Abstracts of patents relating to rubber latex

Compiled by R. W. PARRIS, B.SC., A.R.I.C., A.I.R.I.

Acknowledgement is made to the Research Association of British Rubber Manufacturers who have permitted us to base this collection on abstracts selected from the R.A.B.R.M. PATENT REVIEW, BRITISH PATENT SUPPLEMENT.

No. 728277. *Apparatus for supplying steam to the interior of advancing moulds. United States Rubber Co.*
(*Appl.* 15.7.53; *U.S.A.* 26.7.52. *Filed* 15.7.53. *Publ.* 13.4.55)
The apparatus, which is particularly intended for moulds containing latex foam, comprises a conveyer for advancing the moulds along a predetermined path, and a steam-connecting unit on each mould, each unit being adapted to supply steam to a mould from a steam supply connected to the unit or an adjacent unit. Reference is made to No. 687504.

No. 728290. *New diarylmethane derivatives. Imperial Chemical Industries Ltd. Inventor: A. Lambert.*
(*Appl.* 19.12.51. *Filed* 10.12.52. *Publ.* 20.4.55)
The patent relates to the manufacture of bis-(2-hydroxy-3-alpha-alkylcycloalkyl-5-methylphenyl)-methanes in which the cycloalkyl groups, which may be the same or different, are cyclopentyl, methylcyclopentyl, cyclohexyl or methylcyclohexyl, and the alkyl substituent has not more than four carbon atoms and is attached to the alpha carbon atom of the cycloalkyl group. The use of these compounds as antioxidants, which may be mixed into latex, is claimed in No. 728291.

No. 728291. *Manufacture of natural and synthetic rubbers and rubber articles. Imperial Chemical Industries, Ltd. Inventors: A. Lambert and B. N. Leyland.*
(*Appl.* 19.12.51. *Filed* 10.12.52. *Publ.* 20.4.55)
The diarylmethane derivatives forming the subject of No. 728290 are claimed as antioxidants for rubber. It is stated that they may be mixed into latex, although the three examples relate to the addition of the antioxidants to pale crepe rubber.

No. 728298. *Moulding sponge rubber articles. Pirelli Societa per Azioni.*
(*Appl.* 10.6.52; *Italy* 18.6.51. *Filed* 10.6.52. *Publ.* 20.4.55)
The invention provides a method of producing foamed rubber latex articles which have a surface showing improved porous characteristics. A mould for sponge rubber cushions and mattresses has one or more of its moulding surfaces provided with an arrangement of shallow recesses as obtained by impressing on the surface the pattern of a fabric at least 2 mm. thick, these recesses being such that air is trapped in them during moulding and the cellular structure of the moulded article is therefore exposed. Foamed latex articles made by this method have the advantage that air can pass more easily through the surface than through the surface of similar articles made with conventional moulds.

No. 728305. *Apparatus for continuous frothing of liquids. Dunlop Rubber Co., Ltd.*
(*Appl.* 8.10.52; *U.S.A.* 11.10.51. *Filed* 8.10.52. *Publ.* 20.4.55)
The apparatus enables foam containing a definite proportion of air and liquid, and having a controlled fineness of voids, to be formed. It consists basically of a conical bowl with a rotor of similar shape, the surfaces of each being provided with apertured cylindrical plates, and means at the apex of the bowl for the introduction of controlled amounts of gas and liquid. The apparatus is suitable for frothing latex.

No. 728596. *Manufacture of vulcanised rubber articles. Dunlop Rubber Co., Ltd. Inventors: J. Fishbein and A. E. T. Neale.*
(*Appl.* 19.4.52. *Filed* 1.4.53. *Publ.* 20.4.55)
Certain natural and synthetic rubber latices have been found to be difficult to gel using the common method of adding silicofluorides. This invention is for the gelling of latex by adding a thio compound and an oxidizing agent, which react to form acidic products and thus cause gelling. The dispersion is then shaped and vulcanised. The method is particularly applicable to the manufacture of articles from foamed latex. The organic thio-compound may be a thiocarbonyl compound, for example, a thiourea or a dithiocarbamate or its salt. The oxidizing agent may be a peroxide or a salt of a peracid.

