



Key Investigator

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Field

- Intensive Care Units
- Emergency Medicine
- Surgical Procedures

Technology

- Percutaneous Tracheostomy
- Airway Management
- Medical Device
- Emergency Care
- Tracheal Dilation

Advantages

- Enhanced Safety Features
- Simplified Procedure
- Mechanical Precision
- Compact and User-Friendly Design
- Cost-Effectiveness

Status

Available for licensing

Patent Status

US 11,497,872 B2

UMB Docket Reference

JR-2017-079

External Reference

"Global Tracheostomy Products Market Report and Forecast 2024-2032", [Expert Market Research](#)

Percutaneous Dilation Tracheostomy Device and Method of Using

Summary

The "Percutaneous Dilation Tracheostomy Device and Method of Using" (US 11,497,872 B2) describes a novel percutaneous dilation tracheostomy device. The patented device integrates multiple components into a single unit, enhancing safety and usability. The global tracheostomy products market, valued at USD 170.6 million in 2023, is expected to grow significantly. This patent addresses market gaps by offering a simplified, efficient, and safer approach to tracheostomy.

Market

As of 2023, the global tracheostomy products market was valued at USD 170.6 million, with projections indicating a growth trajectory at a CAGR of 4.56% from 2024 to 2032, potentially reaching USD 254.8 million by 2032.

The primary applications of this innovative tracheostomy device span across intensive care units, emergency medicine, surgical procedures, and airway management training. Its integrated, efficient, and safer approach to tracheostomy addresses critical needs in critical care for patients with respiratory issues. The device's design, which consolidates multiple components into a single unit, not only simplifies the procedure but also potentially reduces the risk of complications, a significant concern in traditional tracheostomy methods.

Technology

The patent "US 11,497,872 B2" describes an innovative percutaneous dilation tracheostomy device. This device integrates multiple components typically used in percutaneous tracheostomy into a single, efficient unit. This integration simplifies the procedure and potentially reduces the risk of complications associated with traditional methods.

A key innovation of this device is the integration of a retractable needle and an extendable j-wire, which are usually separate in conventional devices. This design enhances usability and safety, with the retractable needle minimizing the risk of accidental injury or infection and the extendable j-wire ensuring precise placement and stability during the procedure.

The device also features a dilator section designed to expand the stoma's diameter effectively, crucial for ensuring adequate airway access during tracheostomy. Its compact design makes it more manageable and user-friendly, especially in emergency situations where time and ease of use are critical.

Technically, the device operates through a mechanical pressure system. A plunger controls the expansion of the dilation walls, which press against the patient's tracheal rings to dilate the stoma. This mechanical approach provides controlled and consistent dilation, reducing the risk of tracheal damage.

The primary application of this device is in percutaneous tracheostomy procedures, commonly performed in intensive care units and emergency settings. Its design is particularly beneficial in scenarios where quick and safe airway access is required.

The device's components, including a hollow casing with an elongate cylindrical proximal section and a curved tubular distal section, a depressible cylindrical plunger, a rotatable cam,

and a preloaded tracheostomy tube, are designed for strength, flexibility, machinability, surface finish, and biocompatibility for medical use. The device is configured to provide feedback to the operator during dilation, with a plunger operating through mechanical pressure, allowing controlled expansion within a specified size range.