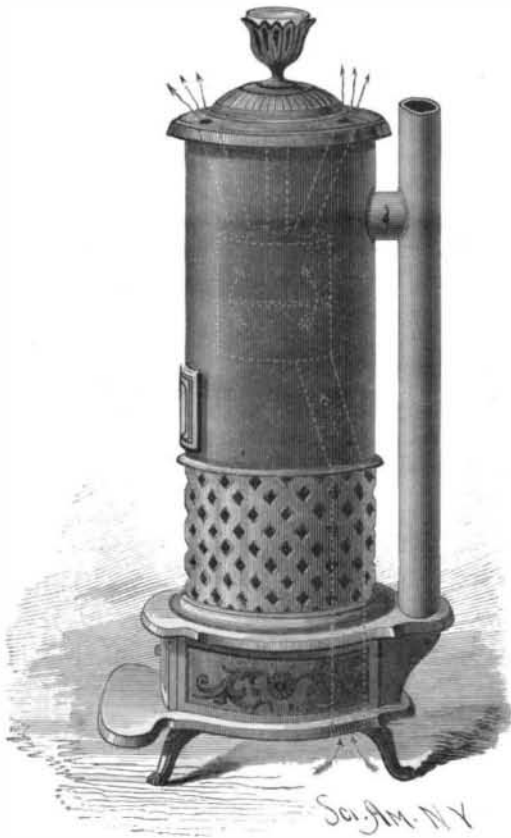


IMPROVED HEATING STOVE.

The accompanying engraving shows a stove which has been recently patented by Mr. George A. Taylor, of New Hampton, Ia. The exterior does not differ in appearance from stoves in every day use, but in the interior are certain cold and hot air flues (represented by the dotted lines) which, it is claimed, add at least twenty-five per cent to the heating ca-



TAYLOR'S IMPROVED HEATING STOVE.

capacity without increasing the consumption of fuel. This arrangement does not increase the size of the stove nor detract in any way from the outer heating surface, but is so placed within the stove that air drawn in at the base is brought in direct contact with the heated fire pot, from which it passes directly above the fire, where it is brought, if possible, to a still higher temperature before it again passes into the room through the pipes in the upper part of the stove. The fire pot is made of cast iron, which is a much better radiator of heat than brick, and which also allows the fuel to drop evenly when shaken, as coal does not burn on this as on other material. Surrounding the pot is an open lattice work, which adds much to the appearance of the stove, while allowing the free passage of air to its outer surface. Any additional information can be obtained by addressing the inventor.

AN ENGINE AND BOILER FOR GOOD SERVICE.

The accompanying illustration shows a combination of engine and boiler especially worthy of the attention of steam users desiring moderate powers, the plant for which shall occupy but a small space. The boilers are made of the best wrought iron, vertical seam, double riveted, and are tested to 200 pounds before they leave the shop. The fire box is stayed in the best manner, and there are hand holes for cleaning the water legs and crown sheet. The engine is easily accessible in all its parts for adjustment and repairs, the valve connection being straight, with no offset to wear or get out of line and cause extra friction; while the wearing surfaces of guides for crosshead, crank, and wrist pin are large, and each provided with means for taking up the wear. The shaft is of best hammered wrought iron, and has large bearings. The piston is fitted with springs and rings, and all the parts are made of sufficient strength to enable the engine to fully develop its rated powers. The engine frames are very heavy, and the boilers are amply large to develop steam for the engine at its full power. For fifteen horse power the floor space occupied by engine and boiler is only 4x6 feet.

These engines and boilers are made by Messrs. Lovegrove & Co., 152 North Third Street, Philadelphia, Pa.

BESSEMER steel is made in the United States equal to that made in England.

