

BEETLE

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
NORTH PACIFIC REGION



ADDRESS REPLY TO
REGIONAL FORESTER
AND REFER TO

POST OFFICE BLDG
PORTLAND, OREGON

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EQUIP & MATER
Experimental
(Trail Beetle Tractor Invention and Design)

June 14, 1947

History and Origin of Design of the Trail Beetle Tractor

1. The original general scheme, proportions and special operating or mechanical features of the Beetle tractor were put together by T. P. Flynn early in 1945 in the form of brief free hand sketches and word description by memorandum.
2. Also in 1945, the proportioned arrangements were presented by Flynn to Flynn's principal assistant and chief draftsman, Thomas Coldwell for expansion and detail on the drafting boards.
3. Under the direction of T. P. Flynn, Mr. Coldwell carried out and recorded in design form in sufficient detail for construction of pilot model, all the original ideas as proposed and presented.
4. In mid-summer 1945, two pilot model tractors, equipped with bulldozer were constructed along the lines as originally prescribed by the U.S. Forest Service. Engineer T. P. Flynn.
5. Following testing of the pilot model which was to prove the principles of this new tractor, bid proposals were issued to various machine shops and manufacturers for the construction of a quantity of 25 of these machines.
6. The Webster-Brinkley Company of Seattle, then an affiliate and branch of the Western Gear Works, were the most interested firm, and as low bidders were awarded the contract for construction of 25 tractors with bulldozers.
7. Under the direction of Mr. Paul Forsythe, at that time an engineer for Webster-Brinkley Company, three mechanical draftsmen namely, Bill Bialkowski, Wilbur Betts and Mr. Olson were placed in Flynn's Equipment Laboratory office for approximately a month to study and copy the original Trail Beetle drawings as were originated and designed by Flynn and his assistants.
8. The first quantities built of the Beetle tractor were started at the Webster-Brinkley plant in Seattle and later transferred to the Western Gear Works. All these tractors were built according to the original plans originated by Flynn and detailed by his assistants and otherwise the Western Gear Works from that point on, expanded original Forest Service drawings to suit their own shop practice.
9. All principle features and detailed assembly arrangement of the Beetle tractor at this date are the same as the data taken from our original drawings

2. Trail Beetle Tractor Invention and Design

by Webster-Brinkley Company with a few exceptions in design detail, for example changing fabricated plate gear cases as used on the original to cast steel or iron cases.

10. Therefore, it is repeated that T. P. Flynn, his assistants and the USFS furnished all the great wealth of design information now used by the Western Gear Company who are the present recognised manufacturers in the Northwest.

11. All design arrangement and details now used by the Western Gear Company are absolute take offs from original drawings and this manufacturer has depended right up to this date on Flynn and his assistants to furnish the design data and prescription for all minor improvements that have been made. Correspondence, sketches and supplementary drawings and other prescription of record furnished to the Western Gear Company are proof that the Western Gear Company have merely transcribed all Forest Service drawings, ideas and sketches to engineering data sheets to suit their own convenience.

12. There is however, no contention nor question even, nor has there ever been on the part of Western Gear Company that all design and subsequent improvements up to date did not belong to and were not furnished by T. P. Flynn and assistants under his direction.

13. Ideas, arrangements and all details of design for this tractor are not in any sense the property of the present contractor who happens to be the Western Gear Company. In fact this company lifted and inherited this wealth of valuable information and will never be in a position to make any claims to ownership of the design arrangements or details.

14. It is a fact and for our own convenience here in the Forest Service Equipment Lab that since Western Gear was our sole and only contractor at the time to build these tractors, that we have made it a practice during the past six months to pass along every idea of improvement that we discovered, to the Western Gear so that they could record the improvements on their drawings and have them ready for application and this procedure saved the Forest Service considerable time in revising their own drawings every time a small improvement was made. It is also a fact however, and I will repeat that all improvements used by Western Gear Company are a matter of record in the files in Flynn's office as definite evidence that all items that may have been inscribed and otherwise located on Western Gear drawings were obtained from Flynn's office and at the U.S. Forest Service Laboratory.

The witnesses whose signatures appear below are the key responsible persons who have the only correct, absolute and definite information that the above picture is correct.

T. P. Flynn, Engineer in Charge, Beetle Tractor Development, U. S. Forest Service

Thomas Coldwell, Principal Assistant, Mech. Engr. on Beetle Design, U.S.F.S.

Agnes A. Deeth, Clerk-Stenographer in Charge of Records for Equip. Lab. U.S.F.S.

