

# HOBBIES

## *weekly*

21st APRIL 1965

VOL. 140

NUMBER 3619

# SWINGING!

\* **SAFE**


\* **SIMPLE**

# BABY'S 1<sup>ST</sup> SWING

FOR CRAFTSMEN OF ALL AGES

6<sup>p</sup>





# RADIO FOR BEGINNERS

BY  
'RADIO MECH.'

# 4-POWER SUPPLIES

**T**HE necessary power supplies for a battery operated amplifier or receiver can be provided very easily. The valve filaments will need a particular voltage, and this must always be provided. A higher (or lower) voltage must never be used for the filaments.

Most valves are now made to run from a  $1\frac{1}{2}$ V. supply. This can be had from a single dry cell, 'A' in Fig. 12. With these cells, the zinc case is negative. Leads may be soldered on. For a small single valve set, the size of the cell is not very important. But if there are two or more valves, a large cell is required, or it will soon lose its voltage.

It is also in order to use two or more cells connected in parallel. The  $1\frac{1}{2}$ V. dry battery, shown at 'B', is usually made up in this way. To use cells in parallel, connect together all the zinc cases, for negative, and all the brass caps, for positive.

Small twin plug connectors can be bought for dry batteries like that at 'B' and it is best to use one of these. The plug will only fit the right way round, and will not fit a high tension battery, so wrong connections are unlikely.

Some receivers have valve filaments in series, and all the filament voltages are then added together. For these, a  $7\frac{1}{2}$ V. dry battery is often used.

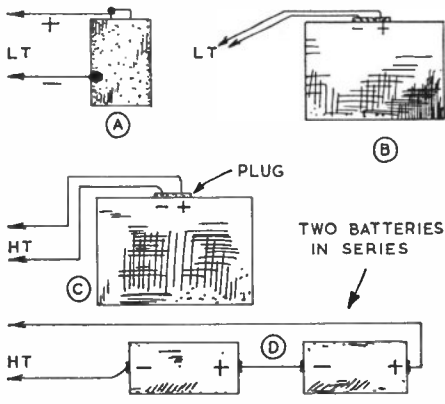


Fig. 12—Power supplies for battery receivers, etc.

### High tension

The voltage used here depends to some extent on the volume wanted. A  $22\frac{1}{2}$ V. battery could do for headphones, but 60V. or more will usually be wanted when a loudspeaker is fitted.

Small HT batteries like that at 'C' are often  $67\frac{1}{2}$ V. and this is convenient for most small receivers. The correct type of plug to fit is recommended.

Sometimes it may be handy to have two smaller batteries in series, as at 'D'. The total voltage is then increased. Two  $22\frac{1}{2}$ V. miniature layer batteries will provide a 45V. supply, very suitable for a midget 1 or 2-valve receiver.

Small 'deaf aid' and similar valves are sometimes used, and these may have a very low filament and HT voltage. So with this type of valve it is wise to refer to the maker's lists, to be sure that the valve is not damaged by using too high a voltage.

### Mains valves

It is often convenient to have a receiver or amplifier which can be run from the mains supply. Valves are of different type, and usually have an indirectly heated cathode.

A triode of this kind is shown in the circuit in Fig. 13. It is the same as the battery operated triode already described, except that the cathode is a small metal tube, with a spiral heater inside. This heater can be run from alternating current, usually from a mains transformer. (The filament of the battery valve cannot be supplied with alternating current.) So it is very easy to get the necessary low voltage for this purpose.

As the emission of electrons is from the cathode, and this electrode is insulated from the heater, it is also very easy to supply the valve with the grid bias which it was seen was required. To provide bias for an indirectly heated valve, it is only necessary to add a bias resistor in series with the cathode, Fig. 13. The voltage drop in this resistor should equal the grid bias wanted.

The resistance to fit can be found by dividing the bias voltage by the cathode current in milliamperes, the result being in thousands of ohms. Suppose the valve needs 10V. bias, and the current is 2mA.  $10/2 = 5,000$  ohms bias resistor.

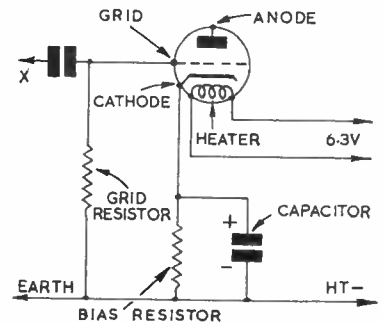


Fig. 13—Mains valve and cathode bias

Point X is taken to the signal to be amplified, as in Fig. 8. (See part 2). The valve anode may be coupled to a loudspeaker, or other circuit.

### Mains power pack

Valve heaters can be run from AC, but their voltage is much lower than the house mains voltage. So the heaters are sometimes connected in series, as in Fig. 14, the excess voltage being lost in a mains dropper resistor.

This resistor may be a large, wire-wound component, or it may be in the form of a long flex, called a 'Line Cord.' The value of the resistor or line cord, to replace a broken one, is easily found.

To do this, first add together the heater voltages of all the valves in series. If Fig. 14 had three valves, each with 25V. 0.3 ampere heaters, the total is 75V. Take the total from the actual mains voltage. This leaves the voltage to be lost in the dropper. If the mains were 250V.,  $250-75 = 175$ V. to be dropped. Divide the voltage to be lost by the heater current, to obtain the value in ohms. Here,  $175/0.3 = 583$  ohms. A 580 ohms dropper would do.

Larger receivers will have more than three valves. And if any dial lamps are

fitted, the voltage of these is also added.

In Fig. 14, the required high tension supply is obtained from the mains by the rectifier. This item converts the alternating current to pulsating direct current which is smoothed by one or more capacitors.

A circuit like that in Fig. 14 will be found in many small and low priced receivers, etc. It has the great disadvantage that one mains lead is directly connected to high tension negative, and thus to a metal chassis, and any parts in con-

Fig. 14—A.C./D.C. power supply

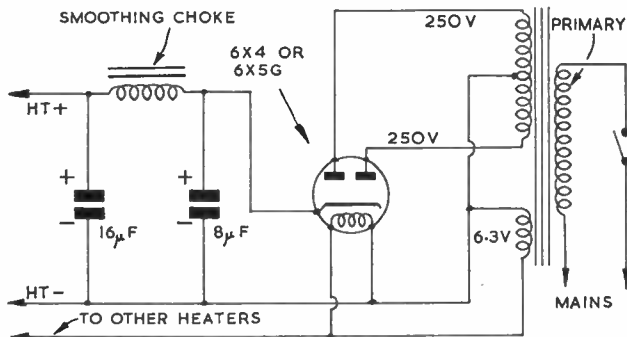
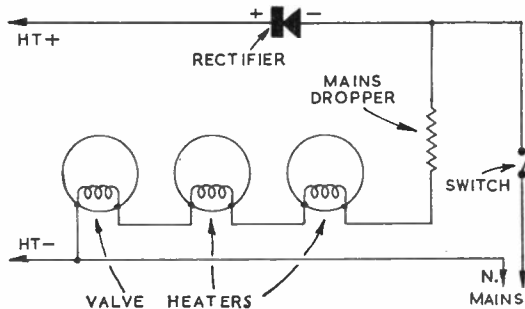


Fig. 15—A.C. mains power pack

$16\mu\text{F}$  capacitors are to smooth away ripple in the rectified current. A resistor is sometimes used instead of the choke, but is less efficient.

A list of parts to build this power pack is as follows:

Mains transformer, 250/0/250V. 60mA and 6.3V. 3A.

60 mA Smoothing choke.

$8\mu\text{F}$  450 V. capacitor.

$16\mu\text{F}$  450V. capacitor.

Mains toggle switch.

6X4 valve and B7G holder, or 6X5G/GT valve and octal holder.

Small wooden or aluminium chassis.

A power supply circuit of this kind is built into very many receivers and amplifiers, to run from AC mains. A wiring plan will be shown in the next article.

Next: Building a power supply.

tact with the chassis. So this circuit should only be used for equipment which is enclosed in an insulated cabinet.

The chances of mains shocks will be reduced if a non-reversible mains plug is used, and the lead 'N' in Fig. 14 is taken to mains Neutral.

The circuit in Fig. 14 is not recommended for home-made equipment.

### Transformer

When high tension and heater supplies are drawn from a mains transformer, the transformer isolates these circuits from actual contact with the mains. So this kind of circuit is recommended.

A mains power supply circuit of this type is shown in Fig. 15. It will do well to provide high tension and heater current for the valves of an amplifier or receiver.

