

Hobbies

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CHILD'S PEDAL MOTOR CAR

THIS is a welcome article for any child and well worth the trouble of making. Normally the fittings, cranked axle, pedals, etc., can be bought, but under present circumstances it is doubtful if they can. A system of driving has been devised, using only such fittings as can reasonably be expected to be available.

The movement consists of flat bar pedals connected to the rear wheels by longer bars via a pin disc crank. There is thus a separate drive for each wheel, so avoiding a cranked axle which is considered too difficult for the amateur to make.

The Chassis

The chassis should be made up first. This is shown in side section, Fig. 1 and the perspective view, Fig. 2. The frame of the chassis is of $\frac{3}{4}$ in. by 2 in. deal and consists of two long bars and two cross bars.

The latter bars are 11 ins. long, and it should be noted that while the rear one is level with the end of the frame, the front one is spaced 3 ins. from the forward end. Nail the bars across securely.

The four front uprights on which the bonnet is built, are cut from $\frac{3}{4}$ in. sq. wood. They are cut away at the bottom to half their thickness for a

length of 2 ins. to fit over the long bars, and are nailed to the inside of them.

Across the front pair of uprights nail a $\frac{3}{4}$ in. sq. strip of wood level with the top, and between the rear pair a $\frac{3}{4}$ in. by 8 in. piece of board. Use $1\frac{1}{2}$ in. nails for this and bore preliminary holes for the nails through the uprights with a bradawl to avoid splitting the wood.

The four rear uprights support the bucket seat. These are also $\frac{3}{4}$ in. sq. wood. They are cut away like the

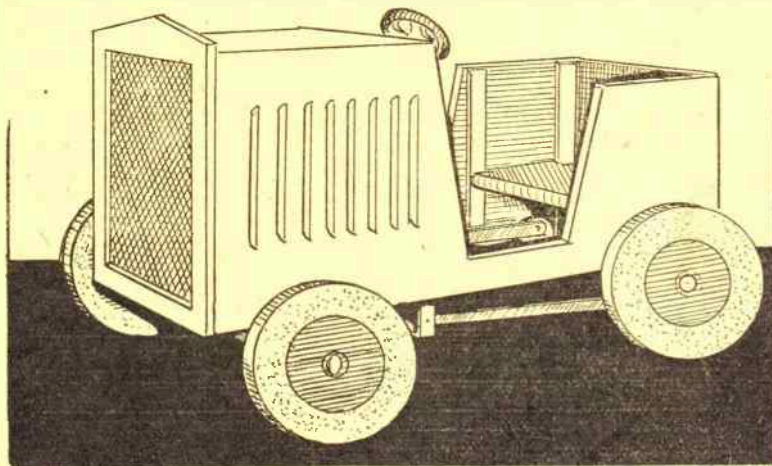
front ones for a distance of 2 ins. at the bottom, and fit similarly over the long bars of the frame.

For the bearing plates of the wheels a piece of $1/16$ in. iron plate, or thereabout will be needed. This can be got from a pair of strap hinges of large size. The plates are shown enlarged at A.

Cut four of them to the length given, the width does not matter so much, within limits, as long as it is near to that given. Scribe a line down the centre, and on this a $\frac{3}{4}$ in. from the bottom centre punch for the axle hole. At 1 in. down from the top punch 2 holes, 1 in. apart, for the fixing bolts.

Fixing the Plates

Cramp the plates together in pairs and drill the holes through both at one operation. The top holes to suit $5/16$ in. by $1\frac{1}{2}$ in. flat headed screw bolts, and the axle hole $\frac{3}{4}$ in. What



will be the outside one of each pair of plates should have the top holes countersunk to sink the bolt heads level.

Now fix the plates to the frame at 4ins. from the end to the centre of the axle holes. Bore holes through the wood for the bolts and screw up tightly, each bolt gripping two plates. This will ensure the holes being truly in line. Care must be taken to get both pairs of plates exactly opposite.

Fig. 3 is a sketch showing how the rear wheels are fitted. First, the wheels themselves. These must be accurately made, and in the absence of a lathe must be sawn out to a true circle.

The Wheels

For each wheel strike two circles, 8ins. dia. on to $\frac{3}{8}$ in. thick wood. Enlarge the centre point slightly with an awl, and with a $\frac{3}{8}$ in. centre bit bore a hole through each disc.

