



The AMA History Project Presents: Autobiography of WILLIAM (BILL) BICKEL

Born March 29, 1942 AMA #1551



Written by WB (09/2020, 02/2021); Reformatted by JS (02/2021, 05/2021-06/2021)

Career:

- **1954-1960:** I built and flew model aircraft, mostly Control Line, but I did experiment with Free Flight and also Radio Control. In 1956, our group organized into the Gallup Model Airplane Club. I joined AMA at the 1956 AMA National Model Airplane Championships (Nats) in Grand Prairie, TX, and in 1958 attended the AMA Nats at the Naval Air Station (NAS) Los Alamitos, in the Los Angeles area. During this time, I built several Stirling Ringmasters and PDQ Flying Clowns, as well as a Veco Warrior, a Veco Smoothie and a DeBolt Live Wire Clipper, which was a 1/2A Payload ship. This one had an OK Cub .049A and no timer, and one time it flew away so Dad and I had to hunt it down with N4706V, his Piper Tri Pacer.
- **1955-1960:** I worked at the Gallup, NM airport as an airport line serviceman for Dad's Navajo Flying Service. I also cleaned and performed minor maintenance on Dad's aircraft.
- **1958:** Dad bought a used 1953 Chevy 3100 pickup truck from Rico Motors, the local GMC dealer, which I sometimes drove to high school.
- **1957-1960:** I worked part time for Tom's Variety Store (the local hobby shop) as a janitor to support my model airplane hobby. I graduated from Gallup High School (Go Bengals!) in May 1960.
- **1960-1962:** I attended the University of Arizona (Go Wildcats!) in Tucson, AZ. While in residence at the University of Arizona, I acquired a plastic .09 powered Cox Piper Comanche plane and joined the Cholla Choppers Model Airplane club, participating in some of their flying sessions.
- **1962-1966:** I joined the U.S. Air Force and after tech school at Sheppard Air Force Base (AFB) near Wichita Falls, TX. I was assigned to Tachikawa AFB near Tokyo, Japan, as a Douglas C-124 II Globemaster II mechanic.
- **1966-1972:** I worked at Sperry Flight Systems Division in Phoenix, AZ as a quality control (QC) tech. on air data computers, which told the aircraft's automatic pilot how high and how fast the aircraft was flying. These were used on Boeing 727, Douglas DC-8, Lockheed L-1011, QF-104s (which were a droned Lockheed Starfighter) and also Grumman Gulfstream IIs.
- **Mid 1967:** Dad gave me the '53 Chevy pickup.
- **1972-1974:** I was laid off at Sperry! I soon found work as an airport line serviceman at Sky Harbor International Airport (PHX), and later at Deer Valley Airport (DVT) in North Phoenix.
- **1974-1992:** I was rehired by Sperry, which was absorbed into Honeywell a few years later. I resumed my QC tech. position and later became a quality auditor for Reaction Wheels, which are basically a high-tech version of a child's gyroscope top. These are

used to keep satellites positioned correctly while in orbit. The Hubbell Space Telescope is one satellite that uses these products. We also produced Multiplex-Demultiplex (MDM) boxes for the Space Shuttles. (Google it.)

- **1997:** Model Engine Collectors Association (MECA) President Charlie Bruce appointed me as MECA Historian, whose function is to maintain a copy of all MECA publications and any other documents of a historical nature that MECA acquires. As of April 2021, I still hold that position.
- **1988-2008:** I hosted annual MECA Collectos in Casa Grande, AZ, in conjunction with Phoenix Model Airplane Club and the Southwest Regionals Contest, which is now held over the Martin Luther King, Jr. holiday weekend at the nearby city of Eloy, AZ. In 2008, we lost our hotel banquet room accommodations in Casa Grande and the Collecto has now become a no-host swap meet that is held at the Southwest Regionals contest site.
- **2001:** I created indexes for the *Engine Collectors' Journal* and also the *M.E.C.A. Swap Sheet and Bulletin*. The latest updates (2020) of those are on file at the National Model Aviation Museum's Lee Renaud Memorial Library and can be accessed through the museum staff. Printed copies may be ordered from me.
- **2021:** I still regularly drive the old truck. It is "as used" and has not been restored.

The following was published in the February 2021 issue of Model Aviation magazine, written by William (Bill) Bickel. The full article can be viewed online here:

<https://www.modelaviation.com/gallup-club-bickel>.



The Air Fair Day flightline on June 30, 1957. (L to R): wearing a dark fedora, Ed Shibata Sr.; squatting and wearing an AMA cap, Edward Cousins; working on a Ringmaster, Bill Bickel; standing with no hat, Walter Shibata; wearing a white fedora, Warren Wakefield; wearing a dark baseball cap, Steve Meza; and wearing a plaid cap, Foster Batt. (Source: Photo by Hank Hengel. Image provided by Bill Bickel.)