No. 728719. *Electric storage batteries. Dry Accumulator Co., Ltd.*
(*Appl.* 30.4.53; *Brazil* 6.6.52. *Filed* 30.4.53. *Publ.* 27.4.55)
In a lead acid electric secondary battery of the so-called dry type in which the separators support the active material of the plate and hold it under compression, the separators are in the form of coherent sheets composed of a mixture of mineral particles, such as diatomaceous earth, resistant to sulphuric acid, and fibres, such as asbestos or cellulosic material. The mineral particles and the fibres are mixed together in the form of a slurry and deposited in sheet form on a wire mesh and then dried. It may be advantageous to add latex to the slurry in quantities up to 5% of dry rubber by weight on the weight of the diatomaceous earth. Preferably the latex is prevulcanised. No mention of the use of latex is made in the claims.

No. 728865. *Fabrics composed of adhesively bonded fibres. C. Freudenberg K.-G. Auf Aktien. Inventor: C. L. Nottebohm.*
(*Appl. and filed* 17.3.53. *Publ.* 27.4.55)
The invention relates to the manufacture of porous,

crease-resisting, shrink-proof, fibrous sheet material by treatment of fibres with foamed latex and then drying the treated fibres, the processing causing collapse of the foam cells. The ten examples mostly relate to the use of synthetic rubber latices, although natural rubber latex is used exclusively in one example, and in another example, natural rubber latex is used in conjunction with a synthetic rubber latex.

No. 728869. *Manufacture of sponge rubber articles. United States Rubber Co.*
(*Appl.* 27.4.53; *U.S.A.* 26.4.52. *Filed* 27.4.53 *Publ.* 27.4.55)

The porosity of the skin of latex foam articles is increased by treating the mould surface with a non-surface-active, water-soluble, hyrdophilic colloid material such as alkali metal polyacrylates, carboxyalkyl celluloses, cellulose ethers, water-soluble proteins, or polyvinyl alcohol. The mould for the latex foam is sprayed with an aqueous solution of the agent, and allowed to dry at least partially before introduction of the foam.

No. 729446. *Continuous manufacture of rayon yarns. R. H. McKee.*
(*Appl. and filed* 25.2.52. *Publ.* 4.5.55)

The invention relates to the manufacture of viscose regenerated cellulose yarns and is particularly suitable for making rayon tyre cord. When tyre cord is made, a step involving treatment of the cord with latex is included in the process, the absorption of rubber from the latex into the cord being facilitated by the processing to which the cord is subjected.

No. 729514. *Rubber foam mixer. Firestone Tire & Rubber Co.*
(*Appl. and filed* 15.1.53. *Publ.* 4.5.55)

The mixer comprises a housing with stator blades arranged on circles concentric with a shaft, a rotor secured to the shaft with blades arranged for co-operation with the stator blades, means defining a tubular inlet coaxially of the shaft for feeding material into the housing, and a free-ended extension on the shaft extending within the inlet opening and radially spaced from its walls. This extension may have a conical end which may be in the form of an enlarged head with vanes. The action of this head is to prevent " blow-by," *i.e.* the passage of large pockets of air in the foamed latex.

No. 729570. *Foamed latex products. Dunlop Rubber Co., Ltd., Inventors: A. E. T. Neale and J. Fishbein.*
(*Appl.* 15.7.52. *Filed* 23.6.53. *Publ.* 11.5.55)

A process of preparing articles of foamed latex having an improved internal structure comprises gelling the latex in the presence of an organic hydroxy compound which contains the hydroxyl group on a carbocyclic nucleus, in an amount producing an increase in the gelling pH of the system of the order of 0.3 pH unit or more, preferably greater than 0.4 pH unit. The preferred amount of the compound is from 0.5 to 2% on the dry rubber present, and examples of suitable compounds are phenol, alpha-naphthol and beta-naphthol. The method is particularly applicable to latices which have been concentrated by electro-decantation or which have been preserved with sodium or ammonium pentachlorphenate, as such latices do not usually yield good gelled foam structures.

No. 730477. *Seats, mattresses and the like. Weathershields, Ltd. Inventor: W. H. Bishop.*
(*Appl.* 22.8.52. *Filed* 13.7.53. *Publ.* 25.5.55)

A moulded rubber filling has, in its upper surface, a series of grooves, which are continued downwardly in opposed sides or ends of the filling and are in communication at their lower ends with openings in the base to permit air to circulate through the grooves below a fabric or other covering extending over the filling. The circulation of air prevents the rubber from becoming over-heated even when used continuously in cars for several hours. The moulded rubber filling may be latex foam.

