

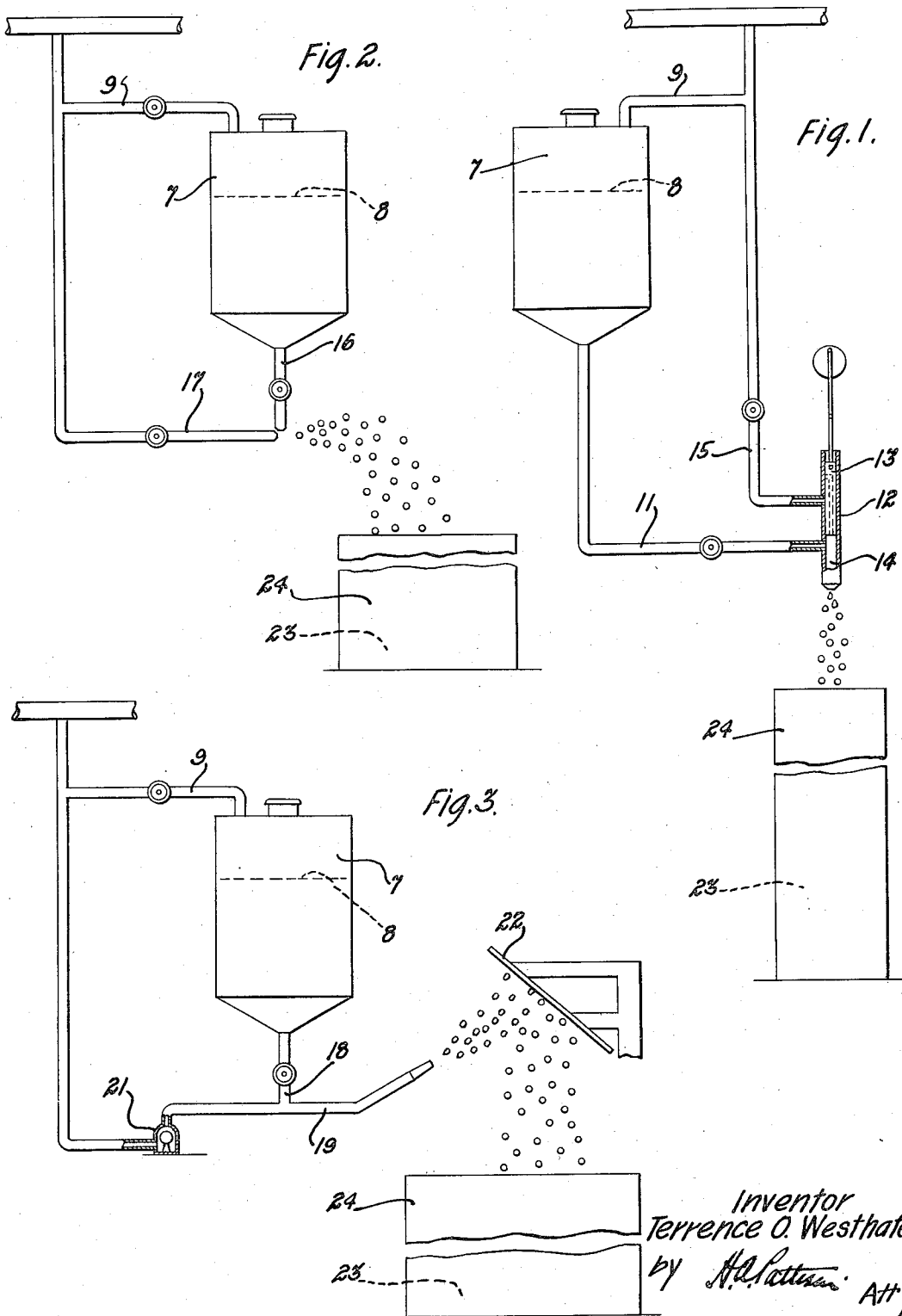
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METHOD OF PRODUCING CARBON GRANULES

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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.