Gallup Model Airplane Club

Growing Up as An Aeromodeler in Gallup

Written by William Bickel

It was 1956, and I was living a teenage boy's dream. I was a freshman at Gallup High School in Gallup, New Mexico (the same Gallup that Nat King Cole sang about in his 1940s [Get your kicks on] "Route 66" song), and was employed by my father to refuel aircraft, as well as help keep his Navajo Flying Service aircraft clean, perform minor maintenance such as oil changes, clean engine air filters, and replace worn tires—jobs that were not required to be performed by a CAA (now FAA) licensed A&E (now A&P) mechanic.



*A Fox .35-powered Twin Ringmaster.
(Source: Image provided by Bill Bickel.)*



*Part of the flightline in March 1957 with spectators
freely mingling with the modelers. The flying circle
was later roped off according to the conditions of the
club's flying site lease. At the far left is Ed Cousins
and Ed Shibata Jr. (Source: Shibata family photo.
Image provided by Bill Bickel.)*



A flying phonograph record. (Source: Image provided by Bill Bickel.)

My dad, a World War II B-29 instructor, now flew air charters and offered flight instruction. Shortly after the war, he signed on as a test pilot for Ryan Aeronautical in San Diego. He was on the FR-1 Fireball project, whose pilots liked to overtake a slower aircraft while in flight then shut down the Fireball's front radial engine, feather the propeller, and accelerate away from the aircraft using only the jet engine, which was housed inside the fuselage.

He taught several women, including my stepmother, how to fly, and at one time he had a husband-and-wife team of commercial pilots among his employees. I did janitorial work in the airline terminal and at Tom's Variety Store, which was the local hobby shop. These jobs supported my obsession with building and flying model aircraft.

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FRONTIER AIRLINES

11th YEAR OF EXPERIENCE AS ONE OF THE NATION'S SCHEDULED AIRLINES

An advertisement used in the Gallup Daily Independent on June 28, 1957. (Source: Image provided by Bill Bickel.)



*Outside of Tom's Variety Store at 300 W. US 66 Ave., circa 1970,
Dan Rhinehart's Live Wire trainer is hanging in the window.
(Source: Photo by Edward Shibata. Image provided by Bill Bickel.)*

I had just returned from visiting my uncle, Bob Bickel, in Aledo, Texas. Bob was once a U.S. Army surgeon stationed in Kunming, China, and could recall having treated American Volunteer Group Flying Tigers pilots and personnel. While in Aledo, I attended every day of the 1956 AMA Nats, which was held roughly 50 miles away at Naval Air Station Dallas. I joined AMA during that week and was assigned AMA 1551.

One Sunday in late summer 1955, I was at home recovering from a bad cold and was upset because dad would not let me go to the airport to fly my models. That afternoon, I received a phone call from Warren Wakefield, informing me that I was now a member of the GMAC, or Gallup Model Airplane Club.

The Gallup-McKinley County airport, which my dad managed and was also the fixed-base operator of, was one of our flying fields at the time. The other one was the parking lot of the Inter-Tribal Indian Ceremonial stadium, which was in town. We would set up and fly our models on the ramp in front of the Frontier Airlines terminal and move out of the way when one of Frontier's scheduled DC-3 flights was being processed.

Those of us who were into Free Flight and/or RC would sometimes set up on the extreme southwest corner of the airport property, well away from the runway, but still beneath the airport's traffic pattern. We had not realized how much altitude some of our models were attaining. It was immediately decided that we needed to find another location for these activities. We were able to locate a suitable, uninhabited open area a few miles north of Gallup, where the only hazards were some sagebrush and a rutted two-track road into the site.

Our club members ranged in age from junior high school students up to the adult members who were employed as auto mechanics, airport line servicemen, store clerks, Santa Fe railroad brakemen, and several other professions. The membership included Asian, Caucasian, and Latino modelers. Two of our members were full-scale aircraft owners. Warren Wakefield, the club's president, had a Luscombe Silvaire and Foster Batt owned a two-control (no rudder pedals) Ercoupe, both of which were based at the Gallup Airport.

