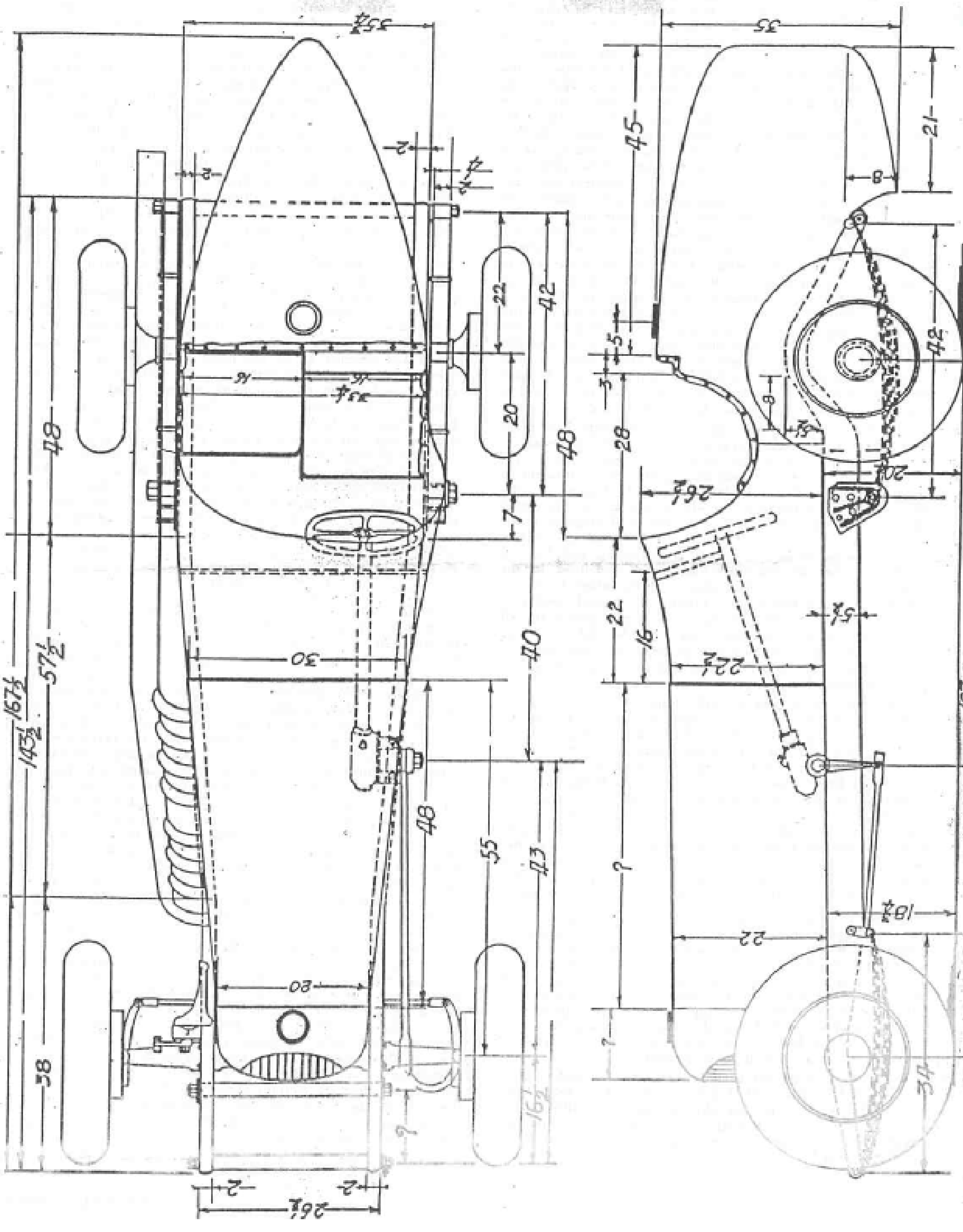
Building the K-8 Special Dirt Track Car Body and Frame

As Reported by W. Klausler of the Minnesota Dirt Track Association, Inc.

