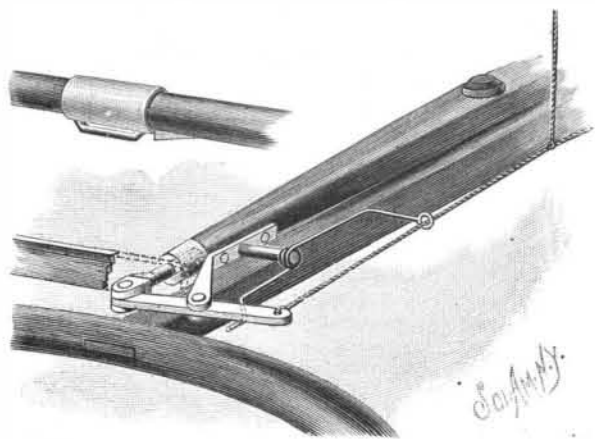


DEVICE FOR DETACHING HORSES FROM VEHICLES.

The engraving herewith shows a simple, practical device whereby a horse may be instantly detached from a vehicle by a person riding therein, to avoid danger in case the horse becomes unmanageable. The whiffletree has a socket in each end to receive bolts, which pass through the traces, and serve as holders therefor. The bolts are each hinged to a lever pivoted to a bent arm secured to the whiffletree, the lever being held a short distance beyond the end of the whiffletree. The rear ends of the two levers are connected together by a cord, and to the center of this cord is attached another cord, which leads into the vehicle or to within convenient reach of the driver, so that by drawing upon this cord the rear ends of the levers will be drawn toward each other and their opposite ends carried outward, thus withdrawing from their sockets the bolts which hold the traces. To prevent the bolts from jarring out of the sockets, a pivoted rod is bent to form a locking device, but it readily releases the bolt when the cord is drawn upon, or is depressed by hand for that purpose when unhitching the horse in the ordinary way. Upon the thills are placed loosely hold-back sleeves, one of which is shown in the illustration, which come against holdback stops on the thills.



WHITE'S IMPROVED HORSE DETACHER.

When the traces are released by pulling upon the cord, these sleeves readily slide off from the thills, and thus wholly detach the horse from the vehicle. This invention has been patented by Mr. Thomas White, of Peekskill, N. Y.

A NIGHT SIGHT FOR ORDNANCE.

In many respects, says *Engineering*, the development of modern weapons of warfare has given increased value to the employment of operations during night time. This is notably the case with all varieties of torpedo operations, which may, indeed, almost be said to be limited to night time for successful results. The employment of artillery enters largely into the defense against this class of attack, in addition to which the use of artillery fire at night, as in bombardments and siege operations, proves most efficacious if correctly applied.

Although great accuracy has been attained in the fire of modern rifled ordnance by day, the question of getting a similar degree of accuracy of fire by night, though not overlooked by artilleryists, has not yet been satisfactorily worked out. It has been the difficulty of obtaining an accurate mode of directing a gun on an

object which has hitherto stood in the way of the effective employment of artillery fire at night. The instances are numerous where an accurate night fire is of great advantage, as, for example, the defense of a ship against torpedo attack by the fire of her guns, great and small; the artillery defense of a harbor entrance, or other channel, against the endeavor of a hostile squadron to pass or force it; the fire directed against a fleet attempting a night bombardment; the protection of mine fields, booms, and obstacles; and siege operations. These are all instances in which the power of accurately laying guns at night is of importance. In addition to this, the effective use of position finders and of observation mines at night largely depends on being able to obtain an accurate alignment on the object to be attacked.

In view of these requirements, there has been no lack of endeavor to provide means for directing the fire of guns at night, in other words, of furnishing an efficient night sight for ordnance. The problem, however, is somewhat awkward, for though many sights have been devised with which an alignment of some description can be obtained, difficulties have arisen which have prevented their successful application.

