

MALAYAN PATENTS RELATING TO RUBBER

PART III

BY

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A list of Malayan patents relating to rubber, together with abstracts of the more important grants up to the end of 1932 has already been published in this *Journal* (1)—(2). The present publication consists of a list of the grants made from the end of 1932 to the middle of September 1936 and includes abstracts.

The list is divided into four parts as under :—

Section 1 F.M.S. Grants of Exclusive Privileges.

End 1932 to September 1936.

Section 2 Registration of United Kingdom and other British Patents in F.M.S.

End 1932 to September 1936.

Section 3 S.S. Grants of Exclusive Privileges.

End 1932 to September 1936.

Section 4 Registration of United Kingdom and other British Patents in S.S.

End 1932 to September 1936.

Specifications of which abstracts are given are marked in the list by an asterisk.

The list of patents was compiled from the register of F.M.S. Grants, by the courtesy of the Commissioner of Trades and Customs, F.M.S., at Kuala Lumpur, and from the similar register in Singapore by the courtesy of the Colonial Secretary.

Section 1. F.M.S. Grants of Exclusive Privileges 1932—1936

Year Issued	Number of Grant	Name of Grantee	Title of Invention
1932	720	Browning	Self-contained fuel-lighter
"	724*	Schweizer	A new type of partition guide and holder for coagulating tanks
"	725*	Schweizer	Improvements in and relating to continuous sheet coagulating tanks
"	726*	Graham & Kendall	Rubber road carpeting
1933	727*	de Schepper	Method of and means for making and obtaining rubber in powdered form from dispersions such as latex, or from solutions

F.M.S. Grants (Continued)

Year Issued	Number of Grant	Name of Grantee	Title of Invention
1933	728	Hodges	Reinforced compounded rubber moulded buckets
"	729*	Sime, Darby & Co., Ltd.	Improvements in and relating to coagulating tanks
"	731	England	Firelighter containing rubber
"	732	Hughes and The Liverpool Electric Cable Co., Ltd.	Improvements in or relating to rubber compositions and articles composed thereof
"	733*	Reginato	Improvements in and relating to line-ahead rubber sheeting batteries
"	734	The Avon India Rubber Co. and Swanborough	Improvements in or relating to valves for the retention of pressure within hollow articles
"	737*	Socfin Co., Ltd.	Drying and/or smoking plant
"	743*	Board of Rubber Research Institute of Malaya and Eaton	A new or improved process for the preparation of soft rubber
1933	744*	Board of Rubber Research Institute of Malaya and Eaton	Process for the preparation of unvulcanised India rubber in crumb or powder form
"	746*	Gaisman	Improvements in or relating to the manufacture of plantation rubber products
"	757*	Cochran and Footner	An improved machine for the rolling of coagulated latex
"	758*	Naugatuck Chemical Company	Improvements in or relating to the treatment and creaming of rubber latex (Assigned to U.S. Rubber Co. 12.7.35)
"	762*	Société Anonyme Septa	Improvements in and relating to the manufacture of rubber products
1934	764	Claessen	Improvements in and relating to the manufacture of rubber envelopes, bags, or like containers
"	768*	Naugatuck Chemical Company	Improvements in or relating to creaming of latex (Assigned to U. S. Rubber Co. 12.7.35)
"	770*	Savege	Improvements in and relating to presses for packing rubber and the like
"	772*	Reginato	Improvements in and relating to connecting troughs between the rollers of rubber sheeting machines (Assigned to Guthrie & Co. 10.9.34)

F.M.S. Grants (Continued)

Year Issued	Number of Grant	Name of Grantee	Title of Invention
1934	775	Hope	An improved dryer, operated by natural draught for drying various agricultural products
1935	784	Marcene Corpn. of America	Reaction products of butadiene derivatives with hydrogen halides and method of producing the same
"	792*	Brandwood	A new or improved process and apparatus for the concentration of rubber latex
"	812	Internationale Vereeniging voor de Rubber en Andere Cultures in Ned. Indies	Improvements relating to the production of asphaltic bitumina or asphalt proper with rubber
"	815*	Dunlop Rubber Co.	Improvements in or relating to the production of concentrated India rubber latex
"	819*	U n g a r a n d Schidrowitz	Improvements relating to the manufacture of rubber
"	824	Michelin & Cie	Improved method and apparatus for the mechanical treatment of coagulated substances preparatory to drying and transporting them
1936	827*	The Board of the Rubber Research Institute of Malaya and Eaton and Rhodes	Improvements relating to the treatment of rubber latex
"	833*	U. S. Rubber Co.	Improvements in or relating to the concentration of latex

Section 2. Registration of United Kingdom and other British Patents in F.M.S.