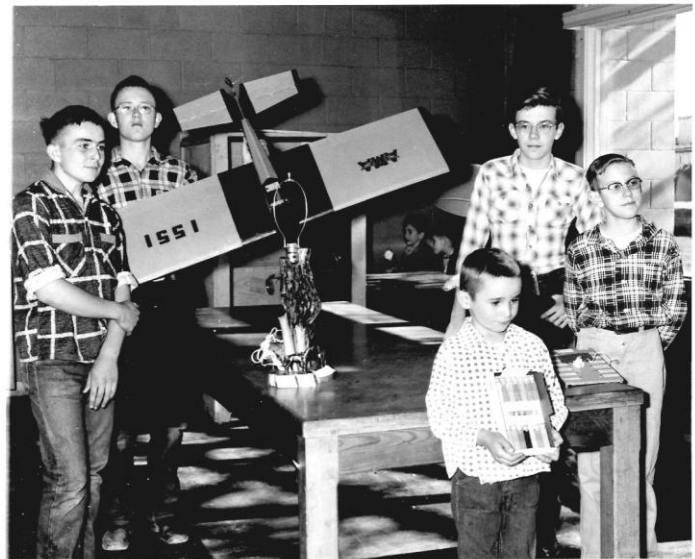
My mom's parents, who were retired Indian traders, were now living in Albuquerque, New Mexico, which was slightly more than 100 miles east of Gallup. I visited them a couple of times each year during summer when school was out.

My friend from Albuquerque, Kip Stephens, wanted to learn about my model airplane hobby, so I decided to demonstrate to him what it was all about. Dad was going to fly me to Albuquerque early one week and pick me up that weekend. At the last moment, he got a charter flight, so he could not take me to Albuquerque as planned and he bought me a Frontier Airlines ticket instead.

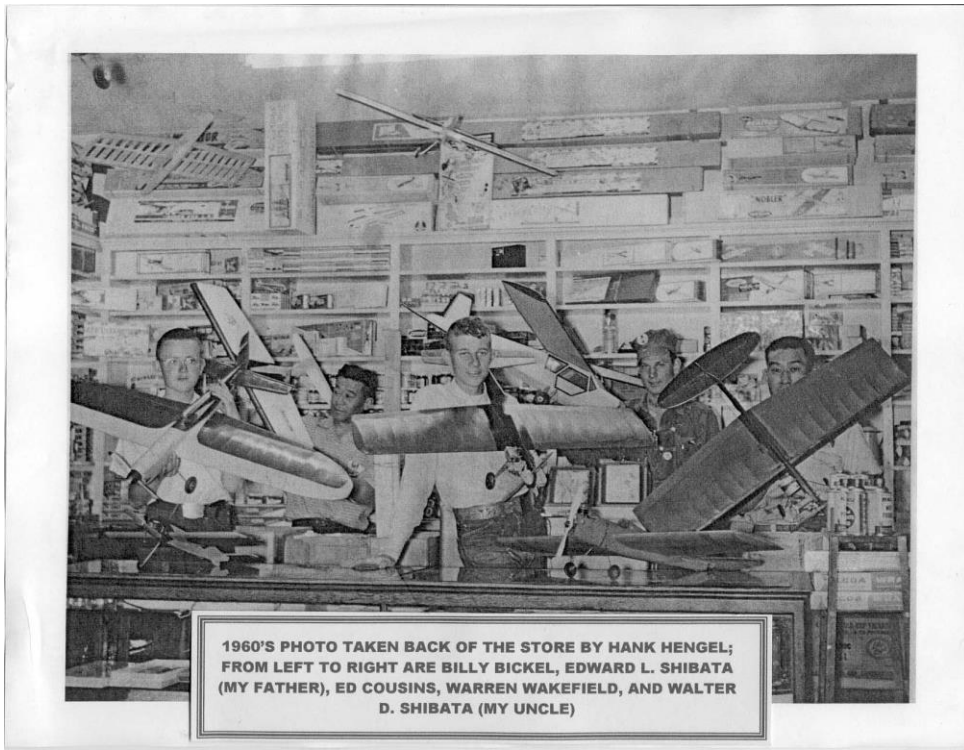
I asked him, "What about my model?" He replied, "Take it with you on the airplane."

When the time came, I checked my suitcase and carried my PDQ Flying Clown and my field box out to the airliner. The stewardess (now called flight attendant) had me place the airplane and my field box in the baggage compartment, which was located just behind the rear bulkhead of the DC-3's cabin where the other passengers' bags had already been stowed.

I did this two or three times throughout the next few years, and nobody ever seemed concerned about my airplane or my field box. In Albuquerque, my grandfather lived roughly a block away from an undeveloped city block. While Kip and I flew the Flying Clown, Granddad would practice driving golf balls.



Bill Bickel holding the second-place winning Super Duper Zilch at the Youth Hobby Show, November 1957. (Source: Hank Hengel photo. Image provided by Bill Bickel.)



