

UNITED STATES PATENT OFFICE

2,025,432

SHOE FILLER COMPOSITION AND
METHOD OF MAKING

Harry H. Beckwith, Brookline, Mass., assignor to
Beckwith Manufacturing Company, Boston,
Mass., a corporation of Massachusetts

No Drawing. Original application February 6,
1928, Serial No. 252,431. Divided and this ap-
plication September 14, 1929, Serial No. 392,748.
Renewed December 20, 1932

8 Claims. (Cl. 106—3)

This invention relates to compositions partic-
ularly suitable for use as fillers between the in-
ner and outsoles of shoes, more particularly
welt shoes, and within the innersole stitch re-
ceiving rib. It further relates to a method of
making such compositions. Such compositions
should be capable of being easily placed in posi-
tion, be in a plastic condition, and should set
within a reasonable time and without material
shrinkage into a tough, flexible mass. This
mass should be yieldable to the flexing of a shoe
during walking and should not be displaced un-
der the pressure of the foot at any temperature
conditions to which it is likely to be subjected,
and it should not contain material injurious
either to the shoe materials or to the foot. Ma-
terial heretofore used for this purpose has not
been entirely satisfactory as to many of these re-
quirements and has commonly had the further
disadvantage of requiring heat treatment with
its attendant great danger of damage by over-
heating to condition it for application to the
shoe.

The composition of the present invention does
not require heating but may be placed in the
shoe in plastic condition at room temperature.
It sets in about an hour into a flexible, stretch-
able mass, completely filling the space desired and
which can not thereafter be displaced or rendered
plastic under any conditions which are
likely to be encountered in service.

In general, this composition when in condi-
tion to be applied to the shoe comprises an
aqueous dispersion of rubber of natural or arti-
ficial variety, mixed with one or more fillers which
are preferably non-water-absorbent. Various
inert fillers, such as talc, granulated cork, cel-
lulose fiber, asbestos fiber, which are water-
absorbent, may be rendered non-water-absorbent
by treatment with a suitable waterproofing ma-
terial, and then employed in the composition of
the present invention, although one may start
with a filler which is initially non-water-ab-
sorbent, such as ground vulcanized rubber scrap.
When talc, granulated cork, or the like, is em-
ployed, it is preferably treated with melted wax
tailings, bitumen, or other suitable waterproofing
material, before being mixed with the aqueous
rubber dispersion, so that absorption of the wa-
ter of the dispersion by the filler is avoided and
no difficulty in drying out and setting the rubber
is encountered. The composition of the present
invention is plastic when moist, but on drying
the rubber coagulates and the material can not
thereafter be reduced to plastic condition merely

by addition of water or by temperature treat-
ment, or both. In drying, the composition
shrinks very little and clings firmly to the shoe
parts, so that when dry it completely fills the
inseam and can not become displaced as by the
pressure of the leveling operation or made lumpy
due to the non-uniform pressure exerted thereon
during the use of the shoe. It may, moreover, be
made of neutral stock so that it has no dele-
terious effect either on the shoe materials or
on the wearer's foot. It also becomes water-
proof on drying. If the outersole is applied before
it is dry, it acts to cement or bond the outersole
to the innersole, and serves as a waterproof, heat-
insulating layer which will not move, crawl, or
crack in service, and which will stand wear even
when the outersole is worn through. With the
parts so bonded, the shoe will not squeak. It can
also be used on the heel portion to form a smooth
inside heel seat.

By using the composition of the present inven-
tion, the desired rubber compound may be co-
agulated in place in the shoe, as by drying, and it
is possible to do away with the expense, and ex-
plosion and fire hazard, incident to the use of
shoe filler compositions comprising rubber solu-
tions, so-called, containing volatile, combustible,
organic solvents, such as benzol or gasoline.
Again, it is easy to effect a uniform mixture of
an aqueous rubber dispersion with the desired
filling materials to form the composition of the
present invention, and the resulting composi-
tion may be handled and used without difficulty.
When the rubber is coagulated from the resulting
composition, the particles of filler become bonded
together in uniformly distributed relationship
throughout the resulting rubber coagulum.

