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ARTICLES MOLDED FROM SYNTHETIC RESIN.
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Fig. 1

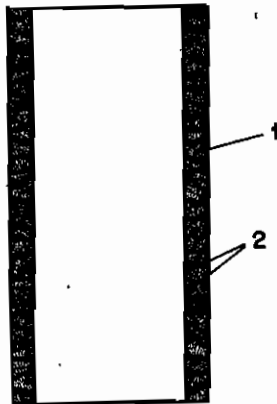
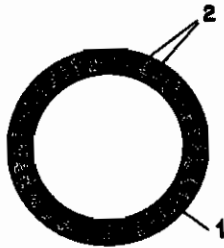


Fig. 2



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ARTICLES MOLDED FROM SYNTHETIC RESIN

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This invention relates to improvements in articles moulded from synthetic plastic and to an improved process for manufacturing such articles.

Articles made of synthetic plastic which are porous superficially are already known but in the known articles the pores either do not extend through the whole mass of the article or else the article does not possess sufficient mechanical strength to make it available for various practical purposes.

According to my invention a process for the manufacture of porous articles from synthetic plastics consists in moulding an article under pressure and heat from a mixture of synthetic plastic and particles of metal or of metal and graphite which render the moulding conductive to heat and/or electricity, together with additional matter which contracts or disappears during the moulding or heating process or which is dissolved out subsequently to leave fine capillary canals extending throughout the moulding; or the metal particles or metal and graphite particles may simply be mixed with synthetic plastic and the mixture moulded under pressure and heated to harden the synthetic plastic which contracts and leaves fine capillary canals, or the metal or metal and graphite particles may be mixed with synthetic plastic and finely divided particles of a soluble substance which, after the moulding has been formed under pressure and heat, is dissolved out of the moulding by means of a suitable solvent to leave fine capillary canals in the moulding.

Such mouldings containing metal particles or metal and graphite particles are particularly suitable for use as bearings, filters, commutators for high voltage electrical machines, as the pores or canals in the moulding will receive and retain lubricant while the metal or metal and graphite particles will conduct electricity and at the same time serve for dissipating any heat generated.

In one method of carrying out my invention an intimate mixture of synthetic resin moulding powder, finely divided metallic particles, and finely divided particles capable of being dissolved out subsequently is moulded under heat and pressure to the desired shape.

The surface skin of the moulding, the so-called pressing skin, is then removed in any convenient manner, as for example by abrasion with a sand blast, and the soluble particles are dissolved out of the moulding by treating it with an appropriate solvent. The dissolving out of these par-

ticles leaves the moulding pierced by a network of fine capillary canals intercommunicating with each other.

The soluble particles may be of a salt such as sodium chloride which is water-soluble so that they can be dissolved out by treating the moulding with water, or they may be of a metal such as zinc which can be dissolved out by treating the moulding with an acid which does not attack the particles of other metal which are to remain in the moulding.

The soluble material mixed with the moulding powder and metallic particles from the canals in the moulding may be of such a nature as to effect catalytically the hardening of the synthetic resin. Many metal salts such as sodium carbonate have this property.

In another method of producing mouldings in accordance with my invention artificial resin grains are formed from a hardenable artificial resin, preferably from a phenol-formaldehyde condensation product, by its transformation into the so-called C state, and the grains are brought by grinding and sieving to a size suitable to give the desired permeability to the moulding. These grains are then mixed with metallic particles and with a resin in the A or B state. This mixture is pressed in moulds and heated or dried at a temperature of from 100° to 200° Cent., the resin which is added in the A or B state serving as a binder which during the heating or drying contracts if hardenable or disappears if not hardenable and leaves the moulding with a network fine capillary canals. If the added resin disappears in the heating or drying of the moulding the temperature must be raised to a degree sufficient to cause the particles of hardened resin to adhere together through partial fusion of their meeting surfaces. For some purposes the grains of hardened artificial resin may be replaced wholly by metallic particles and the added resin forming the binder is hardenable so that the product is a moulding made up of metallic particles held together by the binder which has contracted to leave fine canals extending throughout the moulding.

Instead of using hardened grains of artificial resin in the C state, a hardenable artificial resin in the A or B state absorbed by fillers such as wood flour, asbestos flour, or any other fibrous material may be used, the masses so obtained being ground and sieved to the required dimensions.

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