A Compressed Air Locomotive.

What is undoubtedly the first practical attempt to use compressed air as an underground motor in a coal mine in this country is meeting with success at the Old Eagle pits of W. H. Brown Sons, 27 miles up the Monongahela above Pittsburg. The new motor was built at the Baldwin Locomotive Works, and is a most singular looking affair. The available height above the pit rails being only 5 feet 10 inches, the air locomotive had to conform thereto. The air receivers are 27 feet long and 38 inches in diameter, and made of sheet steel. These are filled with air compressed to 400 pounds per square inch, forming the actuating power of the machine. These air receivers rest on four wheels, driven by a pair of locomotive cylinders, gearing, etc., just as in a railway engine, the air taking the place of steam. The originator of this idea, Capt. Harry Brown, expressed himself as more than satisfied with this locomotive. It does the work of a score of mules, requires the attention of only one man—who also operates the air compressing machinery—and can haul 55 loaded cars (60 tons) up a gradient of 100 feet to the mile.—*Coal Trade Journal.*

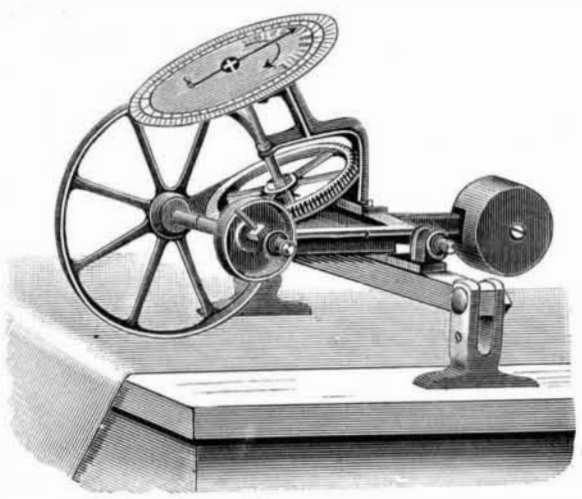
New Method of Printing a Positive from a Positive.

MM. Cros and Vergeraud have worked out a process for obtaining images so as to have a positive impression from a positive plate, and a negative print from a negative original. The process is based on the following circumstances: The easy reduction of soluble bichromates mixed with certain organic substances, and the relative insolubility of bichromate of silver. Suitable paper is covered with a solution of two grammes of bichromate of ammonia, and fifteen grammes grape sugar, dissolved in 100 of water; when dry, it is exposed to light under a positive. As soon as the yellow paper becomes gray, it is removed, and immersed in a one per cent silver bath, to which ten per cent of acetic acid has been added. The image will immediately appear of a ruddy hue, due to the bichromate of silver. The print, on being washed, retains the red impression of the insoluble bichromate, which becomes dark brown on exposure to sunlight. On submitting the print when dry to the fumes of sulphureted hydrogen, or dipping in a solution of sulphite of copper and potash, it becomes black. The latter process is preferable.—*Photo. News.*

MACHINE FOR MEASURING TEXTILE FABRICS.

To measure textile fabrics correctly by a machine is far more difficult than many people would suppose. The difference may be unimportant in the case of calico or other equally unelastic goods, but where woolen goods are concerned, which can be pulled out considerably by a slight stretching, the difference between the measurement of one person and another is sometimes serious. For this reason it is also customary to measure all goods with an elastic selvage down the middle, even when they are not doubled, as naturally the selvages stretch more than the body of the cloth.

In mills where large quantities of goods have to be measured, this is nowadays generally done by machinery. Very often the measuring arrangement is in conjunction with a plaiting or rigging machine, and the number of plaits or layers is registered, the division of a whole plait being thus roughly taken from an index, or the goods pass over a roller covered with cloth or baize, which is in connection with a dial, and is turned by contact with the passing cloth. But even here the measurement is not always correct, because in order to secure adhesion to the roller there must be a certain drag, and this means, of course, a stretching of the cloth.



MACHINE FOR MEASURING TEXTILE FABRICS.

