

# HAVE GUN~WILL USE IT

*Jim Whittaker deals at length with that most important aspect of modelling, the paint finish.*

Whatever the reason, it is fairly certain that a better standard of workmanship is reflected in models now being produced—and by many more modellers, than was the case some ten years ago. I venture to suggest, however, that one specific area, i.e. 'finishing', still lags behind the constructional standards achieved.

One sees so many instances where the overall appeal and quality of a model start to deteriorate as soon as the finishing processes commence—a most discouraging result for any modeller trying his utmost to produce a worthwhile model. To some extent the difficulties might be pin-pointed, but, of course, there is no real substitute for continual practice and experience.

A component might be made and inadvertently scrapped without too much loss of time—one simply makes a replacement. With painting, however, whether by brush or spray gun, an error of judgement can sometimes be most difficult or near impossible to eradicate completely. This situation tends to produce apprehension and lack of confidence—not an ideal basis for top class results. Over many years, as some of you may know, I have finished all my rolling stock by hand painted methods (using very thin coats), but my recent change from 4mm to 7mm scale, has prompted me to re-appraise the spray gun possibilities, especially with the much larger surface areas now involved. At the outset it was decided that there was no sense in spending scores of hours making a model, and then trying to finish it with anything less than a good quality air gun and compressor. I eventually settled for a Badger Model 200 Air Brush and a Campbell Hausfeld Compressor Model MD 1098, but doubtless any equipment of similar price range would give comparable results.

Furthermore, I wanted to spray in comfort—in all kinds of weather or external temperature, which prohibited the use of the garage or out-house. In fact, to meet this requirement it was essential to select a warm room inside the house, and the kitchen was finally chosen as the most suitable site.

Equally essential was the elimination of any fumes or smell, during and after a spraying

session. To this end a small spray booth was designed, using a strong cardboard carton which originally housed a Qualcast lawn mower—anything similar would suffice. This was cut and folded as shown in Fig. 1, the folds being held in position with staples and finally parcel tape to prevent air leaks. The booth was then secured to a stout wooden base to strengthen, and for ease of handling when put into storage. The tapered neck at the front and rear of the spray booth were calculated to assist the flow of excess paint and turps through the booth and into the outside atmosphere, though frankly this was guesswork. However, it works admirably; after a two hour spraying session there is no sign of anything offensive to nostrils or chest. Probably this was achieved by two other safeguards. Firstly, a discarded (noisy), fan extractor was fitted at the rear of the booth, and then the booth itself was designed to rest on the inside kitchen window sill, supported by hinged legs resting in the kitchen sink—the whole unit being in line with the kitchen window, which, of course, is opened during spraying sessions.

For additional sealing precautions, a strong cardboard backplate was fitted to the booth—to dimensions slightly larger than the window aperture. Fig. 2 shows a side elevation of the whole arrangement. The supporting legs are hinged to facilitate their insertion in the kitchen sink, and also so that they can be folded parallel with the base board—thus taking less space in storage. The wooden baseboard is also necessary for supporting the 230v wiring to the strip light and fan extractor, and for the supply socket for the compressor. It also provides support for the all important hook on which to hang the spray gun between usage. Setting up the spray booth is a matter of five minutes. It is transported from storage—placed in the sink, and plugged into an adjacent power supply; the compressor is then plugged into the socket and the kitchen window opened. Finally, a piece of plastic sheeting is placed over the outer window sill to protect it from the emerging paints—my wife doesn't seem to like multicoloured woodwork outside the house, which would presumably be the penalty after a few weeks of spraying.

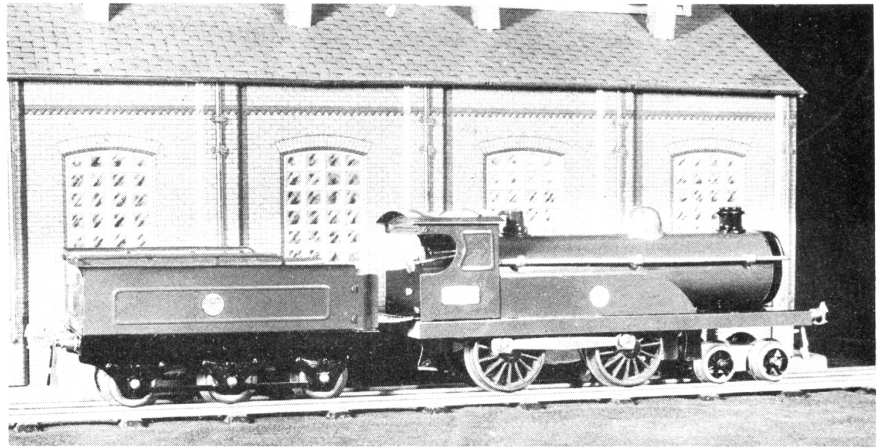
## PAINT PREPARATION (RELATIVE TO OIL BASED PAINTS ONLY)