Now, with a coarse bladed fretsaw cut out the discs most carefully. Then glue two together, the grain of the wood at right angles to each other,

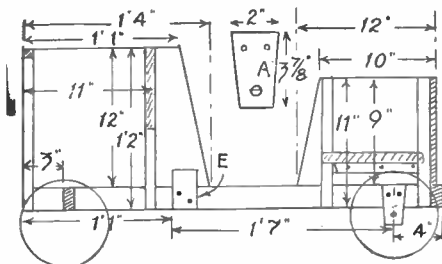


Fig. 1—Side elevation with dimensions

to make one wheel. See the axle holes are truly in line, and leave under pressure for the glue to set hard.

Finish the wheels by filing the rims to a curve and glass-papering. If care is taken in sawing out and centring, these wheels should be little inferior to the professional article.

For the axles, get two $\frac{3}{8}$ in. by 3in. iron bolts, the kind with hexagon heads. Push the bolts through the wheels. Two locking plates must now be cut from 1/16in. iron plate. They can be got from the surplus iron left over from the strap hinges. Cut these to the size shown at B.

In the centre drill a $\frac{1}{4}$ in. hole, and each side of this hole two more holes to take $\frac{3}{8}$ in. iron screws. Countersink these latter holes. Then from the centre hole, and cutting through one of the side holes, file out a $\frac{1}{4}$ in. wide slot, as shown. On the bolts, with the aid of a hacksaw, cut a slot on opposite sides, $\frac{1}{8}$ in. deep, as at C.

Fitting the Wheels

Use a saw blade making a kerf wide enough to admit the thickness of iron used for the plates. The kerfs should just touch the wheel. Then push the plates across the bolts, where they should press against the wheel,

and fix in that position with two screws, thus locking the wheels on the axles. Push the axles through the bearing plates fixed to the frame.

On the bit of axle sticking out on the inside of the frame a pin disc should be fitted. The discs are of $\frac{1}{2}$ in. thick wood, with $\frac{3}{8}$ in. holes in their centres. On the outer face sides glue a lin. round disc of $\frac{1}{4}$ in. fretwood, to touch the rim, as at D, and in the centre of these discs drive in a $1\frac{1}{2}$ in. stout, round-headed brass screw as a pin.

Let the pins stand out $\frac{1}{4}$ in. and file off any superfluous screw sticking out the other side. Now fix the pin discs on their axles with locking plates, as already done for the wheels, and cut off any superfluous part of the axles left at $\frac{1}{8}$ in. from the locking plates.

Allow enough freedom for the wheels and discs to spin round freely, a washer behind the pin discs will help here.

Pedal Mechanism

The pedal arrangement is drawn in Fig. 4. Cut two blocks front $\frac{1}{2}$ in.

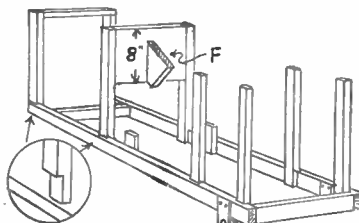


Fig. 2—Construction of framework

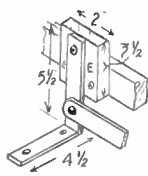


Fig. 4—Pedal fitting

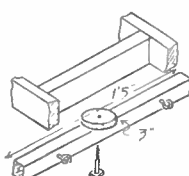


Fig. 6—The axle fitting

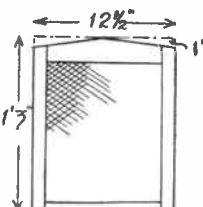


Fig. 7—Radiator front

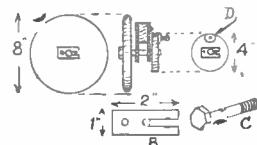


Fig. 3—Rear wheel fitting

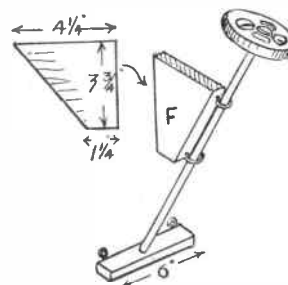


Fig. 5—Steering gear details

thick wood to size given at E, and screw to the inside of the frame, one each side, at the distance from the front shown in Fig. 1.

