

**IMPROVED MARINE LOCOMOTIVE**

The boldness of thought among the inventors of the present day is shown in no department more strikingly than in that of navigation, and one of the most remarkable instances of it is in the plan illustrated in the annexed cut. Several plans have been devised for running vessels on the surface of the water, but this idea is of course an absurdity; every body floating on the water must displace an amount of water equal in weight to itself; in other words, it must run through the water and not over it. The inventor of this contrivance, whatever other errors he may commit, does not fall into this fallacy. He says that it is now generally assumed that the resistance of a steamboat moving through the water is in proportion to the cube of the velocity, and he proposes to avoid this rapidly augmenting resistance as the velocity is increased, by making the wheels sufficiently buoyant to support the vessel with its load above the level of the water, so that the whole resistance to the progress of the vessel is confined to the wheels.

The platform, A, is hung upon axles, C C, of the wheels, B B, which are made in the form of water-tight drums sufficiently large to float the whole apparatus. The rims, a a, of the wheels extend to the outward edge of the buckets, b b, and the cranks are turned by engines in the usual manner. It is proposed to immerse the wheels about one-third of their diameter, and their number may be increased indefinitely. Of course, if a sufficiently rapid revolution of the wheels could be obtained, this plan would produce a vessel that would run with great velocity, and the only way to determine whether such revolution can be obtained is by trying the experiment.

An application for a patent for this invention has been made through the Scientific American Patent Agency, and persons desiring further information in relation to it will please address the inventor, O. Hopkins, No. 90 Third-avenue, this city.

**SOLID EMERY VULCANITE.**

Many attempts have been made to produce a solid emery wheel, for the purpose of cutting, grinding and polishing metals; but until now we have never seen anything which could practically hold the emery in place better than the ordinary mode of covering a wheel with glue, and sprinkling emery upon it. After years of experimenting, however, Mr. Thomas J. Mayall has produced the desired result, if we can judge by the wheels we have seen in operation cutting hardened steel, and by the testimonials of those using them. The emery is incorporated with india-rubber and sulphur, and while in a plastic state, is put into molds and submitted under great pressure to a high degree of heat, according to Goodyear's patent for vulcanizing; this converts it into a solid granular mass, resembling granite or iron. It can be made of any desired grade of emery, and used either dry or with oil or water. The wheels can be turned off in a lathe running very slow in the same manner as iron is turned, which will enable parties using them to turn the face of the wheel to conform to work of any irregular shape or to "true" them if necessary.

The New York Belting and Packing Company, whose manufactory we minutely described on page 169, Vol. I. (new series) SCIENTIFIC AMERICAN (which article was deemed of so much public interest that it was copied verbatim in *Newton's London Journal*), are now manu-

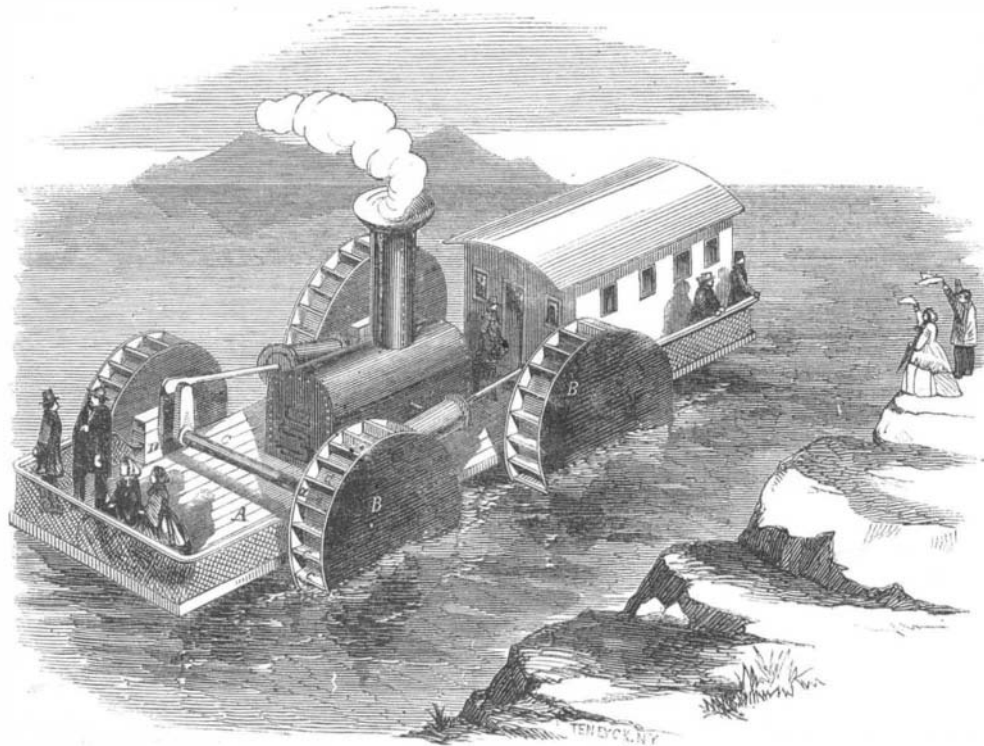
facturing this "Solid Emery Vulcanite;" and those interested can obtain further information by sending for a circular, or calling to see the wheels in operation, at their warehouse, Nos. 37 and 38 Park-row, New York.

**STEAM FIRE-ENGINES.**—The mayors of six cities in Massachusetts have recently addressed messages to their several cities, recommending them to get steam fire-

be used, with the flanges, b, to support it. This frame supports the gridiron, d, and has the wire gauze, c, seen through the bars of the gridiron, covering its bottom. If this gauze is of proper fineness, unless it becomes red-hot, it will cut off the flame arising from the fire and from the dripping grease, and thus prevent it from burning the meat.

