December 20, 1901.

offered for sale. As the revenues did not increase in proportion to the sales, the custom house officials made a few trips to the places where liquor was sold across the line and learned of a new device for smuggling. The metal ski sticks are hollow, the large ones holding nearly a gallon. By fitting a screw cap to the top of the stick the latter could be made to carry whiskey in safety. As soon as the invention was made, ski parties became very popular. It became a custom for parties of five or six to make a trip over the boundary line in the morning. Stopping at saloons to quench their thirst, they filled their sticks with whiskey and came home much refreshed.

The price of liquor fell so low that drummers complained and an investigation stopped the traffic.

EMERY-COATED TOOLS.—The use of emery tools has been limited because the material does not lend itself readily to shaping; we are practically confined to grinding surfaces of simple forms. The galvanic process invented by Joseph Rieder, of Leipzig, however, allows us to make use of any kind of emery powder, and to arrange it in various shapes, so that we are presented with a new style of emery tool. Rieder is known as the inventor of the electro-engraving process, whose characteristic feature is a machine which returns the plaster negative to that the galvanic etching, which has to be interrupted several times a minute to

secure uniform electrolytic action, practically remains continuous. In order to fix the emery sand on the tools referred to above, he first coats the emery with a varnish obtained by dissolving wax or paraffin in benzine. Graphite will adhere to the grains when they have been treated thus, and in this way the emery surface is made electrically conductive. The tool, i.e., a disc, is placed in the sulphate of copper bath, and the prepared sand dropped on it. Each grain will become embedded in a coating of copper, and the grains will thus be fixed just as gems have been mounted for some time by means of a galvanoplastic process. The sand can also be treated with a glycerine paste, which is then applied to the surface to be covered with emery. As soon as a thin film of copper has settled on the steel, the glycerine is washed off with hot water, and the copper film is afterwards thickened in the bath. In this way emery tools are obtained, which are said to wear very well. Their disadvantage is that they do not cut deeply, because the interstices are filled up. But such discs can be revolved at a much higher rate than we could venture to adopt in the case of an ordinary emery wheel of the same dimensions. Another advantage is that we can construct tools of this kind in almost any shape—hollow drums, cutters of various profiles, reamers, convex or concave lenses, knives, engraving tools, and even files. When the electrolytic ten years ago, the invention was ascribed

to and claimed by several inventors. In that case the file is the anode. Here we have a cathodic process which may also have occured to several scientists, though we are not aware that anybody but Rieder has put emery-coated tools on the market.—Kuhlow's.

ELECTRIC POWER IN WORKSHOPS .--- In a recent paper on the above subject by Mr. W. Giepel, M.I.E.E., the advantages of electric driving, apart from efficiency of transmission and saving in power, which in most machinery estab-lishments would pay for the additional cost of the electric plant in from two to five years, are summed up as follows: (1) absence of overhead shafting, which requires special construction of shops, and causes vibration, dust and dirt; (2) absence of belts and the frequent re-pairs they require; (3) clear head room for the use of electric cranes and hoists; (4) better light and cleanliness; (5) regu-larity of speed of machinery, and saving of wear and tear; (6) placement of machinery to facilitate handling of work; (7) easy application of motors for special ing, air compressing; (8) facility of run-ning one or two machines without the rest for working overtime; (9) special suit-ability for working cranes and lifting apparatus; (10) ease of extension; (11) utility for electric lighting and other purposes; (12) general flexibility of the system; (13) increased output. A truly comprehensive list.

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