A Gauge O Steam Loco for beginners.

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Part 1. Introduction.

By

"1121."

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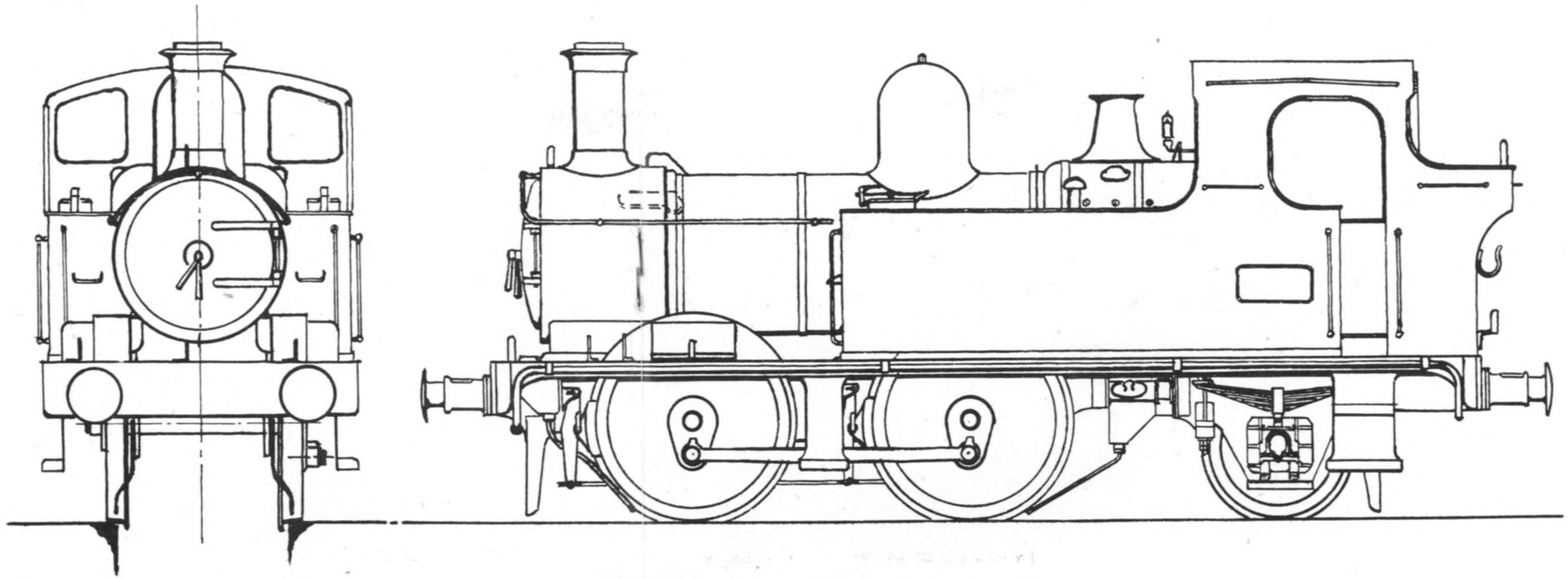
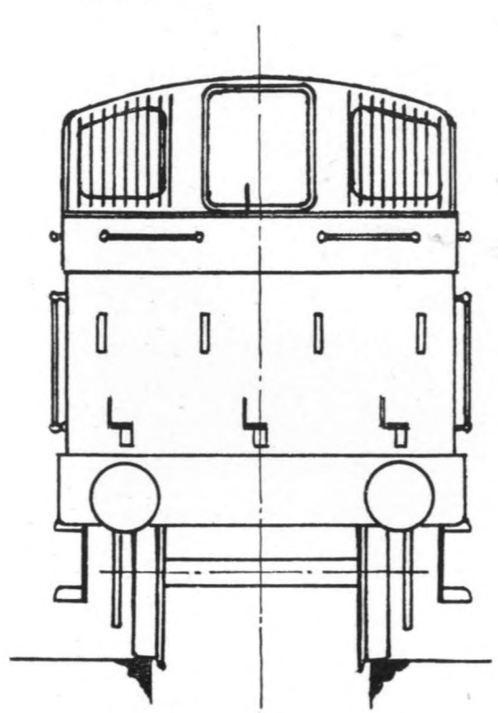
Drawings actual size
7mm. scale.





G.W.R. 0-4-2 TANK 1400 CLASS SIDE AND END ELEVATIONS.

Having dealt in past issues of the *Model Railway Constructor* with various fundamental aspects of steam loco building, maintenance and running, it was only natural that our attention should turn to the idea of building a complete loco from start to finish.

Many and thorough have been the discussions between the Editor and ourselves and the outcome has been the conviction that it would be advisable to introduce the subject of steam loco building gently, by means of a simple gauge O engine, before diving into anything large and ambitious.

