

**Boiler.—**

shire or other equal and specially approved brand. All rivets  $\frac{3}{4}$ " diameter and  $1\frac{1}{2}$ " pitch with  $2\frac{1}{2}$ " lap when single riveted. Longitudinal joints in barrel and barrel to fire box are double riveted. The heads of all rivets to be properly set up. No drifting will be allowed; if the rivet holes are not fair they must be rimmed out. The joints are to be carefully caulked on both sides, care being taken not to injure the plate. 159 wrought iron tubes, manufactured by "National Tube Co.," or "Morris Tasker & Co.," 10' : 10" long x 2" outside diameter and No. 12 W. G. thick. Joint to be made with copper ferrules, No. 16 W. G., about 1" long, driven into tube plate outside the tube. Three gusset stays of  $\frac{1}{2}$ " plate and 3" angle iron in back and two in front of boiler are required, also eight socket ended stay riveted inside barrel, and having 1" bolt screwed through the steel tube plate into the socket stays, as shown in drawing. Smoke box 4' :  $9\frac{1}{2}$ " diameter x 2' :  $6\frac{1}{2}$ " long of  $\frac{1}{2}$ " Staffordshire plate; door and front end to be of cast iron with at least a 3' : 4" opening. A strong diagonal stay of wrought iron from smoke box to front of frame is required. Boiler is bolted tight to frame only at the smoke box, at every other point it is to have free longitudinal movement. For details of the boiler see drawing No. 1164. Great care must be taken in the curving and flanging of all boiler and fire box plates, and no liners will be allowed at corners of fire box ring or elsewhere. Smoke stack 17" outside diameter of No. 9 best Pennsylvania iron, with cast iron cone and strong wire netting, (to drawing) not to be higher than 14' : 9" from rail, the base castings to be well bolted together and to smoke box plate. Coal burners to have cast iron rocking grate worked by wrought iron levers and rods from foot plate. Ash pan of  $\frac{1}{4}$ " plate x 12" deep, with back and front dampers worked from foot plate by wrought iron gear; also side sliding doors with catches, all quite air tight. The ash pan is carried by eight 1" cotter bolts tightly screwed into water space ring.