other emergency valve, the blow off valve being offset from it in the same casting. This emergency valve is similar to the blow off, except that it is operated by a square threaded spindle, at the valve. Normally, this valve is set wide open, with the blow off controlled by the blow off valve. In the event of anything going wrong with the latter, the emergency valve can be closed, and the blow off removed and repaired, without the necessity of draining the boiler. When first applied, the valve was threaded into the side of the water leg, but since then, it has been found advisable to attach the valve by a flange, with a loose ball joint ring between, thereby forming a solid tight joint that will not turn in operation.

GAUGE GLASS MOUNTINGS.—The design of gauge glass mounting used as shown in fig. 7 combines in a simple manner a convenient arrangement of fittings. The fittings to the boiler head are brass castings of almost identical design, except for interior coring of the glass space. In the body of each is a tapered packed valve, controlled in each case by a handle on the side. The end of the valve spindle has flat sides, on which a small clamp handle is fastened by a small bolt. The parts of the valve and handle are so constructed that the valve is open when the handle is in a vertical position. The gauge glass is held in the mountings at each end by packed glands. In the mountings, concentric with the hole into the boiler, are brass plugs, with a similar plug in the upper end of the top mounting. In the lower end of the lower mounting is a steel nipple for trying the gauge. It will be noted that the upper mounting is bored vertically slightly larger than the diameter of the gauge glass. In the event of the more or less frequent breakage of the glass, the procedure would be to turn off the valves, remove the top plug, and after drawing out the glass pieces, first removing the packing, a new length of glass is introduced from the top. After packing, replacing the top plug and turning on the valves, the glass is again complete for service.

The C.N.R. standard try cock is also shown in fig. 7.

BELL STAND.—Forcing the feed water into the side of the boiler at the forward end has been the practice for such a long time that any departure from this plan seems unusual. So successful has the scheme worked out by Mr. Hungerford proved, that a number of other lines have adopted his plan in various modified designs. The feed water is injected into the boiler through the base of the bell stand, the latter being designed as in fig. 8. The feed enters the hollow sides of the bell stand through a vertical check valve, passing on through the hollow base into the boiler. Duplicate sets are arranged on each side. As with the blow off valve, if anything happens to the main valve, pressure must be drawn in order that the difficulty can be dealt with. Consequently, for similar reasons, an emergency valve is supplied on each side between the main valve and the boiler, both emergency valves being horizontal, alongside of the boiler connection. The bell stand is also provided with a plug in the top for washing out the boiler. Like the blow off valve, it is attached to the boiler top by a flange with a loose ball ring intervening.

The method of installing is shown in fig. 9, which graphically shows the principal reason for this method of boiler feeding. In the older method, with the injector in its usual location just above the boiler centre line, the feed pipe bends down, running along above the runboard, and then up to the check valve on the boiler centre