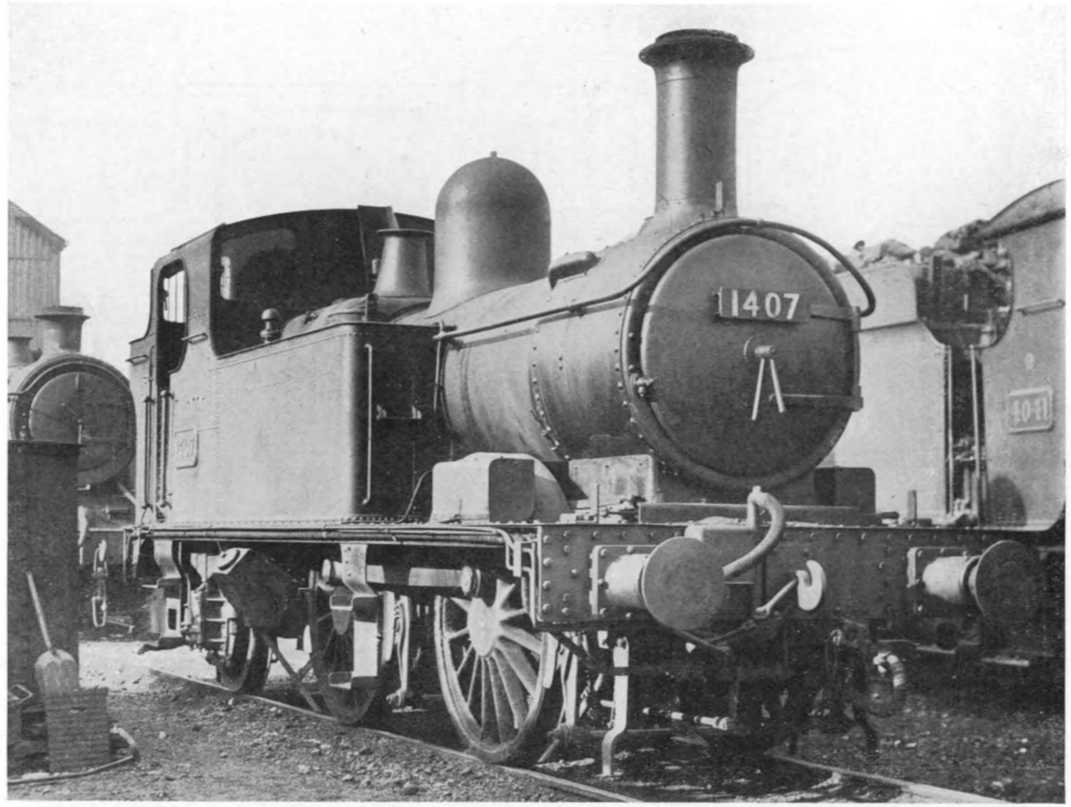
This principle having been agreed, the problem arose of finding a prototype which would prove popular without having already been done to death either in the steam or electric fields, while still being suitable for our particular job.

Let us see what this job is. In the first place we have set ourselves certain standards and conditions to which our model must conform, and perhaps the most important of these is that, while being a working steam job, it shall still be a scale model in the strictest possible sense of the term. We, and probably readers also, have no time for the "maximum power" abortion, distorted out of all recognition from prototype proportions, and with whatever outline is possesses spoiled in some conspicuous place by some fitting yelling "steam" at you. Any builder may "super-detail" our engine externally to his heart's content, and its appearance will bear comparison with any electrically-powered model built to the same standard of workmanship. We must admit that it will need to be "driven," but doesn't a full-sized loco? If you have any heart for the loco itself as a personality, isn't it conceivable that you will find your fun in handling the "baby" in a way at least approaching that in which the full-sized machine is handled?

If your layout abounds with incredible curves and impossible gradients it will be necessary to "drive" the engine in an appropriate manner at such points, which must be done on the spot unless you care to devise some elaborate remote-control system of which examples have been made in the past. Our own opinion, however, is that over-control of this kind reduces the loco to the level of a soulless automatic robot; we would rather handle our little engine as the live thing it is, although we beg the reader not to deduce from this remark that it will be so live as to be wild and uncontrollable, needing unrestricted running powers during its period of activity. We venture to predict that some readers may be surprised at the degree of control possible, bearing in mind this particular engine's extreme simplicity of design, and we suggest that she may give her owner a new outlook in the matter of model railway operation, and show him how much more this can involve than the cold-blooded automaton proceedings of so many electric layouts. We have a great admiration for the mechanical and electrical organisation that can enable a loco to back on to a train, couple itself up, and carry out elaborate shunting operations, coupling and uncoupling at the command of an unseen hand. But have you ever seen a real one do it?

Several years ago the writer and some friends operated an O gauge line powered entirely by steam locos of types similar generally to the one we are about to describe. We operated time-tables, which had to be worked out to suit the limitations of our motive power, as any real time-table has to be worked out. Our engines did their turns of duty, which might be an express run, a spell of shunting, or some goods to be conveyed from here to there, and they returned to sheds for cleaning, refilling and relighting-up in time for the next turn of duty, and what fun we and our engines had. For the first time we could use a water-tower for its intended purpose!