A typical composition and its method of man-
ufacture is as follows. The rubber dispersion may
be made of reclaimed rubber such as a red and
grey tube stock softened as by means of a suit-
able oil such as pine tar or rosin oil. This re-
claimed stock is warmed up on a standard rub-
ber mill for, say, 35 minutes. It is then trans-
ferred to a cool, jacketed mixer of the Werner
and Phleiderer type with the special blades known
as the Pratt blades, and allowed to pull for 10
minutes, about 85 pounds of the rubber being a
normal charge. Then three two-quart shots
of water are added at intervals of 8 minutes,
while the pulling is continued. Twelve and
three-fourths pounds of grade "M" rosin are
then added and the mixer is then subjected to
steam at about 30 pounds pressure for 30 min-
utes while the pulling and mixing is continued.

The steam is then turned off and cooling water is circulated through the jacket of the mixer and after 10 minutes of pulling another two-quart shot of water is added and after 5 minutes more two quarts more of water are added. Five minutes later 14 pounds and 10 ounces of Wilkenite clay made into a 1 to 1 paste with water are added. After 45 minutes of additional pulling four two-quart shots of water are added at 8 minute intervals, together with 7 grams of preservatives such as thymol, benzoate of soda, or the like. As soon as the water has disappeared from the surface the charge is dumped, the dispersion being complete. Fifteen parts by weight of talc which has preferably been rendered non-water-absorbent as by treatment with melted wax tailings, are then mixed with 85 parts by weight of this dispersion at about 70% solids content, to form the desired composition. The talc, besides acting as a filler, causes the composition to spread smoothly and easily, and the rosin increases its adhesive properties. In place of oil-reclaimed rubber, rubber reclaimed by either the acid or alkali process employed when fabric is to be removed from the old rubber might be used but this should be neutralized so as not to attack the shoe parts or the foot. Due to the difficulty of insuring exact neutralization, however, oil-reclaimed stock is preferred since this is in neutral condition. Likewise, natural latex of the proper concentration may be used in place of the artificial dispersion, though the artificial dispersion of reclaimed rubber is quite satisfactory, since characteristics such as high tensile strength are of no particular moment in a set shoe filler composition. Artificial dispersions of reclaimed rubber, usually being less expensive than latex, may indeed be preferable to latex, which is at present procurable on the market only from comparatively few sources.

This filler composition is applied while moist when it is in a plastic condition. As soon as the water content evaporates, it sets and the rubber coagulates, no heat treatment of the material being necessary at any stage of its application to the shoe. Should it be desired to do so, of course, a vulcanizing agent and accelerator could be added so that the filler might be vulcanized.

So far as certain subject matter is concerned, this application is a division of my application Serial No. 252,431, filed February 6, 1928.

Having thus described the nature of this composition and a procedure by which it may be

produced, it should be evident to those skilled in the art that various modifications might be made or practised without departing from the spirit or scope of this invention as defined by the appended claims.

I claim:

1. A shoe filler composition which is spreadable and plastic at room temperature, comprising an aqueous dispersion of rubber containing rosin mixed with granulated cork, the particles of which are coated with waterproofing material.

2. A shoe filler composition which is spreadable and plastic at room temperature, comprising approximately 85 parts of an aqueous dispersion of rubber of about 70% solids content mixed with about 15 parts of granulated cork, the particles of which are coated with waterproofing material.

3. A shoe filler composition which is spreadable and plastic at room temperature, comprising an aqueous dispersion of reclaimed rubber mixed with granulated cork, the particles of which are coated with waterproofing material.

4. A process which comprises dispersing rubber along with rosin in water and adding to the aqueous dispersion granulated cork, said cork granules having been precoated with waterproofing material.

5. A shoe filler composition which is spreadable and plastic at room temperature, comprising an aqueous dispersion of rubber mixed with waterproof, granulated cork, the particles of which are coated with waterproofing material.

6. A composition which is especially adapted for filling shoe bottoms and which is spreadable and plastic at room temperature, comprising an aqueous dispersion of rubber mixed with waterproof, granulated cork, the particles of which are coated with thermoplastic waterproofing material.

7. A composition which is especially adapted for filling shoe bottoms and which is spreadable and plastic at room temperature, comprising an aqueous dispersion of rubber mixed with waterproof, granulated cork, the particles of which are coated with wax.

8. A composition which is especially adapted for filling shoe bottoms and which is spreadable and plastic at room temperature, comprising an aqueous dispersion of rubber mixed with waterproof, granulated cork, the particles of which are coated with bitumen.

HARRY H. BECKWITH.