# construction

## Flat wire

Flat conductor electrical cable, originally designed for spacecraft by the Marshall Space Flight Center has been installed for the first time in a housing project. Six apartments in Yonkers, N.Y. have had the wiring installed. Because it is very thin, the wire can be mounted on the surfaces of walls and floors instead of inside of them. Installation costs are reduced significantly due to single installation time.

Both an undercarpet and a baseboard system are being developed after five years of test installations. A solar test house at Marshall and the NASA Tech House at Langley both will utilize the method. Various companies and government agencies, such as the N.Y. State Urban Development Corp., Amp Inc., and Western Electric Corp. are working with NASA on this project. The Technology & Economics Inc. applications team coordinated the project under direction of NASA's Technology Utilization Office.

Currently the process of commercializing flat wire is centered around gaining approval of the National Electrical Code. The code, which is rewritten every three years, with the next edition in 1978, is a privately developed body of regulations that serves as a model for most of the nation's local building codes. Acceptance, therefore, is a prerequisite to using a new electrification method in mass construction.

*Flat, very thin wires originally designed for spacecraft soon may go under carpets in offices resulting in savings over conventional wiring.*

In order to have the flat wire accepted in the code's 1978 edition, NASA and interested companies have commissioned fact-finding studies at Underwriter's Laboratories to provide necessary technical data.

The flat wire and some of the other developments reported above will be demonstrated in the "Tech House" to be constructed this year by NASA at its Langley Research Center near Hampton, Va. Both the Department of Housing & Urban Development and the National Association of Home Builders have served as advisors in planning Tech House. It is described in Section one of this report under "Your Home."

## Tool for movable ceiling

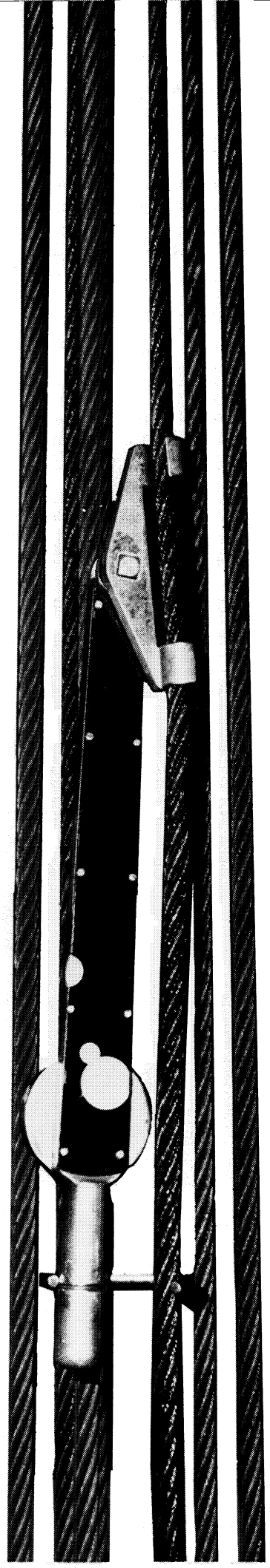
The University of Akron's performing arts hall is a cultural and architectural triumph. It was constructed to accommodate concerts, opera, ballet, and theater productions. These may be cultural relatives, but they are architectural opposites, because the main hall has to shrink and expand to accommodate audiences as large as 3,000 and as small as 900.

Movable ceilings were required not only to alter the size of the main hall, but also to regulate the volume and manipulate the acoustics.

The movable ceiling, the most modern in the U.S., contains overhead hexagons that can be lowered in clusters to exclude either 600 seats or an additional 1,500 seats.

Once the hall has been sound-tuned, the various positions of this ingenious ceiling and related acoustic curtains may be called into play immediately by pushing buttons on a control console that has been programed previously. With the touch of a finger before an event, a technician may condition the hall for chamber music, symphony, or theater.

A simple, inexpensive tool devised in the space program was used to equalize tensions in the 150 cables of the ceiling. The tool was developed sometime before by the Bendix Corp., under contract to NASA's Kennedy Space Center, to adjust the relative tension in elevator and crane cables. The 425-ft mobile launch tower contains two elevators for lifting spacecraft. The crane in the vehicle assembly



*Inexpensive tool to equalize tensions in cables of movable concert-hall ceiling was developed first for elevator and crane cables used to lift heavy space vehicles at Kennedy Space Center.*