

OFFICIAL RULES - 1964 SOAP BOX DERBY*

TO ALL CONTESTANTS:

Some Soap Box Derby rules have been changed this year. Study all of them carefully and be sure you understand them before building your racer. All new changes in the rules are printed in red.

If you built a racer that raced in 1963 or earlier, it may or may not qualify under this year's rules. If your car will not qualify under the new rules, you must change it or build a new one.

Be sure to obey the rules. If your car is not built according to the rules, you will not be allowed to race in the 1964 Soap Box Derby. You *must* build your own car. The purpose of the Derby is to match your skill as a builder and driver against the skill of other boys.

The Soap Box Derby is for BOYS. Its aim is to promote craftsmanship and sportsmanship through honest competition. **YOU MUST NOT LET ADULTS OR ADVISORS DO ANY WORK ON YOUR CAR. HOWEVER, YOU MAY ACCEPT ADVICE AND COUNSEL IN THE DESIGN AND BUILDING OF YOUR CAR.**

These rules are designed to give all entrants an equal opportunity. Study the rules and check them often when building your racer. You must follow all of the rules to the letter.

ATTENTION LOCAL DERBY DIRECTORS:

The rules give local Derby Directors and their duly appointed officials complete authority in the conduct and operation of their local races. This imposes a great responsibility on each Derby Director and his officials.

YOUR CITY WINNER WILL BE SENT TO THE ALL-AMERICAN FINALS AT AKRON, OHIO. HIS RACER WILL BE THOROUGHLY RE-INSPECTED THERE BY THE ALL-AMERICAN SOAP BOX DERBY INSPECTION COMMITTEE. If the racer does not conform to the rules in every respect, it will be disqualified. The boy will lose his chance to race, and your city *will not* be represented in the All-American.

It is important that each Derby Director and his officials study and thoroughly learn the rules. You must enforce both the letter and the spirit of the rule. You must see to it that each racer is carefully and honestly inspected. **IT IS YOUR RESPONSIBILITY TO BE SURE EVERY CAR IN YOUR RACE IS 100% BOY-BUILT, AND THAT BOTH CAR AND ENTRANT CONFORM TO ALL OFFICIAL RULES, INCLUDING FILLING OUT, SIGNING AND FILING THE DERBY CERTIFICATE ON PAGE 27 OF THIS BOOKLET.**

REMEMBER—THE RULES APPLY TO LOCAL SOAP BOX DERBY RACES AND TO THE ALL-AMERICAN SOAP BOX DERBY AT AKRON, OHIO.

PART I—CONTESTANTS

A. AGE LIMITS AND CLASSES

(1) The Soap Box Derby is open only to boys who will be 11 through 15 (inclusive) years of age on August 1, 1964. (If you will not be 11 on August 1, 1964, you cannot enter. If you will be 16 or over on that date, you cannot enter.) Proof of age may be required.

(2) Entrants will race in two classes:
Class A—Age 13-15, inclusive.
Class B—Age 11-12, inclusive.

Entrants who will be 13 years old or over on August 1, 1964, will race in Class A. All other entrants will race in Class B.

(3) Class A and Class B final winners will race for the city championship.

(4) There are no age divisions at Akron. All city winners compete together at the All-American finals.

B. ELIGIBILITY

(1) No boy who has ever won an officially sponsored Soap Box Derby race, nor his car, nor his wheels, nor any part of his car, will be allowed in the Soap Box Derby.

(2) No boy or car that has entered and competed in one authorized local Soap Box Derby can enter any other authorized Soap Box Derby in the same year.

(3) No car or boy that has won any race in 1964 not authorized by the All-American Soap Box Derby, Inc., National Headquarters, by written franchise, can enter an authorized Soap Box Derby.

*Compiled and issued by the All-American Soap Box Derby, Inc.

*Registered U.S. Patent Office.

(4) To compete, a boy must enter an authorized Soap Box Derby near his home and must register with a sponsoring Chevrolet dealer in the area where the race is to be run. Boys living in remote areas must have the written permission of the race sponsor before they can compete in that race. This decision remains in the hands of the race sponsor.

(5) A boy may enter only one car in an official Soap Box Derby.

(6) To enter, a boy must be a school student.

(7) Any car disqualified from an authorized Soap Box Derby may not be entered in another authorized Soap Box Derby.

C. ENTRANT MUST BUILD CAR

(1) All work required in building a Soap Box Derby car (making and shaping the separate parts of the chassis and body, joining the parts to form the completed car, and painting, finishing or surfacing the car, if desired) must be performed by the entrant. Lettering of sponsor name may be done professionally. However, after a car has won a local race, the sponsor may then have the winning car professionally painted and lettered. (See Part II, Rule E5 and Rule G6 (a).)

(2) Advice and counsel may be given to the boy in the design and building of his car. However, advisors are not permitted to build an entrant's car, or parts of the car. The car must be built by the boy who will drive it in the race. Exception noted in (Part I, Rule D (1).)

(3) Cars will be closely inspected by the Inspection Committee and every boy must be able to prove that he built the car himself.

(4) The boy and his parent or guardian must completely fill out and sign the certificate contained on page 27 and present this certificate to the local Derby Director prior to final inspection.

D. DRIVER

(1) The entrant must drive his own car in an authorized race. In the event of the entrant's illness or other emergency recognized by the local Derby Committee, preventing him from competing, the entrant may name a substitute driver for his car. The substitute driver must meet all the requirements for competition with the exception of building his car.

(2) **CLOTHING**—Every driver must race in his shirt or sweater, trousers, unaltered shoes (bedroom or ballet slippers are not shoes), and **UNALTERED** official racing helmet.

(3) Only unbreakable goggles or safety visors may be worn.

E. DISQUALIFICATION

(1) Officials will disqualify any car which, in their opinion, may endanger the driver, other drivers, or spectators.

(2) Officials will disqualify any car which, in their opinion, was not built in accordance with the rules.

(3) **THE USE OF GRAPHITE, PUMICE, OR POWDER, IN ANY FORM, ON CAR, WHEELS, OR ANY PART OF THE DRIVER'S BODY OR CLOTHING, WILL AUTOMATICALLY DISQUALIFY THE BOY AND CAR FROM COMPETITION.**

(4) Officials will disqualify any driver who, in their opinion, shows poor sportsmanship, or whose driving is such as to interfere with other drivers. **NOTE: POOR SPORTSMANSHIP IS MEANT TO INCLUDE, BUT NOT LIMITED TO, ANY ATTEMPT TO GAIN UNFAIR ADVANTAGE UNDER THESE RULES (SUCH AS RECEIVING HELP IN CONSTRUCTION, OR USING MATERIAL SUCH AS REBUILT WHEELS OR SPECIAL BEARINGS NOT PERMITTED BY THESE RULES), OR IMPROPER RACE CONDUCT (SUCH AS INTENTIONAL INTERFERENCE WITH ANOTHER CAR OR DRIVER).**

PART II—CARS

A. COST LIMIT

(1) **COST LIMITED**—The total cost of the car shall not exceed \$20.00, exclusive of the wheels, axles, steering assembly and paint.