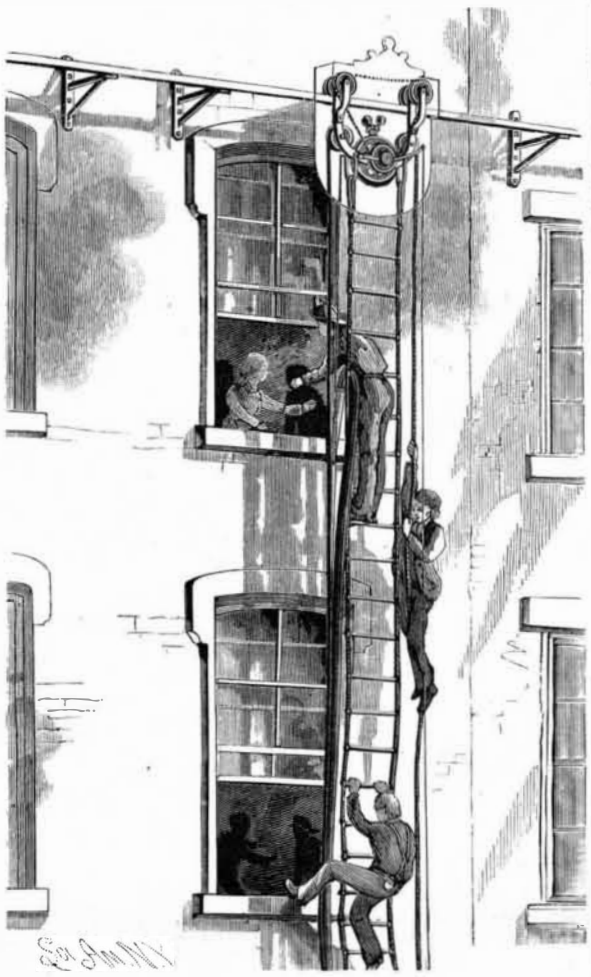
Smaller quantities of goods, especially of the more valuable ones, can be measured more correctly in other ways, and our illustration shows an appliance for the purpose.

Here the cloth does not pass over a roller, or has to drag a heavy cylinder, but is simply drawn by hand or by power over a table. This can be done without exerting any drag upon the cloth. A light iron pulley runs over it, and is turned by the passage of the cloth. This pulley, whose axle runs in two small standards placed upon the table, is connected in the usual manner with a dial, upon which the number of revolutions or yards, or any other standard measure, is registered, while the subdivisions of the same are indicated by a finger and small pulley, the latter of which is keyed direct upon the shaft of the larger pulley. In order to obviate the least drag of the cloth upon the pulley, the latter is counterbalanced by a weight, which can be shifted according to the adhesiveness required. The little machine appears simple, and will no doubt measure correctly if well made.—*Textile Manufacturer.*

IMPROVED FIRE ESCAPE.

The engraving shows a fire escape in which a carriage is arranged to run upon a track near the top of the house. It is provided with a pendent ladder, and may be moved along the track by an endless rope and chain and chain pulleys in one direction or the other, for the purpose of bringing the ladder opposite a window, door, or other place of escape.

A horizontal rail is attached to the building beneath the



COPELAND'S FIRE ESCAPE.

cornice, and supports a carriage, which consists of a U-shaped frame mounted on grooved or flanged wheels, that travel on the rail.

An endless rope passes over grooved pulleys journaled in the frame, and an intermediate pulley which is journaled in the lowest part of frame.

A chain pulley is mounted loose on the projecting axis of the lower rope pulley, and may be locked thereto by means of the spring clutch, which is fixed on the axis, and operated by a lever and hand rope extending to the ground.

An endless chain connects the lower chain pulley with the upper pulleys, which are fixed on the same axis as the flanged transporting wheels.

By pulling the hand rope the lower chain pulley and rope pulley will be locked together; then, by pulling the endless rope in one direction or the other, the carriage will be propelled on the rail in a corresponding direction. It is within the power of any person, stationed on the ladder hanging from the carriage, or on the ground, to propel the carriage and its attachments along the rail to any desired point, and thereby render the ladder available for convenient and immediate use. The ladder furnishes the chief means of escape, but a clamp, which is attached to the endless rope, can also be used as means of escape.

To render the movement of the endless rope uniform during the descent of a person on the endless rope, and at the same time automatic, an automatic governor is provided, which retards the descent and renders it uniform.

The entire fire escape apparatus, with the exception of the rail, which is a fixture, may be inclosed in a suitable box or casing on the rear side of the building, where it will be out of observation and protected from the weather, as well as from access of thieves or burglars designing to enter the building.

By constructing the box or casing with a door properly arranged, the carriage, ladder, and other attachments may be moved out at once when required for use, and guided to the desired point.

To allow the escape to travel around a corner to a different side of the building, the supporting rail is curved, and the flanged supporting wheels are made with a tread wide enough to accommodate the curve.

Further particulars may be obtained by addressing Mr. F. A. Copeland, La Crosse, Wis.

THE Commissioner of Patents has recently decided that in interference cases before the Patent Office, to determine who is the prior inventor, the wife of either contestant may appear as a competent witness.