Year of Issue of Certificate	Number of Certificate	Number of United Kingdom Patent	Name of Grantee	Title of Invention
1933	151*	372,836	International Latex Processes Ltd.	Improvements in or relating to the production of concentrated India rubber latex
"	152*	351,938	do.	Improvements in or relating to the manufacture of goods of rubber or similar material
1934	158*	381,743	General Rubber Co., U.S.A.	Improvements relating to the manufacture of crude rubber
"	159*	396,579	Stam	Improved method of and apparatus for converting milky liquids, solutions, dispersions and emulsions into powder form by spray drying
"	160*	388,341	do.	Process for the preparation of pulveriform rubber
"	164*	393,732	Metallgesellschaft Aktiengesellschaft, and Petersen and Gensecke	Process for concentrating rubber latex
"	171	391,031	Duarry-Serra	A process for impregnating thick textile products with latex under great hydraulic pressures
"	172*	406,222	Cowling	Improvements in and relating to roads, side-walks, floors and like surfacings
"	173*	409,891	do.	Improvements in and relating to roads, side-walks, floors and other surfacings
1935	179*	411,478	Imp. Chemical Ind. Ltd.	Stabilised rubber latices
"	180*	391,511	Kaysam Syndicate Ltd.	Improvements relating to rubber or rubber-like compositions and articles manufactured therefrom
"	181	391,853	do. do.	Improvements in or relating to the manufacture of balls or other hollow inflated articles of India rubber or the like
"	182	391,868	do. do.	Improvements relating to rubber or rubber-like compositions and articles manufactured therefrom
"	183	392,497	do. do.	do. do. do.

F.M.S. Registration of U.K. Patents (Continued)

Year of Issue of Certificate	Number of Certificate	Number of United Kingdom Patent	Name of Grantee	Title of Invention
1935	189*	412,514	Metallgesellschaft Aktiengesellschaft	Process of concentrating rubber latices
"	193*	429,277	Vultex Ltd.	Improvements in or relating to a process for concentrating aqueous dispersions of vulcanised rubber
"	194	429,607	do.	Improvements in or relating to the manufacture of products from rubber dispersions.
"	196*	430,426	Rubber Producers' Research Association	Improvements in and relating to the purification and concentration of latex
1936	200	433,727	The Liverpool Electric Cable Co., Ltd.	Improvements in or relating to rubber compositions and articles composed thereof
"	201	433,728	do.	do. do. do.
"	205*	437,928	Wilkinson	Improvements in or relating to the manufacture of rubber compositions from rubber latex
"	208*	429,705	Dunlop Rubber Co., Ltd.	An improved method for bonding rubber and the like to metal and other surfaces
"	209*	428,559	Dunlop Plantations Ltd.	Improved method and means for coating a metallic surface with fusible material or substance

Section 3. S.S. Grants of Exclusive Privileges 1932—1936

Year Issued	Number of Grant	Name of Grantee	Title of Invention
1931	936	General Rubber Co.	Improvements relating to the manufacture of crude rubber
"	937	Singapore Rubber Works	Improvements in water paints, distempers, colour washes and the like
1932	923	Michelin et Cie	Improvements in pneumatic tyres for railway vehicle wheels
"	927	Kirby	Improvements in and relating to latex Coagulating Tanks—Sectional Units
"	929	de Schepper	Method of and means for making and obtaining rubber in powdered form, from dispersions such as latex, or from solutions
"	931	Schweizer	A new type of partition guide and holder for coagulating tanks
"	932	do.	Improvements in and relating to Continuous Sheet Coagulating Tanks
"	938	Hughes and The Liverpool Electric Cable Co.	Improvements in or relating to Rubber Compositions and Articles composed thereof
1933	941	Reginato	Improvements in and relating to Line-Ahead Rubber Sheeting Batteries
"	944	Gaisman	Improvements in or relating to the Manufacture of Plantation Rubber Products
"	947	Naugatuck Chemical Co.	Improvements in or relating to the Treatment of Rubber Latex
"	952	do.	Improvements in or relating to Creaming of Latex
"	958	Board of the Rubber Research Institute of Malaya and Eaton	A new or improved process for the preparation of soft rubber
"	959	do.	A process for the preparation of unvulcanised India Rubber in crumb or powder form
"	961	Soc. Anon. "Septa"	Improvement in and relating to the Manufacture of Rubber Products
"	964	Kubota	Improvements in Rubber Tyres
1934	976	Reginato	Improvements in and relating to connecting troughs between the rollers of rubber sheeting machines
"	980	Dunlop Rubber Co.	Improvements in or relating to the production of concentrated India-Rubber Latex

S.S. Grants—(Continued)

Year Issued	Number of Grant	Name of Grantee	Title of Invention
1934	983	Dunlop Plantations Ltd.	Adherent Rubber Sheeting and its manufacture
1935	985	U n g a r a n d	Improvements relating to the Manufacture of Rubber
"	987	Schidrowitz Michelin et Cie	Improved method and apparatus for the mechanical treatment of coagulated substances preparatory to drying and transporting them
"	993	United States Rubber Co.	Improvements in or relating to the concentration of latex
1936	994	Guthrie & Co., Ltd.	Improvements in and relating to Roller Adjusting Gear on Rubber Sheeting Batteries