5 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 in order
10 to obtain uniform microphonic properties. 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
15 unit and thus cause a leakage of the carbon from the container, thereby impairing the efficiency of the unit. In view of the fact that the individual spherical granule is quite small a large number of granules are required for
20 a single resistance unit.

It is an object of this invention to provide a method by which large numbers of spherical carbon granules may be quickly and economically produced.

25 In accordance with the general features of the invention, a stream or blast of air is used to break the carbonizable material into a plurality of particles which are subjected to such conditions as will cause them to assume a
30 spherical form, whereupon the particles are hardened and carbonized.

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 drawings, in
35 which

Fig. 1 is an elevational view, partly in section, of an apparatus which is suitable for practicing the invention;

40 Fig. 2 is an elevational view of a modified form of apparatus for practicing the invention, and

Fig. 3 is an elevational view of another form of apparatus for practicing the invention.
45

Referring to the drawings, a tank 7 is shown containing a carbonizable liquid 8, which may consist of vegetable fibres or cellulose dissolved in a solution of zinc chloride or any other suitable carbonizable material

such as is commonly used as filament stock for carbon filaments employed in incandescent lamps.

A tube 9 connects the tank 7 to any suitable air pressure system (not shown) for the purpose of expelling the carbonizable liquid
55 from the tank. In the apparatus of Fig. 1, the carbonizable liquid passes from the tank 7 into a tube 11 which conducts the liquid into a cylinder 12 having a reciprocable piston 13 therein. The piston 13 is provided with a tubular aperture, one end of which terminates in a cavity 14 under the piston and the other end terminates in the cylindrical wall of the piston in such a position that it will coincide
60 with the opening of a tube 15 from the pressure system when the piston is in its lowermost position. When the piston is reciprocated, the cavity 14 will alternately be connected with the tube 11 to supply a quantity
65 of material to the cavity and with the tube 15 to expel the material from the cavity by a blast of air. In this manner a particle of predetermined size is produced upon each reciprocation of the piston.
70

75 In Fig. 2 an apparatus is shown in which the material is conducted from the tank 7 into a tube 16. Positioned at right angles to the tube 16 is a tube 17 which communicates with the pressure system by means of which
80 a current of air is forced across the opening of the tube 16, causing the material which issues therefrom to be dispersed into a plurality of particles.

85 In Fig. 3 is shown an apparatus in which the material from the tank 7 is conducted through a tube 18 and deposited in a tube 19 from which it is expelled by means of an intermittent current of air. The tube 19 is connected to a pressure system (not shown) and is provided with an interrupter 21 of any suitable type. The material expelled from the tube 19 may be intercepted by an inclined surface 22 from which the material drops by gravity in a plurality of small particles.
90

95 The particles or pellets of carbonizable material thus formed, as described in connection with the different apparatus, are deposited in an alcohol bath 23 in a long container 24 several feet in height which gives the pellets
100

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
5 reduced considerably in size and become sufficiently hard to bear handling. The alcohol treatment imparts a tenacious outer skin to the pellets. After the pellets have been retained in the alcohol a sufficient length of
10 time they are removed and dried.

The cellulose pellets are carbonized by heating them in an inert atmosphere such as a hydrogen atmosphere which prevents oxidation of the material. The pellets are first
15 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
20 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
25 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
30 spherical particles are used in variable 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
35 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
40 and scope of the invention.

What is claimed is:

A method of producing spherical carbon
45 granules, which comprises projecting an aqueous solution of cellulose and zinc chloride into the atmosphere so as to break it into a plurality of drops, depositing the drops in a bath of alcohol to harden the drops while
50 their surface tension draws them into spherical shape, and carbonizing the hardened drops to form spherical carbon granules.

In witness whereof, I hereunto subscribe my name this 29th day of March, A. D., 1928.

55 TERRENCE ONAS WESTHAFFER.