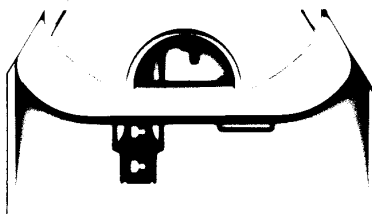


Cadott High School

Advisor: Ryan Schneider

Team Participants

Alan Yeager
Shane Geissler
Lucas Boos
Cole Olynick
Jacob Rygiel
David Guns



Log Book

9/4/07

We were in class and taking notes for the competition.

9/5/07

Mr. Schneider our teacher told us the rules we would have to follow to enter the competition.

9/6/07

We were in class taking notes on information on the cars standards.

9/7/07

We were in class thinking how we would design our cars.

9/10/07

We took a test on the competition rules. Also we drew life size models of cars and Driver.

9/11/07

Examined cars from a packet print out.

9/12/07

Went to computer lab to look up car designs.

9/13/07

Went to computer lab to look up prices for parts needed for the cars we were about to build.

9/14/07

Started to take apart the old cars

9/17/07

Still taking apart the old cars.

9/18/07

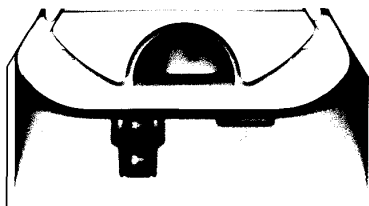
We finally finished taking apart the old cars and now decided on what we needed to get for the chassis.

9/19/07

We received our sponsor ship packets and thought of whom we could get to Sponsor us. Removed the carburetor from motor and cleaned it out.

9/20/07

We cut out a few of the rungs of the ladder that we didn't need to save weight.



9/21/07

Then we took the ladder and cut a 2-½ ft. piece off the end and welded it 4ft. from one end and welded it at a 45-degree angle for the firewall on the frame.

9/24/07

Grinded off all the paint and cement specs on the ladder.

9/25/07

Put sheet metal for the floor pan on the car.

9/26/07

Mounted foot pedal to the floor pan and welded support bars for it.

9/27/06

Welded support bar and added more runs

9/28/07

Hooked throttle cable up to the foot pedal.

10/1/07

We painted open spots on the frame.

10/2/07

We ordered some new brake cables and mirrors.

10/3/07

We were in the classroom deciding on how wide we wanted the wheelbase to be.

10/4/07

Went out in the shop and measured out our wheelbase to be 50.5 inches.

10/5/07

Waited on parts and designed how we were going to set the steering up.

10/8/07

Cut a slit in floor pan and bolted steering column to the frame.

10/9/07

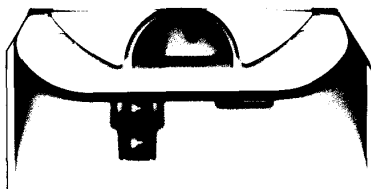
We started engine successfully.

10/10/07

Worked on steering and figured out where engine was going

10/11/07

Welded supports to the frame so we could bolt motor-to-motor plates.



10/12/07

We took off the old exhaust and started to design a new one.

10/15/07

Went into the shop and bent bars for A arms.

10/16/07

We then welded the A arms onto the frame of the car.

10/17/07

We added support bars to the A arms to with stand more pressure and not crack or flex as much.

10/18/07

Hooked up the first tire to the A arms.

10/19/07

Hooked up the second tire to the A arms.

10/22/07

Started making the base of the exhaust pattern to fit exhaust manifold.

10/23/07

Then we started to bend the pipe of the exhaust so it wouldn't interfere with the chain.

10/24/07

We welded the pipe to the base we made and tested it out but it was way to loud Schneider said.

10/25/07

We found a muffler off from a push mower engine and cut it off to use on the car.

10/26/07

We welded the muffler to the pipe to make it quieter.

10/29/07

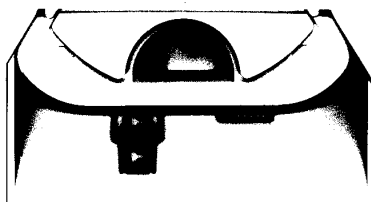
We straightened the motor plates so motor is in center.

