

UNITED STATES PATENT OFFICE.

EDGAR SHAW, OF LYNN, MASSACHUSETTS.

CARBON FOR ELECTRICAL PURPOSES.

SPECIFICATION forming part of Letters Patent No. 353,598, dated November 30, 1886.

Application filed April 11, 1885. Serial No. 161,962. (Specimens.)

To all whom it may concern:

Be it known that I, EDGAR SHAW, a citizen of the United States, residing in the city of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in the Manufacture of Carbon for Electrical and other Purposes, of which the following is a specification.

My invention relates to an improvement in the preparation of carbon in a form suitable for use in its different applications in the arts. This substance, being highly refractory and infusible in its nature, and at the same time an excellent conductor of electricity, is extensively employed for various purposes, and more especially in the construction of electrical apparatus. It is consumed in large quantities in the manufacture of electrodes or pencils for electric-arc lights and in the formation of negative plates for voltaic batteries. It is also largely used for contact points and surfaces in microphones and telephonic transmitters, and for other like purposes.

The principal source from which the carbon of commerce is obtained is the retorts of gas-works, in which it accumulates in great quantities as a by-product. It is deposited in these retorts in exceedingly hard masses, which can only be broken away and removed with much difficulty. Formerly the carbon pencils and plates required for electrical purposes were sawed or cut bodily from these masses. This was necessarily a laborious, difficult, and expensive operation, owing to the extreme hardness and tenacity of the material.

The present improved process of manufacture consists in breaking up and pulverizing the crude masses of carbon procured from the gas-retorts by grinding them in a suitable mill to a very fine powder. This powder is agglomerated by means of sirup or other like material, forming a stiff paste, which may be pressed in molds or formed in dies in any required form. The molded articles are subsequently baked by subjecting them to a very high temperature for a considerable length of time, which forms them into solid masses. The nature of the raw material as it comes from the retorts is such that the operation of grinding is a tedious and expensive one, and hence a substitute has been sought by carbonizing different kinds of wood and vegetable

substances of a ligneous nature, thereby producing a form of carbon commonly known as charcoal, which is soft and easily pulverized. Experience, however, has shown that carbon obtained in this manner does not fulfill the necessary requirements, especially for electrical purposes, as the material contains silicious and other earthy impurities which render it unsuitable for such uses.

I have discovered that by carbonizing any of the various species of marine algæ, commonly called "sea weed," a carbon product is obtained in the form of soft masses, which are capable of being readily ground or pulverized, and are free from all mineral impurities. Carbon derived from this source is found by experiment to be more suitable, especially for electrical uses, than any carbon yet known, while at the same time it is inexpensive to produce by reason of the vast abundance and trifling cost of the raw material and the simplicity of the treatment required to fit it for use.

In carrying out my invention, the algæ or sea-weed which has been collected is placed in convenient quantities in a suitable vessel and thoroughly washed and cleansed by subjecting it to the action of hot water or steam. The material is dried, and is then carbonized by being placed in closed retorts and subjected to a high temperature for a considerable time in a well-known manner. The resulting product is then treated with dilute acid and dried. It is then a perfectly pure form of carbon in soft masses or lumps, which may be easily crushed between the fingers, and constitutes my improved product, which may afterward be ground or pulverized by means of any suitable machinery and manufactured into various articles by the usual processes.

I claim as my invention—

Blocks, plates, or rods consisting of compressed carbonized algæ or sea-weed, adapted for electrical uses.

In testimony whereof I have hereunto subscribed my name this 9th day of April, A. D. 1885.

EDGAR SHAW.

Witnesses:

J. HENRY TAYLOR,
ALEX. P. BROWNE.