Now, it is obvious that our little engine's extreme simplicity of construction must not be too apparent in operation. Her simple slip-eccentric reversing gear will inevitably necessitate movement by hand for a half-turn of her driving wheels to enable her to go ahead after backing on to her train, but we feel that the sight and sound



The prototype of our model. [*Photo*: M. W. *Earley*.

of her gradually gathering speed as she puffs off with her load will compensate for this, and we promise that she will not drip, spray or squirt any undesirable substances over the track or adjacent scenery.

We have to organise our subject so that it can be got through as expeditiously as possible, while yet not losing sight of the fact that many readers embarking on the building of our engine are likely to be beginners at much of the types of work involved, and clarity of instruction for such people has from the start been a fundamental of the whole idea.

We must ensure the availability of the various materials specified for the job, and we have arranged for Messrs. Crescent Industries, 1, Blenheim Crescent, London, W.11, to supply whatever is called for without delay. Any reader, of course, is free to make what other arrangements he likes. "Stock" materials—rod, bar, tube, etc. are all "standard"; we are avoiding "odd" sizes and sections which may be difficult to get. We have also so designed the engine, and are so describing its construction, that only the very minimum of extra tools will be required, over and above those likely to be found in any existing kit. Lucky readers with more efficient equipment will, of course, know how to use it, and will see where they can by-pass our instructions and get the desired results by quicker methods. At the end of this article will be found a list of materials which will be called for next month, when we shall start straight in with construction, so that readers may, if they wish, set about collecting these ready to go right ahead. We also recommend a selection of tools which the builder will need, so that he will not get stuck in the middle of a job for want of some particular item.

The Prototype.

It will be observed that our engine is the pretty little 1400 class 0—4—2 tank of the late G.W.R. With her 5ft. 2in. (36mm.) driving wheels she will prove reasonably fast when a spot of speed is desired, and at the same time possess a good reserve of power for heavy work. To help adhesion we have arranged for very simple springing of the trailing wheels, although any builder desiring the ultimate in simplicity is at liberty to dispense with the spring gear and run the axle in plain axleguards.

Her boiler is the plainest possible "pot" type, fired by a rather special spirit lamp to obviate the need for any external water-tubes. The flame of the lamp is completely hidden by the side-tanks, which also help to keep the heat in to the boiler. She has a single cylinder, with orthodox slide-valve, and loose-eccentric reversing. A finely-adjustable screw-down valve inside the boiler, worked from the cab, does duty as a regulator, and cylinder lubrication is looked after by a small displacement lubricator completely out of sight inside the smokebox.

We think we should give her a name, if only for future reference—readers must please themselves as to whether they perpetrate the sacrilege of adding name-plates! What about "Aladdin"? He had a lamp that was a bit out of the ordinary, too!

Materials required for frames.

18 S.W.G. mild steel or hard brass plate, for frames, buffer-beams.

¼in. brass or steel angle, for frame brackets.

8 B.A. ch. h'd. steel screws, ⅛in. long, or next longer obtainable.

$\frac{1}{16}$in. brass or iron snaphead rivets, $\frac{3}{16}$in. long, or next longer obtainable.

$\frac{5}{16}$in. dia. phosphor bronze or brass rod, for axle bushes.

Tools recommended for first stage of construction.

Toolmaker's clamp (small or medium).

6in. steel rule, with inches to 1/64in. and millimetres.

Scriber.

Square (small to medium).

Centre-punch (the "Eclipse" automatic punch is extremely useful).

Files: flat, half-round (2nd cut and smooth). Needle files, square and round.

Hacksaw—(the miniature type is cheap, and will do all that is required).

Small pliers.

Small screwdriver.

Countersink bit.

Ball-pane hammer (light to medium).

Small Slocomb centre-drill.

Small tap-wrench—get a good one, it's worth it.

Drills: ¼in., $\frac{1}{16}$in., Nos. 12, 43, 51.

Tap: 8 B.A. Taper.

G.N.S. Railway.

Mr. J. A. N. Emslie, 83, Viewpark Drive, Burnside, Rutherglen, Glasgow, is interested in modelling stock of the Great North of Scotland Railway and would like to hear from readers willing to supply information or lend blueprints or photo negatives of G.N.S. equipment, H.R. locos, coaches and wagons and goods stock of the C.R. and N.B.R.

A 7mm. Scale Gauge O Midland Railway 0-6-0 Tank.

The pictures show a Johnson Midland 0—6—0 tank built by Messrs. K's as the latest addition to the already well-known Derby Museum 7mm. scale model of the Midland Railway.

The underside photo shows the method by which the model was two-railed. The frame was "split" with two Tufnol spacers and the axles mounted in Tufnol tubes, and the Romford motor was then mounted on a metal plate which was fitted to the frames by two Tufnol supports.

The frames being insulated no pick-ups were needed and the running was improved by the absence of the friction that usually goes with brush pick-up. To help in the smoothness of the running the model was fitted with ball races on the driving axles and the motor was "flywheeled" with the result that the 24 volt loco would run smoothly and noiselessly on 3 volts.

By way of warning, it was found that if the stub axles were forced into plain Tufnol tube the latter almost always split open and it was found necessary to cover the Tufnol with a thin walled brass tube.