(2) **ITEMIZED LIST**—Each entrant will submit an itemized list of all materials and parts used in his car,

showing the purchase price of each item. Every item used in the car will have a price value, even though it is bought secondhand, found, loaned or given to the contestant . . . and each must have its value listed—honestly appraised according to its condition.

B. READY-MADE PARTS



Figure 1

(1) **RUNNING GEAR**—Unaltered official Soap Box Derby wheels, tires, bearings, and axle rods must be used.

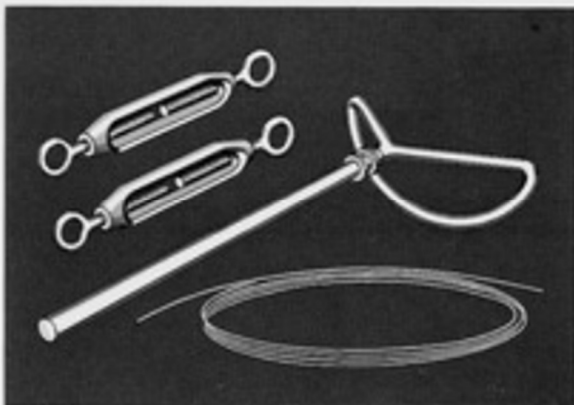


Figure 2

(2) **STEERING SYSTEM**—Ready-made steering wheels and steering shafts may be used. No automobile parts are permitted in the steering system.

Commercially made steering assemblies, consisting of steering wheel, steering shaft, and cable drum, may be used.

C. WEIGHT

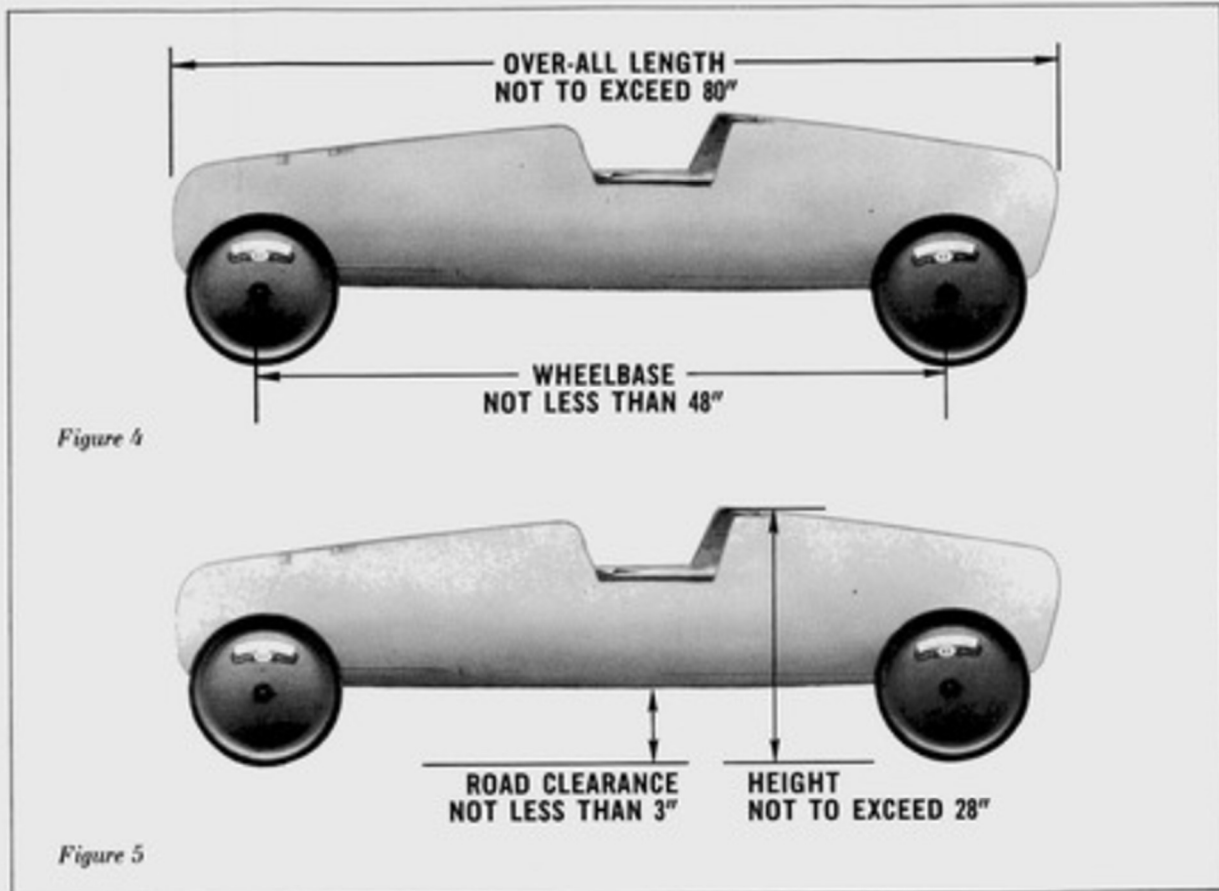
- (1) The total weight of the car and the driver in either class (A or B) must not be more than 250 pounds.
- (2) The car may be built up to maximum weight of boy and car (250 lbs.) by the use of WOOD ONLY, which must be built INTO the body or chassis of the car.
- (3) No LOOSE material or unsafe construction is permitted anywhere in or on the car. The seat back may not weigh more than four pounds.



Figure 3

D. CAR DIMENSIONS

- (1) WIDTH—Over-all width of the car cannot exceed $34\frac{3}{4}$ inches, the length of the unaltered official Soap Box Derby axle.
- (2) LENGTH—Over-all length cannot exceed 80 inches.
- (3) HEIGHT—Over-all height cannot exceed 28 inches excluding the steering wheel, which may extend higher.



(4) ROAD CLEARANCE—Each car must have a minimum road clearance of 3 inches beneath its lowest point including the brake and brake facing with the driver in the car.

(5) WHEELBASE—Each car must have a wheelbase of not less than 48 inches. NOTE: Wheelbase is the distance from the center of the front wheel hub to the center of the rear hub on the same side of the car.

