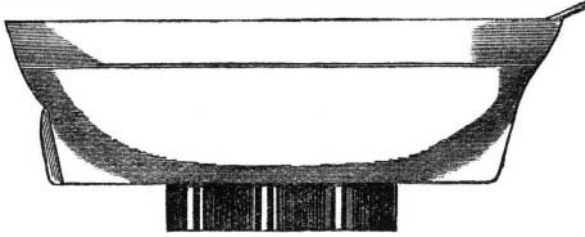


A NEW PROPELLER.

The peculiar mechanism of the dorsal fin of the pipe fish (*syngnathus*) and sea horse (*hippocampus*), which is also known to be present in the electric eel (*gymnotus*), has been referred to by more than one naturalist. The action is a kind of wave, commencing at the front end and continued through its whole length, continually repeated, so as to form a kind of screw propeller.

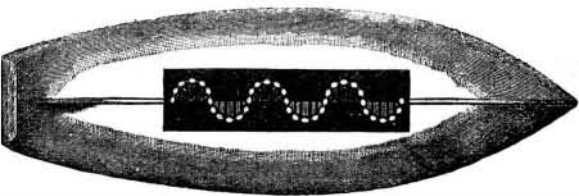
It is not difficult to imitate artificially this undulatory fin of the abovementioned fish. A series of rods hinged near their middle on a single axis will evidently represent at one end any movements given to them at the other. Therefore,

Fig. 1.



if they are made to come in contact at one extremity with the side of a screw which is placed perpendicularly to their direction, and at the same time is provided with projecting disks at right angles to its axis, one between every two rods, to keep them in place, the opposite tips will form an undulating curve, just in the same way that the ivory balls, in the eccentric apparatus so frequently employed by lecturers on experimental physics, are made to represent the undulations of the atoms of the luminiferous ether in the production of

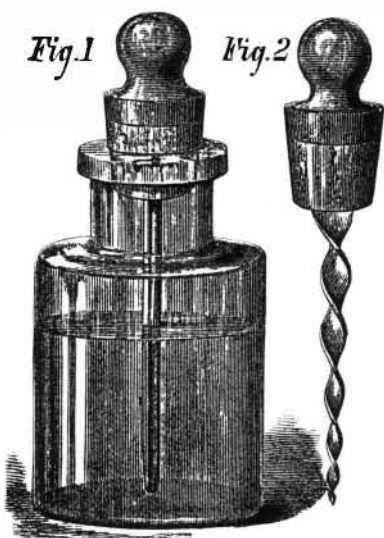
Fig. 2.



light. Like this apparatus, also, if the screw be made to rotate, an undulation will travel along the rods, which is exactly similar to that observed in the fin of the sea horse. Such a piece of machinery, driven by clockwork, ought, theoretically, to propel a boat if properly placed. Mr. C. Becker, says *Nature*, of the firm of Messrs. Elliott & Co., has constructed such a boat, (seen sideways in Fig. 1, and from below in Fig. 2). Its speed is slow, as is that of the fish; in the former case this is accounted for by the fact that the machinery is, in this particular instance, perhaps a little too heavy, at the same time that the friction developed in its action is very considerable. In the artificial fin there are just three complete undulations with eight rods in each semi-undulation, forty-eight in all. Between the rods the membranous portion of the fish's fin is represented by oiled silk. The rods and the other portions of the driving gear are so arranged that the former project, with their undulating ends and the oiled silk, in the middle of the boat, along the line of the keel. They form what may be termed a median ventral fin. The undulations are very complete, the curves being true semicircles.

LUBRICATING DEVICE FOR SEWING AND OTHER LIGHT MACHINES.

The article in ordinary use for applying oil to machinery is the pressure or spurt oil can. For the machine shop, where dirt and oil seem to be matters of no moment, this apparatus serves an excellent purpose; but for sewing machines, and light machinery in general, the use of it is open to many objections



Besides the trouble of pouring oil from a bottle into the can, the delivery of oil from the spurt cans is very uncertain. You put the point of the tube against the part of the machinery requiring oil, and give a gentle pressure with your thumb on the bottom, and nothing comes. You press again a little harder, with the same result. Then, if you are only an average specimen of humanity, you get provoked and give a squeeze which nearly collapses the cup, and a

small deluge of oil flows out and over not only the bearing, but it gently trickles down on the work or one's clothes, and it takes a woman with an angelic temper not to say something a trifle hasty. Then, when you put your oil can down, the surplus oil flows down the outside of the tube over the cup, and slowly meanders around the table, ready to soil the next thing it comes in contact with; and you can set it down as a rule that, when one introduces a spurt oil can into the house, he ought also to bring a gallon of benzine with which to antidote it.