Paint preparation is rather more time consuming, but one must expect to pay a price for a first class job. If you are fussy, even mixing the paint to the desired shade of colour and the degree of matt or gloss finish, can be quite taxing in itself, especially if like me, you have a poor eye for colour. However, one can undoubtedly improve with practice—it's a question, as always, of how much determination you can muster. As bought, the paint will almost certainly be too thick for spraying purposes. As a broad guide, nearly the same volume of turps needs to be added—using a suitably sized glass bottle for the mixing process. The bottle then requires a vigorous shaking for at least a minute to integrate both liquids. If the mixture does not subsequently slowly drain back from the top (empty) portion of the bottle, leaving the glass virtually free from paint, then the mix is likely to be too thick.

Too much turps added and the result will be obvious; the paint will have no covering properties and will be so free running as to be out of control. A little trial and error will provide a feel for a suitable mix. If it is desired to minimise all risks in the actual paint spraying operation, it is then advisable to 'strain' the paint to remove all foreign matter, though I occasionally omit this messy operation on jobs of minor importance. To strain the paint, a piece of fine woven cloth (e.g. your wife's stocking rejects), is attached to the neck of the glass jar belonging to the air brush, using an elastic band. (The jar being scrupulously cleaned beforehand). The stocking is then pushed downwards with the finger to form a cup into which the previously prepared paint mix is then poured. As the paint disappears through the stocking into the jar below, it is continually replenished until the jar is filled to the desired level. Meanwhile a second glass jar, equally clean, is two thirds filled with turps and attached to the spray gun, which is given a few bursts of air to ensure that a clear passage is available through the nozzle. (The emerging spray of turps can easily be seen). The already prepared paint is then substituted for the turps and the gun is ready for action.

A beautifully made model locomotive in O gauge—the Hornby version of the Southern Railway 'L1'. The 'fine' spraying technique outlined in the text, was particularly useful here, as only a partial respray was required—blending in with the rest of the paintwork. The area affected was a 1½in. wide band stretching from the smokebox to the firebox.

Photo: Brian Johnson



A Hornby No 2 loco of the early 1920s period, after a complete strip down and respray in Midlands red. It was purchased in a battered state, requiring many new components, made from tinplate.

Photo: Author

#### WORKPIECE PREPARATION & BASIC SPRAYING METHOD

Whilst the paint preparation is being undertaken as described above, other preparatory jobs can be initiated to save time and improve the finish. The gas oven should be lit at the start, and in cold weather the oven door left open for about 15 minutes to ensure a comfortably warm room temperature for working in, and to reduce, I believe, the chances of an 'orange peel' finish. The various components to be sprayed are initially placed on individual blocks of wood which are then put into the oven to pre-heat the components and to keep them clean. Very little fluff or similar unwanted foreign matter seems to survive in a hot oven which is set to the lowest possible temperature—consistent with the gas flame not being extinguished with the occasional draught. When spraying is to commence, the wood block on which the component is resting, is removed from the oven and placed in a suitable position on the floor of the spray booth, and the appropriate coat of paint applied.

