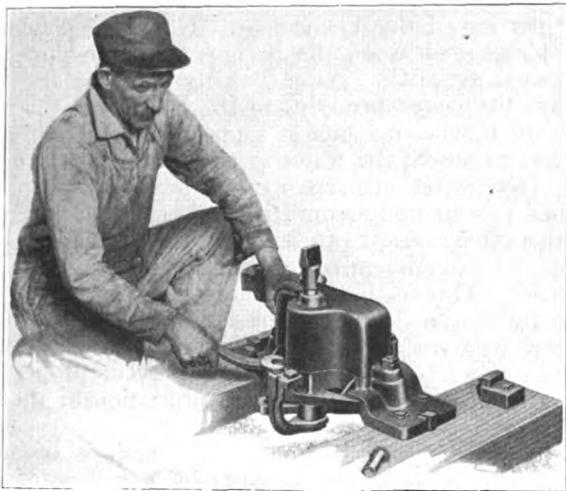


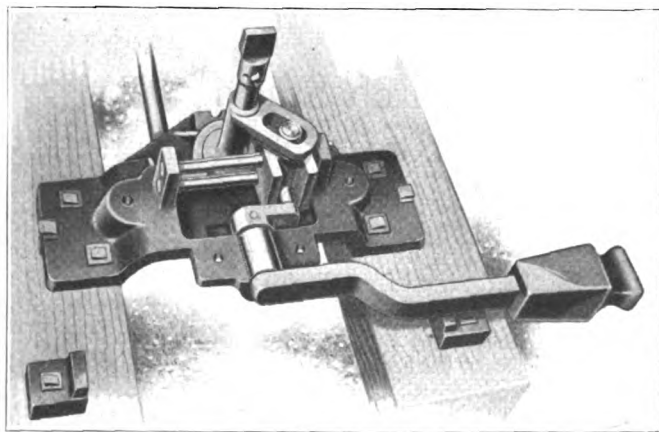
important factor in promoting longer life. The operating bracket is also made of steel, as well as the bars which guide its movement. As a further protection against wear and also for the purpose of insuring ease of operation, both the lever crank which forces the operating bracket back and forth and the pinion on the bracket which engages the operating shaft are fitted with steel roller bearings.

Not only is this construction said to afford longer life to a switch stand than is usual, but to afford the



Applying a Breakable Crank to the Duro Stand

further advantage of avoiding the lost motion in switch stand mechanism commonly experienced where the mechanism employs gears. Most prominent of the advantages claimed for the new stand, aside from its long life, is the dispensing with the need for switch latches to prevent the switch stand lever from opening under traffic. The new stand is said to require no latches because, when the switch is closed, the throwing lever is in a position well past dead center, which locks



The Duro Stand Is Gearless

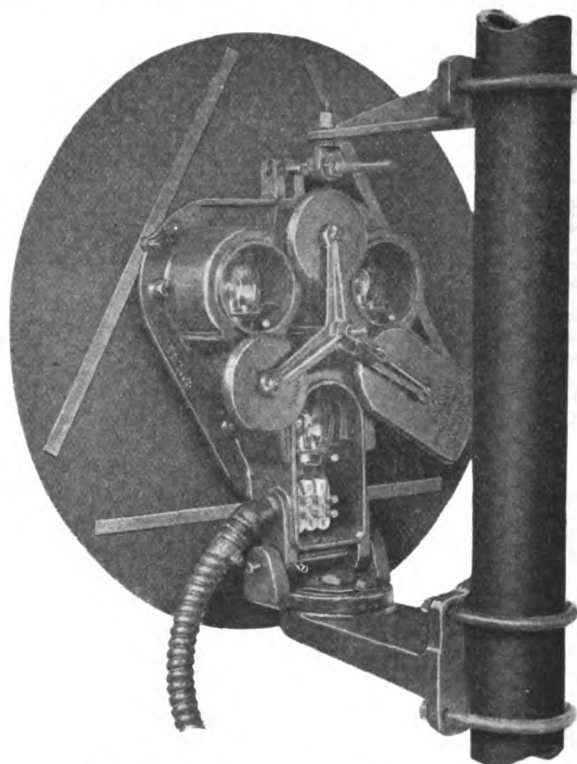
the stand against any possibility of its opening. This adapts the switch stand practically for busy railroad yards in so far as it permits more rapid switching of cars than can be done where switchmen are required to open or close foot latches or other locking devices.