The pedals are a pair of iron shelf brackets, cut to the size given. Ignore the holes already drilled in them, and at $\frac{1}{8}$ in. from the top of each drill a hole for a lin. stout brass round-headed screw, which will act as a pivot on which the pedal can swing. At lin. from the bottom, measured from the inside of the brackets, drill a $\frac{1}{4}$ in. hole through.

A connecting rod is required for each pedal. This can be a length of $\frac{3}{8}$ in. by lin. iron bar, just 1ft. 7ins. long, or a length of wood with a piece of iron plate at each end. At $\frac{1}{8}$ in. from each end of these rods drill a hole, one $\frac{1}{8}$ in. for attachment to the pedals and the other of the right size to suit the pins on the discs attached to the rear wheels.

The rods are fitted to the pedals with rivets, and should not be a tight fit but free enough for the rods to move easily but not wobbly. Bifurcated rivets would do for fixing—they are easily fitted.

The pedals are then fitted to blocks E, where shown, with the screws, placing a washer between each pedal and block to lessen friction. The free ends of the rods are then fitted over the pins of the rear wheels. If the movement is free enough, a twist of the wheels should set the whole motion in action.

The Steering Gear

The steering gear (Fig. 5) is a simple arrangement. First cut the block F, from lin. thick wood and screw to the middle of the cross board of the chassis, where shown in Fig. 2. The steering rod is a piece of $\frac{1}{2}$ in. round wood, about 1ft. 6ins. long.

To the bottom of this is securely glued a cross piece of $\frac{1}{2}$ in. by lin. wood, as shown. The steering wheel is 7ins. dia. and can be cut from lin.

thick wood. Bore a hole in its centre for the rod. In block F, drive a pair of screw eyes with an inside diameter large enough to admit the rod to pass, and drive two more screw eyes in the cross piece at the bottom, 5ins. apart. Leave this for a while and make the front axle.

This is a length of $1\frac{1}{2}$ in. sq. wood, as shown in Fig. 6. To the middle of it glue a $\frac{1}{2}$ in. thick disc of wood, as shown, and mind it is in the middle. In the centre of the disc bore a $\frac{1}{4}$ in. hole for a pivot pin on which the axle can swing. A $\frac{1}{2}$ in. by 2in. coach screw would make a good pin, and it should be pushed through the axle underneath and be driven in the centre of the front cross bar of the frame.

Fixing the Bar

Bore a preliminary hole in the bar before driving in the screw or the wood will split. Let there be enough play

between axle and bar for the former to swing round easily.

In the axle drive in two more screw eyes, this time about 8ins. apart. Push the steering rod through the screw eyes until the cross bar is level with the front axle. Then bore a hole through the rod, just above the lower screw eye, and drive a pin through to prevent the rod dropping. A nail would make a suitable pin.

To complete this part of the work connect the cross bar to the axle with short chains, hooked to the screw eyes on bar and axle, or metal links bent up from stiff wire. Glue the steering wheel to the rod.

Radiator and Bonnet

The radiator frame (Fig. 7) is made up of $\frac{1}{2}$ in. by 1in. sides and bottom and $\frac{1}{2}$ in. by 2in. top rail. A simple glued and nailed joint will suffice here. Across the back of the frame tack a piece of perforated zinc. Now screw this frame to the front of the chassis, the top of it rising 1 $\frac{1}{2}$ ins. above the cross rail on the front uprights.

The bonnet can now be completed by nailing $\frac{3}{4}$ in. thick wood, cut to the sizes given in Fig. 1, to the uprights and over the top of them. The sides and back of the bucket seat, also of $\frac{3}{4}$ in. thick wood are then nailed to the rear uprights. In the inside angles of bonnet and bucket seat, where the wood rests on the frame, glue some blocks.

The Seat

The seat board, of 1in. thick wood, about 9ins wide, rests on battens nailed to the sides. It can be pushed forwards a little, if on test it is found desirable for the rider to operate the pedals comfortably.

The front wheels are made as described for the rear ones, but the axle holes should be strengthened with iron plates or wear will soon widen the holes and make the wheels run untrue.

Two plates to each wheel will be required. Cut them from 1/16in. iron, 1in. sq. and in the centres drill a hole for the axle screws, either

very stout round-headed ones, or $\frac{1}{4}$ in. by 2in. coach screws. Of course, the holes in the wheels will be bored to suit the screws also, not $\frac{3}{4}$ in. ones as for the rear wheels.

