

**THE STRONGEST WAR VESSEL IN THE WORLD.**

The most powerful ironclad vessel at present in existence is the Duilio, which was recently constructed by the Italian government. She is not yet entirely completed, and but one of the four 100-ton Armstrong guns has been delivered. The general design of the vessel will be understood from the accompanying engraving. Her length is 331.2 feet, breadth at water line 58.4 feet, and depth of hold 25.2 feet. She has two turrets, which, instead of being in the center line of the ship, are placed toward the sides, so as to get a clear fore and aft fire from each turret. The inside diameter of each is about 26 feet, and the outside 32.7 feet, while the two turrets, with the armor plating and the two guns, will weigh about 6,720 tons. Each turret makes one complete revolution in a minute, and when in position for firing is stopped by hydraulic locking bolts. The vessel is built in compartments, and is provided with a novel system of pumps, which discharge water from her in case her skin is pierced by a shot. There are no masts, and all the machinery and the rudder are entirely under water, so that the vessel exposes no vulnerable portion.

The immense guns are loaded by hydraulic apparatus. Upon opening a valve, the ram head capped by a sponge advances rapidly into the bore of the gun, the latter being suitably depressed and the sponge rising at an angle from beneath the deck. When the sponge reaches the bottom of the bore, a valve in the head is opened, and a powerful jet of water is brought to play in the powder chamber: thus at the same time aiding in cleaning the bore, and preventing any possibility of fire being left therein. After the sponge is withdrawn, the cartridge and shot are in turn raised by an hydraulic cylinder to their proper position in front, and on a line with the muzzle, this and the remaining operation being performed by one man without his moving from his seat beside the levers. Lastly the ram head advances and drives the shot home. Without machinery, it requires, in the United States navy, 24 men to manage an 11-inch Dahlgren gun, the shell fired by which weighs 135 lbs. With the hydraulic mechanism described, four men can serve a weapon which throws a shell weighing 2,000 lbs., or a shot weighing 2,500 lbs.

It has been calculated that the work developed by the immense projectile is equal to about 39,000 foot tons; so that, if all four of the Duilio's guns were fired at once, her effective power would be equal to that exerted in raising 156,000 tons one foot high per minute.

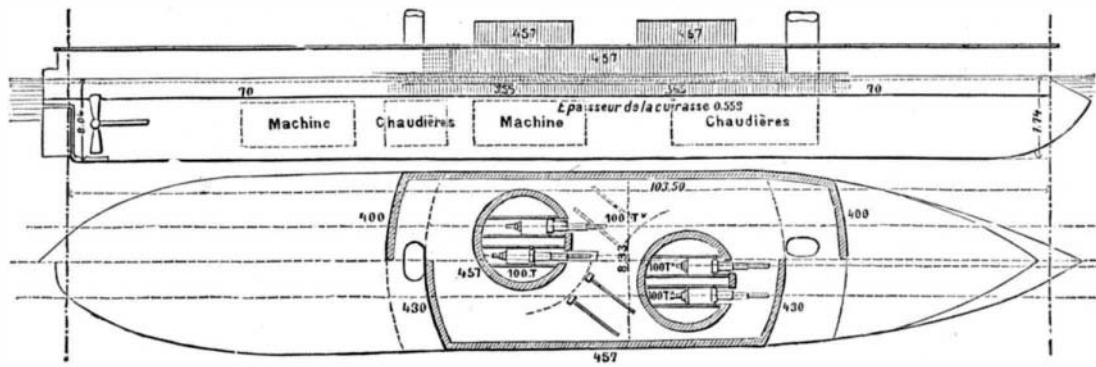
**A NEW STEAM CARRIAGE.**

The novel steam carriage here-with illustrated is provided with improved mechanism which enables it to be readily steered and conducted around curves. Fig. 1 is an elevation and Fig. 2 a view from beneath. The hind axle is revolved by a suitable steam or other motor, that is secured to the supporting platform, and connected by transmitting mechanism to the axle. The hind wheels are placed loosely on the axle, and secured rigidly thereto by clutches, C<sup>1</sup>, that are forced by suitable springs into hub plates of the wheels. The clutch mechanism, C<sup>1</sup>, of each wheel may be readily withdrawn by a lever and swivel connection, C<sup>2</sup>, operated by levers arranged near the driver's seat. On turning ordinary curves in roads the clutch mechanism is arranged to allow the outer wheel to make a greater number of revolutions than the inner one. On turning very short curves, by withdrawing the clutch from the inner wheel all the power is thrown on the outer wheel, and thereby the carriage allowed to turn easily on a space a little larger than its own length. The guide wheel, E, at the front part of frame, A, is connected by its axle, supports, and springs, with a horizontal turn table, F. The turn table

has a circumferential groove, and is connected by a belt with a pulley, d', and steering wheel, G, in front of the driver's seat. The hind wheels are further provided with suitable brakes, worked by a treadle.