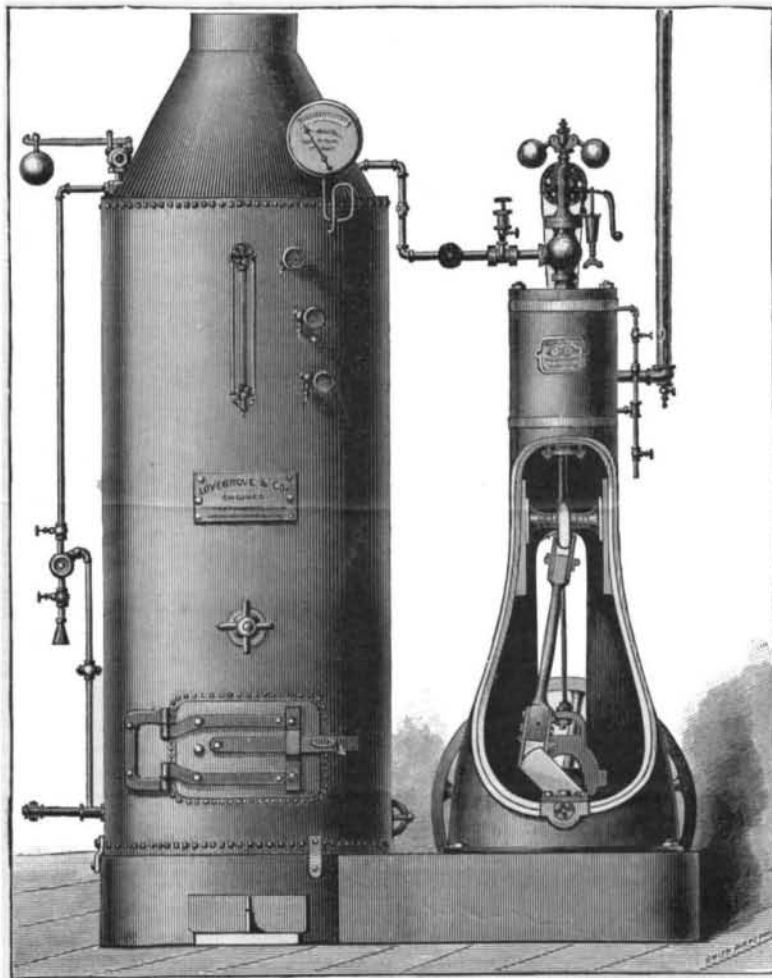
A Trade Mark Decision.

The case of *Rogers et al. vs. Rogers et al.*, decided by the Supreme Court of Errors of Connecticut, arose upon a suit for an injunction to prevent the use of an alleged trade mark. The plaintiffs, manufacturers of silver plated ware, used the words "Rogers & Bro., A1," as their trade mark, and they claimed that the use of the words "C. Rogers & Bro., A1," by the defendants constituted an infringement thereof. The court, affirming the decision of the court below, denied the injunction, on the ground that the defendants' use of their own name was fair and honest and in the ordinary course of business. The court said: "We think there is neither authority nor reason in support of the doctrine that the fair and honest use of one's name can be enjoined, when it is used in the ordinary course of business, in the way and manner in which other manufacturers of similar goods are accustomed to use their own names in the preparation for the sale of goods."

Such a rule would operate in restraint of trade, and prohibit a person from using the ordinary means which all are entitled to in the prosecution of business enterprises. Such a use contains no element of false representation or personation in any just and true sense, and while it may be true that a possibility exists that the goods of one will be purchased to some extent by persons who know no distinction, or by the few who suppose them to be the goods of the other, this condition of things is inevitable in trade and commerce, inhering in the nature of things, and attaches in kind, if not in degree, in all cases where a manufacturer sends goods of any particular description, but without distinguishing mark, into a district of country where such goods were before unknown, and establishing a reputation there as the manufacturer and vender of such goods."

Encouraging Prospect for the City of New York.