Each side of the axle hole drill a hole and countersink for fixing screws. Now place a plate on each side of the wheel, pass the axle screw through the lot to hold them together firmly and screw the plates to the wheel. This will ensure the axle holes all being in line. Fix the wheels with the axle screws to the wood axle in the centre of the ends.

Painting

Now paint the motor to suit. As a suggestion you could paint the body grey, radiator frame black, or aluminium colour, centre of wheels red, and rims grey to simulate tyres. The metal parts might be black enamelled.

In use the child should be taught to see the pedals of the car in correct position, i.e. one forward and one backward, before starting to drive it.

Patterns printed on Cover iv for making this novel TRUMP INDICATOR

THE season for whist is with us, so why not make up the novel trump indicator shown here in readiness for some winning games! Full size patterns for it are printed on Cover iv.

This indicator consists of a base having two uprights with a disc between the latter which revolves and shows the playing trump in a "window" at the top of the uprights. The idea is plainly seen in the sketch of the finished article on this page.

Around the edge of the revolving disc, it will be noticed, are projectors, not only intended as a decorative feature, but also for finger grips in turning the disc to the required trump.

The Patterns

This interesting little article would be a very suitable subject for the fretwork beginner, and by being able to use patterns full size, the work is greatly simplified. All the worker has to do is to stick the various patterns down to his panels of wood and commence straight away with the cutting out.

The base is made up in two pieces of wood glued together. A large mortise is arranged in the centre of the pieces to take the tenons on two uprights and on the filling piece which glues between the uprights at their feet.

If desired, the lower member A of the base could have its edges nicely rounded off with coarse and fine glasspaper, this shaping being done

of course before the two pieces are glued together.

In cutting the mortise it would be advisable to keep inside the line so when it comes to fitting the uprights a neat and tight fit is obtained.

Do not, however, have too tight a fit, for if the uprights are forced into place, the base will be liable to split across. Therefore test the length of the tenons against the mortise and ease them if required before wiping them with the glue and pushing them in place.

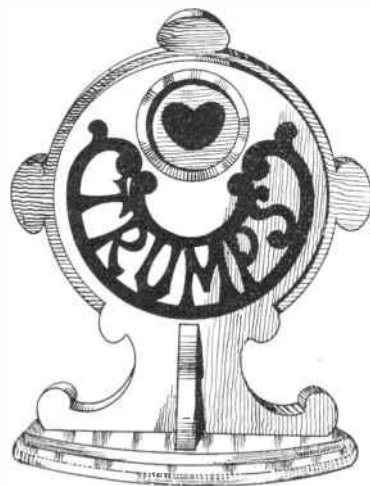
The circular openings in the uprights should have their outer edges chamfered so that the trump itself can be plainly seen from any angle.

Coloured Indicators

The disc bearing the trumps, which, incidentally, are painted on the wood in oil or water colour, is cut from 3/16in. wood and rubbed down on glasspaper so as to just turn easily between the two uprights. A $\frac{1}{4}$ in. round-head screw should be used as the pivot screw. Be sure and get the trumps outlined and painted in the exact positions shown, so they appear in the centre of the holes when the disc is pivoted by the central screw.

Further to stiffen the uprights, two bracket pieces are cut and glued to them and the base.

It only remains now to cut the overlays which are glued on each side. Use wood of a contrasting colour to the remainder of the article if possible, and cut the two thicknesses of 1/16in. together using a piece of



waste wood on the top for protection during the process of cutting. Coat the overlays sparingly with thin glue and put between clamps until the glue has hardened.

For such an article as this we should suggest no elaborate finish to the wood, and if satin walnut or mahogany is used a rubbing with wax should darken the grain nicely and make a very presentable finish.

All sharp and prominent edges should be cleaned with fine glasspaper before any finish is applied.

Two of Hobbies standard panels of wood G3 will be found ample for all the 3/16in. work, with one PPM panel for the overlays.

You get much fun and interest if you form A DISCUSSION CLUB

ONE of the hobbies which possibly is not so popular as it should be, is that of a Talking or Debating Club. The art of public speaking is largely a matter of training, confidence and knowledge, and even the smallest group of organised debaters can be very helpful in this way. Some of the shyest can be converted into quite lucid and interesting talkers, and thereby become self-confident in themselves and interesting company for others.

