

COSMETIC COVERS FOR LOWER-LIMB PROSTHESES

Hans A. Mauch

Principal Investigator, Mauch Laboratories, Inc.
3035 Dryden Road, Dayton, Ohio 45439

The idea for this cosmetic cover grew out of our efforts to develop a cosmetic cover for our tri-axial ankle mechanism. It became increasingly clear that existing cosmetic covers for ankle joints were not suitable for an ankle mechanism which provides rather liberal angular motion ranges around all three spatial axes.

After we arrived at a promising idea, we realized that its principle was also applicable to the problem of covering the knee joint of a pylon-type above-knee prosthesis, without interfering with its free mobility.

We disclosed this idea to Dr. E.F. Murphy, Research Center for Prosthetics, in a letter dated December 19, 1973, as follows:

"The purpose of this new type cover would be to reduce to a minimum the friction and the torque bias imposed upon the knee joint by existing full length covers.

The basic idea to achieve this goal could be characterized by two generic terms: modular design and simulation of nature. In practice this means that the soft tissue, mainly the calf muscle group and the anterior tibialis, would be made available as pre-molded foam elements and would be attached to the endoskeletal structure. The skin would be a relatively thin, easily stretchable stocking that would slide easily over the internal structure including the muscle groups mentioned, a patella-like element, and other bony protuberances. The muscle groups and bone protuberances as well as the 'skin' would come in different sizes which could be further varied by cutting off material in the appropriate places. It would be the job of the prosthetist to select the size that would best imitate the remaining good leg and assemble from these elements a cosmetically pleasing leg."

As a result of this letter, the VA authorized the filing of a patent. This has not been done yet, because we would like to wait until our work on the ankle version of this cover has progressed sufficiently to permit including into the patent application the results of some practical experience.