The carriage, it is claimed, may be propelled at considerable speed, steered with facility, and carried readily around curves.

Patented through the Scientific American Patent Agency,



**THE ITALIAN IRONCLAD DUILIO.**

October 10, 1876, by Mr. Jacob M. Lauck, West Milford, W. Va.

**The Decrease of the Petroleum Supply.**

There has been a marked diminution in the oil product of Pennsylvania, of late. It is reported that, for some months past, the supply has not exceeded 28,000 barrels per day, while not more than two years ago the daily average was 40,000 barrels. The price also has more than doubled. The decrease of the supply is attributed to the cessation of flow-

samples of silk have been proved to contain as much as twenty-three per cent. of sulphate of lead.

There is some mistake in the mode of stating the case, says the *Sewing Machine Gazette*, as the fumes of sulphur would certainly not convert the acetate of lead into the sulphate. Nevertheless, on mentioning the statement to our tailor, he at once declared that the fact of lead impregnation in silk is well known; indeed, he said that the sugar of lead can be detected by the smell in some samples, and not only in silk, but also in other thread, which is also sold by weight. Some

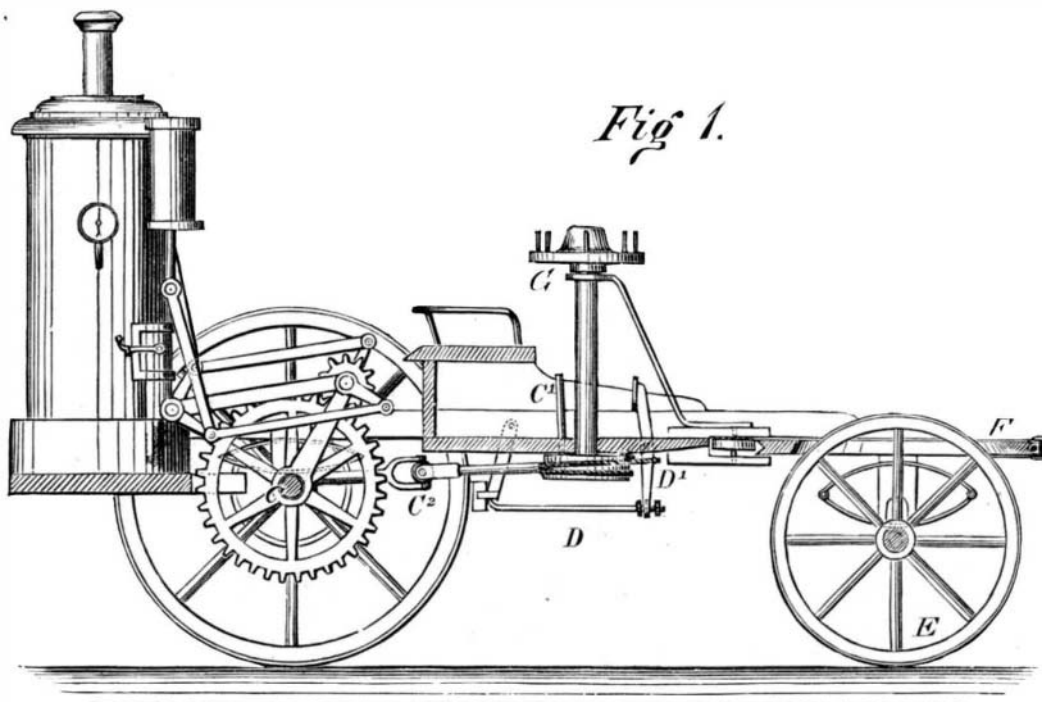
adulteration, then, is practised, various matters being used to give weight to the articles; and, as a consequence, all thread rapidly deteriorates on exposure to the air. On this account the best sewing silk is usually well wrapped in wash leather.