The component is then immediately returned to the oven, still using the wood block as a transporter. For some components like a locomotive boiler, which needs to revolve whilst being sprayed, this technique has to be slightly varied. In such cases a simple wooden jig is required to enable the boiler

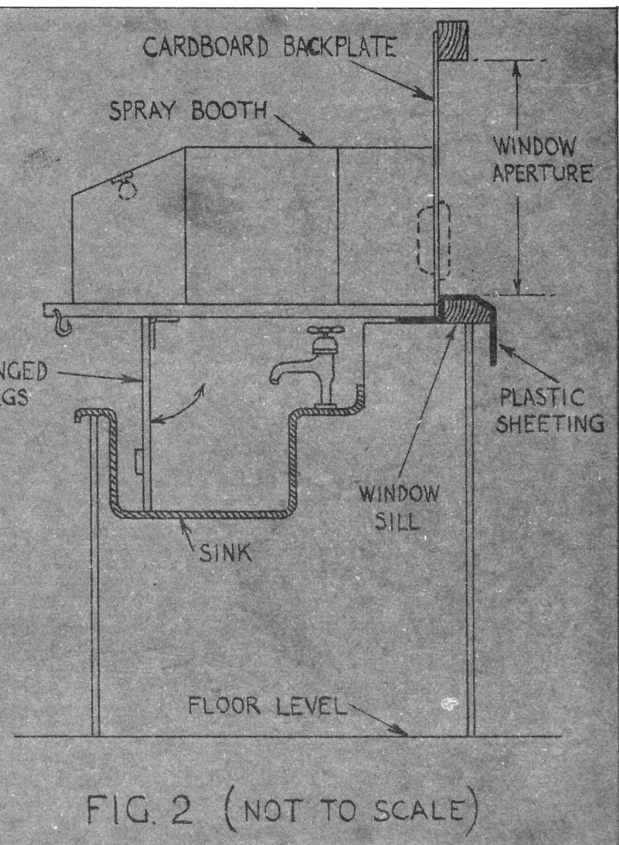
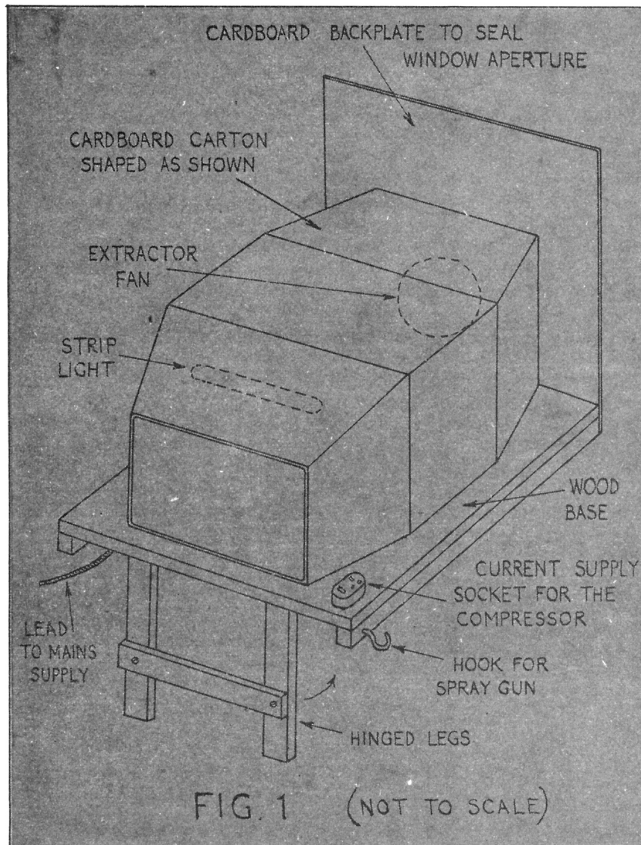
to be revolved with the left hand whilst spraying with the right, and a crude wooden nest made, to hold the boiler in position in the oven, without contacting the sprayed surface.

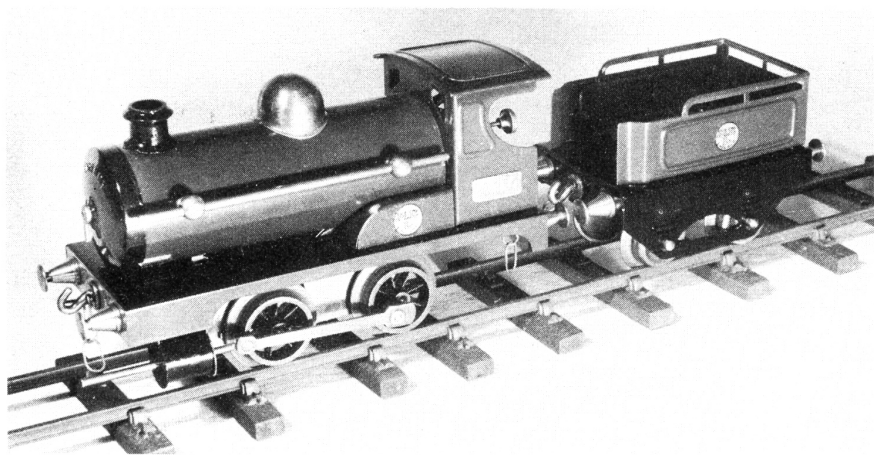
With the aforementioned oven temperature setting, the wood blocks do not catch fire or even deteriorate, even though the metal components get quite hot—indeed, the latter can only just be handled with the bare fingers without being too painful.

