

UNITED STATES PATENT OFFICE.

CHARLES RICHARDSON, OF CHELTENHAM TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA, ASSIGNOR TO WALTON, WHANN & CO., OF WILMINGTON, DELAWARE.

IMPROVEMENT IN FERTILIZERS.

Specification forming part of Letters Patent No. 208,540, dated October 1, 1878; application filed November 19, 1877.

To all whom it may concern:

Be it known that I, CHARLES RICHARDSON, of Cheltenham township, in the county of Montgomery and State of Pennsylvania, have invented a new and useful Improvement in Fertilizers, which improvement is fully set forth in the following specification.

The importance of nitrogenous compounds as elements of plant food is well known and widely recognized, and their great value as ingredients of artificial and natural fertilizers is admitted by all who have paid any attention to the science or intelligent practice of agriculture.

Hair and bristles contain high percentage of nitrogen and yield equivalent quantities of ammonia and other nitrogenous compounds; but the difficulty of reducing these substances to a suitable mechanical condition for use as fertilizers (either alone or mixed with chemical or artificial manures) has hitherto retarded their employment and has greatly restricted their use, whereas, under more favorable conditions their great value would be recognized.

My invention consists of a fertilizer composed of hair or bristles reduced by steam and ground, as hereinafter more fully set forth.

In carrying out my invention, I take a suitable quantity of hair or bristles and wash it in cold water by means of a suitable apparatus, so as to free it as far as practicable from lime, sand, dirt, or other extraneous matter. After it has been removed from the washing apparatus and become nearly dry, it is subjected to the action of steam at a pressure of about ninety pounds to the square inch for a period of from one to one and a half hour. This treatment with live steam creates such molecular changes in the fiber or texture of the hair or bristles as, upon subsequent drying, to render it brittle and capable of pulverization in ordinary grinding-mills. After this

treatment with live steam the substance is spread upon iron plates heated by steam, or upon other suitable drying apparatus, and when it is dry, or nearly so, it is ground to a powder either by burr-stones or iron mills.

By this process I produce from these substances, which have hitherto had but a limited value as a fertilizer, or components of fertilizers, a nitrogenous compound of high value and excellent mechanical condition, so that it will readily drill, and is capable of being mixed with other artificial manures; and this I accomplish without the employment of chemicals and without combination with other substances.

Moreover, the powder thus prepared is dry and odorless, and may be kept without deterioration for an indefinite time, while its concentrated form permits of its easy and cheap transportation to great distances.

By my invention I utilize the short hair from morocco dressers and tanners, which, though abundant and cheap, is largely contaminated with water and lime, which are readily expelled by my process, as above described.

I am aware that it is old to subject wool, leather, and hair to the action of steam to render them friable and to be used as a fertilizer, and I therefore lay no claim, broadly, to such invention.

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

As a new article of manufacture, the fertilizer herein described, composed of hair or bristles, in the form of fine powder, as set forth.

CHAS. RICHARDSON.

Witnesses:

HENRY POLOZ,
GEO. W. PIERCE.