No. 730540. *Seats, mattresses and the like. Weathershields, Ltd. Inventor: W. H. Bishop.*
(*Appl.* 22.8.52. *Filed* 13.7.53. *Publ.* 25.5.55. *Divided out of No.* 730477)

A moulded rubber filling for a seat or mattress has, in its upper surface, a shallow recess occupied by an air-permeable insert of coiled wire, or by a shallow moulded rubber insert comprising a flat upper surface supported by depending spaced walls defining open-bottom spaces. The shallow recess communicates through holes in its base with open-bottom recesses in the base of the filling. The moulded rubber filling may be of latex foam and, as in No. 730477, the construction prevents over-heating of the rubber.

No. 730736. *Garments. C. Freudenberg K. G. Auf Aktien. Inventor: C. L. Nottebohm.*
(*Appl. and filed* 17.3.53. *Publ.* 25.5.55)

In a multilayer garment, the interlining comprises an unwoven sheet material consisting of an open web of intermingled fine cardable fibres arranged in random directions and containing at least 15% of elastic fibres, the web having distributed uniformly throughout and adhering to the fibres, filmy, lamella-shaped particles of a vulcanised, flexible, solid binder. The binder may be applied in the form of natural or synthetic rubber latex and constitutes 25 to 60% (dry weight) of the weight of the interlining.

No. 730806. *Application of rubber compositions to structures. P. E. Bromley-Martin.*
(*Appl.* 25.11.52. *Filed* 24.2.54. *Publ.* 1.6.55)

The invention relates to a device for spraying compositions of cement and natural or synthetic rubber latex, as described in No. 369561. The spraying device is characterized in that the composition is contained in a pressure pot having an outlet connected to the spray gun, the surface of the composition in the pot being covered with a plate-like member subjected to the action of gaseous pressure media, whereby the pressure media does not directly contact the composition. An annular air jet surrounds the tubular

head through which the composition is ejected to produce a spray.

No. 730848. *Cellular products comprising rubber. A Talalay, W. D. Coffey and J. A. Talalay.*
(*Appl.* 13.10.53; *U.S.A.* 7.7.53. *Filed* 13.10.53. *Publ.* 1.6.55)
The invention relates to a method of substantially increasing the compression resistance of cellular rubber while increasing the weight only relatively slightly. Vulcanised latex foam is immersed in a dispersion of colloidal silica, which may contain latex, the foam is withdrawn and the surplus dispersion is removed by squeezing the foam between rolls. The foam is then exposed to hot air to dry the deposited dispersion and vulcanise any latex in the deposit. The treatment may be repeated if necessary to produce the required increase in the compression resistance of the foam. It is believed that the particles of silica penetrate into the latex films of the foam and incorporate themselves in the films to effect the increase in compression resistance. The latex in the dispersion of silica may be natural or synthetic rubber latex, although butadiene-styrene copolymer latex is preferred on account of its lower tackiness compared with natural rubber latex.

No. 730864. *Natural rubber compositions. Dunlop Rubber Co., Ltd. Inventors: E. W. Madge, G. G. George and F. J. Tibenham.*
(*Appl.* 5.1.52. *Filed* 16.12.52. *Publ.* 1.6.55)
The object of the invention is to provide an oil-modified natural rubber in which the deleterious effects of oil in rubber are avoided. The composition comprises natural rubber vulcanised to a content of 0.1% to 0.5% by weight of combined sulphur and a rubber extender oil incorporated therein, the oil preferably being in amount of 25% to 45% by weight based on the unvulcanised rubber. In the preparation of the composition, latex is vulcanised to the above degree and the extender oil is dispersed in the vulcanised latex by stirring and emulsifying. The rubber and oil are then co-precipitated by addition of an acid.