Surprisingly, 12 to 15 minutes in the oven appears to be ample time for the paint to set quite hard, thus the components can be handled for spraying the other side, or for further coats without undue delay. If one considers the alternative, i.e. ordinary air drying, which takes much longer in time (during which all kinds of dirt can settle on the surface), the vital role of the oven becomes apparent. I am referring to oil based paints throughout.

When spraying a different colour of paint on to one already applied (e.g. spraying a black border on to a basic green coat), the

following technique is used, involving the use of masking tape. In this case the green painted component is removed from the oven, following its 15 minutes cooking, and allowed to cool off for about 5 minutes before applying the masking tape to the appropriate area. (Ordinary transparent Sellotape is quite effective for the job). After spraying the black border, the component is returned to the oven with the Sellotape still in position, and given a further 15 minutes of heat. On being removed, the masking tape can be peeled off without any risk of bringing paint with it—indeed, without leaving any sign of its former presence. It does, however, leave a beautifully sharp edge dividing the two colours. Perhaps it should be clarified that when using





The first of a long line of Hornby locos issued in 1920. Completely stripped and resprayed as described in the text. Note the 8 buffers in solid brass.

Photo: Author

the oven to dry out the paint, the oven door is kept closed. It is left open only during the preparatory period of warming the kitchen generally before spraying commences. The drying out of the paint under heat, produces only the slightest discernible odour, which disappears within minutes of the components being removed from the oven. It is not possible to outline the consequences of using an electric oven for this process, as I have no practical experience of this type of heat, but presumably it will offer similar facilities.

#### PREPARATION AND USE OF AIR GUN (AIR BRUSH)

Before describing the precise techniques adopted, perhaps it should be pointed out that various books are available on the subject, and that these go into far more technical detail than I propose to, or can, offer. You are also strongly advised to read the Air Brush Review article in the January and February, 1978, issues of MODEL RAILWAYS (now out of print). This goes into the basic principles of airbrush operation, and also reviews the many alternative types of equipment.

The following notes are based on my own particular approach based on practical experience, and developed after several disappointments—you must decide whether it suits you or not. Right from the beginning, the main problem was the persistent refusal of the paint to emerge from the nozzle. Even when the gun was placed aside for only a few seconds, the paint would congeal with heat breaking regularity, and there is nothing more exasperating than trying to paint a component with nothing coming out of the air gun. In fact, I genuinely believe that any normal person subjected to this irritation for a couple of hours or so—compounded by having to continually strip down the air gun for cleaning—would seriously risk permanent damage to his nervous system. This bunged up nozzle problem was probably worsened by my insistence on setting the needle control to the smallest possible air gap, to provide the maximum control over the flow of paint from the gun to the workpiece. A large air gap produced a flood of paint which was difficult to control, with a consequent risk of uneven coats of paint. Put another way, I was trying to remove as much skill as possible from the job, by applying the paint as slowly as practicable, thus giving me time to think and to recover from any difficult situation that might arise. I deliberately chose to spend, say, three times the normal spraying time in exchange for consistently good results, with a minimum risk of messing up the job and having to start again from scratch.

