Punching for Pleasure

Two constructional articles

SINCE I described the method of punching awkward and irregular shaped blanks from metal strip (see "Cheating Father Time" in *Model Railway News* of August and September 1962), quite a number of enthusiasts have tried it with apparent success. In the article I showed how small items like plates and hinges could be punched or mass produced. The punch is made from ordinary mild steel rod about 3in long, and 3/16in or ¼in diameter. Scribe the end of the rod with the shape of the part required and carefully remove the surplus metal with a fine saw and file, finishing with a very smooth file until the exact size is obtained. Work on the punch is amply repaid, and it is better to spend an extra half hour on this item than three or four hours work on the finished parts.

The material for these small parts or blanks is thin sheet lead of the required thickness, usually 5thou or 10thou. This is laid over a sheet of 1/16in sheet lead and both placed on a smooth, flat and firm surface. The amount of force required to hit the punch with the hammer is found in a matter of minutes, and usually a short sharp blow will produce the best results, and the blank will then be impressed into the bottom sheet. When the required number have been punched or the sheet completely used the lower sheet is gently bent over a large tin lid or other receptacle and the pressings will neatly fall out. Those that stay put can be prised out with an old gramophone needle or similar implement.

I mentioned in the article at the time the possibility of producing in one "blow" not only the blank shape required, but also, where applicable, the embossed "rivets" simulating the bolt head of the prototype and this has now been realised completely—at least for bolts of the common round headed pattern.

The method is as follows:—

Apply one coat of marking out ink to the end face of the punch, already prepared to the shape required.

Carefully mark out the position of the "rivets" required as per the prototype and "centre-pop" lightly.

Drill No 80 holes as required to a depth of approx. .020in (a guess at the depth is quite good enough).

Slightly chamfer the top edge of each hole with a No 74. drill. The amount of chamfer, of course, determines the size of the head (Note that these drill sizes apply to 4mm scale only).

The punch will now produce a blank, complete with bolt heads of the shape (section) shown in fig. 1 and a good example of this application is the corner bracket used on many vehicles for joining the headstock to the solebar (see fig. 2). This has nine bolt heads per stamping and they cost nothing in time once the punch has been made. The 90deg bend at "A" is, of course, done separately as a second operation and here again the punch can be used to produce consistency of appearance—I scribe a straight line on the punch face where the position of the bend is required and this line is then reproduced (embossed) on every punched blank, thus avoiding all further marking out and possible consequent variations. Another example is shown in fig. 3. This is the scroll iron support plate used on nearly every GWR passenger vehicle over a period of thirty years and as each vehicle uses eight of these plates, I think a little time spent on a punch as outlined is well justified. In general, I think the best material to make these punches from is ordinary good commercial quality mild steel (no heat treatment or hardening is necessary).

One other change introduced since the 1962 article, though apparently slight, has proved a good investment and is worth recording. Whereas I previously used a piece of ordinary 1/16in thick lead sheet for the die, I now adopt the following procedure:—

Obtain a flat metal dish approx. 6in diameter (from Woolworth's) of sufficient thickness of metal to withstand distortion of the base when heat is applied via the household gas ring.

Load up the metal dish with bits of scrap lead sheet or billets and place on the gas ring with a low heat until the lead has melted to a nice flat shiny surface, using sufficient lead to give approx. 1/8in thickness all over; when cooled off, it is then ready for the punching operation.

(*Warning*:—Whilst the lead is in a molten state, please keep all traces of water away from it, otherwise, so I am told, an explosion could result.)

Advantages

Possibly through cooling slowly in the metal dish, the lead appears harder than in sheet form and thus gives a cleaner and sharper blank.

For the same reason, the punches are easier to make—a dead flat face is not essential and the punch invariably starts producing good blanks right away, without any touching up.

When the dish of lead is completely covered with indentations, it is a simple operation to obtain a new flat surface—just a few minutes re-melt on the gas stove is all that is required.

The removing of the blank from the lead die is rather slower than the old method, as each blank has to be removed individually, but I believe it is well worth it. For this operation I use a gramophone needle held in a pinchuck. The needle is pressed into the lead at any position adjacent to the blank and then pushed under the blank at an angle, levering it upwards out of its nest. Unless you're heavy handed with the hammer during the punching operation, most blanks are easily removed without damage.

One of the best examples of the use of this stamping principle (since my previous article) concerns brake blocks. Many of the old GWR freight and passenger vehicles (circa 1885, when vacuum brakes were beginning to be introduced) were equipped with complicated double clasp brakes, where each brake block was operated by its individual lever, the latter passing right through the centre of the brake block housing (see fig. 4). It can be seen that the brake block is no easy thing to make, especially if eight identical ones are required. With a punch, however, it can be made with little time or skill. The modus operandi is briefly as follows:—

Punch the "developed" blank (fig. 5).

Bend as shown in fig. 6 and fill with soft solder.

Sawcut slot to fit operating lever (fig. 7).

Position lever in brake block and solder together, at the same time "filling in" the remainder of the sawcut with solder for a clean job (fig. 8).

It will be seen that by incorporating this punching technique, dozens of brake blocks can be produced in one evening's work and—most important—each one is identical to its neighbour.

The alternative of shaping and filing each brake block from solid metal would be extremely laborious and I would like to think that this simple example might encourage more modellers, when faced with the problems of similarly difficult components, to ask themselves:—"Can I introduce more 'punch' into my methods and thus get more pleasure (and models!) out of it?"


