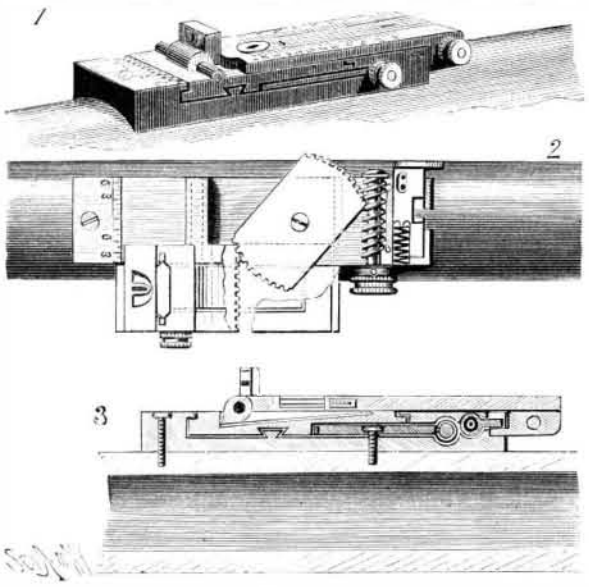
AN IMPROVED RIFLE SIGHT.

The illustration represents a rear sight for a rifle, which is adapted to be easily and nicely adjusted, and is especially designed to make proper allowance for the wind in the setting of the sight. It has been patented by Mr. Robert W. Parker, of Camp Huachuca, Arizona Ter. Fig. 1 is a perspective view of the device applied to a rifle barrel, Fig. 2 being a broken plan view, partly in section, showing the construction and operation of the wind gauge and the means for fastening the leaf to the base of the sight, while Fig. 3 is a central longitudinal section. The base of the sight is secured to the barrel in the usual way, and at its rear it is marked to serve as a wind gauge, indicating the extent to which a supplemental base is moved to one side or the other. This supplemental base slides horizontally in the main base and moves laterally on a dovetail rib, having a transverse toothed rack in front of the rib meshing with teeth on the rear end of a pinion pivoted in a recess in the base. The forward end of the pinion meshes with a transverse worm terminating at one end in a milled wheel, by turning which the supplemental base is moved out or in. Hinged to the rear of the supplemental base is a vertically swinging leaf, its pivoted end pressing upon a spring which holds the leaf in a vertical position when it is tipped up. When the sight is used for point blank shooting the leaf is turned down, the peep hole being made elliptical. The leaf is slotted, and a slide is held to move in the slot, the leaf also having counter grooves in which slides a head, moving obliquely when pushed up to counteract the drift of the bullet, the slide and head being connected, and each having peep holes to be used as sights, gauge marks on each side of the leaf indicating the range of the rifle when either peep hole is used. A novel mechanism is provided for raising the slide and holding it at the desired adjustment. If there is but little or no wind, the supplemental base and the mechanism carried on it are centrally held, but if there is considerable wind, the base is moved to the right or left as desired.

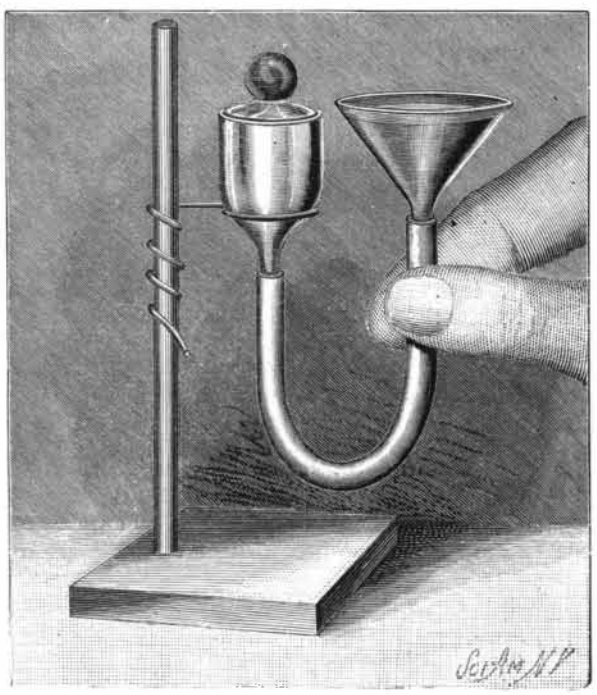


PARKER'S RIFLE SIGHT.

