Chapter V

WIRE SHAPE-MAKING

THE making of wire shapes is one of the most interesting and useful of all branches of millinery. Once the knack of manipulating the wire is acquired, it is possible for even an amateur worker to design graceful and becoming headgear. As a foundation for transparent materials such as tulle, lace, net and jewelled fabrics, the wire shape is always in demand, and is used by a great many milliners as a support for the light-weight fancy straws and braids.

In this process most careful and accurate workmanship is essential, and for this one must have suitable wire, a pair of good quality wire nippers, strong cotton Nos. 16 or 20, and covering net or muslin of just the best weight and texture to support the material of which the headgear is to be made.

Choice of Wire.—A medium-weight, silk-wrapped wire is quite the most satisfactory one for shape-building. A medium-sized, satin-wrapped wire is often used for the head-ring and occasionally for the brim-outline. Satin-wrapped wire has an inner padding of cotton filaments bound along its length by the smooth wrapping of fine silky fibres used for the outer covering. This padded wire is comparatively soft to the touch, and does away with the chief objection to the wearing of a wire shape, namely, the pressure of the hard wire on the forehead.

There are many qualities and sizes of wire used in making shapes, and a knowledge of them is essential. They are—

(*1*) Fine mounting or "tie"-wire which can be bought in most colours wound on large or small reels.

(*2*) "Filet" or lace-wire is very fine and obtainable in many colours.

(*3*) Light-weight, medium and heavy, silk-wrapped wire, manufactured in many colours.

(*4*) Fine, medium and thick, satin-wrapped wire, obtainable in many colours.

It is often an advantage for a worker to use three sizes of wire in the making of a hat shape, choosing probably a firm silk or a satin-wrapped one at the brim-edge ; a medium silk-wrapped one for the principal rings and supports, and a filet wire for extra rings and supports when an intricate shape is being modelled.

METHODS OF MAKING.—There are two methods of making wire shapes : (*a*) in the hand, by measurement ; (*b*) over a block by modelling. Both these methods are good, (*a*) being much the simpler and more practical for a straightforward shape, and (*b*) for a more difficult form.

There are a few rules to be noted—

(*1*) The wire and covering material must be of suitable weight and texture for the outer covering.

(*2*) The pattern or measurements of the shape to be made must be accurate.

(*3*) The sketch, model or block to be copied, must be thoroughly understood.

(*4*) Before any shape is begun the wire must be " sprung," that is, well slackened from the coil and flattened out straight before use, in order to prevent the shape from becoming twisted.

(*5*) Each ring and support wire should be cut in one length, as an unnecessary join weakens the shape.

(*6*) All joinings must be well overlapped, in the case of ring wires by 2 in. ; and in nipping and tying the wires together firmness must be achieved without breakage of the filaments covering the wires.

(*7*) Twisting a cross wire more than once over a ring does not produce firmness, but gives the shape a clumsy appearance, in addition to causing much discomfort to the wearer.

(*8*) The outline of a shape must be kept most carefully, but a heavy shape is unwearable for any considerable length of time.

