MFG: BRILL, A.K.
NAME: KIDDIE AUTO RIDE
TYPE: KIDDIE

PLANS AND INSTRUCTIONS FOR BUILDING THE KIDDIE AUTO RIDE. COPYRIGHT 1947
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In building a Kiddie Auto Ride, the CENTER WHEEL is the most important part, so that is the part with which we will start. Ordinarily plans would include only one center wheel--but as these are the first instructions that were written after World War II, material shortage required that anything available could be used. We included 5 CENTER WHEELs and the BRILL-O-MATIC clutch added. This permits the ride to start slowly and coast to a stop, rgardless of the locking of gears. This is actually a complete course in ride building.

FIGURING THE RATIO

A good speed of a Kiddie Auto Ride is 7 to 9 revolutions per minute, depending on the diameter of the ride. A standard electric motor revolves at 1725 R.P.M. So the speed reduction for the ride is appoximately 200 to I. As cars are on a radius of 10 to 12 feet, torque is generated and this overcome by the reduction of the speed. the increased torque is availble. Speed is reduced in several ways. gears, gearboxes, sprockets, pulleys, etc. If all parts are ball or roller bearinged even a motor smaller than the standard I hp can power the ride.

Here is the way the speed of the ride is determined. A standard electric motor is figured at 1725 rpm. If you have a worm gear truck rear end--you will find by observation that in input shaft revolves at 6-1/2 times that of the axle. which of course is 265 rpm--much too fast. If you used a 3-1/2 to 1 pasenger car or light truck rear end, it would be almost two times as fast.. You put a large spur gear (66 teeth) on the shaft and a 11 tooth pinion gear on the motor, and you have a speed of 44 rpm, (on truck rear end axle) 265 -by 6 (66 to 11 is 6) which is also too fast and using the auto rear end would be twice as fast. So you remove the pinion gear and place it on a shaft, with a 10" pulley on the other end. Now you put a 1-1/2" pulley on the motor (10 -by- 1-1/2 equal 6, so divide 44x6 and get a little over seven, which is a good speed for a ride 20 to 24' in diameter.. You don't need to lug a heavy truck rear end around, so use the same theory for the 3 -1/2 to 1 auto rear end. Adding another shaft if necessary

The above merely illustrated how to adapt the materials you have. The figures to follow are from actual wheels, built by the writer and others; from experience, not just theory. The point to remember is to find the gear ratio, by the number of teeth, divide the large by the small figure. Pulley ratios depend on diameters--the proportion of small to large. Gear Boxes and transmissions from Vehicles depend on teeth, but as they are enclosed, counting revolutions of the output shaft against the input shaft, gives you the proportion.

CENTER WHEEL NUMBER L

Referring to the drawing, Center wheel Number 1 is a bit more complicated than some of the others. But it is lighter in weight and the materials are more available. I recently (1947) completed a second wheel of this type. It consists of a front wheel spindle of an auto, fastened to an 9" "I" beam. A front wheel hub and brake drum to fit the spindle, the brake drum is sloped from the center, so small triangular pieces of angle steel were used to make the edge level with the center. I used 2 1931 Chrysler flyweel gears (one above the other. There were six holes in the center that matched the brake drum holes and six holes farther out. Holes were drilled through the angle iron pieces to match them. If the angles were not permanently welded to the drum. Otherise the bolts had to go through the flyweel gears and nuts on the angles.

I MATCHED THE DOUBLE FLYWHEEL GEARS WITH A STOCK GEAR, 2" DIAMETER, 1-1/2" FACE, 8 PITCH, 16 TEETH. THE FLYWHEEL GEAR HAS 114 TEETH. IF YOU DON'T WANT TO BUY A STOCK GEAR, YOU CAN USE THE STARTER PINION, BUT IT WILL HAVE TO BE BUSHED, AND THE STOCK GEAR WAS NOT COSTLY, AND OF THE BORE WANTED.

ON THE SAME SHAFT WITH THE PINION, A MITER GEAR, 3" IN DIAMETER WAS SECURED. BOTH GEARS HAD 3/4" BORE SO A 3/4" COLD ROLLED STEEL SHAFT WAS USED. TWO PILLOW BLOCKS (BALL BEARING ONES) WERE MOUNTED ON THIS SHAFT TOGETHER WITH COLLARS AND WASHERS ON A WELL BRACED UPRIGHT PIECE OF HEAVY ANGLE IRON. THE MITER GEAR HANGS BELOW THE "SHELF" ON THE "I" BEAM.

YOU MAY FIND IT NECESSARY TO PUT A COLLAR ON THE SHAFT, ALSO AND YOU CAN USE PLAIN BRONZE, OILITE OR BABBIT BEARINGS. IF YOU USE A COLLAR OR SEVERAL OF THEM, BE SURE AND PUT TWO WAHERS BETWEEN COLLAR AND BEARINGS AND BETWEEN GEARS AND PILLOW BLOCK BEARINGS. THE BEST SOLUTION I WOUND FOR THE THRUST, WAS TO BUY THRUST BEARING PILLOW BLOCK. THESE CONTAINED SLEEVES THAT REVOLVE WITH THE SHAFT. THEY HAD SET-SCREWS WHICH HELD THE SLEEVES IN PLACE ON THE AXLE B E SURE AND DRILL A SMALL FLAT SPOT ON THE SHAFT FOR THE SETSCREW TO "BITE". THIS GOES FOR ALL THE SET SCREWS IN THE GEARS AS WELL.

ON THE SECOND SHAFT WAS AN 8" 8 PITCH, 66 TOOTH SPUR GEAR, TWO PILLOW BLOCK BEARINGS, A MITER GEAR TO MATCH THE OTHER MITER GEAR AS SHOWN IN THE RIGHT HAND ILLUSTRATION. THESE BLOCKS MUST BE RAISED TO PERMIT GEAR TO REVOLVE. A BLOCK OF HARDWOOD, A SHORT LENGTH OF CHANNEL IRON OR A FRAME BUILT UP OF HEAVY STRAP-IRON AS SHOWN IN THE 3 SMALL ILLUSTRATIONS, ACCOMPLISH THIS. AS THE SLOTS IN THE PILLOW BLOCKS ARE THE LONG WAY, IF SLOTS IN THE CHANNEL OR STRAP ARE MADE ACROSS THE WIDTH, YOU WILL HAVE A UNIVERSAL ADJUSTMENT. USE CARRIAGE BOLTS, 3/8" OR LARGER FOR MOUNTING THESE PARTS.

THE THIRD SHAFT, MOUNTED PARALLEL TO THE SECOND ONE HAS A MATCHING SPUR GEAR ON THE END(8 PITCH 13 TEETH). THIS MAKES A FIVE TO ONE REDUCTION AND A LARGE DOUBLE GROOVE "V" BELT PULLEY IS ON THE END OF THE SHAFT. I USED A 1-1/2 TO 9" PULLEY, BUT THE DIAMETER OF THE 66 TOOTH GEAR AND THE 13 TOOTH GEAR, WOULD NOT ALLOW THE 9" PULLEY TO SNUGGLE BETWEEN THEM. THE 1-1/2" PULLEY WAS ALSO A DOUBLE GROOVE ON THE MOTOR. HAVE YOUR WELDER CUT A ROUND NOTCH IN THE "I" BEAM, SO THE MOTOR CAN SNUGGLE IN UNDER THE SPINDLE.

THIS IS ALL THERE IS TO THIS WHEEL. THE MOTOR REVOLVES AT 1725 . I USED A FULL HORSEPOWER MOTOR AND HAD PLENTY OF POWER. IF YOU USE BALL BEARING BLOCKS AND WHEELS , YOU MIGHT GET BY WITH A 3/4. THE FIRST REDUCTION PULLEYS ARE 1 TO 6 , BRINGING IT TO 287 RPM. THE 5 TO 1 GEARS BRING IT DOWN TO 57 AND THE 16 TO 114 TEETH FLYWHEEL BRING IT TO 8 RPM.

IF YOU USE A 12 TOOTH PINION AGAINST THE FLYWHEEL GEARS AND A 2 TO 8 PULLEY REDUCTION YOU CAN NESTLE THE PULLEY BETWEEN THE GEARS AS SHOWN IN THE ILLUSTRATION. THE SPEED WILL BE ABOUT 7 RPM. A SLIGHTLY LARGER MOTOR PULLEY WILL BRING IT UP TO 8 RPM. BEVEL GEAR AND PINION INSTEAD OF MITERS FURNISH ANOTHER REDUCTION.

CENTER WHEEL NUMBER 8

CENTER WHEEL NUMBER 2 IS THE EASIEST TO BUILD, THE MOST SIMPLE YET, UNLESS A SUITABLE REDUCTION CAR IS USED. IT MIGHT BE A BIT COSTLY TO PURCHASE A NEW GEAR REDUCTION BOX. A BOSTON GEAR REDUCTION OF SUITABLE SIVE IS NOW(1947) A LITTLE OVER $65. SMALL REDUCTION GEAR BOXES, WITH 1/2" OUTPUT SHAFTS ARE NOT RUGGED ENOUGH. YOU CAN USE A REDUCTION WITH A 1/2" INPUT SHAFT HOWEVER

IT CONSISTS OF AN AUTO OR BALL BRUCK REAR END A MOTOR AND GEAR REDUCER. CUT THE HOUSING OFF AT THE FIRST BEARING IF YOU WANT A LOW CENTER, OR YOU CAN LEVE IT TALL, AND USE BENT SWEEPS, WHICH WILL ALSO SUPPORT A CANVAS COVER. THE BENT SWEEPS OR COURSE MUST BE MUCH MORE RIGIDLY BRACED THAN THE STRAIGHT ONES, EMINATING FROM A LOW CENTER. YOU

CAN CUT THE HOUSING OFF AT THE FIRST BEARING, BUT LEAVE THE LONG AXLE, WELDING A PLATE FOR THE CROWN TO THE AXLE ABOVE THE HOUSING CUT-OFF, BUT USING THE LONG AXLE AS A PEAK FOR THE CANVAS. YOU MUST FILL THE SPIDER OR DIFFERENTIAL GEARS WITH WITH BRONZE WELD, SO THE RING GEAR AND PINION WILL OPERATE THE AXLE.

THE REDUCTION GEAR IS NEXT. IF YOU CAN GET ONE, A RIGHT ANGLE GEAR BOX, WITH WORM (INPUT SHAFT) ABOVE THE WORM GER, IT WILL MAKE IT POSSIBLE TO PUT A LARGE PULLEY OR SPROCKET ON-THIS SHAFT. OTHERWISE YOU WILL HAVE TO BLOCK IT UP. I USED A 6 TO 1 TRUCK REAR END, AND A 12 TO 1 GEAR BOX, 6" PULLEY ON THE GEAR BOX, 2" PULLEY ON THE MOTOR. THE REDUCTION --3 TO 1 ON THE PULLEYS (573 RPM); THE GEAR BOX 12 TIO1 (48 RPM) THE TRUCK REAR END 6 TO 1, MADE IT 8 RPM.