Oil of Wintergreen in the Treatment of Acute Rheumatism.

Dr. F. P. Kinnicutt draws the following conclusions from the results obtained in twelve cases of acute rheumatism, treated by oil of wintergreen:

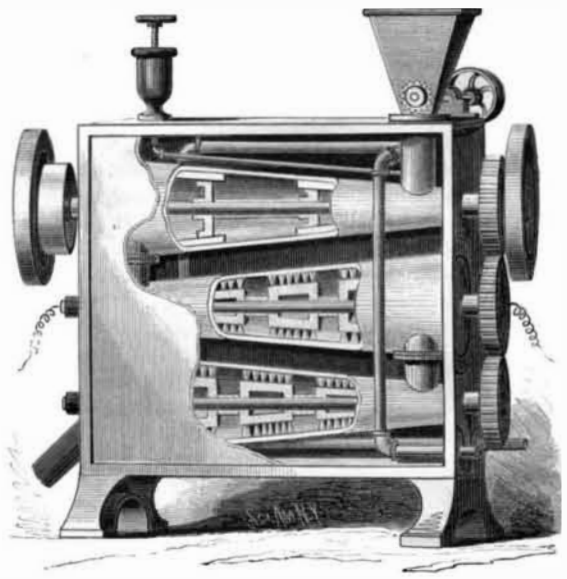
1. In the oil of wintergreen we possess a most efficient salicylate in the treatment of rheumatism. 2. In its efficiency in controlling the pyrexia, the joint pains, and the disease, it at least ranks with any of the salicyl compounds. 3. The best method of its administration is in frequently repeated doses, continued in diminished doses throughout the convalescence. 4. Its use possesses the advantages of being unattended with the occasional toxic effects, the frequent gastric disturbance produced by the acid or its sodium salt, even when prepared from the oil of wintergreen; that its agreeable taste, and finally its comparative cheapness, are further recommendations in favor of its employment.

ELECTRO PULVERIZER AND AMALGAMATOR.

The Manes electro pulverizer and amalgamating machine, shown in the cut, is designed for saving the rusty and fine gold, also the quicksilver, that has been lost in hydraulic washing for gold on the coast of California ever since the commencement of hydraulic washing in the summer of 1852. It is said that the loss has been at the rate of from 20 to 35 per cent of the precious metals and mercury, which, if saved, would amount to hundreds of millions of dollars.

Notwithstanding all the modern improvements in mining machinery, immense quantities of the precious metals are constantly washed away and irrecoverably lost. The value of this lost portion, according to various estimates, is very nearly if not quite as great as that of the metal secured. A great deal of engineering skill and inventive genius have been engaged in trying to devise means of preventing this great loss. This has generally resulted in placing various devices in the sluices to catch and retain the stray particles of gold or sulphuret. Some of these inventions have been more or less successful, but none of them have saved anything like a reasonable proportion of the valuable part of the metals.

The electro amalgamator, it is claimed, will save from 50 to 75 per cent of all the gold and quicksilver that passes through the machine, as the rusty gold will be perfectly scoured and electroplated with quicksilver, and thoroughly amalgamated by the rapid action of the electrical steel brushes and steel mullers that revolve inside of the series of steel cylinders in the machine, placed one above the other, and made cone shape, and connected with spouts; the large end of one cylinder is placed under the bottom of the small end of the next one and so on, forming inclined planes for the sand or crushed ore to run down by its own gravity, which is assisted by streams of water and quicksilver, constantly fed into the machine from a hopper on the upper part of the machine; and the powerful current of electricity is constantly passing through the sands or ore, as it passes from one cylinder to another, and as it is thoroughly mixed at the same time with the quicksilver by the steel brushes, no gold escapes without having been thoroughly amalgamated. The material passes through a movable iron spout into settling tanks, where the cleaning up is done. The machine does not stop except when repairs are needed; the waste water of the sluice boxes is used for driving the machines, and but one



MANES' ELECTRO PULVERIZER AND AMALGAMATOR.

man is required to attend to each machine. The fine sands will be conveyed into the machines through screens of the proper size. This apparatus can be used in stamp mills for amalgamating purposes, and will surpass the old process of treating gold and silver ores. The inventor, Mr. James Manes, is now engaged at the new chemical works in Morrison, Jefferson County, Colo., for the Colorado Paint and Chemical Company, as chemist and metallurgist. Mr. Manes, as an inventor of mining machinery, is well known in this and other countries. The first one of the electro amalgamating machines has just been completed at the extensive shops of the Colorado Iron Works, Denver, Colo., and the models and complete drawings are exhibited at the office, 5 Windsor Block, Denver, Colo.