Inside Tom's Variety Store (L to R): Bill Bickel with a Smoothie; Ed Shibata Sr. with a Ringmaster; Edward Cousins with a Firecat; Warren Wakefield with a Royal Rudder Bug; and Walter Shibata with a Ringmaster. (Source. Photo by the Gallup Daily Independent, June 28, 1957 photo. Image provided by Bill Bickel.)



Larry Cantrel (L) and Ed Shibata Jr. with Ed's Super Ringmaster, circa 1957. (Source: Shibata family photo. Image provided by Bill Bickel.)



Another view of part of the Air Fair Day flightline. (Source: Shibata family photo. Image provided by Bill Bickel.)

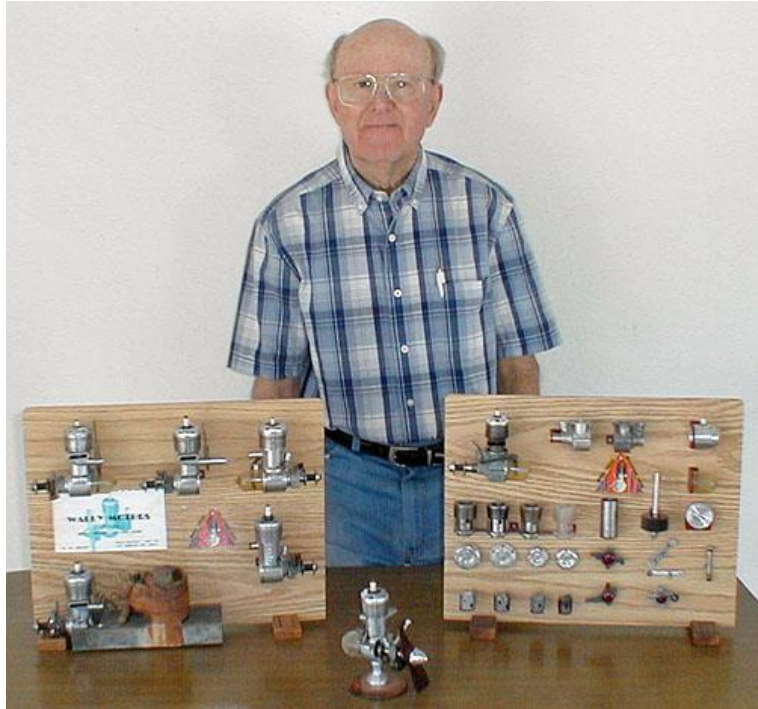
Ed Shibata owned Tom's Variety Store, which was the magnet that held the GMAC together. Located at 304 W. 66, and later moving to 300 W. 66, it was a small store operated by Ed and his wife, Jean. Ed, who had received a Purple Heart while fighting in France during WW II, was now operating the store that his brother, Tom, had started. He promptly stepped up to the plate when he saw that there were kids and adults who wanted to build and fly model aircraft.

The result was that an expanded hobby section was added to the store when it moved to the new larger location. It was kept well stocked according to our modeling needs. I can remember one instance where I was watching Ed unpack a shipment that had just arrived from his distributor in Phoenix. After Ed had unpacked and checked off most of the items, I noticed that there was still one large box that he had not yet opened. Ed had ordered a case of Sterling Ringmasters.

Ed, who was also the GMAC secretary/treasurer, brought supplies that we were most likely to need out to the flying field on Sundays and sold them out of the trunk of his Oldsmobile. We were allowed to take any items that we needed and pay for them at a later date.



Combat at the Inter-Tribal Indian Ceremonial stadium grounds. (L): Bill Bickel and Ed Shibata Jr. (Source: Photo clip from 8 mm movie filmed by Jim Bickel. Image provided by Bill Bickel.)



Shown is Bill Bickel with his collection of late-1940s Wally Engines made in the Los Angeles area by Walter Dailey. (Source: Image provided by Bill Bickel.)



Dan Rhinehart displays the restored Live Wire Trainer. (Source: Dan Rhinehart photo. Image provided by Bill Bickel.)

Ed also served as the scoutmaster of our Boy Scout Troop 330 and he provided me with my first non-family-related job as the store's janitor.

Ed died in October 1980 and the store closed in 1981. In the late 1970s, stepping into the store was like entering a time capsule. The building the store was in, once the Rex Hotel, now houses the Rex Museum.

In a couple of instances, my dad had a chartered flight scheduled for Phoenix. Knowing that Ed needed some hobby items to support an upcoming Sunday flying session, I mentioned this to my dad, who had Ed telephone his order to Cacti Model Supplies, a hobby distributor owned by Gaylord Webster in Phoenix, and made arrangements for my dad to pick up his order and fly it back to Gallup on the return trip.

