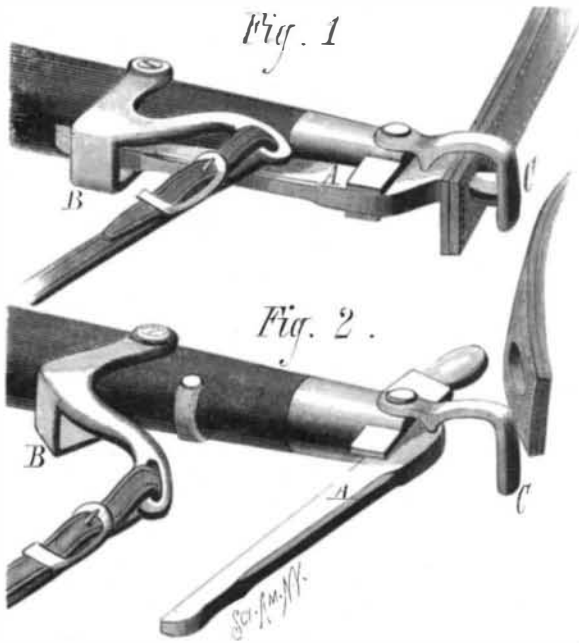


NEW SAFETY WHIFFLETREE.

The engraving shows a simple and effective device for instantly detaching horses from a vehicle. This invention was recently patented by Mr. B. J. Quattlebaum, and is controlled by Messrs. Brooker & Home, of Ridge Springs, S. C., who are general agents for the inventor in the United States. The invention will be comprehended by a glance at the engravings, in which Fig. 1 shows one end of a whiffletree with the trace attached, and Fig. 2 shows the device as it appears when letting the trace go.

The whiffletree is of ordinary construction and attached to the pole or shafts in the usual way. The end of the whiffletree is provided with a clip in which is pivoted the lever,

**QUATTLEBAUM'S SAFETY WHIFFLETREE.**

A, with its shorter arm projecting beyond the end of the whiffletree to receive the end of the trace, while the longer arm rests against the rear side of the whiffletree and is retained by a locking lever, B, pivoted to the whiffletree, and having its longer arm projecting in a direction parallel with the lever, A. To this arm is attached one end of a forked strap, the other end of which is connected with a similar lever on the opposite end of the whiffletree. This strap is within easy reach of the driver, and when pulled moves both levers, B, simultaneously allowing the levers, A, to escape, and permitting the traces to slip off, as indicated in Fig. 2. This operation is so simple and easy that a child can readily work the device even when the horses are pulling to their full extent. A spring guard, C, attached to the end of the whiffletree, serves to prevent the accidental unfastening of the traces. When the trace is to be put on or removed from the rounded end of the lever, A, the guard, C, is sprung out of the way. This device is simple and inexpensive, and there appears no reason why it may not outlast the whiffletrees. It is a useful and much-needed invention, and should find a ready application wherever horses are used.

IMPROVED HYDRAULIC RAM.

The hydraulic ram is one of the simplest and most desirable devices for raising water where a fall of a foot or more is available, providing its construction be such as to insure continuous and uniform action under equable conditions. A ram which seems to embody every essential feature without being unduly complicated is represented by the annexed engraving, in which Fig. 1 is a perspective view showing the exterior, and Fig. 2 is a vertical section showing the interior construction.

The base of the ram has a horizontal passage, A, with a discharge valve, B, at the top, and an overflow valve, C, at the end. Covering the discharge valve there is an air chamber, held in place by keys or wedges, and furnished with a discharge pipe at the top, which projects a short distance downward and serves the double purpose of a discharge for water and an escape for the surplus of air in the chamber. One of the greatest troubles with all rams, aside from this one, is the gradual increase of water in the air chamber until the chamber is filled and the ram stops. The ram

shown in the engraving airs itself, and drives off with the water any surplus air when the quantity is more than sufficient to fill the space above the lower end of the tube, D.

The discharge valve, B, is attached to a flap formed on a disk of leather which also forms the packing of the lower end of the air chamber. The valve is concaved to receive the head of the rivet or bolt which secures it to the leather, and the leather touches the valve seat a short distance from the edge of the valve opening. By means of this construction the valve is always kept free from ridges, and whether or not it always strikes exactly in the same place it is always tight.