CENTER WHEEL NO 3

CENTER WHEEL NUMBER 3 IS A UNIQUE ONE THAT HAS BEEN USED FOR A NUMBER OF YEARS BY ONE CARNEY WHO HAS LONG PASSED ON —MR. FAYE OF FAY'S SILVER DERBY SHOWS) IT PULLED A GOOD SIZED AUTO RIDE TOO. OF COURSE BACK IN THOSE DAYS THE REAR ENDS WERE FROM MODEL A FORDS, BUT ANY AUTO OR TRUCK REAR ENDS WILL DO. THE WHEEL CONSISTS OF TWO AUTO REAR ENDS, CUT DOWN AND THE SPIDERS WELDED. ONE DRIVE SHAFT IS CONNECTED TO THE WHEEL AXLE OF THE FIRST REAR END..THE MODEL A REAR ENDS WERE FROM CARS IN MOUNTAINOUS COUNTRY AND A BIGGER RATIO THANN FLAT LAND REAR-ENDS—HENRY FORD WAS THAT THOUGHTFUL..BUT IF YOU CAN GET PICK-UP TRUCK REAR ENDS, YOU CAN MATCH IT. THE TWO REAR ENDS AND A WASHING MACHINE(COMMERCIAL MODEL) GEAR BOX MADE UP THE DEAL. IF YOU USE TWO 6 TO 1 TRUCK REAR ENDS AND A 2 TO 12" PULLEY REDUCTION FROM THE MOTOR YOU HAVE IT MADE.

THE EXPLANATION FOR THE REDUCTIONS IN THIS WHEEL ARE AS FOLLOWS 1725 MOTOR, 2-1/2 TO 1 PULLEY EQUALS 690 RPM. THE REDUCER 6 TO 1 BRINGS IT DOWN TO 130 RPM AND 4 TO 1 ON FIRST REAR END, 32-1/2 AND 4 TO 1 ON 2ND REAR END IS 8 RPM. A LITTLE MORE REDUCTION ON THE PULLEYS WILL GIVE A STILL SLOWER SPEED.

CENTER WHEEL NUMBER 4

I BUILT THIS WHEEL FOR A RIDE IN 1942 AND IT GAVE GOOD SERVICE FOR MANY YEARS. IT HAD A MODEL T FORD TRUCK REAR END(WORM DRIVE), A PUMP JACK, I PICKED UP IN THE JUNK YARD AND SOME PULLEYS. THE REAR END WAS FASTENED TO THE BAS E AND THE DIFFERENTIAL WAS WELDED SHUT SO THE RING GEAR WAS TIGHT ON THE AXLE. THE WHEEL WAS LEFT IN PLACE TO SERVE AS A CROWN. A PILLOW BLOCK BEARING WAS FASTENED TO THE BASE TO HOLD THE EXTENSION TO THE DRIVE SHAFT. THE PUMP JACK WAS AN 8 TO 1 REDUCT ION WITH A FIBER PINION. I WAS CONSTANTL AFRAID OF THE PINION GOING OUT AND I CARRIED A SPARE AND NEVER HAD USE FOR IT. IT RAN PERFECTLY AND QUIETLY. A 2-1/2" PULLEY ON THE SAME SHAFT AS THE PINION AND A 2" PULLEY ON THE MOTOR GAVE THE NECESSARY 8 RPM.

I LEFT THE WHEEL ON AS A SUBSTITUTE FOR THE CROWN., BUT IT WAS EXCESS WEIGHT AND REQUIRED BOLTING OF SWEEPS INSTEAD OF USING PINS.(AFTER ALL IT WAS ONLY MY 3RD RIDE) YOU CAN NOW BUY PUMP JACKS(SEARS ROEBUCK FARM CATALOG) IN ENCLOSED HOUSINGS WITH BALL AND ROLLER BEARINGS THAT WOULD SERVE MUCH BETTER THAN THE OPEN GEARS. HOWEVER THIS ONE ONLY COST ME $2 AND I WAS VERY HAPPY TO FIND IT IN THE JUNK YARD. THE LARGE PULLEY ON THE EXTENDED INPUT SHAFT ON THE REAR END COMPLETED THE REDUCTION.

THE SPEED WAS OBTAINED AS FOLLOWS: 4 TO 1 ON PULLEY, 431; 8 TO 1 ON THE PUMP JACK, 54; AND 6-1/2 TO 1 ON REAR END BROUGHT IT TO 8 RPM.

CENTER WHEEL NUMBER 5

BACK IN 1947, I WROTE, "THERE ARE PROBABLY MORE OF THIS TYPE CENTER WHEELS ON THE ROAD TODAY, DUE TO THE FACT THE FIRST MANUFACTURER OF KIDDIE RIDES USED IT. PRICES ON A RIDE OF THIS SORT WERE $ 3000(A HIGH PRICE IN 47). THE FACORTY RIDE CARRIED A HAND OPERATED CLUTCH, BUT THE ONLY TIME I EVER SAW THE RIDE "DOWN" WAS WHEN THE CLUTCH "WENT OUT.

IT IS JUST AS WELL TO ELIMIN ATE THE CLUTCH AND SUBSTITTUE A SLIDING MOTOR OR BUY A MOTOR DESIGNED FOR PRINTING PRESSES THAT HAS A VARIABLE SPEED. THE CENTER GEAR OR BULL GEAR IS BIG—ABOUT 30" IN DIAMETER AND HAS A 3" FACE. IT HAS 146 TEETH. THE SPOKES AND HUB ARE REMOVED AND HOLES DRILLED NEAR THE RIM FOR BOLTS TO HOLD CLIPS FOR THE SWEEPS. THESE SHOULD BE EQUADISTANT AND OF COURSE, ONE SET FOR EACH SWEEP. A CROWN—SEE SECTION 8 — AS ILLUSTRATED WILL SERVE AS THE CENTER OR HUB. AN ELEVEN TOOTH SPURGEAR SERVES AS PINION.

SECOND REDUCTION IS A LARGE BEVEL GEAR AND PINION, 72 TOOTH AND 12 RESPECTICELY TO GIVE A 6 TO 1 REDUCTIONS. YOU MAY FIND THIS IN A TRUCK OR TRACTOR RING GEAR AND PINION. IF YOU DON'T WANT TO INVEST IN A STOCK GEAR JOB. THE SHAFT IN THE CENTER OF THE BEVEL GEAR CARRIES THE SPUR GEAR PINION TO DRIVE THE BIG BULL GEAR. A THRUST BEARING ~~BEHIND THE LARGE BEVEL GEAR IS DIRECTLY IN LINE WITH ANOTHER PILLOW BLOCK~~ ~~SET PILLOW~~ BLOCK OR THRUST BALL BEARING RACE SET IN A PILLOW BLOCK DIRECTLY BELOW THE LARGE BEVEL GEAR IS DIRECTLY IN LINE WITH ANOTHER PILLOW BLOCK OR BALL BEARING RACE TO PROVIDE PERPENDICULAR FIRMNESS TO THE SHAFT. THIS SHAFT HAS A LOT OF TORQUE, MAKE IT STRAONG AND THE BEARINGS RIGID. USE COLLARS OR WASHERS AS MENTIONED IN WHEEL NUMBER 1, IF NECESSARY.

ANOTHER HORIZONTAL SHAFT CARRYIN G THE BEVEL PINION, ALSO CARRIES A 12 INCH PULLEY, TWO PILLOW BLOCK BEARINGS AND NECESSARY COLLARS. A 4" PULLEY ON THE MOTOR COMPLETES THE DRIVE.

IF YOU HAVE TO BUY THE BIG GEAR NEW, IT WILL BE QUITE EXPENSIVE, BUT YOU CAN FIND BIG GEARS FROM WRECKED BUILDING ELEVATORS AND CERTAIN TYPE OF MACHINER IN THE JUNG YARD IN SOME CASES GREY IRON(CAST) FOUNDRIES HAVE PATTERNS FOR SUCH GEARS, WHICH THEY WILL FURNISH TO GET THE CASTING JOB AT SO MUCH PER POUND. PINIONS ARE FOND THE SAME PLACE YOU FIND THE GEAR AS THEY ARE USELESS WITHOUT EACH OTHER. IF GEARS ARE OF STANDARD PITCH, THE PINION CAN BE A STOCK ITEM OF LITTLE COST.

ABOUT CENTER WHEELS IN GENERAL

NOTE THAT ALL CENTER WHEELS HAVE A BELT DRIVE. NO SMART RIDE MAN TRIED TO ELIMINATE THIS, ALTHOUGH BELT TIGHTNERS, IDLER PULLEYS AND SLIDING MOTOR BASES SOMETIMES HAVE TO BE DEVISED TO INSURE SLOW STARTSSAND TO KEEP THE BELT FROM SLIPPING. THE BELT DRIVE SERVES AS A CUSHION TO THE STARTING SHOCK, AND AVOIDS TEARING UP OF GEARS. BELTS ARE EASIER TO REPLACE AND LESS EXPENSIVE THAN GEARS. A SINGLE PULLEY IS NOT ENO ENOUGH IF "V" BELTS ARE USED OTHER THAN FIRST DRIVE. YOU CAN USE A TWO OR THREE GROOVE PULLEY, OR MAKE THEM BY BUYING SEVERAL PULLEYS OF THE SAME SIZE AND BOLTING OR WELDING THEM TOGETHER.

IN GEARS OVER TWO INCHES IN DIAMETER, AN AUTO GEARS, IF AVAILABLE ARE BETTER THAN STOCK GEARS. STOCK GEARS OVER 2" ARE GENERALLY CAST FROM CAST IRON OR SEMI-STEEL, WHERE AS AUTOMOBILE GEARS ARE OF BEST QUALITY STEEL —HIGH CARBON HARD STEEL AT THAT. THE SAME GOES FOR SHAFTS AND AXLES BUT THSES ARE NOT GENERALLY STANDARD SIZE IN AUTO GEARS. STOCK GEARS ARE NOT EXPENSIVE, AND FIT STANDARD SIZE COLD ROLLED STEEL SHAFTS FOR WHICH BEARINGS ARE READILY OBTAINABLE. IN ADDITION TO THE REAR ENDS OF AUTOS AND TRUCKS, AND COMMERCIAL GEAR REDUCERS MENTIONED, YOU CAN USE AUTO TRANSMISSIONS, PUMP JACKS AND I'VE EVEN SEEN MOTORCYCLE TRANSMISSSIONS USED FOR GEAR REDUCERS.

ELECTRIC MOTORS

IF YOU ARE GOIN G WITH A CARNIVAL WITH ITS OWN LIGHT PLAN(AND ALMOST ALL OF THEM CARRY THEIR OWN THESE DAYS) YOU CANNOUT USE A SPLIT PHASE MOTOR. THEY AREN'T TOO GOD ANYWAY AS THEY HAVE A LOW STARTING TORQUE —BUT THEY REQUIRE 15 TIMES THE RUNNING AMPERAGE T TO START. IN OTHERWORD A 1 HP MOTOR REQUIRING 660 WATTS TO RUN, WOULD REQUIRE ABOUT 19,000 WATTS TO START, AND WOULD COMPLETELY UNBALANCE THE POWER PLANT.

