

# UNITED STATES PATENT OFFICE.

REVERE M. BREINIG, OF BROOKLYN, NEW YORK.

## MANUFACTURE OF VARNISH FROM SLUDGE-TAR.

SPECIFICATION forming part of Letters Patent No. 315,597, dated April 14, 1885.

Application filed January 28, 1884. (Specimens.)

*To all whom it may concern:*

Be it known that I, REVERE M. BREINIG, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in the Manufacture of Varnishes and Similar Bodies, of which the following is a specification.

In practice of various arts,—such, for example, as the purification of petroleum and other hydrocarbon oils, the distillation of coal, resin, and bitumens, and some others—there is produced as a residual product a substance known by the name of “sludge,” which contains, among other matter, the acid, or a part of it, used in the said manufacture. Sludge has heretofore had very little, if any, commercial value, it being somewhat used by manufactures of fertilizers, and has not only been substantially a waste product, but also, owing to its intensely disagreeable and unhealthy odor, and the presence of the acid in it, and its inflammability, it has occasioned those engaged in the manufactures producing it great trouble and frequently expense to dispose of it so that it would not be detrimental to health or comfort. By my process I so treat the sludge as that I not only remove its disagreeable and unhealthy properties, so that it may be disposed of as other harmless waste products are, but also derive from it directly and indirectly certain commercially-valuable products.

To practice my process, I first prepare a soap, as follows: Take about seventy (70) pounds of rosin or any resinous gum—such, for example only, as copal, Zanzibar, or kauri—and place the same in a kettle and add thereto about eight (8) gallons of linseed or other vegetable, animal, or mineral oil, it may be either hot or cold, and either raw or boiled; or as an equivalent therefor about fifty-five (55) pounds of tallow or other fats or grease. The kettle containing the above gum and oil, fat, or grease, I put upon a fire until the gum is thoroughly melted and united with the oil, fat, or grease, preferably stirring it meantime in any suitable manner to prevent burning and to effect more complete union. A jacketed kettle may be used, if desired, in this as

well as in the subsequent steps in my process, and it may be heated in any known manner. I then put into another kettle about fifty (50) gallons of water, hot or cold, and put into it about twenty (20) pounds of caustic soda or other caustic lye, preferring, however, the caustic soda, because of its superior strength. I then place this second kettle on the fire and allow the contents to boil until the caustic is thoroughly dissolved in the water, preferably stirring it meantime in any desired manner to hasten the operation. I then thoroughly mix the contents of these two kettles, preferably by boiling, until saponification takes place, thus forming a soap. To the soap thus formed I add, preferably when hot, ordinary commercial salt in the proportion of about a pound of salt (more or less) to a gallon of soap, thus separating from the soap by a well-known action the excess of alkali, which I then draw off from the soap by means of a filter, or in any other suitable manner. The soap may be used without removing the excess of alkali, but I prefer to remove it. When the salt is used and the excess of alkali removed, the soap is considerably thickened, and to render it sufficiently thin or liquid again I add after the alkali has been separated about one hundred (100) gallons (more or less) of water, hot or cold, and mix the same thoroughly with the soap, preferably by boiling, thus forming a soap solution. The soap solution thus prepared I place in a suitable tank or vat, preferably so located that the sludge may flow into it from the receptacles in which it is left at the close of the operation by which it is produced, and I then let the sludge flow into the tank containing the soap solution. There should be about one (1) gallon of the soap solution to from three to four gallons of the sludge. While the sludge is flowing into the soap solution I prefer to stir them together by any suitable means, so that the sludge may be thoroughly acted upon by the soap solution. The stirring, however, is not essential. When the soap solution and the sludge are mixed, the tar and oily parts of the sludge chemically combine with the resinous gums, oils, fats, or grease contained in the soap solution, leaving the acid separate by itself. Thus the tar or oily part of the sludge



chemically combined with the soap I will call  
the "sludge-tar." I then take the sludge-tar  
thus produced and put it into a kettle and  
boil it until all free water has been driven off,  
5 and then add linseed-oil and spirits of turpen-  
tine, or its equivalent—benzine, for instance—  
to bring it to the proper consistence, and thus  
produce, depending upon the proportions of  
the linseed-oil and turpentine or equivalent,  
10 as is well known in this art and does not re-  
quire explanation by me, either a baking black  
varnish or a drying black varnish, by the ad-  
dition of suitable driers, or a black japan.

Although I have stated the ingredients and  
15 their proportions which I employ in making  
the soap used by me, I wish it to be understood  
that I do not limit myself to a soap composed of  
those ingredients in the proportions stated, or  
any other proportions, because the described  
20 separation of the sludge may be effected by the  
use of any soap. I prefer, however, that de-  
scribed by me, because I believe the presence  
of the resinous gum facilitates the separation  
and produces a better product.

I do not limit myself to the precise quanti- 25  
ties of the ingredients named, since they may  
be somewhat varied and still my invention be  
embodied.

Having thus described my invention, I  
claim— 30

The described process, consisting in treat-  
ing sludge, as described, with a soap com-  
pound, whereby the acid is separated and the  
tar or oily parts of the sludge chemically com-  
bined with the soap, then driving off from the 35  
mass all free water, and treating the resulting  
mass with linseed-oil and turpentine, or equiv-  
alent substances, substantially as and for the  
purposes set forth.

Signed at New York, in the county of New 40  
York and State of New York, this 25th day  
of January, A. D. 1884.

REVERE M. BREINIG.

Witnesses:

PHILLIPS ABBOTT,  
JOHN H. IVES.