Scientific Museum.

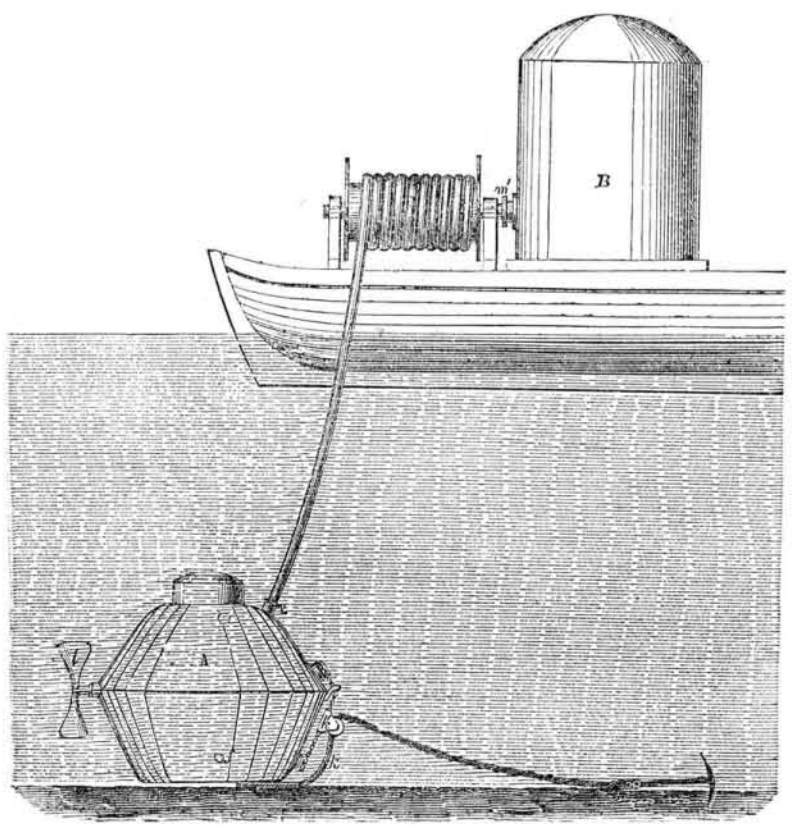
Improvement in Diving Bells.

The annexed engraving is a view of an improvement in diving bell apparatus, invented by E. W. Foreman, of New Rochelle, N. Y., a young man who lost his life last year while bathing. A patent was granted to his brother as administrator on the 23d of last month, the claim for which will be found on page 406, vol. 8. The assignee of the patentee is H. W. Sears, of this city.

We consider that all improvements relating to submarine apparatus are of much importance to such a great commercial country as ours; hence we have always endeavored to spread abroad much useful information on the subject. In the first number of our last volume we presented an illustrative description of blasting rocks under water by the electric spark, without the use of a diving bell; but the diving bell is for the purpose of doing under water what no other machine nor apparatus is capable of doing; hence it will always be used, and every improvement made in it should attract attention.

The figure of the dividing chamber, A, is made up of the frusta of two cones joined at their bases. At the top is an opening by which the workman enters, having a cover fitting air-tight, which may be secured from within. The bottom also has a hole in it, with a cover. Around the edge is a rim. The use of this rim is to retain within the vessel any object the explorers may take in through the bottom. There are a series of tanks arranged around the sides of the diving-chamber; these are the air and water reservoirs for regulating the specific gravity of the chamber. Each tank is connected with the others by two sets of pipes; the one set being at the top, and the other at the bottom. The upper pipe is for the supply of air, and the lower one for water. The supply of air is obtained from a reservoir (carried upon a boat or float) by means of a flexible tube, C, extending from it to the diving chamber, where B is the reservoir, and it is by filling the tanks with water, wholly or partially, that the buoyancy of the chamber, A, is regulated; *g* is the end of a pipe to which the flexible air-tube, leading from the reservoir, B, is connected outside, whi e it communicates within by means of a branch having a stop-cock with one of the tanks, and then the main pipe passes down near the bottom, and discharges by another stop-cock into the general chamber A. There is a pipe for discharging air from the tanks. This pipe has a stop-cock in it, and is beside covered by a valve of common construction on the outside, and opening outwards. There is a pipe for emptying the tanks of water, which discharges outside and also through the bottom; there being here a valve of common construction opening outwards. The air may likewise be introduced into and discharged from the tanks by separate pipes; an arrangement which will sometimes be required, as the proper balancing of the vessel will depend upon it. The chamber is further supplied with an arrangement for anchoring it to the bottom for holding it in one place, or to afford the means of shifting its position. The anchor, which may be of common construction, is attached by a cable, *k*, through a traversing sheave or block, *k'*, and the end, after passing over k', is taken in through a hole in the bottom, where it may be wound upon a windlass. The block *k'* is fixed to an endless chain passing over two rollers, one near the bottom, and the other near the middle of the diving chamber A. The upper roller is fixed to a shaft which passes through the side of the chamber, A, and terminates in a crank, by which it can be turned round. This movement from within effects the traverse of the pulley *k'*, up and down, and so changes the angle or direction of the pull upon the anchor. The various positions which may thus be given to the block, *k'*, afford a means of regulating the degree of force with which the chamber is held to the ground; for if the cable be adjusted to pull from the bottom of the chamber, A, it will exert little force in keeping it upon the ground; and, on the contrary, if the block, *k'*, be raised, the anchor will act more effectually to hold the chamber upon the ground. At *l* is a propeller rudder. This is a common screw, fixed upon a shaft passing through into A, and having a crank to set it in rotation. The box supporting the shaft is formed on the principle of a ball and socket joint, thus any direction may be given to the shaft, so that by it the chamber, A, may be propelled within a certain arc in various directions, the anchor forming the centre about which the motion would take place. The flexible air tube is exhibited at C. It is so constructed as to be capable of being coiled or uncoiled without interrupting the passage of air; for this purpose it is combined with a hollow-shafted reel. The end fixed upon the reel opens in the hollow shaft, one end of which is stopped, the opposite end entering the reservoir, B, through a stuffing-box, by which means the air may pass out of B through the shaft, thence through the tube coiled upon it, and be thence discharged into A, so that no more tube need be in the water than is sufficient to reach the diving-chamber. The air-reservoir, B, must be constructed of a material capable of sustaining a great degree of pressure.