The K-8 Special is presented as a credible dirt track racing car, frame and body which may be within the limits of skill of the average body builder and racing mechanic. If the builder will stop for a moment to consider the price which is asked for complete bodies and frames for dirt track racing, he will realize immediately that there is a reason for the price. Once he is engaged in the building of a frame and body for his own racer, he will be more certain than ever that the prices asked are fair. For those beginners who are desirous of going ahead with their own cars from the ground up, the Plates 1 and 2, Figures I and 2, of the K-8 Special will be found to be quite valuable able. It will be noted that the body has excellent lines, and it might be mentioned in passing that approximately two score automobiles have been built from these plans. Figure 3 illustrates some of these race cars in finished condition, ready for the track. It will be noted that the wheelbase of the racer is 92 inches, which is within the limits of the popular dirt track class. This chassis will take the popular B Ford racing motors, such as are described in Chapter 7, covering the Riley motor. Some of these cars are running with flat tops and others are also running with the Riley equipment. The K-8 body and frame, used in conjunction with the Riley motor, will give a very close approach to what might be termed a standard outfit for dirt track racing. Some very fast time has been made with this type racer, and, in fact, many worth while purses have been earned.

Unless the builder is accustomed to working sheet metal and knows some of the tricks of that trade, he is certain to find the fabrication of the frame and body to be a very tedious job. If he does not learn these tricks, it might as well be stated at the beginning that he is not going to complete a body and frame which will be a credit to the racing game. Needless to state, only the barest of essential information can be given herein. Such fundamental information as heat-treating of metals, stretching, shrinking, and forming of metals must be mastered, understood, and used in the fabrication of a job of this kind. On the other hand, the satisfaction which comes from turning out a sleek, well-proportioned, neatly finished racing car is ample reward for all the trials and tribulations which must be endured. The builder who undertakes one of these jobs can have the satisfaction of knowing that he is not undertaking in untried or unproven piece of equipment.

The first step for the would-be builder is to go over the plans very carefully, making a study of them to see how the different parts are inter-related. The frame is illustrated in Plate 2, Figure 2, and the finished body is shown in three views, Plate 1. It will be noted that all of the parts have been given key numbers, which are carried throughout the illustration in order to enable the builder to recognize the interrelation of the parts. The main parts of the body are -- the radiator shell, which must be evolved first in the design of any automobile body; the cowl, which is second; and the tail section and seat, which make up the third units. The hood merely serves to couple up the radiator shell and the cowl section, resting thereon. It is relatively easy to form.



35
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167½
143½
57½

FRAME. Practically all modern dirt track racing cars are constructed with a round front end for the frame, as shown in the plan view X-5, Plate 2. The steel to be used is 10 gauge S.A.E. 1025. The layout shown at X-6, Plate 2, is used if the side members and frame are to be made from flat stock. The dotted lines represent points at which the frame is to be formed by bending. One of the finished side members is shown at X-2, and the sections X-1 and X-3 give the workman an idea of the form into which the laid-out metal, as shown at X-6, is to be formed.

After the channel has been formed up, the bend to give the rounded front is started 15 inches from the front end. The ends of the two sides are brought together and welded. This X-9 is worked out from the 10 gauge metal and is laid onto the top of the two side members after they have been formed and welded in place. An additional reinforcement for the spring mounting is shown at X-8. This is made up and welded in place under the 5 inch projection which is used for the spring mount. The rear horns of the side frame are provided with a hap-over for the axle and are turned inward in order to conform to the general shape of the body. To bend the hop-up, a cast iron form is used. This is clamped to the metal with many C clamps and worked over with a hammer and heated with a torch. If desired, a form may also be made up for the front end, either from cast iron or from heavy bar stock forged to shape. The weight of the finished frame is approximately 69 pounds.

Cross members must be made up to accommodate the type of springing used. Ordinarily, of course, this is the usual Ford springing, and it is possible to aciapt a cross member from a 1924 Model T or earlier model to the rear cross member use. Other cross members for the frame must be worked out and adapted to the mounting of the engine and the axle and transmission parts.