EXPERIMENT IN CAPILLARITY.

T. O'CONOR SLOANE, PH.D.

A very pretty experiment in capillary force, adapted for projection by the magic lantern, is shown in the cut. It illustrates the attraction and repulsion between bodies surrounded by like or unlike liquid surfaces. If a body is partly immersed in a liquid which wets it, the liquid surface will rise in a curve all along its wetted surface, forming part of a concave meniscus. If another body in similar condition is brought near it, the two will be attracted and, if permitted, will be drawn together so as to adhere. This is shown by floating a glass ball in a vessel partly filled with water. Sooner or later it goes to the side and stays there in contact with the side of the vessel.



EXPERIMENT IN CAPILLARITY.

If a body not wet by water is immersed in it, the liquid will curve downward where it meets its surface, forming part of a convex meniscus. If two such surfaces are brought near together in the same liquid, they will attract each other also. An iron ball floating in a glass of mercury is drawn to the sides of the vessel, because the mercury does not wet either iron or glass.

In the experiment illustrated a straight-walled tube, about an inch in diameter, is connected with a funnel, by an open tube at its bottom and by a short piece of India rubber tube. The tube and funnel contain water. No air must be left in the rubber tube. As the funnel is raised or lowered, the level of the liquid in the tube will rise or fall. If the edges of the tube are perfectly dry or, still better, are oiled or coated with paraffine or beeswax, the liquid can be forced up far above the level of the tube, so as to form a meniscus. This, when projected by the lantern, especially if a reversing prism is used, will form in itself a very striking object.

A ball, which may be a Christmas tree ball, with any apertures closed by sealing wax, is floated in the tube. As long as the water is below the top of the tube, the ball will stick to the side of the tube. Now, on raising the funnel, the liquid will rise, carrying the ball with it. As it reaches the top of the tube and rises above it, it forms the convex meniscus. As this occurs, the ball, as if by magic, sails away from the side to the center, and remains there. If displaced, it returns to the center. On lowering the funnel, it again goes to the side as the convex meniscus gives place to a concave one.

This method of changing the water level is to be recommended, as it avoids the necessity of introducing anything from above, whether water or a solid object, in order to raise the level of the liquid. As shown in the cut, it is mounted for projection by the experimental lantern.

A Word to Inventors.

The following good advice to patentees we copy from the *Manufacturers' Gazette* (Boston). We commend it to the attention of patentees generally, who are too apt to reject very good offers for their patents soon after their issue.

We have frequently been asked by inventors who have succeeded in producing small articles of more or less merit, and for which there appears to be a demand, what is the best method to pursue in order to put them on the market.

This is a question which has puzzled a great many, and especially those who with small means are unable to go into the manufacturing of their specialty on a large scale, without parting with a controlling interest in their patent to another party in order to raise the necessary capital with which to push the business, a transaction which many object to on account of the possible and probable consequences which often follow, viz., the loss not only of the patent right, but of all share in future business.

In nine cases out of ten it is far better for the inventor, and he will realize more from his invention, to sell out entirely, and turn his attention to some other business, or the production of a new patentable article. That is, in case he has no money with which to develop and place his invention in the market.

The only difficulty in this is that a majority of inventors set too high value upon their inventions. They think they have the world in their hands, and are disposed to hold on to it, unless some one comes along who is foolish enough to pay an unreasonable price for the patent. This is where they are often mistaken, and it would be far better for them to accept a *bona fide* offer, even though it is but a fraction of their ideal value of the article.

The fact is that no invention, however valuable at the time it is produced or perfected, is sure of a monopoly or even a fair competing chance for a great while, and the sooner the inventor disposes of it, the better off he is. Thousands of inventions have been dead failures, and never returned to the inventor one dollar, simply because, thinking that he held a monopoly, and that the world was bound to him, he has held on to it, unable himself to put it upon the market, and alike unwilling to allow any one else to do so for a reasonable consideration, until some one else has come out with something equally good, and possibly an improvement, and he finds himself without a bidder, and another man making money which he might have had, had he used better judgment and good sense.