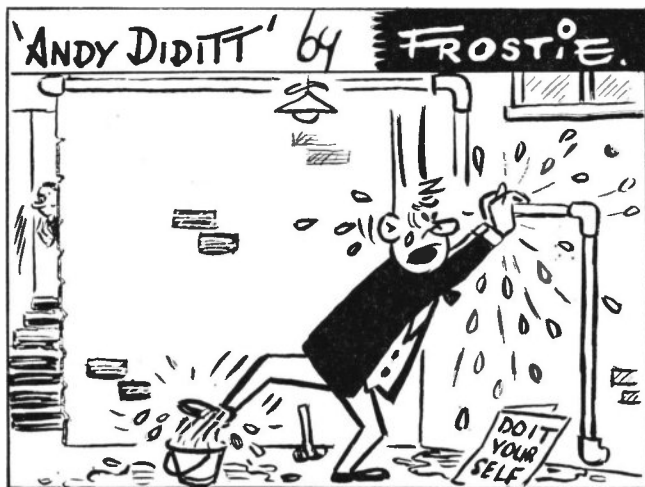
The transformer has a 200/250V. primary, with a switch in circuit, and connected to a flexible cord with a mains plug attached. The 6.3V. secondary delivers this voltage, for the rectifier heater and other heaters.

The high tension winding of the transformer supplies 250V. each side the centre tap, which is taken to HT negative. A secondary able to deliver 60–80 milliamperes will provide enough current for any popular amplifier or receiver.

A 6X4 miniature (B7G) or 6X5G

octal based rectifier is suitable. Some rectifiers need a separate heater winding, but the 6X4 or 6X5G may have its heater run from the same transformer winding as other valves.

The smoothing choke and  $8\mu\text{F}$  and



"MA! MA! BRING ANOTHER BUCKET QUICKLY!"



WHEN a coldwater tank has been established for some time, what appears to be fungus may start to grow on the inside of the container. This is quite harmless and the fish will eat it, but it certainly makes the tank look untidy. The plant growth is called 'algae'.

There are two varieties of algae, called (from their colouring) 'brown' and 'green'. Brown algae is caused by too little light reaching the tank and green algae to too much light, and by moving the tank to a position where the conditions of light are suitably altered, algae will cease to form in an indoor tank.

When algae exists in any quantity it spoils the look of the tank. It should then be scraped off the sides so that it falls to the bottom of the tank. This should be done with as little disturbance to the fish as possible. A special scraper can be bought for the job, but it can be done equally well with an old dinner knife or a razor blade fastened to the end of a stick.

Although scraping will clean the sides of the tank the bottom will still be messy. There will be oddments of food and other rubbish at the bottom of the tank. (Unless excessive, fish excreta should not be regarded as rubbish as it provides nourishment for the aquatic plants.)

The easiest way of removing this rubbish is to siphon it off.

The siphoning arrangement is shown in the drawing. It consists of a rubber tube long enough to reach from the bottom of the tank to a pail standing on the floor. One end of the tube is placed in the tank and the air is sucked out of it until the water starts to flow. It will continue to flow as long as the end is kept under water, but the tube should be moved gently over the bottom of the tank so as to suck up

the rubbish with the water. To 'sweep' a larger area, a small funnel can be inserted in the end of the tube. Once the tank has been cleaned in this way it will need topping-up with fresh water. The topping-up water should be of approximately the same temperature as that siphoned out of the tank.

### Cleaning away deposits

When there is only a little rubbish to be removed, or for cleaning away excess food, a 'dip tube' can be used. This is simply a piece of glass tubing of about  $\frac{1}{2}$  in. diameter. One end is kept closed with the thumb, and the open end is put into the tank just above the rubbish to be removed. On lifting the thumb the water and rubbish will be forced into the tube. When the tube has again been closed by placing the thumb over the top, it can be lifted clear and the water and rubbish deposited in a suitable receptacle.

The dip tube takes far less water from the tank than does a siphon tube, but even so the tank will eventually need topping-up: again, water of tank temperature should be used.

## BREEDING FISH

The secrets of success with keeping coldwater fish are (1) a well set-out tank of proper size, (2) avoiding over-feeding of the fish, and (3) keeping the tank free of decomposing food and other forms of rubbish. These points have been adequately covered above.

Many readers will be interested in the breeding of goldfish. Breeding cannot be successful with immature fish; they need to be about 4 in. long before they can be successfully mated. It is quite easy to distinguish the sexes, because when ready for breeding the body of the female is distended with spawn, while the male shows tiny spots (white in colour) on the gill plates.

The actual breeding tank should be large but relatively shallow, with not more than about 6 in. of water. One end of the tank must be thickly planted with aquatics, leaving the other end bare, and the tank should be stood in a position where it gets the warmth of the morning sun. It is advisable to set up the tank some time before it will be needed, so that plants and water have a chance to settle down.

### Breeding goldfish

The selected parents are kept in solitary confinement in separate tanks for about ten days, and are fed well on live food. They are then introduced into the spawning tank overnight. Spawning (which usually takes place in the early morning) may not occur on the first day, but eventually the male will start to 'drive' the female, chasing her about the tank. The female will deposit her eggs among the plant leaves, and the male will spray them with his 'milt'. When the act of spawning is complete the fish should be returned to the main tank.

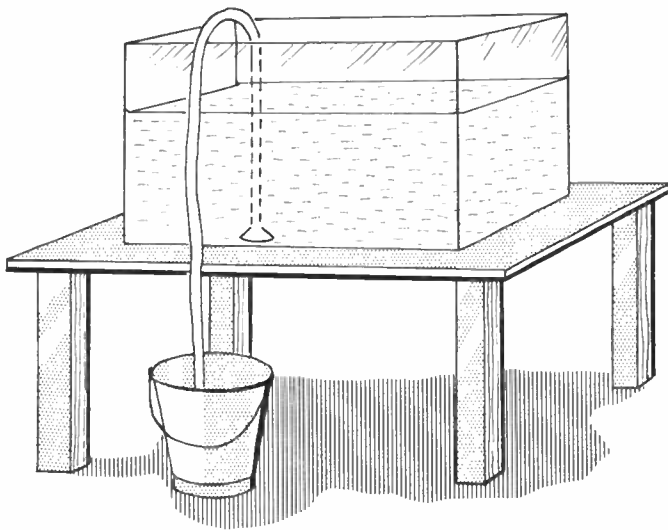
When first laid the eggs are very small and almost transparent. It will soon be clear if the eggs are going to hatch or not, because if they are infertile they will, within

twenty-four hours, turn white and fuzzy. With care infertile eggs can be removed from the tank with a fine brush, but if it is seen that the eggs are likely to hatch the tank should be left undisturbed. It should be noted that if left in the breeding tank the adult fish will start to feed on the eggs, whether they are fertile or infertile.

Newly hatched fish will take no food for at least three days, gaining their nourishment from the yolk sac with which they are born. When they do start feeding they must be reared on a minute form of animal life called 'infusoria'.

The breeding of infusoria is done by bruising some lettuce leaves into a jar of mature tank water: in a few days this water will be swarming with life, and should be fed into the tank by means of a thin rubber tube, pinched so as to ensure a very slow drip.

When the young have grown to the stage where they are clearly recognizable as fish, the diet can be changed to one of the proprietary foods for fry. They will also appreciate liver scrapings and sieved hard boiled egg, and should be brought along on such a diet until they are large enough to take adult food.



**A** NEW instant lettering system using the Blick 'Dry Print' transfer method should be of particular interest to modellers who find difficulty in adding the names of their projects, such as boats, in free hand painting.

The method of transfer to any clean, smooth, dry surface is simple. All that is necessary is to remove the backing sheet and rub over the selected letters or characters; a ball point pen makes an

impression, 83 Copers Cope Road, Beckenham, Kent.

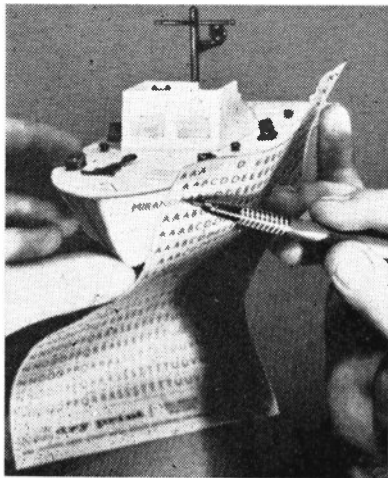
Another new system of lettering is by means of Mirotrack Mylar Metallised Monograms which provide 70 cut out initials on a sheet in silver or gold for 3s. 6d. All you have to do is peel them from the backing strip and press down on to any smooth and clean surface.

## LETTERING FOR MODELS

ideal tool for the purpose, and alignment is made easy by the provision of guide lines beneath each letter. The whole operation is completely dry and clean and where the finished work is likely to be exposed to the weather it may be protected by a spray fixative or film covering.

Letters and figures in various type faces and sizes give a range of more than 50 sheets costing 2s 3d. per sheet.