USING OLD CAR FRAME. It has been discovered by dirt track car builders that the 1926 and 1927 Essex frame members make a desirable type of frame. Some of the builders use these by stripping them down completely from the original frame and welding all of the holes shut. The rear of the frame is longer than needed and it is necessary to rework this to conform to the general characteristics of the frame shown. This is shown at X-7, Plate 2. In bending the Essex frame on the front, it is not necessary to vee cut the channel legs, but it can be formed an the anvil and worked with the hammer, upsetting where the ine-al tends to buckle by hammering out these wrinkles while the metal is hot. Do not heat beyond a yellow heat. The bend in this case is started again 15 inches from the front, and the general effect of the plan view X-5 is secured by assembling the plate shown at-X-10 on the front of the Essex members after they have been drawn into form. The weight is approximately 78 pounds.

The Body

BODY METAL. The layouts for the sheet metal parts of the body appear on Plates I and 2. The builder will have to determine whether he is going to make use of aluminum or whether he expects to use automobile body steel for the body. A saving of about 30 pounds ran be obtained by making use of the aluminum. If aluminum is used, it should be 14 gauge, which is about .070 inch thick. If body steel is used, it should be 20 gauge. The steel body is much cheaper and stronger and is an ideal body for barnstorming about the country. The aluminum is easy to form and makes a better looking piece of work, but it is claimed to be not as durable and his more of a tendency to crack under strain. Gray plate aluminum is used and it is annealed by heating with the torch prior to forming. If steel is used, the weight of the parts will be: Tail and seat combination, 31 pounds; cowl section, 22 pounds; radiator shell, 12 pounds; making a total of

65 pounds. If aluminum is used, the tail and seat section will weigh 20 pounds; the cowl section 13 pounds; and the radiator shell 9 pounds; making a total of 42 pounds.

