

# Wentworth Institute Engineering

## Project#1 Bike Brake Design Project

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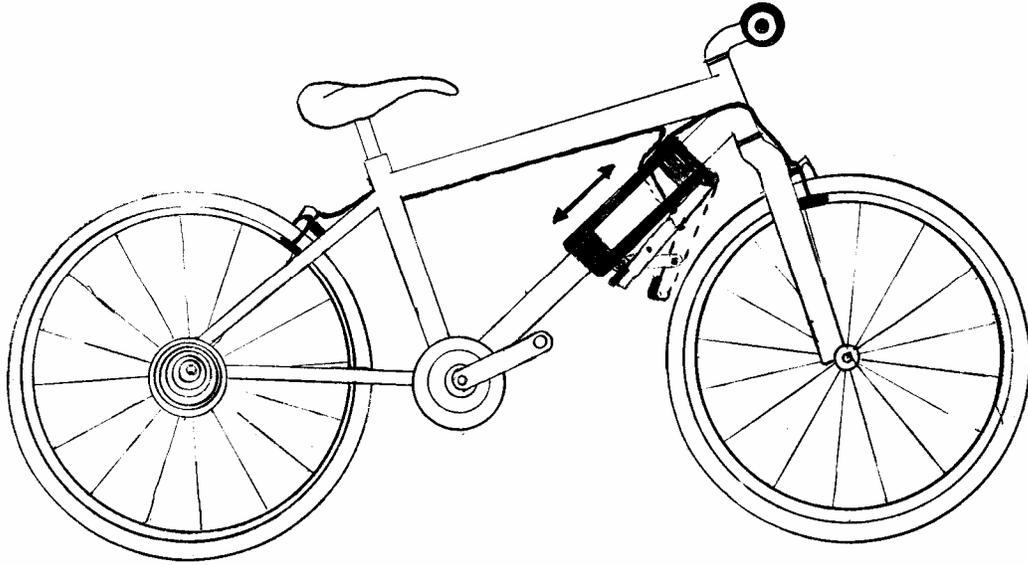
# Bike Brake Design Project

By: Dan, Dave, Rachel, and Ross.

As a group we were assigned a project which had to meet certain requirements and as a group we would section our time and assign task to complete the project. The requirements were that we had to design a bike break that could be activated by anything other than a hand squeezing motion. The bike specified was a light use bike that was neither mountain nor racing. Each team member set out designing his or her own solution to the problem. Halfway through our designs Dan approached us with his design. We met in Lower Beatty and as a group agreed on Dan's design. We all set out and came up with some background information on bikes and brakes. We actually found a program on our computer that showed us the mechanics of a break, chain, and levers. After research Dan and Dave began drawing up some parts while Rachel and I further researched bikes on line and came up with some pictures of some of the materials we would make the application out of if we were really making it. We all came up with a brief materials list and also briefly talked about how the parts would be

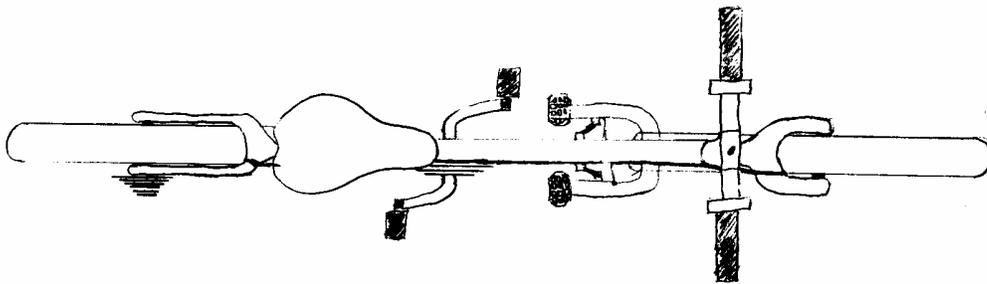
manufactured but never documented it. We had one final meeting and discussed the completion of our project. The bike you operate regularly with the exception of the hand brake. In place of the hand brake we designed two foot pedals positioned in front of the crank and gyro that would be fastened to the lower cross bar. Acting in the same way as a hand brake and using the same physics, the right foot pedal would control the back break by applying force downward. In the same way, the left pedal would control the front break by applying force downward. With this we also present sketches of the part and we are eager to answer any questions on the functions of our application.