Blick 'Dry Print' lends itself to a variety of uses where it is desired to use lettering neatly and effectively — on stamp albums, for instance. The sheets are available from leading stationers, stores, drawing office and artists' materials suppliers. Further details may be obtained from Blick Office Equip-



They make attractive monograms on such personal items as wallets, spectacle cases, diaries, brief cases, musical instruments etc. They are manufactured by Convex Ltd., 41 Brecknock Road, London, N.7, and are available from stores and stationers. (E)

## ADVERTISEMENT

### LEARN WATCHMAKING

Learn this fascinating trade through our modern, easy-to-follow home study course. Learn Swiss and American movements, do profitable repair jobs after the first few lessons. Have a business of your own or work in trade. Excellent source of extra income, a good retirement supplement. Highly illustrated lessons, tools supplied, instruction by experts. Easy tuition payments. Diploma awarded. Watchmakers are in demand in all countries. Students and graduates in 19 countries acclaim this course. Write for free details. No obligation.

**COMMONWEALTH  
CORRESPONDENCE SCHOOLS LTD**

Dept. HWA  
2125 Avenue Road, Toronto 12  
Ontario, Canada

*Air Mail speeds replies*



## USE OF THE EDGING

By L. P. V. Veale

**H**AVE you ever considered the importance of the stamp edging which surrounds each sheet of stamps seen on the post office counter? Its primary use is as a protection against any of the stamps in the sheet getting torn before they are placed on the counter. As soon as they are ready for sale one strip of the edging is torn off, the perforation is exposed and it is then an easy matter to separate the stamps.

Now if you look at a complete sheet of stamps you will see quite a number of different marks on the edging and each of these has a use. Half way along the sheet you will see an arrow which enables the clerk to divide the sheet accurately and quickly.

At one time on the stamp edging there used to be a control number, and those, people who specialize in the stamps of Great Britain attach considerable importance to them. They were discontinued in 1947, the last control number on British stamps being U over 47. Each year there were two letters, one for the first half of the year and the other for the second. Close to this control number was a number in small figures, called the cylinder number. This told us when the stamp was printed and also the cylinder used in its production.

### Control numbers

In the first illustration you see a King George VI one penny, control T over 46 and the cylinder number 142. These numbers were generally found in the bottom left-hand corner two stamps up. Sometimes the number was two stamps along from the bottom left-hand corner, as in the case of the second illustration. Ideally these should be collected in blocks of six but to save space we have shown just the single stamp.

There are two things to note about the second illustration. First it is the same letter T but the year is 33. That bears out what has just been said; 1946 is 13 years after 1933 and two letters per year makes 26 letters of the alphabet, so that by 1946 they had got back to the letter T again. Notice also that in the second illustration it is T 33 and not T over 33.

The second point to note is the thick line above the 33 but below the perforation. That is the 'Jubilee Line', so called because it was first introduced in 1887, the year of Queen Victoria's Jubilee. If you look carefully you will see that the line is not quite as long as the stamp. There would be a small white gap between that line and the next. When that is the case the jubilee line is called 'co-extensive'. If there is no gap and the line is continuous then that is a 'continuous jubilee line'.

You may also see on the edging two fine lines crossing one another, or perhaps a small hole. These are guide marks so that when the stamps are being prepared the printed sheet may be placed exactly on the perforating machine otherwise the perforations might go through the



Left (top): Control and cylinder number.

Centre: Control and jubilee line.

Below: From a 2s. 6d. booklet stamp plus label.

Above: New Zealand advertisement, also Belgium advertisement, and details of commemorative issue on stamp edging.

stamp and not through the gutters; also of course they need some such mark if the stamp is printed in more than one colour. Now have a look at the bottom left and right-hand corners of the commemorative issues such as the Forth Bridge, Shakespeare or Botanical and you will see such marks as have been described, and understand the reason for them.

A little while ago the post office issued a 2s. 6d. book of stamps. Some contained 6 @ 2½d., 6 @ 2d., and 6 @ ½d., others had 6 @ 2½d., 6 @ 1½d., 3 @ 1d. and 6 @ ½d. They were issued in both King George VI's and Queen Elizabeth's reigns. In the first case it was easy. There were three panes of six stamps of each value, but in the second case there were only three penny stamps, so these each had a white label attached exactly the same size as a stamp. In the case of the King George VI stamps the label had on it '½d. minimum inland printed paper rate' and Queen Elizabeth II stamps had on one 'Pack your parcels securely', on the next 'Address your letters correctly', and on the third 'And post early in the day'.

If you should have one of these panes then on no account tear the labels away from the stamps. The pane should be mounted intact. They are worth much more like that.

### Imprint blocks

Some countries (Canada is one of them) print on the stamp edging at each corner some particulars of the stamp. For example the Common Loon stamp issued in April 1957 has three lines of print. The top line in English reads 'National Wild Life — Common Loon', the next is in French 'Faune Sauvage du Canada — Le Plongeon a Collier', and the third line is 'Canadian Bank Note Co. Limited Ottawa No. 1'. If you have each of the four corner blocks of the sheet you will have the four 'imprint blocks' as they are called, and these are of more value than a block of four stamps taken from anywhere off the sheet.

For a few years from 1917 Canada used a rather different idea to the Jubilee line but for the same purpose. She engraved on the stamp edging some rather delicate lathework as it is called; that is, a design of fine lines. The printing of these lines was watched with the idea of finding out if there had been any wear on the plate. This practice was discontinued at the end of 1924.

A few years ago miniature sheets of stamps seemed to be all the rage, and New Zealand among others made up sheets of her Christmas Health stamps. There were six stamps in a sheet. Some were 2d. postage plus 1d. for charity and the others 3d. postage and 1d. for charity.

On the stamp edging they had simply the price 'Miniature sheet price 1s. 6d.' or 'price 2s. 0d.' No doubt there was wisdom in the idea. Plenty of people would buy a miniature sheet who would otherwise only have bought just the number of stamps they required.

Germany in 1937 also issued miniature sheets, this time of four stamps and the charity was Hitler's Culture fund. Some of these sheets were sold at the Berlin Philatelic Exhibition, the cost of the stamps being added to the price of admission.

In 1936 South Africa issued miniature sheets of six stamps overprinted 'Jipex' which stands for 'Johannesburg International Philatelic Exhibition'. On either side of the sheet and at the top and bottom they had advertisements. One was for a certain pipe (smokers) and the other five were for either telephone or post office savings bank so that it would seem as though people were not very certain of the value of advertising in this way.

### Advertising

Other countries seem to have derived some income from it. For example, Belgium in 1929 attached an advertisement to the 40 cent lion issue. France used the edging of her 'Peace' issue of

1932 for advertisements and New Zealand in 1915 on her King George V stamps allowed Messrs Kodak to advertise their cameras and films on the edging. But that was not a new idea for them. They had in 1893 advertisements printed on the backs of their Queen Victoria portrait stamps.

By the way, when you see any of those stamps then be careful to look at the back because you may find quite an interesting specimen. They are not valuable so there is quite a chance that you may pick one up.

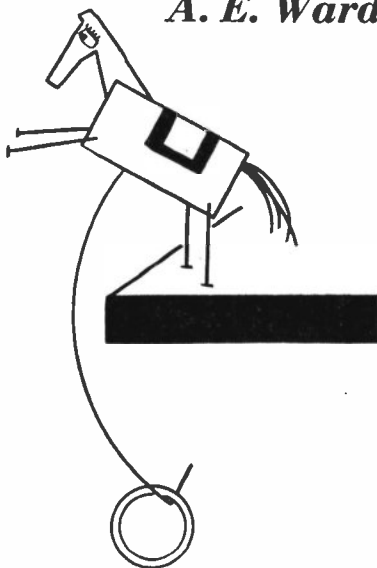
The next illustration shows one of the Czechoslovakian stamps issued in 1937 to commemorate the 150th anniversary of the birth of the physiologist Jan Evangelista Purkyně. Czechoslovakia did not put very much on the stamp to indicate why it was issued but on the edging they have added a certain device — a snake entwined on a stick.

There is another unofficial service that the stamp edging does for the collector and that is to help him to spot the watermark. If you take any of the present British stamps and look for the watermark it is quite hard to decide what it is, but if you have a stamp with the edging attached then by looking at that you can see the watermark quite distinctly.

## A TOY PRANCING HORSE

By

A. E. Ward



AN old mechanical toy, popular with Victorian children, can be used to illustrate an elementary point in physics. Construct a little horse out of a cork, 4 pins, some wool, and a tiny horse's head, cut out of thin cardboard (see illustration).

The pins will be legs and the wool can be cut into short lengths and then knotted together, to serve as a tail. Push the wool knot into a hole in one end of the cork. Next, bend a hairpin into a curve with a hook at one end (as illustrated) and acquire a curtain ring.

Fix the opened-up hairpin underneath the toy horse's body, so that the wire curves backwards right below the beast. Hang the ring upon the hook at the wire's lower end. Then, after making some minor adjustments to the arrangement, you can make the toy rear up on its hind legs and sway up and down on the edge of a table.

The horse prances so nicely, because the slight weight of the ring brings the toy's centre of gravity down to a point in space, under the table and directly beneath where the pins serving as hind legs rest. It might be necessary to use a heavier weight, such as an iron nut, instead of a curtain ring.