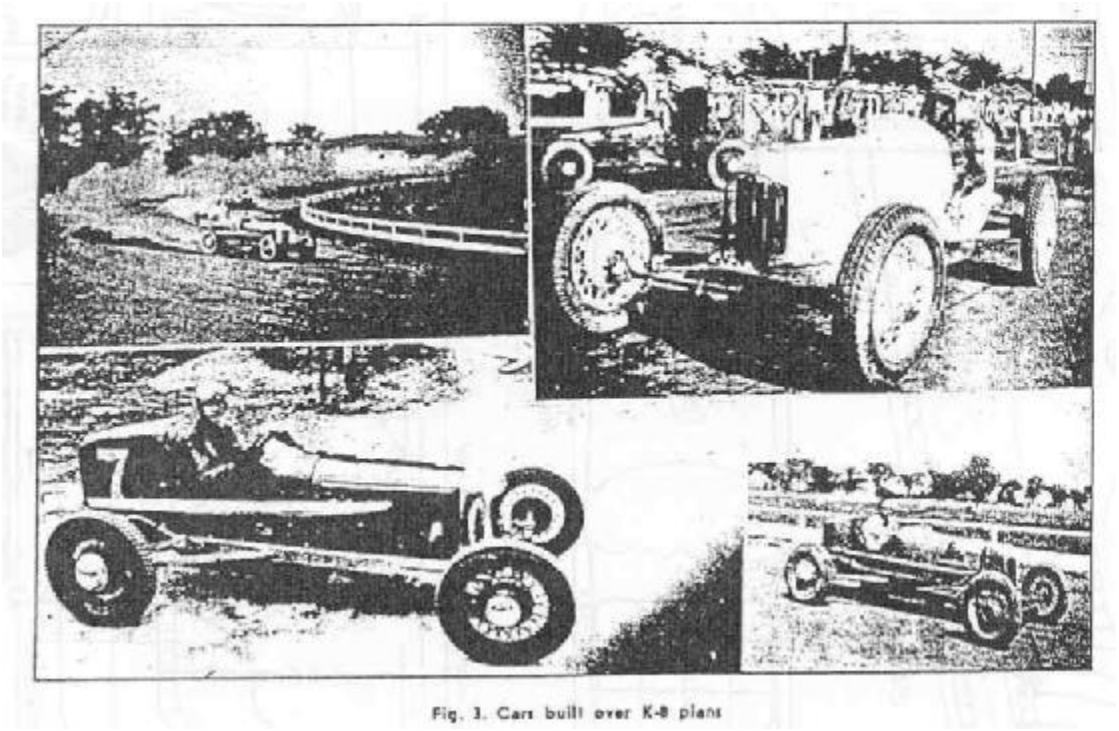


Fig. 1. Cars built over K-8 plans

RADIATOR SHELL. The radiator shell shown by the key letter D in the drawings is best made by shopping at used car graveyard. Find a 1926 or 1927 Buick sedan or a car having a similar body formation.(An early Studebaker gas tank may be used.) The parts desired are the rear top quarters; that is, that section of formed sheet metal which lies to the side of the body, back of the rear-most side window and to the end of the rear sedan window. Proceed to cut out a section which is considerably larger than is needed. Two of these sections then can be taken to the shop and formed up to conform to the general style of the shell shown at D. One of these sections appears at D-1 as viewed from the rear of the Buick car body or from the front of radiator shell, and at D-3 as viewed from the side. When the left and right sections have been brought together, they should be welded. The amount of metal to be cut out to give the heart-shaped center depends upon the design of the radiator grille which is desired. This allows the workman a little freedom in working out a design which suits the material at hand the which pleases his eye. A suitable radiator ornament can ofttimes be picked up for the top of the shell. Best practice indicates an ornament which is relatively smooth and free from projections. The small piece of mold which is shown to the upper left of the radiator shell at D-3, Plate 1, may be sweated onto the shell, or if it is desired to have a center to the grille, it may be run all the way down, as indicated at D-4. The grille itself may be worked out by utilizing bars running vertically or crosswise. In some cases the workman may be able to pick up a perforated or cast radiator grille which would suit his own particular job.

In order to protect the raw edges which are secured when the section for the heart-shaped center is cut out, it is a good plan to make use of a piece of mold as shown at D-2, Plate 1. Rivet or bolt this to the raw edge, forming the metal as you go. A blow torch or welding torch will facilitate this work. Have the

mold a bit longer than needed as the work is started so that enough will be available for a complete half without splicing. The mounting for the radiator shell is made from a strip of flat stock 1/8" inch thick and 2-1/4 inches wide by 26 inches long. This is bent as shown, on the dotted lines at E and D-4, Plate 1. When the ends are finally formed up as shown, the mounting should fit over the radiator shell and may be attached thereto by riveting or welding, or a combination of both. The projecting ends on this will mount on the car frame to support the radiator. When the shell is completed send to the plating works to be plated with nickel or chromium.

THE COWL SECTION. The cowl section is shown by the key letter B. This is supported on a frame which should be made up from angle iron or square tubing, or a combination of both. First the workman should get out the cowl frame and the aluminum fire wall as shown at K, J, and I in Plate 1. Two of the frames J are required so that they may be riveted together. The aluminum fire wall K is bolted into the forward frame with 6 bolts. All details of the frame section B-7 should be worked out before forming and covering. The dash may be made up assembled and the fire wall may be installed. Do not fasten this in permanently until the engine is finally completed and in Place as the bottom of the fire wall must be cut out to fit the engine housing. It might be bolted in temporarily as the body work goes along.

FORMING UP THE METAL FOR THE COWL SECTION. The patterns for the metal for the cowl section are shown at B-1 to 3 in Plate 2. In laying out this metal, it should be made to conform roughly to a fit over the cowl frame. It is suggested that no great hurry be had in laying out the sections B-2 and B-3. The better plan is to have the side sections laid out and bring them to form over the cowl frame as near as possible, attaching them temporarily with clamps, after which the section B-2 should be laid out to fit. After this section has been fitted in and made to conform in a general way with the sides, it will then be possible to cut out a section familiar in shape to B-3 which will run around the cowl. If these units are all worked out to rough shape and then welded together, using a good flux in making the weld, it will be found that the general shape of the cowl has been secured. After that it will be necessary to make use of the dolly block and planishing hammer, going over the metal, drawing and shrinking, as is indicated in order to secure a smooth, one-piece appearance of a good job of work.

