

UNITED STATES PATENT OFFICE.

MAURICE GANDY, OF NEW BRIGHTON, COUNTY OF CHESTER, ASSIGNOR
TO THE GANDY BELT MANUFACTURING COMPANY, (LIMITED,) OF LIVER-
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BELT FOR DRIVING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 356,933, dated February 1, 1887.

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To all whom it may concern:

Be it known that I, MAURICE GANDY, a
subject of the Queen of Great Britain, resid-
ing at New Brighton, in the county of Ches-
ter, England, have invented certain new and
5 useful Improvements in Belts for Driving
Machinery, of which the following is a de-
scription in such full, clear, concise, and ex-
act terms as to enable any one skilled in the
10 arts to which my invention belongs to make
and use the same.

My invention relates to the manufacture of
belts composed of cotton, canvas, or duck.

It has been and is now a common and well-
15 known practice to make belts for driving ma-
chinery of cotton, canvas, or duck by first
folding the canvas on the line of its warp to
the desired width and thickness, and to then
stitch it either zigzag or longitudinally, the
20 belt being subsequently soaked in linseed-oil,
after which it is pressed, stretched, and dried,
and is then usually covered with a coat of
paint. In the manufacture of these belts, as
above stated, the oil is used to protect the belt
25 against dampness and atmospheric changes,
to soften the canvas, and keep it from mildew-
ing. Without the oil the belt would be im-
practicable, for the reason that it would ex-
pand and contract by reason of atmospheric
30 changes, absorb water and mildew, cut itself
to pieces on the pulley when made of hard
woven canvas, as it necessarily must be to be
of any practical value, the belt being other-
wise so stretchy and sleazy as to be wanting in
35 gripping power upon the pulley.

Now, the object of my invention is to dis-
pense with the use of the oil in the manufac-
ture of the belt, and still retain those qualities
in the belt which are imparted to it by the
40 oil, the oil being a dirty and expensive ele-
ment in the manufacture of the belt.

To accomplish the above-mentioned object,
I take the canvas before it is made in the form
of a belt and soak it in a solution of soap and
45 water, in the proportion of about one pound
of soap to one gallon of water, the canvas be-
ing then allowed to dry. I then soak it in a
solution of alumina sulphate and water mixed
in the proportion of about two pounds of the
50 alumina to one gallon of water, the canvas be-

ing again allowed to dry. The canvas is then
made in the form of a belt, and stitched after
the ordinary method of making such belts.
The surface of the belt may then be painted or
not, as circumstances may require. I prefer 55
to paint it, as the belt not only wears better
when painted, but it also draws better upon
the pulley. A belt made in this way is thor-
oughly proof against dampness, atmospheric
changes, mildewing, and cutting upon the pul- 60
leys, as much so as if treated with oil, and is
very much cheaper and cleaner to manufac-
ture. The canvas may, of course, be treated
with the soap-and-water solution and also with
the alumina-and-water solution after being 65
made in the form of the belt, and the alumina
solution may be applied before the soap solu-
tion has dried; but I prefer to make the belt
as first above stated, as I think it yields more
satisfactory results. There are also other 70
waterproofing agents now well known to
those skilled in the arts appertaining to such
matters that may be used as a substitute for
that mentioned—as, for instance, the canvas
may first be dipped in a solution of rock-alum 75
and acetate of lead, to which is added an ounce
of acetic acid to each gallon of said mixture,
and the canvas subsequently passed through
lime-water; or the canvas may be passed
through a solution containing about a pound 80
of potash, alum, acetate of lead, bicarbonate
of potash, and sulphate of soda, in equal parts,
to a gallon of water added to and thoroughly
mixed with a solution of soap, substantially
such as described, and then dried. After the 85
treatment of the belt as above described, it may
be passed through a solution of equal parts of
hydrochlorate of ammonia (sal-ammonia) and
borax, and then dried as before, thus render-
ing the canvas practically fire-proof; but I 90
prefer the solutions and methods of treatment
I have specified as yielding very satisfactory
results. My invention is, however, intended
to include all that class of agents now well
known to the arts as suitable for this purpose. 95

In making the solutions above specified, I
have given the proportions which I have found
thus far to yield the best results. Further ex-
perience may show that these proportions may
be varied somewhat to advantage without 100

departing from the spirit or substance of my improvements in the belt.

In making the belt the canvas may, of course, be woven the width the belt is to be when finished, or it may be woven in wide sheets or bolts and folded to the width and thickness desired in the belt; but I prefer to have it woven just the width I want the belt to be when finished, with a selvage on each edge, and to lay these layers one on top of the other until the desired thickness and strength of belt is obtained.

A belt made as above described possesses not only the qualities I have above pointed out, but it will resist also a high degree of heat, thus protecting it not only against the barometrical changes but also against thermal changes, the belt being practically fire-proof, as well as water-proof. Indeed, a belt treated with soap and alumina sulphate, as hereinbefore set forth, is absolutely proof against thermal changes. A belt treated with oil subjected to a high degree of heat will eventually lose its initial pliability and elasticity as the oil becomes dry; besides it is always inflammable, whereas a belt treated with soap and alumina sulphate may be subjected to a high degree of heat for any length of time without its initial pliability and elasticity being impaired, and it is never inflammable.

Having now described my invention, I claim and desire to secure by Letters Patent the following:

1. A water-proof belt for driving machinery, made of fibrous or textile material, treated with soap and alumina sulphate, or their equivalent, substantially as and for the purpose set forth.

2. A water-proof belt for driving machinery, made of fibrous or textile material, treated with soap and alumina sulphate, or their equivalent, and also treated with a fireproofing agent, such as hydrochlorate of ammonia and borax, substantially as described.

3. A water-proof belt for driving machinery, consisting of the following elements in combination, viz: hard woven canvas or duck, two or more thicknesses of such canvas or duck stitched together, and a waterproofing agent, such as alumina sulphate and soap, and a coat of paint with which the belt is covered, substantially as described.

MAURICE GANDY.

Witnesses:

GEO. P. VEST,

W. J. SULIS,

U. S. Consulate.