before me; I found there were two white organs, which, to an incautious eye, would pass for fat These on a nearer inspection, were the roes or ovaria, extending in two long leaves, or legs, from the anus on each side of the spine far toward the neck. They were plentifully supplied with blood vessels, and contained numberless ova of a very minute size." Yours very respectfully,

R. K. TELLER.

OFFICE OF THE HANCOCK INSPIRATOR CO., BOSTON.

MESSRS. MUNN & CO.—Permit us again to say that in all our advertising experience we have had no such results from any and all other sources, as from our advertisement in your valuable journal.

Yours very truly,

J. E. BLAKEMORE, Treasurer.

Poisonous Colors.

According to the *Chemical Review*, energetic steps are being taken in Switzerland against the use of poisonous colors. The Governing Council of Zurich has prohibited the use of all coloring matters prepared from the compounds of the metals lead, arsenic, copper, chrome, zinc, antimony, bismuth, and mercury, for decorating articles of consumption or of clothing, or their materials; also paper for wrapping up chocolate, coffee, tea, chiccory, tobacco, and eatables in general; toys, covers and cushions of children's carriages, carpets, curtains and window blinds, lamp screens, wafers, and table services. Poisonous organic matters, such as gamboge, picric acid, the aniline colors, especially magenta, are not to be used for coloring articles of food or drink, such as confectionery, jams, sirups, wines, etc. The same rule applies to the phenol colors. Imported articles containing such poisons may not be sold.

AVELING & PORTER'S ROAD AND FARM LOCOMOTIVE.

The accompanying engraving represents a road and farm locomotive and train of wagons lately built by Messrs. Aveling & Porter for the Kohala Sugar Company, of Kohala, Sandwich Islands, for hauling sugar cane, sugar, forthrashing, and for farm purposes generally. The engine is one of Messrs. Aveling & Porter's newest design. It is fitted with differential gearing and double speed gear varying from two to six miles an hour; and is provided with governors which can be used when the engine is employed in driving stationary machinery. Wrought iron side plate brackets are used for carrying the crank shaft, countershaft, and driving axle. This arrangement, which has been in use on Messrs. Aveling's engines since 1871, has proved of great value in strengthening those parts of a road locomotive most subjected to strain and wear when used on rough roads and on farm lands. The cylinder is steam-jacketed and lagged, and the boiler is made of "best best" plates, butt jointed, carried through flush from end to end; it is double riveted, and is lagged and felted and covered with plate iron and banded in locomotive style. Besides the primal use of the side plate brackets, Mr. Aveling has lately further utilized his invention as a groundwork for the better arrangement of the driving and double speed gear of his engines. The whole of the crank shaft and countershaft gearing is now arranged to work between (instead of outside) the wrought iron brackets, and the fly wheel is fixed close to the crank shaft bearings. The pinions for the two speeds are keyed fast upon the crank shaft. The intermediate shaft is fixed, and the sliding sleeve, which carries the spur wheel and the fast and low speed pinions, revolves on it. The two crank shaft pinions are of the same size, and the intermediate spur wheel gears with one or the other as required. The advantages of this improvement are that it decreases the width of the locomotive, and avoids all overhanging gear, the side plate brackets serving as sides to a wrought box in which all gearing is placed immediately over the boiler.

This arrangement strengthens the whole structure.

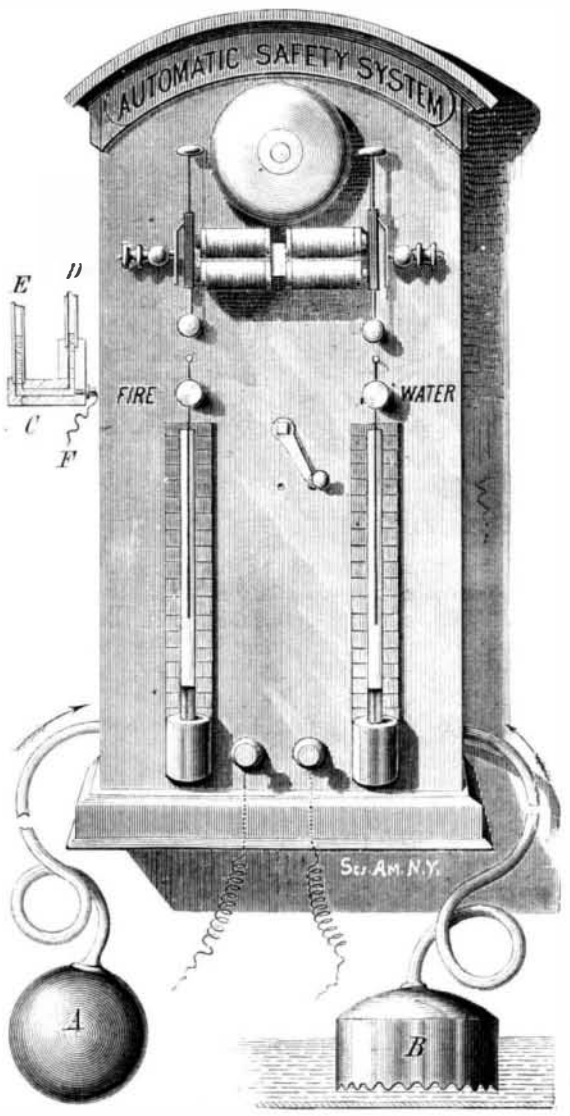
It is stated that this firm have built upwards of 1,600 road and farm locomotives, and number among their customers the governments of Great Britain, France, Russia, Austria, Hungary, Italy, and Mexico.