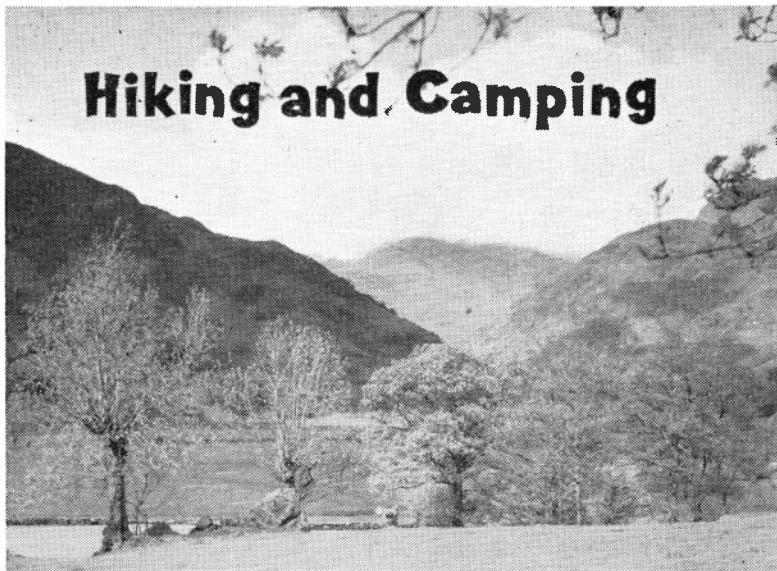
**I**N a previous issue we described how to make a buddy burner (a home-made stove for campers), and we now offer a few more hints, also utilizing wire coat hangers.

You may use a similar piece of wire for making an emergency pan from aluminium foil. Incidentally, such pans can be discarded after use, and you save yourself the task of washing-up. In this instance we take a single end of the wire, and make a circle, twisting the balance of the wire round the stem as shown in the diagram. This makes the frame of our pan, to which we have to add a piece of aluminium foil.

You will need a piece about 18 in. square (which can be folded for carrying) and this is first moulded over the end of a wooden log or rounded stone. You can even mould over your bended knee if there is nothing else, the aim being a pan shape. Fit the finished vessel inside the wire circle, fold over the rim, flatten the bottom of the foil, and the pan is ready. Allow plenty of overlap for the handle when making the frame, and sufficient surplus of foil to wrap round the rim.

Cups, beakers, and trays can be easily made in a similar fashion, while a frying pan is merely a piece of foil stretched across the wire frame.

While dealing with this subject of foil I would also mention that it makes good reflectors for candles, keeps dampness away if laid under your bed, and if the ground is wet is an aid to fire lighting



## Hiking and Camping

*Langdale—a favourite spot for campers.*

when a sheet is laid on the surface. Foods, sandwiches, meat, and vegetables kept extremely well if wrapped and sealed in the foil.

You may need a camp fire quickly, but never build a fire where there may be a danger of it spreading. At the same time you must look for some protection against the prevailing wind, or you may dig a trench fireplace in the ground. It is wise to keep handy some fire fighting

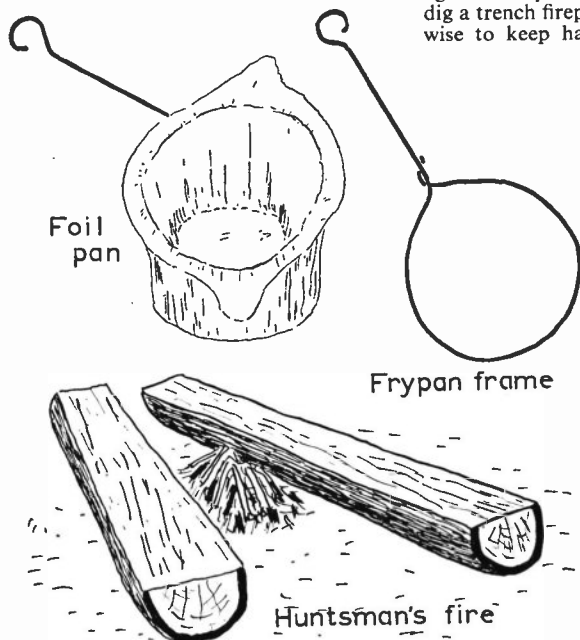
material, such as soil or water, in case it is required. You will need tinder, kindling, and fuel for your fire, and it is no use lighting it until these have been found.

Kindling is a little heavier than tinder, dry sticks, and the like about 12 in. long such as pine or cedar that will help to light even heavier fuel. The latter should keep the fire burning a long time. Try to find standing dead wood, since it is usually much drier. Collect a good supply of fuel, and try to keep it dry.

Make a ring of stones, lay three pieces of kindling across each other into the shape of a triangle with some tinder underneath. Have your back to the wind, strike your match, and light the tinder. Keep feeding the fire with kindling, using the smallest sticks first until you have a basic fire well alight. You may now add some of the heavier fuel.

A trench fire is useful when wood is scarce. This is a little trench 3 ft. long and about 1 ft. wide, but triangular in shape. Use stones again around the perimeter, since these hold heat, and build your fire as before.

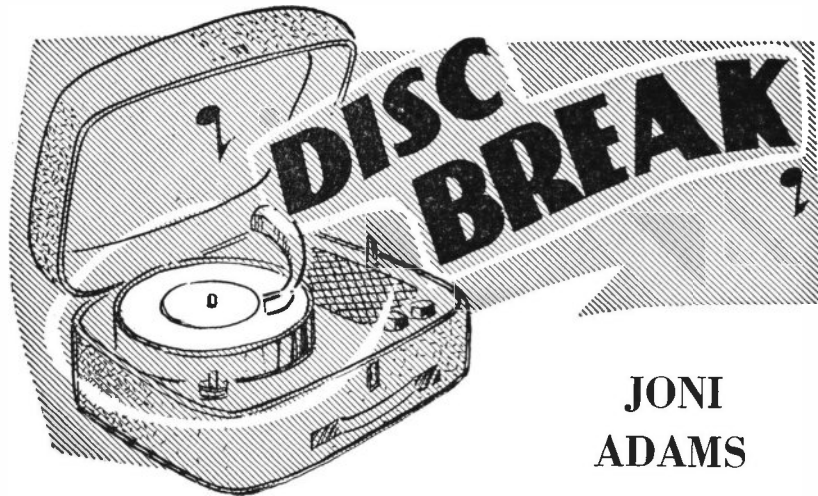
A hunter's fire is one where two logs are arranged so that they are nearer together at one end than the other. Green logs, 8 in. thick, are best since they do not burn easily, but make an ideal stand for your pots, especially if they can be split down the centre, as shown in the sketch. Fire lighting is just the same as already described. You can use rocks instead of logs, but never use shale rocks or those found in water — they may explode when heated.



material, such as soil or water, in case it is required. You will need tinder, kindling, and fuel for your fire, and it is no use lighting it until these have been found. We start a fire with tinder, that is, fine, dry material which starts with one match, and burns quickly. Dead grass, pine needles, bracken, and bark are ideal — birch bark will always burn wet or dry, rotten or green. If you cannot find tinder of this description use 'fuzzy-sticks'. These are small branches which are well notched — almost to shavings — with a sharp knife. Take

● Continued on page 41





## JONI ADAMS

Blonde, attractive Joni Adams gave up a part in a hit West End musical last year to concentrate on a singing career — but she hasn't regretted it.

She gained her recording contract by chance. Joni lives very near ex-Vernon girl Margaret Stredder and was playing

some tapes to her one day when recording manager Monty Babson called for Margaret. She does a lot of vocal backing work on his sessions. Monty was impressed with Joni's voice and signed her up.

Towards the end of 1964, he came

across a big Continental hit written by leading French composer Charles Aznavour. A beautiful English lyric was written by one of our top songwriters Johnny Worth and Joni recorded *Love At Last You Have Found Me* (Columbia) which was released recently.

● Continued from page 40

## CAMPING

When leaving your camp do make sure that your fire is out, for you could endanger lives and property. A good camper never leaves his fire unattended. Scatter the ashes and embers, drench charred logs, sprinkle the remnants with water, and cover the fire area with earth before leaving.

A compass is one of the most useful instruments any type of tourist may have. Should you lose your bearings it is always possible to take a reading, and then continue on your journey. You can always take the direction you know you should make for. I was once caught in a mist on some Lakeland fells, and would have been stranded but for the help of a compass.

The magnetic needle of the compass points to the magnetic north. It is pulled into this position by the powerful influence of our planet's magnetic poles. But remember that this is not the true north, which is usually a few degrees east of the compass reading. Sometimes a compass, for no apparent reason, may point south, east or west. This can be due to the presence of iron or steel — a knife or axe — in the vicinity so make sure that you take your readings away from such metals.

Plan your hike, go in easy stages at a steady pace, and you will enjoy every minute of it. (S.H.L.)