We do not, of course, include the persistent talker who monopolises the conversation and becomes a bore. The trained man knows how he can "hold" his audience; suitable points to make and when to stop. There is a surprising amount of interest and often amusement in a group gathering of this sort, and it is, indeed, an excellent way of noting the varieties of the English language in the correctly spoken world.

Learn to Speak

There are endless topics on the subject, and if the Debating Society starts with but half a dozen, it should soon grow both in popularity and in numbers. The usefulness of the course may not be immediately apparent, but there are sure to be occasions—if only at someone's wedding—when an interesting speech is called for, and the confidence and ability of the speaker makes a good impression on all.

One great advantage of a hobby such as this is that there is no cost of tools or materials or appliances. A group of fellows or even of both sexes can get together and use a room in their respective homes as a periodical meeting place.

If they are friends amongst themselves, so much the better, but even if all do not know each other, the atmosphere will soon create camaraderie and a general friendliness will become apparent.

Guiding Rules

There is need, however, to have a more or less formal set of rules in order that the talks or debates may be conducted with decorum. There needs to be, too, a few officers, who have specified duties. They are not difficult, but a knowledge of them is essential.

Whether they are permanent is a matter for the group to decide, but if there is any likelihood of jealousy or irritation, then it is best to turn the officers round periodically to let all get a chance and a knowledge of the actual working and responsibilities of each individual.

For instance, one must have a

chairman and a secretary. If there is any question of subscriptions or income and expenses, then it is advisable also to have a treasurer.

A Chairman's Duties

There are some handbooks on the duties of a chairman, etc., which any ambitious Debating Society should obtain. These, of course, go into the more intricate rulings where the position of a chairman is sometimes difficult. For instance, he has to know what to do in the case of an unruly meeting. He has to know the procedure when somebody raises a "point of order."

If, in forming the Society you have not one of these books, it is quite simple to formulate a set of rules, and we can supply a suggestion of these for any readers interested.

The meetings can be held weekly, keeping to the same night and the same time, and suggestions for talks or debates should be made by mem-

NOAH'S ARK AND ANIMALS DESIGN

With this week's issue is given a design (No. 2510) for a simple Noah's Ark; the animals will follow the week after next. A parcel of planed wood for making the whole thing is obtainable from Hobbies Branches for 9/3, or by post from Hobbies Ltd., Dereham, Norfolk for 9/10.



bers, and if necessary, should be ballotted for by the members. The length of time for talking must be stipulated.

Procedure

The chairman introduces the opener of the debate, and he can be allowed, say 10 minutes or a quarter of an hour. He is followed by the opposition side, if there is one, or the meeting can be thrown open to general debate. Those taking part can be allowed up to five minutes—and you can say quite a lot in that time.

At first, members will possibly be shy of talking, but when they become more conversant, some may be the reverse and too talkative. If this is likely to occur, a rule can easily be made that no one can speak twice

during a debate unless the chairman gives permission. Speakers, too, should keep definitely to the point, omit personalities, and give a reasoned speech rather than a rambling one.

For and Against

It would be a good plan, too, to decide one week on the subject which was going to be debated the next. This would give members an opportunity of looking up facts.

The leader and the opposer should preferably be selected at first as being the best able to marshal facts and present them in an interesting and straightforward way. As others grasp the method, they can then be given opportunities of making their endeavours.

The great point is to get all members to join in, and one method of doing this is to allocate a period of two minutes to each member in turn. In this way some surprising results are obtained.

It is not really the duty of a chairman to make speeches; merely to rule the meeting gently and diplomatically, to deal with items on the agenda, to keep the speaker to the point, to be unbiased in his ruling, and to act fairly according to the requirements of the meeting.

Minutes

If Minutes are kept by the Secretary they should be concise and legibly written, with a heading of their subject put in a column at the side for easy later reference if required. These Minutes should be read, put to the vote of the meeting as correct, and then signed and dated by the chairman himself.

If it is thought that the keeping of Minutes is too formal and unnecessary, they can be omitted, but a note of the subjects taken with just the names of the proposer and opposer kept.