The overflow valve, C, is hung upon a casting attached to the lower end of the spring, E, and its stroke is regulated by the screw, F, which bears against the body of the ram. The screw, F, carries a toothed head which may be secured in any desired position by a stop or pawl. This construction admits of regulating the overflow valve to the $\frac{1}{4}$ part of an inch, and effectually prevents it from jarring out of adjustment. The valve can be regulated to make from 30 to 300 strokes per minute, and the ram may be adjusted so delicately as to raise water 10 feet on a 9 inch fall, or it may raise water 200 feet with less than 4 feet fall. For irrigating lands, supplying dairies, farms, barnyards, dwellings, factories, engines, railroad stations, villages, etc., this ram is invaluable, as its extreme simplicity enables it to be set up or repaired by any one likely to use it.

This improved form of hydraulic ram is the invention of Mr. H. F. Morrow, of Chester, Pa., who has a patent for it and an application pending.

Mode of Purifying Oils.

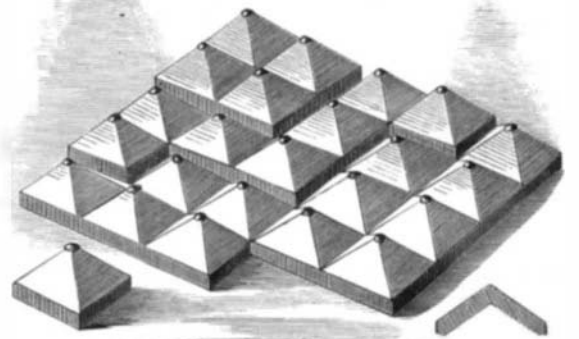
Oils in their natural state are always more or less impure, and some of them so viscous as to be quite inapplicable to the lubrication of machinery, or to illuminating purposes, without previous purification. The impurities consist, for the most part, of albuminous, mucous, gelatinous, and coloring matters. A great part of the mucilaginous matters, and all bodies merely in a state of suspension, are deposited by repose for a short time; but, in order completely to clarify the oil, it is necessary to employ other means. The method most generally adopted is that suggested by Thenard. Sulphuric acid, for example, in the proportion of 1 to 2 per cent of the oil, acts as a purifying agent, precipitating the mucilage and parenchymatous matters: first, by its powerful dehydrating action, it removes the water by which the substances were held in solution in the oil, and afterward chars the mucous matters themselves, thus rendering them insoluble, or otherwise effecting their destruction. The oil itself is, to a small extent, used upon. It becomes green or dark brown, and after some time yields a deposit of the same color, becoming itself bright and clear.

Thenard's purifying process, as improved by Cogan, is conducted as follows: The oil is heated to 212° Fah. by steam in a copper pan. When sufficiently hot, from 1 to 2 per cent of sulphuric acid is gradually poured in, with constant and violent agitation. As the action of the acid depends more or less upon the amount of contact between the two liquids as well as upon the degree of heat, Cogan's improvement consists in blowing steam through the mixture. In five or ten minutes the action will be complete, and after twenty-four hours' repose, the oil will be almost entirely freed from acid, and the black feculent dregs will subside, leaving the supernatant oil quite clear and greatly improved in color. For one hundred gallons, ten pounds of sulphuric acid are required, diluted with an equal bulk of water. After standing for twelve hours, the black watery acid liquor is withdrawn, by opening a stop cock at the bottom of the pan. The clear and limpid oil is then drawn off by

opening a tap in the side, and what remains below this tap is turbid, and this, being let out into a reservoir, is either clarified by subsidence, or mixed with the next portion of raw oil.

NOVEL FIRE KINDLER.

The engraving shows a recently patented fire kindler which dispenses with matches, and is always ready and reliable. The kindler is moulded from inflammable material in the form of hollow pyramids, a number of which are produced in a sheet, as indicated in the illustration. The apices of the pyramids are tipped with a striking surface of material something like that applied to the ends of safety matches, which can be ignited only by striking it against a prepared surface. This admits of packing and shipping the kindlers with perfect safety. The peculiar form of the sheet admits of forming a very close package, and it facilitates breaking off one or more of the pyramids as may be required. The material of the kindler is easily ignited, and burns for a long time, giving off no unpleasant odors. It is

**IMPROVED FIRE KINDLER.**

cheaply made, and answers perfectly the purpose for which it is intended.

Further information may be obtained by addressing Mr. Wm. Rausch, 1828 Wood street, Philadelphia, Pa.