10/30/07

We lined the motor up so the tire wouldn't be off set to one side.

10/31/07

We bolted the engine down to the motor plates on the frame.



11/1/07

We ran the motor to see if there was any vibration and checked the noise level.

11/2/07

We put foam pads between motor and motor plates to lessen the vibration.

11/5/07

Hooked up the throttle cable up to the foot pedal.

11/6/07

We discussed our next steps in the building process.

11/7/07

We pumped up our front tires.

11/8/07

We pumped up the rear tire.

11/9/07

We fixed the recoil.

11/12/07

Ordered metal

11/13/07

We started patching firewall together.

11/14/07

Finished piecing firewall together.

11/15/07

Finished final details on firewall.

11/16/07

Braced the firewall structure.

11/29/07

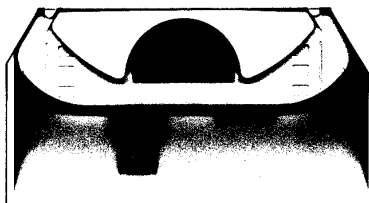
Re-did steering wheel and figured out a better body style

12/30/07

The steering and the tie rods couldn't handle the pressure.

12/3/07

We drained old oil and filled it with new oil.



12/4/07

We ported the exhaust.

12/5/07

Made cuts for the rear tires

12/6/07

Cut angles for the sidewalls

12/7/07

Figured out where we were going to put the seat belt.

12/10/07

We re measured the wheelbase of the car.

12/11/07

We tighten the spindles on the tires before our test drive for tomorrow.

12/12/07

We tested out the steering and the tires were unstable and jerky.

12/13/07

We tightened up the steering components, but it was still to jerky for a test drive.

12/14/07

Decided to do different steering configuration.

12/17/07

Went to computer lab and looked up steering configurations.

12/18/07

Went to computer lab and looked up steering configurations.

12/19/07

Went to computer lab and looked up steering configurations.

12/20/07

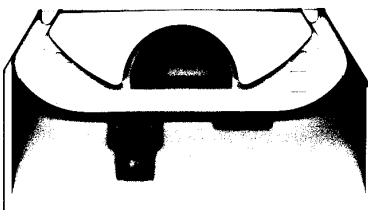
Went to computer lab and looked up steering configurations.

12/21/07

Went to computer lab and looked up steering configurations.

1/2/08

We found a push pull steering set up.



1/3/08

We ordered some new parts for the steering.

1/4/08

Waited for parts and meanwhile designed front supports.

1/7/08

Received steering components and started to assemble.

1/8/08

Received steering components and started to assemble.

1/9/08

Received steering components and started to assemble.

1/10/08

Received steering components and started to assemble.

1/11/08

Received steering components and started to assemble.

1/14/08

Received steering components and started to assemble.

1/15/08

Finished hooking up all the steering components.

1/16/08

Tested steering out and it was a lot more stable and smooth.

1/17/08

Welded some more supports on the front end.

1/18/08

Started the design for the frame.

1/21/08

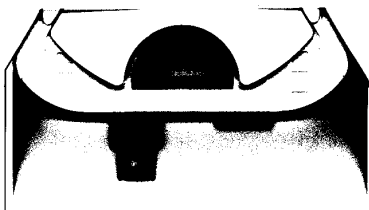
We ordered metal for the frame.

1/22/08

Received metal and started to weld support bars for the side rails of car.

1/23/08

Started to weld support bars for the side rails of car.



1/24/08

Started to weld support bars for the side rails of car.

1/25/08

Started to weld support bars for the side rails of car.

1/28/08

Finished up both sides of the frame of the car.

1/29/08

We bent a bar to use as are roll bar.

1/30/08

Welded the bar on the firewall for the roll cage.

1/31/08

Decided were we were going to put the fuel bottle and fire extinguisher.

2/1/08

We cut two 2" squares and painted them blaze orange for kill switch plates.

