

April 12, 1938.

A. L. FREEDLANDER ET AL

2,113,724

VENEER ROLL

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FIG 1

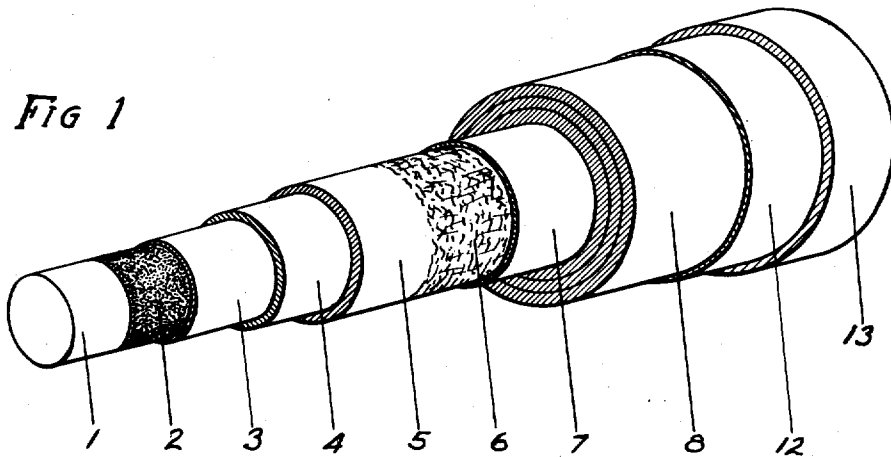


FIG.2.

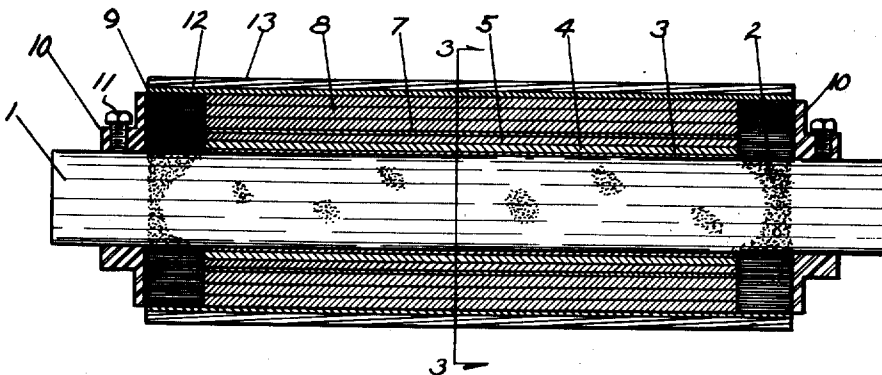
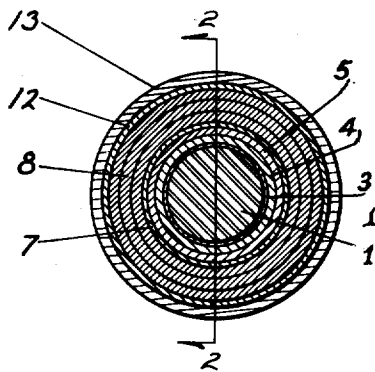
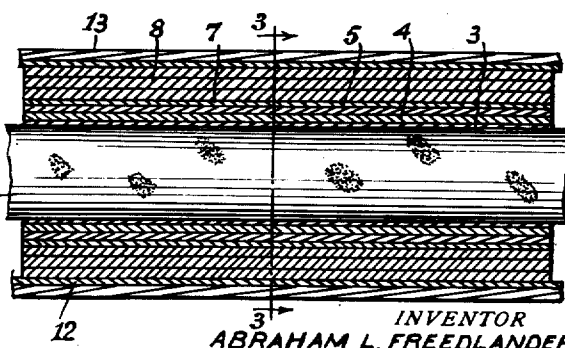


FIG 3

FIG.4.



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UNITED STATES PATENT OFFICE

2,113,724

VENEER ROLL

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Application September 30, 1936, Serial No. 103,415

16 Claims. (Cl. 91—67.8)

Our invention relates to printing rollers.