Section 4. Registration of United Kingdom and other British Patents in S.S. 1932—1936

Year of Issue of Certificate	Number of Certificate	Number of United Kingdom Patent	Name of Grantee	Title of Invention
1932	172	309,907	Cramer	Method of Grading Planting Material of Latex-containing Trees and Tapping Tool for this purpose
"	173	363,872	Revertex Ltd.	Process for the production of Rubber-Latex concentrates
1933	179	382,235	Metallgesellschaft Aktiengesellschaft	Process for Inspissating or Concentrating Rubber Latex
"	180	383,062	Milne	Improvements relating to the Manufacture of Rubber Sheet from Coagulated Latex
"	182	383,158	Savege	Improvements in and relating to Machines for Rolling Coagulated Latex and like Materials
"	186	391,735	Vis	Method of Tapping Rubber Trees and such-like sap-containing trees
"	187	372,836	International Latex Processes Ltd.	Improvements in or relating to the production of Concentrated india-rubber latex
"	189	388,341	Stam	Process for the Preparation of Pulveriform Rubber
"	190	396,579	do.	Improved method of and Apparatus for converting Milky Liquids, Solutions, Dispersions and Emulsions into Powder Form By Spray Drying
"	193	393,732	Metallgesellschaft Aktiengesellschaft, and Petersen and Gensecke	Process for Concentrating Rubber Latex
1934	200	351,988	International Latex Processes Ltd. (assignees of Dunlop R.C. & others)	Improvements in or relating to the manufacture of goods of rubber or similar material
"	203	391,031	Duarry-Serra	A process for impregnating thick textile products with latex under great hydraulic pressures
"	204	406,222	Cowling	Improvements in and relating to Roads, Sidewalks, Floors and like surfacings

S.S. Registration of U.K. Patents (Continued)

Year of Issue of Certificate	Number of Certificate	Number of United Kingdom Patent	Name of Grantee	Title of Invention
1934	205	409,891	Cowling	Improvements in and relating to Roads, Sidewalks, Floors and other surfacings
1935	213	391,853	Kaysam Syndicate Ltd.	Improvements in or relating to the manufacture of balls or other hollow inflated articles of India Rubber or the like
"	214	392,497	do.	Improvements relating to Rubber or Rubber-like Compositions and articles manufactured therefrom
"	215	391,868	do.	do. do.
"	216	391,511	do.	do. do.
"	221	412,514	Metallgesellschaft Aktiengesellschaft	Process for Concentrating Rubber Latices
"	230	429,277	Vultex Ltd	Improvements in or relating to a Process for concentrating Aqueous Dispersions of Vulcanised Rubber
"	231	429,607	do.	Improvements in or relating to the manufacture of Products from Rubber Dispersions
"	234	430,426	Rubber Producers' Research Association	Improvements in and relating to the Purification and Concentration of Latex
1936	236	433,728	Liverpool Electric Cable Co.	Improvements in or relating to Rubber Compositions and articles composed thereof
"	237	433,727	do.	do.
"	241	437,928	Wilkinson	Improvements in or relating to the Manufacture of Rubber Compositions from Rubber Latex
"	242	429,705	Dunlop Rubber Co.	An improved method for Bonding Rubber and the like to Metal and other surfaces

The abstracts of selected patents are set out in the following broad general groups of subject matter :—

Group No.	General Heading	Number of patents in group
I	Concentration of latex	12
II	Powdered, crumb, and soft rubbers	7
III	Manufacturing processes based on latex and rubber	5
IV	Rubber estate equipment	9
V	Rubber Roadways	3
VI	Miscellaneous	1

Group I

CONCENTRATION OF LATEX

- (1) International Latex Processes Ltd.
 British Patent No. 372,836; 1931
 Registered in F.M.S. No. 151; 1933
Improvements in or relating to the Production of Concentrated India Rubber Latex

Concentrated latex preserved with a caustic alkali (or some similar preservative) is obtained by centrifuging ordinary latex preserved with ammonia, then adding the desired caustic alkali to the concentrate thus obtained and heating to remove the residual ammonia. Latex concentrated in this way contains a smaller proportion of non-caoutchouc constituents than latex which has been concentrated entirely by evaporation.

- (2) Dunlop Rubber Co., Ltd.
 F.M.S. Grant No. 815, 1935
Improvements in or relating to the Production of Concentrated India Rubber Latex

Describes a method of increasing the efficiency of the centrifugal process of concentration, by heating the latex and centrifuging it at a temperature between 45°C and 85°C. A greater proportion of the total rubber is obtained as cream, but the dry-rubber-content of this cream might be lower (as in some of the examples given in the patent specification) than if the centrifuging had been done at ordinary temperatures.