2/4/08

We wired up the kill switches.

2/5/08

We figured out which ways the switches go for them to be on and off.

2/6/08

Went to computer lab to figure out what we were going to use for the body.

2/7/08

We decided we were going to use plexi glass.

2/8/08

A group member brought some in from an old semi trailer.

2/11/08

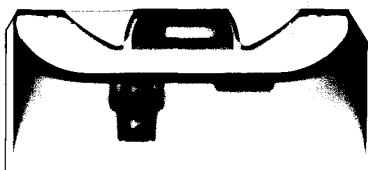
Finished put steering back together and aligned wheels and worked on struts to hold back the wheels

2/12/08

Went to the computer lab to look at designs for the rear end.

2/13/08

Didn't like any designs so we designed our own.



2/14/08

We ordered so more metal.

2/15/08

Welded on brace bars for rear end.

2/18/08

Welded on brace bars for rear end.

2/19/08

We used the metal lathe to customize our own rear axels ourselves.

2/20/08

We used the metal lathe to customize our own rear axels ourselves.

2/21/08

Mounted stabilizers for the rear wheel.

2/22/08

Mounted stabilizers for the rear wheel.

2/25/08

Worked on mounting rear axle. Worked on mounting rear wheel.

2/26/08

Worked on mounting rear axle. Worked on mounting rear wheel.

2/27/08

Worked on mounting rear axle. Worked on mounting rear wheel.

2/28/08

Worked on mounting rear axle. Worked on mounting rear wheel.

2/29/08

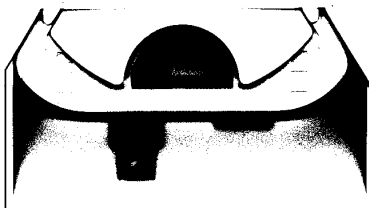
Worked on mounting rear axle. Worked on mounting rear wheel.

3/3/08

Took off the foot pedal for throttle and made a pistol grip level for the throttle and brake.

3/4/08

Hooked up brakes and throttle cable. Took car outside and turning radius



3/5/08

Mounted seat belt and took it outside for a test drive.

3/6/08

Kill switches didn't work but the throttle and brakes worked great, but there was a small gas leak.

3/7/08

Took the bowl off the carburetor and the gasket was torn.

3/10/08

We ordered a new gasket for the carburetor.

3/11/08

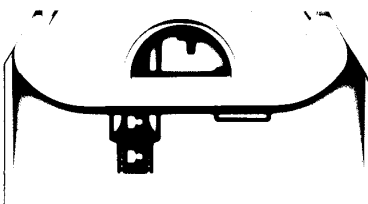
Put the new gasket on the bowl of the carburetor.

3/12/08

We ran the motor and checked out the carburetor and the gas line and there were no leaks