Gaylord's brother, Quentin, owned Webster's Hobby Shop, which was the largest hobby shop in Phoenix at the time. On one of these flights, there was an open seat on the Beechcraft Bonanza that my dad was flying that day, and I was allowed to accompany him on the trip. I can remember adding a GHQ fly wheel and a couple of other items that I thought I needed to add to Ed's order that day.

In the summer of 1957, the city of Gallup decided to celebrate having had airline service for 10 years and also tried to promote a new location for the airport. An Air Fair Day event was scheduled to take place on June 30 at the Gallup airport. There would be a demonstration of radar aircraft tracking and how anti-aircraft guns operate using radar.

The New Mexico Air National Guard demonstration team, flying F-80 Shooting Star jets, was scheduled to perform stunts, and Frontier Airlines would be giving short DC-3 rides over the city for \$2.75 per person. In order to keep the spectators entertained between the events, the GMAC was called on by the Gallup Chamber of Commerce, the Active 20-30 Club, and Frontier Airlines, who were all sponsors of the event, to display and fly our model aircraft.

Our flightline was set up next to the boarding gate along the fence that separated the airline terminal from the ramp. We were to fly our models as much as possible between the departure and arrivals of the sightseeing flights. As soon as a Frontier flight taxied away from the boarding area we would start putting up our CL flights and we would keep doing so until a returning flight approached the boarding area. The crowd loved it!

Saying that the event was a success would be a gross understatement. The July 1 Gallup Daily Independent headline stated, "4,000 turn out for Gallup Air Fair Day." Not bad for a town with a population of less than 14,000! According to the Gallup Chamber of Commerce, the current population is roughly 21,000 and it knows of no model airplane clubs currently operating in town.

In May 1960, I graduated from Gallup High School (go Bengals), and after attending the University of Arizona in Tucson, I enlisted in the U.S. Air Force. After my discharge in 1966, I found that my modeling interests had drifted toward engine collecting rather than building and

flying models. I am currently the historian for the Model Engine Collectors Association (MECA), which is an AMA Special Interest Group.

By William Bickel
wbickel@msn.com

Photos by the author except as noted.

Be sure to visit the AMA History Project to read stories like William's, as well as other club and company histories. While you are there, please consider sharing your own model aviation story.

The AMA History Project is our ongoing endeavor to save the history of model aviation by collecting the stories of model aviation enthusiasts and the histories of modeling companies, clubs, and other organizations, as well as other compilations of historical data about the hobby/sport that is model aviation.

We have more than 1,080 modelers' biographies, 59 club histories, and 26 company histories completed and online, and our collection continues to grow. The following link will take you to our current collection of biographies, histories, as well as other model aviation-related historical information. Consider contributing your story today! Visit www.modelaircraft.org/museum/history-recognition/ama-history-project.

The following is material that, due to space constraints, could not be included in the above Model Aviation article. This was written by William (Bill) Bickel, and submitted for inclusion in his AMA History Project autobiography.

During these times, many of us Gallup kids had to try out some of the many ready to fly models that were available at the time. Wen-Mac's Aeromite was one of the better ones, but our best luck was had with Cox products, especially after the spring starter was introduced. This not only made the little Babe Bee .049 engines much easier to start, but being reed valve engines, it also prevented them from starting in the wrong direction.

My first Cox RTF was the Super Cub 105. Ed Cousins and I would sometimes take it out on a summer night and fly it under the street light at a nearby intersection. It was very unusual to have to stop the flight by landing hard enough to stop the engine because there was very little traffic on the street where I lived.

Johnny Horrocks had a Cox P-40 Warhawk. This plane was beautiful... and heavy. With Gallup's altitude being about 6500 feet, the plane essentially was a tether car; with some effort he could "whip" it into the air, but it would not stay airborne on its own.



***K&B .15 powered Live Wire Trainer.
(Source: Image provided by Bill Bickel.)***



AUG 1958

***Wendell Johnson the holding broken Live Wire Trainer wing.
(Source: Image provided by Bill Bickel.)***

I purchased this Live Wire Trainer around March of 1957. It had no RC equipment but was otherwise ready to fly. I purchased a 27.255 mc transmitter and receiver made by CG Electronics of Albuquerque, NM. (Remember the cute “Charlie CG” ads?) This “tone” equipment was supposed to be resistant to outside interference. I soon learned that turning on any fluorescent light in my workshop with the receiver on would have the effect of causing the rudder to cycle until the escapement was unwound. It reminds me of a Galloping Ghost setup.

I installed the radio, which operated on a frequency of 27.255 MHz, and Ed Cousins and I piled into Ed’s 1950 Chevy fastback, heading out to the flying field. The field was located in the desert west of Gallup, accessible by a rutted 2-track road and populated with many Sagebrush plants.