I am aware that in some quarters I am regarded as having an over cautious approach to painting generally, but I believe that in this case it has paid off. Such are the safety margins of the principles outlined, it is now possible to achieve a really smooth, even finish, with unfailing regularity and without 'rubbing down' between coats. In fact, using gloss paints, the finish can fairly be described as almost glass smooth. But to return to the bunged up nozzle problem which is a direct consequence of the above technique. This problem was eliminated by the simple expedient of using the spare jar of turps already referred to. This jar is substituted for the paint, immediately a bout of spraying is concluded, and the gun given a few bursts of air to send the turps through the system to remove all traces of paint—thus providing a clear passage for future paint spraying operations. Because of the fine needle setting, it often takes 10 to 15 seconds for the full flow of turps to emerge from the nozzle, in spite of frequent blasts of air. Repeated placing of the finger over the nozzle, for about one second intervals, with the air blast full on (a sort of coaxing action), will often help in stubborn cases; the secret is not to give up trying. On a number of occasions I thought I had 'lost it', but repeated applications of air pressure finally forced the turps through. The gun can then be put aside for lengthy periods and be ready for re-use as required. When resuming painting, the turps jar is removed from the gun and the air applied (without the jar), to remove all traces of turps before fitting the paint jar to the gun for further spraying activities.

All this may sound long winded and wasteful of materials, but this is not so. By spraying a batch of components at one session, the changeover from paint to turps is kept to a minimum, and the fine air gap setting ensures that the amount of paint and turps used is microscopic—no other word adequately describes it.

Whether it is the thin coats of paint applied, or the oven treatment, or a combination of both is not known, but the resulting finish appears to be very resistant to knocks, i.e. the paint is most difficult to chip off. Another consequence of the fine air gap setting is the unusual distance which the air gun is held from the workpiece during spraying. This is approximately 3 to 4 inches, which is about half the distance normally recommended. The paint covers only a small area at any one particular instant of time, hence the greater degree of control. With the workpiece positioned on a wood block, the gun is initially directed to its top left hand corner, and slowly moved to the right, leaving a coloured

strip of paint about 1/4in. wide along the top edge. The process is then repeated as required, again starting on the left hand side, and aiming for a 50% overlap of paint coverage to reduce the risk of a semi bald patch. In effect, the continual 50% overlap means that two coats of paint are being applied in one spraying session, though a repeat performance is recommended after hardening off the first coats in the oven. During the spraying session, the paint mix is thoroughly shaken for about 15 seconds every 8 minutes or so, to make sure the paint and turps are consistently integrated.

To avoid the possible risk of the paint 'blowing back' from the surface being sprayed, the gun is directed towards the workpiece at any convenient angle except anything around 90 degrees, so that any surplus paint or turps has a chance of being drawn in the direction of the extractor fan. I suspect, though no attempt has been made to prove it, that this angular direction helps to minimise the risk of an orange peel finish—so often associated with spray painting.

During the actual spraying condition I usually tie a handkerchief over my nose and mouth as a precaution against inhaling anything objectionable. Perhaps an over cautious procedure, but it offers more peace of mind—a good basis for better results.

Finally, the fine air gap setting of the needle has eliminated a common problem—at least one I encountered in my early attempts at spraying. My right arm would continually insist on allowing the air gun to linger in odd places, resulting in a build up of paint with consequent uneven coats or 'running'. Now the paint is slow to build up, so that some lingering of the air gun can be tolerated without adverse effect.

When the last coat of paint has been applied, an important operation is still needed before the spraying equipment is put into storage. The nozzle assembly is removed from the gun and stripped down completely. Any fibre or plastic washers are carefully stored, and the remaining metal parts put into a glass jar containing Polyclens liquid. During storage this liquid loosens any unwanted paint which the short bursts of turps, previously described, has failed to remove. Loosen is the operative word; the paint will still have to be removed, using appropriate tools such as a pointed match stick and a piece of wire. Failure to do so can produce depressing results. After about 3 or 4 spraying sessions—and in spite of there being an apparent air gap round the needle, the gun will fail to pass any paint, and we are back where we started with a bunged up nozzle.

Yes, quite a bit of money is involved in acquiring the gun and compressor, especially when related to the limited use of the equipment in comparison with actual modelling time, but the broad smile on your face when you see the results, should adequately compensate for your temporary empty pocket. Whenever I'm in doubt about purchasing rather expensive items of this nature, I usually remind myself that I'm only here once, and it's all in a good cause anyway.

Lining and lettering are outside the scope of this article, but meanwhile it is hoped that these notes might help some of you to achieve the same standard on finishing as on construction. Good shooting!