With the little device illustrated herewith, it is claimed that all this is avoided. The cork, or stopper, and rod are made to fit the oil bottle, just as it is received from the dealer, and it is always ready for use. To operate it, remove the rod by means of the little knob attached to the stopper. The latter comes out with its groove full of oil. Touch the point of the rod to the parts requiring lubrication, and the oil flows as long as necessary. Remove the point at just the right moment to leave the exact quantity needed. The rod is returned to the bottle, the cork pressed in, and the bottle is safe from spilling from a chance overturn; and the hands, work, and table are clean, and no oil is lost or wasted.

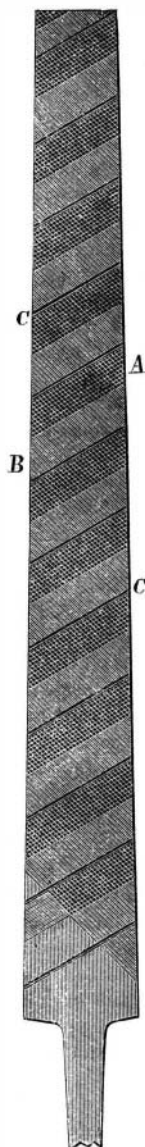
As evidence of the value of this little invention, the inventor estimates that a sewing machine company, using 100,000 oil cans, would save \$4,000 or more per annum by adopting this device. Few persons, he thinks, after trying the invention on their sewing machine, jig saw, lathe, or other light machinery, would willingly go back to the old can.

Patented September 28, 1875. For further information address the inventor, Mr. G. A. Sawyer, care Trump Brothers, Wilmington, Del.

A NEW PATENT FILE.

We illustrate in the annexed engravings a new method of cutting files, through which, it is claimed, the tool is caused to partake of the advantages of both the single cut and the cross-cut file.

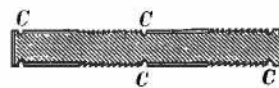
Fig. 1.



The invention, which will be readily understood from the illustrations, consists in forming, on the surface of a file of the usual shape, a number of sections, A, Fig. 1, of cross-cut teeth alternated with a similar number of sections, B, of single-cut teeth. Also, at the point of intersection between each cross-cut and single-cut division, and for the purpose of meeting the requirements of coarse filing, a groove, C, is made, shown in section in Fig. 2, which is parallel with the edges of the various divisions and has a depth and width greater than those of any of the other cuts. The object of these diagonal grooves is to collect the particles of metal abraded and to prevent the same from being wedged into the teeth, in this way obviating the scratching, by these minute fragments, of the material worked upon.

The inventor submits to us several excellent testimonials from machinists and others who have practically tested the tool with satisfactory results. He informs us that it allows of the surface of either metal or wood being cut away with greater rapidity than is possible with a single-cut file, and at the same time it produces a smoother surface than the cross-cut file, in this manner, as stated in the be-

Fig. 2.



ginning, combining the advantages of both kinds of tool. It appears to be an efficient and useful invention, and to possess qualities of durability superior to those of files of the ordinary pattern.

Patented September 7, 1875, by Messrs. C. F. Carr and S. S. Wilcox. For further information relative to sale of rights, etc., address the last mentioned inventor at Lisle, Broome county, N. Y.

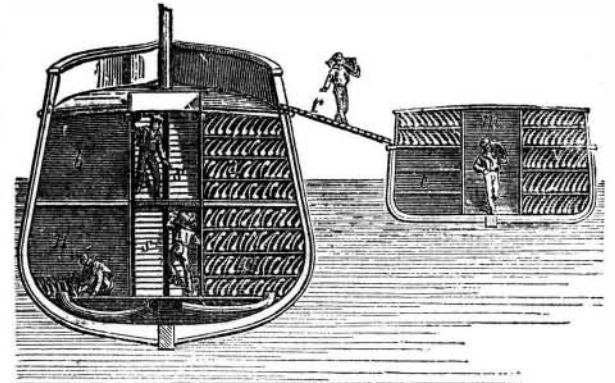
THE PROPOSED REFRIGERATOR STEAMER.