A strong paper pattern may be a guide to an amateur worker

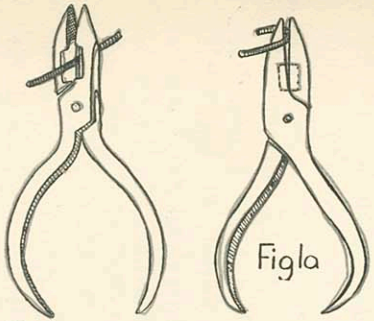

Fig1

Fig1a

Fig2a

Fig2b

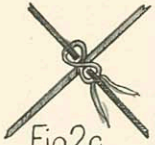

Fig2c

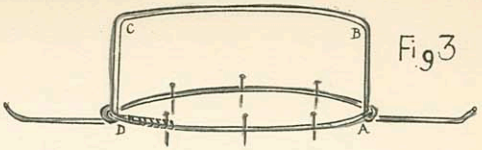

Fig3

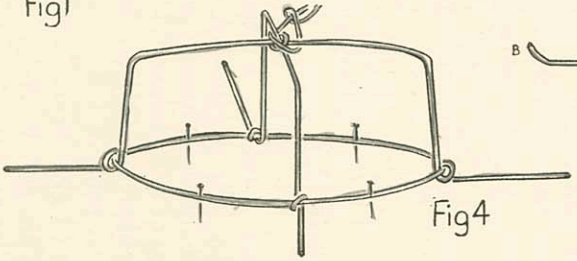

Fig4

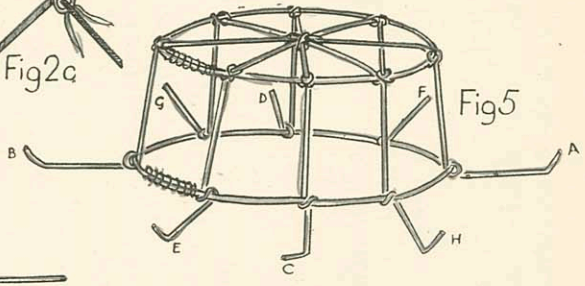

Fig5

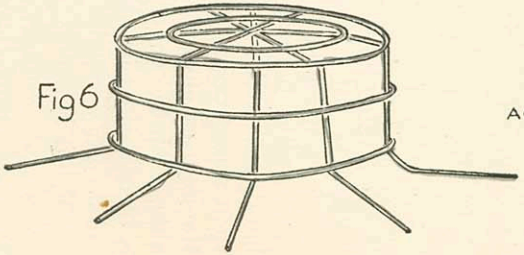

Fig6

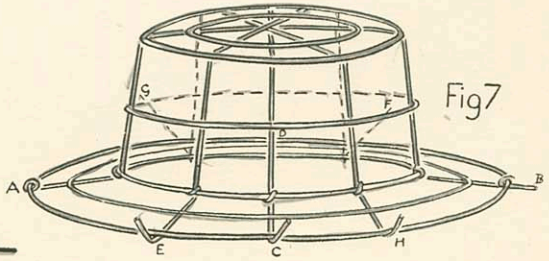

Fig7

in the making of a simple flat shape, as the ruled construction lines show clearly where the cross-supports must be fixed to the head and outline rings; but this guide is of little use for either rolled or undulating brims.

It is well to practice the cutting, bending, nipping, and tying processes before attempting to make a shape as the knack of these processes must be acquired before any serious work can be done.

The "ties" round the coil of wire must first be loosened, then a length of wire be drawn out free of them, and straightened. To do this, hold the freed wire in the left hand about 6 in. from the end; then draw the right thumb and fingers flat along to the end. When this portion is straight prepare another few inches in the same way until sufficient length has been straightened for the ring or support needed.

Cutting the wire is easy. All the student has to do is to open the nippers, place the wire between the cutting edges on one side of the hollow square, and close the nippers sharply (*Fig. 1*).

Bending the wire is also easy. Hold the wire firmly in the left hand a few inches from the end; with the nippers in the right hand grip the wire between the roughened points of the nippers about $\frac{1}{2}$ in. from its end, then bend the wire round one point of the nippers (*Fig. 1a*).

Nipping requires knack. Hold one wire firmly in the left hand, and with the right hand pass another wire across (*Fig. 2a*), then round it *once* (*Fig. 2b*); press the wires firmly together with the pointed ends of the nippers, and the wires should be unmovable, with the covering of each intact. Never pass the wire over a second time in an endeavour to gain firmness—clumsiness and unnecessary weight inevitably result.

Tying is necessary to give firmness where two or more wires cross one another. This can be done with the wire, or single No. 16 cotton (*Fig. 2c*) and twisting or tying the ends firmly together.