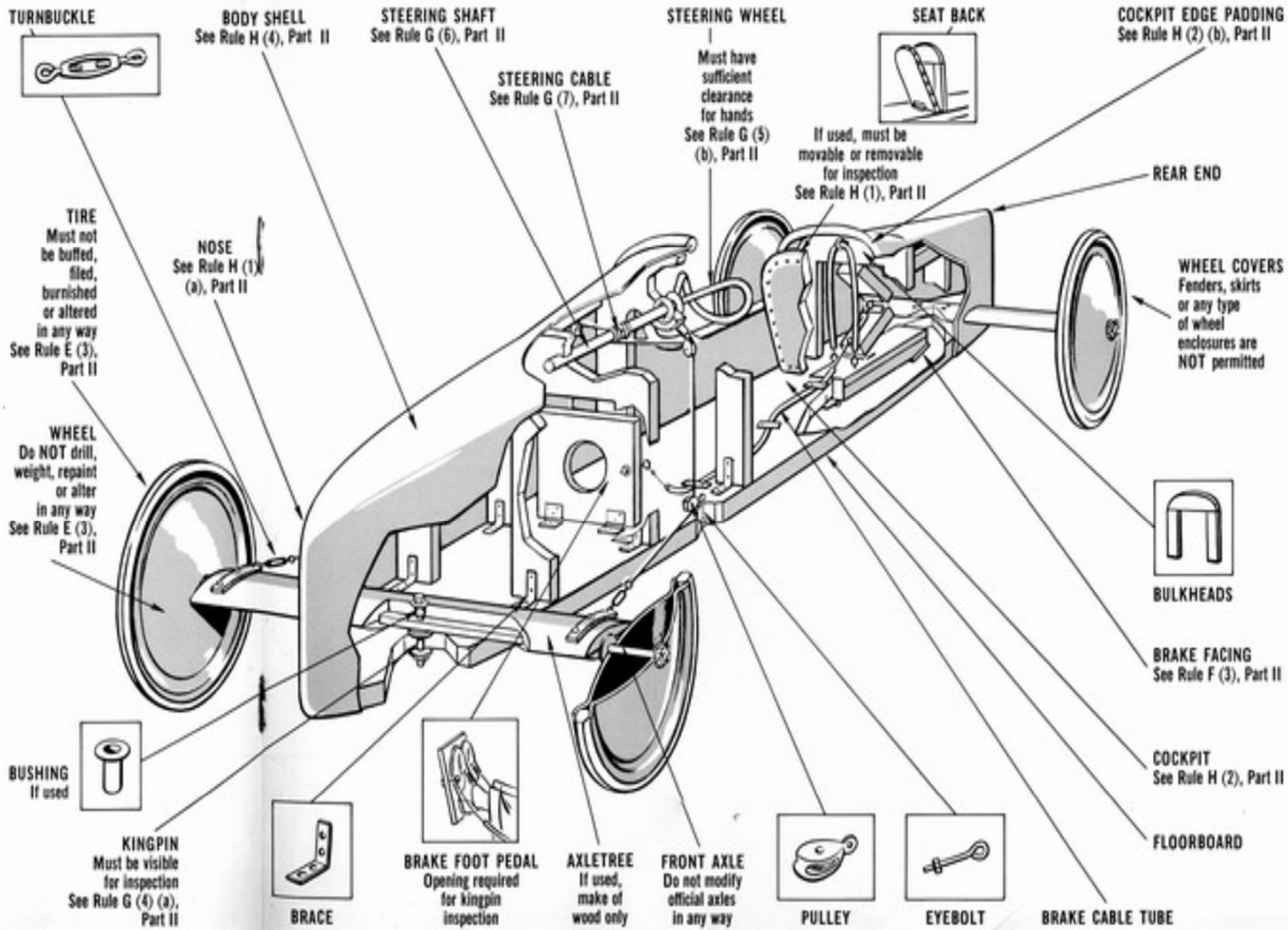
E. WHEELS AND AXLES

(1) PERMITTED WHEELS AND AXLES—Only unaltered official Soap Box Derby wheels, tires and axles, manufactured during or after 1948, may be used.

The car must run on two straight axles—one front, one rear. Axle shafts may be reinforced by wooden axletrees only and may not rotate.

(2) NUMBER—The car must run on four wheels, two front, two rear, as on an automobile.

(3) PROHIBITED WHEELS AND TIRES—Wheels that have been drilled, weighted, or repainted, or that have had the bearings removed, changed or tampered with, or the tires buffed, filed or burnished, or wheels that have had the paint intentionally removed, or that have been changed in any way from the original wheels and tires as manufactured are prohibited. The determination of the officials with respect to this rule shall be final.



(4) **ONLY GENERALLY AVAILABLE LUBRICATING OILS**, with no additives, may be used in the wheel bearings and cannot be applied to the rest of the wheel or tire. Treatment of wheels or any part of them in any other way or with any other material whatsoever is expressly forbidden.

(5) **AXLE RODS**—May be taken to a workshop to be drilled for the kingpin and for axle-attaching bolts.

(6) **AXLE NUTS**—Must be locked with a cotter pin running through both the nut and the axle shaft. All cotter pins must be spread after insertion.



Figure 6

F. BRAKES

(1) **SINGLE DRAG BRAKE REQUIRED**—Every car must be equipped with a single drag brake capable of stopping the car safely in a straight line. No other type of brake is permitted.

(2) **OPERATION**—The brake must be operated by a foot pedal designed with an opening to facilitate inspection of the kingpin. Plywood or hardwood makes good brake pedals. Hand, hydraulic, or other types of mechanical brakes are not permitted. No covering will be permitted over brake facing or brake opening.

(3) **BRAKE FACING**—The brake must be faced with a piece of tire tread, or equally effective material, having a contact area of at least 9 square inches, flat on the ground when brake is applied. (Do not use leather.) Facing must be **BOLTED** to brake shoe and bolts must be countersunk, so that they cannot touch the ground when the brake is applied. Remember, road clearance must be 3 inches under brake facing before brake is applied. (See figures 5, 7 and 10)

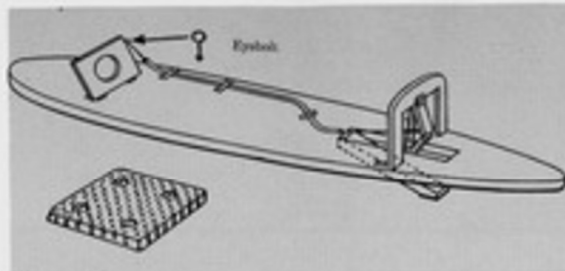


Figure 7



Figure 8



Figure 9



Figure 10

(4) The brake facing shall be not more than 18 inches from the extreme rear of the car, before brake is applied, and must be in the exact center of the width of the car.