The rear edge of the cowl is stiffened and strengthened by means of a 3/4 inch half-oval aluminum or steel mold laid into the cowl from beneath and attached by means of counter-sunk rivets. This forms a safety protection, as well as adding the necessary strength. In reality, this constitutes a third cowl frame member, joined to the members j and I to give a good, strong job. The members J and I should be covered with hood lacing, over which the cowl will be drawn down and secured. In order to hold the cowl, the cowl side members, made up from angle iron shown at N, Plate 1, are riveted to the bottom edges of the cowl side B-1. When assembling the cowl frame to the car frame, the angle iron feet are attached under the upper legs of the frame side members. This requires 6 special bolts, used as shown at B-8. The center head of the bolt fits into a countersunk hole in the car frame. This construction leaves the top of the car frame free to mount the cowling and trim molds. The upper nuts may be Chevrolet Valve Cover nuts either chrome or nickel plated. This construction allows the removal of the cowl cover to permit access to the chassis for work thereon without removing the cowl frame. Naturally, the dash and the steering gear are attached to the Cowl frame, as well as the tank O which appears at 3-4, Plate 2.

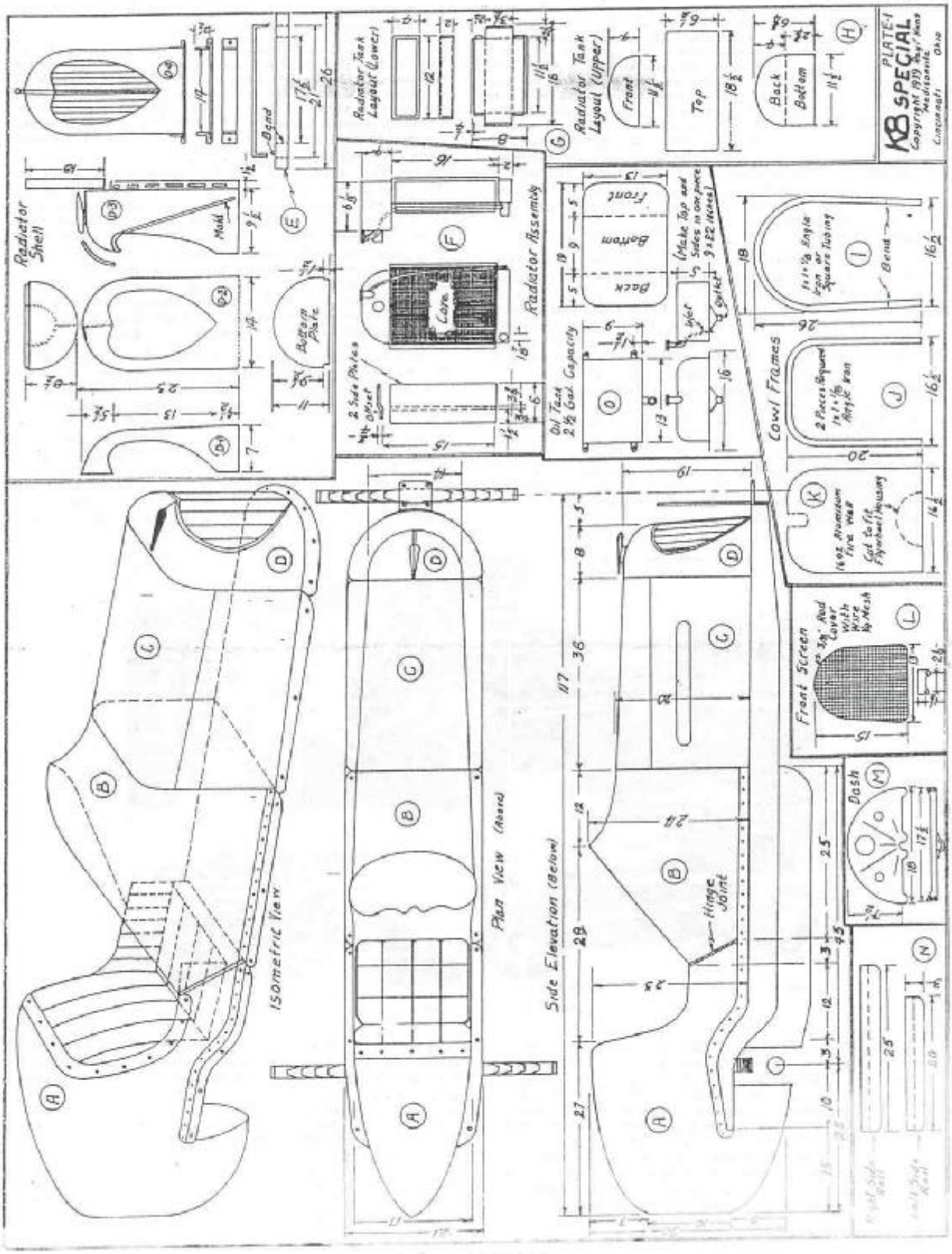
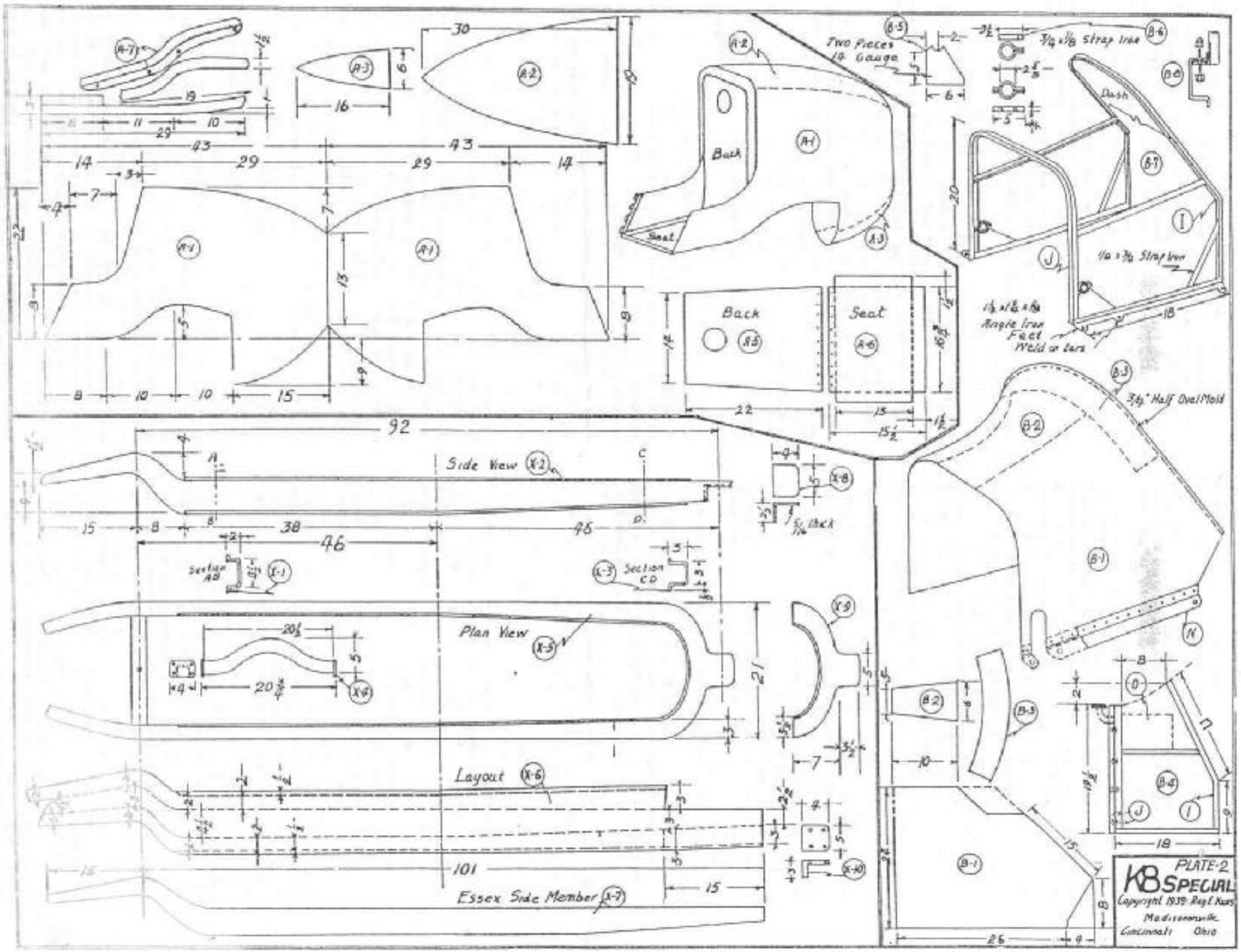