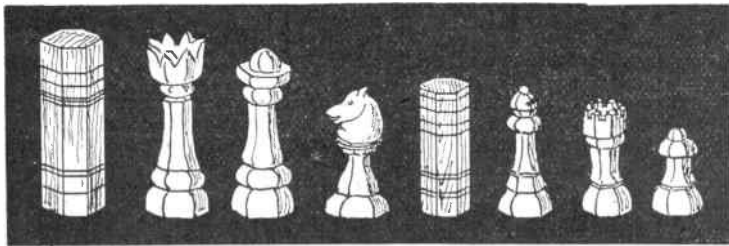
Altogether some very interesting and enlivening evenings can be spent in this manner. It teaches attractive conversational powers, speaking good English and understanding everyday affairs on a wider scale.

It may be worth while, to discuss the question of electing a permanent chairman. If so, get one with tact and knowledge and one who is a general favourite with the other members.

In the ordinary way, the duties of the chairman are light, but he must be ready for any emergency, and handle it firmly.

The most likely need is when some members get heated and personal in their points. This must not be allowed and the speaker is immediately stopped by being "called to order."

For home or canteen make these WHITTLED CHESSMEN



NEARLY all chessmen are turned on a lathe or are cast. The expensive ones are carved or whittled. It is not a very difficult task, however to whittle a beautiful set of chessmen yourself with a small bladed knife that has been properly sharpened. The job can be finished readily in a few evenings.

The first thing to decide is whether the men are to be made of softwood or of hardwood. Since the pieces are all small and since they do not require so much work it may be well to choose hardwood so that continued use will not nick and dent the chessmen so easily.

Suitable Wood

Birch or maple may be used for making the white men and walnut or mahogany for the black men. To make the one set still darker a coat or two of walnut stain may be applied.

Of course, all men may be whittled out of birchwood and then the one set painted with two coats of flat black paint such as Hobbies Black-board Black. The final coat may consist of several coats of clear varnish or lacquer. If made of softwood or basswood the whittling will take less time and they will be quite serviceable, too.

The First Strips

The simplest way to start is to cut strips of wood to a square shape and convert them into octagonal shape as shown in the illustrations. About 2 feet of the 1 in. wood and 2 feet of the 3/4 in. wood will be used for each colour. This will allow for some waste too.

Mark off the divisions and whittle to the shape in Figs. 1 and 2. The

eye will quickly detect whether the cuts have been correctly made. Those who have done little or no whittling should try to make a few trial cuts going all the way round the stick.

It is really surprising how easy the whole thing is and how quickly one can learn to do it. Be sure to have the bottoms squared off properly. Cut all blanks to length in a mitre box before starting the job of whittling. The bottoms also may be squared off on a piece of glasspaper.

Be sure they stand properly or you will be disappointed when they are finished and then it will be difficult to get them to stand straight.

Finish

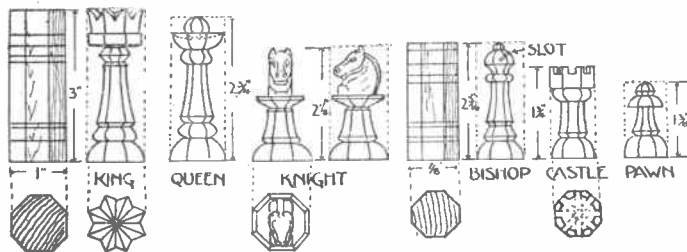
Finishing them is a matter of personal taste. That is, the knife cuts may be left as they are or the pieces may be glasspapered before they are varnished.

For sanding the writer fastens a strip of fine glasspaper to a piece of sheet iron and uses this in the same manner as one would a thin knife file. This permitted sanding all the deeper cuts. The paper may be fastened to the iron with shellac.

The drawings below show the shape of the original block and the marking out to the shape required. You will, of course, require a complete set of each—one set black and the other white.

Each set consists of King, Queen, two Knights, two Bishops, two Castles, and two Pawns. The tallest are from a strip 3 ins. long, whilst the shorter ones need a piece only 2-3/16 in. long for each man.

You will, of course, require a fairly large board for use with the set—one with 1 in. squares at least. The making of one of these is also easily undertaken by the handyman.



A Simple Nail Holder

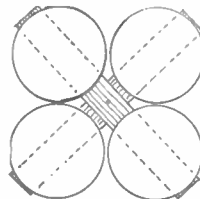
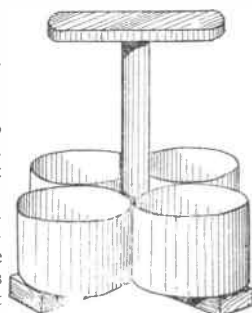
FIG. 1 shows a very handy holder, just the thing to contain nails.

