UNITED STATES PATENT OFFICE.

JAMES TYZICK, OF ST. JOHN, CANADA.

IMPROVEMENT IN EMERY WHEELS.

Specification forming part of Letters Patent No. **131,481**, dated September 17, 1872.

To all whom it may concern:

Be it known that I, JAMES TYZICK, of St. John, in the province of New Brunswick, Dominion of Canada, have invented a new and useful Process for Making Emery Wheels; and I do hereby declare the following to be a full, clear, and exact description of the same.

I am aware that emery wheels have been made before of emery in combination with clay, litharge, India rubber, glue, &c. But metallic surfaces that are ground or polished on such wheels are liable to get heated and get twisted out of shape; and in the case of circular saws, for example, the operation becomes sometimes quite expensive, the heating being produced mainly by the presence of foreign substances, which do not add anything to the cutting quality of the emery, but produce friction against the surface which is to to be polished.

The object of my invention is to produce an emery wheel free from these defects, not liable to clog or glaze, strong, and at the same time very hard.

After many months of experiments I find that a composition of borates or biborates of soda or boracic acid and emery, sand, or other gritty matter produces the desired result, the proportion being one part of the borate or biborate of soda or boracic acid to four parts of emery or sand. This proportion may be varied a little when it is desired to reduce the hardness of the wheel, by increasing the proportion of emery, sand, or other gritty matter; but I prefer the above for grinding and polishing iron or steel. The hardness of this composition can be perhaps better understood when I state that the specimen filed with this application wore away an ordinary diamond tool one-sixteenth of an inch in reducing the face of the wheel less than one-sixteenth of an inch.

The manner in which the emery wheels made of my composition are formed is as follows: I take any given quantity of the borate or biborate of soda or boracic acid and place it in a crucible and heat it until it melts or runs, and then add the emery or sand until the whole comes to the consistency of putty by being well mixed together, being then at a low white heat. Then a mass of it is taken out with a pair of tongs or squeezers and placed in a mold, laid out evenly, and pressed to the form required, and when cool the wheel is ready for use.

By adding sand or other gritty material to the borate or biborate of soda or boracic acid in the crucible, a softer stone is produced, which can be used to advantage on brass, copper, bronze, and other soft metals. It also reduces the price, so that it can be used in preference to ordinary grindstones.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

A mixture of borate or biborate of soda or boracic acid with emery or other gritty substance, for making grinding or abrading wheels and stones, substantially as and for the purpose described.

JAMES TYZICK.

Witnesses:
EDMUND MASSON,
EDM. F. BROWN.