(5) Eyebolts of at least $\frac{3}{8}$ -inch-diameter wire, pulleys or metal tubing must be used for guiding brake cable. Eyebolts must be used in attaching brake cable. (Screws, screw eyes, staples and nails must not be used to attach or guide cables.)

(6) **TURNBUCKLES OR OTHER ADJUSTING DEVICES** must be used in brake cable for adjusting purposes. (See fig. 9)

(7) Hinges in the brake mechanism must be attached with bolts and not with screws.

G. STEERING

(1) **SAFETY**—The utmost care must be taken in designing and installing the steering system to insure easy, positive control and safe operation.

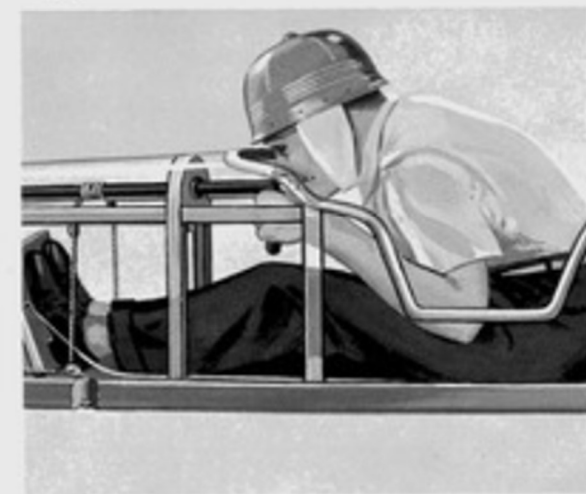


Figure 11

(2) DRIVING POSITION

(a) The body and seat must be so built that the driver sits in a position permitting easy operation of steering and brakes and a clear view to the front and both sides. The driver may lean forward or backward in his seat during the race, but his eyes must be above the cowl at all times. Other driving positions are prohibited. (See fig. 11)

(b) The driver must steer with both hands on the steering wheel. The steering wheel must be above the level of the driver's knees, and the center of the steering wheel must be no farther forward than his knees, when he is in driving position and when he applies his brakes. (See fig. 12)

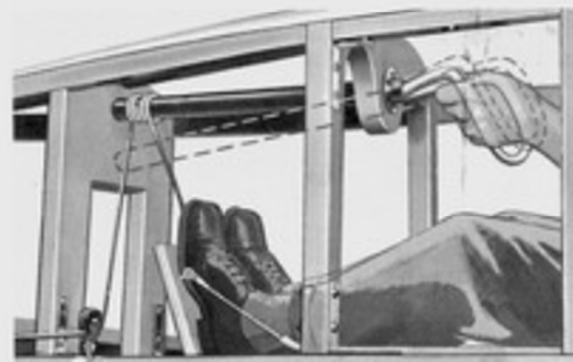


Figure 12

(3) METHODS OF CONTROL—The steering wheel must operate to swing the front axle (on a kingpin through the axle or axletree) only by means of cables attached to the front axle assembly. Any type of tiller-bar steering is prohibited.

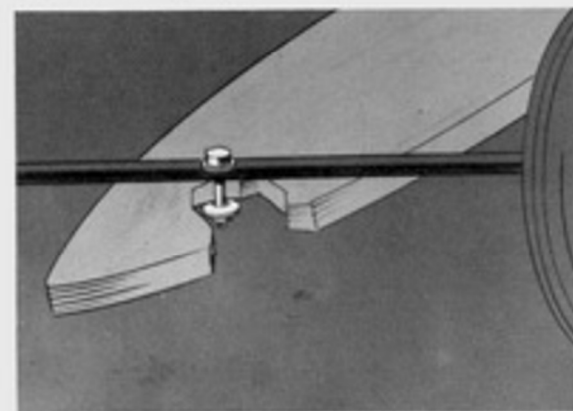


Figure 13

(4) KINGPIN AND FRONT AXLE

(a) KINGPIN—The kingpin shall not be less than $\frac{1}{4}$ inch in diameter. THE CAR MUST BE BUILT SO THAT THE KINGPIN CAN BE READILY INSPECTED.

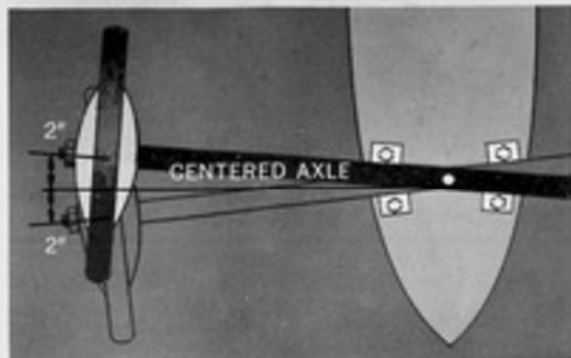


Figure 14

(b) AXLE MOVEMENT—To promote safety and control, axle movement must be limited so that the front wheels cannot be moved more than 2 inches off center (straight ahead position) in either direction—forward or back.



Figure 15

(5) STEERING WHEELS

(a) Every car must be steered with a wheel (or half-wheel) which must be not less than $7\frac{1}{2}$ inches in diameter. The steering wheel must not have open ends. (See fig. 15)

(b) There must be sufficient clearance between the steering wheel and any part of the car or driver's body, regardless of the position of the steering wheel, while he is in driving position and when he applies his brake, to permit free and safe operation of the steering wheel.

(c) The steering wheel must be firmly attached to the steering shaft. Hinged or collapsible steering wheels are prohibited.

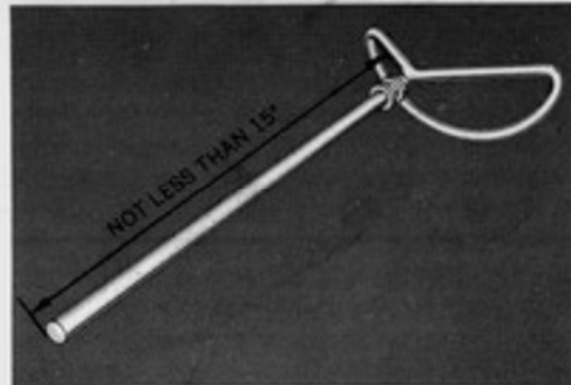


Figure 16

(6) STEERING SHAFT

(a) With any approved type of steering wheel, a metal steering shaft must be used. It may be taken to a workshop to be cut to the proper length and to be threaded or drilled through for bolts or pins to be used in attaching the steering wheel, cable and cable drum, or in locking the shaft in position in the body.