The patent for this invention was issued, Dec. 20, 1859.

and persons desiring further information in relation to it will please address the inventor, John G. Treadwell, at Albany, N. Y.



**HOPKINS' IMPROVED MARINE LOCOMOTIVE.**

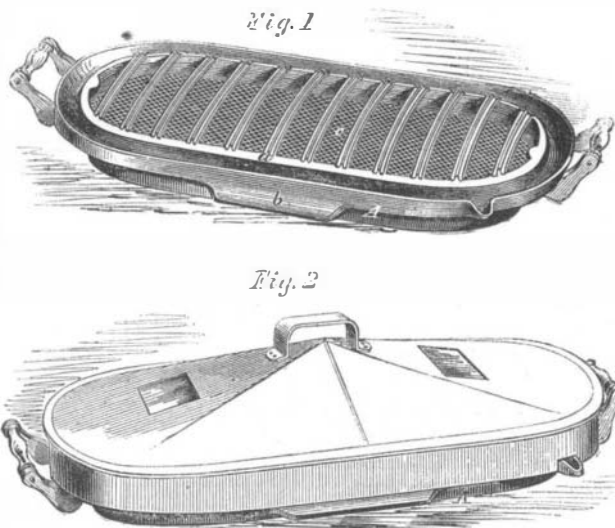
engines as early as possible. One or two new steam fire-engines have lately been built in London, England.

**IMPROVED GRIDIRON.**

One of the most singular of all the facts of nature, is the obstruction offered to the passage of flame by wire gauze. A burning lamp or candle surrounded by this apparently frail protection may be carried through a

teological phenomena, and magnetic variations; the taking of photographs, and the like, during the period of the eclipse.

**THE GREAT ECLIPSE OF 1860.**—M. Faye, in a memoir lately read before the French Academy of Sciences, suggests a concert in the observations to be made by astronomers upon the great eclipse of the sun on July 18, 1860, partial over a great portion of Europe and America, and total in Spain, Algiers and Morocco, and a portion of North America. He recommends the establishment of stations with some degree of regularity along the path of the total eclipse. Among other recommendations to astronomers, in their observations, are, the study of the physical constitution of the sun; of the protuberances on the solar surface; the testing of the tables of the moon's motion; careful observations of meteorological phenomena, and magnetic variations; the taking of photographs, and the like, during the period of the eclipse.



**TREADWELL'S IMPROVED GRIDIRON.**

chamber filled with explosive gases with perfect impunity. This is the arrangement of Sir Humphrey Davy's famous safety lamp for preventing the explosions of inflammable gases in mines. The explanation generally given is that the wire cools the gas as it passes through the meshes, below the temperature at which it combines with oxygen. This singular power of gauze to cut off flame is used in the invention here illustrated, to prevent the burning of meat while it is being broiled upon a gridiron.

Fig. 1 represents the utensil with the cover off, and Fig. 2 with the cover over it; this cover being made of tin with mica windows through which the progress of the cooking may be watched. The frame, A, is of cast iron in the proper form to fit the stove on which it is to



**INVENTORS, MACHINISTS, MILLWRIGHTS, AND MANUFACTURERS.**

The SCIENTIFIC AMERICAN is a paper peculiarly adapted to all persons engaged in these pursuits, while to the Farmer, House-keeper, and Man-of-Science, it will be found of equal interest and use.

A NEW VOLUME COMMENCED JANUARY, 2, 1860.

The SCIENTIFIC AMERICAN has been published FOURTEEN YEARS, and has the largest circulation of any journal of its class in the world. It is indispensable to the Inventor and Patentee; each number containing a complete official list of the claims of all the patents issued each week at the United States Patent Office, besides elaborate notices of the most important inventions, many of which are accompanied with engravings executed in the highest degree of perfection.

To the Mechanic and Manufacturer the SCIENTIFIC AMERICAN is important, as every number treats of matters pertaining to their business, and as often as may be deemed necessary a column or two on the metal and lumber markets will be given; thus comprising, in a useful, practical, scientific paper a Price Current which can be relied upon.

The SCIENTIFIC AMERICAN is published weekly in a form suitable for binding, each number containing sixteen pages of letter-press, with numerous illustrations, making a yearly volume of 832 pages of useful matter not contained in any other paper.

**Terms.**

To mail subscribers: Two Dollars a Year, or One Dollar for Six Months. One Dollar pays for one complete volume of 416 pages; two volumes comprise one year. The volumes commence on the first of January and July.

**Club Rates.**

- Five Copies, for Six Months.....\$4
- Ten Copies, for Six Months.....\$8
- Ten Copies, for Twelve Months.....\$15
- Fifteen Copies, for Twelve Months.....\$22
- Twenty Copies, for Twelve Months.....\$28

For all clubs of Twenty and over, the yearly subscription is only \$1 40. Names can be sent in at different times and from different Post-offices. Specimen copies will be sent gratis to any part of the country.

Southern, Western, and Canadian money or Post-office stamps taken at par for subscriptions. Canadian subscribers will please to remit twenty-six cents extra on each year's subscription to pre-pay postage.

When persons order the SCIENTIFIC AMERICAN they should be careful to give the name of the Post-office, County, and State to which they wish the paper sent. And when they change their residence, and wish their paper changed accordingly, they should state the name of the Post-office where they have been receiving it, and that where they wish it sent in future.