- (3) Vultex Corporation
 British Patent No. 429,277; 1933
 Registered in F.M.S. No. 193; 1935
Improvements in or relating to a Process for concentrating Aqueous Dispersions of Vulcanised Rubber

The proteins and other non-caoutchouc constituents of latex are aids to vulcanisation. This fact is made use of in this process for preparing concentrated *vulcanised* latex by vulcanising first and removing the proteins etc. afterwards. Ordinary preserved latex is treated with vulcanising agents and is then centrifuged. The centrifuging gives a concentrate (cream) which contains a lower proportion of non-caoutchouc serum constituents than the original latex, as the greater part of these passes into the skim. This cream can be washed by diluting with ammoniated water and centrifuging again, repeating the process several times if required, and in this way a vulcanised concentrated latex free from non-

caoutchouc serum constituents is finally obtained. This product is stable and can be transported long distances without coagulating.

British Patent No. 429,607, registered in F.M.S. No. 194, 1935, describes methods of making various rubber articles by the heat coagulation on formers of vulcanised concentrated latex prepared as above.

(4) Naugatuck Chemical Co.

F.M.S. Grant No. 758, 1933

Improvements in or relating to the Treatment and Creaming of Rubber Latex

Describes a method of accelerating the process of creaming latex, by the use of a small quantity of water-soluble soap (about 0.3 per cent) in addition to the usual creaming agents such as Karaya gum, ammonium alginate, etc.

(Patent assigned to United States Rubber Co. in 1935).

(5) Naugatuck Chemical Co.

F.M.S. Grant No. 768, 1934

Improvements in or relating to Creaming of Latex

Creaming is accelerated by violently agitating the latex, as with a high speed mechanical stirrer, for a short time before, after, or simultaneously with the addition of the creaming agent. If desired, the latex may be vulcanised before it is agitated.

(Patent assigned to United States Rubber Co. in 1935).

(6) General Rubber Co.

British Patent No. 381,743; 1931

Registered in F.M.S. No. 158; 1934

Improvements relating to the Manufacture of Crude Rubber

Describes a method of making crude rubber containing any desired proportion, from about 12 per cent to 80 per cent, of non-caoutchouc latex constituents. The process consists of separating latex into cream and skim, and then recovering crude rubber from the skim by evaporation, *e.g.* by spray drying. The proportion of non-caoutchouc constituents in the crude rubber thus obtained depends on the extent to which the separation of the original latex into cream and skim had been carried out, and is therefore controllable. The rubber obtained by these means has such properties as tensile strength, tear resistance, and age resistance enhanced, by which its value for certain purposes is increased.

(7) J. Brandwood

F.M.S. Grant No. 792, 1935

A new or improved Process and Apparatus for the Concentration of Rubber Latex

A process for accelerating creaming by imparting to the latex mechanical vibratory impulses, in addition to using a creaming agent such as gum tragacanth in glycerine.

- (8) Board of the Rubber Research Institute of Malaya and
B. J. Eaton and E. Rhodes
F.M.S. Grant No. 827, 1936

Improvements relating to the Treatment of Rubber Latex

This patent was first taken out in the United Kingdom, as British Patent No. 415,133. It is published in full in the *Journal of the Rubber Research Institute of Malaya*, Volume 6, No. 2, December 1935, page 137.

The creaming of latex by means of an organic colloid such as gum tragacanth is accelerated by the addition of a small proportion of a neutral organic liquid which is more volatile than water; *e.g.* ethyl alcohol or acetone may be added at the rate of about 2 to 5 per cent by volume of the original latex and results in more rapid creaming and in a richer final cream.

- (9) United States Rubber Co.
F.M.S. Grant No. 833, 1936

Improvements in or relating to the Concentration of Latex

The rate at which latex creams becomes slower as the creaming proceeds. In preparing very pure rubber, latex may be creamed several times; *i.e.* it is creamed, and then the cream separated, diluted with water, and allowed to cream again; and so on. The time required for this can be shortened by interrupting each successive creaming at the point where the rate of creaming is decreasing rapidly, which might occur after about one quarter of the time normally required for complete creaming has elapsed. The last of the re-creaming operations is of course allowed to proceed to its finish.

This process may be used in conjunction with other methods for accelerating creaming, *e.g.* violent agitation of the latex, the addition of other chemicals besides the creaming agent, etc., etc.

- (10) Rubber Producers' Research Association
British Patent No. 430,426; 1934
Registered in F.M.S. No. 196; 1935

Improvements in and relating to the Purification and Concentration of Latex

The purification and concentration of latex are carried out simultaneously or consecutively by dialysis under pressure. The apparatus consists essentially of a series of cells separated by

dialysing membranes. Alternate cells are charged with ammoniated latex and the intermediate cells contain water or an aqueous solution of some substance such as an ammonium soap. The latex cells are under a hydrostatic pressure of 1 to 2 lb. per square inch more than the intermediate cells. The carbohydrates, salts, etc. contained in the latex pass by dialysis through the membranes into the water or solution in the intermediate cells, and the corresponding dilution of the latex which would normally occur is retarded or reversed by the greater pressure in the latex cells, aided by the osmotic action of the aqueous solution if such is used. The ammonia content of the latex requires to be renewed from time to time during the working of the process.

