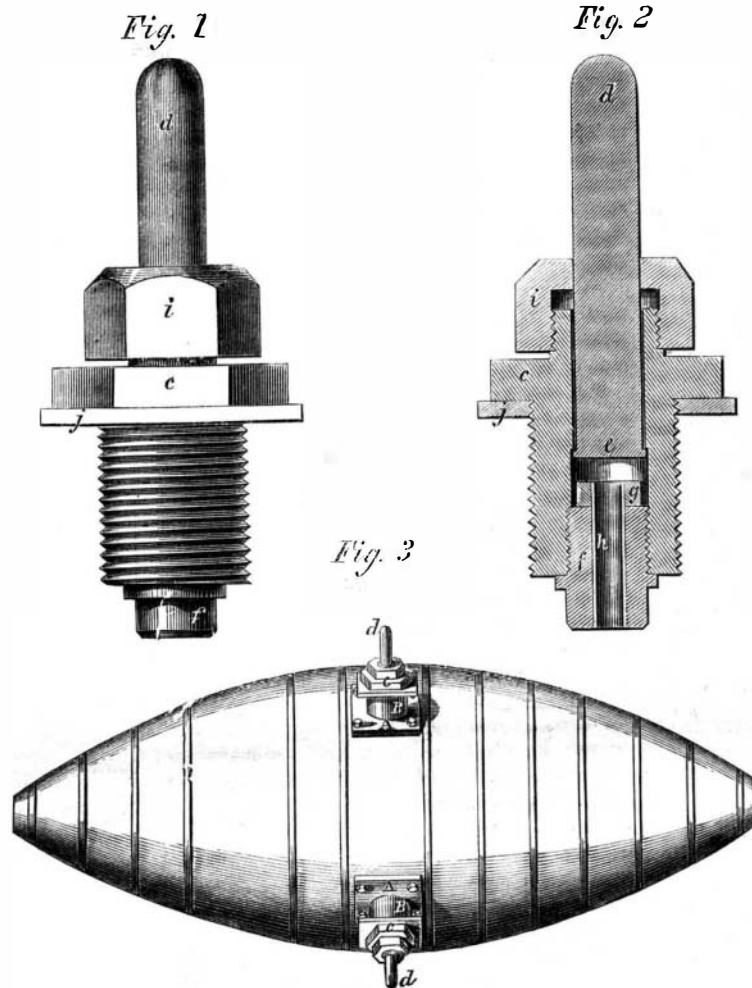


THE NEW TORPEDO IN CHARLESTON HARBOR.

It has always been a favorite project with a certain school of military and naval men, to destroy ships by means of large quantities of powder placed in water-tight vessels, sunk in the channels of harbors or rivers. These torpedoes, as they are called, are sometimes fired by contact with vessels, by clockwork arranged to run a specified time—with lines run to the shore, where a man concealed pulls a lanyard—by percussion, or the liberating of a set of hammers—by the aid of galvanic batteries; in short, they have been projected upon all possible schemes, and with but very little success. It would be a curious item for the statistician if we could ascertain how many tons of powder are lying at the bottoms of the several rivers, lakes, bays, and bays in the south, and what number of water-logged, sunken, and misshapen cases drift to and fro, at the mercy of the current, utterly powerless for injury. To prevent suspicion and allay any fears caused by floating torpedoes, they have been made in the shape of barrels and sent down with the tide upon unsuspecting ships; but by some miscalculation on the part of the authors of the intended mischief, they have in nearly all cases gone wide of the mark; and out of the countless number made at different periods of time the few casualties arising from them can be counted on the fingers. In the war of the Revolution, the British man-of-war *Rinaldo* (?) which lay near the town of Norfolk, Virginia, was the recipient of a favor of this kind, which was floated down the Elizabeth river. It exploded close alongside and threw an immense body of water on deck; so frightening the crew that they jumped overboard in large numbers. During the present war, torpedoes have been sown like grain in all southern waters, where it was thought they might be efficient; but every one conversant with the gallant deeds of the Navy, can easily remember how many of them have proved fatal. The Mississippi river had quantities of these "queer fish" scattered along its eddies, and near the banks of the stream, where the current was not too rapid; the rebels also sent torpedoes down stream, whenever they thought they could do mischief; but not one that we ever heard of took effect. The catfish may have been astonished by an uproar in their domains, but the ships were unharmed. It is only quite recently that the rebels have obtained any success in the discharge of torpedoes. At the time the *Montauk* assailed Fort McAllister, near Savannah, a torpedo exploded under her stern, and raised the vessel a foot out of the water; but although the submerged hull is only of $\frac{1}{2}$ inch plate iron, it was not even caused to leak, or if so, knowledge of it was withheld from the public. Still later the *Commodore Barney*, a gunboat made out of one of the ferry boats that ply in our harbor, exploded a torpedo in the James river, and was much injured thereby. Yet another infernal machine of this class was forced under the Monitor *Weehawken*, but without any decisive result. The wonder is that all on board these vessels were not destroyed. It is not strange that the hulls were uninjured; for while a violent shock may be given to a vessel by a torpedo, the resistance interposed by the elastic cushion of water will tend to prevent any penetration, or crushing in of the hull, unless the torpedo be near the surface. They are therefore practically useless. The newest invention of this kind is illustrated above, from drawings made by officers in Government employ. It was intended to float with the tide, and explode on any vessel it came in contact with. The machine itself is elliptical in section, and made of wooden staves hooped with iron; the outside being well coated with pitch, to make it