No. 730865. *Rubber reinforcing agents and compositions containing them. Dunlop Rubber Co., Ltd. Inventors: E. W. Madge, W. Mobberley and F. J. Tibenham.*
(*Appl.* 15.1.52. *Filed* 28.11.52. *Publ.* 1.6.55)
The compositions comprise rubber having incorporated therein a lignin compound having a cationic long-chain radical attached to an anionic lignin residue by a salt-like linkage. The lignin compound is formed by effecting a base-exchange reaction between a hydrophilic lignin compound and an organic compound containing a cationic long-chain radical. Preferably the production of the reinforcing agent and its incorporation in rubber are effected together by mixing a solution of a hydrophilic lignin compound with an alkaline latex, adding a solution of the organic compound containing the cationic long-chain radical, and then co-precipitating the cation-exchanged lignin product and the rubber by addition of an acid.

No. 730879. *Laminated material. Scholl Manufacturing Co., Ltd.*
(*Appl.* 17.6.52; *U.S.A.* 7.7.51. *Filed* 17.6.52. *Publ.* 1.6.55)
The palm portion of a fabric glove is faced with a layer of latex foam which is preferably vulcanised to the fabric. The exposed surface of the foam has its surface layer removed by friction to form a layer of material of enhanced gripping qualities.

No. 730921. *Manufacture of rubber articles. United States Rubber Co.*
(*Appl.* 10.4.53; *U.S.A.* 30.4.52. *Filed* 10.4.53. *Publ.* 1.6.55)
The invention relates to rubber footwear prepared by latex dipping. The dipping form is coated with a thin uniform coating of a composition comprising a resinous copolymer of styrene with isobutylene, butadiene, or acrylonitrile, an unvulcanised rubber compatible therewith, and a polymeric silicone fluid, all dissolved in a volatile solvent. The coated form is then dipped into natural rubber latex and the deposit of latex is conventionally coagulated and cured, thus forming an article with an attractive slip finish on the inside without the necessity for further treatment of the rubber surface. The treatment is primarily intended for rubber footwear but it can be applied to any other dipped rubber articles, such as gloves or balloons.

No. 730954. *Fibrous pads for upholstered and like articles. Xetal Products, Ltd. Inventor: P. Merriman.*
(*Appl.* 10.4.51. *Filed* 4.3.52. *Publ.* 1.6.55)
The pad comprises a layer of adhesively-bonded resilient fibres and a layer of softer non-felted fibres united to the first layer by needling. The adhesive used for bonding the fibres in the first layer is preferably polyvinyl chloride, as described in No. 706413, but a rubber adhesive may be used. The union between the two layers may be increased by the use of a latex adhesive.

No. 731432. *Manufacture of spongy rubber from natural or synthetic rubber latex. E. D. Money.*
(*Appl.* 8.3.52. *Filed* 8.6.53. *Publ.* 8.6.55)
In the vulcanisation of latex foam, the method is claimed of heating the mould by a number of jets of gas or other inflammable vapour impinging on the outer surface of the mould. The temperature of the mould is controlled by thermostatic or manual control of the gas supply, which regulates the length of the burning gas jets. The mould is preferably constructed from a metal such as aluminium, which is a good conductor of heat. Vulcanisation can be completed in 10 minutes with a suitable mix.

No. 731935. *Microporous separators for electric accumulators and cells. Aktiebolaget Tudor.*
(*Appl.* 8.5.52; *Sweden* 9.5.51. *Filed* 8.5.52. *Publ.* 15.6.55)
Because of the low strength of microporous separators made from latex it is hardly possible to make the porosity higher than about 70% and the thickness cannot be reduced below 2 mm. without the brittleness becoming appreciable. However, separators with a

porosity of more than 75% and as thin as 0.5 mm. can be made by impregnating a sheet of matted, pre-bonded, glass fibres with the latex mixture so as to effect a glass fibre network embedded in the separator and reinforcing it. A coagulant for the latex may be added to the glass fibre band before the latter is impregnated with the latex. The impregnated band is heated to effect vulcanisation.

No. 732034. *Chair or similar seat. S. Hansen.* (*Appl.* 11.11.53; *Denmark* 12.11.52. *Filed* 11.11.53. *Publ.* 15.6.55)
A chair has a back supporting a back cushion, the back of the chair having a curved profile in horizontal section with its convex part facing the seat, and the cushion having a curved concave front and back so that it can rest against the curved back of the chair with either side. The cushion may consist of foam rubber or rubberized hair and must be capable of being bent and compressed but must assume its original shape when it is no longer subjected to bending or compression.