We were about halfway there when Ed got pulled over by a New Mexico State policeman for crossing over the double yellow line on a hill. The cop immediately became interested in the Live Wire Trainer that was sitting in the back seat, gave Ed a verbal warning, and asked to follow us to the field to witness my first attempt at flying RC.

Once at the field, Ed and I performed a ¼-mile range check and found everything to be OK. I started the engine, Ed hand-launched the plane, and I immediately found out that keying the transmitter had no effect. I now had a Free Flight plane that was not circling overhead, it was making a beeline West towards Arizona. The cop said, “Come on”, so we piled into his patrol car and, bouncing across the desert, followed the plane. It eventually ran out of fuel and landed about two miles away. Upon testing we found the radio to still be unresponsive, so we called it a day and returned to Gallup.

I did have a few successful flights over the following months, but in August 1958 I managed to reinvent the spin-in, making an unsuccessful attempt to kill a Sagebrush plant in the process. I did however manage to repair the wing and get it flying again.



Berkeley Super Squirt.
(Source: Image provided by Bill Bickel.)

In March 1957, I received a Dyna-Jet Redhead as a birthday gift. I built a Berkeley Super Squirt plane for it. Not having a Ford Model T coil, we “imported” spark by running wires to one of the sparkplugs on Ed Shibata’s 1955 Oldsmobile. The first thing learned is that, holding the control handle, I could feel a slight “jolt” from the cars spark, as did the person who held/launched the plane. We guessed that the plane’s aluminum paint may have been slightly conductive causing this. After the launch, we found that the Inter-Tribal Indian Ceremonial stadium parking lot was too rough for a takeoff because the plane’s bouncing around on the asphalt would kill the engine before it could become airborne. We then moved to the ramp in front of the Gallup Airport terminal, which was smoother, but we soon learned that the fiberglass material (which came with

the kit) that was supposed to protect the belly was not up to the task. Wheels were added to the fuselage, but were later discarded in favor of a proper takeoff dolly which solved the problem.

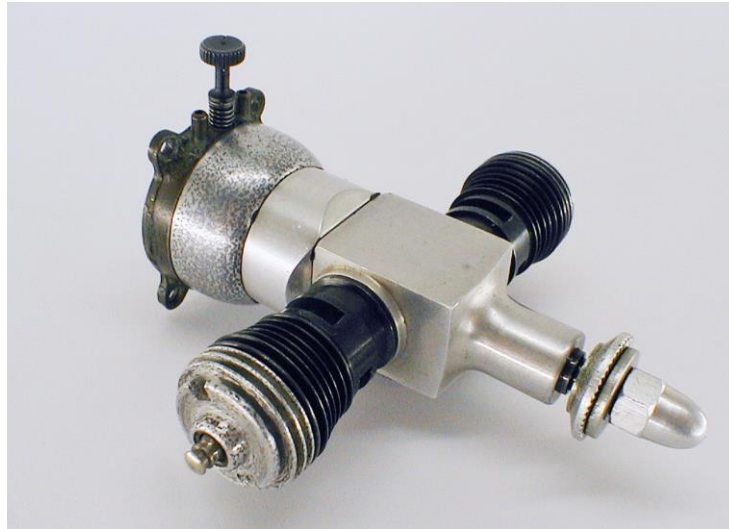
This bit of craziness started in September of 1962, while I was attending aircraft mechanics school at Sheppard AFB in Wichita Falls, TX. The airman, whose bunk I was taking because he had graduated, told me that my wall locker had a model plane hidden under its floor; it must not be discovered by any of the 3767th School Squadron NCOs because that sort of thing was not allowed in the barracks. When I lifted up the locker's floor, I discovered this Shoestring CL model, in flyable condition with everything needed to fly it, hidden there. Several times, when I was off duty, I got one of the other airmen to act as a pit crew and we flew the plane, always returning it to its hiding place after our flying session. I never got caught, and in December when I was going on leave before heading to Tokyo, Japan, I passed it on to another incoming airman. I hope that he had as much fun with it as I did.



*McCoy Redhead powered Shoestring resting on my bunk.
(Source: Image provided by Bill Bickel.)*

In 1963, while stationed at Tachikawa AFB near Tokyo, Japan, I was an airframe mechanic and worked in the Periodic Inspection docks for Douglas C-124 Globemaster II aircraft. Those were powered by four Pratt & Whitney R-4360 Wasp Major 4-row 28-cylinder engines that could develop 3500 hp each.

