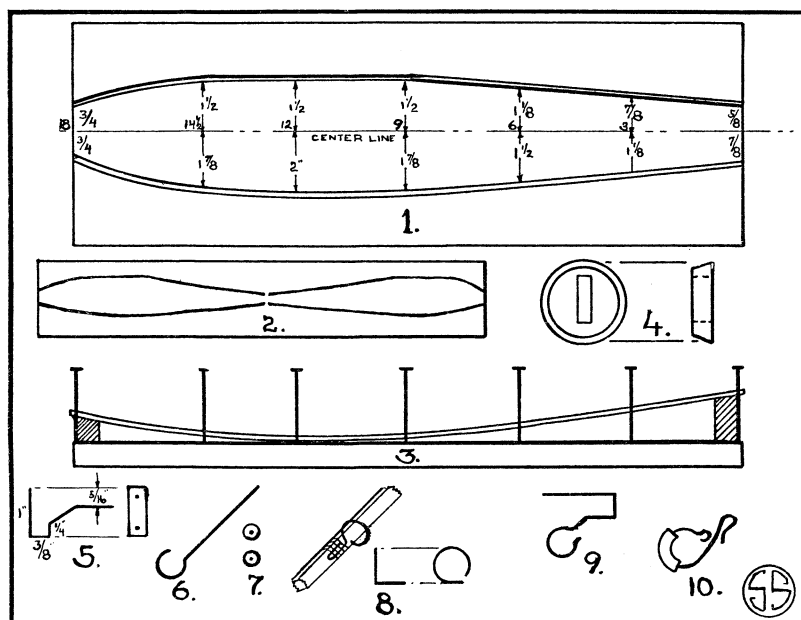


Building and Flying Model Airplanes



Making the Fuselage Frame

This is the thirteenth of a series of articles by Paul Edward Garber, telling how to make model airplanes. Mr. Garber is in charge of aeronautics at the Smithsonian Institution.

Because the wood used for the fuselage requires to be steamed and formed, the construction of this part will be a two-day job, therefore we will describe the fuselage in two installments. The first thing to do is to take four sticks of wood, slightly larger than $\frac{1}{8}$ " square and eighteen inches long, and steam them. The steaming may be done by laying them in a pan of boiling water for $\frac{1}{2}$ hour, by laying them in a tube through which hot steam is passed, or by wrapping them in hot wet cloths which shall be constantly kept hot and wet for at least half an hour. While these sticks are steaming start construction of the forms.

Figure 1 in the drawing shows how the forms are laid out. On the 36" board draw a full size replica of the above Figure 1 and also an opposite of it. In other words for the opposite drawing have the tail end of the drawing at the left and the nose at the right with dimensions reversed as shown in Figure 2. At the points marked with the arrow points drive in ten penny nails. This completes the preliminary laying out of the form. When the wood has sufficiently steamed lay one piece against each row of nails and retain them there with other nails placed outside of the sticks. It will be necessary to bend the wood in a double curve. To do this place blocks of wood under the ends of the sticks, and hold down

the center with small staples, lightly driven in, so as to not bruise the sticks. Figure 3 shows how this is done, using $\frac{3}{4}$ " blocks at the nose ends and $1\frac{1}{2}$ " blocks at the tail ends. Other blocks may be used to preserve the shape between. It will be necessary to let the wood stay in these frames over night—24 hours would be better, in order that the wood can thoroughly dry and become set in its shape.

In preparation for future work you can make a few fittings. Figure 4 shows two views of the nose piece. It is to be made out of a small piece of wood, such as pine or spruce. The ideal way to make it would be on a lathe, but it can be easily cut out with a saw and penknife and sandpapered or filed true. Lay out the circle on a $\frac{1}{2}$ " piece of wood and after it is cut out and beveled, make the hole. This may be carved out with a knife, or two $\frac{5}{16}$ " holes may be bored with their opposite edges 1" apart, and the intervening wood and corners cut out. Be careful not to split the wood in this process.

Figure 5 shows two views of the propeller bearing. It is to be made of a strip of flat metal $\frac{7}{8}$ " long. No. 16 gauge aluminum is preferred, but if unobtainable a piece of one of the beaters taken off the egg-beater described previously may be used. The metal is bent as shown and a No. 52 hole bored through the lower portion, and through the upright.

Figure 6 shows the propeller shaft which is to be bent from a 3" piece of hatpin wire or 15 piano wire. Figure 7 shows the type of washers

which are to be used to reduce friction between the propeller and bearing. They are $\frac{1}{4}$ " in diameter with a $\frac{1}{16}$ " hole. Dress spangles may be substituted. Figure 8 shows three views of a can or rubber guide, similar to those used on the previous models. Two are required and are formed from $2\frac{1}{2}$ " lengths of small wire, such as No. 10 piano wire. Figure 9 shows the type of hook which we will use on the tail of this model. It is made from a $2\frac{3}{4}$ " length of hatpin wire. Figure 10 shows an "S" hook used to hook the rubbers onto the tail hook. It is made similarly to that described in Article 10, from No. 10 piano wire or equivalent. It will be noticed that it has the safety feature, and that on its loop is strung a piece of rubber insulation or other tubing to protect the rubber strands from cutting.

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ETHNOLOGY

Why Indian "Queens" Worked

Quotation from THE AMERICAN INDIANS AND THEIR MUSIC—Frances Densmore—Woman's Press.

The position of women among the Indians has been greatly misunderstood. This is natural, as the early observers of Indian customs came from Europe in the age of chivalry. At that time the feudal system had provided servants for people of wealth, and the frequent wars had placed around women an atmosphere of romance. Nothing could be more widely different than the social conditions in Europe and among both colonists and Indians in America. The wives of the colonists were hard-working women and expected to share with men the hardships of their new mode of life, but the terms "kings, queens, and princesses" had been applied to Indians and could not easily be freed from their accustomed meaning. A queen in Europe did not work, but the wife of an Indian "king" frequently carried on her back the material for an entire dwelling; it appeared, therefore, that she was no better than a slave.

In the old days an Indian woman might be seen toiling along with a heavy load of camp equipment and, perhaps, with a baby on her back, while her husband, tall and vigorous, walked in front of her. He did not do this because of any lack of respect or affection, but in order to "make the way safe" for her. How could a man defend his wife and himself against an ambushed enemy if he carried a kettle in each hand and a pack on his back?

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