It is the object of our invention to provide a printing roller, the surface of which is inert to oils, greases and compounds used for cleaning ink from printing surfaces.

It is our particular object to provide a printing surface, the material for which is of a composition that gives the necessary tack, is soft and stable like a glycerine roller, but is resilient and has a long life and does not disintegrate like a glycerine roller.

It also can be cleaned with the ordinary ink cleaning compounds without affecting it, as is the case with a glycerine roller.

Our invention relates to a process of making this roller, as well as to the roller itself.

It is the object of our invention to provide a new composition of covering for the roller so that the roller is soft, tacky and stable, but is inert to acids, oils, greases and materials used for cleaning ink from printing surfaces.

Referring to the drawing:

Figure 1 is a perspective of the roller with various layers cut away to illustrate their relative position. It will be understood that in Figure 1 the thicknesses of the layers are purely diagrammatic and are not accurate. The same thing is true of the other figures in the drawing of this application.

Figure 2 is a section on the line 2—2 of Figure 3 with the axle in elevation.

Figure 3 is a section on the line 3—3 of Figure 2 looking in the direction of the arrows.

Figure 4 is a section similar to Figure 2, showing the roller in its finished condition.

Referring to the drawing in detail, 1 is a steel axle, which is sandblasted as at 2. A coating 3 of hard rubber cement is applied on the sandblasted surface. This cement consists of: Rubber, sulphur, zinc oxide, clay, whiting, mineral oil or palm oil, phenyl-beta-naphthalamine, hexamethylenamine; and benzol, in the proportion of one pound of the foregoing ingredients to one gallon of benzol.

After this cement dried, a thin sheet of hard rubber 4 followed by a thin sheet of soft rubber 5 are wound upon the axle and vulcanized thereon. This vulcanization is by the hot water process, which consists of immersing the axle in a container of hot water under pressure and keeping there sufficiently long to effect a cure. The approximate temperature is from 250 to 260 degrees Fahrenheit and the pressure is from 150 to 200 pounds. The approximate period of time for a roller to be kept in the water is 3 to 6 hours.

After the rubber coverings 4 and 5 have been vulcanized on the steel axle 1, the surface of the sheet 5 is roughened by a wire brush as at 6. Then a coating of cement such as "Duprene" cement 7 is applied to the roughened surface 6. This cement is composed of: A chloroprene derivative of mono-vinyl-acetylene, zinc oxide, magnesium oxide, sulphur, cumar, resin, cotton seed oil; and benzol, in the proportion of one pound of the foregoing ingredients to one gallon of 10 benzol.

There is wrapped upon the cement 7 a sheet of rubber-like material, such as the synthetic rubber "Duprene", marked 8. We prefer, however, a combination of glyptal resin and "Duprene". The "Duprene" and glyptal are mixed in proportions varying from 99 per cent "Duprene" to 2 per cent of glyptal. 8 to 20 per cent of "Duprene" and the balance glyptal have been found to be one of the most satisfactory compositions. This glyptal resin is a reaction product of glycerine and adipic acid.

Any other material which is inert to oils, greases, acids and cleaning materials for cleaning ink from printed surfaces may be employed in the place of "Duprene" or glyptal and "Duprene".

After the sheet 8 is wound upon the roller, we then wind upon the axle at either end of the rubber-like rollers thus built up concentric layers of adhesive tape 9. We place steel collars 10 on the axle 1 adjacent the ends of the layers of adhesive tape 9 and secure these collars in position by the set screws 11. Thereafter the exterior of the roller thus formed is wound tightly with additional adhesive tape. The entire roller is then vulcanized for about 3 hours at 30 pounds steam pressure in the jacket with 50 pounds of air pressure inside the jacket. Air is circulated in the heater.

Upon vulcanization being complete, the steel plates 10 and the tape 9 are removed. The roller is then ground on its surface to a dimension of two inches, leaving a very thin veneer of a very soft face.

