

March 5, 1957

Dear Harry:

I was glad to talk with you last night. I guess I am too impatient to wait for letters!!!. At any rate we covered a lot of things that were important.

Tonight we will take the pictures, and I'll mail them to you as soon as I get them. Will send a couple, and you can take your pick.

Now here is something that I think is important--when it comes to writing about me. How about playing down my 'fireworks' interest?? I have several reasons for not yelling to loud on a national scale about my fireworks. In the first place right off the bat we put the Rock-A-Chute in the light of fireworks, and that makes people shy away. And on top of that the publicity of making fireworks in your basement might build a fire under the people who carry my personal life insurance, and the insurance on my home. Do you get what I mean??

So how about just saying that because of my hobby of chemistry, I was able to develop the rocket motor for the rock-a-chute? Then go and tell how safe it is, and how 'fool proof' its operation is.

I realize that as a human interest story it might have a kick to tell about a guy who loads fireworks in his basement, but I think it would do me and the rock-a-chute more harm than good.

Then you can tell how every one in the USA can't have the Rock-A-Chute, because in some areas the rocket motors are classed as pyrotechnics.

But the truth of the matter is that it can be shipped to any one who will get the proper permit from his firemarshap, fire chief, (every location has a different office that issues such permits). This is a lot of red-tape but that is the way the ball bounces. So that is why it will be hard for a kid to get a permit. I know that clubs, science groups, and even responsible individuals can get the permits, but the question is--will they go to the trouble??

The law is set up to protect the knot head from himself--but sometimes I think we should let the knot head go on and get rid of himself!! The trouble is that the knot head usually harms others than himself.

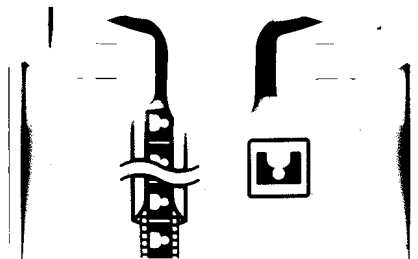
Now here again is a BRIEF account of the Rock-a-Chute.

My brother is a flier. Flew before the war, all through the war (Navy) and flies now in a Naval Reserve Unit. He also is the commanding officer of the local C.A.P. unit. He is also a model plane builder (and a good one) Because of his interest in flying, he is often called upon by various clubs, and civic groups to talk about flying. He worked up a lecture that he calls the 'History of Flight'. He has scale models of every flying machine that ever was--and they work. So he needed some sort of rocket to demonstrate the latest trend in flight. He asked me if I could make some sort of a rocket that would work like the V-2--but come down by parachute instead of in a heap of pieces.

So I developed the Rock-A-Chute Rocket motor--with the aid of my experience gained through my hobby of chemistry.

I knew that the fuel or propellent for the motor would have to be stable, and safe to work with, so I avoided all mixtures that were liable to spontaneous (sp) combustion, or that would take fire from shock or friction. (That is where most troubles start when it comes to making rocket motors, by the average person)

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Because we wanted to use the rocket motor to fly small scale models, we decided that the smaller we could make it the better--so we stuck on the size as you see it today--2 1/4 inches long, 3/8 inch bore/ 1/2 inch O.D.

Like the people who design the big rocket motors, I had trouble getting a paper tube that would not only stand the pressure of the burning propellant, but one that would not burn through before all of the propellant was exhausted. After several hundred tests I found the right kind of a tube.

Then there was the problem of protecting the parachute from damage when it was expelled from the rocket body. You know how that works.

I also had trouble with the chute breaking loose from the body when the chute was expelled, and when it popped open. I lost a lot of models till my brother suggested the rubber shock cord. Have had no trouble since.

In the beginning I used Jap tissue to make the chutes from, but after 30 or 40 launchings, the tissue would sort of 'come apart at the seams'. So I went to the thin plastic. The big problem was in holding the shroud lines onto the plastic--neatly. At first I used regular scotch tape--but after a while the tape (scotch) would get brittle and come loose. So I wrote to the people who make Scotch Tape (Minn. Mining) and they knocked themselves out helping me select the right tape. It is wonderful the way the real big outfits go out of their way for a person. They suggested that I use their Polyester Film Tape No.850. And it was perfect. Stayed flexible, and held tight.

The plastic chute was hard to fold into a compact package because of the air that was trapped in the folds--so I punched it full of holes to let the air out. The plastic chute was better than the tissue in a lot of ways--it is sort of rubbery and would open better and quicker than the tissue.

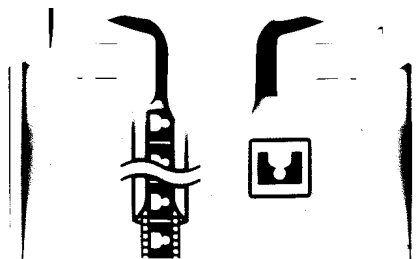
Another thing--the plastic was not subject to being burned by the expelling charge as was the tissue.