Fig. 1 (Plate 1) K-8 Dirt Track Racer


Two Pieces 18 Gauge
3/4 x 1/8 Strap Iron
Dash
1/8 x 3/8 Strap Iron
1 1/2 x 1 1/2 x 1/8 Angle Iron Feet Weld or Bolt
3/4" Half Oval Mold
Back
Seat
Side View
Plan View
Layout
Essex Side Member
Section AB
Section CD
PLATE-2
KB SPECIAL
Copyright 1939 Reg'd U.S.
Madisonville
Cincinnati Ohio

TAIL OR DECK SECTION. After the main- part of the tail section A-1, Plate 2, has been laid out, it should be carefully trimmed to line. The upper edges of the parts A-1 should be turned inward to give the characteristic rounded effect, and the 13 inch straight dimension at the rear should be formed over a rounded metal dolly to give some width to the tail at that point.

The section A-2, which constitutes the top deck, should be laid out and formed up bring it to the approximate lines of the sides A-1, A-1 after that section has been formed. Make this section larger than would--appear to be needed, .so that when it comes down onto the sides, some metal has been allowed for trimming off and for welding. The bottom section A-3 is formed up in a manner similar to the section A-2. It will likely be necessary for the builder to work out these three parts more or less in conjunction one with the other so as to have them conform to the desired shape.

There are several methods which may be used in bringing these parts A-2 and A-3 to the approximate shape desired. One of these is to build up a rough mold out of wood, into which the metal may be forced, stretching it as it is forced in. If a considerable width is left to the edges of the metal, this will serve to hold the metal from buckling on the edges while the center is being stretched out to conform to the desired shape. Of course, if a power hammer is available it is possible to take these sheets of metal under the hammer and form them up by working them in the usual fashion when hand forming body panels in a commercial shop.

The least expensive method is to use a heavy tinner's forming hammer and work the metal by laying it on the bench top and holding up the different sides while hammering and drawing to get the desired shape. If the parts are steel, they must be the desired shape before welding on the top, but if aluminum is used much of the forming can be done after attaching.

While the aluminum can be formed to perfect shapes and filed to a smooth finish, it is almost impossible to make a perfectly smooth job with steel, but this metal can be filled with body solder, or glazing putty is quite satisfactory. Never use gas sand glazing putty when putting on a very heavy coat, as this will cause it to crack.

If the job is being hand formed, it will be necessary to have dolly blocks and planishing hammers to go over the work so as to smooth out any irregularities and make the edges come to shape, conforming one with the other. After the three parts are approximately in the form desired, it is then a good plan to trim them to approximate size and turn the edges inward about 5 of an inch " the way round where the welding is to be done- This will then form a slight vee into which the welding metal may be worked as the welding proceeds. In case the metal is fractured or ruptured where the work of forming it proceeds, this should not occasion undue worry, as the torch should be resorted to immediately and the break welded up. Then the stretching or forming of the metal may continue. As the hammering on the metal proceeds, it will be found that the metal takes on temper or hardens, with the result that it is springy and difficult to work. When this has occurred, it is necessary to use the torch to heat the metal, in the case of the steel, to a dull red, and then allow it to coal, which will anneal it. The same practice holds with reference to the aluminum except that the degree of heat is less.

