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DIAPHRAGM AND METHOD OF MAKING SAME

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Fig. 1.



Fig. 2.



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UNITED STATES PATENT OFFICE.

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DIAPHRAGM AND METHOD OF MAKING SAME.

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To all whom it may concern:

Be it known that I, JOHN M. TAYLOR, a citizen of the United States, residing in Bridgeport, Pennsylvania, have invented a Diaphragm and Method of Making Same, of which the following is a specification.

One object of my invention is to provide a novel form of diaphragm for use in telephones, loud speakers, phonographs and the like, which shall be easily and inexpensively made as well as highly efficient under conditions of use.

Another object of my invention is to provide a simple and practical method for making the diaphragm.

These objects and other advantageous ends I attain as hereinafter set forth, reference being had to the accompanying drawings, in which,

Figs. 1 and 2 are fragmentary transverse sections of two forms of my invention on an enlarged scale.

In carrying out my invention, I may incorporate uniformly throughout a length or piece of paper, a certain proportion of iron filings and for this purpose may mix said filings in the pulp from which the paper is made or otherwise incorporate the filings so that the resultant product contains say 30 per cent of iron filings uniformly distributed through its mass or applied to it in the form of one or more layers. Said paper, in the form of a web is then subjected to a parchmentizing treatment, after which it is impregnated with a suitable phenolic condensation product or synthetic gum in its intermediate, soluble and fusible form. For this purpose, I may use that substance known to the trade as condensite, and thereafter subject the impregnated paper to heat and pressure such, for example as 350° F. and a pressure of from one thousand to three thousand pounds to the square inch. The finished sheet is in the form of a relatively stiff sheet and may be punched or cut into forms suitable for use as diaphragms for telephones, phonographs or the like.

In the aforesaid process, the parchmentizing step may be omitted.

As a modification of my invention, I may

utilize a layer of perforated, relatively thin sheet iron having suitable characteristics and place it between two or more layers of paper containing or impregnated with a suitable phenolic condensation product in its intermediate fusible condition. These three layers are then subjected to heat and pressure, as above described, whereupon the impregnated paper adheres to the iron, under the action of the condensation product which is caused to assume its final infusible and insoluble form.

Obviously, in the broader aspects of the invention, other binders than synthetic gums may be used such, for example, as glue, dissolved cellulose, etc. Also, I do not wish to limit myself to paper as the carrier for the metal particles since other fibrous webs may be employed, and in fact sheets or webs of any substance capable of having the said particles incorporated therein. It will further be apparent that the amount of iron particles employed may vary as desired within wide limits.

A sheet made as I have specified may be utilized as a diaphragm for loud speakers, telephones, etc., since when properly cut and mounted possesses the characteristics of a good form of the above apparatus.

I claim:

1. A diaphragm comprising a mixture of paper, finely divided iron and a phenolic condensation product in its final, infusible and insoluble stage.

2. A diaphragm comprising paper and iron with a phenolic product in its final, insoluble, infusible form.

3. The method of making a diaphragm which consists of mixing paper pulp with finely divided iron; adding to said mixture a phenolic condensation product in its intermediate stage; and thereafter subjecting said material to heat and pressure to cause the condensation product to assume its final form.

4. The method which consists making a mixture of iron filings and finely divided paper; adding a phenolic condensation product to said mixture; and subjecting the mixture to heat and pressure to cause the con-

condensation product to assume its final condition and form the material into relatively stiff sheets.

5 5. The method which consists of preparing a mixture of finely divided iron and pulp, adding to said mixture a phenolic condensation product in its intermediate solu-

ble form and thereafter subjecting said material to heat and pressure to form it into relatively thin sheets, causing the condensation product to assume its final insoluble state. 10

JOHN M. TAYLOR.