After discharge from the Air Force in 1966, I was living in Phoenix and had taken up the hobby of engine collecting. It got a huge boost because, while attending an Air Show at the Phoenix Deer Valley airport in the early 1970s, I met Roger Gudahl. He told me about the Model Engine Collectors Association (MECA), which I soon joined, and also the *Engine Collectors' Journal* magazine (ECJ), to which I immediately subscribed. My engine collection at one time contained over 400 engines, most of which I displayed in a 7-foot-high case.



Bickel Twin .098.
(Source: Image provided by Bill Bickel.)

In 1972, I built this .098 opposed twin based on Cox cylinders. This engine ran quite well but could not be completely disassembled because the crankshaft sections were brazed together inside of the crankcase, making it impossible to remove the piston and connecting rod assemblies. Not a real great idea. Note that the Cox-produced aluminum parts have become corroded over time.

In 1973, I built a Berkeley Buccaneer "B" Special Free Flight plane, which I built from plans that Roger Gudahl had given me. It was powered by a K&B .24 ignition engine. As it turned out, the flying field used by the Phoenix Model Airplane Club (PMAC) was located close to my home.



K&B .24 powered Berkeley Buccaneer B Special.
(Source: Image provided by Bill Bickel.)

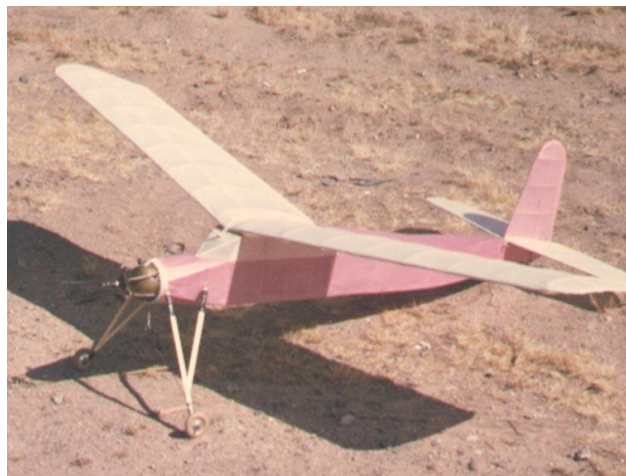
Some of the PMAC guys thought that rise-off-water (ROW) in the middle of the Arizona desert would be a fun thing to try. As luck would have it, I lived only about two miles away from the flying field and I was set up to handle the water problem. I lived in an undeveloped area and did not yet have a well, which meant that I had to haul in all of my water and dump it into a cistern. It had a pump and pressure tank that supplied water to the house. I have a trailer with a 550 gallon tank on it that I used to haul the water. Some of the guys set up a frame, over which we put a black poly-something-or-other type of plastic sheet, and we had our tank. ROW flying never caught on here, but it was an interesting experiment.

Then I built Don Burnham's 1930 AMLA Nats Winner Twin Pusher, which I still have but is in bad need of restoration. Not knowing anything about twin pusher winders, I modified a kitchen eggbeater to do the job.



Burnham Twin Pusher.
(Source: Image provided by Bill Bickel.)

A bit later, I built this 1932 design Hobart compressed air model and powered it with a Hoosier Whirlwind compressed air motor and tank combo. This plane would fly at about walking speed, so there was no chasing involved, and when it descended for a landing I could simply catch it. This nearly 6-foot-wingspan model proved to be quite delicate and did not have a very long lifespan.



Hobart compressed air model.
(Source: Image provided by Bill Bickel.)

Later, I obtained another Hoosier air motor that I attached to an air tank (that I had constructed from instructions on page 19 and 20 of a magazine whose title I cannot remember) by epoxying six Coors beer cans together. The first time I filled the tank it gave me a bad scare. For its initial filling, I had placed the tank inside a closet from which I ran a hose outside to a propane tank that I had pressurized with air to about 150 psi. With the closet door closed, I started filling the tank and all went well 'til I got it up to about 100 psi. At that point there was a loud BANG! I thought, "OK, this did not work". Then I noticed that there was no sound of escaping air and that the tank was still holding pressure. A close inspection revealed that the concave bottom of the two end beer cans had reformed themselves to a convex shape. Later, I sold the air motor and tank to Tom Lay, who constructed this beautiful, compressed air model and provided this photo.



*Coors can air tank on Tom Lay's compressed air model.
(Source: Image provided by Bill Bickel.)*

In 1978, I built two of these Schlitz planes. That project was just too pretty to pass up. The plans were ordered from, of all places, *Playboy* magazine. I still have this one which never fails to get comments when I have a visitor here at the house.



