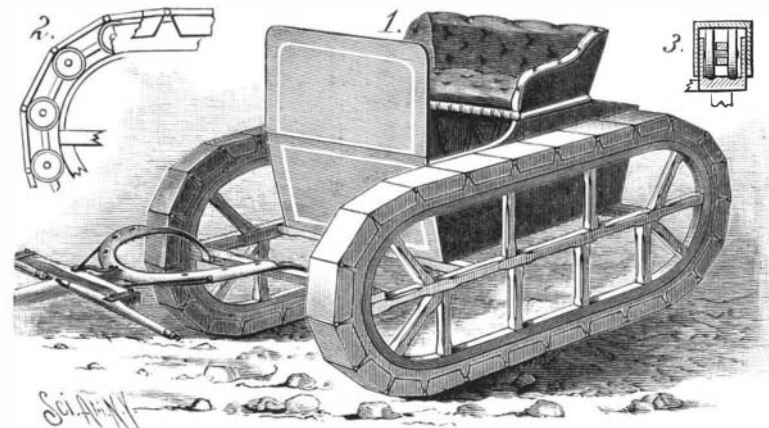


**VEHICLE.**

The object of the invention here illustrated is to obviate, as far as possible, the jolt, friction, and difficulty of propulsion inherent in that class of vehicles having for their running gear wheels and axles, to dispense with springs, and to obtain a smooth and easy movement of the vehicle. The endless tracks are composed mainly of anti-friction rollers, united by links to form an endless chain, as shown in Fig. 2. The side pieces of the body of the vehicle are oblong in form, are held parallel with each other by suitable frame-work, and are flanged to form guides for the wheels of the endless tracks, so that all danger of lateral displacement of the tracks is obviated.

The guards surrounding the wheels are made up of links of sheet metal, shaped as clearly shown in the perspective view, and hinged together to form a continuous chain to inclose the wheels. As the vehicle is drawn along the ground, the contact of the endless guards with the ground will cause the body to be drawn along the endless tracks, as it were, upon the oblong side pieces, the latter running upon the rollers. The tracks at the same time pass around the side pieces, over which they run with but little friction, thereby producing easy running, and, owing to the broad surface in contact with the ground, easy riding. This invention has been patented by Mr. Charles Dinsmore, of Warren, Pa.



**DINSMORE'S VEHICLE.**

**The Occupations of Great Men.**

The *Medical Age* has been investigating this subject, and says that the father of Demosthenes was a blacksmith; of Euripides, a dealer in vegetables; of Socrates, a mediocre sculptor; of Epicurus, a shepherd; of Virgil, an innkeeper. Columbus was the son of a wool carder; Shakespeare, of a butcher; Luther, of a miner; Cromwell, of a brewer; Sixtus V., of a swineherd; Linnæus, of a poor country minister; Franklin, of a soap boiler; Rousseau, of a watchmaker; and Murat, of an innkeeper. The writer concludes that the mothers of these men may have been the source from which their genius was derived, and, indeed, it is known that some of them were women of more than ordinary excellence.

**NEW TORPEDO BOATS.**

The increasing importance of the question of our naval defenses, now before Congress for action, gives interest to the doings of other nations in this direction. Several new vessels have, within two years past, been

**Danger of Water in Steam Pipes.**

Many are not aware of the danger that ensues when condensed water is permitted to accumulate in steam pipes, and no means provided for drawing off, by suitable opening provided with cocks arranged or located at the lowest points in a line of pipe.

The danger arises from the fact that when the steam encounters a body of cold water, there is rapid condensation, causing a vacuum, and the violent rush with which the water is then driven along the pipe

like a water hammer, against elbows or the casing of a valve, sufficient sometimes to drive a hole through the solid metal, as if it had been punched with a solid ram of steel. Connecting pipes between the boilers of a battery, a part of them having been cold for a few days, have been ruptured by opening the valves that closed the connection with the boilers under pressure of neglecting to properly drain the pipes. Men in charge of boilers have been seriously injured by neglecting these precautions. Not only valves have been ruptured, but steam pipes are sometimes split, in some cases for several feet of their length.