Making a Simple Flat-Brimmed Shape in Wire

(*1*) First cut the head ring, allowing ¾ in. to 1 in. at both ends for overlapping, e.g. for a head size of 24½ in., wire is cut 24½ in.+ 1½ in. = 26 in. In making it up, overlap the ends and bind firmly with tie-wire or strong cotton before putting it in position on the shape. Mark the exact centre of the join and from this point mark the centre front and quarters of the ring, and if necessary, four more points midway between each of these. Many milliners prefer to make the head-wire join come just to one side of the centre back, as shown in *Fig. 3*.

(*2*) Now bend and cut off the front to back support-wire, as shown in position with the head-wire (*Fig. 3*), allowing 1½ in. at each end, i.e. ¾ in. for the twist over head-ring, and ¾ in. for the twist over brim-outline wire; e.g. if brim is 3 in. in width all round, crown is 3 in. in height, and the top of crown is 9 in. from front to back, and 7 in. from side to side, measure 3 in. + 1½ in. for front brim and bend at A; measure 3 in. for crown height and bend at B; measure 9 in. for top of crown and bend at C; measure again 3 in. for crown height, and bend at D, and 3 in. + 1½ in. for the back brim; cut the wire sharply through.

(*3*) Fix this support wire into place on the head-ring by placing the ring over the support wire (*Fig. 3*), and at the exact centre front twist the support *once* over the ring, letting it wrap the ring quite closely, and press it flat with the nose of pliers. Use gentle yet firm treatment or the filament on the wire will soon resent the hard metal of the tool and become ruffled.

Twist and nip the back support round the head-ring at the centre back in just the same way as the front one. Many workers prefer the joins in rings to be placed alternately, just to right or to left of the centre back, so that the twist of the support wire just avoids them, and so can be made flatter.

(*4*) Measure and bend the side to the side-support, e.g. 3 in. + 1½ in. for left side, bend at A, 3 in. for crown height, bend at B, 7 in. across crown, bend at C, 3 in. again for height, and bend at D 3 in. + 1½ in. for right side. Fix this support on to the head-ring

from side to side (*Fig. 4*). Two cross supports are required, from side-front and side-back at exactly half the distance between the two already placed. The brim measurement for these is the same as for the first and second support, the brim being of equal width at all points.

The crown height is also the same, but to obtain the measurement across the top of the crown, add together the back-to-front and side-to-side measurements, i.e. 9 in. + 7 in. = 16 in., and divide the result by 2, which gives 8 in. ; the crown is, of course, oval in shape. After fixing these wires tie the four supports where they cross, exactly in the centre of the crown (*Fig. 4*). Take great care to wrap the cotton tightly round each way of the cross before knotting to prevent the wires from slipping out of place.

A crown-outline ring should be joined to the exact size, round the top of the crown and carefully marked into eight parts, just as the head-ring was in *Fig. 3*. This ring must be tied firmly to each support wire, the joining of the ring being at the back (*Fig. 5*). Extra rings are placed at equal distances apart between the head-ring and crown-outline wire (*Fig. 6*). Sometimes one extra ring is sufficient, but two, or even three, may be required according to size of shape and weight of outer covering material. If several rings are needed, the wire used should be finer and lighter to avoid weighting the shape. These rings are tied on the outside of the shape.

Each brim support wire must be carefully measured, and turned up to the measurement of brim-width, which in this case is 3 in. (*Fig. 7*). The brim-outline wire is then cut and joined to the size required, marked into eight equal parts, and fixed to the shape by wrapping the eight support-wires once round (*Fig. 7*).

The joining of the ring of wire is put at the back and it will be found an easier method to attach the wires (*a*) centre front, (*b*) centre back, (*c*) side, (*d*) remaining side, (*e*), (*f*), (*g*), (*h*) cross-wires, than it would be to work them consecutively, commencing