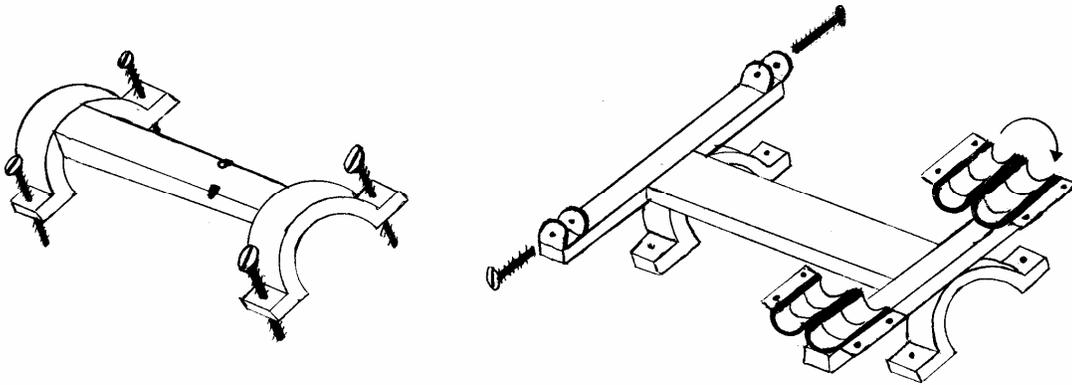
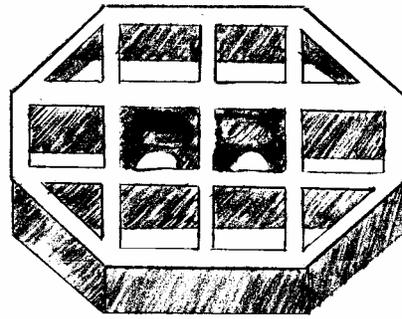
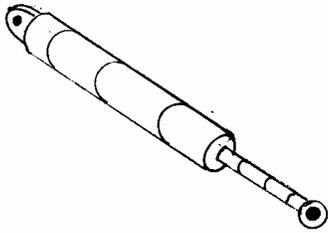
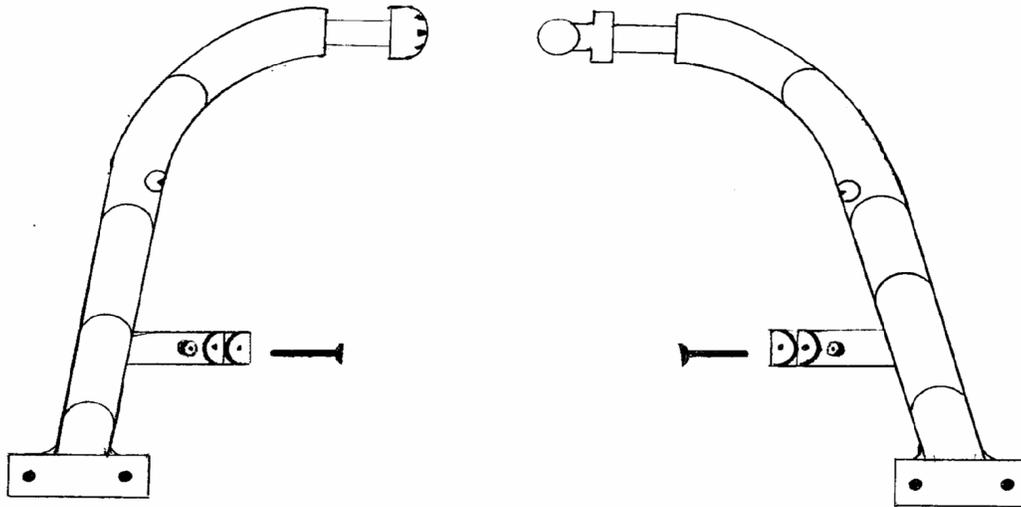
# Bike Parts



**Above:** Side view of the brakes mounted onto the frame of the bicycle itself. This shows the adjustability being able to clamp closer or farther away from the pedals clearing the front wheel.

**Below:** Top view of the brakes mounted showing its width in comparison of the pedal and the rest of the bicycle.





**Above:** Brakes arms (above: a left and a right) will fit together and be clamped into frame (bottom right). Also the brake arms will be held up by hydraulic pull backs (middle left) similar to that on a screen door. To depress the brake arms, there will be brake pads (middle right) the foot pushes. To keep the frame clamping on the brake arms would be the upper frame clamp (bottom left). Notice how the clamps holding the two frame clamps are circular to either slide up or down on the frame do desired height of the foot brakes.