It has been proved beyond question that no steam fitter who neglects to provide for the easy and rapid removal of all water of condensation is fitted or competent to be trusted with the supervision of work requiring the intelligence and caution which has been shown to be necessary in laying lines of pipe for carrying steam.

There is no doubt that a reliable automatic steam trap which will drain the water off from the line will prevent these disasters; and it is the duty of persons in charge of the erection of steam lines to see that

a line of pipe can be quickly and easily drained, and, by this, the possibility of disaster is removed.—*Master Steam Fitter.*

**Novel Health Treatment.**

The variety of remedies and appliances for the treatment of maladies of every kind are not only numerous on the Continent of Europe, but some of them are very amusing. The mud baths administered at many establishments have had quite a successful run, and now a novel anti-fat cure establishment has been started in Germany, which is described by a traveler who has inspected its working:

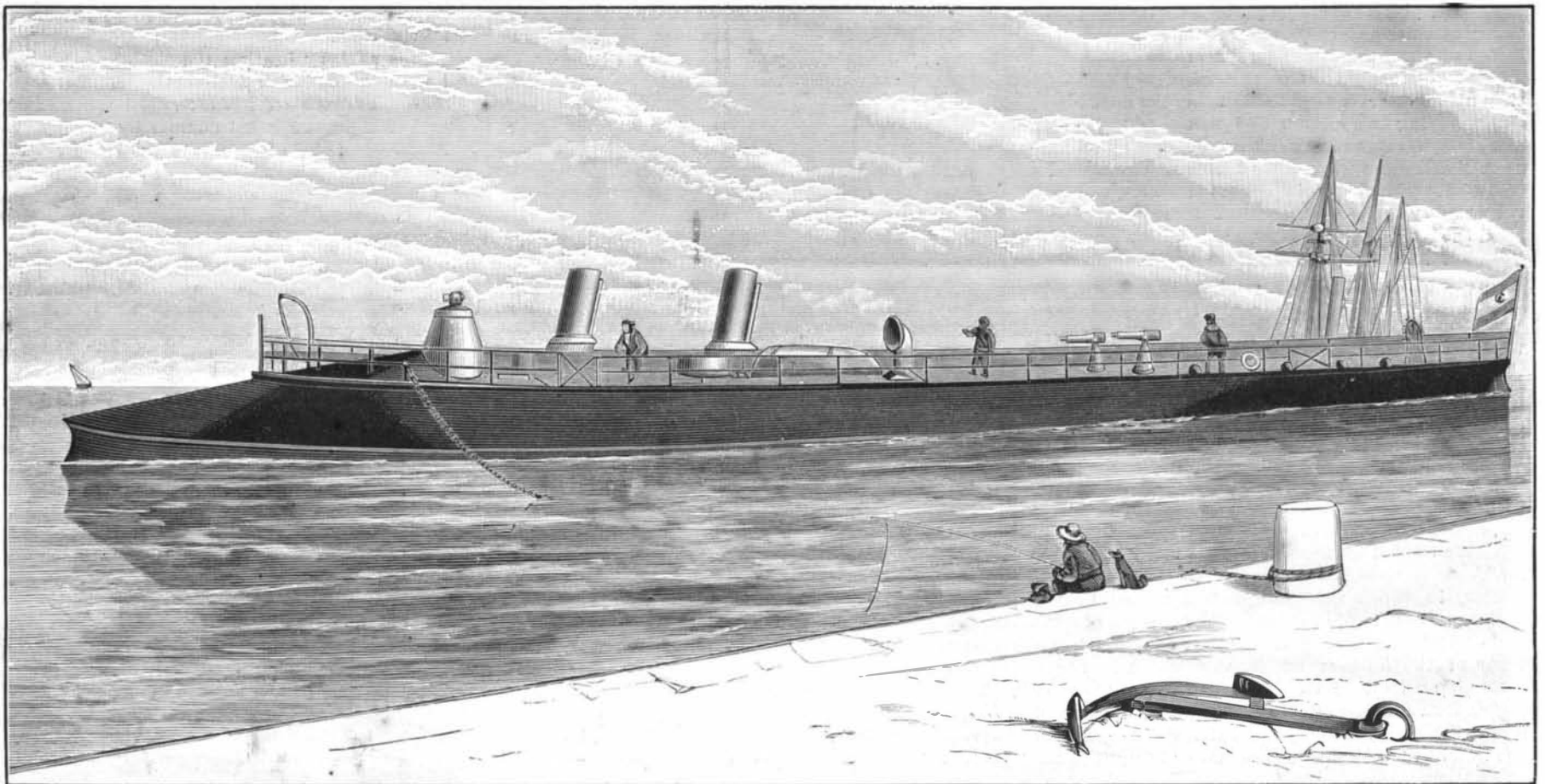
"Imagine to yourself a gentleman of aldermanic rotundity standing in a sort of treadmill and hard at work trying to mount an imaginary staircase, without ever getting above the first step, inasmuch as the upper ones are constantly receding under his weight. The physical exertion of ascending the continuously descending steps causes the unhappy climber to set in motion a system of bellows, which inhale the outer air and blow it full in his face. Instead of the common street air, however, the victim can also be made to inhale air impregnated with extract of pine and other forest trees, and oxygen, thereby procuring him, within the walls of the city, the illusion of filling