THE BEST AND MOST POWERFUL MOTOR IS REPULSION-INDUCTION. THIS REQUIRES ONLY 3 TIMES THE STARTING WATTS AND IS HIGH TORQUE. THE MOROR RUNS ON HEAVY WINDINGS TO START, AND THEN "REPULSES" OR SLIDES OVER INTO THE RUNNING WINDINGS. IF YOU ARE GOING TO USE A CENTRIFUGAL CLUTCH, YOU CANNOT USE A REPULSION INDUCTION MOTOR SATISFACTORILY AS THE CLUTCH WORKS THE SAME WAS AS THE MOTOR —KICKS IN AFTER A CERTAIN SPEED.) THE BEST ALL AROUND, NOT TOO EXPENSIVE MOTOR , IS THE CAPACITOR TYPE. IT HAS A LITTLE BOX OR TUBE OF WINDING ON TOP OR ON SIDE OF THE MOTOR HOUSING, WHICH TAKES CARE OF THE STARTING WINDINGS. IT REQUIRES ABOUT 6 TIMES THE RUNNING WATTAGE TO START, BUT THERE IS NO CONFLICT IN STARTING CENTRIFUGAL CLUTCHES. CENTRIFUGAL CLUTCHES CAN BE BOUGHT FOR AS LITTLE AS $10 AND SAVE WEAR AND TEAR ON THE MOTOR BECAUSE THEY LET THE MOTOR GET UP TO THREE-QUARTER SPEED, BEFORE KICKING IN. THEY CANNOT BE USED AS A STARTING CLUTCH FOR SLOW STARTS, AS THE MOTOR TAKES HOLD ONLY AFTER SPEED IS UP AND MAKES RIDE START WITH A SLIGHT JERK. ONE LARGE RIDE MANUFACTURER USES THIS SET-UP, DEPENING ON SLACK IN THE BELT TO AVOID THE JERK.

BASE

THE CENTER WHEEL REQUIRES A PIECE OF METAL OR FRAME TO HOLD IT TOGETHER AND GIVE SUPPORT TO THE INSIDE EDGE OF THE FLOOR JACKS. GROUP THE ESSENTIAL PARTS OF THE WHEEL IN THEIR PROPER LOCATIONS AND DRAW A RING ABOUT THEM TO DETERMINE THE SIZE. NOW DIVIDE THE CIRCLE IN 8, 10 OR 12 PARTS, ONE FOR EACH FLOOR JACK AND FLOOR SECTION.

YOU MUST ARRANGE THE WORKING PARTS, SO THEY WILL BE AT LEAST 3" TO 6" IN FROM THE CIRCUMFERENCE OF THE CIRCLE, SO YOU CAN MOUNT THE CLIPS TO HOLD THE FLOOR JACKS THERE. IT MAKES NO DIFFERENCE IF THE PARTS EXTEND TO THE END OF THE BASE BETWEEN THE CLIPS, BUT THE CLIPS FOR THE FLOOR JACKS MUST BE ACCESSIBLE. WELD OR BOLT THE WORKING PARTS IN PLACE. THE BASE MAY BE ANYWHERE FROM 2 TO 3-1/2 FEET IN DIAMETER AND CLIPS MAY BE MOUNTED BELOW THE BASE IF DESIRED. BASES ARE MADE ROUND, SO THEY MAY BE ROLLED INTO POSITION AND ROLLED UP A PLANK TO GET IN THE TRUCK.

IN USING A SPLIT AUTO HOUSING, BOLTS CAN BE TAPPED INTO THE PLATE(WHICH SHOULD BE AT LEAST 1/4" THICK. IF YOU CANNOT GET PLATE WIDE ENOUGH, WELD TWO TOGETHER. AN ACETELYNE TORCH IS THE EASIEST WAY TO CUT A CIRCULAR PLATE.

TAKE EXTRA CARE IN LAYING OUT DIVISIONS NEAR CIRCUMFERENCE. USE A PROTRACTOR OR GEOMETRIC METHOD, MAKING SURE CLIPS ARE EQUA-DISTANT. IF THEY ARE EXACTLY THE SAME DISTANCE APART AND THE JACKS ARE OF EQUAL LENGTH, THEY CAN BE USED INTERCHANGEABLY. HOWEVER ITS BEST TO NUMBER CLIP AND NUMBER JACK THAT GOES INTO IT. HANDLES CAN BE WELDED TO THE BASE PLATE FOR EASE IN HANDLING. MANY BUILDERS MAKE PROVISIONS FOR ATTACHING WHEELS, WHEN MOVING TO THE TRUCK.

CLIPS

ASSUMING YOU ARE USING " T" IRON OR EQUIVALENT JACKS, THE CLIPS SHOWN IN SECTION 7 ARE USED. THEY CAN BE MADE OF BAR STOCK, IN OR OR TWO PIECES. TAKE THE TWO PIECE CLIP SHOWN AT THE LEFT. IT CONSISTS OF TWO PIECES OF BAR STOCK WELDED TOGETHER OVERLAPPING THEY SHOULD BE ABOUT 4" LONG. THE THICKNESS AND WIDTH SHOULD CLEAR THE "T" JACK AS SHOWN IN THE LOWER ILLUSTRATION. YOUR BLACSMITH CAN MAKE ONE PIECE CLIPS SHOWN IN THE RIGHT HAND ILLUSTRATIONS. METAL AT LEAST 1/8"THICK SHOULD BE USED, PREFERABLY 3/16". OF COURSE TWO CLIPS ARE NEEDED FOR EACH JACK. CLIPS MOUNTED ON THE U NDERSIDE OF THE BASE, CONSIST OF THREE PIECES OF BAR STOCK, ONE BRIDGING THE OTHER 2. UPRIGHT OF JACK MUST BE CUT AWAY FOR THE DISTANCE THE JACK EXTENDS UNTER THE BASE, IF CLIPS ARE MADE BELOW THE BASE.

AFTER CLIPS ARE MADE AND TESTED FOR FIT, DRILL A HOLE FOR PIN THROUGH ONE IN EACH PAIR, EXTENDING THROUGH THE BASE. IF EVERYTHING IS EXACTLY TRUE , THEY MAY BE USED INTERCHANGEABLY, BUT IT IS BETTER TO NUMBER EACH JACK AND CLIP.

CROWNS:

CROWNS ARE TO SWEEPS, WHAT BASE AND CLIPS ARE TO JACKS. THEY REVOLVE WITH THE AXLE IN ALL CENTER WHEELS, BUT IN NUMBER 5, THE PROVIDE SLOTS FOR THE "T" SHAPED SWEEPS. THEY ARE BUILD UP TO FORM THE HUB OF YOUR RIDE.

IN WHEELS NUMBER 1 OR 4, WHERE DRUM AND HUB ARE USED, A FLAT CIRCLE OF 3/16" TO 1/4" STEEL IS BOLTED DIRECTLY TO THE HUB. IN WHEELS NUMBER 2 AND 4, AN ARRANGEMENT SIMILAR TO A PIPE FLANGE MUST BE BUILT UP TO GRIP THE AXLE AND FORM A SHELF FOR THIS CIRCULAR PLATE. PART OF THE ORIGINAL REAR WHEEL HUB CAN BE USED. 12" OR 16" DIAMETER IS A GOOD WIDTH FOR THE CROWN BUT YOU CAN MAKE IT LARGER IF DESIRED.

SECOND LAYER IS BUILT UP BY LAYING SHORT SECTIONS OF SWEEP STOCK IN POSITION ON TOP OF THIS PLATE AND BLANK SPACES FILLED IN. INSTEAD OF CUTTING PIECES THE EXACT SIZE, YOUR WELDER CAN TAKE SCRAPS AND FILL HIGH ENOUGH FOR THE FEET OF THE SWEEP WITHOUT MUCH PLAY. IF YOU LEAVE A BEAD OR CIRCLE OF STEEL IN THE CENTER FOR THE HUB AND CUT THE FILLERS FROM A SOLID DISC AF YOU LIKE.

THIRD

THE ~~THIRD~~ LAYER CONSISTS OF SECTION TO HOLD THE NECK OF THE "T" IRON (SEE ILLUSTRATION) THESE CAN BE ALMOST ANY THICKNESS, THEY CAN BE MADE STRONGER BY USING HALF INCH STOCK ALONG THE BEARING EDGES, BUT IT IS NOT NECESSARY. THESE SECTIONS SHOULD BE BOLTED OR WELDED, OR THE WHOLE GROUP CAN BE CUT FROM ONE PIECE. BY ALL MEANS MAKE YOUR CROWN TIGHT AND STRONG AS IT IS FROM HERE, THAT YOUR POWER EMITS. IN WHEELS NUMBER 2 AND 3, THE OTHER HALF OF THE WHEEL HUB SHOULD GO ON TAP. A FLAT DISC WITH A HOLE FOR CENTER WILL DO FOR FINAL TOP-PIECE FOR WHEELS NUMBER 1 AND 4.

IF DESIRED, YOU CAN START WITH A FLAT DISC OF STEEL, AND WELD CLIPS IN PLACE SIMILAR TO THE BASE. BE SURE THEY ARE TIGHT FIT AND DRILL A HOLE THROUGH CLIP AND SWEEP.

IF CENTER WHEEL NUMBER 5 IS USED, THE SAME PRINCIPLE EXISTS BUT A BEARING MUST BE BUILT INTO THE CENTER. IF A PIPE IS USED FOR A CENTER POLE, THE BEARING SHOULD FIT IT WITH LITTLE PLAY. A BAND OF STEEL OR PIECE OF LARGER PIPE SHOULD BE FITTED BELOW THE BEARING TO KEEP IT FROM SLIPPING DOWNWARD. THER CROWN OF THREE LAYSRS IS MADE IN THE SAME MANNER, AS FOR OTHER CENTER WHEELS.

AS THIS CROWN MUST ALSO CARRY THE WEIGH OF THE "BULL-GEAR", AN ADDITIONAL CIRCULAR PLATE IS FASTENED ON A BEARING ABOUT FOUR TO SIX FEET UP THE PIPE. THIS SUPPORTS THE SWEEPS NEAR THE OUTER END BY RODS AS SHOWN IN THE RIGHT HAND ILLUSTRATION THIS UPPER CROWN MAKES A STURDY ARRANGEMENT.

JACKS

JACKS ARE SUPPORTS FOR THE FLOOR SECTIONS. IF RIDE IS TO SIT FLAT ON THE GROUND-- (IT'S A GOOD PLAN--) STRAIGHT PIECES OF T IRON 3/16" x 1-1/2 x 1-1/2 WILL DO NICELY. IF A SIXTEEN FOOT RIDE IS USED, YOU CAN USE T FENCE POSTS, BUT THEY ARE PLENTY TOUGH DRILL "T" IRON WAS SCARCE AFTER THE WAR. A LUMINUM IS ALSO AVAILABLE BUT A THICKER AND A LARGER SIZE, AS IT IS NOT AS STRONG AS STEEL. ANGLE IRON IN 1-1/2" x 1-1/2 x 3/16" IS GENERALLY AVAILABLE. IT CAN BE USED IF A 3/16" x 1-1/2 STRIP IS WELDED TO IT AS SHOWN IN RIGHT HAND ILLUSTRATION, TOP ROW, SECTION 9.

IF YOU'R GOING TO USE TOP OR SKY BOARDS AS SHOWN IN 14 AND 19, PROVISIONS MUST B BE MADE FOR HOLDING THE UPRIGHTS. A SHORT PIECE OF ROUND BAR STOCK OR PIPE OF A SIZE TO SNUGLY FIT INSIDE OF UPRIGHT IS WELDED TO THE END OF THE JACK. A HOLE DRILLED IN UPRIGHT AND JACK CAN BE USED TO INSERT A PIN.