water-tight. The cast-iron flanges, A, are fitted to the outside of the torpedo, and screwed to it by bolts. The projecting bosses, B, have the hollow brass plugs, C, screwed into them; this plug is fitted with a plunger, *d*, and a stuffing-box, *i*, which keeps the same water-tight. The bottom of the plunger is larger in diameter, as seen at *e*, Fig. 2, so that it cannot slip out. The brass nipple, *f*, is screwed into the lower part of the plug, and has the friction tube, *h*, inserted in it: this is surmounted by a circular piece of wood, *g*. The leather washer, *j*, makes a tight joint at the bottom of the plug flange. The swell of the sea is supposed to throw the torpedo against a vessel with sufficient force to cause an explosion. The charge is about 50 pounds of coarse powder. This machine did no damage, being picked



up adrift before it had exploded. Whether it would have injured the iron-clads is a matter of some doubt; but there is no question that a wooden ship would have had a hole stove in her side by this torpedo if suffered to explode as designed.

IRON RAFTS FOR HARBOR DEFENSE.

The latest English papers bring advices respecting the progress toward completion of the new Anglo-rebel iron-clad fleet. Three of these formidable vessels are nearly ready for service; one of them is now on the graving dock at Liverpool, another is ready to launch at Birkenhead, opposite the first-named city, and the third is well under way at Glasgow. These ships are first-class in all respects, having rams, turrets and heavy plating. They are not intended to rust idly in English dockyards, until emergency shall call them forth; but are destined for immediate and urgent duty. Long ago we were informed of the intentions of the rebels respecting our large seaports; and we see now the active steps they are taking to put their threats in force. Supposing this city to be the most desirable point for them to wreak vengeance on, may we not inquire pertinently what means are at our disposal to repel them? It is idle to talk of stone forts; useless to point at the huge guns now mounted at the entrance of the port. Forts and guns are alike ineffectual against opportunity, as found in a foggy morning, or the darkness and obscurity of night. The *Monitor* batteries, invulnerable as they are, might do efficient service; but at this writing, and in all probability for some time to

come, their services are required elsewhere, for duty equally as important as the defense of this port. Not only are these facts to be considered, but it must be also recollected that the harbors to be defended are many, and the *Monitors* comparatively few. If the enemy can cross the ocean, he can go anywhere on the coast, and burn cities or compel a ransom for them, which it will be hard for us to pay. These, and other points are to be taken into account when settling the problem of harbor defense. The experience of the past year amply attests the inefficiency of stationary forts, or in fact any fort, stationary or revolving, unless some auxiliary be brought to bear, to detain under fire the ship or ships endeavoring to pass.

The lesson this nation has to bear in mind is that one learned before Charleston. The attack on that city in April last was futile, and the present one proceeds slowly to ultimate success. And why? Fort Sumter is a dust heap, the frowning batteries that encircled it are irregular masses of sand, although their guns are yet formidable; neither the darkness of the night nor the invulnerability of the *Monitors* avails as yet against the other obstructions which thwart our efforts to obtain a speedy success. The inner line of obstructions—the concealed piles, hulks, torpedoes, or whatever the nature of the barricade may be—obstinately bars the approach and renders the utmost caution and skill necessary. These are the defenses on which the rebels relied, and of which they boasted not without reason. They delay our progress at this writing: they defy us utterly: and were they as perfect as they could be made, no entrance to Charleston could be effected.

We believe that the mouth of a roadstead may be most effectually sealed up against invasion, by submerged obstructions; but the nature of such an impediment is the one thing to be carefully studied, and looked at in all situations before it is adopted. If such a hastily gotten up and constructed defense as that at Charleston delays the consummation of the siege, with how much more certainty we can argue that a properly built raft or barricade would be utterly impervious to all assault from an enemy's ship or ships. To our mind the raft forms the best method of obstructing the entrance of our harbors; but the plan of it is, as before remarked, all-important. It will not answer to have this defense rigid and unyielding, for the reason that sufficient force could be brought to bear upon it to destroy it; but it must be elastic and yet strong, and above all inaccessible to the enemy, so that he cannot operate it with any hope of success. Such a raft comprises in itself the essential features of an efficient harbor defense. It is proposed by the inventor, Mr. Theodore Timby, the inventor of the revolving turret, to construct the chains of which this raft is composed from 3-inch iron, and to buoy them up with metallic buoys at a specified distance from the surface; say seven feet, or at any depth deemed most suitable for the object in view. The raft is to be composed of sixty chains, each of the size mentioned, which are stayed to each other by shackles, or other device of an equivalent nature, so that any assault upon the outer chain would be distributed throughout the whole gang, until the force of the shock was lost. If it is argued that the buoys may be pierced, and so destroyed, we have only to point out the depth of water which covers them, as well as the want of knowledge of their exact situation, to make it apparent to the reader that tons of shot might be fired at them before they could be struck, and that the piercing of one, or two, would not destroy the efficiency of the raft. The cohesive strength of the best cable iron is 46,000 pounds to the square inch, and it is easy from these figures to calculate the enormous