**T**RY this tantalising match puzzle on a friend. But, to start with, lay out 12 matches to form a square with 3 matches in every side. Then use

## THE TRICK OF CROSSING A POND

4 matches only to form a smaller square exactly in the middle of the larger one.

Explain that the matches represent an island in a pond. Growing on the island is a little tree with a big rosy apple on it.

A hungry boy decides to go and eat the apple; but the pond is deep and he is without a boat — so he must make a bridge.

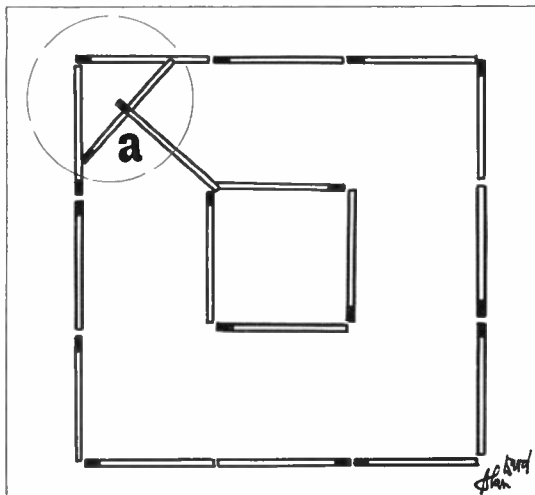
All the boy has to make a bridge with are 2 planks — each as long as a side of the island (i.e. 2 matchsticks). He finds that one plank by itself will not quite reach from the shore to the island. How can he build a bridge, using *only the planks*, without nails, string, or anything else?

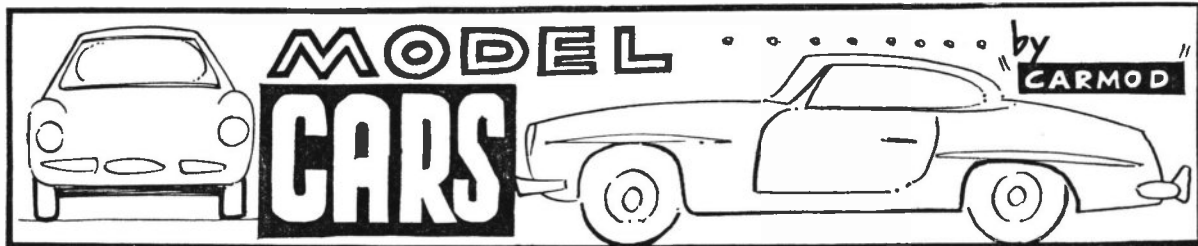
Give two matches to your friend and let him try to solve the problem. If he fails — as is most likely — you

will have the fun of showing him the solution. To form the 'bridge', begin by resting a match across a corner of the larger square (the pond). Then you can

easily put the second match between the first one and a corner of the 'island'. See A.

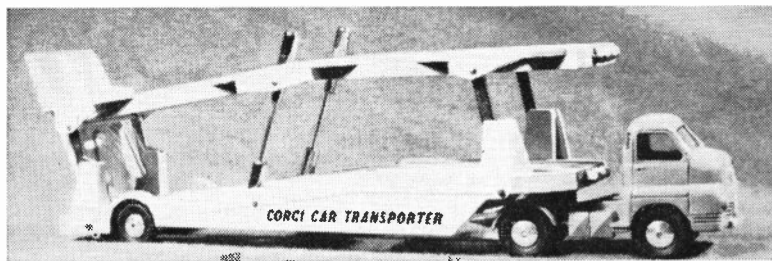
(A.E.W.)





UP to now in this series we have considered the modification of mass-produced miniatures to resemble examples of specific cars, but mainly through lack of space, we have covered the external requirements only. To many collectors, with a more critical approach to the hobby, external appearance is not enough, and they would like

## DETAILING INTERIORS



their models to be as authentic as possible inside as well as out. Frankly, the interiors of mass-produced miniatures are not of the same high standard as the metal shells, and they can be improved considerably.

The typical miniature consists of a die-cast body, a stamped steel or die-cast floor, two steel rod axles with spun ends to hold the wheels in place, a vacuum formed plastic sheet interior which depicts seats etc., and a cast styrene assembly. The model is held together by spun ended posts that are die-cast in one piece with the body.

I have often described the removal of the chassis base flat floor by filing or drilling off the spun ends of the posts so will not dwell on this particular aspect of the work. After removing the base plate the various components will be separated. On some models the clear plastic window assembly is held in place by a riveted projection inside the roof; in these cases grind off or use a drill to remove the rolled-over part of the projection.

Most of the interiors which are fitted in the production miniatures are extremely poor in detail and usually the only part which can be employed in the conversion is the steering wheel.

Refer to illustrations of the car interior in motoring magazines and, if possible, sales literature to decide on the interior layout and details. Start by cutting



$\frac{1}{32}$  in. balsa wood front and rear bulkheads (i.e., firewall and boot partition). Thin card can be used to make the side body panels 'below the waist'. These bulkheads and panels can be made by the 'cut and try' method but in some cases the work can be speeded up by bending thin fuse wire around the shape to be made and tracing this on to the wood or card.

The instrument panel can be carved from a piece of  $\frac{1}{8}$  in. balsa wood. In recent years very few instrument panels have been flat pieces of wood and have involved irregular profiles; some intricate carving is needed to reproduce some of these. Single drops of black or white paint can form the instrument faces and when dry the markings and indicator needles can be put in with black or white drawing ink and a mapping pen.

Heads of very small pins make light switches, throttle, choke etc., and when bent, they become door handles and window winders. Paint the interior parts and make a trial installation, ensuring that they do not interfere with the window assembly or the chassis. Remove and set aside until the windows have been fitted.

For the best appearance, the inside surface of the plastic window assembly should be painted except where it must be clear to provide windows. Insert the plastic into the car and scribe the window lines from the outside very

lightly, then remove. The scribe marks will serve as a guide for painting. If the window is held in place by a top rivet it is advisable to make a head-lining to stick on to the inside of the plastic. Thin cloth, leather or paper can be used for this purpose, depending upon the appearance of the full-sized vehicle. The window assembly can now be cemented into position.

In recent years there has been a con-

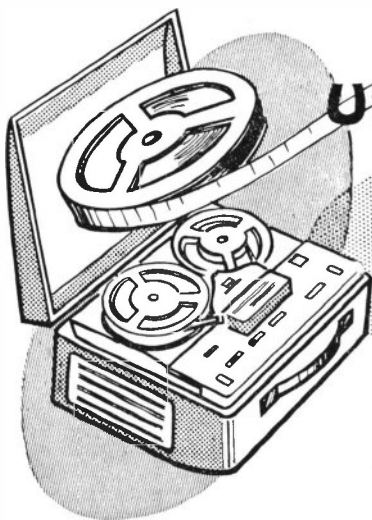
*Until a few years ago manufacturers of die-cast miniatures did not fit representations of interiors. This Big Bedford by Corgi was one of the first models to be fitted with windows*

siderable improvement in the standard of production model wheels and many models now have excellent wire wheels fitted. However, there is still an abundance of very plain and uninteresting metal discs. Sets of Porsche type wheels in 1/43rd scale, with the lightening holes around the rim, are available from Marc Europa but there are times when these are of inappropriate size or style. Original wheels can be greatly improved by careful painting. Protruding spun ends of axles in most cases look ugly and it is best to cut off these ends and cement the axles into the wheels. Knock-off hub caps for sports cars can be cut from thin card and cemented in place.

Some months ago, I described the making of detailed wheel discs from thin aluminium foil. Personally I still prefer this method and have mentioned this detail painting technique as a second best alternative.

The steering wheel and column may be mounted either on the floor or against the underside of the dashboard, according to the particular car. In any event a steering wheel will be needed; the original wheel may be suitable for the particular conversion or the Marc Europa 'Y' or 'T' shaped spoked wheels can be used. If none of these are appropriate for the car in question 'one-off' modelling might have to be considered. Use a small ring of copper wire with a soldered joint, and wire, pieces of wood, or narrow brass strips will make near-acceptable spokes.

● Continued on page 43



# USING YOUR TAPE RECORDER

## ADDING SOUND UPON SOUND

**I**N my article 'The Mixer' (11.11.64) I considered a very elementary link-up — a portable tape recorder and a microphone plugged into a mixer, which in turn is plugged into a mains tape recorder. This link up is unavoidable for anyone with the two types of recorders and a mixer, if they have any intention of using their equipment properly at all. It is, indeed, the basic link-up.

I suggested then that it could be employed in the editing of a tape recorded holiday. However, there is another use to which this link-up can be put which is even more special.

In my article on mood music (3.2.65),

I wrote about the forming of amateur groups of musicians to provide improvised mood music, using chiefly very elementary instruments. To a great extent I always think in terms of groups, whenever I am speaking or writing on tape recording. No matter from what aspect, the group activity is never far away. Even as now, when I am specifically dealing with the possibilities of the solo recordist, I am still reflecting that it is a pity he is not a member of a group.