FLOOR SECTIONS CAN BE RAISED OFF THE GROUND, ANY DISTANCE BY WELDING ADDITIONAL T IRON FOR THE WIDTH OF THE FLOOR SECTION OR MATCHING AND BENDING JACK STOCK FOR ADDITION OF SUPPORT AS SHOWN IN LOWER ILLUSTRATION.

PROTECTION FROM ROT, SUCH AS CREOSOTE OR ALUMINUM PAINT, OR EVEN ADDITION OF SHEET ALUMINUM MUST BE USED ON THE UNDERSIDE, IF FLOOR SECTIONS LIDE DIRECTLY ON THE GROUND.

FLOOR SECTIONS

FLOOR SECTIONS ARE GENERALLY BUILT OF TONGUE AND GROOVE OR D AND M STOCK(SHEATHING) OF ONE INCH ON A 1x3" FRAME. WHITE PINE IS USED IF POSSIBLE FOR LIGHT WEIGHT. IN A PARK, WHERE WEIGHT IS OF LITTLE CONSEQUENCE, HARDWOOD CAN BE USED. THE FRAME IS FASTENED TOGETHER WITH CORRUGATED IRON FASTENERS,(SIMILAR TO THOSE USED BY SIGN PAINTERS FOR CLOTH SIGN FRAMES) AND THE FLOOR NAILED TO IT. THE FLOOR SECTIONS ARE 42 " WIDE , YOU MAY GET BY WITH 36". AS MENTIONED BEFORE, IF POSSIB LE, THEY SHOULD BE MADE EXACTLY ALIKE TO BE INTERCHANGEABLE...BUT DON'T WORRY ABOUT IT. THEY CAN BE NUMBERED AND THE SAME NUMBER ON THE JACK. SOME FORM OF PIN SHOULD BE MADE ON THE JACK AND A PIECE OF TUBING INSERTED IN THE FLOOR, TO HOLD THEM IN PLACE AS SHOWN IN LOWER ILLUSTRATION.

SWEEPS

SWEEPS CAN BE MADE IN VARIOUS SHAPES, A "T" END IS REQUIRED NEAR THE CROWN, BUT THE OUTSIDE CAN BE ANY SHAPE AS LONG AS A SUITABLE FASTENER CAN BE USED. IF POSSIBLE AVOID USING FENCE POSTS AS THEY ARE SPRINGY AND UNLESS BRACED VERY CLOSE TO THE END, SHOOT THE CAR FORWARD LIKE A ROCKET ON THE START. " T" IRON IS BEST, BUT 3/4" OR 1" PIPE WITH FLATTENED ENDS AND UPRIGHTS WELDED IN SHAPE OF A "T" WILL DO. SWEERS CAN BE STRAIGHT, BENT TO CURVE OR ANGLE , PROVIDING A BASE FOR THE CANVAS CENTER COVER. SEE SECTION 20. THIS IS ALL A MATTER OF TASTE , WHEELS NUMBER 1 AND 5 REQUIRE STRAIGHT SWEEPS. A PEAKING CENTER OF THE CANVAS CAN BE MADE BY ATTACHING A PIPE TO THE REVOLVING HUB, CENTER-POLE FASHION

BRACES

THE SWEEPS MUST BE FASTNED INTO THE FORM OF A WHEEL TO RR EVEN STRESS AND STRAIN, AND DRAWN UP TIGHELY. BRACES ARE PLACED BETWEEN EACH SWEEP AS CLOSE TO THE OUTSIDE EDGE AS POSSIBLE AN YET ALLOW ROOM FOR THE CARS TO RIDE BETWEEN THEM. ADDITIONAL BRACESC CAN BE USED BETWEEN SWEEPS NEAR THE CENTER BUT THIS IS SELDOM NECESSARY.

THE SIMPLEST WAY IS TO DRILL HOLES IN THE PROPER PLACE IN THE SWEEPS AND DROP 1/2" "U" SHAPED ROUND STEEL BARS(SEE ILLUSTRATION SECTION 12,TOP ROW) ONE BRACE SHOULD BE IN TWO PIECES THTREADED FOR A TURNBUCKLE TO TAKE UP ANY PLAY.

A LIGHT WEIGHT CHAIN MAY BE SUBSTITTUTED FOR BRACES IF HOOKS ARE PUT ON SWEEPS TO ATTACH IT. IF LINKS ARE SMALL, IT WILL NOT BE NECESSARY TO USE A TURNBUCKLE ON THE CHAIN AS IT CAN BE PULLED UP ANOTHER LINK TO TIGHTEN.

THE SECOND ROW OF ILLUSTRATIONS SHOWS PIPE WITH FLATTENED USED AS BRACES. WELD OR BOLT BENT STEEL, TO FORM SLOTS(TO SWEEPS) SO PINS CAN BE USED. DO NOT USE BOLT S IN A PORTABLE RIDE, AS THIS SLOWS UP ERECTION AND TEAR DOWNS.

HOLLOW FRAMES MADE OF LIGH GAGE ANGLE IRON(1" x1"x1/8") WELDED TO SHAPE MAY BE USED AS BRACES , OR WOODEN SECTIONS, SIMILAR TO FLOOR SECTIONS BUT WIT H BRACES AS WIDE AS THE BOARDS ALTERNATNING. IF THE LATTER TWO ARE USED, BE SURE THEY DO NOT RUB THE BACK TIRES OF THE CARS.

JACK BRA CES

WHILE WE ARE DISCUSSING BRACES, AS LONG AS FLOOR SECTIONS ARE FLAT ON THE GROUND, NO JACK BRACES ARE NECESSARY, BUT IF YOU FIND THE RIDE TWISTS AT THE START WITH THE ELEVATED FLOOR SECTIONS AND JACKS ON PAVED STREETS—YOU CAN USE THE SAME TYPE BRACES AS YOU DID FOR THE SWEEPS. A LSO YOU CAN WIND A CABLE AROUND THE RIDE AND TIGHTEN IT WITH A TURNBUCKLE.

CANVAS CENTER

CUT THE RIDE UP AND LAY HEAVY PAPER OVER THE SPACE BETWEEN THE SWEEPS TO MEASURE FOR A PATTERN MOVE FROM ONE SECTION TO THE OTHER, TO DETERMINE IF ALL ARE THE SAME SIZE. ALLOW A FEW INCHES FOR SEAMS AND SHRINKAGE, AND CUT FROM CANVAS. I USED WHITE DUCK, 10 OZ PURCHASED IN LOCAL DRY GOOD STORES AND NUMBER 30 THREAD ON AN ORDINARY SEWING MACHINE. MAKE TWO OR THREE SEAMS AT EACH JOINING. PLACE OVER RIDE AND MARK SPOT FOR TAPES OR STRINGS.

PAINT SECTIONS IN CONTRASTING COLORS WITH A SPECIAL CANVAS PAINT(YOU CAN BUY IT AT ANDY LARGE PAINT STORE) IT DOESN'T GO VERY FAR, BUT IT DOESN'T HARDEN OR STIFFEN THE CANVAS LIKE ORDINARY PAINT. YOU CAN ALSO SUE "SIGN PAINT "BULLETIN COLORS CUT WITH TURPENTINE OF JAPAN DRIER. (TODAY THERE ARE SYNTHETIC BULLETIN COLORS) USE A STIFF BRUSH--A BRUSH THAT HAS NOT BEEN CLEANED VERY WELL FROM HOUSE PAINT, IS GOOD AS PAINT COATED BRISTLES ARE STIFF. BE SURE AND PAINT ALTERNATE SECTIONS IN CONTRASTING COLORS.

DO NOT PAINT FANCY DESIGNS OR LETTIRING ON CANVAS, AS IT WILL BE NECESSARY TO REPAINT DURING THE SEASON AND IT'S SIMPLER TO PAINT EACH SECTION A SOLID COLOR. THE COVER AS PROTECTS THE MOTOR FROM RAIN, AS WELL AS DECORATING THE RIDE.

TOPS AND SKYBOARDS

WHETHER YOU USE A TOP, SKYBOARD, UPRIGHTS TO SUPPORT THEM, AND A CENTER POLE, IS OF COURSE UP TO YOU. IF YOUR ARE SHORT ON MONEY, BUILD THE RIDE WITHOUT THEM AND ADD THEM AFTER THE RIDE MAKES THE MONE. YOUR RIDE GOES UP MUCH FASTER AND THERE IS LESS TO CARRY. HOWEVER IF YOUR ARE BUCKING COMPETITION, THE MORE ELABOARATE THE RIDE, TB THE BETTER. WITHOUT A TOP YOU ARE OUT OF BUSINESS IF IT RAINS--WITH A TOR, THEY STILL RIDE.

IT'S A GOOD IDEA TO EQUIP YOUR JACKS WITH "BUTTONS" ON WHICH TO FASTEN THE UPRIGHTS WHETHER YOU USE THEM AT THE START OR NOT. YOU CAN ALSO MAKE ARRANGEMENTS FOR THE CENTER POLE BEARING--AN AUTO FRONT WHEEL SPINDLE AND HUB FASTENED TO THE CROWN WILL TAKE CARE OF THIS IN MOST CASES.

UPRIGHTS ARE MEREL Y STEEL PIPES, ALUMINUM TUBING OR WOODEN POLES(ON SHORT PIPE SECTIONS) TO HOLD THE SKYBOARDS AND BRACES TO TIGHTEN THE OUTER EDGE OF THE TOP TO. MAKE THEM 7' OR 8'TALL. THEY MERELY SET OVER THE " BUTTON" ON THE END OF THE JACK. ~~WHEN THEY ARE IN PLACE~~ SO A PIN CAN BE INSERTED. THE WEIGHT OF THE POLE WILL PROBABLY HOLD THE UPRIGHT IN PLACE --WITHOUT A PIN. SUITABLE HOOKS SHOULD BE ! ADDED ON THE TOP TO CARRY THE SKYBOARD.

SKYBOARDS ARE DECORATIVE SECTIONS THAT CROWN THE TOP OF YOUR RIDE BETWEEN THE UPRIGHTS. THEY MAY BE MADE OF SOLID WOOD, A WOOD FRAME COVERED WITH PLYWOOD OR TRASPARENT OR TRANSLUCENT PLASTIC, OR EVEN SHEET ALUMINUM. A STEEL FRAME CAN BE USED INSTEAD OF WOOD. BE SURE THERE IS AT LEAST ONE PIECE OF STEEL ANGLE BUILT INTO THE SKYBOARD FOR STRENGTH, AS THE CANVAS TOP IS FASTENED TO IT. YOU CAN USE A RIDE WITH SKY BOARDS AND NO TOP, IF YOU DESIRE. THIS IS QUATE A FLASHY ARRANGEMENT, BUT NO PROTECTION IN CASE OF RAIN. THE SKYBOARDS SHOULD BE ELABORATELY DECORATED.

CENTER POLES

REGARDLESS OF WHETHER YOUR CENTER WHEEL AXLE IS REVOLVING OR STATIONARY, THE TOP MUST REMAIN STATIONARY. IF WHEEL NUMBER 1 IS USED, IT CAN BE FASTENED TO SUPPORT A CENTERPOLE BY MERELY REMOVING THE HUB CAP AND ~~EXTENDING~~ AND WELDING A NUT INSIDE THE CENTERPOLE. IF WHEEL NUMBER FIVE IS USED, IT MERELY IS A MATTER OF SLIPPING THE CENTERPOLE INSIDE THE PIPE USED FOR THE CENTER.