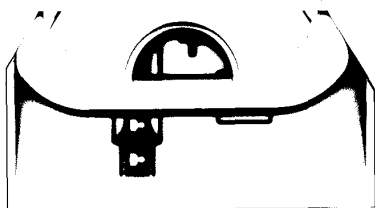
3/13/08

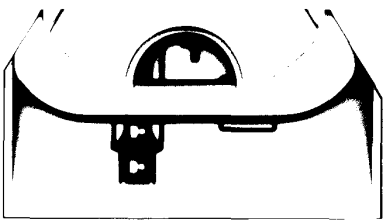
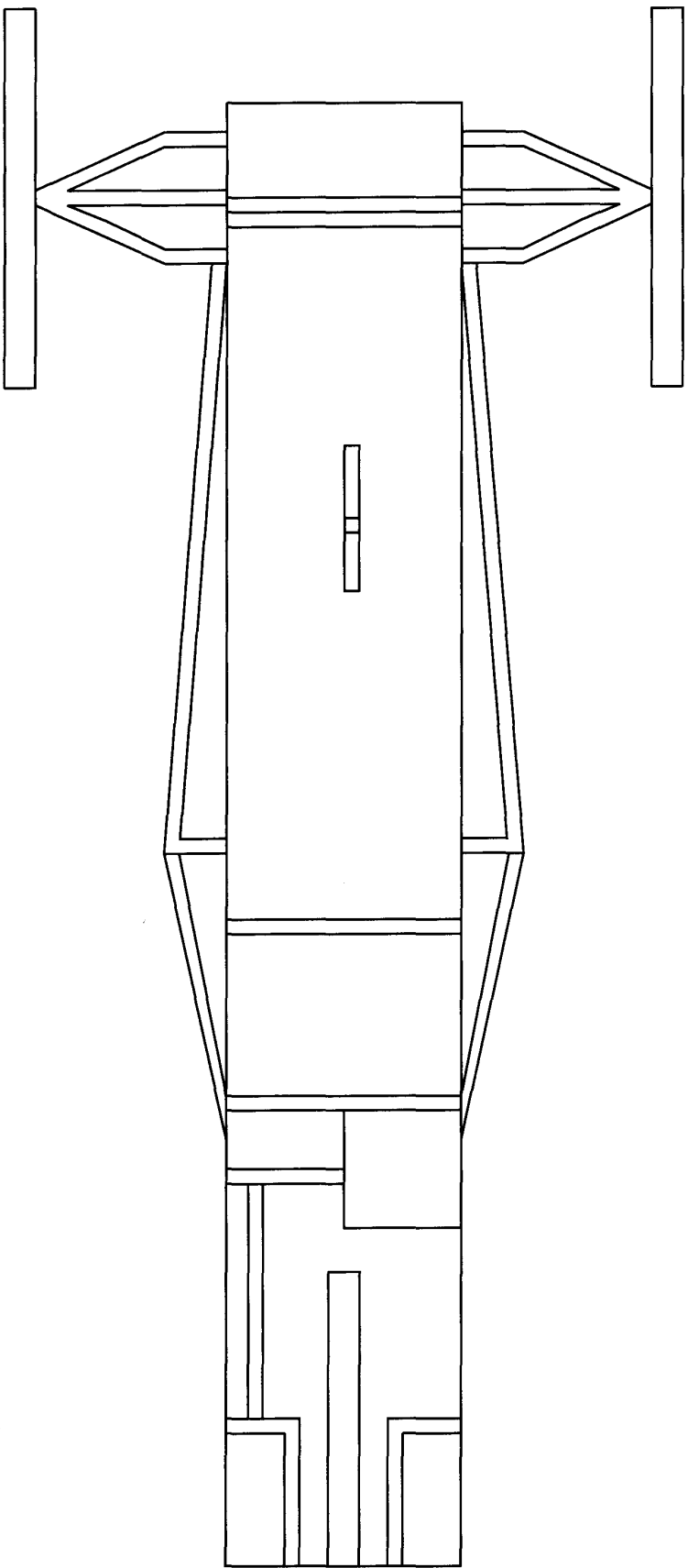
Started doing check ups and fine-tuning everything until race day.