Variations of this process are the hydrolysis of the non-caoutchouc constituents by heat before dialysis, and the concentration of the latex before and/or after dialysis by means of evaporation, centrifuging, creaming, or spray drying.

(11) Metallgesellschaft Aktiengesellschaft and Petersen and Gensecke

British Patent No. 393,732; 1932

Registered in F.M.S. No. 164; 1934

Process for Concentrating Rubber Latex

A quantity of stabilised latex is circulated through a system in which it is alternately heated and then discharged into an evaporation chamber under reduced pressure. The water vapour formed in the evaporation chamber is withdrawn and condensed separately. When the latex has become sufficiently concentrated the circulation is stopped and the concentrate run off, after which another charge of latex is admitted to the system and the circulation resumed. Owing to the increase in the viscosity of the latex as concentration proceeds, the process is more conveniently worked in two or more stages.

(12) Metallgesellschaft Aktiengesellschaft

British Patent No. 412,514; 1934

Registered in F.M.S. No. 189; 1935

Process for Concentrating Rubber Latexes

Describes a process for obtaining concentrated latex which is wholly or partially free from serum constituents. The method is to take latex which has already been concentrated by creaming or centrifuging, and has thus lost some of its serum constituents, and then to concentrate it further by some evaporation process such as that described under B.P. No. 393,732 (see above). The final product contains more than 65 per cent of total solids, is free from included air, and has a reduced proportion of non-caoutchouc constituents.

Group II

POWDERED, CRUMB, AND SOFT RUBBERS

(1) A. J. A. Yssel de Schepper

F.M.S. Grant No. 727, 1933

Method of and means for making and obtaining Rubber in Powdered form, from Dispersions such as Latex, or from Solutions

Latex or rubber solution is sprayed on to a moving surface, such as a rotating drum, where it is dried by heat and then mechanically scraped off in the form of a powder. The process is continuous. The latex or rubber solution can be treated with compounding and vulcanising materials etc. before spraying, so that the resulting rubber powder is ready for use in manufacture without further compounding. Where this has not been done, and further compounding is necessary, the powdered rubber can be mixed much more easily than ordinary forms of rubber such as sheet and crepe.

(2) M. J. Stam

British Patent No. 396,579; 1932

Registered in F.M.S. No. 159; 1934

Improved Method of and Apparatus for Converting Milky Liquids, Solutions, Dispersions and Emulsions into Powder form by spray drying

The liquid, *e.g.* latex, is sprayed from a centrifugal sprayer and is carried upwards by a forced draught which dries the substance besides carrying it upwards and out of the spraying chamber. The spraying chamber is of special shape, and the forced draught is regulated according to the rate at which the liquid is sprayed. After leaving the spraying chamber the stream of air and sprayed substance is forced into a filtration chamber where the air and water vapour are drawn out and the dried residue falls downwards as a powder on to a conveyor which carries it to an outlet.

(3) M. J. Stam

British Patent No. 388,341; 1932

Registered in F.M.S. No. 160; 1934

Process for the Preparation of Pulveriform Rubber

Describes the use of dextrin (6 to 12 per cent on the latex) as a protective colloid to be added to latex so that when the latter is spray-dried a non-sticky powder is obtained.

- (4) Board of the Rubber Research Institute of Malaya and
B. J. Eaton

F.M.S. Grant No. 744, 1933

*Process for the Preparation of Unvulcanised India-rubber
in Crumb or Powder form*

Rubber latex is treated with a salt of nitrous acid, *e.g.* 1 per cent or more by weight of sodium nitrite, followed by sufficient acid to produce coagulation and also to react with all the nitrite present. A spongy coagulum is obtained which is washed and then is easily disintegrated into powder. This powder or crumb rubber can be dried in the air in about two days. Its use in the manufacture of rubber goods would facilitate mixing operations.

- (5) Board of the Rubber Research Institute of Malaya and
B. J. Eaton

F.M.S. Grant No. 743, 1933

A new or improved Process for the Preparation of Soft Rubber

Rubber latex is treated with a salt of nitrous acid, *e.g.* sodium nitrite, followed by coagulation with an acid, *e.g.* formic or acetic acid. The nitrous acid liberated from the nitrite reacts to give a plastic rubber in the form of a porous coagulum, which after machining and drying is softer than crepe or sheet and can be used to facilitate manufacturing operations. Fresh, preserved, or artificial latex, concentrated or diluted, may be used for the process. The reaction may be accelerated by heating if desired.

- (6) L. Gaisman

F.M.S. Grant No. 746, 1933

*Improvements in or relating to the Manufacture of
Plantation Rubber Products*

A process for making on the plantation rubber having plasticity, softness, and other qualities which make it equivalent to "reclaimed rubber," thus increasing its value for many manufacturing purposes. The necessary ingredients such as mineral or vegetable oils are added to the latex, either in the form of an emulsion, or direct, and the whole coagulated, machined, and dried in the usual way.