REVOLVING AXLES PRESENT ANOTHER PROBLEM. A FRONT WHEEL SPINDLE OR SIMILAR AXLE IS FASTENED TO THE CROWN BY WELDING ON BOLTS. TWO BEARINGS ARE INSTALLED INSIDE THE CENTER POLE OR THE FRONT WHEEL HUB IS WELDED TO THE END OF THE POLE.

THIS PERMITS THE RIDE TO REVOLVE AND THE POLE REMAIN STATIONARY. ALUMINUM TUBING WOOD OR STEEL PIPE, CAN BE USED FOR THE CENTER POLE.

CANVAS TOP

THE EASIEST WAY TO MAKE A TOP IS TO RUN WIRES FROM THE TOP OF THE CENTER POLE, TO THE TOP OF TWO ADJOINING UPRIGHTS AND DETERMINE THE SIZE OF A SECTION AND CUT PAPER PATTERN. PROCEED THE SAME AS FOR THE CANVAS CENTER COVER. A STEEL RING THAT WILL EASILY CLEAR THE CENTER POLE IS PLACED IN THE CENTER. ARRANGEMENT S TO RAISE OR LOWER THIS BY PULLEY CAN BE MADE, OR IT CAN BE HOISTED IN PLACE WITH THE POLE. A HOOD TO COVER THE HOLE MADE BY THE RING SHOULD BE MADE. USE GROMETS(METAL EYELETS) IN THE OUTER SEAM FOR ROPES OR HOOKS TO FAST EN TO SKYBOARDS AND UPRIGHTSS

CONVERTING THE AUTOS

A LOT CAN BE WRITTIN ABOUT THE TYPE OF AUTOS YOUR NEED. IF YOU BUY BIG CARS YOU CAN DARRY BIGGER PASSENGERS, BUT THEY ARE VERY EXPENSIVE AND HEAVIER TO CARRY AND AFTER ALL THE RIDE APPEALS CHIEFLY TO SMALL CHILDREN. DO NOT BUY ALL OF ONE COLOR ONE DESIGN CAR. FIRE TRUCKS ARE POPULAR, BUT DON'T HAVE MORE THAN TWO ON YOUR RIDE, . AND HAVE THEM DIAMETRICALLY ACROSS FROM EACH OTHER. HAVE TWO CARS THAT WILL HOLD TWO CHILDREN IN THE SAME SEAT, SO BABY CAN RIDE WITH BROTHER. INSTALL CARS OF THE SAME TYPE DIAMETRICALLY OPPOSITE EACH OTHER. IF YOU FIND FIRE TRICKS T OO EXPENSIVE, YOU CAN MAKE THEM FROM ANY CAR BY ADDING LADDERS, HOSE REELS, BELLS AND TWO 3/8" PIPE WU' HAND RAILS. IF POSSIBLE,.

THE CAR PEDAL AND PEDAL RODS SHOULD BE REMOVED AD YOU CAN SUBSTITUTE A STRAIGHT AXLE FOR THE CRANK IN THE REAR(BUT THIS IS REALLY NOT NECESSARY). D ISCONNECT THE STEERING WHEEL POST, OR AT LEAST MAKE THE STEEBING WHEEE FREE TO SPIN ON THE SHAFT. WHEN BUYING CARS, PAY MORE ATTENTION TO THE APPEARANCE AND THE EASE WITH WHICH THEY CAN BE KEPT CLEAN AND SHINY FOR EXTRAS SUCH AS OVER DRIVES, CHAIN DRIVES, ETC, WHICH YOU MUST BEMOVE ANYWAY. BUY CARS PAINTED IN ONE COLOR, OR AT LEAST ONE COLOR TO A PANEL SO THEY CAN BE RE-ENAMELED. A COAT OF SIMONIZE OR OTHER AUTO POLISH SHOULD BE APPLIED IMMEDIATELY AND RENEWED REGULARLY.

A PAN OF HEAVY SHEET METAL , BENT AS SHOWN IN THE LAST PICTURE IN SECTION 18 IS MADE AND FASTENED UNDER THE CAR SO IT IS IMPOSSIBLE FOR THE RIDER T O TOUCH THE FLOORL IF YOU CANNOT GET HEAVY ENOUGH METAL, ADD FLAT RIGN OR ANGLE BRACES.

YOU MAY HAVE TO BUY CARS WITH NARROW TIRES. IF YOU DO, YOU CAN REPLACE THE WHEELS WITH HEAVY TIRED BRONZE—BALL OR ROLLER BEARING WHEELS. IF NECESSARY YOU CAN START WITH NARROW TIRED WHEELS, BUT HAVE REP LACEMENTS HANDY AS THEY WILL NOT LAST LONG. DO I NOT USE AXLES LESS THAN 1/2" IN DIAMETER, EXCEPT IN VERY SMALL AUTOS.

PULLING OF THE AUTOS IS ACCOMPLISHED BY A PIECE OF FLAT IRON, BENT T O CONNEOT FROM THE FRONT AXLE TO SWEEP. ON THE SWEEP END, AN ADDITIONL PIECE IS WELDED OR BOLTE TO IT, SO A HOLE DRILLED THROUGH THE TWO PIECES AND AND THE SWEEP CAN BE USED WITH A PIN. BOLTS, IF USED SHOULD BE COTTERED SO THEY WON'T WORK LOOSE AND SEND THE CAR CARREENING OF THE PLATFORM. THE FRONT WHEELS ARE STEERED BY THIS ROD. IF ACKER-MAN STEERING(SIMILAR TO AUTOMOBILE SPINDLES) WITH SPINDLES , AND SUCH ARE ON THE CAR, FASTEN THE TOW ROD TO THE STEERING BAR. ON 16 FOOT DIAMETER RIDES. IF CARS ARE LONG, REAR WHEELS MUST BE SET AT AN ANGLE.

COMPLETE SET-UP

SECTION 19 SHOWS A RIDE COMPLETELY SET-UP , WITH THE SKYBOARDS, TOP AND CENTER COVER, AND FLOOR SECTIONS FL AT ON THE GROUND. ILLUSTRATION 20 SHOWS RIDE WITH CURVED SWEEP SWEEPS, CANVAS CENTER COVER AND RAISED FLOOR SECTIONS. CARS ARE FASTENED TO THE END OF THE SWEEPS(NOT SHOWN IN PICTURE) BE SURE THEY DO NOT RUB AGAINST BRACES.

LIGHTS CAN BE INSTALLED INSIDE THE SKYBOARDS AND A ROW OF SOCKETS CAN BE SET IN TH' LOWER EDGE OF THE SKYBOARDS TO ILLUMINATE BOTH INSIDE AND OUTSIDE OF THE RIDE. MOS' MIDWAYS HAVE ENOUGH LIGHTS ON THEM TO MAKE THELIGHTING IN FIGURE 20, UNNECCARY.

FENCE

IT IS NOT ALWAYS NECESSARY TO HAVE A FENCE, IN CROWDED AREAS, IT MAY BE A HELP AS IT DOES PREVENT CHILDRENT FROM DASHING ON TO A MOVING RIDE. SOME CARNIVALS DEMAND A FENCE. FENCE SECTIONS AS SHOWN CAN BE ABOUT TEN FEET LONG, MADE OF THIN WALLED ECTRIC CONDUIT OF OTHER PIPE. LIGHT STRIPS OF STRAP IRON ARE USED BETWEEN OTHER DESIGNS CAN BE MADE, BUT BE SURE THEY ARE OF OPEN CONSTRUCTION, AND DO NOT HIDE THE VIEW OF CARS.

ANOTHER TYPE OF FENCE CAN BE MADE BY DRIVING A SECTION OF ANGLE IRON ABOUT 1"x1" s1/8", OR LIGHT STEEL ROUND ROD AND TOP SAME WITH A CHAIN. THE CHAIN CAN BE OF THE PORCH SWING VARIETY AND FASTENED WITH LOOPS TO S. HOOKS. TWO ROWS OF CHAINS—ONE ABOUT A FOOT BELOW THE OTHER, AND PLASTIC FLAGS TO LET IT BE KNOWN, IT'S THERE.

IF FLOOD LIGHS ARE DESIRED, THEY CAN BE MADE BY USING THE SAME WEIGHT ANGLE IRON. DRIVE A FOUR FOOT LENGTH, 2 FEET IN THE GROUND AND BOLT A SIX OR EIGHT FOOT LENGTH OF ANGLE IRON TO THE TOP OF IT, TO CARRY THE LIGHTS. DON'T USE THIS ROD FOR A CHAIN FENCE AS PEOPLE LEANING ON IT WILL TILT THE LIGHT. INSTALL THE LIGHT POLES INSIDE THE FENCE, OUT OF PUBLIC REACH

TICKET BOX

THE TICKET BOX IS MADE IN THREE PANELS. THEY SHOULD BE HINGED TOGETHER. MAKE THE COUNTER LOW ENOUGH TO DEAL WITH YOUR SMALL CUSTOMERS. THREE PANELS ABOUT 30" HIGH IS ABOUT RIGHT. THE TOP IS LAID ACROSS IT ON CLEATS AND BELOW THIS, ANOTHER SHELL FOR YOUR MONEY AND TICKETS, OUT OF PUBLIC VIEW. HAVE A FLAP HINGED TO IT, SO IT CAN BE DROPPED TO COVER THE OPENING IF YOU HAVE TO COLLECT TICKETS OR LEAVE THE BOX FOR A MINUTE.

USEFUL INFORMATION

IN AN CITY OF ANY SIZE AT ALL, ESPECIALLY IF THERE IS MANUFACTURING GOING ON, YOU WILL FIND DEALERS IN GEARS, GEAR REDUCERS, PULLEYS, ETC, AS THESE ARE PART OF FACTORY MAINTENANCE. LOOK IN YOUR YELLLOW PAGES UNDER BEARINGS, GEARS, ETC. STOCK GEARS IN SMALLER SIZES ARE REASONABLY PRICED,

YOUR BLACKSMITH (IF YOU CAN FIND ONE) WELDER, ETC, WILL TELL YOU ABOUT STEEL. IN 69 IT IS FROM 10¢ TO 12¢ APOUNT, BUT THAT IS IN TEN TON LOTS. IN INCREASES GRADUALLY UNTILL IT'S MORE THAN 25¢ A POUND IN LOTS OF LESS THAN 100 LBS. THE NEXT PRICE BREAK IS 400 LBS, AND IT DROPS CONSIDERABLY IN 1000 AND 10000 LB LOTS. TRY WRECKING AD JUNK YARDS. HERE JUNK YARDS SWELL NEW STEEL ANGLES AND FLATS AND ROUNDS (ON ONLY THE BEST SELLING SIZES) FROM 10¢ TO 15¢ A POUND, REGARDLESS OF HOW MUCH YOU BUY, AND USED STEEL IS GENERALLY 5¢ TO 10¢ SURFACE RUST DOES NOT HARM THE STEEL, HOWEVER DO NOT BUY STEEL THAT IS RUSTED CLEAR THROUGH.

