

that the CAA looks for before approving a towing installation.

Quite frequently, glider pilots make use of banner-towing airplanes, and get themselves and the tow pilot in trouble. In order to tow ANYTHING, the airplane has to have a waiver (CAA Form ACA 663, more about this later). Just because an airplane is approved to tow banners does not necessarily mean that it can tow gliders. Since the gliders can move around behind the tow plane, the angular displacement between the two can be considerable. The tow hook must be so located that the towline will clear all airplane structure when displaced to the maximum angle apt to be encountered in normal operation. Numerous banner-hook locations have been approved that cannot accommodate any upward displacement of the line at all. Since all gliders are in "High Tow" position relative to the towplane before the tail comes up and during takeoff, this type of installation is unsatisfactory.

One problem that must be considered seriously, especially on an airplane design that has not previously been used for towing, is the matter of adequate engine cooling. On older radial-engined airplanes this presents little or no problem at all, but some more modern types, with tightly-cowled flat engines, are extremely critical in this department. The problem stems primarily from the fact that, when towing, the airplane is being operated at more than normal cruising power while flying at considerably less than normal cruising airspeed. Also, it is flying at a higher angle of attack, and the air does not enter the cooling ducts at the proper design angle. Some modern airplanes encounter similar problems when converted to seaplanes, and cowling modifications are required before the airplane can be certificated for operation on floats.

Such things as modifications to the cowling resulting in changes in cooling air flow are definitely in the category of "major changes," and require approval on Form 337. Getting the necessary approval is the major towplane problem. CAA agents have been unjustly criticized in the past for being stubborn, un-cooperative, anti-glider, and a lot of other things merely because they would not give enthusiastic approval for a quickie towplane conversion on short notice, or required a lot of seemingly unnecessary test flights prior to giving approval.

Many glider people cannot appre-

ciate the CAA's problems in situations like this, mainly because they know only their own side of the problem—a case of being too close to the forest to see the trees. In regions where the degree of glider activity is high and the CAA is familiar with the operation, each side is able to operate with a good understanding of the other's problems and requirements, and few real deadlocks occur. It is in areas where gliding is just getting started, and where the CAA people have never seen a glider, that the real difficulties over towplane certification are encountered.

When you consider the almost infinitesimal portion of the CAA's time that gliding takes up, this is not surprising. When the inspectors do not have personal experience in a particular matter, they have to go strictly by the book, and that's that. The applicant can rave all he wants to over

items on the approved paper, and that's that, except for possible local restrictions. However, just because prior approval is on file in some other CAA Office, you are not relieved of the responsibility of furnishing proof of such approval to the local office yourself. To protect the proprietary interest of the people involved, CAA treats all aircraft modification data as CONFIDENTIAL, and will not release it for the use of others without permission from the originator. With such permission in writing, a local CAA Office might obtain data from another office for you, but you are far better off if you get it directly from the party concerned yourself.

Whether or not your modification requires Form 337, the airplane must have a valid waiver (CAA Form ACA 663, renewable annually on application Form ACA 400) for towing gliders. Some restrictions may be ap-

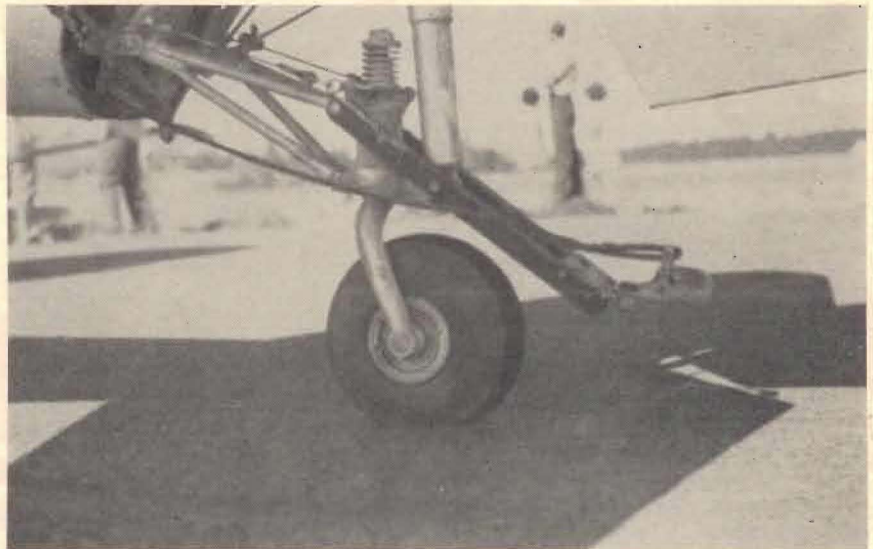


Photo: Peter M. Bowers

Angle iron hook mount installed on tailwheel unit of Stearman PT17 designed to utilize existing bolt locations on the tailwheel unit. Hook in proper location to allow rope to clear airplane at all normal towing angles.

the fact that some club clear across the country uses exactly the same airplane and towing rig, and has approval on it. This is an old, old story to CAA—to whom rejecting odd-ball aircraft modifications backed only by the applicant's statement that "It's just like one that's approved over in —" is practically a daily habit.

If you can show a previously-approved copy of the Form 337 or the towing waiver to prove that your towplane conversion is just like some other that is approved, you have no problem and neither does the inspector. He looks your airplane over to see that the changes agree with the

plied as a result of aircraft characteristics, especially in the case of low-powered planes, which might be limited to "Solo operation only" when towing, "glider weight limited to . . . pounds," etc. The cooling characteristics of a particular airplane might be cause for an RPM or cylinder head temperature restriction, or the location of the particular field to be used may limit operations to takeoff in a certain direction only.

Ordinarily, only commercial pilots are supposed to tow gliders (CAM 43-46-3). However, private pilots with their own planes can be granted

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