However, be that as it may, it is perfectly possible for one lone recordist to be the only instrumentalist in a mood

music 'group', with the help of the basic link-up.

Let us assume that the instrumentalist-cum-recordist wants a three instrument group, say the piano, recorder, and the gazooka. First he should record the piano. I do it, myself, straight on to the mains machine. The piano recording, which is on a suitably sized spool, is then transferred to the portable tape recorder. This is played back with the recordist accompanying it on the recorder, thus recording both together on to the mains, which has been laced up again with clean tape.

Here a slight adjustment is needed. The portable tape recorder volume has got to be up to at least 6, in order that the recordist can hear it, but at this volume it is apt to drown the instrumentalist coming over the microphone. Therefore the volume control of the portable tape recorder at the mixer has to be set considerably lower than the microphone volume channel.

When you have the piano and recorder recorded together, put this tape on to the portable tape recorder, and play it back as you are adding the gazooka sound; and thus all three instruments are being recorded on to the mains tape recorder.

Only three? Well, of course, you could add instruments *ad infinitum*, but it gets a bit messy if you go too far. Of course, my own work in this field does sound a big mess, but that is only because I am a chronically bad musician. Otherwise my experiments in this field have always been judged highly successful! (G.E.G.)

● Continued from page 42

## MODEL CARS

The steering column may be of heavy wire, dowel or tubing (such as the insides of old ball-point pens).

At this stage cement the interior bulkheads and panels into place.

Cover the entire chassis base-plate with balsa wood. In some cases this will be difficult because of projection in die-cast base-plates to hold springing and other features. Each model has to be considered on its merits: some projections can be cut off and sometimes the balsa wood has to be cut to fit. While making the decisions bear in mind the floor surfaces that will be seen in the completed model.

Cut oversize holes at the fastening points and use balsa for the tunnel and the toe-board. A pin, suitably painted, can be used for the gear-lever. Seats are carved from balsa, 'upholstered' by grooving with a knife, and then painted in suitable colours.

Some very good die-cast bucket seats are made by Marc Europa and these are excellent for sports and G.T. cars. Mount the seats on the floor after painting it in a matching or harmonizing colour to simulate rubber matting or carpet. Foot pedals are made from pieces of card or brass, cemented to cut-off pins and painted matt black or brown.

The completed chassis base-plate unit can now be replaced. I have always suggested that this should be cemented into position but there are some choppers who prefer to drill holes in the locating posts and secure the chassis with self-tapping screws.

## Miscellaneous Advertisements

**UNDER 21?** Penfriends anywhere — details free.—Teenage Club, Falcon House, Burnley.

**PENFRIENDS** home and abroad all ages. S.a.e. for details. — European Friendship Society, Burnley, Lancs.

**STAMPS FREE** — Empire Packet with Approvals (3d. postage)—John Peck, 143 Markham Rd., Winton, Bournemouth.

**FREE** — Interested in Marquetry? A special leaflet 'Making Pictures in Wood' by the fret-saw method is free for the asking. Send to **HOBBIES LTD, DEREHAM, NORFOLK.**

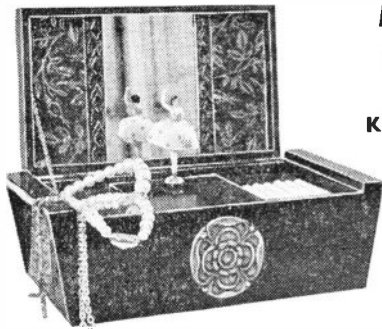
**STAMPS FREE, Approvals. S.A.E. C.A.Mac** Quarrie 43 Bell Road, Wallasey, Cheshire

**MAKE £10** a month Co Publishing Money Making Journal. Only 30/- capital req. Send 1/3d. for specimen copy. King, Ardvorlich, Lochearnhead, Perthshire, Scotland

**WE CAN SUPPLY**, at competitive prices, the components for most of the radio articles which appear in these pages.

We also stock the Sinclair Micro 6, 3 transistor radio kit, excellent value at 59/6d. Send S.A.E. for price list. Knowle Radio Supplies, 115 Ecclesall Road, Sheffield, 11.

## BALLERINA MUSICAL BOX



Ready to  
assemble

Kit R.T.A. 19

22/6

(Postage 2/-)

No. 4 Ballerina Musical Movement 23/11 (postage 9d.)

Two compartments for jewels and/or cigarettes. Lined in red and gold with embossed wood ornaments and mirror.

No design required, but full assembly instructions included with kit.

**HOBBIES LTD**

(Dept. H.24) DEREHAM, NORFOLK



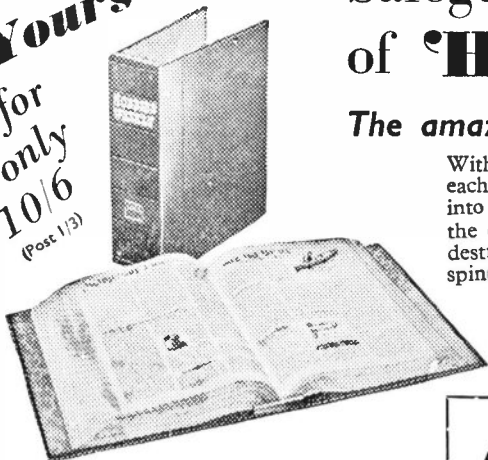
## JOHNSON UNIVERSAL DEVELOPING TANK

(designed by practical photographers to do a better job)

1. easy to load with roto feed device.
2. large filling funnel.
3. takes 4 sizes of film—120/620, 127, 35 and 16 mm; takes two at a time of 120 or 127.
4. lid easy to replace in dark.
5. empties easily, cleanly and rapidly.
6. leak-proof with screw-on lid.
7. ribbed to prevent slipping in wet hands.
8. novel system of light trapping eliminates "spluttering".
9. design based on years of experience and manufacture.
10. made in black polystyrene.



**Yours**  
for  
only  
10/6  
(Post 1/3)



## Safeguard your copies of 'HOBBIES WEEKLY'

The amazing 'EASIBINDER' (Pat.) makes it simple

With the new *EASIBINDER*, specially prepared for Hobbies, you can bind each copy of *Hobbies Weekly* as you get it, turning your favourite magazine into a permanent, easily-consulted library of immense value, and avoiding the delay and despair occasioned when copies are accidentally mislaid or destroyed. Carefully finished in black leather-cloth and gold-blocked on the spine, each binder is strong, serviceable and neat. It will hold two complete volumes (52 copies) and costs only 10/6. Each copy of the magazine is quickly inserted by means of a flexible steel wire, and can easily be removed if necessary. Easy-to-follow instructions with each *EASIBINDER*. Get one today and take care of your copies of *Hobbies Weekly*.

- ☆ One 'EASIBINDER' holds two volumes (52 copies)
- ☆ Easy to use

**Post today**



To: **HOBBIES LTD., Dept. H25 Dereham, Norfolk.**

**PLEASE SUPPLY . . . . . EASIBINDERS**  
at 10/6 each (post each 1/3)

NAME.....  
ADDRESS .....

P.O. for .....

.....  
enclosed .....

# A SAFE SWING FOR BABY

THE swing described here is intended specifically for small children, the construction being designed with the safety factor in mind. The baby is placed in position with the legs protruding through the bars and mother can then relax in the deck chair knowing that there will be no accidental falls.

Commence by making eight safety bars similar to those seen in Fig. 1. They are each  $13\frac{1}{2}$  in. long, 1 in. wide and  $\frac{3}{8}$  in. thick. Bore  $\frac{3}{8}$  in. diameter holes at the ends as suggested. The exact location of the holes is not critical so long as they are all identical. The bars can be made from plywood or from hardwood such as beech.

The seat should be of  $\frac{3}{8}$  in. or  $\frac{7}{8}$  in. plywood or hardwood. In the latter case it can be constructed of two pieces batted underneath. Bore  $\frac{3}{8}$  in. holes in the corners to coincide exactly with those in the bars.

The tubes which keep the bars apart can be cut from

plastic hose, copper or brass tubing, each length being  $2\frac{1}{2}$  in.

All the parts should now be cleaned up with glasspaper and given a suitable undercoat. This is followed by a finishing coat of high gloss enamel.

The cord used for the swing could be a clothes line of suitable thickness or better still lengths of nylon or terylene cord such as used for the rigging of small boats. These will of course be more expensive than the clothes line, but will be far stronger and will last much longer. The exact length will depend upon the position in which the swing is to be used, but two lengths of about 10 ft. should be sufficient.

The seat is now assembled as shown in Fig. 2. A large knot is tied at one end of one of the lengths of cord, which is then threaded through one of the holes in the seat. The cord is threaded through one of the distance tubes and two safety bars. Another distance tube is then slipped on and finally two more safety bars. Another large knot is tied in the cord at such a position to allow a certain amount of movement of the safety bars when the child sits in the swing.