AUTO WRECING YARDS, JUNK YARDS, OLD MACHINERY DEALERS, ETC, CAN SUPPLY YOU WITH GEAR, TRANSMISSIONS, ETC, OR YOU CAN BUY NEW. WITH CARS JUNKING FOR LESS THAN $15, IT WILL PAY YOU TO BUY ONE WITH THE PARTS YOU CAN USE, AND CUT THEM OFF, CUTTING UP THE REST OF THE CAR FOR JUNK.

NUMBERING THE PARTS

EVEN SOME FACTORY BUILT RIDES RARTS SOMETIMES ARE NOT INTERCHANGEABLE. IT IS A GOOD IDEA TO NUMBER EACH PART WHERE IT JOINGS. JACKS AND FLOOR SECTIONS CARRY THE SAME NUMBERS WHERE THE MEET. THE SAME FOR CARS AND SWEEPS, 1 TO 1, 2 TO 2, ETC.

ELIMINATTING THE CENTER POLE.

ELIMINATION OF THE CENTER POLE MAY BE ACHIEVED BY RUNNING A 2"x2" BOARD FROM ONE SIDE OF THE CRESTING TO THE OTHER. YOU MAY HAVE TO JOING TWO PICES WITH PIN HINGES TO REACH.

MAKE A CROSS PIECE, AT 90 DEGREE ANGLES FROM IT. NOW PIN HING A 2x3 TO THE CENTER TO FORM THE PEAK IN THE CANVAS. DIAGONAL BRACES ARE PIN HINGED FROM THE 4 SUPPORTS TO THE POLE. THIS WILL GIVE YOU A CLEAR VIEW THROUGH THE RIDE, YET PEAKED CANVAS TOP.

IT'S UP TO YOU

THIS IS A LOT OF INFORATION, IT SHOULD ENABLE YOU TO BUILD A RIDE, FROM ALMOST ANY-THING YOU HAVE AROUND.

ADDITIONAL INFORMATION:

YOU CAN PURCHASE A PROTRACTOR FROM YOUR LOCAL VARIETY OR STATIONER STORE. TO DETERMINE THE OUTSIDE PLATFORM LENGTH AND ANGLE OF THE CUT. THE SIMPLEST METHOD IS TO MERELY RUN A STRAIGHT LINE, FROM THE CENTER OF THE PROTRACTOR THRU THE LINE GIVING YOU THE DEGREE OF THE CUT. THERE ARE 360 DEGREES TO A CIRCLE. AND IF YOU ARE USING AN 8 CAR RIDE AND WANT AN 8 SECTION PLATFORM, DIVIDE THE 360 x8 AND YOU GET 45 DEGREES. HOWEVER EACH PLATFORM HAS TWO SIDES, AND BOTH ARE CUT ON AN ANGLE, SO YOU DIVIDE THE 45 BY TWO ANG GET 22-1/2 DEGREES. IF YOUR RIDE IS 16 FEET IN DIAMETER REACH OUT 8 FEET WITH YOUR RULE OR CORD. FIRST DIVIDE THE HALF CIRCLE IN QUARTERS--45 ~~DEGREES~~ 4x45 IS 180 DEGREES, HALF CIRCLE. THAT IS THE BACK ANGLE. RUN A LINE FROM THE 8 FOOT EDGE IN FOR THE ACTUCAL DEPTH—NOT A DIAGONAL, BUT ACTUAL, FOR 36" OR 42" THE WIDTH YOU ARE GOING TO USE FOR YOUR PLATFORM SECTION. IF YOU ARGE GOING TO CREATE THE PLAT FORM AWAY FROM THE SPOKES, USE A 22-1/2 DEGREE ANGLE FROM THE IS INSIDE EDGE OF THE PLATFORM TO THE OUTSIDE, AS THERE ARE TWO SIDES TO THE PLATFORM--—IT IS SKETCHED IN THE DRAWINGS.

FOR A 10 CAR 10 SECTION PLATFORM USE 36 DEGREES FOR THE SPOKES OR JACKS, AND 18 DEGREES FOR THE PLATFORM SIDES. FOR A 12 CAR , 12 SECTION PLATFORM, IT'S 30 DEGREES ON THE JACKS AND 15 ON EACH SIDE OF THE PLATFORM SECTION.

ABOUT CUTTING DOWN AUTO REAR ENDS

THE CUTTING DOWN OF THE REAR ENDS OF CARS AND DRUCKS. SOME DO NOT HAVE A BEARING, OTHER THAN THAT JUST ABOVE THE RING GEAR CARRIER AND THE ONE AT THE END, ON THE WHEEL. IF THESE ARE PROPERLY ALIGNED(USING THE AXLE FOR ALIGHNMENT)YOU WILL HAVE NO DIFFICULTY TAKING OUT A SECTION. IF YOU WANT TO CUT IT OFF ELSEWHERE, SOMETIMES IT IN NECESSART TO TNSERT A COMMERCIAL BEARING—BUT GENERALLY THIS IS NOT REQUIRED.

DETERMINING THE PLATFORM LENGTH MATHEMATICALLY

THE EQUALITY OF THE DISTANCE AT THE END OF THE JACKS MAY EE DETERMINED MATHEMATICALLY BU USING THE OLD PATTERNMAKER'S CHORD LENGTH CHART. THIS WAS WORKED OUT MANY YEARS AGO AND IS STILL IN USE.

FO AN 8 SECTION PLATFORM, CHANGE THE DIMETOR(16 FEET) TO INCHES AND MULTIPLY BY .38268. 12 x16 IS 192 INCHCES. T HIS TIMES .38268 EQUALS 73.47656 INCHES OR ABOUT 6 FEET 1-1/2 INCHES. DRAW A LINE ACROSS THE END OF THE JACKS, THE CENTER OF THIS SPACE BETWEEN TWO JACKS, GO IN 36 INCHES. AND LAY A LINE ACROSS IT, THEN MEASURE FROM THIS LINE TO THE END OF THE JACK. SHOULD BE 37" DUE TO THE DIAGONAL. NOW MULTIPLY 192" LESS 74" OR 118" x .38268., AD YOU HAVE THE INSIDE LENGTH OF THE PLATFORM. YOU CAN CHECK THIS WITH THE JACKS OR A LINE FROM THE PROTRACTOR.

FOR A 16 SECTION PLATFORM CHANGE THE DIAMETER OF 20 FEET TO 240INCH ES AND MULTIPLY BY .30902, YOU GET 74.16480 OR ABOUT 6'2-3/16 INCHES

FOR A 12 SECTION 24 FOOT PLATFORM, 288 INCHES x .25882, THE ANSWER IS 74.48 OR 6'2-1/2" . P APER OR CARDBOARD FULL SIZE PATTERNS WILL AID IN MAKING THEM ALL EXACTLY ALIKE. DO NOT WORRY, MERELY PUT NUMBERS ON THE PLATFORMS AND THE SAME NUMBER S ON THE JACKS, SO THEY WILL GO IN PLACE EACH TIME.

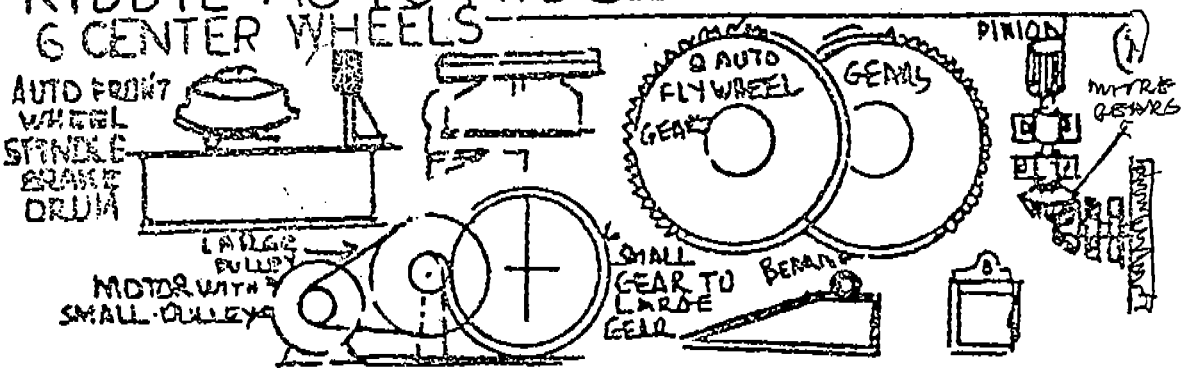
THERE ARE MANY CENTRIFUGAL AUTOMATIC CLUTCHES ON THE MARKET. THE RELIEVE THE STARTING TORQUE ON THE MOTOR BY LETTING IT REV UP TO 1200 OR MORE RPM BEFORE CUTTING IN. THEY SAVE THE MOTOR, BUT HAVE NOTHING TO DO WITH SMOOTH STARTS. THEY ARE INEXPENSIVE, COSTING ABOUT $30

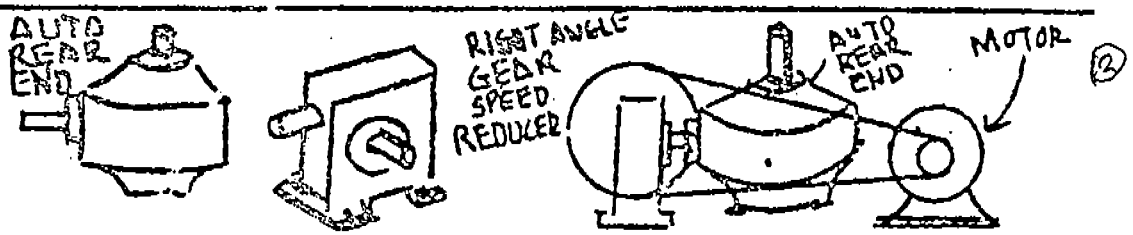
MANY A BIG CARNEY WAS STARTED WITH THIS SET OF DRAWINGS AND INSTRUCTIONS, WHICH WERE AND COPYRIGHED IN 1947. YOU CAN DO IT TOO, IF YOU APPLY YOURSELF,