The *Railway Herald* predicts that the construction of the Croton aqueduct will open the way to something new in the railway business of New York. We expect within ten years to see our city honeycombed underneath by railroad lines. The drilling for the aqueduct has shown men what can be done in that line. One of these days men will go over into Jersey and dig down until they reach a level a hundred feet below the bottom of the North River. Then they will drill right through under New York, and the next thing we know all the railroad depots will be in the heart of the city. When that time comes, there will be branch lines running up and down under the city for freight. The merchant, instead of sending his goods down to the dock, will take them to the nearest shaft, where an elevator will lower them to the cars on the track below. It is probable that such a tunnel would be put right through under the East River also. It would be immensely profitable in that event. There are 2,000 freight cars

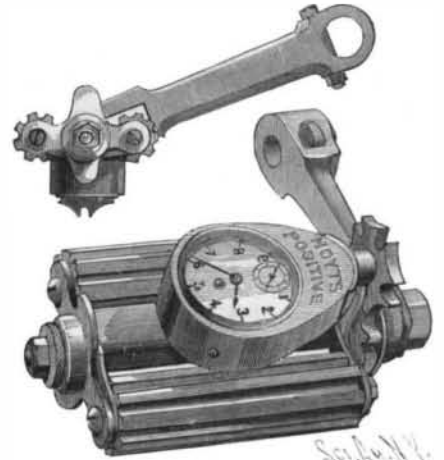


THE LOVEGROVE COMBINED ENGINE AND BOILER.

daily sent around New York by the various roads, which are bound through east or west. It costs these roads now over \$5 a car to get these trains around the city. On that basis, the tunnels could start with a business of \$10,000 a day.

A POSITIVE CYCLOMETER.

The cyclometer shown in the accompanying engraving possesses many novel and new features. It is rigidly secured to the under side of the pedal, and its weight alone keeps the pedal right side up whenever the foot of the rider is removed, which of course is very seldom. When the rider's foot is upon the pedal, the cyclometer is held firmly in place, while it receives its motion from the revolution of the crank pin in the pedal, which, at every revolution of the wheel, must make a revolution of the pedal. The mode of connection is by means of a "Geneva movement," whereby all parts of the recording mechanism are securely locked, yet without the least friction, except when the cog of the finger wheel is in operation. The



HOYT'S POSITIVE CYCLOMETER.

internal recording parts are very simple, and are run by the use of worm and worm wheel, thereby securing a positive movement without the use of ratchets, springs, pawls, or levers of any kind. There is no chance for a miss or slip, and every revolution of the wheel is properly recorded, whether it goes backward or forward. It can be connected or disconnected in a few moments, and the record can be read from the saddle with a little practice and care.

The cyclometer is the invention of Mr. G. P. B. Hoyt, of 202 Lewis Street, New York city, who may be addressed for any further particulars.

Sub-Aqueous Photography.

Photography under curious and novel circumstances has recently been attempted at the Forth Bridge, where several groups have been taken in the working chamber of one of the caissons under a pressure of air of 25 pounds to the square inch. It was found that this did not have any effect upon the film, but that the passage of the rays of light was very greatly interfered with by the haze or fog which is always found in compressed air. In order to get a sharp image, it was necessary that the air-compressing machine should be run slowly and steadily during the experiments, and that the locks which afford entrance and exit for men and materials should be kept closed, as variations of pressure, either upward or downward, increased the haze. The photographs were taken by Mr. E. G. Carey, assistant engineer, who brought very considerable perseverance to the work. He obtained the light in the first instance from three and afterward from five arc lamps of 1,200 candle power each, and to judge of the time of exposure, he first took a group on shore under similar conditions of illumination. Ten seconds were found to give fair results, and a series of views in the caisson were taken with 12, 20, 25, and 30 seconds' exposure. These proved, on development, to be greatly under-exposed, and ten days later a second attempt, under similar conditions, was made, but with exposures of 5, 10, and 15 minutes. The plates were, however, poor, indistinct, and blurred, and it was evident that more light was required. Five lamps were then tried, one at either side of the group, one behind it, and two lighting the remainder of the chamber. This attempt gave encouraging results, with 7 and 8 minutes' exposure. In the final experiments it was decided to try the effects of plates of exceptional rapidity, similar to those used for the most rapid yacht work, and these, with an exposure of 1½ to 2 minutes, gave very fair results, the lamps being in two rows, one at either side of the group, in such a position that they could not shine into the lens. The lens used was by Dallmeyer, 2½ inches aperture and 18 inches focal length, the plates being 12 inches by 15 inches. We have received copies of the groups, and find, in spite of the difficulties, that the faces come out very clearly, particularly when it is remembered how long was the exposure.