

Re: Home make launchers

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Bryan Ashcraft wrote:

> *Hehehe, believe it or not I have tried using oranges when there was a
> personal potato shortage. There didn't appear much difference with flight
> characteristics, however the barrel did get a little sticky and attracted
> wasps! This is where a toilet brush and some warm saopy water came in handy.*
>

Grapes out of PVC plumbing pipe blowguns work great also; the grape's flexibility lets it seal well with the tube, but the grape ruptures on impact with the target, transferring its energy into the foe with a satisfying wallop that can be heard from over fifty feet away, and leaving a bruise that lasts many days.

>
> *Another thing I tried once was tipping some frozen peas on top of the spud
> to be fired. This made marvelous birdshot ; -)*
>

That would probably be "Birdseye" shot; as they make frozen peas. A big Foster's Lager can with its top removed, filled with gravel, and covered with aluminum foil fired from a homemade gunpowder cannon works great. 3/8" thick plywood ends up looking like Swiss Cheese, and in my test ended up with a rectangular hole in it as the can passed through it going sideways.

>
>
> *Ok, I'll bite, how did you manage to blow yourself up?*
>

By trying to reload a 175 mm siege mortar without swabbing out the barrel; I had a one-pound can of gunpowder detonate in my right hand.

I wrote about this and some of my other world class screw-ups:

The foot-long plumbing-pipe rocket motor:

"I was standing in the Blockhouse (our enclosed porch) safely behind one of the glass windows, when the countdown reached zero, and the plug of the 20,000 volt furnace ignition coil went into wall socket, sending the power to the spark plug located at the bottom of the rocket motor (buried in the heap of mud to contain shrapnel in case of a casing failure) and the little dab of You-Know-What that was applied over its spark gap— in earlier tests, with a fuse igniter (which made the device scarily resemble a pipe bomb) The grain was ignited at the bottom of the central hole, leading to a second or so until full thrust was achieved, as the fire propagated up the inside of the grain— but I knew that that wasn't very effective, and would lead to a slow liftoff when it had grown fins.

The engine started nicely, blew the buried sparkplug out of its hole (this making a downward facing hole of larger diameter than the upward facing exhaust nozzle), and then, like a Minuteman missile, rose majestically from its mudpile, straight up, breathing fire at both ends, finless, and rising rapidly out of my field of vision through the window— this occurred as my father was leaving in the family car to investigate the fire at a building we owned and rented out. I didn't know how high it was going to go, or in which direction, but the "launch technicians"; my somewhat smarter friends, cowering behind the concrete wall into the alley, saw it reach an altitude of around 75 feet, and head on a trajectory toward the departing car. My father saw the impact of the motor about thirty feet from the car, as he waited at the corner yield sign, completely ruining any chance of "plausible deniability" of the incident. Around a half hour later he got back from the fire, which had been minor, and had a little talk with me.

But I had learned my lesson, and only did tests from then on when my parents were far away from the house. After the flaming birch tree incident caused by the fuze-ignited/gunpowder down center grain bore boosted ignition strapdown test which shattered the fuel grain and led to the giant blast of exhaust going up to the tree above it under the tree (I blamed the somewhat blackened condition of the upper branches on a possible case of tree blight.), it was time to start the aerial tests, from a shooting range at one of the local reservoirs,

By then it was winter, and the motor had aluminum fins, made from bookshelf supports attached to it with the aid of two hose clamps. As it stood there, in its proud red primer paint scheme, ready to challenge the heavens from the pie tin that was its launch pad and blast deflector perched on a snowbank the hissing of the waterproof fuse gave announcement of the beginning of a new age, as our launch team cowered behind the families other, more beat up car. The fire slowly reached the bottom of the rocket, and the cocktail straw full of gunpowder waiting inside it, as we all cringed in gleeful expectation— A terrific roar! A vast cloud of white smoke! Something traveling upwards hundreds of feet in a blink of an eye; then the long futile search for the rocket, which could give eternal evidence of my technical virtuosity...and more importantly, could be used as evidence in a court of law if found by someone "not in the loop" of the experiments.