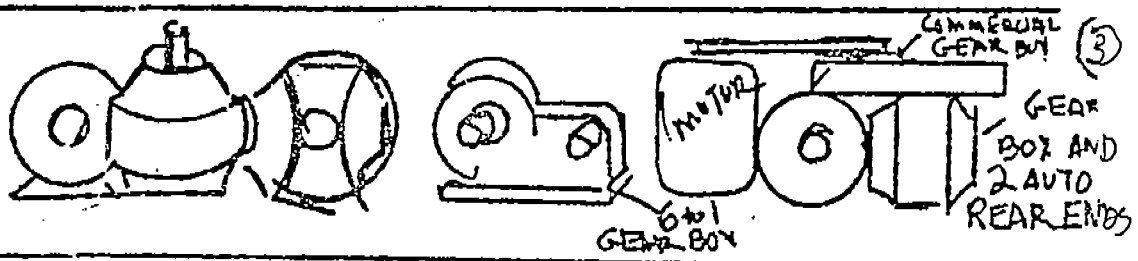
A .K. BRILL

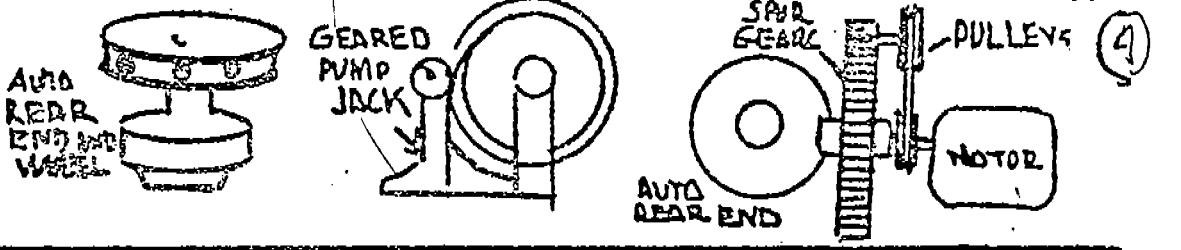
KIDDIE AUTO RIDE A.B. ENTERPRIZES A

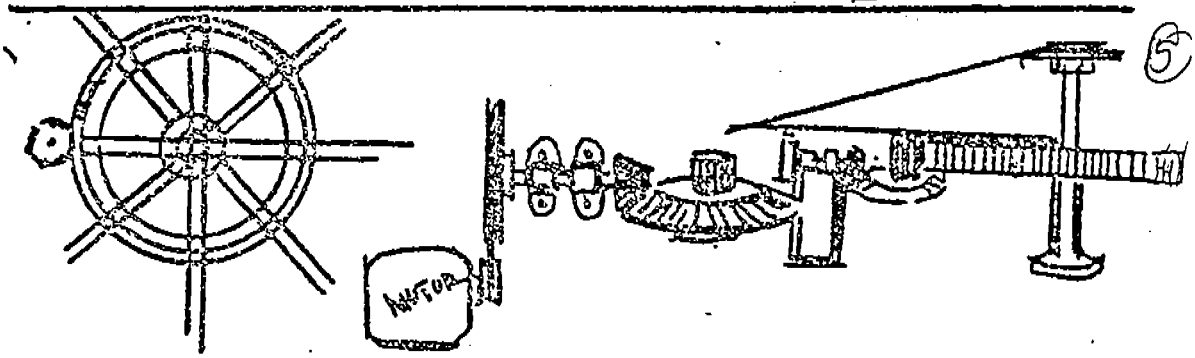
6 CENTER WHEELS

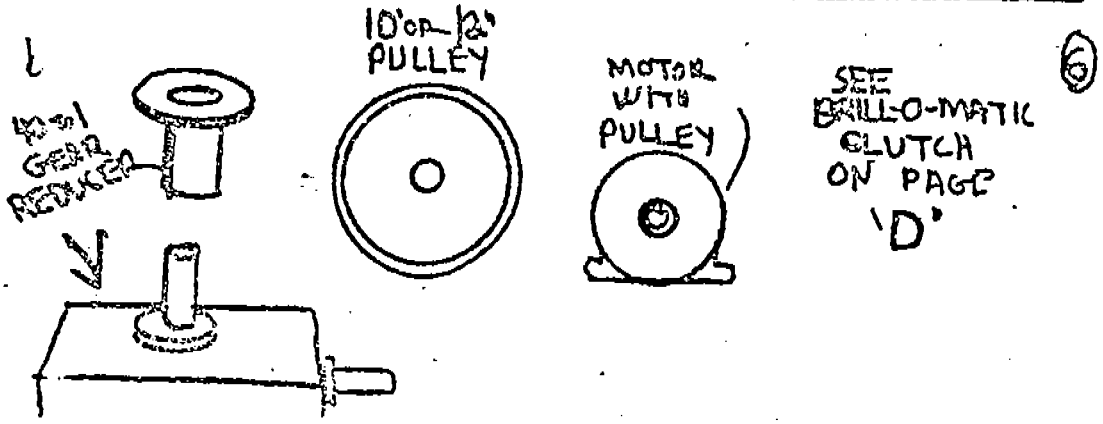




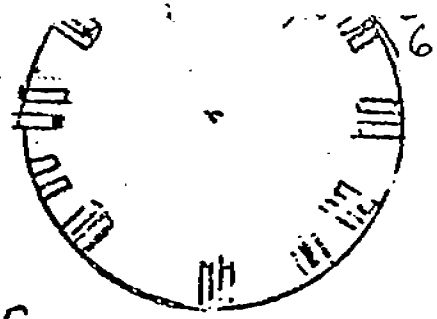








KIDDIE AUTO RIDE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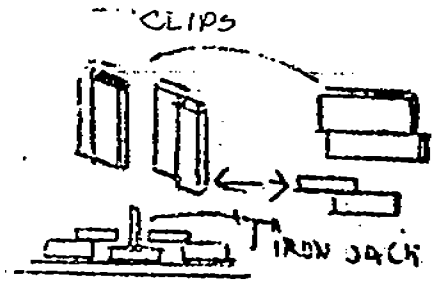

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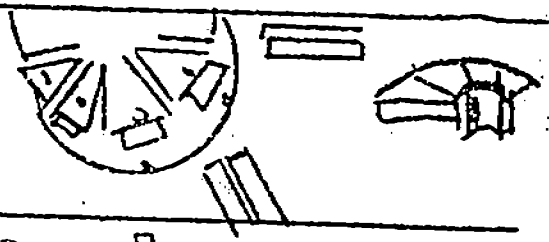
CROWN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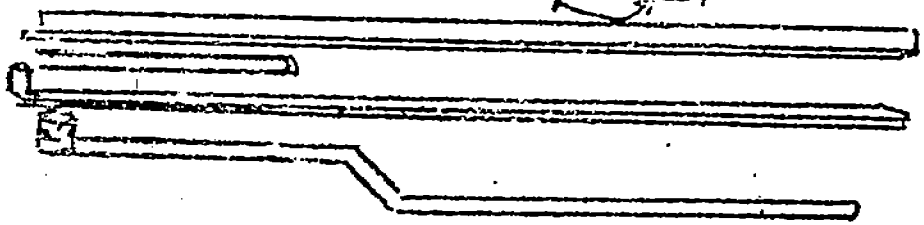
JACKS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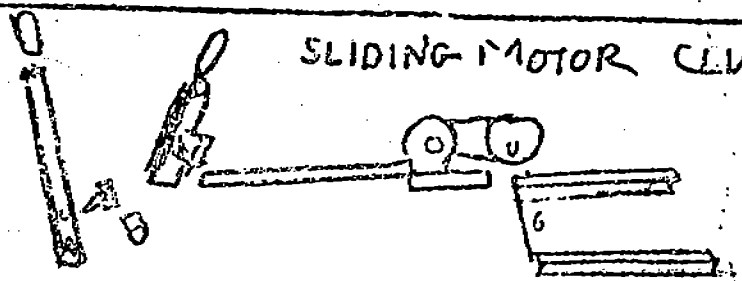

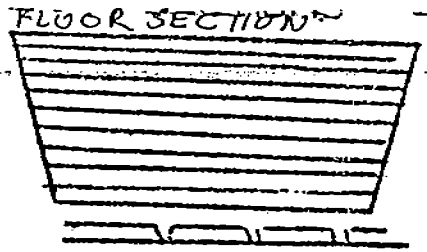

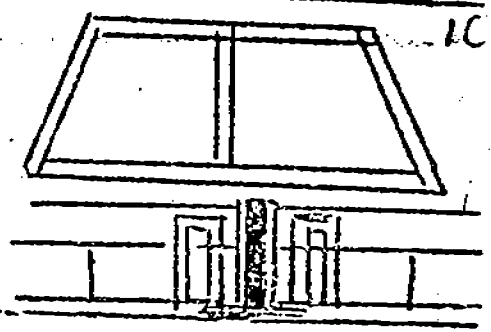
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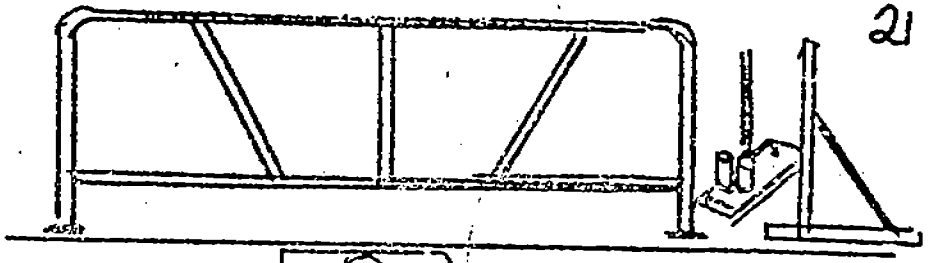
FENCE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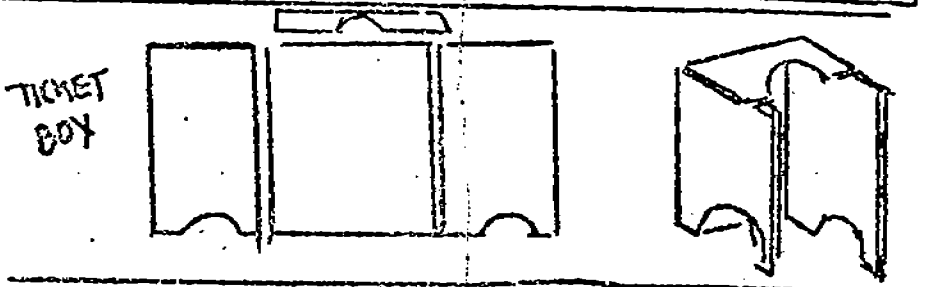
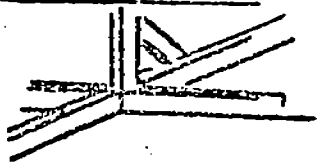


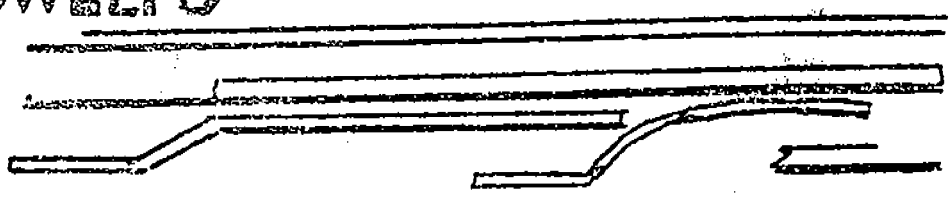
CROSS PIECE OF 2X3 LUMBER HINGED TO SIDE BOARDS WITH SHORT BRACE AND UPRIGHT CAN BE USED INSTEAD OF CENTER POLE AND BEARING SHOWN IN B



DDIE AUTO RIDE

SWEEPS

(11)



BRACES

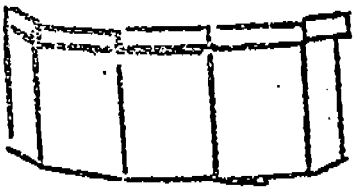
(12)

CANVAS COVERS

(13)

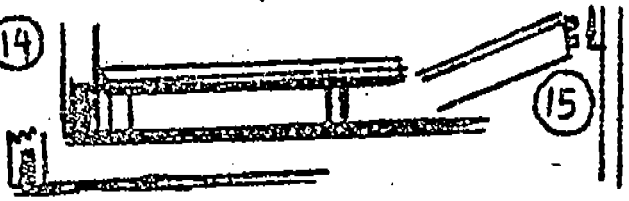
UPRIGHTS FOR TOPS

(14)



