



A Smart, Remotely Operated Fire-Fighting Hose IITM Technology Available for Licensing

Problem Statement

- The prior art fire fighting method involves the fire fighters to manually put out the fire from a certain distance.
- Said prior art methods are **ineffective** in **controlling the spreading of fire** under such circumstances.
- To extinguish the fire quick & effectively, there is a **requirement for the tip of the conventional fire fighting hose** to be in **close proximity** to the **origin of fire** to effectively dispense the extinguisher at the site of the fire.
- Further said fire fighter robots lack **the sense of discretion** that human posses & remotely operated system have to carry a lot of system.
- Hence there is a need to address the issues.

Technology Category/ Market

Technology: Fire Fighting Hose;
Industry: Assistive device, Robotics & Sensors;
Applications: Fire Fighting Robot.
Market: The global Fire fighting Robot market is projected to grow at a **CAGR** of **9.95%** during forecast period **(2024-2030)**.

Technology

- Present invention describes a **firefighting system** having a **remotely steerable nozzle**.
- Said system comprising:
 - a **reservoir** having pressurized liquid to be dispensed therefrom;
 - a **hose assembly** configured to dispense the liquid from the reservoir to a remotely located fire site.
 - Further, the hose assembly comprises a hose, a connector, a hydraulic elevation line including two or more steering nozzle lines.
 - The hose is having a first & a second end, the first end attached to the reservoir &

the second end attached to a hose tip having a nozzle.

- a connector is configured to detachably connect the second end to the hose tip.
- The hydraulic elevation line running through the interior of the hose & is connected to a conduit.
- Further two or more steering nozzle lines are connected to one or more half-steering conduits.
- The operation of claimed device is illustrated in the figure:

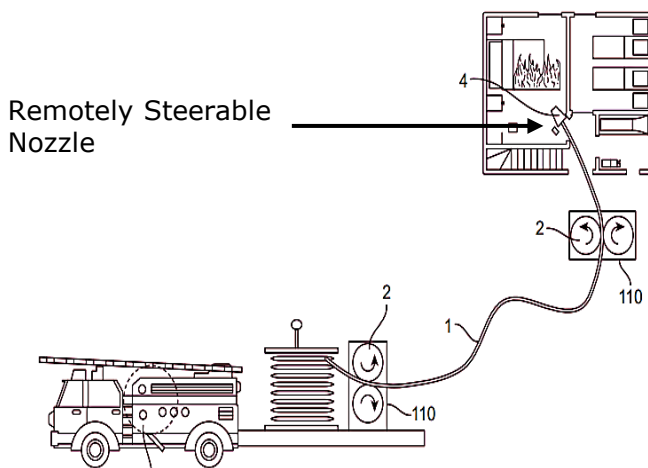


Fig.1 Illustrates a fire fighting system that is operated remotely, including indicating the claimed remotely steerable nozzle.

Intellectual Property

IITM IDF Ref. 1888;
IN Patent No. 523626 (Granted)

TRL (Technology Readiness Level)

TRL- 3, Proof of Concept ready, tested and validated in Laboratory

Research Lab

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Key Features / Value Proposition

❖ **Technical Perspective:**

❑ **Fire-Fighting Materials:**

1. The system has designed to operate using **any material or fluid** configured to put out a fire, examples of fluid could be **water**, or in some cases **gas-generating substances** such as **sodium bicarbonate**, dissolved carbon-di-oxide, etc.
2. Further firefighting material may be **solid powder** such as of **monoammonium phosphate**, **sodium bicarbonate**, **potassium bicarbonate** or other material.

❑ **Nozzle Performance:**

1. The **remote steerable hose** is affixed with a **thermal camera** that **provides signal** to a **control console** located at the liquid reservoir.
2. The Hose tip has a **flat or tapered nozzle** wherein the nozzle is configured to **splash water in all directions equally**.
3. The Nozzle is configured to **direct a jet of liquid** at the vane, wherein the wheel assembly thereby **turns or steers in the desired direction**.

❖ **Industrial Perspective:**

1. The device is **portable, easy to handle, highly cost-effective & reliable**.
2. Facilitates a **unique system** for the **remotely steerable hose mechanism** of the fire extinguishing system intended for **use in buildings & even to climb staircases**.
3. Provides **mechanically robust & reliable system** with **very small number** of electronic components facing **hazardous environment** as in proximity to a fire.

Images

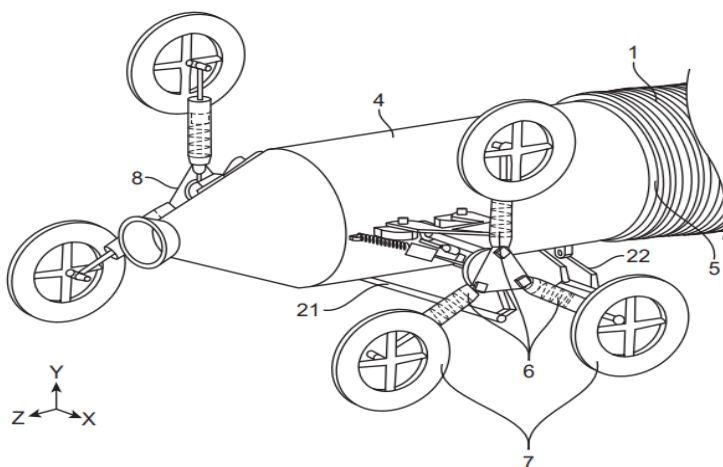


FIG.2: Illustrates the overall isometric view of the steering and hydraulic system.

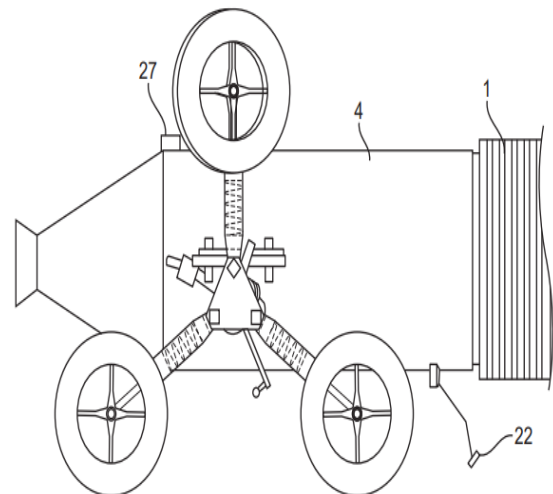


FIG.3: Illustrates the side view of the steering system.

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