Another way in which a mistake is made is in starting out on too large a scale. If you have a really valuable patented article, there is very little difficulty about finding a market for it, if you are not too hasty. It is better to begin in a small way and gradually increase, than to begin by forming a large stock company and beginning too large. We are speaking in reference to the inventor's interests. If he can get his goods manufactured so that he can handle them himself, even though in a small way at the start, if his invention is worth anything, he will soon be able to increase his business and can then hold control of it himself. As a rule, we are of the opinion that it is better to contract with some reliable firm for the manufacture of the article than to go to the expense of putting in the necessary machinery, etc., to do it for yourself. This is especially true in relation to the smaller articles.

By doing it in this way, you are saved the care and management of a shop, and have more time to devote to pushing the sale of the article, and the difference in the cost is very little—hardly sufficient to compensate for the possible saving.

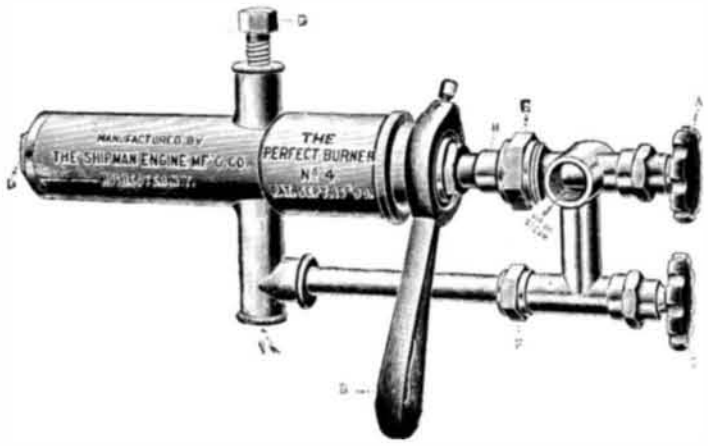
It also gives you the use of the capital which would be required to fit up and maintain a shop, with which to push the business, and at a time when it is needed, too.

After the business has grown sufficiently large to warrant it, then there is time enough to put in a plant, and you will be better able to do so, and you will be in a position to know what is required.

AN IMPROVED CRUDE OIL BURNER.

The competition between oil fuel and coal is a most interesting one, and certainly shows an increasing use of oil where the conditions are favorable for its employment. Perhaps the most conspicuous of the advantages possessed by oil over coal as a fuel is the readiness with which the most intense heat can be employed at any special point desired, and the economy with which it can be used for just the period required.

In addition there is a great saving of labor in the use of oil, and, as there are no ashes made, all the work around the boilers and furnaces can be kept in a much more cleanly condition.



AN IMPROVED CRUDE OIL BURNER.

The obvious advantages possessed by oil have led to much experiment in designing the most efficient burner, and the one shown in the accompanying illustration, recently put upon the market by the Shipman Engine Mfg. Company, of Rochester, N. Y., is claimed to practically effect the most complete atomizing of the oil, thus insuring the most perfect combustion. It is also safe, because the oil is sucked up by the burner from the tank below its level, instead of being fed from a tank above, and depending on regulating devices, although it will work in either way. The regulation is effected by means of the lever shown, which is attached to the oil sleeve. In case of clogging, by opening the cleaner valve steam is allowed to pass through the oil chamber, cleaning the burner, without disconnecting any pipes at all. Likewise, the oil chilled or thickened by cold may be warmed and made to run freely by first closing the oil sleeve and then opening the cleaner valve, which will allow the steam to free its way up the oil supply pipe. The claim is also made that in point of economy in combustion it is unexcelled by any other petroleum oil burner. It is made in six sizes, and, as all the parts are interchangeable, cost of repairs is reduced to a minimum. In the illustration, A represents the steam valve; B, the oil regulating lever; C, the cleaner valve; D, the mouth of the burner; G, screw for attaching burner to boiler or furnace front.

The economy of using oil is now becoming recognized in many lines of business where it had heretofore been deemed inadmissible, and it has been found suitable for nearly all purposes that coal is used for, working successfully on boilers, brick kilns, forges, ovens, salt evaporators, driers, etc.

Compressed Air in Chicago.

An ordinance has been passed and signed by the mayor of Chicago giving permission to a company known as the Chicago Power, Supply, and Smoke Abating Company to lay pipes in the streets of that city for the transmission of compressed air as a motive power for machinery.

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