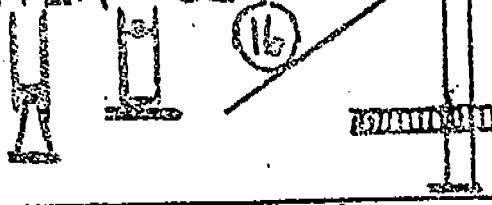
SKY BOARDS

(15)



CENTER POLES

(16)

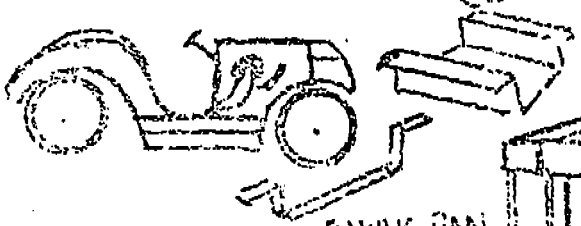


CANVAS TOPS

(17)

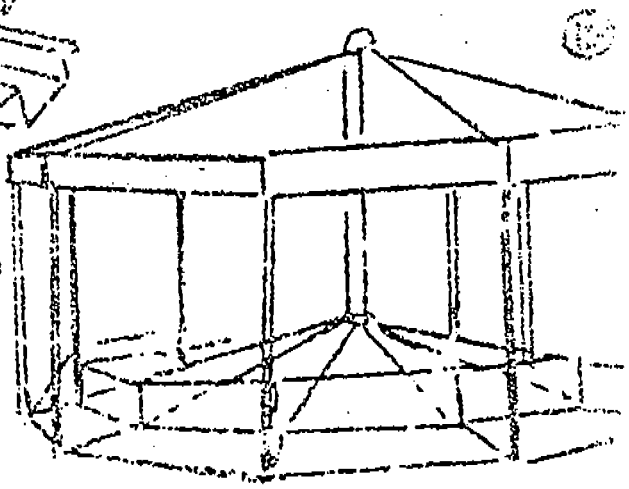
CONVERTING THE AUTOS

(18)

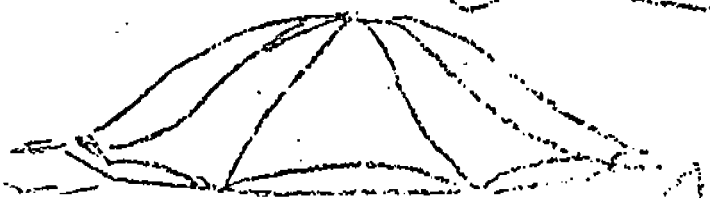


BAKING PAN CAN BE USED ON SMALL AUTOS

(19)



(20)



KIDDIE AUTO RIDE

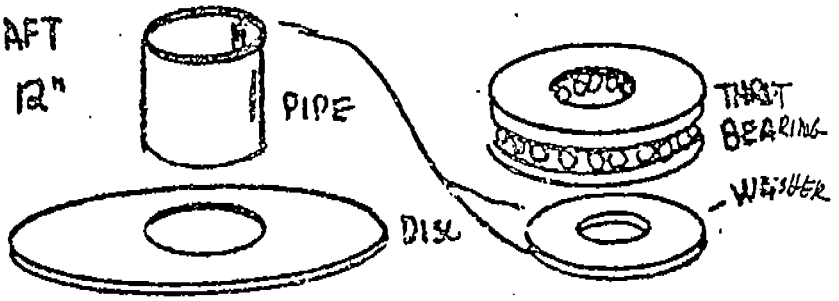
THE BRILL-O-MATIC CLUTCH

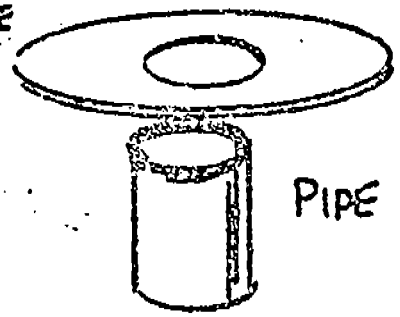
SLOW START - COASTING STOP

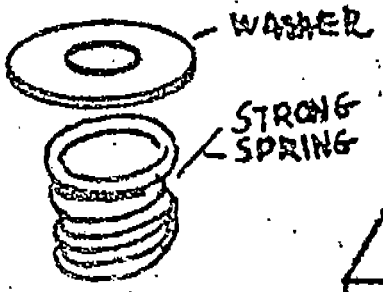
PIPES ARE TIGHT SLIDING FIT ON SHAFT

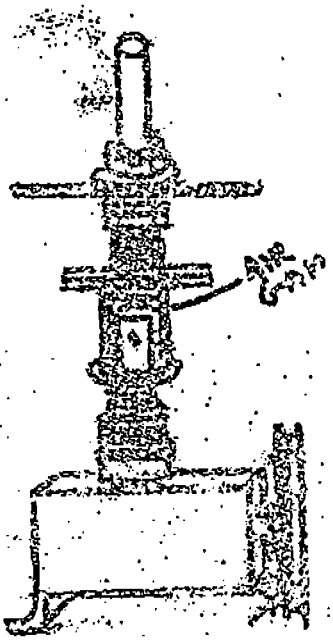
DISCS ARE 10" TO 12" DIAMETER 1/2" THICK OR MORE

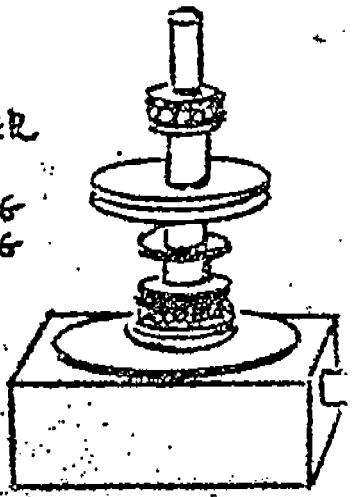
DISCS ARE TURNED SMOOTH AFTER WELDING TO PIPE

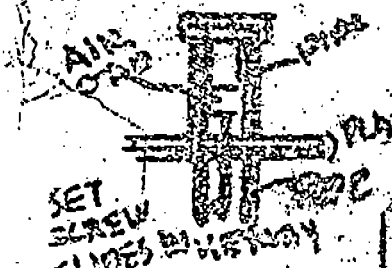


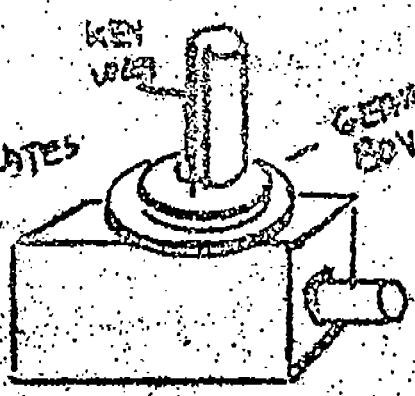


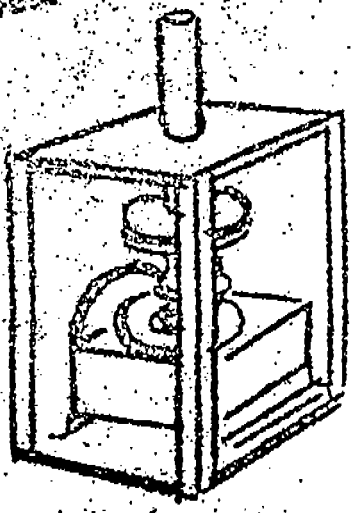




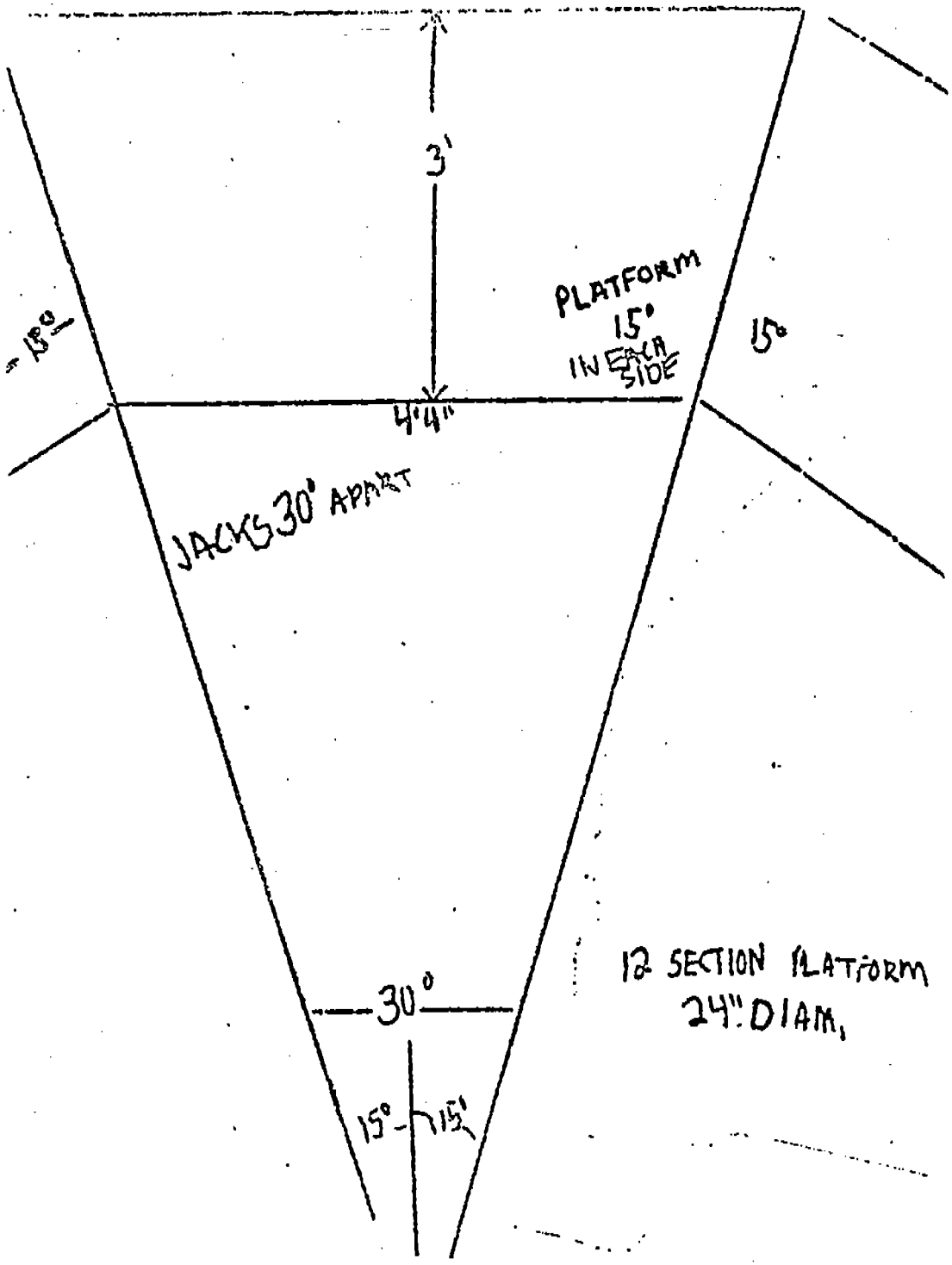








KIDDIE AUTO RIDE



12 SECTION PLATFORM
24" DIAM.