The launching ramp was not too hard to dope out. In order that the Rock-A-Chute would take off in a straight line, we put the guide tube on the side, and made the guide stick of the ramp long enough so that by the time the rocket cleared the guide stick it was going fast enough not to be bothered by any wind. We could control (to a great extent) the direction the model took when launched.

The Mark II was designed around the nose. The only thing that I could find that was cheap, and looked like a Missile nose was a plastic crayon sharpener at the dime store. So with the aid of my brother we came up with the Mark II. Without his assistance I would have been lost. He knew about the center of gravity, balance--etc. So I let him dope out the 'airframe', and I worked out the rocket motor. The Mark II was build good and solid so as to stand a lot of abuse. I have one that has been launched over 500 times, and will still work.

This all started in 1953--the winter of 1953. Ever since then I have been going through all the process of obtaining patents on the various features

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of the device, and in trying to interest some one to take on the manufacturing and distribution of it.

It has been quite an experience--and an education.

I became aware of the commercial possibilities early in the development stage. When ever I took it out to test launch it (which was often) every one wanted to know where they could get one. I also noticed the many requests in the model magazines asking for information on how to make rockets. And I noted how neatly the editors sidestepped the questions. I figured that they either did not know what to answer, or were afraid to tell some one for fear they might get hurt. I also noticed that there was no ~~sense~~ of power similar to my rocket motor--or parachute system on the market--so then I thought it best to get what protection I could on my motor, and design.

In the development stages I had as much trouble with the Rock-^AChute as did the people who were working on the big full sized missiles. I have had the rocket motors mis fire, explode like a small firecracker and burn through the case. I have had chutes fail to open, be damaged in expelling, and have had the whole works come down in a heap.

But after weeks--(months even) of experimenting I got the Rock-a-chute to the point that it is to day. I had a developed a power plant that was small, safe, and inexpensive. The parachute system was reliable, and the airframe was strong and light weight. And the whole thing worked.

That is the story.

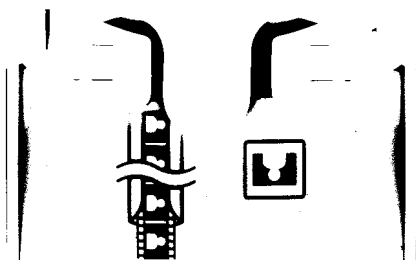
March 6--

We took the pictures last night. I will have them this afternoon and will send them to you. Hope they are ok.

I have been thinking about my suggestion of you writing to Mr Brown. If you wish, go ahead and write him. Tell him you have seen it, and that I have told you all about him, and the whole story. It may be that a letter from one such as you might prod him into action. His full name is: Mr. L. W. Brown, Zenith Fireworks Company, Clinton, Missouri.

Now in regard to the way the powder is loaded into the tubes. I hope I did not scare you when I told you that the powder is pounded into the case. But that is the way it is done, and with the right tools it is just as safe as driving nailes into a piece of soft wood. Now it is possible to fire gunpowder by striking it a very hard blow--if the powder is confined in a strong metal tube, and the ram rod is of metal, and if the ram rod is struck a very strong blow. They call this the drop test, and black gunpowder can be fired this way. But when the tube is of paper (like I use) and the mallet used to strike the metal ram rod is light weight, it is impossible to hit hard enough to fire the powder. The tube will split, in the first place, and in the second place you cant swing the mallet hard enough. The way to compress the powder into the tube is done best by many light, smart, quick TAPS with the mallet. You just sort of peck away at the ram rod about 20 taps and the powder gets compressed solid as a rock. Many light blows are better than

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few heavy blows. Let me just say that I have loaded thousands of rockets by hand, using a light mallet, etc as I have described, and have never had any trouble. And some of the finest fireworks factories do such work by hand.

The other way is to use a smallerbor press. With the press you can make the boosters faster than with the hand ramming method. When hand ramming you can only load the powder in small amounts--pound it solid, add more powder, pound it solid--and repeat this till the case is as full as you want it. It takes a 22 cal long rifle case full for each loading when you ram by hand. To make a booster by hand that will give a good flight you must load at least 10 of the small amounts--and ram each of them solid. This you can see takes time. But for a guy who only needs a few of them it is no big job. He can load up a dozen or ~~two~~ in one evening, just by hand.

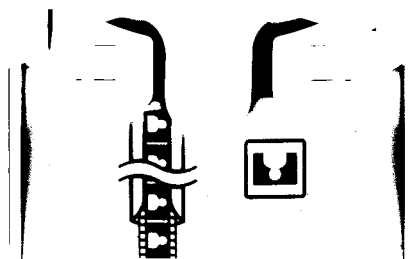
With the press you can load 1/4 teaspoonfull at a time, press it solid, and repeat till you have as much powder in the case as you want. With the press it is necessary to have the tube inserted in a brass die. The die is required in order that the case does not split when the pressure is applied. This is much faster, and makes powerful boosters. When the required amount of powder is in the tube, you just press them out of the die, and start over.