U.S. Forest Service History Collection

File - Bulldozers

(1929)

Development of 1st bulldozer, driven by motor power, was built by Earl Hall of the Forest Service, in the Bureau of Public Roads Shops, at Government Island, near Oakland, California, in 1929. Though designed for Forest Service road work in rough terrain, the bulldozer soon became a powerful weapon against Forest fires. From design drawings of this hand-made machine, a manufacturer constructed 29 dozers which were purchased by the Forest Service. (Davis, California)

Ted Flynn honored as "Father of Bulldozer"

From his (Hall's) drawings a manufacturer in Davis, California, made several dozers purchased by the Forest Service in California region. Hall^{was} forest road construction superintendent for Forest Service California region.

Ted Flynn of Forest Service (construction engineer)

Developed two-drum logging hoist
power cable lifts for tractors and graders
angle blade bulldozer
"Clarke airborne" tractor
adjustable tooth bulldozer blade

1923-Flynn came up with idea to build a counterbalanced, handlift, angle blade bulldozer using a worn horse grader blade and scrap metal

1925-attached it cettae tractor

1926-fixed it better

1928-big road meeting in Santa Barbara got Woolridge, Killifer and Hall to be at the show-jammed their bulldozers on the field and stole the show. Manufacturers took the ball from here and started producing dozers.

Forest Service at Portland built the 1st power-lift pull grader in 1930.

1937-designed new midget trail tractor with several advanced design features. 1942 adopted by Army for Airborne Engineers.

1925-Forest Service employee - R.A. Bottcher (Regional Equipment Engineer) with a local blacksmith built a push-arm with mounting for each side of the tractor. Mountings were bolted to the track frames on each side.

On each push-arm to the rear of the track frame mounting was a large steel counterweight. Each block could be slid along its push-arm thereby changing the balance and attitude of the blade-used "FRESNO" as a dozer blade.

Did the above to:

- 1 - eliminate 1 man from the team needed in earlier dozers
- 2 - maneuver the machine faster
- 3 - reduce distance traveled
- 4 - place excavated materials with less effort and loss where they were needed along the road prision.

417 Adams Street,
Albuquerque N.M. 87108
Dec. 30. 1971.

Chief, Forest Service,
Washington D.C.

Dear Sir:

In the alumni notes for the second and third quarters of 1971 just recieved I note that a search is now on to find the first hand made bulldozer for the Smithsonian's permanent collection. Though, regrettably, I cant tell you where the machine can be found, my recollections of a very early hand made prototype may be of interest:

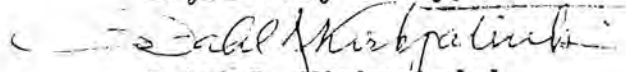
Mr. T.P. (Ted) Flynn, a staffer in the Division of Engineering in R-6, in about 1926, developed a dozer that was mounted on a small Cletrac crawler tractor which consisted of the following: A 5 or 6 foot section of a horse drawn pull grader, ^{blade} to each end of which was fixed a section of 4" pipe some 10 or twelve feet long that ran back on either side of the tractor. These pipes were supported on stanchions attached to the front of the track frame of the tractor. The rear end of the pipes had a series of holes which were used to pin the moveable balance weights in place. An arch made of heavy strap iron (maybe 4" x 1/2") was fixed to the rear end of the track frame on either side of the rig to protect the driver. As I recall the weights on the rear ends of the pipes were 60 pounds or so. I do not believe that provision was made for angling the blade, though I could be wrong about this. When the blade was at the level of the bottom of the track the side arms running back to the weights must have been at an angle of some 15 degrees from the horizontal..

The machine roughly described above was used first at the beginning of construction of the Cispus road on the Randle ranger district of what is now the Gifford Pinchot N.F. Moving pictures of the rig in action were taken in the fall of 1926 or possibly 1927 under sponsorship of the Division of I & E of the Portland office and were used for publicity purposed by the region during that era.

Though it seems highly improbable that any trace can now be found of the little Cletrac and its hand made dirt pusher there may be a chance that the old movie film is still about in the I&E archives in the Portland office. Any way, I'm confident, that the most fertile ground for researching the origins of the bulldozer would be in R-6 and specifically among the friends and former associates of Ted Flynn. Members of Ted's family should also be helpful. It runs in my mind that the Pacific Logging Congress at one of its meetings, after the modern bulldozer had become well established, honored Ted as the 'father' of the idea.

Bad as this typing is, my handwriting is worse ! .

Yours very truly,


Dahl J. Kirkpatrick