The piece of cord should now be folded at its mid-position, a curtain ring about  $1\frac{1}{2}$  in. or 2 in. diameter put on and held in place by binding the cord together with plastic covered wire over a length of 3 in. This binding should be 2 in. from the mid-point of the cord.

The length of cord is now taken down towards the next corner of the seat. A knot is tied first, and then the other end of the top safety bar is picked up. A new safety bar is added, a distance tube, the second bar, another new bar, another distance tube, and finally through the hole in the seat and secured by a large knot underneath.

The other cord is attached in a similar manner, and when this has been done the eight safety bars should be in position all round the swing.

An added improvement is to insert two thimbles (boat fittings) as seen in the diagram Fig. 3. This will prevent wear on the cord or rope. Terylene cord or ropes and thimbles can be obtained from any yacht chandlers. (M.h.)

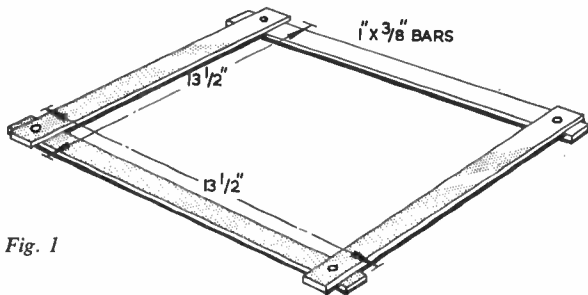


Fig. 1

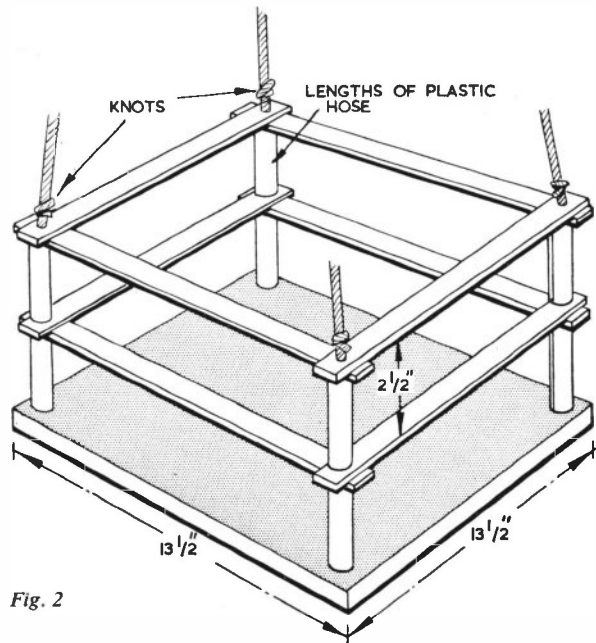


Fig. 2

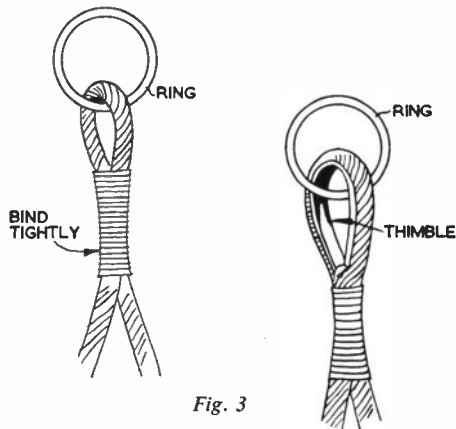
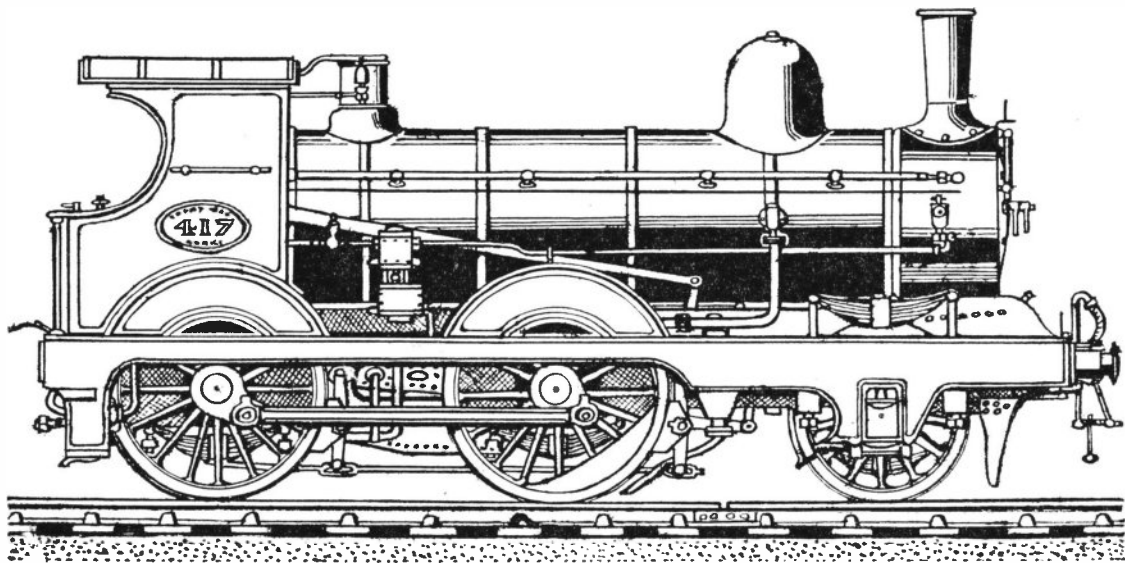


Fig. 3

# The G.E.R. Holden Coupled Engines



Great Eastern Railway. James Holden's 2-4-0 mixed traffic locomotive, Stratford Works, 1891, class No. 417

ONE of the most interesting of the Great Eastern Railway locomotive types were the handsome 7 ft. 2-4-0 coupled engines designed by Mr James Holden the Locomotive Superintendent for the express passenger duties of the line.

A total of 110 of these fine engines were built at the company's Stratford Works between 1886 and 1897, ten of the class being fitted to burn oil fuel on Mr Holden's system. These were known as the 'Petrolea' class, this name being bestowed on one of the engines. They had 18 in. by 24 in. cylinders, Trick slide valves and a leading axle having both inside and outside bearings.

In 1891 Mr Holden designed a mixed traffic version of the 'Petrolea' class. This was the 5 ft. 8 in. '417' class of which 100 were built at Stratford between that year and 1902. Their running Nos. were 417 to 506 and 1250 to 1259. These engines have rendered magnificent service on almost all duties of the line and it is fitting that one of the class No. 490, built in 1895, has now been restored to its original livery and preserved by British Railways as a locomotive of historical interest being now housed in Clapham Museum.

These engines, known as class 'T26', were used extensively on the long branch lines of the G.E.R. where they were outstandingly successful. The leading details

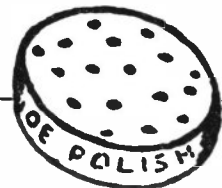
included cylinders 17½ in. diameter by 24 in. stroke inclined at 1 in 8. The slide valves were below being placed horizontally. As in the 'Petrolea', class the leading axle was provided with both inside and outside bearings, the outside axleboxes having 1 in. play in the horn cheeks. The inside boxes fitted their guides, the axle bearings being without collars. Total boiler heating surface was 1208.3 sq. ft., grate area 18 sq. ft. and working pressure 140 lb. per sq. in. in the first 80 engines, increased to 160 lb. for the last 20. The total engine weight in working order was 40.3 tons, 14.125 tons being carried by the leading axle.

Other interesting features included the shapely stove pipe chimney first introduced on the G.E.R. by Robert Sinclair as far back as 1856. The large oval brass number plate with its red painted background being introduced by Samuel Johnson, and the single slide-bars of heavy section (6 in. by 3 in.), the thick 2½ in. piston-rod and the large box cross-head measuring 13¾ in. in length were William Adams designs. The handsome rich blue livery and the red painted fluted coupling rods were first introduced by Thomas Worsdell.

The leading wheels were 4 ft. diameter and coupled wheelbase 8 ft. 9 in., the total engine base being 16 ft. 6 in. The cylinders are placed with their centres as close together as 2 ft. Whilst the connect-

ing-rods were 5 ft. 11 in. between centres (incidentally the same as on the L. & N.W.R. 2-4-0 'Precedent' class engines) Excellent cabs were provided for the enginemmen, being roomy and comfortable with wide side panels and a long wooden roof. (A.J.R.)