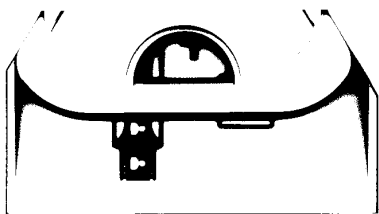
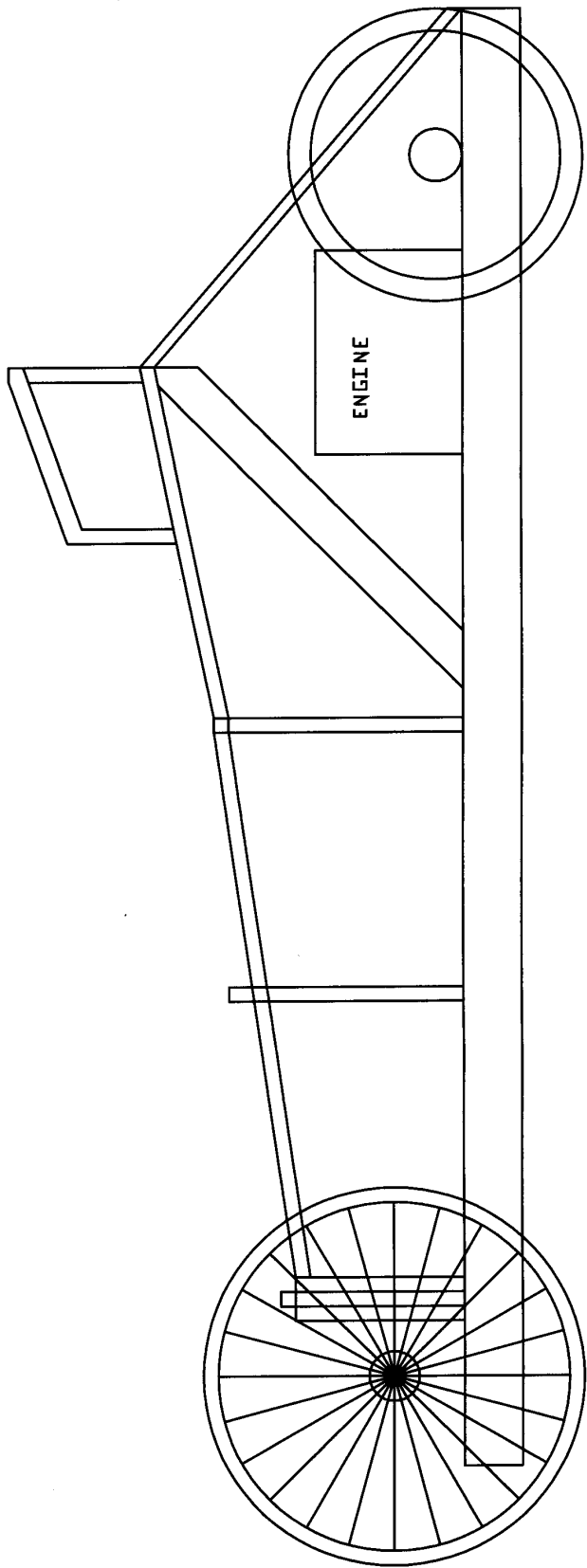