his lungs with the invigorating air of high mountains. Besides all this, the steps are so constructed as to be placed perpendicularly, if desired, in imitation of a steep mountain.

Thus the patient obtains the exercise, and at the same time inhales artificially prepared oxygen, or it may be natural air impregnated with other health-giving properties.

**Intensifying with Bromide of Copper.**

Mr. Ives, of Philadelphia, gives an improved method of intensifying with bromide of copper and silver for negatives that are used for photo-lithography and similar processes. The author contends that the present method does not give such a density as is often desired for these processes, even if one repeats the operation, or blackens it with an alkaline sulphide. With the following method, however, a much greater density is obtained by simpler means. He recommends that, after the negative has become white by the application of the bromide of copper solution, it should be thoroughly washed, and placed in a weak solution of iodide of ammonia, which will turn the negative to a yellowish green color. The negative should be again washed,



**NEW TORPEDO BOAT FOR THE SPANISH NAVY.**

added to the Spanish navy, and that government is now providing itself with a number of new torpedo boats. We here present the model of the very latest constructions of this class. They are vessels of the Austrian Falke type, constructed by Thornycroft & Co., London. Length, 147 ft.; width, 14.6 ft.; displacement, 147 tons; double screws; speed, 22 miles an hour. They have two torpedo tubes at the bow, and three repeating deck guns. Our engraving is from *La Ilustracion Espanola*.

ample means are provided for preventing the accumulation of water. Every low part or place in the line should be provided with traps or drain cocks, ample to carry off in a few minutes any water in that part of the line.

It is often found that through false notions of economy the cocks placed for draining off the water are too small, and it often happens that the man who is charged with the duty is hurried, and the work is only half done. The best economy is to arrange so that

and the silver solution applied in the usual manner. This method gives an opaque and less actinic color than with the bromide of copper solution alone.

AN order has been issued in Lower Austria forbidding manufacturers and tradesmen to sell *nickel plated cooking vessels*. It is stated that vinegar and other acid substances dissolve nickel; and that this, in portions of one-seventh of a grain, causes vomiting, and is even more poisonous than copper.