It is made from empty tins and a few bits of wood, so costs practically nothing. The wood frame on which the tins are fixed is of simple construction.

It consists of two pieces of wood, say 1/2 in. by 1 in. section, halved together at the centre. The length of these will depend on the size of the tins used, so draw four circles, each of the same diameter as the tins, to touch each other, as in Fig. 2. Then the length of the wood strips for the frame can be measured off.

Fix these together at right angles. A central upright stick is needed to which a handle can be fixed. A piece of broomstick would do here, or a square bit of wood.

It does not matter in the least as long as it is not too



thick. Fix this stick to the bottom frame with a single long screw in the centre, well countersunk.

Screw up tight to make it firm.

Its length, by the way, can be 8 ins. or a little more.

The handle is a piece of 1/2 in. by 1 in. wood, about 5 ins. long. Fix this to the top also with a single screw and see it comes directly over where the tins touch each other, so as not to be in the way when picking the nails out.

The handle should be glasspapered to smoothness to make it comfortable to grip hold of, the ends can also be rounded off for neatness.

The tins must, of course, be chosen from those at hand. Perhaps the most suitable are those of the large flat salmon size, or any flat kind such as is used to can fruit. However, almost any flat tin available can be used.

The tall tins could also be used but would be more convenient if cut down to say 3 ins. deep for ease in picking the nails out. Fix the tins to the wood frame with a small central nail to each.



GREAT BRITAIN 1d. RED IMPERF.

A GOOD, clean copy of the "1d. red" with four margins can be bought for 4d. to 6d. For this reason it is a particularly good stamp for someone of moderate means to specialize in. It is also attractive because there is a vast number of varieties, many of them very scarce and often difficult to distinguish, which you may easily pick up for a song.

The varieties include a great range of shades, postmarks, re-entries, and ivory heads. The commonest shade is red-brown, on blue or bluish-green paper. It is scarcer on very deep blue paper and scarcer still if the paper is perfectly white. Brick-red and lake-red are less common than the ordinary shade, and orange-brown is the scarcest of them all when it is on white paper.

Scarce Varieties

Several very scarce shades are not mentioned in the big catalogues, such as orange-red, orange-yellow, ochre-yellow, deep purple-brown, and plum. The common shade of red-brown varies enormously, and it must not be assumed that if a specimen is slightly different in shade from one already possessed that it is one of the scarcer shades.

It would probably be well worth your while to accumulate some hundreds of poor copies (which can be obtained cheaply) for practice in identifying shades. It is impossible to decide until you have had considerable experience the shade of one particular stamp without comparing it with others. Even then it would be very difficult.

Watermarks and Postmarks

The watermark of the stamp in Fig. 1 is the Small Crown. It is quite scarce when it is inverted, and rare when it is double.

The postmarks on early stamps provide just as much interest as the stamps themselves. Those on the 1d. reds are no exception, so if you come across a stamp on a piece of cover do not on any account, soak it off.

The Maltese Cross type of cancellation (Figs. 2 and 3) was the first to be used. It is less common than the 1844 type, which came later. Maltese Cross cancellations with the numbers 1 to 12 in the centre were used at the London Chief Office. Number 4 is the scarcest.

There are five main types of the 1844 postmark: the London Chief Office, the London District Post, the

English Provincial, the Scotch and the Irish. The London Chief Office postmark consisted of a number enclosed in a diamond frame with a surround of bars forming a horizontal oval.

The original series had Nos. 1 to 20 with three bars above and below the diamond and 10 short bars to the right and left of it respectively. As additional hand stamps were required the numbers were gradually increased until in June, 1855, No. 75 was reached.

A New Name

In 1844 the London 2d. Post was renamed the London District Post and was given a number series in circles instead of diamonds. The original series was 1 to 72 (except 9 and 19, as the 9 was confused with the 6).

London Chief Office postmarks are scarce with numbers above 30, and London District Post are scarce below 50.

The English Provincial postmark was a number with horizontal bars above and below and two curved vertical bars at each side, the whole forming a horizontal oval.

The Scotch postmark (see Figs. 4

fairly common, but they are very much scarcer through the value.

A re-entry is a doubling of part of the design, and is usually fairly faint. Sometimes, however, it is quite marked.