FOREMAN'S DIVING BELL.



The mode of operating with the apparatus will be as follows: The diving-chamber, floating upon the surface of the water, is anchored so as to stand over the bed of the wreck or other object to be explored, or as nearly so as may be. The reservoir, B, is then charged by means of an air-pump with as much air as can be forced into it, and the flexible tube, C, is attached to A. The workmen enter with such tools as they require, and the top is shut down and fastened. The tanks, at first, contain only air at the pressure of the atmosphere. The air-cock is then opened, and also a cock at *f;* the latter of which allows water to flow into the tanks, and forces the air out, which decreases the buoyancy of A so much that it sinks. As the chamber descends, the cock, *g*, is opened so far as to allow a sufficient amount of air to be sent in from the reservoir, B, to sustain respiration, and also to counterbalance the pressure of the water outside, for the ascertainment of which proper gauges will be employed. The specific gravity of the vessel may be regulated for any depth of water it is to go, by properly proportioning the water and air in the tanks, so that it may be held in suspension at any depth the operators may please. In this manner the upward and downward motions are effected, while the traversing motion along the bottom is obtained by means of the anchor and the rudder.

If the apparatus lie in a current, it can be worked along it by means of the cable, *k*, being wound or unwound within, while to go from side to side the propeller-rudder is worked. As soon as the chamber is over the proper spot, the cover to the bottom hole is taken off, when the water will be kept back by the pressure of the air from within, and the workmen can then begin their operations. Light is admitted within the vessel by the insertion of heavy plate glass, or bulls'-eyes, in the top and sides. The buoyancy of A should be such that on emptying the tanks of water and filling them with air, it will rise to the surface with the additional weight of such articles as may have been taken from the bottom. As soon as it is desired to rise to the surface, water is expelled from the tanks by the force of the air from the reservoir, B, which is then admitted in at the top, the water passing out by the bottom pipe, *f*, from which there is a communication with the outside.

It is intended to combine with the diving-chamber a second chamber, placed below the lower opening, and to be formed of several pieces, which is intended to act as a moveable cofferdam.*

* We refer our readers to the claim to see what is new to this apparatus.

The American Yacht Silvie Beaten.

The American Yacht Silvie, the property of a gentleman at New Rochelle, was beaten this year in the race for the Royal Prize. The successful Yacht was the Julia, of only one half the tonnage of the Silvie, and is quite new, having been built on improved lines. The Silvie came in second; the time was 7 hours, 7 minutes, 3 1-2 seconds for the Julia, the Silvie's time was 6 minutes, 38 1-2 seconds longer. The owner of the Silvie, L. A. Depaw, at once challenged the Julia for another race; we do not know if the challenge was accepted.

Serious Steamboat Accident.

The steamboat Bay State, while on her passage to this city from Fall River, on the night of the 8th inst., broke her crank pin, by which the cylinder lid was smashed to pieces, and a great discharge of steam took place into some of the rooms where the passengers were sleeping, by which four persons lost their lives.—The verdict of the Coroner's Jury threw no blame on any of the officers of the boat, or the makers of the machinery.

Improvement in the Manufacture of Iron.

The "Pittsburgh Dispatch" states that a valuable improvement has recently been made in the manufacture of iron by J. Finch, of that city. The nature of the improvement is not described, but it is stated that the common grey iron of Pittsburgh has improved so much in strength by it, as to sustain more than 20,000 lbs. extra on the square inch. The improvement is made in the puddling process, and is applicable to all kinds of iron.

There are some that live without any design at all, and only pass in the world like straws on a river—they do not go, but are carried.

Heat and Comets.

When some persons get notions of a peculiar character into their heads, it is curious to witness the reasons they advance, and the proofs they bring forward in support of their opinions. The recent comet has called forth the philosophic deductions of a correspondent of the "New York Tribune," in proof of great heat as the usual accompanyment of such visitations. He asserts that the comet of 1811 was accompanied with a highly heated atmosphere, and that the present comet was the same that Beilas discovered in 1826, and that its periodical revolutions were calculated by E. Clausen, and found to be 6 3-4 years, which he says would make it cross the ecliptic on the 29th Oct., 1852. How he makes out the recent comet to be Beilas', in order to prove its connection with the great heat of our atmosphere this summer, by his own proofs, is enough to puzzle the best spiritual medium in our country. Beilas' comet appeared last year and was seen at Rome, consequently the present comet cannot be the same, and his conclusions about heat and comets are simply erroneous.

Inventions.

Some one thus sums up a few of the advantages of modern inventions:—"One boy, with a Fourdrinier machine, will make more paper in a twelvemonth, than all Egypt could have made in a hundred years during the reign of the Ptolemies. One girl, with a power-press, will strike off books faster than a million scribes could copy them before the invention of printing.—One man, with an iron foundry, will turn out more utensils than Tubal Cain could have forged, had he worked directly to this time.

In the course of one month there will be a double track all the way to Albany on the Hudson River Railroad. Good.