The new stand is called the Anderson Duro switch stand and is a development of the American Valve & Meter Co., Cincinnati, Ohio. As with the Economy switch stand, manufactured by this company, the new

switch stand may or may not be equipped with breakable cranks, the latter consisting of a crank so designed as to embody the weakest part of the entire switch stand. As a result of this construction the stand is protected from injury in yards when switches are run through since the crank breaks first, whereupon new cranks are quickly applied from the outside, as shown in the illustration. Switch stands of this type are in test service on several railroads.

A New Triangular Light Signal

A DEMAND FOR MORE compact color-light signal units so that more than one may be placed conveniently on the same pole caused the Union Switch & Signal Company to modify a former triangular design to suit the present day requirements. The lamp units of this new signal, which is known as the Style-TR, are aligned with respect to the finished mounting surfaces and when placed in the triangular cast iron case, the



Rear View of Triangular Light Signal

main beams of light are parallel. Vertical and horizontal alignment of the complete light unit is accomplished by means of the combination adjustment and supporting brackets which secure the case to the mast. Provision is made for telescopic alignment of the light unit to bear on the desired point, however, it is possible to secure good range by using ordinary alignment methods.

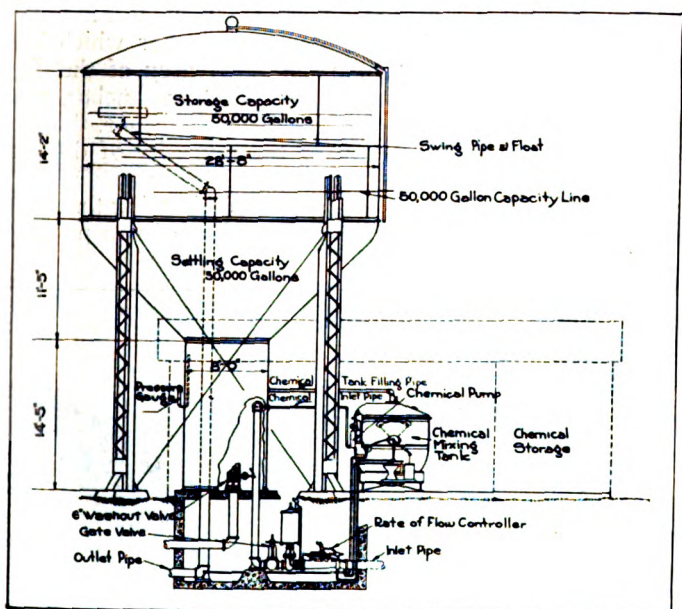
The lamp unit consists of the doublet lenses, the outside member of which is $8\frac{3}{8}$ in. in diameter, a rebased lamp held in a receptacle, the position of which is definitely located with respect to the lenses, and a supporting casting. Lamp bulbs may be renewed without disturbing the optical precision of the adjustment.

The cover design of the back of the case is unique as ready access may be had to the lamps and terminals (illustrated in the rear view shown) and it is impossible through negligence to leave the cover off of one lamp unit without also leaving it off the other two, thus assuring that no one indication may be improperly displayed

on account of a strong light behind the signal without the other two lenses receiving the same illumination. The three covers are carried on a centrally supported spider. As the lower one is the heaviest, there is no chance of accidental exposure if the maintainer should fail to secure the hasp.

New Type Water Softeners Installed on North Western

A CONICAL BOTTOM steel tank, the total absence of the familiar mixing chamber and automatic control of the inflow are features of the Horton type water softening plant which has recently been developed by the Chicago Bridge & Iron Works, Chicago, incident to the entrance of this company into this field of activity. Five plants of this type have recently been installed on the Chicago & North Western, where they constitute a marked departure from the prevailing prac-



A Sketch of the Horton Type Softeners Showing Interior Construction

tice in treating plant designs intended for general use.