The 1d. red is printed on varying degrees of blue paper. This bluing of the paper is believed to have been caused by the presence of prussiate of potash in the printing ink, or in the paper. This, under certain conditions tended to colour the paper when the sheets were damped for printing.

Ivory Head Variety

The "Ivory Head" variety in which the Queen's head shows white on the back of the stamp is due to the comparative absence of ink in the head portion of the design, with consequent absence of bluing. Ivory heads can be found in varying degrees of completeness, but copies in which the whole outline shows clearly are not very common.

The left and right edges of the design are usually wavy and indistinct, but in some copies they have been strengthened by a clear straight line. These copies exhibit what is known as the "thick outer frame" or "re-cut frame."



1—Small Crown Watermark Postmark 2—Maltese Cross Postmark 3—English Prov. Postmark 4—The Scotch Postmark



5—The Irish Postmark 6—Guide line through value and (above) in the corner

and 5) was a number enclosed in a rectangle of horizontal bars, and the Irish a number enclosed in a diamond of bars. The differences can easily be seen in the accompanying diagrams.

The 1844 postmarks in blue are moderately common, but scarcer in green, and in red and violet very rare. The green cancellation is commonest in the Irish type, and the blue in the English Provincial.

Line Variety

Varieties are numerous. Guide Lines were made intentionally (see Fig. 6) but were supposed to be removed when the engraving was finished. They were to assist the engraver in placing the impressions, and were usually removed from the gutter margins, although it was not possible to remove them from the design without damage to it.

The lines vary in thickness, often requiring a magnifier to see them clearly. Lines on the corners, especially in the star corners, are

In worn plate copies the features of the face have lost their sharpness and worn patches appear in the background, especially immediately above the "ONE PENNY" label. These are fairly common.

Quite frequently you may come across a stamp containing two or more of the varieties mentioned above; for example, ivory head, worn plate, coloured cancellation, or re-cut frame.

In Good Condition

The most important thing to remember when collecting these stamps is to maintain a high standard of condition. Specimens must have four margins, even if they are cut close, because specialists find it harder to identify the plate from which the stamp was printed if any part of the stamp is cut away.

Also remember that a torn, thinned, or creased stamp is worthless, and that a thick messy postmark mars the page.

If you are interested in wireless, here is all about MAKING CARBON GRANULES

CARBON granules used in microphones and telephone transmitters are of high, fine quality. In appearance, the granules look like minute particles of shiny black coal—coal filings, in fact. That gives one a fair idea of their grade of fineness.

As there appears to be a great difficulty in obtaining carbon granules these days, it is possible to make substitute granules from the carbon rods in dry batteries. Any dry cell will provide one small rod of carbon. A large quantity of granules is not required, about one tablespoonful sufficing for most needs.

The best way to granulate the carbon rod is to "peck" at it with the nippers, or alternatively, one could "nibble" at its ends with the toothed jaws of pliers. The small lumps are then placed on a piece of flat metal and "crushed" into fine particles by means of the face end of a hammer.

When doing this, by the way, avoid crushing and grinding up too much. Remember, particles are wanted—not a black dust. Some dust is, of course, inevitable, and this powder must be removed. To do so, place some of the ground carbon in the palm of the hand and blow upon it, meanwhile shaking the hand from side to side to free the carbon particles from the black powder.

By using a tea strainer, much of the dust can be removed. The tea strainer will also serve in separating large lumps from smaller lumps. Having, then, graded the particles in a suitable form, put them in a piece of soft linen and clean off any dust adhering to them by folding the linen over them and rubbing the enclosed particles between the palms of the hands.

Carbon particles like fine granulated sugar is ideal, because one is making use of a "soft" carbon of an inferior quality. The harder the

carbon, the finer the granules, is a good rule to follow. Carbon granules the size of the heads of pins is an excellent "between" size.

By the way, the carbon contact blocks in home-made microphones should be neatly filed on the surface and glasspapered to a smooth, shiny finish, if possible. Such a surface provides better "contact" for the particles of loose carbon than a roughened surface. Small discs of carbon sheeting are to be found in the granule contacts of commercially-made microphones and telephone transmitters, and the surfaces of these discs are always well polished up.

The best type of diaphragm to use in conjunction with home-made granules is a skin of brass—sheet brass the thickness of tissue paper. It is also possible to incorporate the sensitive diaphragm of a gramophone sound box, this consisting of an aluminium alloy.

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