(b) For safety, not less than $\frac{1}{2}$ -inch inside diameter pipe to serve as both shaft and cable drum shall be used. If solid shaft is used, outside diameter must be not less than $\frac{3}{8}$ inch.

(c) The steering shaft must be at least 15 inches long, and must be horizontal or slightly sloping. The lowest point of the steering shaft must be at least 9 inches above the floorboard, and the steering shaft must be at least 12 inches above the floorboard at the point of attachment to the steering wheel. At the above points of measurement, the floorboard must be reasonably level; i.e., no drilling or gouging to meet the required measurements. (See figs. 12 and 16)

(d) The steering shaft shall be attached to the top of the car, and shall have no upright support from the floorboard, between the driver's legs. Telescoping-type steering shafts are prohibited.

(7) STEERING CABLES

(a) Steering cable must be flexible, woven, non-covered wire $\frac{3}{8}$ inch or more in diameter. $\frac{1}{8}$ -inch airplane, covered or uncovered marine cable may be used. The use of rope, chain or clothesline cable is prohibited.

(b) Cables must be firmly attached. Soldered connections are prohibited. Cables must be so wound on the steering post, or drum, that the car will steer in the

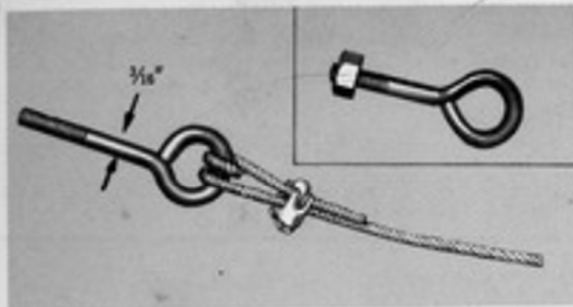


Figure 17

same direction as the steering wheel is turned. Cable must not be positioned between the driver's legs. (See figure 12.)



Figure 18

(c) **TURNBUCKLES**—Cables must be fitted with one or more turnbuckles, or other adjusting devices, to permit easy tightening of slack. For safety, all turnbuckles must be wired or otherwise locked so that they cannot unscrew. (See fig. 18)

(d) Eyebolts of at least $\frac{1}{8}$ -inch diameter wire, pulleys or metal tubing must be used for guiding and attaching steering cable. (Screws, screw eyes, staples and nails must not be used to attach or guide cables. See fig. 17)

H. BODY

(1) CONSTRUCTION

(a) The "nose" must be the foremost part of the car; that means, the nose must extend farther forward than any part of the front wheels. (Wheels may extend ahead of the nose only when the front axle is turned in steering.) (See fig. 19)

(b) Each car must have a body completely enclosing the floorboard with the exception of the cockpit area, and which provides easy inspection of all parts of the car. A SEAT BACK MAY BE USED and, if used, must be hinged or otherwise securely fastened to permit inspection inside the rear of the body. (See Part II, Rule C (3).)

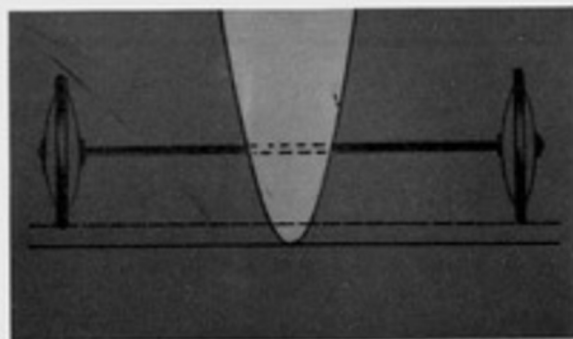


Figure 19

(c) The body must not confine the driver's head, and must be wide enough to permit the driver to have free use of his hands and arms.

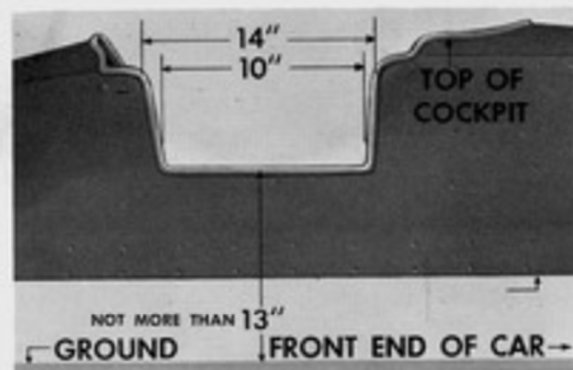


Figure 20

(2) COCKPIT

(a) The cockpit must be large enough to permit the driver to get in or out without removing the steering wheel and without removing or opening a section of the body.

(b) Cockpits must be open at the top; no enclosures or partial enclosures will be permitted. Edge of cockpit must be covered or padded for safety, if needed.

(c) The sides of the cockpit must be open. The bottom of the opening must be not more than 13 inches from the ground (measured when the car is empty). The opening must be at least 10 inches wide at the narrowest part, and must be at least 14 inches wide at the top. Only one cockpit opening on each side will be permitted. The inspectors may order the cockpit changed for maximum safety purposes. (See fig. 20)

(d) The top and sides of the cockpit must be of rigid material.

(3) **FLOORBOARD**—The floorboard must be made of wood only. It must be not less than $\frac{3}{4}$ inch thick, but it may be thicker.

(4) **COVERING**—Metal foils, fabric, wood, leather, paper, fiber and fiber glass, pressed wood, fiberboard, papier-mache, plywood, linoleum, wire or cardboard may be used as body covering. NOTE: Sheet metal and sheet aluminum are now prohibited. For purposes of interpretation of this rule, sheet metal will be defined as any metal in sheet form having a thickness of over .012 inch, or 30 gauge.

(5) **BULKHEADS**—Make bulkheads of wood only.

I. PROHIBITED CONSTRUCTION

(1) **SPRINGING**—The car shall not ride on metal springs or on metal parts that serve as springs.

(2) No welding, brazing or soldering of any type is allowed on any part of the car. The only exception to this rule is the welding or brazing required in the construction of steering wheels, or that done by the manufacturer on official wheels.

(3) Any arrangement by which the wheelbase can be altered while the car is in motion is prohibited.

(4) Gears, sprockets and cut-down automobile assemblies of any and all types are prohibited.

(5) Lead is not permitted anywhere in the car.

(6) No windshield of any kind is permitted.

(7) No transparent material of any kind is permitted anywhere in the car.

(8) No glass, other than fiber glass, is allowed anywhere in the car.

(9) Plaster, concrete and masonry materials of all types are prohibited.

(10) Fenders, skirts or any type of wheel enclosures are prohibited.

