

the known applications of it in the useful arts. The cabinet of Mr. C. A. Wilson, of Genoa, is said to contain one hundred distinct varieties from the Alps. It is largely exported from Italy to the United States.

See "Waste Products and Undeveloped Substances," by Simmons. London, 1876.

The uses of Asbestos are recited on pp. 167, 168, "Mech. Dict.":—

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| Absorbent in lamps. | Molded articles. |
| Boiler covering. | Paper. |
| Coffins. | Piston and rod packing, either in rope or loose form. |
| Cremation shrouds. | Porcelain. |
| Electric insulators. | Refrigerators. |
| Fire brick and crucibles. | Roofing cement. |
| Firemen's clothes. | Ropes. |
| Flooring cement. | Safes. |
| Fuel bed for petroleum. | Wrapper for articles to be consumed. |
| Ink. | Yarn. |
| Journal bearings, Ingredient in. | |
| Lamp-wicks. | |

To these may be added:—

- Cellar ceilings, to prevent radiation of heat.
- Sheathing paper, for walls and ceilings.
- Fire-proof boxes, for shelves, etc.
- Theatrical scenery.
- Converting hydro-carbon into gas fuel.
- Packing and lubricant, Jennings; U. S. Patent, 1828.
- Mill boards, for steam joints.
- Gaskets, for man-hole plates.
- Filtering acids.

It is used in the shape of trays of cardboard, for containing molten metals at high temperature.

As a sponge, to contain concentrated sulphuric acid in that form of lighting apparatus known as *oxygènes*, No. 18 of the series of *lighting devices* recited on p. 1815, "Mech. Dict."

Asbestos is used in Italy as a fire-bed in a furnace, petroleum being poured thereon and burned beneath the steam boiler. — *Scientific American*, xxxvi., 217. Modifications of this form the subjects of many patents in England and the United States.

See, also, ASBESTOS STOVE, p. 168, "Mech. Dict."

As a coating for metals in a furnace:—

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| Fire Clay | } Nes Patent 104,878, June 28, 1870. |
| Soap-stone | |
| Asbestos | |

BRITISH PATENTS.

- No. 145 Lamp-wick, silk and asbestos woven together.
- 2,647 Plaited and felted asbestos for wicks.
- 1,418 Asbestos pulp for paper. Boiled; fibres segregated and mixed with alum.
- 6,555 Safes.
- 2,048 Lubricant of asbestos, mercury, fat, and oils.
- 218 Lubricant of asbestos and clay. (*Laubereau*.)
- 362 Insulator, and non-conductor in electrical apparatus.

UNITED STATES PATENTS.

- 1870. Refrigerators, as a non-conductor. (*F. Hyatt, U. S.*)
- 1828. Packing for pistons, piston-rods, pump plungers, joints, etc., etc. (*Israel Jennings*.)
- August 22, 1865. Lubricant: asbestos, soapstone, and cotton. (*Devlan*.)
- March 29, 1870. Cord in a rope packing of asbestos. (*Stevens*.)
- October 4, 1874. Loose asbestos packing. (*Botticher*.)
- November 8, 1870. Asbestos, graphite, and iron filings. (*Kelly*.)
- 1868. Made into sheets with felt or pulp. (*Johns*.)
- September 18, 1866. In carburetors. (*Bassett*.)
- August 14, 1866. In lamps as an absorbent. (*Beschke*.)
- Nos. 112,647 and 112,648, Packing. (*Stevens*.)
- Nos. 112,649 and 112,650, Mode of treating asbestos. (*Stevens*.)

See under the following references:—

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| | "Engineering." |
| Faucet Packing, <i>Deurance</i> . | xxi. 68. |
| | "Mining and Scientific Press." |
| Uses | xxxiii. 180, 344, 433; xxxvii. 282, 297, 393. |
| Felt | xxxvi. 307. |
| | "Engineering and Mining Journal." |
| Powder | xxi. 347. |
| California Mines | xxiv. 404; xxix. 86. |
| At Rome | xxii. 141. |
| Patents | xxii. 347; xxiv. 328. |
| Pipe Covering | xxvi. 443. |

As-bes'tos. A curious fibrous mineral; a variety of hornblende and pyroxene. It is found in many parts of the world, is of very various qualities, and requires careful preparation for some of the uses to which it is applied. See p. 167, "Mech. Dict."

In the application of asbestos, it is used loose, or is made into sheets, felt, boards, braid, or rope, sometimes with a cementing substance, such as paper pulp, cement, mortar; or as a covering or lining to hair-felt, to prevent the charring of the latter when used as a covering to steam boilers and pipes.

For steam-packing the fibres are covered with braid, and made in coils of convenient length.

As a paint, it is mixed with metallic pigments, and used on wooden structures, roofs, ceilings, and partitions.

The best asbestos is found in Italy. An exhibition of asbestos has recently been held at the Simonetti Palace in Rome; the material in numerous different crude forms being exhibited, as also all

Packing xxvi. 58.
 Uses xxx. 444.
 "Scientific American."
 At Italian Exposition xxxv. 79.
 Roof and Boiler Covering * xxxiv. 258; xliii. 357.
 Uses and History xxxv. 392; * xxxiv. 258.
 Fire Surface xxxvi. 217.
 "Scientific American Supplement."
 Packing 2947.
 "Polytechnic Review," August 26, 1876.
 "Leffel's Milling and Mechanical News."
 Uses * vi. 31.
 "Iron Age."
 Uses xix., Jan. 11, p. 15; xx., Sept.
 13, p. 7.
 Fire Surface xix., May 24, p. 1.
 Roman Exhibition xviii., Sept. 28, p. 1.
 "Manufacturer and Builder."
 Uses ix. 102, 127; viii. 176; xii.
 227; x. 65; xi. 68.
 Paint xi. 236.
 Artificial x. 5.
 Roofing ix. 102; xii. 228.
 Boiler Covering ix. 102; xii. 31.
 "American Railroad Journal."
 Fire-proofing liii. 160, 193.
 Mineral Wool liii. 843, 1231.
 "Telegraph Journal."
 Uses v. 285.
 "English Mechanic."
 Fire Surface xxiv. 440, 531.
 "Engineer."
 Asbestos and Patents xlii. 396.
 Cardboard xliii. 352.
 "American Builder," xiii. 9.

See paper by Mr. Lloyd, "Philosophical Transactions," vol.
 xiv., p. 823, A. D. 1684. See "Abridgments," vol. ii., pp. 548-
 554. Several articles.
 See, also, "Munsell on Paper," pp. 20, 25, 102.