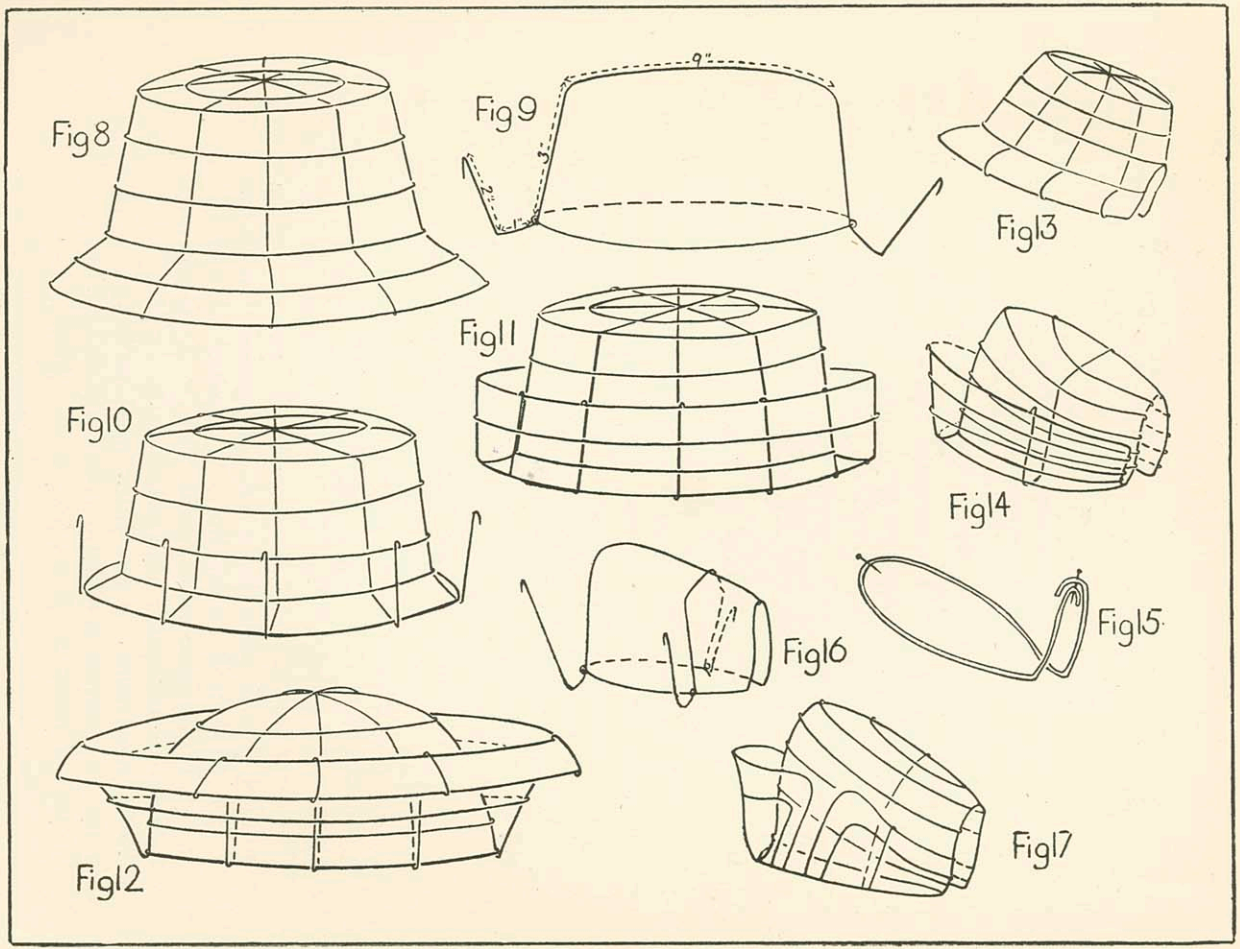
Fig8
Fig9
9"
3"
2"
1"
Fig13
Fig11
Fig10
Fig14
Fig16
Fig15
Fig12
Fig17

at the back. After hooking the wires once round the ring, press each one flat with the nose of the pliers, and cut off the projecting end quite closely, to prevent damage to outer covering. Tie on extra rings between head and brim outline, according to size of shape and likely weight of outer covering.

