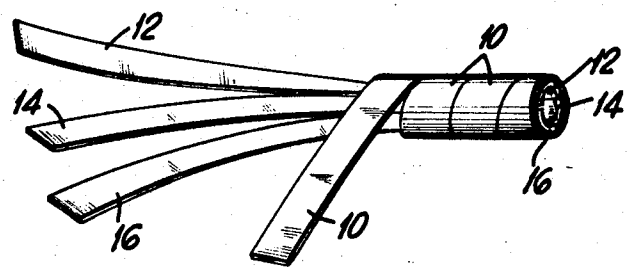
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PACKING MATERIAL

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INVENTOR.
CLEVELAND E. DODGE, JR.

BY

Davis, Hoxie, Faithfull & Hapgood
ATTORNEYS.

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PACKING MATERIAL

Cleveland E. Dodge, Jr., Hoosick Falls, N.Y., assignor, by mesne assignments, to Dodge Industries, Hoosick Falls, N.Y., a corporation of Delaware

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ABSTRACT OF THE DISCLOSURE

A packing material having a core formed of one or more thin polytetrafluoroethylene tapes, the core being overwrapped with a tensioned tape of the same or similar material. The packing is suited for making gaskets, valve or stem packings and for sealing pipe threads and the like.

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This invention is an improved material for making gaskets, packing valves and stems, for sealing pipe threads and for other like uses. It is a continuous, strong and compressible polytetrafluoroethylene strand composed of a thin outer tape wound about one or more core tapes. It is characterized by chemical inertness and high tensile and compressive strength and is ideally suited for use in packing flanged or threaded connections, valves, stems, stuffing boxes, expansion joints and the like.

The component tapes are composed of polytetrafluoroethylene or similar materials such as the copolymer of tetrafluoroethylene and hexafluoropropylene or other copolymers of tetrafluoroethylene and other unsaturated organic compounds having a terminal ethylenic double bond, for example, ethylene, chlorotrifluoroethylene or the like. The polymer, polytetrafluoroethylene, is preferred; however, the term as herein employed includes within its scope the above-mentioned copolymers.

Polytetrafluoroethylene is characterized by chemical inertness to aqueous alkalies, concentrated acids, oxidizing agents and organic solvents. In the form of thin tapes, as employed herein, the material is characterized by a tensile strength of about 900–2500 p.s.i. longitudinally and about 50–500 p.s.i. transversely. In forming the material of this invention, unsintered polytetrafluoroethylene, having a specific gravity of about 1.4–2.4, may also be used.

The component tape pieces of unsintered or sintered polytetrafluoroethylene may be between about 1 and 20 mils thick and 0.05 and 0.75 inch wide and may be formed by extrusion. Extrusion of unsintered polytetrafluoroethylene of the above dimensions is described in U.S. Patent No. 3,002,770 (issued on Oct. 3, 1961 to J. A. Chestnut et al.).

Packing materials have been made by winding a tape about a core and packing materials in other forms have been made from sintered polytetrafluoroethylene. However, my invention is distinctive and unique, in that both the outside winding and the internal core material are formed from the same or similar thin polymeric tape, and gives unexpected properties. Single, uniform strands of, or other forms of, polytetrafluoroethylene when used in packing tend to extrude out of the packed joint. My improved packing material is readily formed into useful shapes and does not extrude during service. Due to

the strength of the material it remains in place as an effective and improved packing or seal.

A better understanding of the preparation and use of the present packing material may be had by reference to the accompanying figure which diagrammatically shows the preparation of a packing material of the present invention by winding a tape about three core tapes. Referring to the figure, an outer tape **10** is wound about three core tapes **12**, **14** and **16**. The core tapes are guided through a conventional wire taping machine not shown which winds the outer tape **10** around the core tapes. Such a machine is manufactured by the Dodge Machine and Tool Company, Hoosick Falls, N.Y., and designated CW 64. The core may contain one or more tapes, preferably between two and thirty. This strand, composed of the outer tape and the core tapes, may be applied to flanged or threaded connections, valves, pump housings or the like. A number of these strands, for example seven, may be used to form the core of a larger strand by winding them in the manner shown in the figure to form a core which is overwound with another similar tape. Such a composite strand has usefulness in applications requiring a greater bulk of packing material.

The packing material of my invention is characterized by high chemical resistance and, due to the method of winding a polytetrafluoroethylene tape about a core consisting of one or more similar tapes, by unexpected dimensional stability and strength. The material is serviceable at temperatures between about —400° F. and 600° F., and is characterized additionally by flexibility, high elongation and low friction.

I claim:

1. A packing material comprising at least one outer tape wound about one or more core tapes, the tapes being composed of a material selected from the group consisting of polytetrafluoroethylene and copolymers of tetrafluoroethylene and organic compounds having a terminal ethylenic double bond, said tapes being characterized by a longitudinal tensile strength of about 900–2500 p.s.i.

2. The packing material of claim **1**, wherein the material is polytetrafluoroethylene.

3. The packing material of claim **1**, wherein the material is extruded unsintered polytetrafluoroethylene.

4. The packing material of claim **1**, wherein the tapes are between about 1 and 20 mils thick and 0.05 and 0.75 inch wide.

5. The packing material of claim **1**, containing between 2 and 6 core tapes and 1 outer tape of unsintered polytetrafluoroethylene.

6. The packing material of claim **1**, wherein the extruded material is a copolymer of tetrafluoroethylene and hexafluoropropylene.

7. A packing material comprising at least one outer tape of polytetrafluoroethylene wound about a plurality of core strands composed of the material of claim **2**.

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FRANK J. COHEN, *Primary Examiner.*

W. A. SCHROEDER, *Assistant Examiner.*