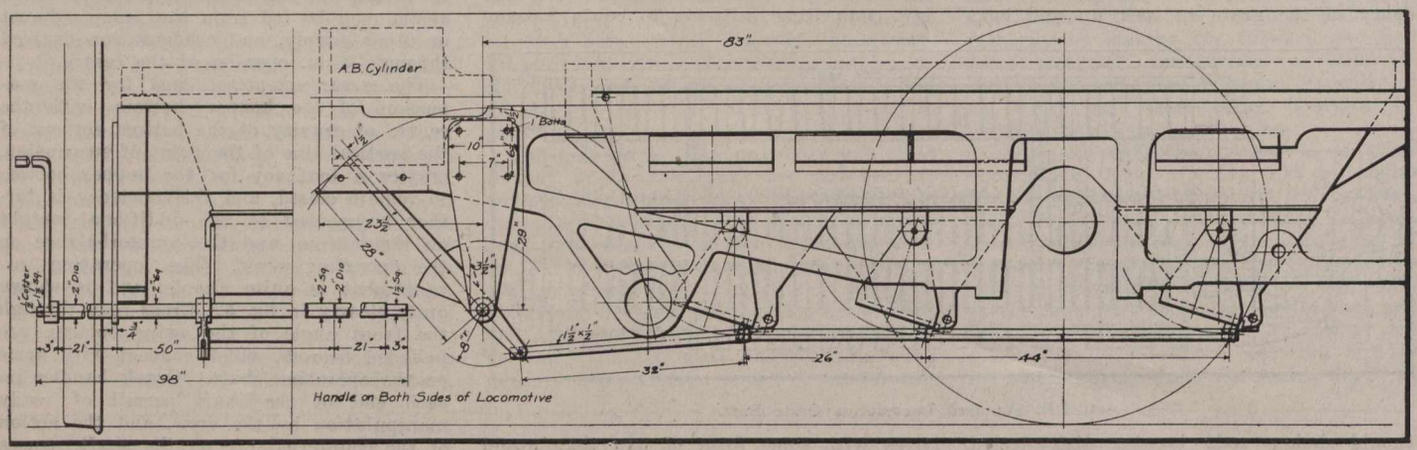

Fig. 5.—Installation of C.N.R. Standard Ashpan on an M-2-a Consolidation Locomotive.

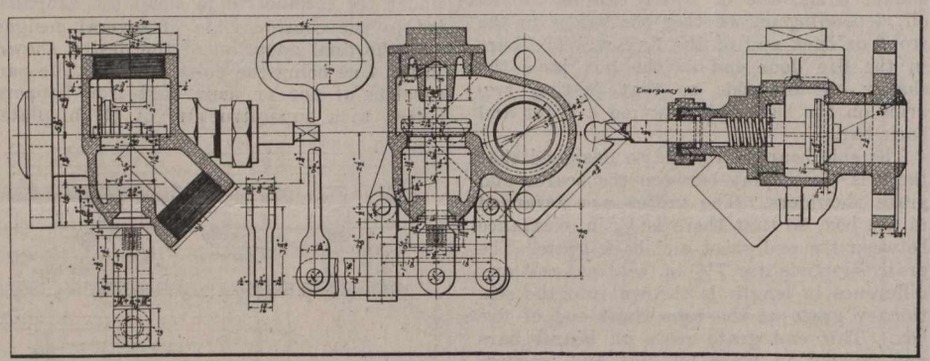

Fig. 6.—C.N.R. Standard Blow Off Valve.

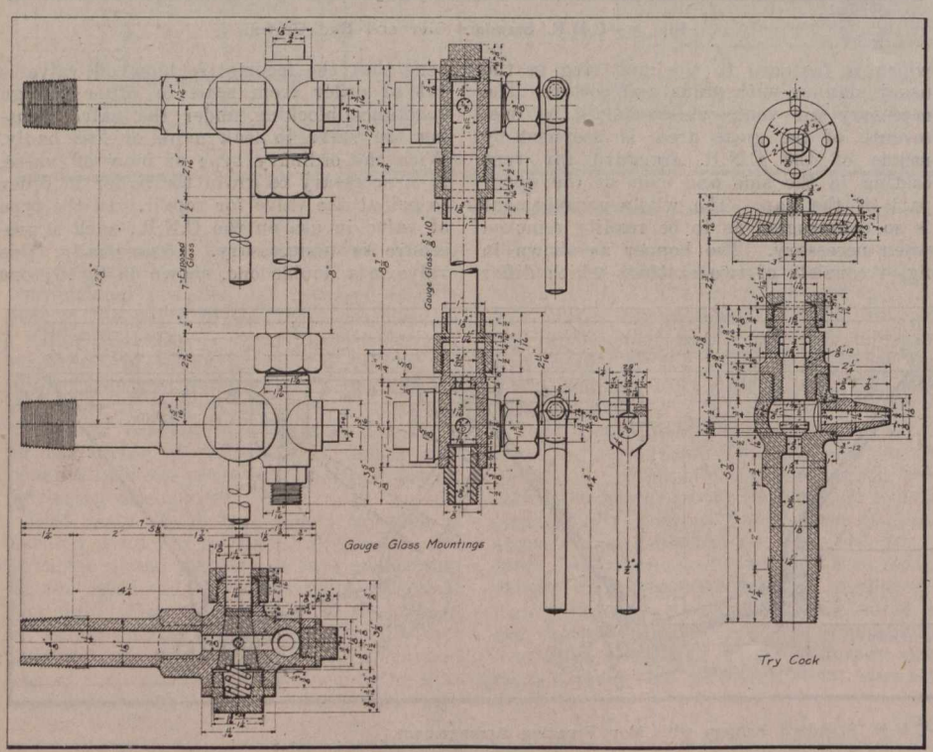

Fig. 7.—C.N.R. Standard Gauge Glass Mountings and Try Cock.