Alternatively, there can be applied a cement 12 of "Duprene" and a "Duprene" sleeve, or a sleeve of other similar material designated 13. This sleeve has been previously vulcanized on a mandrel and is removed from the mandrel in inverted position so that its roughened exterior is on the inside and its smooth interior is on the outside. It is blown onto the roller and is vulcanized on the roller. When the end retaining plates and tape are removed, the portion of the sleeve that is

overhanging can be cut away to bring the length of the roller to exact dimensions.

The composition of this covering may range from 8 to 20 per cent "Duprene" and the balance a glyptal resin. To this combination may be added a stabilizer such as a phenol formaldehyde condensation product.

The glyptal makes the surface soft, tacky and stable like glycerine. The "Duprene" adds resiliency to the combination.

Alternatively, this coating of "Duprene" and glyptal resin may be applied to the roller prior to its vulcanization. Under such circumstances, it will be wrapped within the outside adhesive tape prior to vulcanization and its surface ground after vulcanization.

It is the object of our invention to provide the synthetic rubber coatings and base in varying combinations. We comprehend within our invention rubber substitutes such as "Duprene" and "Thiokol". We comprehend the use of a rubber base with a Shore hardness of from 7 to 40 and a synthetic rubber sleeve; a very soft rubber base with a Shore hardness of from 3 to 4 and a synthetic rubber sleeve; a synthetic rubber or natural rubber base with a glyptal and "Duprene" cover combination; a "Duprene" and glyptal base with a cover of "Duprene"; and a rubber substitute base such as a mineral oil base with a cover of "Duprene" or of "Duprene" and glyptal. When we mention "Duprene" we refer to any of the synthetic rubber substitutes and when we refer to "glyptal", we refer to any of the relatively long chain resins having the characteristics of glyptal.

It will be understood that we desire to comprehend within our invention such modifications as come within the scope of our claims and our invention.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In a printing roller, the combination of an axle, a plurality of layers of a resilient material thereon, an outer layer thereover of synthetic rubber-like material inert to oils, greases and materials for cleaning inks from printed surfaces, and a removable sleeve of the same material attached thereto over said outer layer.

2. In combination, in a printing roller, an axle, a plurality of layers of resilient materials of different degrees of hardness vulcanized thereon, a roller body thereover comprising a plurality of layers of synthetic rubber-like material inert to oils, greases and material for cleaning ink from printed surfaces, and a removable sleeve of a similar synthetic rubber-like material secured over said synthetic rubber-like roller body whereby the surface of the roller can be periodically renewed.

3. In combination, in a printing roller, a steel axle having a sandblasted surface, a rubber sleeve vulcanized thereon, a wound resilient sheet forming a resilient body cemented thereto and vulcanized thereon, said body consisting of a synthetic rubber-like material inert to oils, greases and materials used to clean inks from printed surfaces, and a removable sleeve thereover of synthetic rubber-like material that is soft, tacky and stable vulcanized to the surface of said body.

4. In a method of manufacturing a printing roller, winding on an axle a sheet of resilient material to form a roller body, winding adhesive tapes to form abutting shoulders on either end

of said body, securing said tapes against lateral movement, winding the entire roller with additional adhesive tape, and vulcanizing.

5. In a method of manufacturing a printing roller, winding on an axle a sheet of resilient material to form a roller body, winding adhesive tapes to form abutting shoulders on either end of said body, securing said tapes against lateral movement, winding the entire roller with additional adhesive tape, vulcanizing, removing said tapes and grinding the surface of the roller to a uniform size.

6. In a method of manufacturing a printing roller, winding on an axle a sheet of resilient material to form a roller body, winding adhesive tapes to form abutting shoulders on either end of said body, securing said tapes against lateral movement, winding the entire roller with additional adhesive tape, vulcanizing, removing said tapes and grinding the surface of the roller to a uniform size, and applying a sleeve to the surface of the roller.