**Laundry Hints.**

A spoonful of oxgall to a gallon of water will set the colors of almost any goods soaked in it previous to washing. A teacup of lye in a pail of water will improve the color of black goods. Napkins should lie in lye before being washed; it sets the color. A strong tea of common hay will preserve the color of French linen. Vinegar in the rinsing water for the pink or green calicoes will brighten them; soda answers the same end for both purple and blue. To bleach cotton cloth, take one large spoonful of sal soda and one pound of chloride of lime for thirty yards; dissolve in clean soft water; rinse the cloth thoroughly in cold soft water, so that it may not rot. This amount of cloth may be bleached in fourteen or fifteen minutes.

**TIME REGISTER.**

The important principle of this invention is that when the clock is placed in one position it stops, and when placed in another, or reverse position, it runs again.

It is applicable as a time register for billiard and other gaming tables, and for all kinds of machines or machinery used at intervals, such as dynamos, when it is necessary or desirable to have an account of the whole length of time such machinery is in use during the day or week. The application of this register to billiard tables is very simple and perfect. It may be attached under the edge of the table by an arm which telescopes, thus allowing the clock to be drawn out and laid over the table, as shown in the annexed engraving; or it can be attached to the gas fixture or suspended from the ceiling over the table by two brass tubes, one sliding inside the other, allowing the clock to be raised and lowered, as also shown in the drawing. When the clock is lowered or laid over the table, it stops running. When it is raised from the table, it commences to run. The table cannot be used while the clock is down, neither can the clock be raised from the table without starting to run, and continuing until lowered or laid across the table again. As a register for billiard tables, the clock is provided with three hands. In the morning, before play commences, all three hands are placed over the figure XII. As each set of players finish their play, the clock is lowered or brought over the table, the key inserted in the back, and the hour and minute hand turned back to the figure XII. again; the third hand keeps its position and records the whole time the table is used during the day, and is controlled only by the proprietor or person having the lock key.

The use of the register in this respect is threefold. The players see exactly how long they play, the attendant or clerk does not require to keep a record of the time, and mistakes are impossible. The proprietor has a close record of the whole time his tables have been used during the day.

In applying this register to dynamos and other machinery an eight day clock is used, and may be applied in various ways. The one most suggestive is to operate it by the belt driving the machine. When the belt is upon the loose pulley the clock stops, and when upon the tight pulley it runs, a slight cant from right to left or left to right being sufficient to produce this effect.

This register was invented and patented by Rudolf C. Wittmann, box 564, of East New York, N. Y., of whom further particulars can be obtained.

