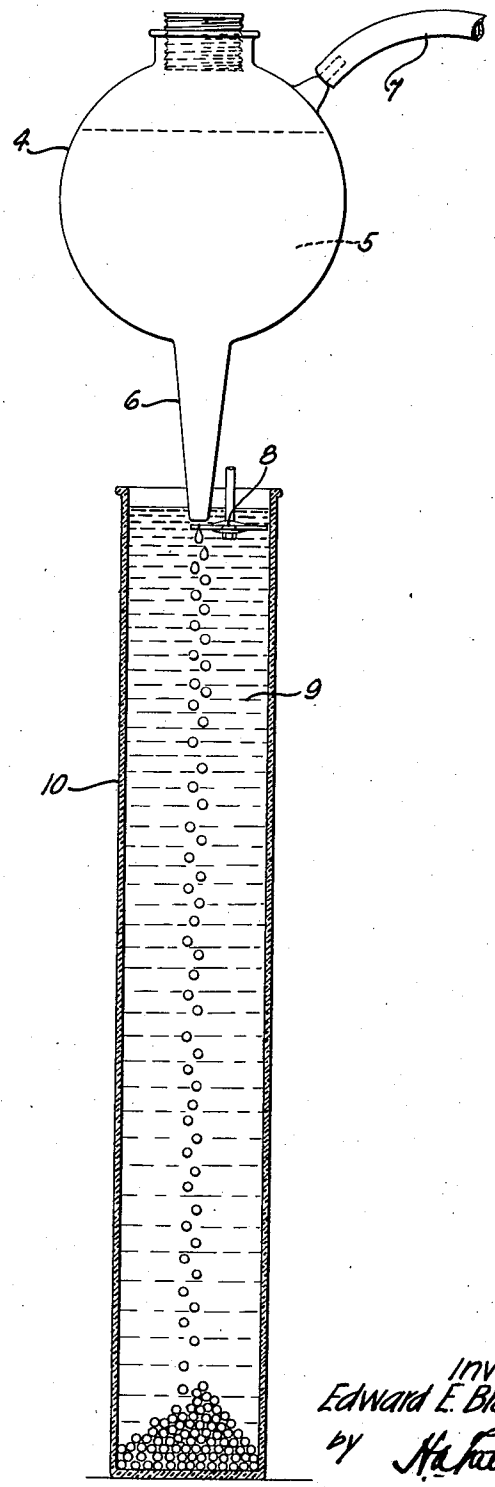
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METHOD OF PRODUCING CARBON GRANULES

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METHOD OF PRODUCING CARBON GRANULES

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This invention relates to a method of producing carbon granules and more particularly to a method of treating carbonizable material to form spherical carbon granules.

In variable resistance units such as are used in sound translating devices of which a telephone transmitter is an example, the use of carbon particles of a uniform size and of a spherical shape is very desirable, since by the use of such particles the electrical resistance variation can be made more nearly proportional to the pressure variation upon the carbon particles. In some instances where irregularly shaped particles have been used there is a tendency for the sharp points of the carbon to penetrate the thin walls of the container of the unit and thus cause a leakage of the carbon from the container, thereby impairing the efficiency of the unit.

An object of the invention is to provide an economical method for producing carbon in a very efficient form for use in variable resistance units.

In accordance with the general features of the invention, a particle of carbonizable material in liquid or plastic form is isolated from a mass of such material and subjected to conditions which permit the particle to assume a spherical shape due to the surface tension of the material. The spherical pellet thus formed is then hardened and carbonized to form a spherical carbon granule which is in a form particularly suitable for use in telephone transmitters.

It is believed that a complete understanding of the invention may be had by reference to the following description taken in conjunction with the accompanying drawing which illustrates a method in accordance with the invention.

A receptacle 4 is shown partially filled with a carbonizable material 5 in a liquid form, which may consist of vegetable fibers or cellulose dissolved in a solution of zinc chloride or any other material commonly used as filament stock for carbon filaments such as are employed in incandescent lamps. The carbonizable material is extruded from the receptacle in the form of a heavy liquid through a nozzle 6 by exerting an air pressure on the interior of the receptacle through a tube 7 leading to a suitable pressure system (not shown). A revolving knife 8 driven by any suitable means (not shown), and having a plurality of blades is positioned so that the revolving blades pass through the path of the extruded material and the rate of revolution of the blades with respect to the rate of extrusion of the material is such that masses of the material of suitable size will be isolated from one another permitting the surface tension of the masses to draw them into spherical form.

The pellets of carbonizable material thus formed are deposited in an alcohol bath 9 in a long container 10 several feet in height which gives the pellets sufficient time to solidify and harden before reaching the base of the container where they accumulate and come in contact with one another. In the alcohol bath the pellets are reduced considerably in size and become sufficiently hard to bear handling. The alcohol treatment appears to aid in the formation of the spheres which may be due to the fact that the cellulose material is not soluble or miscible in the alcohol, and also to impart a tenacious outer skin to the pellets. After the pellets have been retained in the alcohol a sufficient length of time they are removed and dried.

The cellulose pellets are carbonized by heating them in an inert atmosphere such as a hydrogen atmosphre which prevents oxidation of the material. The pellets are first heated to a comparatively low temperature for an extended period to expel any volatile substance contained therein after which the temperature is raised sufficiently high to carbonize the material leaving it in the form of spherical carbon granules.

It has been found that spherical carbon granules formed as described above are particularly well adapted for use in sound transmitting devices having what is known as a floating diaphragm which is resiliently supported. The spherical granules have no appreciable tendency to work their way out of their container through the juncture between the container and the diaphragm. When the spherical particles are used in va-

riable resistance units very satisfactory results are also obtained due to the fact that the spherical granules can conveniently be made of a substantially uniform size and therefore a more uniform variation of the resistance will result.

It will be understood that the illustration of the invention herein described is merely a convenient and useful form of the invention which is capable of many other modifications without departing from the spirit and scope of the invention.

What is claimed is:

1. A method of producing spherical carbon granules, which comprises extruding a stream of cellulose dissolved in a water solution of zinc chloride, breaking the stream into isolated particles to cause the particles to assume a spherical shape, depositing the particles in a bath of alcohol to solidify them, and carbonizing the spherical particles to form spherical carbon granules.

2. A method of producing carbon granules, which comprises forming a solution of cellulose in a water solution of zinc chloride into small particles, passing the particles through alcohol to harden them, and carbonizing the particles.

In witness whereof, I hereunto subscribe my name this 16th day of December, A. D. 1927.

EDWARD EVANS BLANKENSTEIN.