(11) No car can have any device that can in any way aid in the starting of the car, including any kind of nose extension.

(12) Towing rings are not permitted.

(13) Attachments and decorations such as pennants, ornaments, etc., are not permitted on the car.

PART III—RACE

A. INSPECTION

(1) Every car must pass inspection by the Official Inspection Committee before it may compete. If periodic pre-race inspections are deemed necessary by local Derby Director, each entrant must make his car available at times and places so designated. Any entrant failing to comply may be disqualified at the discretion of the local Derby Director.

(2) Special attention will be given to wheels, bearings, steering, and brakes during inspection. Inspectors may remove wheels for inspection. Failure to provide the car with strong and safe steering and braking devices may lead to disqualification.

(3) CHANGES—After passing inspection, no entrant shall remove or change wheels, or make any further changes in his car, either before or during the Derby, without the supervision of the Inspection Committee.

(4) Should a car, after passing inspection, be damaged before or during the race, permission to make repairs must be obtained from the Inspection Committee. Only wheels inspected and approved by the Committee may be used if the original wheels must be replaced with others.

(5) All repairs after inspection must be made by the boy himself, or with the help of official Soap Box Derby mechanics.

(6) Prior to final inspection, the boy must surrender in completed form the certificate contained on page 27.

B. RACE PROCEDURE

(1) HEATS

(a) All races will be run on a system of elimination by heats. Time achieved by a contestant in a previous heat shall have no bearing in subsequent heats.

(b) Lane positions for each heat shall be allotted by drawing.

(2) STARTING

(a) Cars must start by gravity from a standstill, at a starting line on the track or a special starting ramp, without any help. No pushing will be allowed.

(b) Heats will be started with the cars so positioned that their foremost parts, or "noses," are evenly lined up.

(3) FINISH—The car whose nose is first over the finish line according to the decision of the judges is the winner.

(4) DISPOSITION OF CARS

(a) To assure that no part of a winning car in a local Soap Box Derby is used in any future Soap Box Derby race, the car of each local winner must automatically become the property of the local franchised sponsor, who must ultimately destroy the car unless the car is being retained for permanent display.

(b) The first-nine-place cars in the All-American Soap Box Derby at Akron automatically become the property of the All-American Soap Box Derby, Inc.

(5) WINNING CAR

(a) ONCE A CAR HAS WON THE LOCAL RACE IT MUST BE IMPOUNDED IMMEDIATELY BY THE RACE SPONSOR. It cannot then be altered in any way, except to be painted and lettered with the name of the sponsor and city of the local Soap Box Derby. No other name or designation shall be permitted on the car.

(b) A car coming to the All-American Soap Box Derby, Akron, must be shipped by the race sponsor. It must be shipped with the winning wheels mounted on the axles. Prior to the test run at Akron, before the All-American race, the local winner will surrender the wheels which he used in the local race and receive in return therefore a new set of championship wheels. The wheels so surrendered shall be the property of the All-American Soap Box Derby, Inc. Every local champion will thereupon make his test run and the All-American race on these new championship wheels given to him at Akron.

(c) Only official Soap Box Derby lubricant, with no additive, which will be supplied to the local winner at Akron, may be used on the championship wheels. All other substances or materials of any kind, other than official Soap Box Derby lubricant, are prohibited. Each

champion will be provided with a tool kit, wax and official lubricating oil while in Akron. All such personal items (tools, tool kits, oils, waxes and fixtures) should not be brought to Akron and will be prohibited in the Topside area.

PART IV—OFFICIALS

A. LOCAL SOAP BOX DERBIES

(1) The decision of the judges in all matters pertaining to the interpretation and enforcement of the rules, the conduct of the race and to the determination of winners will be final and binding upon all concerned. Each contestant, by participating in a race, agrees to be bound by such decisions.

(2) The authority to qualify or disqualify cars or contestants at the local level rests solely with local race officials.

B. ALL-AMERICAN SOAP BOX DERBY

(1) The decision of the judges in all matters pertaining to the interpretation and enforcement of the rules, the conduct of the race and to the determination of winners will be final and binding upon all concerned. Each contestant, by participating in a race, agrees to be bound by such decisions.

(2) The authority to qualify or disqualify cars or contestants at the All-American Soap Box Derby rests solely with national race officials.

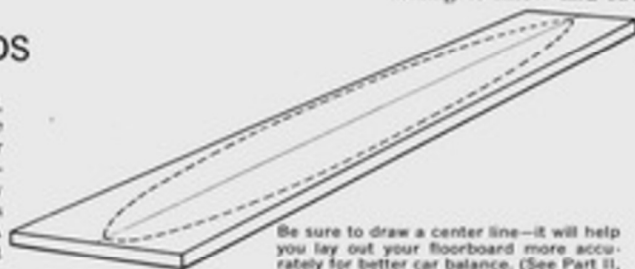


CONSTRUCTION TIPS

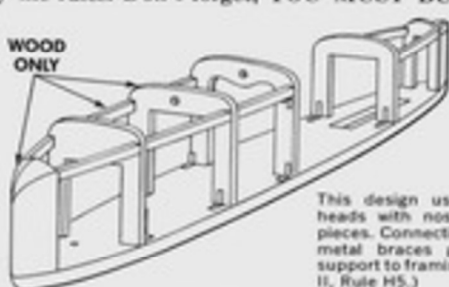
DESIGN YOUR OWN RACER, BUILD IT YOURSELF AND BE SURE TO FOLLOW THE RULES
 By entering the Soap Box Derby, you bind yourself to live up to every rule. The rules are written to give each boy a safe, equal chance to win. You may use the design suggestions in this book or work up your own ideas as long as you follow the rules. The Derby encourages you to use your imagination and resourcefulness. But do not lose your chance to win by failing to know and obey the rules. Don't forget, **YOU MUST BUILD YOUR OWN RACER!**

FLOORBOARD AND BULKHEADS

Your floorboard design will, in part, govern the body style of your car. Cut the hole for the drag brake early in building. Body design is largely controlled by the bulkheads or inside body supports. A good floorboard builds weight into a car.



Be sure to draw a center line—it will help you lay out your floorboard more accurately for better car balance. (See Part II, Rule H3.)