Briefly stated, the problem is how to provide a sight which shall be susceptible of great accuracy of definition and adjustment, and yet be such as in no way to blind the observer's vision or obscure his perception of the object aimed at. Every one who has had to do with the sea is aware how blinding on a dark night is the effect of any considerable light on the eye, and how completely it prevents the observation of a dim object.

Many sights, as has been said, have been proposed, some of which give admirably defined points of more or less brilliancy. Phosphorus, enamel, luminous paint, mother-of-pearl, reflected or direct rays of light, have all been pressed into service, but the difficulty has always been that just in proportion as the sights are rendered visible, the amount of light thrown on or proceeding from them dazzles the eye of the observer, and renders it impossible to keep in view the object on which the alignment is desired. The eye, in fact, sees the sights, but at once loses the object.

In the night sight recently brought out by Sir W. Armstrong & Co., at Elswick, of which we give an illustration on this page, an alignment is obtained which is easily discernible by the eye under all degrees of dusk or darkness, is capable of even more accurate adjustment than the usual day sight, and is so arranged that even on the darkest night in which fire is possible, the observer's eye is in no way fatigued or blinded by the illuminated points.

The sight is made in several forms, according to the purpose for which it is applied. When used with the director for discharging guns from a central position or for the sighting positions in turrets or barbets, light is transmitted by reflection from an electric lamp through two small spherical lenses, where it concentrates in two minute and easily adjusted points of light. For the torpedo director used for discharging torpedoes, and for direct use with larger guns, two lamps are employed, while for smaller guns, such as Hotchkiss and other three-pounders and six-pounders, two separate sights, each with its lamp, take the place of the ordinary day sight.

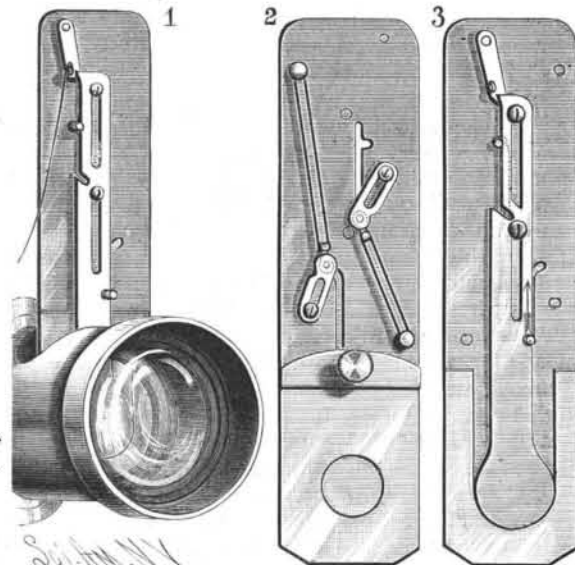
As most war ships are now fitted with the electric light, the application of these sights is arranged in connection with the light circuit. A short length of wire with a terminal in a convenient position close to the gun or director enables the sights to be illuminated as desired.

The purposes for which these sights are applicable are for directing instruments for discharging guns and torpedoes either on board ship or in forts and coast batteries; for ordnance generally afloat and ashore; and for position finders and observation mines. The engraving shows night sight applied to a naval director for discharging guns.

The great value of nitrate of soda, a material our cultivators are only beginning to learn the value of, is to hasten the growth of plants early in the season, and for this purpose it has no equal.

IMPROVED CAMERA SHUTTER.

The camera herewith illustrated is extremely simple in construction, and quick and reliable in operation. The shutter is designed to be inserted in the diaphragm opening in the lens tube. It consists of two principal parts. The main plate, Fig. 2, is composed of two sections, the upper one of which carries the slide, Fig. 3, which normally closes the exposing aperture in the lower section. It is designed to have several of the lower sections with apertures of different sizes, so that the proper exposure may be effected in any light, by selecting the section of proper aperture, and attaching it to the other by some simple means. Attached to



BETTS' IMPROVED CAMERA SHUTTER.

the main plate and to pins sliding in slots in the plate, and adapted to engage notches in the slide, are two elastic bands so arranged that when the holding catch at the top of the main plate, Figs. 1 and 3, is tripped, one band will raise the shutter to the top, when the second band will instantly act to pull it down. In Figs. 1 and 3 the parts are in position to be operated, while Fig. 2 shows the bands after the slide has been moved to make the exposure. The extreme simplicity of this device, and the certainty of making an instantaneous exposure, are evident.