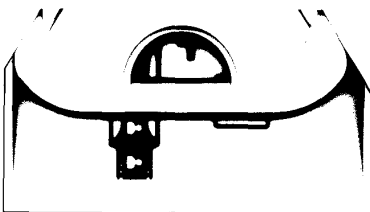
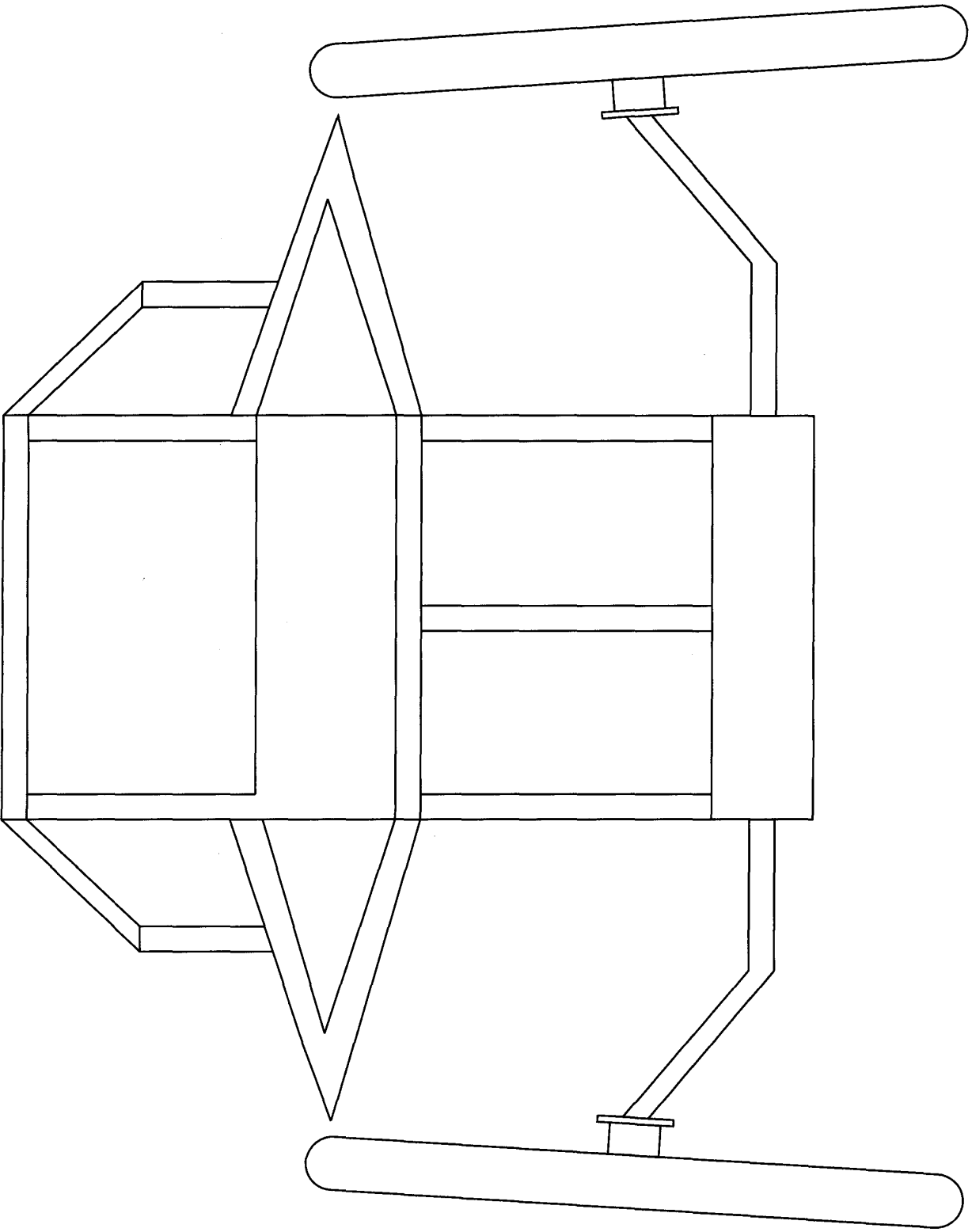
Basic Vehicle Configuration

We have a rear wheel drive, chain driven car and front wheel steering. The front wheels have a base of 4 feet and 5 inches. The engine that we decided to use is a 5.5 hp Honda engine. The engine is mounted just in front of the rear wheel. The length of our car is 8 feet 4 inches. The height is 3 feet and 2 inches. The cockpit area is 2 feet and 7 inches by 2 feet and 11.5 inches. We made our car out of an aluminum ladder.