It may be safely predicted that the time is not very far distant when vessels carrying perishable cargoes, of fruit, meat, and other articles of food, will make constant and regular voyages between the tropics and the colder temperate regions. The use of refrigerator cars in transporting the fruit and vegetable productions of California to the Atlantic seaboard, and more recently the export of a quantity of American peaches to England, by steamer, during the latter part of last summer, may be considered in the light of successful experiments leading to the more important results of a steady commerce, and this more especially in view of the rapidly advancing progress in refrigerating machinery.

We lately alluded to the Tellier refrigerating apparatus, in which a low degree of temperature is transmitted to an

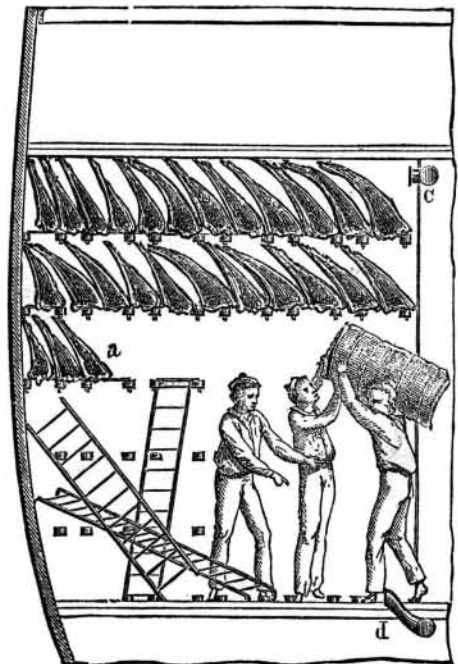
air blast which passes around large plates cooled by the expanded vapor of methylated spirit. By the aid of this invention, it is believed that cargoes of fruit, etc., may be carried over very long voyages even in the warmest weather, and it is now proposed practically to test this assumption. From late French journals we learn that the inventor has chartered a steamer of 900 tons, which he has named the *Frigorific*, and which he intends to load with perishable ma-

Fig. 1.



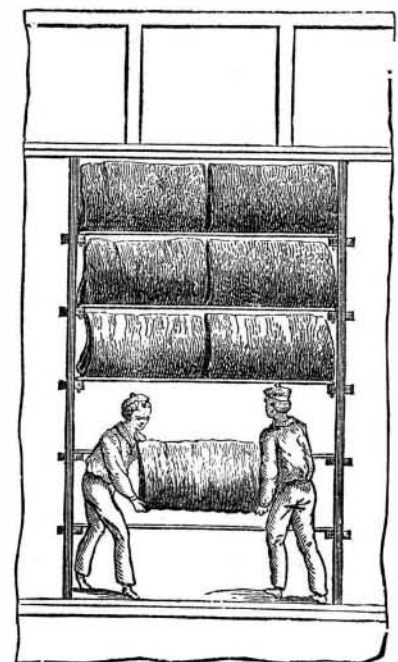
terial in France, and dispatch to La Plata, in South America. The first part of the test will consist, of course, in determining whether the outward cargo will keep over the voyage. If so, the contents of the ship will be disposed of and her hold filled with fresh beef, which will be transported to France. This transportation of beef has been the object of projectors of schemes for cooling vessels for a long time past, for the reason that, if success can be obtained, an immense

Fig. 2.



trade is at once possible. In Texas, on the pampas of South America, and in Australia, thousands of cattle are slaughtered simply for their hides, the bodies being left totally unutilized. It has of course occurred to many that to carry this enormous quantity of meat, to be bought for almost nothing, to European markets where butchers' rates are high, and especially to great cities where to the poor fresh meat

Fig. 3.



is a luxury sparingly to be indulged in, would be both profitable to a high degree, and at the same time a measure of philanthropy. Hence the repeated attempts, thus far failures, which have been made to use ice as a means of preserving cargoes of dead cattle.

If, as appeared to be the case when we examined the Tellier apparatus, it is possible to maintain a temperature of 32° Fah. at so small an expense as was indicated, there is no