- (7) R. W. Ungar and P. Schidrowitz

F.M.S. Grant No. 819, 1935

Improvements relating to the Manufacture of Rubber

In a previous patent, British Patent No. 368,902, the preparation of softened rubber by the controlled oxidation of crude rubber such as sheet or crepe was described. The present patent is an extension of this process so as to prepare softened rubber direct

from coagulum. The method is to break up the coagulum into crumbs, wash thoroughly, and dry on trays in a steam oven at 270°—290°F. with dry steam circulating at a pressure of 100 pounds per square inch. When the crumb is dry, air is admitted into the oven for from 10 to 30 minutes according to the degree of softness required in the finished product, with dry steam continuing to circulate as previously. The trays of heated, oxidised rubber are then taken out and allowed to cool in the air, after which the rubber may be agglomerated for packing.

Group III

MANUFACTURING PROCESSES BASED ON LATEX AND RUBBER

(1) Société Anonyme Septa

F.M.S. Grant No. 762, 1933

Improvements in and relating to the Manufacture of Rubber Products

Describes a method for the manufacture of soft rubber products direct from latex combined with fibrous, porous, or granular reinforcing material. Latex is spread upon a plate, impressed with the desired grooves or pattern, and allowed to dry. Then the reinforcing material is applied to the surface of the rubber sheet thus formed, latex itself being used as a binding agent. Paper or cloth or granular substances can be used as the reinforcing material, and articles can be made consisting of two layers of soft rubber with an intermediate reinforcing layer, the whole being united integrally by means of the latex.

(2) International Latex Processes Ltd.

British Patent No. 351,938; 1930

Registered in F.M.S. No. 152; 1933

Improvements in or relating to the Manufacture of goods of Rubber or similar material

Describes a process for the manufacture of crumb-like or powder-like compositions of rubber or similar material from aqueous dispersions thereof, *e.g.* latex, by the addition of such substances as ground tyre carcasses, wood flour, leather dust etc. The process is in two stages. The compounding ingredients, with protective colloids, are first added to the aqueous rubber dispersion, followed by the ingredients mentioned above. Then this mixture is coagulated by the addition of some substance such as zinc oxide or lime, previously made into a paste with water. The result is a crumb-like composition which can be moulded whilst wet, or which can be dried and worked on the ordinary rubber machinery.

(3) Kaysam Syndicate Ltd.

British Patent No. 391,511; 1932

Registered in F.M.S. No. 180; 1935

Improvements relating to Rubber or Rubber-like Compositions and Articles manufactured therefrom

Describes a method of making moulded rubber goods from aqueous dispersions of rubber, *e.g.* latex. First a stable mix is made containing the necessary fillers, vulcanising agents, etc. Then the mix is rendered unstable by the addition of a "setting" agent, such as ammonium nitrate. This does not cause immediate coagulation and the mix can be poured into a mould, where it thickens and sets. In order to obtain a quick setting, the mould should be heated to 80°—90°C. If cold setting is desired, a higher proportion of setting agent is used. Such articles as rubber heels can be made in this way, and any metal parts, *e.g.* washers, can be embedded in the rubber by placing them on supports in the mould before pouring in the mix.

British Patents Nos. 391,853; 391,868; and 392,497; registered in the F.M.S. Nos. 181, 182 and 183 respectively, deal with particular applications of the above general patent.

(4) B. Wilkinson

British Patent No. 437,928; 1935

Registered in F.M.S. No. 205; 1936

Improvements in or relating to the Manufacture of Rubber Compositions from Rubber Latex

A vulcanising agent, such as sulphur, and an accelerator, are mixed with the latex which is then coagulated. The coagulum is machined into sheet or crepe, and dried. Vulcanisation preferably takes place during storage at atmospheric temperature, the amount and type of accelerator used being such that little or no vulcanisation occurs before or during drying. Complete vulcanisation may take from one or two weeks to several months. If desired the sheet or crepe can be dried at 80° to 120°F., and the subsequent vulcanisation can be hastened by storing the product at the same temperature. Fillers, colouring materials, etc., can be mixed with the latex before coagulation.

(5) Dunlop Rubber Co.

British Patent No. 429,705; 1935

Registered in F.M.S. No. 208; 1936

An improved Method for bonding Rubber and the like to Metal and other Surfaces

The method consists essentially of treating the surface of the rubber with strong sulphuric acid and pressing it against the prepared

surface of the rigid material where it is held under pressure for at least 10 minutes at 148°C. Further heat treatment might be necessary to complete the vulcanisation of the rubber, if this had not been done previously. If the rubber surface contains any grease, oil, etc. it is prepared by treating with a saturated solution of chromium tri-oxide in sulphuric acid. The metal surface must be freed from grease, scale, rust etc. before applying the treated rubber surface.

Applications of this method are found in the manufacture of rubber-lined pipes, tanks, floor boards, etc.