7. In a method of manufacturing a printing roller, winding on an axle a sheet of resilient material to form a roller body, winding adhesive tapes to form abutting shoulders on either end of said body, securing said tapes against lateral movement, winding the entire roller with additional adhesive tape, vulcanizing, removing said tapes and grinding the surface of the roller to a uniform size, and applying a sleeve to the surface of the roller by vulcanization.

8. In a method of making a printing roller, sandblasting the surface of a steel axle, vulcanizing a rubber sleeve thereon, winding a strip of resilient material inert to oils, greases and materials for cleaning ink from printing surfaces, winding on either end of said axle adjacent either end of said material abutments of adhesive tape, wrapping the entire roller so formed in adhesive tape, vulcanizing, removing the tapes, and grinding the surface of the roller to size.

9. In combination, a steel axle, a printing roller mounted thereon preparatory to vulcanization, adhesive tape collars mounted on said axle adjacent the end of said roller, and metal collars mounted on said axle adapted to position said adhesive tape collars.

10. In combination, a steel axle, a printing roller mounted thereon preparatory to vulcanization, adhesive tape collars mounted on said axle adjacent the end of said roller, metal collars mounted on said axle adapted to position said adhesive tape collars, and an adhesive tape wrapping around said roller and said collars.

11. In combination, an axle and a printing roller mounted thereon comprising a roller with a surface consisting of a combination of "Duprene" and glyptal.

12. A new article of manufacture for use as a printing roller comprising an axle, a resilient rubber-like body, and a coating comprising a combination of chloroprene and a derivative of mono-vinyl-acetylene and a reaction product of glycerine and adipic acid.

13. A new article of manufacture for use as a printing roller comprising an axle, a resilient rubber-like body, and a coating comprising a combination of chloroprene and a derivative of mono-vinyl-acetylene and a reaction product of glycerine and adipic acid, in the proportions of from 8 to 20 per cent of the former and the balance comprised of the latter.

14. A new article of manufacture for use as a printing roller comprising an axle, a resilient

5 rubber-like body, and a coating comprising a combination of chloroprene and a derivative of mono-vinyl-acetylene and a reaction product of glycerine and adipic acid, in the proportions of
10 from 2 to 99 per cent mono-vinyl-acetylene and the balance the reaction product of glycerine and adipic acid.

15. A new article of manufacture comprising a printing roller consisting of an axle, a rubber body, and a coating comprising a chloroprene derivative of mono-vinyl-acetylene and a reaction product of glycerine and adipic acid.

16. A new article of manufacture comprising a printing roller consisting of an axle, a rubber body, and a coating comprising a chloroprene derivative of mono-vinyl-acetylene and a reaction product of glycerine and adipic acid, in proportions of 8 to 20 per cent of the mono-vinyl-acetylene and the balance consisting of the reaction product of glycerine and adipic acid.

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JOSEPH ROCKOFF.

DISCLAIMER

2,113,724.—*Abraham L. Freedlander and Joseph Rockoff*, Dayton, Ohio. VENEER ROLL. Patent dated April 12, 1938. Disclaimer filed July 26, 1938, by the assignee, *The Dayton Rubber Manufacturing Company*; the patentees, joining and concurring.

Hereby enters this disclaimer to claim 11 of said Letters Patent.

[*Official Gazette August 23, 1938.*]

5 rubber-like body, and a coating comprising a combination of chloroprene and a derivative of mono-vinyl-acetylene and a reaction product of glycerine and adipic acid, in the proportions of
10 from 2 to 99 per cent mono-vinyl-acetylene and the balance the reaction product of glycerine and adipic acid.

15. A new article of manufacture comprising a printing roller consisting of an axle, a rubber body, and a coating comprising a chloroprene derivative of mono-vinyl-acetylene and a reaction product of glycerine and adipic acid.

16. A new article of manufacture comprising a printing roller consisting of an axle, a rubber body, and a coating comprising a chloroprene derivative of mono-vinyl-acetylene and a reaction product of glycerine and adipic acid, in proportions of 8 to 20 per cent of the mono-vinyl-acetylene and the balance consisting of the reaction product of glycerine and adipic acid.

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