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Powered Fire Nozzle for Fast Penetration of Structures: A Concept

A special fire-entinguishing nozzle has been proposed with a tip that will punch through a wall very quickly. It would allow an extinguishing agent to be delivered inside a closed structure in a minimum amount of time. Powersaws, fire axes, and sledge-hammer-driven nozzles have been used to penetrate walls. Unlike these, the powered nozzle will penetrate a wall almost instantly, an important consideration in firefighting.

Two versions of the nozzle have been conceived: one operated from a hydraulic pressure source and the other activated by an explosive charge.

The hydraulic ram shown in Figure 1 has a solid head connected to a hollow tube with nozzles on one end and a piston on the other. The piston end is mounted in a hydraulic cylinder. The cylinder has inlet and outlet hydraulic ports that can be opened or closed to extend or retract the ram. The ports can be operated by a hand valve or by remote control. The extinguishing agent is fed through a flex line into the ram cavity and is expelled through four nozzles behind the penetration head. The device would also include a method (not shown) to adjust the length of the ram stroke to prevent the penetration of objects inside a wall. One version of the device would be mounted on a boom and a platform so operators would be at a safe distance from a fire.

A scaled-down portable version (Figure 2) of the nozzle could be operated by two men. This device would use an explosive charge as a power source. Otherwise it is similar to the hydraulic nozzle.

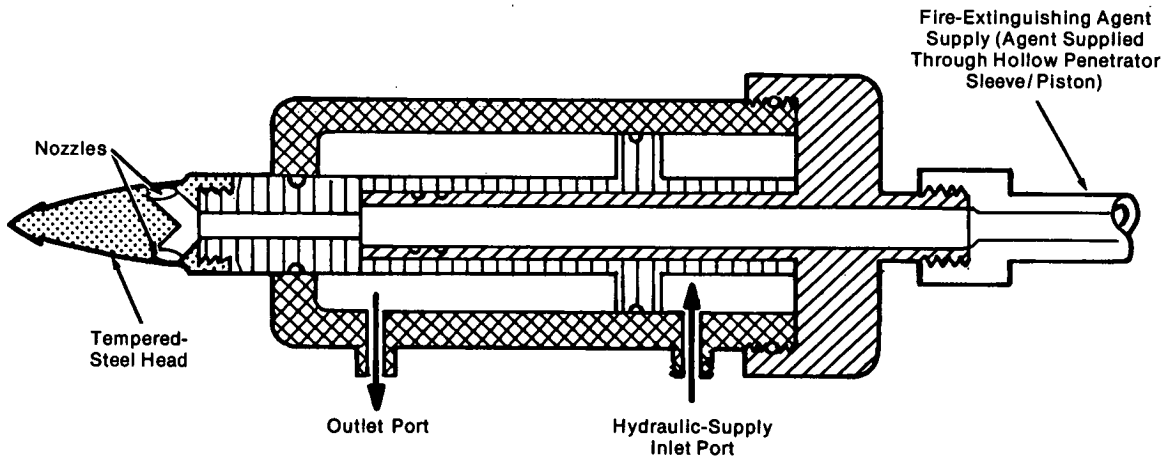

Figure 1. Hydraulic-Ram Nozzle

(continued overleaf)

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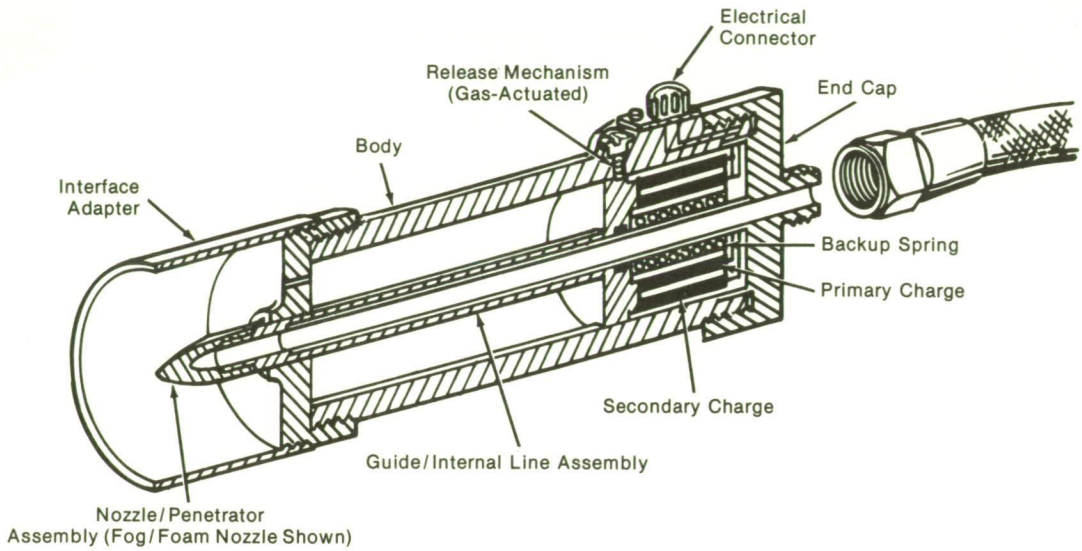

Figure 2. Explosive-Powered Nozzle

Note:

Requests for further information may be directed to:

Technology Utilization Officer
Johnson Space Center
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NASA has decided not to apply for a patent.

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