Group IV

(1) H. Schweizer

F.M.S. Grant No. 724, 1932

A new type of Partition Guide and Holder for Coagulating Tanks

Instead of having grooves in the sides of coagulation tanks, the sides and/or bottoms of the tanks are embossed so that the partitions are held in place by the protrusions thus formed. Where the tanks are made of material which cannot be embossed, beadings or mouldings are fastened to the sides and/or bottoms to serve the same purpose. Such tanks, being without grooves, are more easily cleaned during use and are also more easily made.

(2) H. Schweizer

F.M.S. Grant No. 725, 1932

Improvements in and relating to Continuous Sheet Coagulating Tanks

The coagulating tanks are fitted with corrugated sides, instead of straight sides, so that the bend in the continuous coagulum is curved instead of being rectangular. This prevents thick and uneven patches in the resulting continuous sheet. The partitions have suitable beadings which fit into the corrugations. In this way the partitions are held rigidly in place.

(3) Sime, Darby & Co.

F.M.S. Grant No. 729, 1933

Improvements in and relating to Latex Coagulating Tanks

Describes a coagulating tank with corrugated sides, so that continuous coagulum of uniform thickness can be made. The partitions, suitably cut, are held in place by slots in reinforced constructions extending throughout the length of the tank and above the corrugations in the sides. It is claimed that in addition to such tanks being

suitable for making uniform continuous coagulum, the corrugations on the sides confer great strength. Hence such tanks can be made of relatively thinner material, reinforced at top and bottom only.

(4) G. B. Reginato

F.M.S. Grant No. 733, 1933

*Improvements in and relating to Line-ahead Rubber
Sheeting Batteries*

Describes the "Reginato" flat-faced rolls, used for the first pair of rolls in the battery and for other rolls if desired. Also describes the use of floating or "jockey" rollers, placed between the different pairs of rolls on the battery for the purpose of keeping the continuous coagulum at the proper tension.

(5) J. Cochran and C. C. Footner

F.M.S. Grant No. 757, 1933

An improved Machine for the Rolling of Coagulated Latex

The machine has five pairs of rolls of varying diameters placed close together in two groups running at different shaft speeds. An adjustable guide is fitted to keep the sheets straight and there is also an arrangement for raising all the top rolls simultaneously when it is necessary to remove sheet which has stuck. The machine, including its engine if one is used, can be mounted on wheels enabling it to be moved as desired.

(6) G. B. Reginato

F.M.S. Grant No. 772, 1934

*Improvements in and relating to Connecting Troughs between the
Rollers of Rubber Sheeting Machines*

Describes an automatic chute for conveying sheet from one pair of rollers to the next, without requiring a person to move or guide the sheet. The chute is pivoted and controlled by springs, and is fitted with a self-centring device consisting of small wheels inserted into its surface and arranged in herring-bone fashion.

(7) Socfin Company Limited

F.M.S. Grant No. 737, 1933

Drying and/or Smoking Plant

Describes the well known "Socfin" dryer and/or smoke house, by means of which sheet rubber of suitable thinness is dried in less than 48 hours. Drying is in three stages:—(1) a few hours of dripping under shade, (2) almost one day in a well-ventilated chamber heated to 100°—120° F., and (3) almost one day in a closed chamber

at a higher temperature. The chambers can be heated by steam pipes, and smoke generated in smoke pots can be admitted if desired. The design of the building is such that the risk of fire is greatly reduced.

(8) E. W. Savege

F.M.S. Grant No. 770, 1934

*Improvements in and relating to Presses for
Packing Rubber and the like*

Describes a press fitted with hinged side pieces. These prevent lateral bulging of the packed case when pressure is applied.

(9) Dunlop Plantations Ltd.

British Patent No. 428,559; 1934

Registered in F.M.S. No. 209; 1936

*Improved Method and Means for Coating a Metallic Surface
with Fusible Material or Substance*

A container, such as a latex drum, can be given an internal protective coating by spraying it on the inside with fused substance, such as molten wax, which is in this way deposited as a powder on the interior surface. To form a continuous protective film of wax, the sprayed drum is closed and rotated in a bath of hot water. This melts the wax, giving a continuous liquid film which solidifies when the drum is allowed to cool. When the drum is being rotated under water it can at the same time be tested for leaks. In treating a large surface, such as a ship's tank, it is sprayed with the molten wax, and the deposit thus formed is then converted into a continuous film by rapidly playing over it the flame of a blow lamp.

Group V

RUBBER ROADWAYS

(1) D. Graham & R. W. Kendall

F.M.S. Grant No. 726, 1932

Rubber Road Carpeting

A road surfacing material consisting of slabs or strips of vulcanised rubber compound. The slabs should be three or more feet wide, of a length according to the width of the road, and from one to three and a half inches thick according to the volume and nature of the traffic. The slabs are laid on the road in hot asphalt, which is also used to caulk the joins.