SEATS AND BACK. The layout for these two units is shown at A-5 and A-6 in Plate 2. Lay out the seat section to the sizes shown and told on the dotted line. The back section is laid out as shown, and, after being formed up to fit into the deck section, it is riveted to the seat section to meet up with the edges where they have been turned in. The side rails shown at A-2, Plate 1, should be assembled to the side A-1 when the seat section A-6 is riveted to them; that is, rivet the metal A-1 between the other two, using the rivets to hold these three units together.

The cushion is made up to lay in the seat section, and -the back is upholstered with imitation leather made to come out and button around the tail section shell. Very often it is a good plan to have the seat cushion and the back upholstering sewed together to that they are removed or installed as one unit. The gasoline tank, of course, is housed within the rear or deck section ; however, it is not anchored to that section in any way, but is anchored directly to the frame by mean of three-point suspension. The method of forming up the gasoline tank is described in Chapter 7, dealing with the Model B Riley motor.

HOOD. The hood for the racer is made in one piece, or, if it is to be equipped with hinged sections or removable side plates, it may be made in three sections. Little difficulty need be experienced in forming the hinges if a hinged section is desired. Look over an old hood for the details, or form up an experimental section. Making the hood conform to the cowl and radiator shell is a relatively simple process inasmuch as both of these are fixed and but one type of bend is required. Naturally, the exhaust manifolding and tail pipe must be taken into consideration when making up the hood section.

OIL TANK. The details of the oil tank appear at 0, Plate 1. After the parts of the tank have been gotten out and formed, they should be assembled by means of welding. It is suggested that 18 gauge steel be used for the tank. The interior of the tank should be cleaned thoroughly. Have a good filler tube and cap provided. The oil tank is used to operate the engine by the dry sump method. The one opening in the bottom of the tank is to take the oil off and the other is to pump it back. If the return line is brought up to the filler neck, the driver can take off the filler cap and see if the oil is being pumped back Many drivers run into difficulty when the scavenger pump is not functioning as the one pump will pump the oil into the motor when it is heavy or cold, but if the motor is speeded up, the scavenger pump loses its prime and results in the crankcase filling up. The position of the oil tank in the cowl frame is indicated by 0 in Plate 2. The capacity of the tank is 2-1/2 gallons.

BUILDING THE RADIATOR. The radiator core is 4 inches deep by 12 inches wide and 16 inches high. The details of the assembly are shown at F on Plate 1. It will be necessary to make up the top and bottom tanks for the radiator. These should be made from 20 gauge copper or brass. Copper is less likely to crack under vibration. The form of layout for the upper tank is shown at H, Plate 1, and for the lower tank at G, Plate 1. These tanks may be made up by any sheet metal worker, or, if the builder desires to make them up himself, he should follow the usual sheet metal practice in making up joints which are strong enough to hold under the severe racking the radiator will receive. An examination of the core when it has been secured will show that there is a point of approximately 1/4 inch all around the en<is of the core to which the edges of the tank when laid out are to be sweated or assembled. Make very certain that none of the water passages are cut off when the tanks are sweated to the top and bottom. It will be noted in this design that the upper tank is given considerable overhang and that the filler tube for it is set back so that it will come under the hood, being completely covered thereby. It is just as good design to have the filler

cap on the outside, as it ran be filled in a hurry, or the water level can be inspected without lifting the hood. In this design cut a hole through the top of the radiator shell and bring the neck through to allow the cap to lay close to the shell. When putting in the overflow line, make certain that this is at least 3A inch copper tubing. One-half inch would be preferable. In some cases, it has been found that the extreme speed at which the pump operates causes the water to tend to overflow through this tube. This is because of the fact that water will not run down through the tubes of the radiator core at a speed equal to that at which it is being forced back into the upper tank. Some builders overcome this difficulty by installing some direct tube connections between the upper and lower tanks. These may be ahead of the tanks or to their rear, provided that they do not obstruct the other parts of the assembly at the rear. If installed at the front, they should be back of the radiator grille; otherwise, they are unsightly and subject to injury. The side plates are provided as a means of assembling the radiator care into the shell. They were attached to the radiator core and tanks by means of soldering, and the radiator assembly is then bolted into the radiator shell. The hose outlet attached to

At this point our copy of the article ends.