Other Types of Shapes

OVER A BLOCK.—If made over a block, a wire shape has a tendency to increase considerably in size. This can be avoided by fixing the outline-ring for the crown *inside* the support-wires, and taking very accurate measurement of the brim-outline of the block before joining that wire, for the copied shape.

When a brim is much wider at one point, e.g. at (*1*) left side, (*2*) back, (*3*) front; or higher at (*1*) back, (*2*) side of the crown, the correct length of the support is gauged by adding the length of the wires on the right and left of the cross-wire together and dividing this measurement by 2, e.g. front wire 3 in., left side wire 5 in.; 5 in. + 3 in. = 8 in., 8 in. ÷ 2 in. = 4 in. It is not necessary to carry the extra rings of wire completely round a shape, when one side of it is much wider than the other; they should be continued just as far as the outline of shape requires defining, and then fastened either to the head-ring or to a support-wire. Great care must be taken never to spoil or lose the outline, or form of any shape by omitting necessary wires, or by adding wires at the wrong point or angle.

A mushroom-shaped brim is made similarly to the flat-brimmed hat, so far as the fixing of support and cross wires is concerned; but the brim-outline wire is decreased in size according to the amount of droop desired at the brim-edge. The brim-outline (*Fig. 8*) is 44 in.; if a ½ in. droop is required for the mushroom-brim, the outline-wire should be 42 in.; a 40-in. outline will produce a 1-in. droop all round the edge of the shape.

The support-wires of the brim must be carefully curved to meet the reduced outline-wire (*Fig. 8*). Brims that require a double turn on the support-wires, as for instance a turban or a

" directoire " shape are rather more complicated and a little difficult to calculate. The crown of either shape may be made (*Fig. 9*), or the sides and top be curved as a dome-shape, as fashion dictates.

Fig. 10 illustrates a simple turban with a flat-topped crown, the inner brim being 1 in. in width and the " rim " or turned-up brim 2 in. in depth. The back-to-front support is totalled as follows: Rim 2 in. + 1½ in. (for turning over head- and brim-outlines) = 3½ in. Add 1 in. (for inner brim) = 4½ in. Add 3 in. (for crown height) = 7½ in. Add 9 in. (across crown) = 16½ in. Add 3 in. (crown height) = 19½ in. Add 1 in. (inner brim) = 20½ in. Add 3½ in. = 24 in. Fasten this support on to the head-wire as in *Fig. 3*, and then bend into shape as shown in *Fig. 9*. Fasten all the four support-wires in the same way and tie on the necessary rings for outlining the crown.

Before attaching the brim-outline wire, make another ring the exact size of the outline, to keep the shape of the inner 1-in. brim; tie this firmly into place (*Fig. 10*). Complete the shape by fixing the outline to the turned-up brim, and to any necessary intervening rings (*Fig. 11*).

A type of " directoire " shape is illustrated by *Fig. 12*. It has a double turn on the brim-wire, the upturned portion being 3 in. deep, and the downturned part ¾ in. The crown is dome-shaped, and measures 15 in. from back to front and 14 in. from side to side. If the head measurement desired is 24 in., the brim-outline should be 40 in., or 16 in. greater than the head size; if, however, the head measure is 23 in., then the brim-edge should measure 23 in. + 16 in. = 39 in., provided that the same slope is required. The measurements for the back-to-front support-wire are calculated as follows: downturned or bevelled edge = ¾ in. + 1½ in. (for turnings) = 2¼ in. Add 3 in. (upturned portion of brim) = 5¼ in. Add 15 in. (over crown) = 20¼ in. Add 3 in., ¾ in., and 1½ in. = 25½ in. The back-to-front and side-to-side support-wires differ only in the crown measurement.

These principles are applicable to other types of shapes and

should enable the student both to copy and to design according to fashion and the desire of the wearer.

