

# UNITED STATES PATENT OFFICE.

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## GRINDING-WHEEL AND THE LIKE.

975,089.

Specification of Letters Patent.

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No Drawing.

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### *To all whom it may concern:*

Be it known that I, LARS RICHARD LEANDER WALLÉN, a subject of the King of Sweden, residing at Norrtelje, in Sweden, master builder, have invented new and useful Improvements in Grinding-Wheels and the Like, of which the following is a specification.

This invention relates to grinding wheels, millstones, grindstones, grinding slips and the like and has for its object to improve the quality of such articles and especially to keep their cutting capacity unabated for a long time without cleaning or renovating the cutting surface.

It is well known that emery wheels and the like of ordinary kind do not remain sharp but a short time. The cutting surface becomes soon blunt and inactive, and in order to restore its cutting capacity it is necessary to break up or roughen the surface by suitable means. Moreover the ordinary emery wheels are often unequal in hardness so that the wear or abrasion is greater on some points than on others. This is also a reason why renovating of the surface must take place from time to time so as to render it regular and concentric with the axis of rotation. By continuous and thorough experiments I have been able to overcome these difficulties and to produce a grinding wheel which works with substantially unabated capacity during a very long period compared with those now in use and also is equal or even in hardness throughout. I attain this result by a suitable composition of matter, that is to say by a proper choice of cutting materials and a suitable combination (mixture) of them and also by using suitable binding substances and by properly proportionating the latter with regard to the size of granules of the cutting material. To this end I mix emery and carborundum or one of them with either elektrit or flint or with both and bind them together by means of Sorel cement or the like.

The cutting ingredients are used in the form of granules or powder of suitable size according to the number of fineness required and are thoroughly mixed in dry state with finely powdered burnt magnesite. Then a

suitable solution is added in such a quantity that the whole becomes sufficiently damp or moist. The solution, which consists of chlorid of magnesium and water, may be saturated or nearly so and about 2% chlorin-water is preferably added to it. The powder mixture should be thoroughly mixed with this solution so as to form a homogeneous damp mass, which is pressed in suitable molds. The molded articles are then dried and hardened by exposure to air or the like (for instance at a temperature of about 17° C). The mass is hard after 26 hours and after 8 days' drying the articles are ready for use.

It should be understood that the proportions of the different cutting substances may vary according to the special purpose for which the article is intended to be used. And, as already stated, the suitable quantity of the binding substances varies with the degree of fineness of the cutting material, a finer granulation of the cutting material requiring a larger quantity of the binding substances. So for instance to a mixture of say 1000 grams carborundum, 1000 grams elektrit, 2000 grams emery, 1000 grams flint and 500 grams quartz sand, all being of a fineness corresponding to emery No. 30, I may add about 23% or 1265 grams burnt Eubea magnesite and about 25% or 1375 grams of the solution above stated.

Grinding wheels made according to this invention are better than those of pure carborundum and much cheaper.

The "elektrit" employed in my compound consists of 53% aluminum oxid, 20% ferric oxid and 27% silicious compounds and it is generated at a high temperature.

What I claim is:

1. A composition for grinding wheels and the like comprising a mixture of carborundum, emery, quartz, burnt magnesite and a solution of chlorid of magnesium.

2. A composition for grinding wheels and the like comprising a mixture of carborundum, emery, quartz, burnt magnesite, a solution of chlorid of magnesium and cement in substantially the proportions set forth.

3. A composition for grinding wheels and

the like comprising a mixture of carborundum, emery, quartz, elektrit, and a cement.

4. A compound for the purpose described consisting of a mixture of carborundum,  
5 emery, elektrit, quartz, burnt magnesite and a solution of chlorid of magnesium.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

LARS RICHARD LEANDER WALLÉN.

Witnesses:

R. LARRSON,

O. DILLNER.