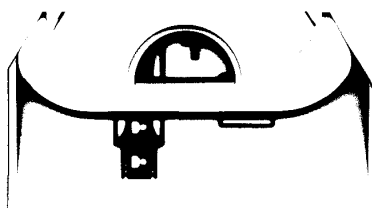


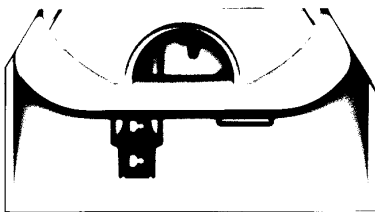
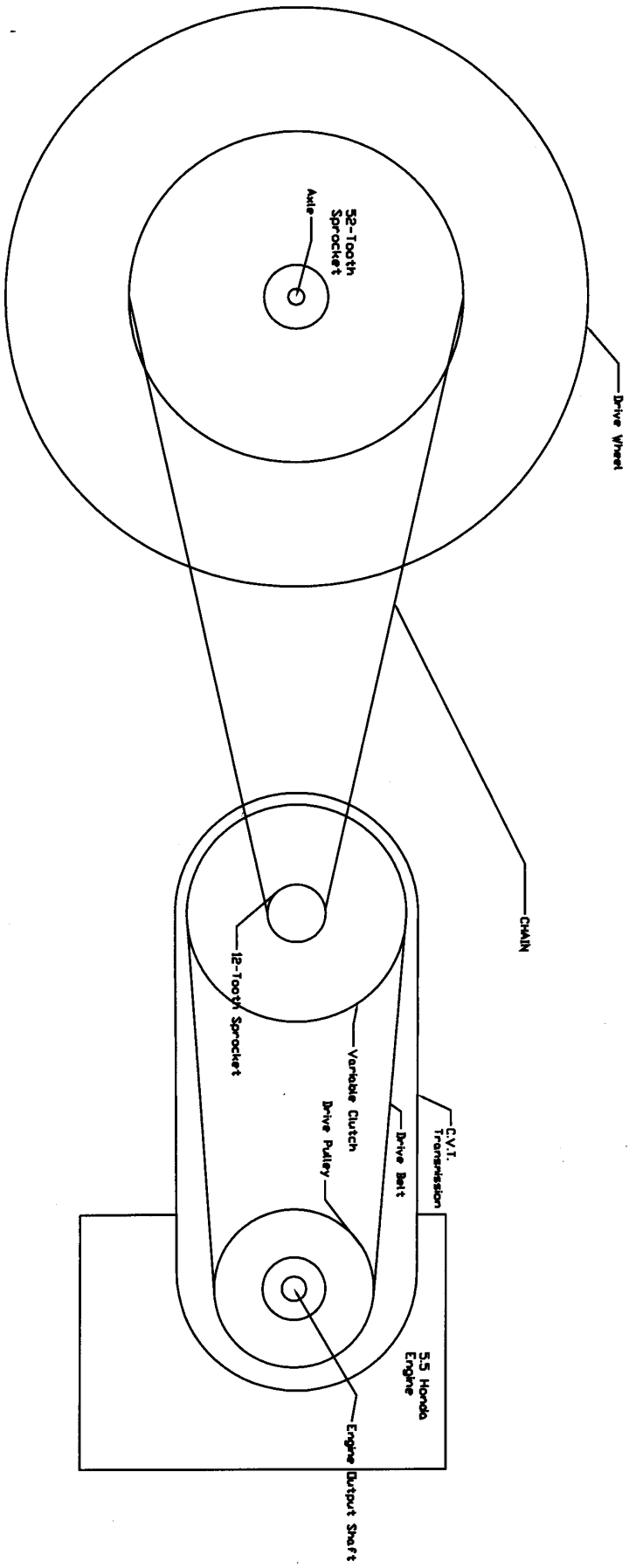




Power Train

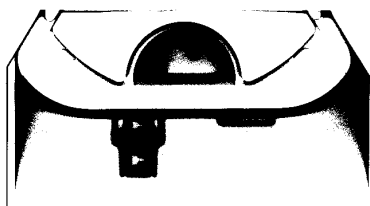
The engine is a 5.5hp Honda connected to a constant variable clutch (CVT) that is mounted directly to the engine the CVT is modified to start engaging at 1800 RPM This allows our car to achieve a 90% overdrive at max RPM and lets the clutch shift out faster letting us run the engine at a lower speed thus saving fuel. From the CVT a 12-tooth sprocket is connected to a chain which goes to the 52-tooth sprocket on the rear 14" wheel.