- (2) H. W. Cowling
 British Patent No. 406,222; 1933
 Registered in F.M.S. No. 172; 1934
*Improvements in and relating to Roads, Sidewalks,
 Floors and like Surfacing*

Describes a process of applying a rubber latex composition to a road or similar surface. The underlayer on which the composition is to be laid must be dry and its surface must contain depressions to help to hold the composition. After applying an adhesive to the underlayer the latex composition is poured on as a paste and becomes set and vulcanised under ordinary atmospheric conditions. If desired the rubber surface can be reinforced by such reinforcing material as galvanised iron wire netting, which is fixed to the underlayer before pouring on the latex composition. After the composition has set, it can be consolidated by rolling.

- (3) H. W. Cowling
 British Patent No. 409,891; 1933
 Registered in F.M.S. No. 173; 1934
*Improvements in and relating to Roads, Sidewalks,
 Floors, and other Surfacing*

Describes an improved rubber latex composition for making roads etc. Besides the usual compounding and vulcanising ingredients, this composition contains a flocculating agent, such as lime, so that on setting the surface will dry evenly without cracking. This rubber latex composition can be preserved by the addition of casein, or some similar substance, and can then be packed in drums for transport. Also, if desired, part of the water can be removed by evaporation or by centrifuging, the composition being thinned down again before use if necessary.

Group VI

MISCELLANEOUS

- (1) Imperial Chemical Industries Ltd.
 British Patent No. 411,478; 1932
 Registered in F.M.S. No. 179; 1935
Stabilised Rubber Latices

Describes the production of stable rubber latex by adding to fresh or concentrated latex a compound of the class R. O. SO³ M,

where R is an aliphatic hydrocarbon radical containing an alkyl chain of not less than 10 carbon atoms and M is hydrogen, an alkali metal, ammonium or alkyl ammonium.

Literature Cited.

- (1) WILTSHIRE, J. L. *J.R.R.I.M.* **5** (1933) 48
- (2) RHODES, E. &
 WILTSHIRE, J. L. *J.R.R.I.M.* **5** (1934) 196

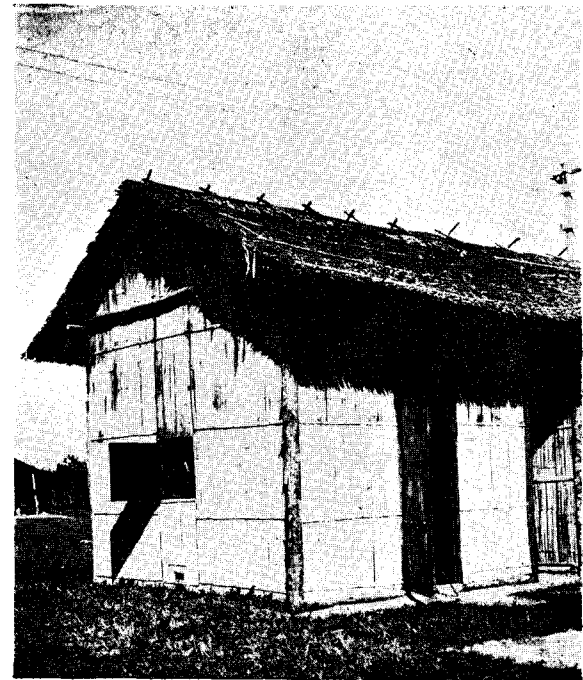
Kuala Lumpur,
12th January, 1937

PLATE I



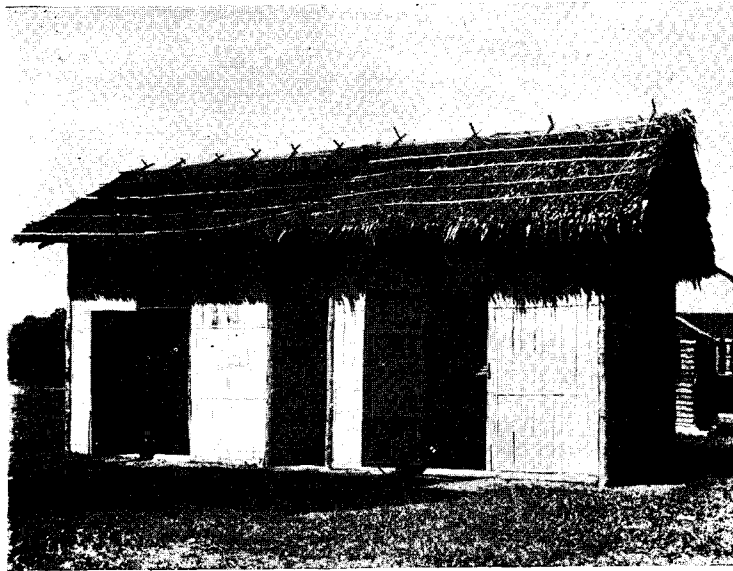
Front view of temporary smoke house. Walls and inner roof are of split bamboo lined with paper.

PLATE II



End view of building shown in Plate III.

PLATE III



View of two temporary smoke houses built side by side with a passage between. They can be used independently of each other.

PLATE IV



Interior view showing furnace. Note the paper lining to the wall.