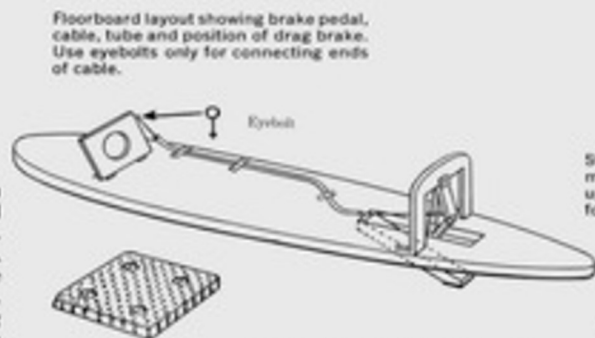
This design uses 5 bulkheads with nose and end pieces. Connecting ribs and metal braces give sturdy support to framing. (See Part II, Rule H5.)



Rounding of bulkheads, as shown, will produce jet plane type of body. Note holes in bulkheads for steering shaft.

GOOD BRAKES ARE A MUST

These diagrams show you how to easily construct a good and sturdy single drag brake. Design it so that the brake, when pulled up, will meet the 3-inch ground clearance rule. Countersink the bolts holding brake shoe. Be sure to use strong hinges. No covering is permitted over brake facing or opening.



Floorboard layout showing brake pedal, cable, tube and position of drag brake. Use eyebolts only for connecting ends of cable.

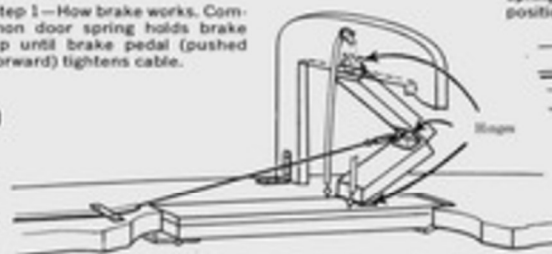
Eyebolt



Brake shoe must be attached by bolts. Old tire casing makes excellent braking surface.



Step 1—How brake works. Common door spring holds brake up until brake pedal (pushed forward) tightens cable.

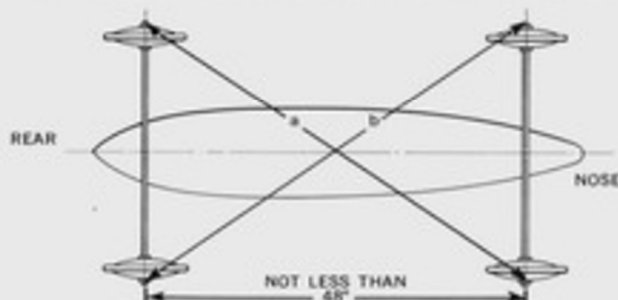


Step 2—Brake is now fully extended with brake facing dragging on ground. When foot pedal pressure is released, door spring returns brake to normal position.

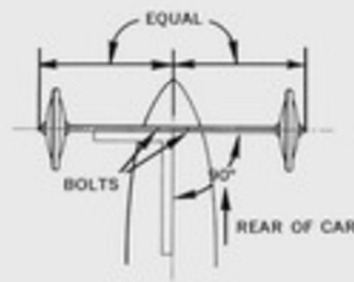
Common door spring

METHODS FOR OBTAINING WHEEL ALIGNMENT

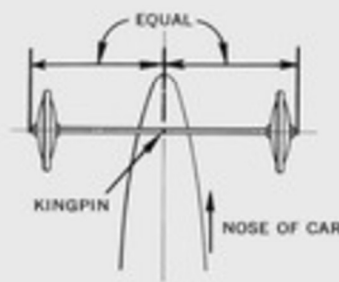
To be sure your racer runs straight and true, it is important that your car have correct wheel alignment.



First, draw the center line on the floorboard. Then locate and mark where your axles will be placed. When wheels are properly aligned dimension "a" will equal "b". (See Part II, Rule D and Rule H (1) (a).)



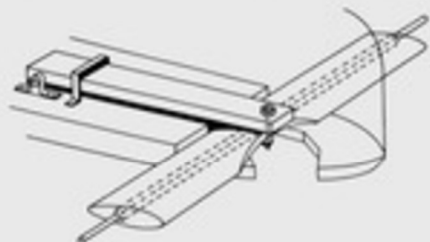
When you mount your rear axle, make sure it is centered and exactly 90° to the center line. This is very important.



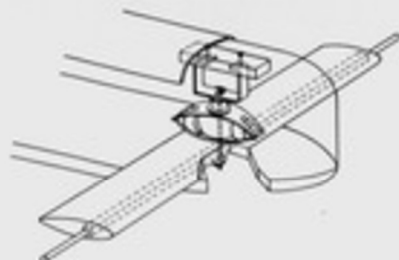
When you drill your front axle for the kingpin, be sure the hole is drilled exactly in the center and equidistant from each end. (See Part II, Rule G (4).)

SUGGESTED SUSPENSION SYSTEMS, IF YOU USE ONE

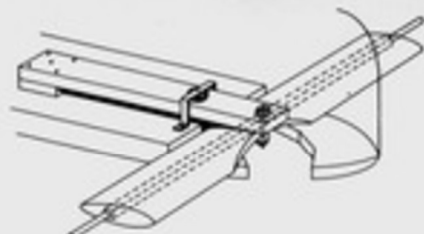
Here are suggested suspension systems. While it is not necessary to include one, many successful Soap Box Derby racers are built with suspension systems. The kingpin is placed in front of the axle in these three suspension systems.



Floorboard is cut to allow space between axletree and springboard. Pillow block holds springboard at rear and retainer clamp mounted in rubber is used to control movement.



Retainer clamps are hinged around two half-sections and one full rubber ball. Kingpin is attached to top of racer body by U-shaped clamp and square block.

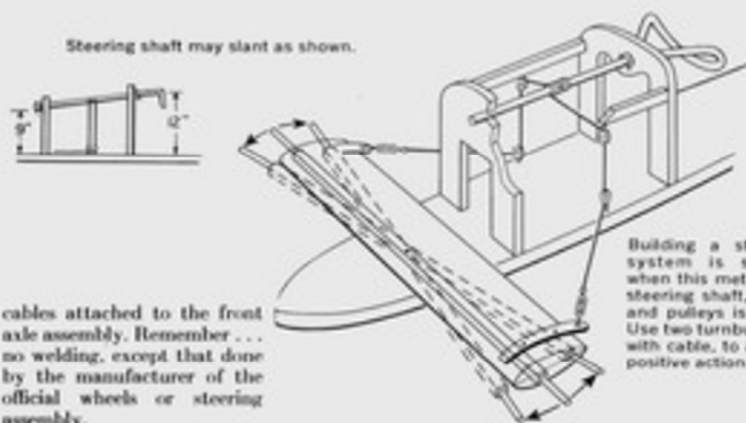


Five bolts on raised springboard anchor this suspension system. Retainer clamp with pinned half-section rubber ball controls jounce.

