UNITED STATES PATENT OFFICE.

CHARLES D. WOOLEY, OF WALDEN, NEW YORK.

IMPROVEMENT IN SOAP COMPOSITIONS.

Specification forming part of Letters Patent No. **182,261**, dated September 12, 1876; application filed July 20, 1876.

To all whom it may concern:

Be it known that I, CHARLES D. WOOLEY, of Walden, in the county of Orange and State of New York, have invented an Improvement in Composition for the Manufacture of Soap; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention has for its object the improvement of the quality and the cheapening of soap for certain uses, among which uses may be named the fulling of cloth or felted tissues; and it consists in a soap in which the ingredients employed are alkali, fats, and oils, or the fatty acids, and the substance known in commerce as "mineral wool," said soap being made substantially in the manner, and the ingredients being employed substantially as, hereinafter set forth.

The substance called mineral wool, which has been recently produced from the slag of iron-furnaces, is a compound of silicic acid and the oxides of aluminum and calcium, containing some impurities as sold in the market.

My researches with this substance, and its action upon fats and oils, have shown that it acts very differently from its constituent substances used in an uncombined state, for, although two of these substances—to wit, lime and alumina—will form soaps with fatty bodies, the process technically known by soap-makers as "separation,"—that is, the removal of glycerine and other impurities from the salts of the fatty acids, usually performed by adding chloride of sodium (common salt) to the mixed lye, glycerine, and soap in the kettles after saponification—also separates out the oxides of aluminum and calcium, and the same effect is produced upon the silica if the same be incorporated with the saponified fats previous to the separation. But if these substances, chemically combined as in the mineral wool, be added previous to the separation, they remain incorporated with the soap, not in the form of gritty impurities, but form a part of the soap, giving the soap more body, causing it to yield up its alkali more slowly, and rendering it less adherent to the fibers and pores of textile fabrics, which last property enables such fabrics to be rinsed and cleansed from the soap with greater facility than from soaps made solely from fatty bodies and caustic alkali.

My improved soap has been used for three months in fulling woolen textures, and is preferred to pure tallow soap for the qualities hereinbefore set forth as possessed by it in an unusual degree. And this has been done in an industry where pure tallow soap has hitherto been exclusively used, thus showing that it has specially valuable qualities not possessed by soaps made exclusively of tallow and caustic alkali.

In making my improved soap I can advantageously use from ten to forty per cent. of the mineral wool; but about twenty per cent. is the quantity I most frequently employ.

I first melt, say, one hundred (100) pounds of fat or tallow, and while melted add the mineral wool, previously washed in water to rid it of impurities. What is technically known as "pasting," or partial saponification of the fat or tallow, at once commences, and in a short time the fat assumes a curdled or flaky appearance. I then add caustic lye in sufficient quantity to complete the saponification, with frequent stirring. If the alkali be used in excess the soap will not necessarily be unduly caustic, because the excess of alkali will be thrown out of the soap in the process of separation.

The separation is performed in the usual way, as hereinbefore described; but instead of throwing out the silica, lime, and alumina, as is always the case when added in an uncombined state previous to the separation, these substances remain in the soap, which, when poured into the frames, and cut into bars in the usual manner, presents a uniform homogeneous consistency, and has a highly detergent quality.

The soap is not notably more insoluble than soap made from pure lard and soda, or pure tallow and soda. It slowly yields up its alkali in aqueous solutions, and when large quantities of water are employed is much more easily washed out of fibrous textures than ordinary soap, these properties rendering it superior to pure tallow soap for many industrial purposes.

I claim—

A composition for soap, consisting of mineral wool, caustic alkali, and tallow or fat, substantially as described.

CHARLES D. WOOLEY.

Witnesses:

A. K. RIDER,

GEO. C. WOOSTER.