The British Government has purchased nearly one hundred of these locomotives, the Italian Government sixty-six, and the Russian Government bought them in large numbers at the beginning of the Russo Turkish war for the removal of ordnance and stores.

Mr. Wm. C. Oastler, 43 Exchange Place, New York city, is Messrs. Aveling & Porter's representative in the United States.

FIRE AND WATER INDICATOR.

We illustrate herewith a novel fire and water indicator and alarm, which is the invention of Col. A. Gerard. It was



AUTOMATIC SAFETY APPARATUS.

recently patented in this country, also in Canada and Europe, and is controlled by the Automatic Safety Company, of No. 40 Charles St., New Orleans, La.

The invention consists in a simple arrangement of devices, by means of which the presence of fire or undue heat or any change of temperature may be indicated or recorded at any distant point. The instrument illustrated is also designed for the detection of the presence of water in the holds of vessels.

The two vertical glass tubes shown below the alarm apparatus, and marked "Fire" and "Water," are similar in their construction. The glass tube, D, is inserted in a metallic piece, C, which extends through the support, and has a passage, E, that communicates, in the case of the fire alarm, with the receiver hollow sphere, A, and in case of the water alarm with the bell or receiver, B, which is inverted upon the floor or surface liable to the incursions of water. Needles enter the tops of the glass tubes and extend downward toward the mercury contained in the lower part of the tubes. These needles are in electrical communication with the alarm bell at the top of the apparatus, and the mercury is in communication with the battery wires, the whole being arranged so that the rising of the mercury beyond the prescribed distance in either tube will complete an electrical circuit and operate the alarm apparatus.

The hollow sphere, A, being placed in any distant apartment, a rise of temperature in the vicinity of the sphere expands the air contained by it, creating a pressure which displaces the mercury in the tubes of the apparatus and gives the alarm. Similarly, when the water rises upon the surface on which rests the bell, B, the air in the bell is displaced, and the mercury in the tube marked "water" rises and completes the electrical circuit and gives the alarm.

The necessity of an invention that will with certainty report leakages or fires on shipboard will be recognized by any one having even a cursory knowledge of shipping, and the simplicity and adaptability of the Gerard system will be apparent to our readers.

This apparatus is applicable to buildings as an indicator of high temperatures or fire, and, placed in a cellar liable to flooding, it indicates the presence of water. It is capable of many other applications, which our space will not permit us to enumerate.

Edison's Electric Light.

The Philadelphia *Bulletin* suggests that if Mr. Edison wishes public faith in that electric light of his to remain steadfast, he will have to give an early demonstration of the truth of his claim that it is a practical success. When he first announced that he had solved the problem of dividing the light and of adapting it to domestic uses, there was a very general inclination to accept the story with absolute confidence, because Mr. Edison had proved by his previous inventions that he could achieve some things which had been regarded by other men as impossible. But, after all, the proof of the pudding is in the eating, and the world, after waiting patiently for the public display of an invention which sent gas stocks down as soon as it was heralded, will be disposed, unless Mr. Edison shows his hand, to suspect that the Edison Electric Light and the Keely Motor will have to be ranked together as enterprises which contained much more of promise than of performance.

New Mechanical Inventions.