No. 732208. *Method and apparatus for producing latex foam. United States Rubber Co.* (*Appl.* 2.9.53; *U.S.A.* 26.9.52. *Filed* 2.9.53. *Publ.* 22.6.55)
Latex foam is produced in a continuous stream by feeding soap froth and latex under pressure through a tube which is revolved bodily in a circular path about a fixed axis which lies parallel with the axis of the tube and outside the tube itself. The tube is held to prevent it rotating through complete revolutions about its own axis. Thus the soap froth and latex are forced turbulently towards successive portions of the side wall of the tube and are mixed together as they pass through the tube.

No. 732287. *Manufacture of articles made of spongy or cellular rubber. Societa per Azioni Giuseppe Olmo and D. Carraroli.* (*Appl.* 9.4.53; *Italy* 12.4.52. *Filed* 9.4.53. *Publ.* 22.6.55)
In a process of moulding articles from latex or solid rubber by the development of gases in the material in the mould, the mould used has, over the whole of its internal surface, grooves allowing the escape of gases to the atmosphere. These grooves may be all in one direction or crossed.

No. 732582. *Feeding bottle teats. Lewis Woolf, Ltd. Inventor: F. H. Hadley.* (*Appl.* 16.1.53. *Filed* 14.1.54. *Publ.* 29.6.55)
A metal former for making feeding bottle teats has a circumferential groove at the position corresponding to the required bead. A rubber ring is placed on the upper part of the former and the teat is produced by dipping the former into a bath of liquid rubber to provide an initial layer of rubber and then rolling the ring down the former into the groove to incorporate it with a part of this layer. The former is re-dipped until an article of the required thickness is obtained, the article being subsequently dried and hardened by heat and then removed from the former.

No. 733898. *Braided strip material. A. Erlenkotter.* (*Appl.* 19.6.53; *Germany* 20.9.52. *Filed* 19.6.53. *Publ.* 20.7.55)
A braided strip having longitudinal elastic threads woven in it is characterized by a surface provided with a vulcanised-on pad of foam rubber, which may be longitudinally ribbed, and is of less width than the strip. The strip is for application to the waistband of a garment to prevent slipping.

No. 734245. *Fire hose. George Angus & Co., Ltd. A. E. Jackson and E. H. W. Searle.* (*Appl.* 9.7.53. *Filed* 17.5.54. *Publ.* 27.7.55)
A fire hose, resistant to rotting under adverse conditions such as in coal mines, comprises a rubber-lined woven hose the textile jacket of which has been proofed with a fungicide and which carries an outer elastomeric deposit consisting substantially of a modified polyvinylidene chloride internally plasticized by copolymerization. Preferably the rubber lining is applied by the method of No. 538455, according to which latex may be used.

No. 734250. *Head rest or cushion. N. F. Jorgensen.* (*Appl.* 7.9.53; *Denmark* 15.9.52. *Filed* 7.9.53. *Publ.* 27.7.55)
A head rest or cushion is moulded in one piece from latex foam material with a hook-like shape to grip an upper edge of a chair. It may be of hollow construction or have ribs or spaces on the back side.

No. 734330. *Apparatus for the manufacture of foamed latex. Lintafoam Industries, Ltd. Inventor: S. W. Alderfer.* (*Appl. and filed* 25.7.53. *Publ.* 27.7.55. *Addition to No.* 694284)
According to the invention, the apparatus described in No. 694284 is provided with means for (a) maintaining automatically a predetermined proportion of latex and air in foamed latex produced continuously and for (b) permitting variation in the volume of foamed latex delivered per unit of time.

No. 734990. *Girdles. International Latex Corpn.* (*Appl.* 15.7.53; *U.S.A.* 4.2.53. *Filed* 15.7.53. *Publ.* 10.8.55)
A foundation garment of seamless deposited latex is provided with a homogeneous bulge-resisting abdominal portion free of metal or fabric reinforcement and made of rubber stiffer or thicker than that of the rest of the garment. The abdominal portion may have rib-like projections. Natural rubber latex is used for making the garment, except that a layer of rubber stiffer than natural rubber may be used as the initial depositing layer for the abdominal portion. This stiffer layer may be formed by deposition of a synthetic latex comprising a copolymer of about 85% styrene and about 15% butadiene.