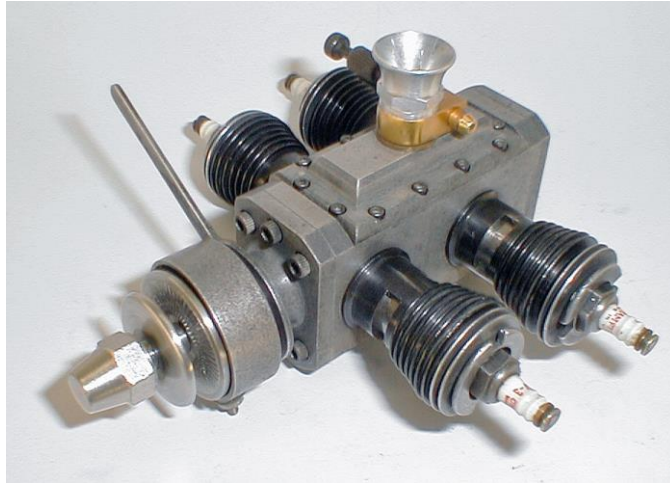
Schlitz biplane.
(Source: Image provided by Bill Bickel.)

In 1979, I built a GHQ Sportster, powered with a GHQ that I had reworked into a good running engine by installing a McCoy (I think) ringed piston and opening up the bypass port a bit. This plane actually more or less destroyed itself because over time the nitrate dope that I used would not stop shrinking and it got to the point that the slightest tap on the now very brittle nylon covering would cause it to rip. Later, I learned that nitrate dope needed to have plasticizer added.



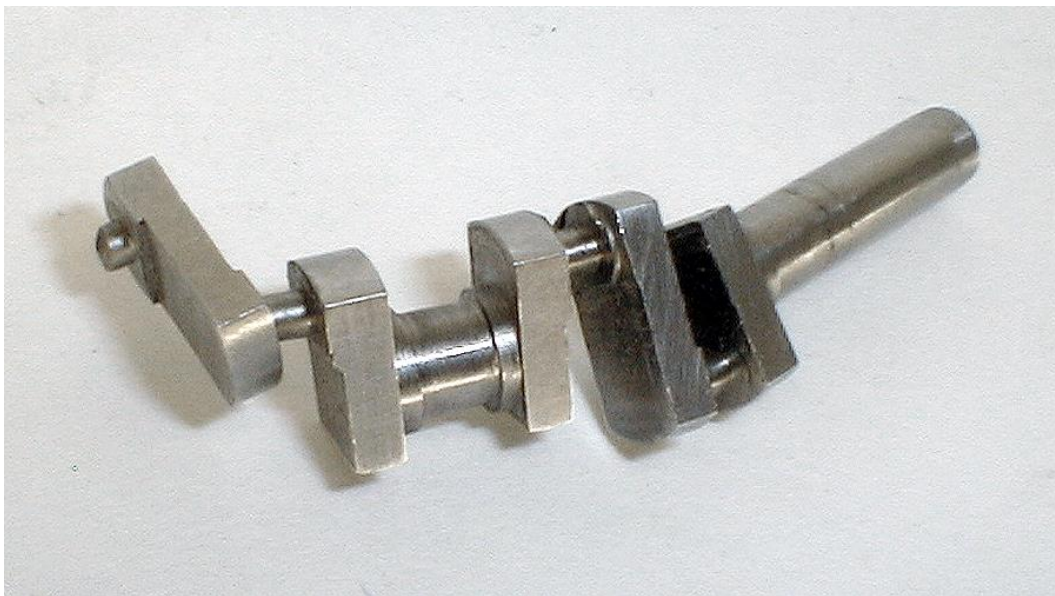
GHQ powered GHQ Sportster.
(Source: Image provided by Bill Bickel.)

In 1987, I built another Cox-based engine, this time an ignition .19 opposed four. This one is all magnesium, using conventional automotive-style connecting rod caps installed using 0-80 screws that were safety wired to prevent their loosening during operation. The engine's front and rear covers, and also the intake manifold, are also attached with 0-80 screws. It runs OK, but when I attached the ends to the connecting rods I must have weakened the rods somewhat because they have a slight tendency to bend while the engine is running.



Bickel Four .19.
(Source: Image provided by Bill Bickel.)

This crankshaft almost made it into the engine. It was nearing completion when my lathe's cutting tool dug in with fatal results. This little crankshaft was not strong enough to stop a 12-inch Craftsman lathe.



OOPS!
(Source: Image provided by Bill Bickel.)



The 1953 Chevy loaded with scrap metal for another trip to the recycler's yard in late 2020. (Source: Image provided by Bill Bickel.)

Being that I have no one to pass my engine collection on to, I disposed of most of it through the *M.E.C.A. Swap Sheet and Bulletin* and eBay. All that still remains is the Wally collection featured in the *Model Aviation* article and the Cox-based opposed twin and four that I built.

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