No luck, but I had learned my lesson, and swore that from now on, I would wear gloves when handling my rockets, so as not to leave possibly incriminating fingerprints on them. It was only when we examined the piepad that we noticed an odd hole in the center of it, with three rips, each 120 degrees apart, radiating from it. The body of the rocket, minus its

screw-on nose cap, was found about a foot under the pad. Apparently, the high pressure gas of the burning propellant had seeped out around the top joint (I should have gotten in touch with NASA about this: Cold Weather + Leaky Joint On Solid Rocket Booster = No Go.), "lubricating" it with hot gas, so that it unscrewed nearly instantaneously, or simply tore off the threads.

The Pipe Motor program ended on that embarrassing note, the one intended to stay put having gone into the air; the one that was to have gone into the air descending through the launchpad.

But I had learned my lesson— Gunpowder, not You-Know-What, was the wave of the future— and my 100 mm cannon, 175 mm siege mortar, and trip to the emergency room were just around the corner!"

The Great Big Cannons.

"Mine never blew— just lifted off backwards from the strap-down test minus stabilizing fins, and unscrewed the nose cap on high pressure gas— these were the "Caramel Candy" variety... on the other hand I cannot possibly stress the importance of swabbing out the barrel of a siege mortar before you begin pouring black powder into it from a 1 pound can...still it could have been worse...it could have gone off when I was leaning over it putting the projectile into it— making a 7 inch diameter hole through me, rather than merely setting me on fire and partially blowing my thumb off."

Lightning Death To The Ants.

Then there was the destruction of the anthill by driving the two rods from the anode and cathode of the 20,000 volt furnace ignition coil into the ground on either side of it, and letting the current flow through the intervening ground; a plan that worked well until I reached down and removed one of the rods; thereby allowing the current to flow through the ground into my tennis shoes and out via my hand, which surprisingly was not insulated by the oven mitt covered with the plastic bread bag as I thought it would be...my friend said I cut a most striking figure as I bounded down the boulevard, leaving lightning flashes each time my shoes touched the ground, until the wires pulled off of the ignition coil; and allowed the muscles in my hand to relax.

But it was after the siege mortar explosion that my friends started referring to me as "Wile E. Coyote", or "Professor Fate"; and showed their deep concern for my condition by eating two large pizzas between the three of them as well as drinking a case of beer, before they arrived at the hospital to visit me— laughing hysterically."

The Bomb In The Basement Sink

"You can take a large empty tin for percussion caps, fill it with black powder, put a length of waterproof fuze in it, and sink it to the bottom of your forty gallon square shaped cast-concrete sink in the basement...with a submerged air-filled glass Christmas tree ornament next to it to demonstrate how depth charges destroy submarines by shockwaves traveling through water...

The experiment will demonstrate many things:

- 1.) Water is basically incompressible.
- 2.) It is an excellent tamping compound for any explosive.
- 3.) Properly tamped, even a small amount of gunpowder packs a great deal

of energy.

- 4.) It is fully possible to move a cubic block of water of about forty gallons volume in a vertical direction at high velocity while maintaining it in an approximately cubic form.
- 5.) Glass Christmas Tree ornaments are far stronger than they would appear to be... strong enough to rise up in a vertical column of explosively driven water intact...but not so strong that they can survive being driven into a ceiling joist at around a hundred miles per hour.
- 6.) As well as worrying about spilling water and having it leak through the floor into the downstairs story, it is also possible to have "spilled" water emerge through the floor of the story above you.
- 7.) Barnes Wallis was quite correct when he realized that even small explosions can crack concrete when the blast is tamped by water, and the explosive is in direct contact with the concrete...such as the concrete of the face of the Mohne dam...or the concrete at the bottom of a cast-concrete basement sink. It only leaked around a pint or two a minute after that— from the hairline cracks in the bottom."

Pat