FIG 1

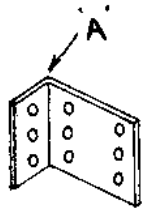


FIG 2

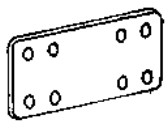


FIG. 3

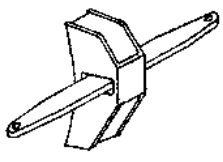


FIG 4

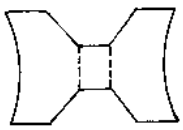


FIG. 5


FIG. 6


FIG. 7

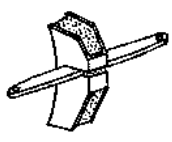


FIG. 8

Realistic wagon loads

by Jim Whittaker (Historical MRS & Manchester MRS)

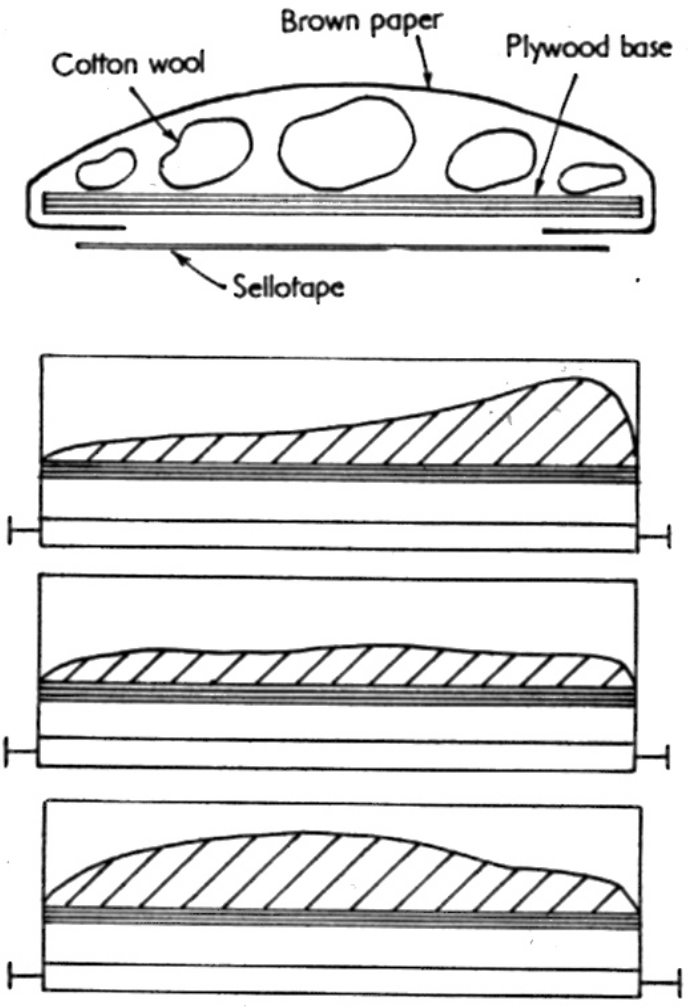
SOME few years ago, when I first started modelling, I derived considerable pleasure from building up the K's and Peco wagon kits. When these were running on the layout, however, they looked very "bare" and unconvincing without a load and I devised the following method to rectify this. No skill is required and only a few minutes of work is involved per wagon and the end result is, I think, quite realistic. (I am only referring to "mineral" loads, such as ballast and coal etc., as these are predominately associated with open wagons.)

First of all, cut a rectangular piece of 1/16in thick 3-ply wood so that it just drops inside the body of the open wagon. For this operation, I use an Exacto knife for cutting to rough dimensions and then sand the edges to get the finer dimensions for a nice fit to the body. Then, using ordinary cotton wool, tear off about half a dozen pieces of various sizes and roll between the fingers. Place these pieces of cotton wool on the wood base referred to above and retain in position by wrapping round with thin brown paper, the latter being finally folded underneath the wood base and secured in position with a piece of Cellotape (see fig. 1). Finally, apply a really thick coating of Croid's fish glue over the upper contour of brown paper (making sure the glue goes right down to the edges on all four sides) and sprinkle liberally and evenly, whilst the glue is still very fluid, with whatever choice of "load" you require. For "coal" I use the small pieces of black composition available from the gas masks issued in the late war which comes in assorted shapes and sizes just right for 4mm scale coal. (Real coal, beaten down to scale size, *might* look more realistic, but is obviously a dirty business if several wagons are envisaged.) To make sure that no brown paper is visible after this sprinkling operation, I daub the entire top surface, coal included, with dull black paint. The complete unit is then pressed into the wagon body (the wrapping of the brown paper round the edges of the wood now produces a nice push fit, which allows the load to be easily set at any height required.

For stone ballast loads, I sprinkle with granulated cork and paint with dark grey or light brown according to one's preference. Whatever colour of paint is chosen, it is, of course, essential to obtain a really dull finish and to ensure this, I mix the paint with a flattening agent in the ratio of approximately 2 to 1 (flattening agent recommended is Parris's Marble Medium, manufactured by C. Robertson & Co. Ltd.—available at any good art shop). Three thinnish coats of paint are obviously preferable to one thick one.

By varying the position and size of the cotton wool pads positioned under the brown paper, loads of different appearances can easily be achieved. One can have a "crown" at the centre or the end (fig. 2 and 3) which gives every appearance of hopped loading, or just a plain level appearance, as in fig. 4. I also vary the height of the load, so that some have a load projecting away above the top edge of the wagon sides, while others are only half-filled.

Although the load looks heavy when in position in the wagon, it is, of course, of negligible weight and does not appear to affect the hauling capacity of any of the standard 12v motors.



Two LMS class 8F 2-8-0s on a North-bound freight, climbing towards Sugar Loaf summit on the Central Wales line. Photograph by B. J. Ashworth.