It is easy enough to detect the adulteration by chemical process, and, although the result is not conclusive as to the presence of lead (as stated by the French writer), it proves, at any rate, the presence of some metal. Put a few pieces of silk thread at the top of a test tube filled with water containing a few drops of acetic acid or vinegar. As soon as the silk gets moistened, let fall into the test tube a few drops of a solution of iodide of potassium. Then, if the silk contain lead or other metal, an iodide of the metal will be formed, sinking with a violet tint into the tube.

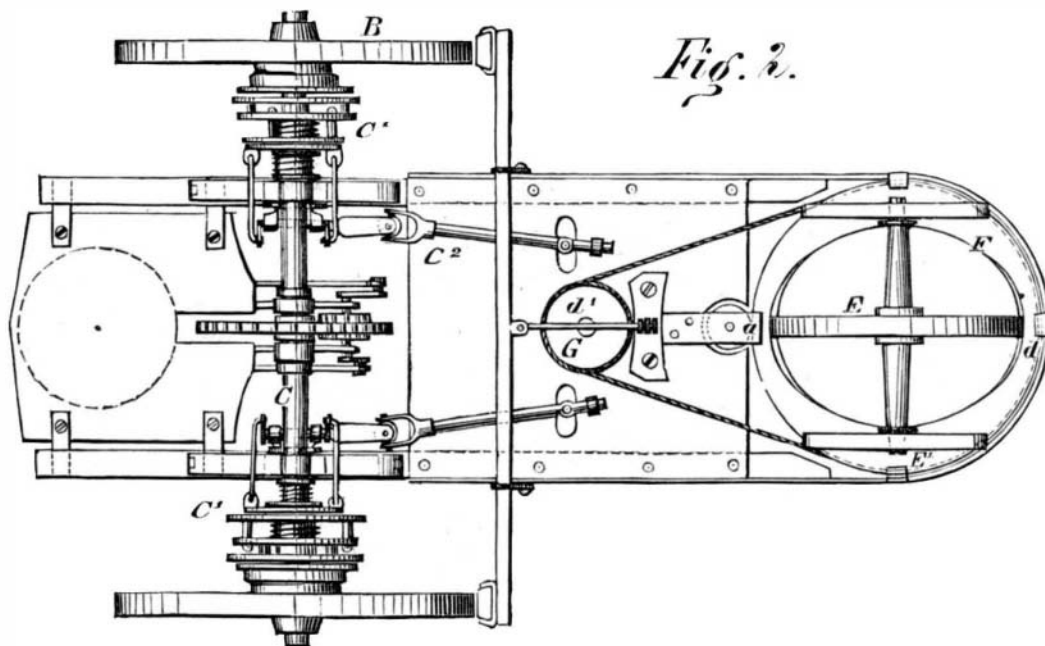
We have tested several samples of silk thread in this manner. With the exception of one sample, all the fine sewing silk was proved to be free from lead or other metal. But we found metal very abundant in what is called "tailor's twist" and "hatter's twist," especially the latter.

The fact is important if lead be the metal used for giving weight to silk. Lead acts very surreptitiously on the system; it is essentially "a slow poison," and it is very difficult to combat its effects. It acts on the teeth and on the intestines, in which it produces paralysis, frequently followed by death. "We have seen," says the writer in the *Moniteur d'Hygiène*, "among other cases, that of a lady who keeps a large sewing establishment, who, by the use of such silk thread, was, together with her workwomen, attacked by lead colic, some of them losing their teeth—the result of the habit of putting the ends of the silk into the mouth before passing it through the eye of the needle. Such is the way in which the lead poison is directly absorbed,

whilst, by continually handling the silk, the fingers may retain a portion of the lead, to be indirectly introduced into the system with the food that may be touched by the hand. The poison may be avoided by refraining from putting the silk into the mouth—clipping it in gummed water instead—but perhaps the best remedy will be found by the large dealers refusing to buy silk thread by weight unless it is proved to be free from metallic adulteration.



*Fig. 1.*



*Fig. 2.*

**LAUCK'S STEAM CARRIAGE.**

ing wells; and the fact that most of the pumping wells, refineries, and railroad lines are controlled by a single company which exacts high profits has probably much to do with the increase in the price.

Most persons have an idea that the Atlantic telegraph cable is a ponderous affair, while in fact its circumference is that of a five cent piece.