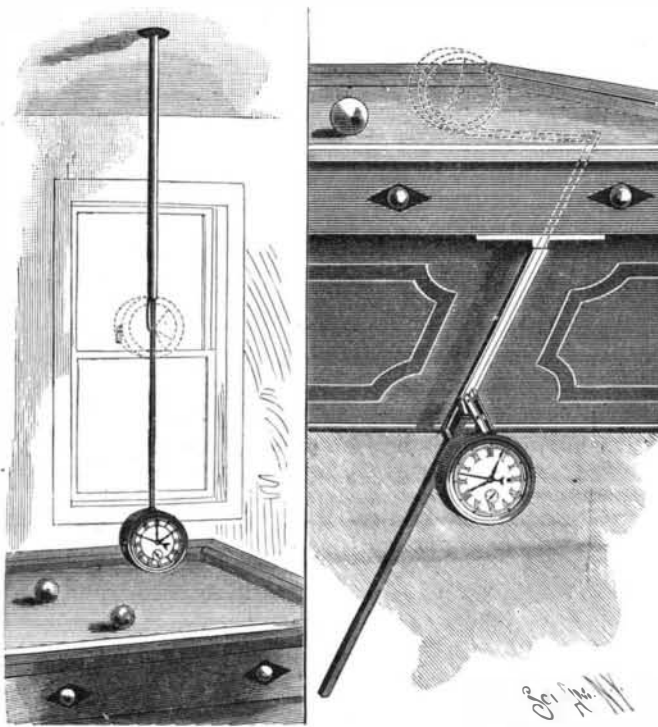
**The Filtration of Water.**

Mr. W. Anderson lately read a paper before the Society of Arts "On a System of Purifying Water by Agitation with Iron, and by Sand Filtration." The process described is one that has been carried out with good results at Antwerp, where the water supply derived from an impure source, the River Nethe, has been treated by the Bischof spongy iron process. Mr. Anderson testified to the excellent working of this system, in which the water is first passed through ordinary filter sand, beneath which is a layer of coarse gravel and granular iron, one part of the latter to three of the former; finally, the water is filtered through an ordinary sand bed. The condition of the mixed iron and gravel after continued use demonstrates in a very striking manner the chemical action of the iron in removing from the water impurities held in solution. After this system had been in use at the Antwerp Water Works for four years, an extension of the supply became absolutely necessary; and as the acquisition of new land for filter beds would have been attended with a very heavy expenditure, in addition to the purchase of 900 tons of granular iron, Mr. Anderson determined to carry out experiments upon a suggestion that had been made some years previously by Sir Frederick Abel. This suggestion was to the effect that excellent results might be obtained by agitating the water to be purified with iron particles in such a manner that the iron surfaces should be brought into intimate contact with the mass of water being treated. Preliminary trials having in-

dicated very promising results, the new system was tried on a practical scale. Large iron cylinders are mounted horizontally on hollow trunnions fitted with pipes by means of stuffing boxes and glands, and a slow rotating movement is imparted to the cylinders by means of spur gearing.

One pipe, serving as an inlet, delivers the water into the cylinder against a disk which acts as a distributor, and the outlet pipe is fitted, also within the cylinder, with an inverted funnel, up which the water passes so slowly as to allow of the precipitation of the iron particles. The inside of the cylinder is furnished with curved intercepting and baffling plates, and they are filled to one-tenth of their capacity with iron borings. The cylinders at Antwerp are 5 feet in diameter and 15 feet long. They are driven at a speed of one revolution a minute, and are capable of purifying 500 gallons of water per minute. The diameter of the inlet and outlet pipes is 10 inches. The charge of iron borings for each cylinder is  $3\frac{1}{2}$  tons. This system was commenced at Antwerp in March, 1885, and has been in successful operation ever since; one incidental advantage attending its introduction having been that the iron and gravel filter beds were changed into ordinary sand filters, upon which the water was discharged from the cylinders. The storage capacity of the works was doubled by this change. The results of purifying water by agitating it in contact with finely divided iron are stated by Mr. Anderson to be as follows:

1. The chemical nature of the organic matter is



WITTMANN'S TIME REGISTER.

changed, and existing albuminoid ammonia is reduced from one-half to one-fifth of its original amount. 2. The water is softened by the precipitation of the carbonate. 3. Infusorial life is largely destroyed and modified. This system is now in successful operation at Gouda and Dordrecht, in Holland, and at the works of MM. Cail & Co., in Paris.

**The Prevention of Scarlet Fever.**

Scarlet fever is a disease whose prevalence does not seem to be greatly affected by improvements in drainage, water supply, or by better modes of living generally. This is shown by English statistics. For the last twenty-five years the annual mortality in all England from this disease has kept above 12,000. In London the mortality, until within the last two years, has been over 2,000. In New York city the mortality in 1871 was 791; in 1875 it was 515; in 1883 it was 744; and in 1885, 559.

It is only by isolation and disinfection, therefore, that this disease can at present be checked; but there is already considerable evidence that such measures are helpful.

Thus, in London, in the last two years, since more efficient means have been adopted for isolation, the mortality rate has fallen to 700 in 1884-85, while for the present year it has been only at the rate of about 400.

At Salford, England, according to Mr. John Gatham, the annual death rate from scarlet fever used to be about 135 per 100,000 of the population. Since the establishment of a fever hospital, and the passing of a compulsory notification act, the mortality has been only about 50 per 100,000.

