

A MODIFIED PROSTHETIC FOOT FOR PILOTS

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A number of lower-limb amputees who were airplane pilots, and who wished to continue flying, have requested a modification of the prosthetic foot so that the rudder pedal can be operated without the foot hitting the brake pedal. Also, there is concern about the foot getting "hung up" in the cockpit should bailing out be necessary.

The foot described in this article is one way in which we have dealt with this problem and still provided the patient with a functional prosthetic foot for ordinary use so that it is not necessary to change the entire foot each time he flies.

The amputee came to us wearing the foot as shown in Fig. 1. The foot, designed for the

the pilot had to sacrifice the function of the forefoot needed for normal earthbound activities.

THE NEW DESIGN

The keel (Figs. 2 and 3) for use in a molded SACH foot was constructed of stainless steel, wood, and balata belting. The stainless steel

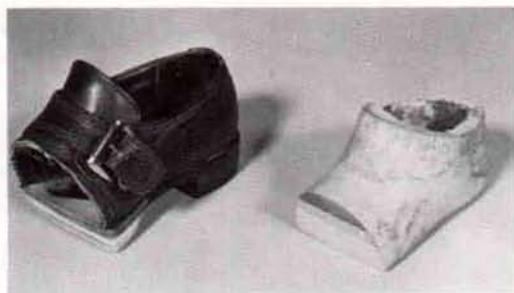


Fig. 1. Modified foot from "Hydra-Cadence" unit used by amputee in piloting an airplane. Forepart of foot has been removed to avoid undesirable operation of brake.



Fig. 2. Special keel assembly for use in construction of a molded SACH foot.

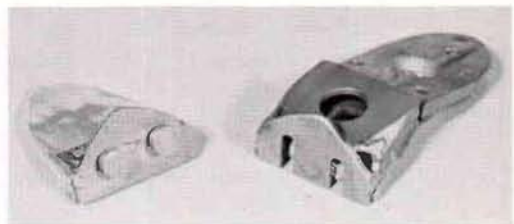


Fig. 3. Keel shown in Figure 2 showing quick connect-disconnect feature for removal and reinstallation of the forepart of the foot.

"Hydra-Cadence" above-knee prosthesis (2), had been used as a basis for the modified design.

The forefoot had been cut off and thus there was no "toe lever" for pushoff during walking. Because the foot was one used with the "Hydra-Cadence" unit, the cosmetic cover was glued to the top surface of the foot making it almost impossible to change the foot each time he flew. Since the shorter foot was needed in flying,

part, 304 grade, was shaped and welded to conform to the size of the foot mold to be used. The 1/4-in. thick balata belting was riveted into place with 3/16-in. copper rivets. The two locking pins were made of 3140-type steel for high strength, and welded into place. The wood block, which

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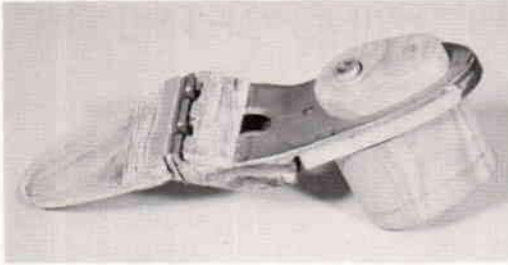


Fig. 4. Keel assembly with wooden parts installed preparatory to casting of the foam rubber.



Fig. 6. Completed two-part SACH foot for use by amputee in piloting aircraft.

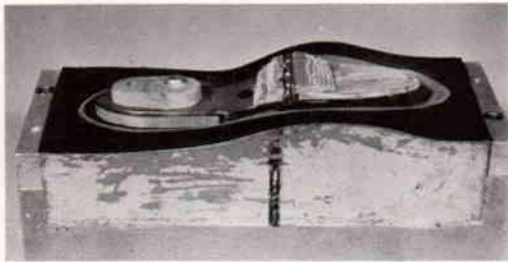


Fig. 5. Keel assembly in mold.

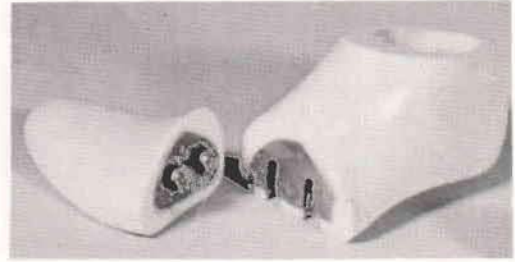


Fig. 7. Two-part SACH foot shown in Figure 6 with forepart of foot detached.

can be seen in the center of the heel section (Fig. 4), was used as a permanent filler to keep the weight down. The block was secured with three #8-32 screws. The other two pieces of wood were used as fillers for the voids needed to make attachment of the foot to the shin possible.

The foot was poured in the usual manner for making SACH feet (Fig. 5) (1). The completed foot as it appears with and without the forefoot is shown ready for attaching to the prosthesis, in Figures 6 and 7.

With this foot the amputee is able to wear a

complete artificial foot for his normal everyday activities. When he wishes to fly, the only change required is removal of the toe section of the artificial foot and a change of shoe.

LITERATURE CITED

1. Navy Prosthetic Research Laboratory, *Development of an epoxy foot mold and a lightweight artificial foot*, Final Report, 15 March 1968, 12ND P867 (Rev. 4-68).
2. Wilson, A. Bennett, Jr., *Limb prosthetics-1970*, *Artif. Limbs* 14:1:1-52, Spring 1970.