**Quik-Tip**



**PERFORATED METAL  
DISC ON SURFACE  
OF SHOE POLISH,  
PREVENTS OVER-LOAD  
OF BRUSH**

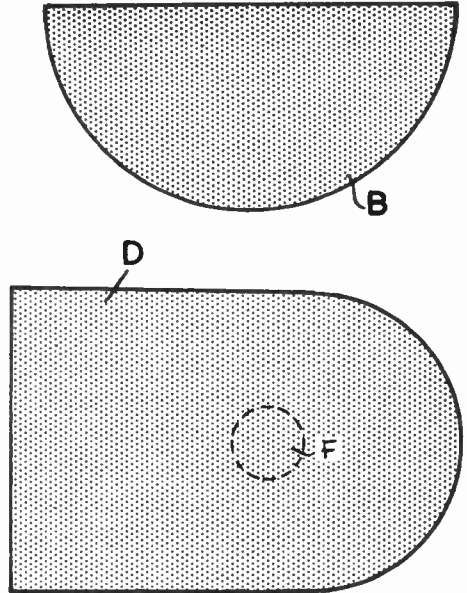
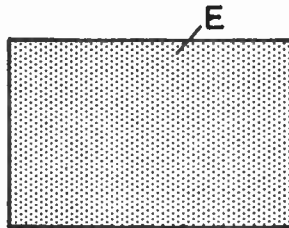
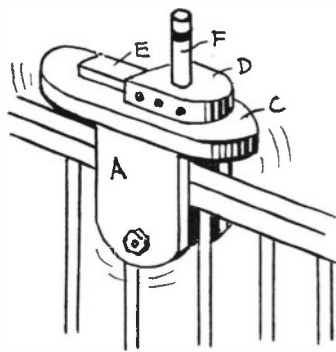
# ROCKING TUG FOR A PLAYPEN

**T**HIS rocking toy is used on the rails of a cot or playpen. It can be pushed along, or can be rocked. The parts are cut out with a fretsaw, cleaned up with glasspaper, and glued together.

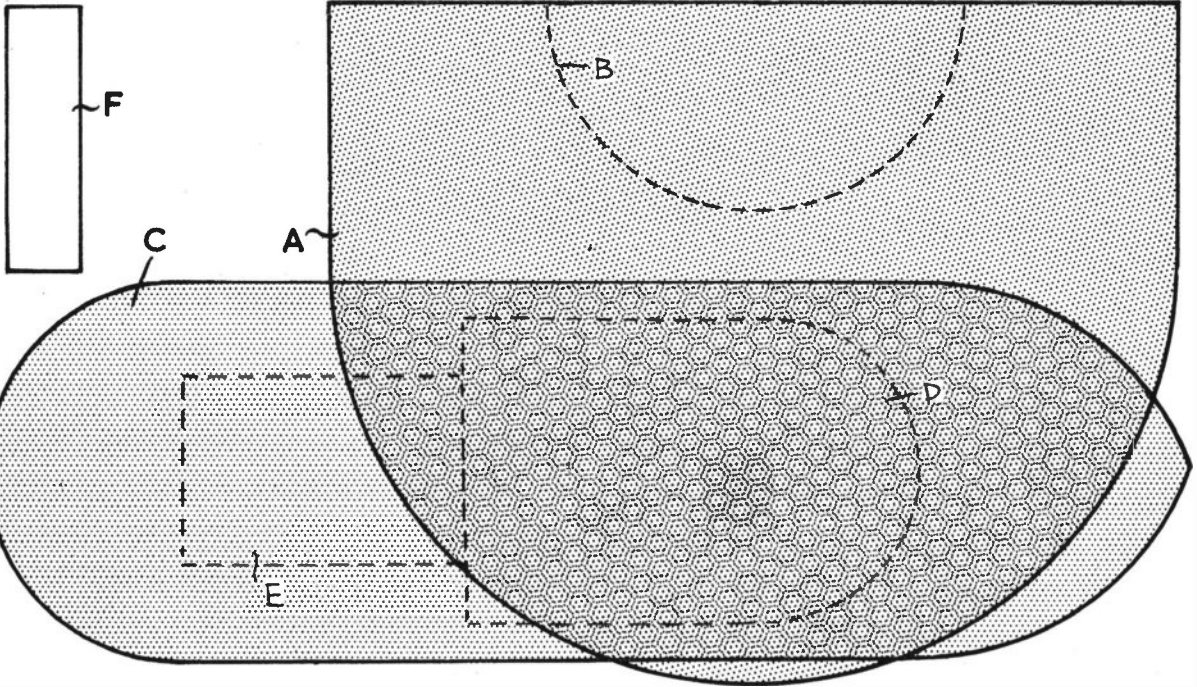
Cut two of A and one each of C and D from  $\frac{1}{2}$  in. wood, one of E from  $\frac{1}{4}$  in. wood and one of F from  $\frac{3}{8}$  in. round rod. Piece B can be 1 in. thick or two pieces  $\frac{1}{2}$  in. glued together. It is unlikely that the cot rails will exceed 1 in. wide, but if it does, make pieces A  $\frac{3}{8}$  in., and B  $1\frac{1}{4}$  in. thick.

Glue piece B between pieces A, and assemble the rest of the tug as shown in the diagram. Finish off by painting with non-toxic paint in bright colours. A large nut can be fixed to either side, by roundhead screws, to give a balancing weight.

(M.p.)



CUT IT OUT WITH A FRETSAW

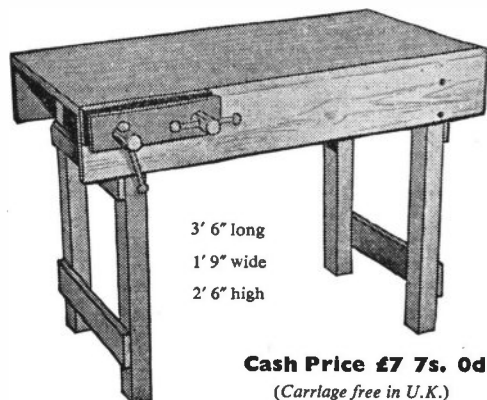


# TOOLS FOR



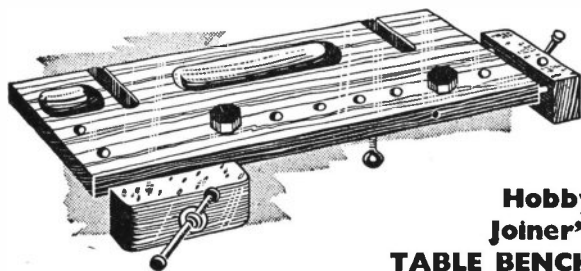
# THE HANDYMAN

With a bench like this you can work to your heart's content. Perfectly rigid, but can be easily taken apart if space is required. Best selected timber, complete with hardwood vice with twin screws. Easy payments £2 down and 6 monthly payments of 19s. 7d. Ask for agreement form.



3' 6" long  
1' 9" wide  
2' 6" high

**Cash Price £7 7s. 0d.**  
(Carriage free in U.K.)



**Hobby  
Joiner's  
TABLE BENCH**

Cramps to kitchen table to provide an ideal working surface for cutting, shaping and assembling small parts. The spaced holes and pegs permit work to be held for planing. Two sturdy vices, two metal cramps. Size 37/6

(post 2/9)

To HOBBIES, LTD. Dept H26, DEREHAM, NORFOLK

Please send me.....

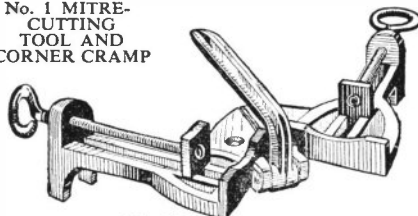
for which I enclose.....

Name.....

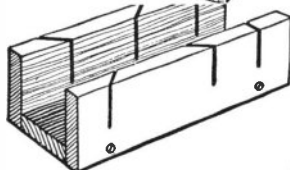
Address.....

Please write in BLOCK letters.

No. 1 MITRE-CUTTING TOOL AND CORNER CRAMP

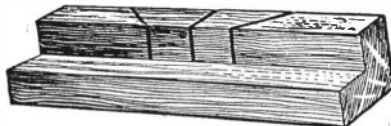


Will cut mitres on moulding and similar work up to 4 in. wide (post 3/-) **57/6**



WOOD MITRE BOX  
Made of selected hardwood  
Size 9 in. long.  
(postage 2/-) **5/6**

WOOD MITRE BLOCK  
Made of selected hardwood. Size 9 in. long.  
(postage 1/-) **3/-**

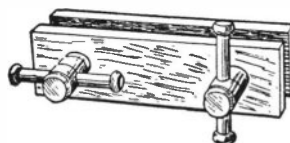


HOBBIES No. 2 CORNER CRAMP  
Made of cast iron. Will take mouldings up to 4 in. **32/6**  
(postage 2/3)  
GUARANTEED BRITISH MADE



ALL-STEEL CORNER CRAMP  
The all-steel corner cramp will take work up to 2 1/2 in. wide. **14/-**  
(post 1/3)

**WOOD BENCH VICE**



A strong hardwood vice which can be screwed to the work bench. A real serviceable tool, well made and fitted with hardwood screws. 12 in. long. **PRICE 9/11, postage 2/-**