Patented Apr. 21, 1925. 1,534,371

UNITED STATES PATENT OFFICE.

DOZIER FINLEY, OF BERKELEY, CALIFORNIA, ASSIGNOR TO THE PARAFFINE COMPANIES, INC., OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF DELAWARE.

MULCH.

No Drawing. Application filed September 19, 1922. Serial No. 589,252.

To all whom it may concern:

Be it known that I, DOZIER FINLEY, a citizen of the United States of America, and a resident of Berkeley, county of Alameda, and State of California, have invented a new and useful Mulch, of which the following is a specification.

My invention relates to mulching sheets, and one of the objects of the invention is the provision of a mulching sheet having pronounced capacity for absorbing solar heat and transmitting such heat to the underlying soil. Another object is the production of a mulch sheet characterized by its resistance to deterioration and wear.

My invention possesses other objects and features of advantage some of which, with the foregoing, will be set forth in the following description of my invention. It is to be understood that I do not limit myself to the said description, as I may adopt variant forms of my invention within the scope of the claims.

Broadly considered, the mulch of my invention comprises a paper or felt base which has been first saturated with asphalt, then coated with a harder asphalt on the upper surface with preferably a thinner skin coating on the under surface. A dust finish of dark or black pulverulent material is next applied to prevent adhesion of the layers when the sheet is rolled up, to increase the absorption of heat from the sun's rays when the sheet is in use as a mulch, and to enhance the wearing qualities of the sheet. For this purpose a variety of materials may be used including coal, black earth, cinder, graphite and lampblack, each of which is preferably of a size to pass thru a 65 mesh screen. Of these, the lampblack finished sheet is the most efficient in the matter of absorbing heat.

In detail my mulching paper is formed on a paper or felt base or on a stock formed of a combination of the two in any desired proportion, or on a fabric base, such as burlap or muslin. I prefer however under conditions now obtaining to use a base comprising 90% mixed paper stock and 10% rag, the base being preferably rendered black by the addition of a black dyestuff to the paper pulp while in the beaters, or by the addition of lampblack to the paper stock in the beater and the subsequent precipitation of the lampblack on the fibers by a rosin size and alum in a manner known to papermakers, or by the use of dyestuff and lampblack. The lampblack I prefer to use is that derived in the oil gas process of making illuminating gas.

Preferably too, I use a stock weighing 17 to 19 pounds per 480 square feet if my product is to be used in pineapple or sugar cane culture, although a lighter stock may be used for garden vegetables.

The stock is next saturated with an asphalt mixture, the percentage of saturation running from 75 to 100. Preferably, a semi-solid asphalt having a softening point ranging between 70° and 120° Fahrenheit, by methods of the American Society for Testing Materials, standard of 1921 is used in the saturating process which proceeds in accordance with known methods.

The saturated stock is next preferably coated, and given a dust finish but it should here be noted that the saturated black sheet may be used as a mulch without additional processing and in this state provides a good though cheaper material, which will not bleach out to a grayish white upon exposure to the sun, a failing characterizing the uncoated sheet as heretofore made. The importance of the black coloring of the stock will now be apparent, as the sustained efficiency of the uncoated mulch is largely dependent on the permanence of such color if the sheet is not to be coated. It will be appreciated also that even with the coated sheets, the black color of the stock is an important matter in maintaining the desired absorbing qualities.

To make a mulching sheet of highest quality, I coat the saturated stock in accordance with known methods, with a blown asphalt of medium consistency, having a penetration of 12, and a softening point of about 200° Fahrenheit by the methods of the American Society for Testing Materials, standard of 1921. Preferably the bulk of the coating material is applied on that surface of the sheet which is to be uppermost and exposed to the weather, with a thinner skin coating on the under surface.

The saturated and coated sheet is finally given a finish comprising pulverulent matter, preferably of a size to pass thru a 65 mesh screen and including all the fines.

Such matter may be derived from a variety of sources including graphite, black earth, coal, cinder, and lampblack.

Test sheets finished with lampblack give a higher degree of heat absorption than any of the others, although all give good results, and a mixture of two parts black earth and one part lampblack is only slightly inferior in the quality named, to lampblack alone. Pulverized bituminous coal, or graphite also gives good results and I prefer one or the other of these three carbonaceous materials either alone or in combination with other materials, the choice being determined by practical considerations of availability and price.

The finish of pulverulent material is not only productive of increased capacity to absorb solar heat, but also functions to prevent sticking of the layers of the sheet in the rolls during shipment and storage, under the high temperatures characteristic of the localities in which my product finds an important application. Such finish also imparts durability and tends to prevent deterioration and bleaching out of the asphaltic components of the mulch.

With a coated and finished mulch, the black coloring of the base sheet material is of course of less importance in determining the efficiency of the product than in the uncoated mulch, and if desired the base sheet for the coated and finished mulch may be untreated in this respect.

I find it also of advantage to add to the felt or paper base, about 1% by weight of zinc sulfate or copper acetate. This prevents decay and kills fungus, which, unhampered, rapidly deteriorates the paper.

If desired, a decay or disintegration preventing substance may be combined with the asphalt, such for instance, as creosote. Pine tar to disguise the odor of the creosote may be used in the proportions 90 parts asphalt, 9 parts creosote and 1 part pine tar.

I claim:

1. A mulch, comprising a sheet saturated with asphaltum, said sheet containing a chemical agent possessing the qualities of killing fungus and preventing decay of the mulch.

2. A mulch comprising a substantially black sheet containing a fungus killing and decay preventing chemical, said sheet being processed with asphaltum and having a finish comprising a dark pulverulent material.

3. A mulch comprising a substantially black sheet containing a paper preserving and fungus killing chemical, said sheet being saturated with asphaltum and having a finish comprising a carbonaceous pulverulent material.

4. A mulch comprising a felt sheet saturated with a semi-solid asphalt having a softening point ranging between 70° and 120° F., and coated with a blown asphalt having a softening point of about 200° F.

In testimony whereof, I have hereunto set my hand.

DOZIER FINLEY.