Bonnet Shapes

These are decidedly more simple in structure and easier to manipulate than hat shapes, but, being closely fitted round the face, they require greater care. A good grip of the head, as well as a perfectly true and carefully-chosen outline, are absolutely essential if the shape is to prove at all satisfactory. Bonnet shapes have no brim at the back and the head wire is usually arched to fit round the hair instead of keeping the oval head shape as a hat does. The first measurement is taken from ear to ear, round the forehead, and is about 15 in.; the second measurement is the back arch of the bonnet, which varies very much both in size and shape, being usually arranged according to the fashion of the hairdressing; an average measurement is 8 in. to 9 in. The back-to-front and side-to-side measurements are taken more closely than for a hat, but they vary a little with the dictates of fashion.

An average back-to-front measurement is 8 in. to 9 in. and the measure from side to side is 11 in. to 12 in., when the crown is the shape of a horseshoe. A small brim or coronet is usually added round the front of a bonnet and it may either turn downwards as in a mushroom shape (*Fig. 13*), or upwards (*Fig. 14*). In the little bonnet shape sketched (*Fig. 14*), the coronet is 3 in. deep at the front and 2 in. at the sides, the outline-wire being 10 in. longer than the face, or ear-to-ear measure.

To obtain the full head-wire size, add together the first and second measurements taken, i.e. 15 in. + 9 in. = 24 in. Add 1 in. (turnings) = 25 in.; cut this in medium satin-wrapped wire, and join into a ring. Put the joining at centre back (*Fig. 15*) where the pressure is least felt—never at the ear corners or on the face line. Measure half the back arch, i.e. 4½ in., on both sides of the centre join, and bend the wire to the shape of the head (*Fig. 15*), taking particular care to curve the face of the bonnet, so that

it will grip the head at the ear corners. Calculate the back-to-front support-wire by adding together 9 in., 1½ in. (turnings), 3 in. (depth of coronet), 1 in. (turnings) = 14½ in.; fasten this wire over the outline-wire, already joined (*Fig. 16*).

Measure 3 in. to 3½ in. from the ear corners along the face-outline wire, and mark this for position for the side-to-side support-wire. This length is ascertained by adding together 12 in., 1½ in. (turnings), 4 in. (twice the depth of side coronet), 1½ in. (turnings) = 19 in.; fasten this wire into place (*Fig. 16*).

The outline-wires in this style of bonnet shape are all of horse-shoe form, each of the crown wires being clipped over the back arch of bonnet (*Fig. 14*). One wire gives outline to the crown and others are fastened on at regular intervals as the shape requires them, usually one on top of the crown and two dividing the space between crown and face-outline wires. After tying these wires firmly into position, mark the exact centre of the coronet wire, and grip the front support-wire firmly to it at this point.

From *Fig. 14* it will be apparent that the coronet outline continues to the ear corners of the bonnet, and in this particular shape is not hooked on to the back arch but to the face-outline wire. Fix the ends of wire firmly and hook the side supports into place on the outline wire. Add one or two outline wires round the coronet, between the face and outer edge to complete the shape. Another type of coronet is sketched in *Fig.* 17, an opening being made on the left side of the front to be filled in with either feather, osprey, or floral mount.

Fig. 13 is a favourite shape, the crown being built on the same principle as a hat, while the back retains the arch of the bonnet.

Choice of Covering Materials

COVERING AND BINDING WIRE SHAPES.—If the shape is intended for an outer covering of straw plait, it should be covered carefully either with stiff net or leno muslin and all

outer edges neatly bound before the plait is sewn on. Each piece of covering is cut to the exact pattern of the shape, i.e. (*a*) upper-brim piece, (*b*) under-brim piece, (*c*) top of crown, (*d*) side-band ; excepting that the under-brim piece is sometimes omitted when stiff net is used, on account of weight and bulk. For method of covering refer to Chapters VII and XV and for binding to Chapter IX.

Tulle is used as an undercovering for transparent outer coverings, and sometimes aerophane and georgette, of an inexpensive quality, make the most satisfactory undercovering for a more expensive quality of the same material. A binding of cross-cut velvet is often used round the head-wire of both hats and bonnets to render them more comfortable.