In the factory in Missouri, the loading is done by use of air-~~blow~~ hammers. It is just the same process of pounding the powder into the case by hand, only with the machines, the work is done by rammers worked by compressed air. And it is fast. Mr. Brown and his sons are first classed machinests--they designed the ramming machines themselves. They are made from aircraft rivet hammers, and are wonderful. They do not use a brass die to contain the case while it is being rammed. They use tubes that are much stronger than the ones I use, and will stand the pressure of the ramming without splitting. I have told you about the difference in weight of the tubes. They would be able to load a tube that will do everythingg my tubes do--perhaps better.

But so much for that. I think you get the idea. The big hazzard with amateur rocket makers is that they use the wrong tools, wrong powder, and they do it all wrong--because no one ever told them how to do it right. Most information of this nature is hard to come by. And a lot that is offered is no good. And yet the desire to make rockets is still in boys--and men, and so they go along blowing theff heads , hands, and eyes off and out!!

If you come up with a good electrical system for firing the rockets, let me know. I have on many occassions, used 1/2 amp fuse wire to fire off bombs, flash powder, etc. I get into the doggonedest (sp) situations, because of my hoby. I wind up on the stage crew of every theatstage production that our little town comes up with. I make a little firecracker that is fired by a piece of the fuse wire mentioned above. But this works off of 110 volts. I made a crude but efficient firing board, so that when I push the button the fuse wire shorts out, and blooie goes the cracker. But what we need is something that would work off of flashlight batteries. I have used regularr electric squibs, but they are to expensive. Some sort of deal could be worked out, and from what I have READ about you, this should be no sweat, for you to do. If the heating element goes up into the vent of the rocket, the blast of the rocket might ruin it. So that will take some study.

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Your various suggestions on the way to handle the publishing of the Rock-A-Chute story sound ok to me. You know more about how those things are done than I do. The division of the 'loot' is satisfactory to me.

I wouldn't wonder that when the story is made public that some one would want to see the thing work. Might even want to use it at air-shows, both model and big shows. It will be interesting to see what develops.

I have been flying the Parabee II with a 4-4-2 x charge, and they are to powerful for even me. They take the thing just out of sight--then pop and the chute is open. I have chased them all over our airport. But it would make a wonderful demonstration after shooting a few that did not go so high.

I (and my brother Bob) are waiting for the plans of the new models. It is wonderful how the same power gives different results in various airframes. I like the sound of the VIPER.

Bob has been making the nose cones for me. He chucks them into his speed drill, and buzzes them out. And then paints them for me. They look to good, to shoot out of sight!

If you are having any trouble making cups, let me know, as I have a set of punches to punch out the stiff cardboard for the cup. I enclose one that I am using, and it makes nice neat cups. I have several sets of dies to form the cups in.

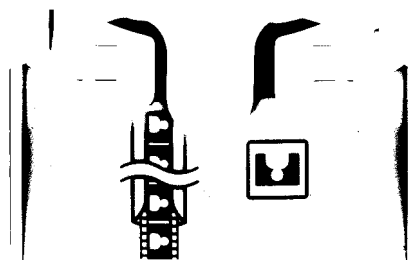
Thanks for your check. It is appreciated. Made me feel like Goddard must have when the Guggenheim Foundation kicked into his project!!!!. This thing has cost a few bucks---but I have had fun!!

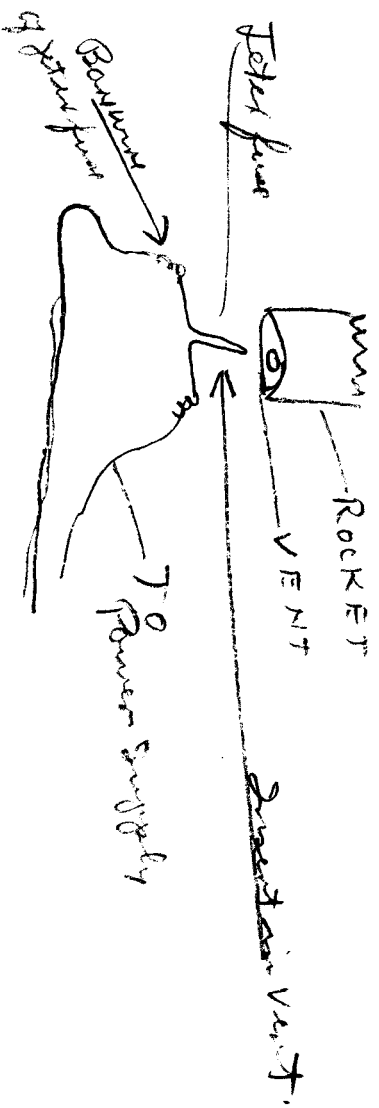
You never knew that a shoe clerk could be such a letter writer----5 pages that's enough.

Best regards

Orville Carlisle

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Price this says a
 weight for length of
 Pen also.