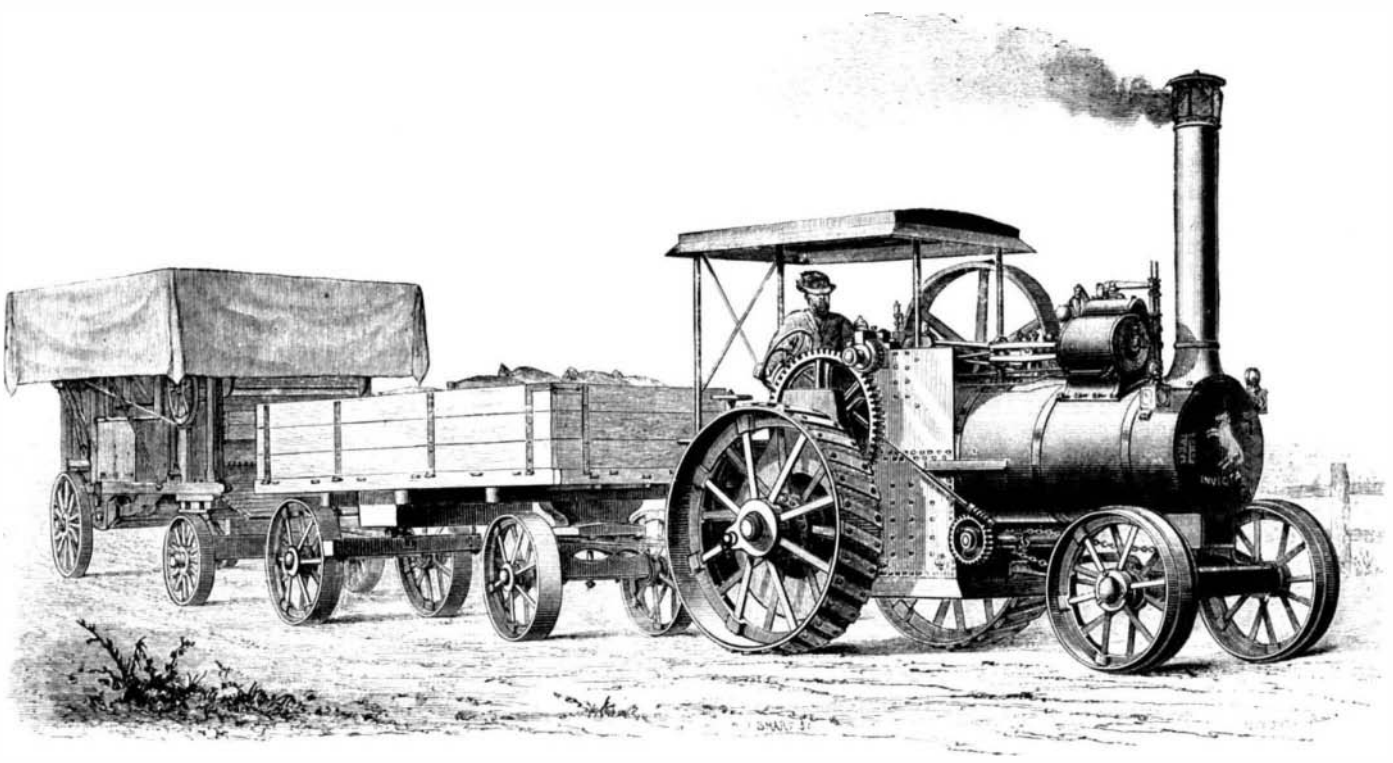
Mr. Charles F. Brem, of Charlotte, N. C., has patented an improvement in Automatic Car Couplings, and it relates to a construction, whereby the coupling pin, which is pivoted in the bumper, is prevented from being raised out of its bearings in the act of coupling or uncoupling, and is nevertheless adapted to be quickly detached from the bumper when required.

An improved Hydrometer and Liquid Meter has been patented by Mr. John M. Cayce, of Franklin, Tenn. The object of this invention is to provide an improved apparatus, chiefly for use of distillers and the government, for measuring and determining the specific gravity of spirits or alcoholic liquors. This invention cannot be properly described without engravings.

An improvement in Windmills has been patented by Mr. William Frazier, of Centralia, Ill. The object of this invention is to construct the windmill in such a way that the wind will act upon the whole or any part of the surface of the arms or sails.

Mr. C. A. Hussey, of New York city, has patented an Electro Magnetic Motor. The invention consists in providing an electric motor with two stationary and one intermediate rotary magnet, the latter arranged with regard to the other magnets and the commutator, so that the best results are secured.

Mr. Geo. W. Prescott, of Battle Creek, Mich., has patented an improved Buffer for locomotive tanks for coupling them with coaches, using Miller's or any other similar coupling. It will protect the brakeman from being crushed while coupling the cars.



AVELING & PORTER'S ROAD AND FARM LOCOMOTIVE AND TRAIN.