YOUR STEERING SYSTEM MUST BE STRONG AND SAFE

The Soap Box Derby steering assembly is safe and simple to build. Only this type of steering is permitted. All cars **MUST** be steered with a wheel or half-wheel and

cables attached to the front axle assembly. Remember . . . no welding, except that done by the manufacturer of the official wheels or steering assembly.



Steering shaft may slant as shown.

Building a steering system is simple when this method of steering shaft, cable and pulleys is used. Use two turnbuckles, with cable, to assure positive action.



Two types of pulleys that will guide your steering cables without binding.



Turnbuckles or other adjusting devices must be used to remove slack from steering cable.



Thread steering cable through hole in shaft (left). Then wrap cable around shaft.

Put cotter pin through steering shaft, against washer, to hold shaft in position.

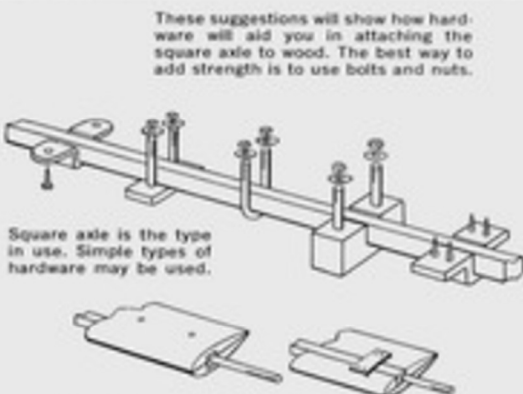


Five bolts through axletree and floorboard, as shown, will anchor rear axle.

Kingpin through axle or axletree. Be sure kingpin is in center floorboard.

WAYS TO ATTACH AXLES AND AXLETREES

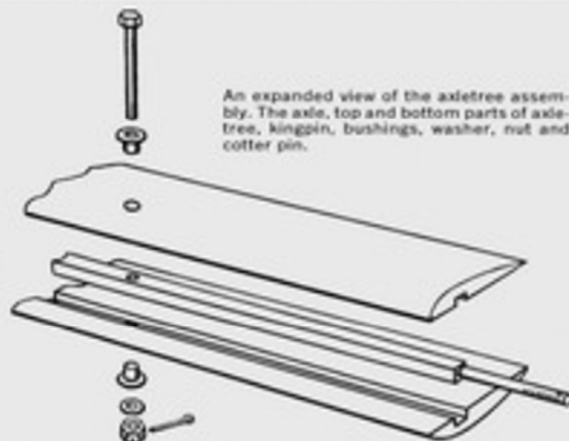
Many boys like the streamlined appearance of wooden axletrees on their racers. Of course, the rules do not require axletrees. Depending on your preference, here are suggestions for making axletrees and for attaching the official axles without axletrees.



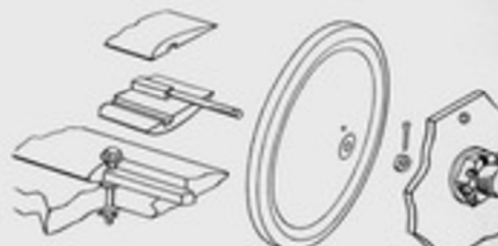
Square axle is the type in use. Simple types of hardware may be used.

Top and bottom views of axle in axletrees.

These suggestions will show how hardware will aid you in attaching the square axle to wood. The best way to add strength is to use bolts and nuts.



An expanded view of the axletree assembly. The axle, top and bottom parts of axletree, kingpin, bushings, washer, nut and cotter pin.



You may use kingpin bushings in front axle. A bushing is a collar which fits around pin.

Official wheel slips onto axle spindle. Attach nut and lock with cotter pin.

Cotter pin through axle nut should be bent at ends.

IDEAS FOR COVERING YOUR RACER

Of the thousands of Soap Box Derby cars built each year, there are no two alike. Body styles, body covering and individual designing are all part of the challenge of creating your own racer.



Seat backs may be used and, if used, must be removable or tilt forward for inspection and should not weigh more than 4 pounds. (See Part II, Rule H1.)

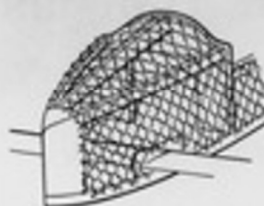
Use C-clamps to hold wood in position while inserting screws.



Cardboard patterns will help you in cutting body pieces to fit. Cover car with care, then paint.



Strips of wood make good body covering, or car body may be laminated. Watch car weight if you use laminated body.



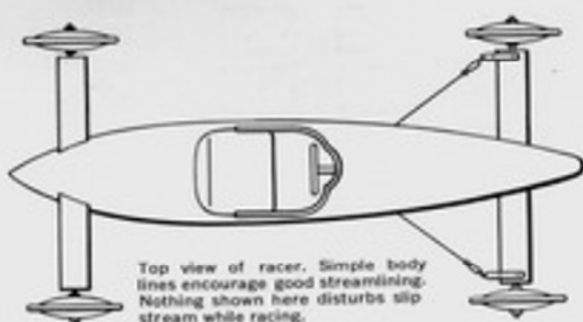
Chicken wire applied to body frame, then covered, is popular method.



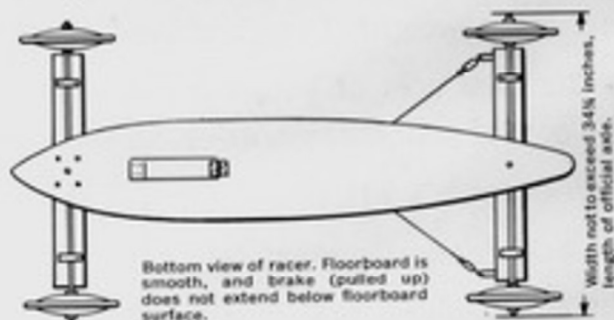
Paper or cloth, applied with lacquer-like sizing, makes durable body.

LOOK AT YOUR RACER FROM ALL ANGLES

Here are five views of a Soap Box Derby racing car. Note driver's steering position and the room allowed for his legs. If needed for safety, use padding around edges of cockpit.



Top view of racer. Simple body lines encourage good streamlining. Nothing shown here disturbs slip stream while racing.



Bottom view of racer. Floorboard is smooth, and brake (pulled up) does not extend below floorboard surface.

Width not to exceed 34 1/4 inches, length of official axle.



WHEELBASE NOT LESS THAN 48"
LENGTH NOT TO EXCEED 80"

Direct side view of racer. Keep cockpit open so arms have ample room. (See Part II, Rule H2 (c).)



Nose-end view of car. Rounded corners will help you.

Rear-end view. Check perfect wheel alignment.