It thus appears that by means of isolation, by the establishment of fever hospitals with the enactment of a proper compulsory notification law, scarlet fever can be reduced in amount about one-third. And this seems to be the only way at present by which we can seriously affect the prevalence of the disease.

It may be said that in New York we have both these things, and yet no marked effect is produced. To this

the answer is that New York, owing to its crowded population, is under peculiarly unfavorable circumstances; and again, it is by no means certain that we may not claim a diminution in the prevalence of the malady; for our population has increased 300,000, while the scarlet fever mortality has not increased, the annual average being, perhaps, even less than it was a decade ago.—*Med. Record.*

**Business Amiability.**

Bishop Ames, of the Methodist Episcopal Church, once delivered a sermon in Washington in the presence of members of Congress, the President, and a large number of other Government officials, on the subject of amiability in business. His text related to the personal characteristics of the prophet Daniel, the leading characteristic of whom was amiability of deportment, winning to Daniel by his traits nearly all with whom he came in contact. From this starting point the Bishop proceeded to sum up some of the observations of his own long life, showing how men of his acquaintance had succeeded in their several occupations by the practice of habitual courtesy without insincerity, this trait, of course, accompanied by honesty and industry. "Other things being equal," said the great preacher, "I always prefer to buy my goods at the store from that clerk who has a friendly word and a kindly look of recognition. So, too, I prefer to deal with that business man who has a pleasant demeanor, and treats me like a brother. Other things being equal, such a clerk and such a business man will win where others of different social qualities will fail."

The good Bishop long since passed to final rest, but the lesson he sought to impress upon the young, on the occasion of which we speak, is as important now as it was then, and employer and employed in all branches of trade and industry could heed it with profit. In politics, the lack of amiability has sent many a candidate to the rear, and in business depending upon the voluntary favor of the public (and what business does not?) it marked the line between success and failure for many a firm. Courteous treatment of the rich and poor alike thus has not only a commercial value above estimate, but it comes very near to the fulfillment of a divine command.—*Laundry Journal.*

**Schaefer's Compound for Steel.**

BY S. LLOYD WIEGAND.

This compound is the subject of letters patent of the United States, numbered 341,173, and dated May 4, 1886. It consists of resin, linseed oil, glycerine, and powdered charcoal, heated and intimately mixed in the proportion stated in the specification.

It is used by heating the steel to a clear red heat, and immersing and coating it in the compound, and the steel is afterward reheated and hardened in the usual manner by quickly cooling it.

Burned cast steel is restored to its original condition, and the softer grades of steel acquire the properties of cast steel, by being treated as above stated. Tools made from Bessemer steel, which is incapable of being hardened, are, after treatment with this compound and hardening, capable of cutting cast steel.

Tools so treated possess a greater durability than before, and are capable of cutting castings which resist the best of ordinary cast steel tools.

The grain of steel exhibited by fracture of tools so treated, as compared with the same material before treatment, shows a difference analogous to that between the fine cast steel and coarse or blistered steel.

The compound applied to gray castings and malleable iron castings imparts a degree of hardness to them superior to ordinary casehardening.

It is not attended in use with the unpleasant and deleterious fumes incident to casehardening compounds containing hydrocyanic acid, and is much less expensive.

Specimens of different materials in their normal state, and also as treated with this compound and hardened, were submitted, properly labeled, which conveyed a clearer conception of the effect than could be stated in language.

In order that the facility of application and its effect may be seen, a forge, with fuel and bars of steel and other metal and a supply of the compound, were submitted, by means of which the members who felt inclined personally tested it after the close of the meeting.

The compound has been introduced into practical use in many manufacturing establishments in this city, with uniformly satisfactory results.—*Jour. Fr. Inst.*

**Use of Compressed Air.**

Mr. Preece states that in some of the British post offices a great deal more air power than electrical power is used. In London, Manchester, Liverpool, and Glasgow, all the telegrams were transmitted by air power, and the use of air pressure for that purpose had been applied for thirty years.