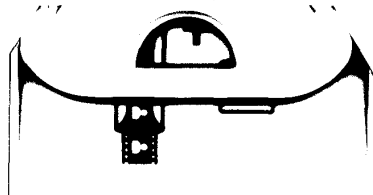
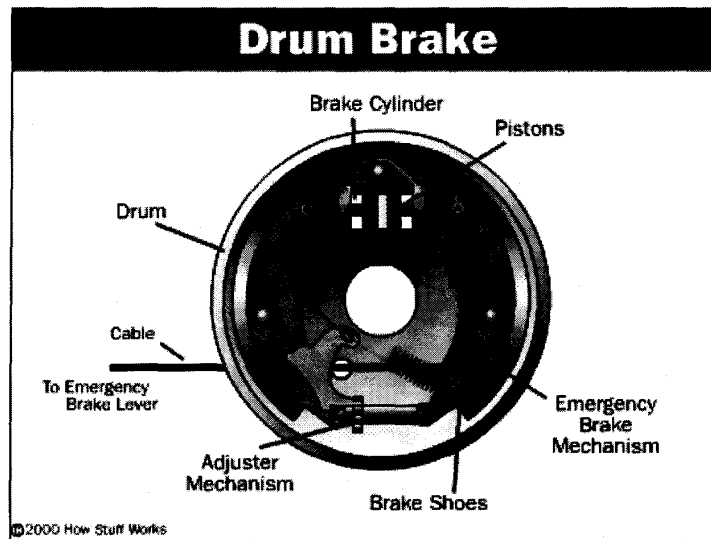
Performance

We did many test trials; we did our radius test, to see if the car would turn sharp enough. We also did our braking tests. The brake test we did went well except for we had to make a few modifications to the brakes. We modified the brakes by welding a support bar to hold the brake cap from spinning when applying the brakes. We also had to redo the bolt that held the brake cable in place because the bolt stripped out, other than that the brakes went well and after we fixed the problems that occurred we re-run the car and everything worked fine. When we finally got to drive the car we found some problems. We found out that our steering is a little hard to handle because we have it set up like a joystick, but with a little practice we will be able to figure out how the steering handles. We also discovered that our throttle cable was too short therefore when we started the car it wouldn't idle and started off at quarter throttle.



Brake System

In our super mileage vehicle the brake system is a drum-based brake. A drum brake is a brake in which the friction is caused by a set of shoes or pads that press against the inner surface of a rotating drum. The drum is connected to a rotating wheel off a Toros moped. We figured that our car weights about the same as a moped. We determined that with the brakes we are using our car would be able to stop from a speed of 15mph with in 25ft.



Safety items

Seat belt- 3-point harness system bolted to the frame.

Fire extinguisher- above the driver's head on roll bar.

Kill Switches- one is located on the steering lever, and the other is mounted by the engine.

Roll bar- six inches above the driver when wearing the helmet.

Mirrors- in front of the driver on bolted on the frame so the driver can see behind him.

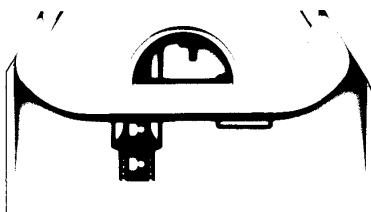
Firewall- a sheet of metal lying between the engine and the driver.

Floor Pan- a sheet of metal that the driver sits on.

Exhaust System- A muffler venting out of the engine compartment.

Fuel Systems- A 250mL tube that has a clear line running to the engine.

Helmet- A DOT approved cycling type helmet.



Problem Solving Essay

The problems that we encountered throughout this project were: We had to rip a lot of stuff apart because we didn't plan ahead. We had to reorder parts because the year before had lost a lot of parts for the carburetor. We also had problems with our throttle and brake cables. The brake cable kept pulling out of the cable holder and our throttle cable was too short so the car wouldn't idle right. We had problems with the steering. The steering worked well but it is a little hard to handle because we have it set up on a joystick. We had some problems when we test drove our car. First off our throttle cable was too short and the car immediately took off. Next when we went to hit the kill switches our wiring connections must have come loose and we couldn't kill the engine, then our driver panicked and forgot to hit the brakes. He then decided to put the car into a snow bank but missed and hit a telephone pole. This had buckled the front end and set our steering off. We then had to redo the front end, which set us back a week. Now on to our successes. We started off about two weeks ahead because instead of building a frame from scratch we used an aluminum ladder. Our rear end also went together well we decided to use a CVT (constant variable transmission) clutch. Lastly the body of our car went together quick because we used paneling off of a semi trailer. We learned from our experiences that we needed to plan out things before we just start putting things together and have to take it back apart. About half way through our project we started planning things before we added accessories from then the car has went together smoothly.