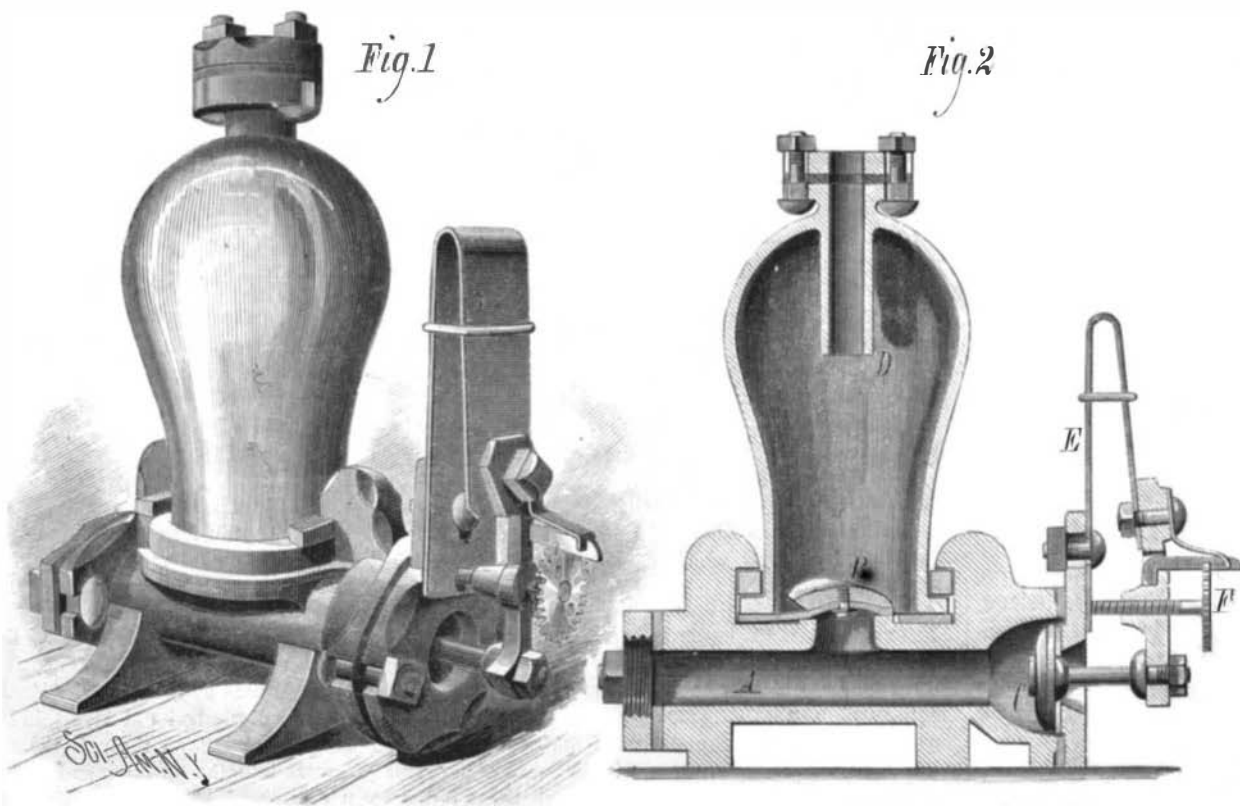
Proposed Crematory in Brooklyn.

The advocates of cremation, as an economical and sanitary mode of disposing of the dead, appear to be increasing in number and confidence. It is now proposed to establish a crematory in Brooklyn, a gentleman having tendered a plat of land there for the purpose. Steps have been taken to organize a society for the construction and operation of the crematory, with an associated society for collecting, collating, and publishing information in relation to cremation and its advantages. It is expected that the expense of cremation may ultimately be reduced as low as five dollars.

Compressed Air Locomotive.

A preliminary trial to test the practicability of employing compressed air instead of steam as the motive power for an underground railway lately took place on the Metropolitan line, London. The engine employed was one of Beaumont's compressed air locomotives, and was originally made for a tramway. It was not large enough to draw a complete train, the wheels being only thirty inches in diameter. The inventor, Colonel Beaumont, R.E., was present, together with Mr. Tomlinson, chief engineer of the line; Colonel Frank Bolton; Major Ardagh, of the War Office, and several other gentlemen. A start was made from the

Chapel street works of the railway company, near the Edgware road station. The engine ran to Baker street, where it was shunted on to the St. John's Wood line to pick up a carriage, which most of the party entered in order to continue the journey. The engine then ran from Baker street to Moorgate street. On the return journey, after a halt at King's Cross, the engine ran without a stop to Edgware road, the distance between the two stations—which is for the greater part an ascent of 1 in 100—being performed in eight minutes, or less than the average time taken by the ordinary trains. The total distance run, including the shunting, was about eleven miles, and the weight moved, including the engine itself, was about 20 tons.

**MORROW'S HYDRAULIC RAM.**