This invention has been patented by Mr. F. K. Betts, of 2028 Madison Avenue, New York City.

CARRIER FOR ASH PANS.

By means of this simple device, a pan of ashes can be conveniently and safely carried without danger of spilling the hot cinders or burning or soiling the hands. The handle is made of stout wire, and to each end is attached a hook, made of a single piece of wire, shaped

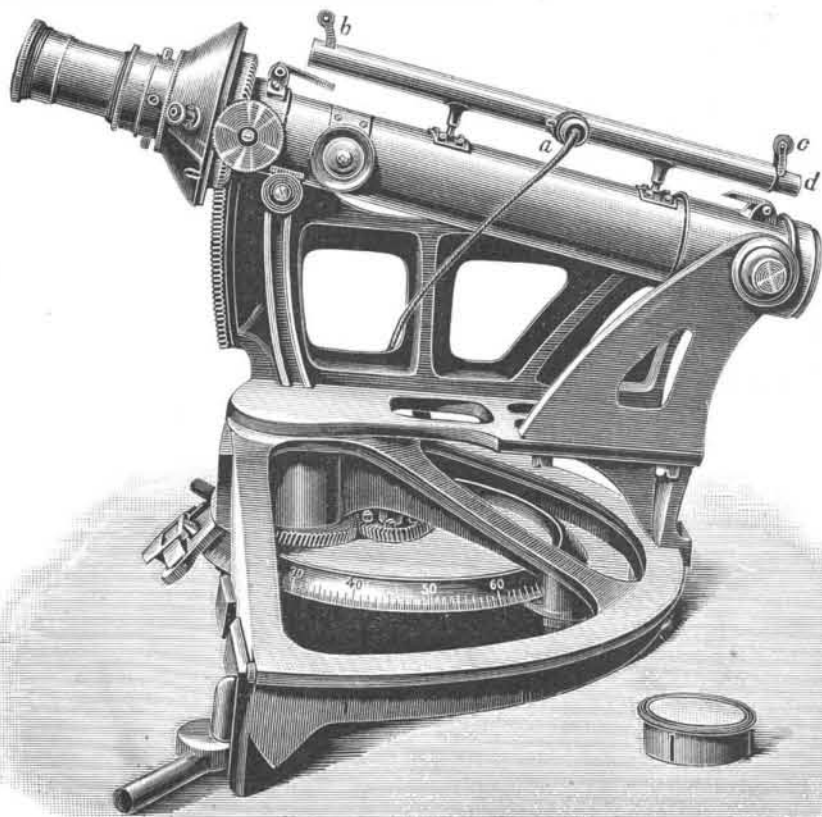


COLEMAN'S CARRIER FOR ASH PANS.

as shown in the engraving. The extremities of each of these wires are separated from each other, and are sharpened and curved inwardly and upwardly to constitute grips. The ash pan having been drawn from under the grate by one of these hooks, is then seized with both hooks in such a way that their points pass under the bottom of the pan. The handle is then grasped, and as the pan is lifted, the shanks of the hooks are brought firmly against the sides, when the pan, thus evenly and securely held, can be safely carried.

This invention has been patented by Mr. Francis W. Coleman, of Rodney, Miss.

COMMERCIAL TRAVELERS' TAX CASE.—The Supreme Court of the United States has, in the case of *Gorson vs. Maryland*, declared unconstitutional the provision of the Maryland code requiring any one not the grower, maker, or manufacturer selling goods within the State to pay a license tax proportioned to the amount of his stock in trade, whether situated in the State or out of it. The court held that this provision was a regulation of interstate commerce, and therefore invalid as to persons living out of the State and selling by sample within it.



NIGHT SIGHT FOR ORDNANCE.