The plant at Laurens, Iowa, the first of the five plants to be placed in operation, is illustrative of the character of construction and the principle under which the new type functions. This plant is of the continuous type and is constructed to treat water at a maximum rate of 12,500 gal. per hour. The conical bottom steel tank is of 100,000 gal. capacity, the upper half of which fulfills the requirements of storage. Instead of entering the plant at the top, as is usual in water treating practice, all water enters this type tank through the bottom, and is discharged at a point in the mud drum about eight feet above the ground.

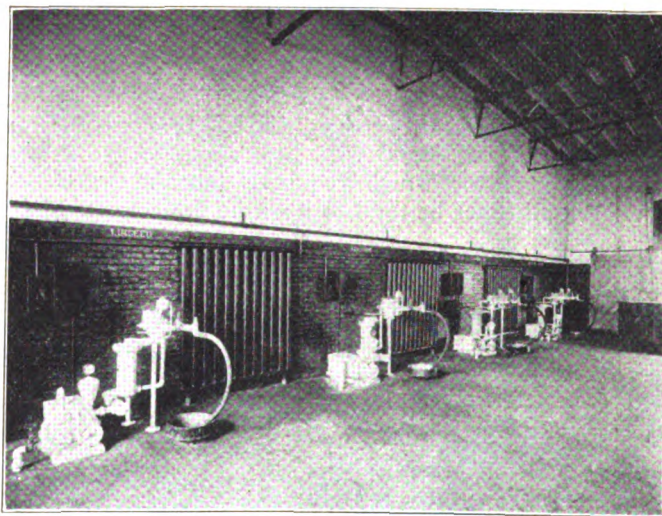
The chemical mixing and proportioning system is that of the International Filter Company. This is installed on the ground level and discharges a constant flow of chemical directly into the raw water before it emerges from the inlet pipe. The inlet pipe is provided with a special elbow designed to obstruct the flow of the incoming water so as to give it a swirling motion in the tank, no other form of agitation being provided.

Upon emerging from the inlet pipe the treated water passes directly into the settling portion of the tank. In

order to utilize the top half of the tank as a storage reservoir and at the same time to draw off all water from the top level, the outlet pipe is equipped with a swinging outlet. Precipitates are removed from the mud drum in the tank through a six-inch washout valve in the bottom. Aside from the total absence of a mixing chamber and the familiar method of agitation by mechanical means, neither of which is considered essential by the manufacturers, this plant is distinctive in the method of controlling the inflow of water. In this plant the effort is made to obtain a constant rate of inflow by means of a controlling device installed on the inlet pipe, the purpose of which is to allow only a predetermined supply of water to enter the softener, regardless of the pressure on the supply line. The chemical feed is likewise regulated so that it will deliver a constant amount of chemical solution as long as the water supply remains equal to or greater than the rate at which the controller has been set. As a safety precaution the chemical system is equipped with a controlling mechanism which maintains a proper ratio of chemical to incoming water will if the water supply inlet pipe should fall at any time below the rate at which the controller is set to operate.

Electrically Controlled Oil Barrel Filling Equipment

ONE OF THE PROBLEMS which arises at any point from which oil is distributed is the filling of oil barrels for shipment to outlying points. To solve this problem the Chicago, Rock Island & Pacific has installed a novel type of oil handling equipment at Shawnee, Okla. and also at Silvis, Ill., consisting of a series of rotary power pumps. The units at Shawnee,



An Interior View of the Barrel Filling Station at Shawnee, Okla., Showing the Several Automatic Filling Pumps

which are four in number, shown in the illustration, consist of electrically operated rotary power pumps large enough to fill a barrel in $1\frac{1}{2}$ min. Combined with each pump is an automatic registering meter which is not only designed to afford a pre-determined delivery but also to furnish a permanent record of the total number of barrels filled. So far as is known, this is the only meter of the kind in use. Equipped with these units it is possible to fill an unusually large number of barrels, using but one or two extra men whose work consists simply of rolling the barrels in position to be filled and