

# Improvement in Bad Clothing

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PATENTED JUN 21 1870

FIG 1

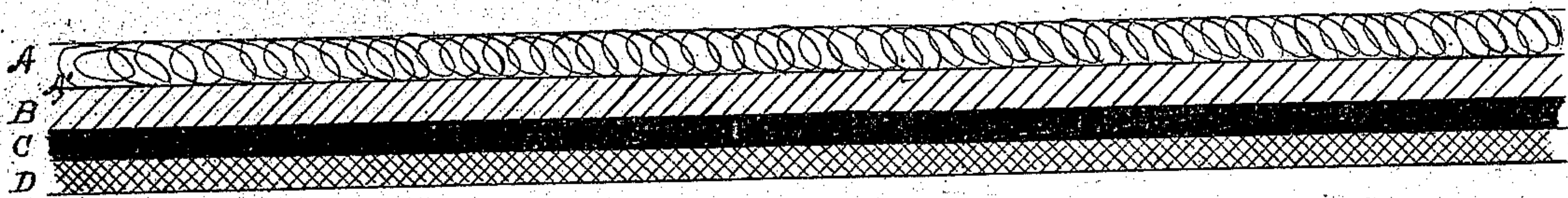
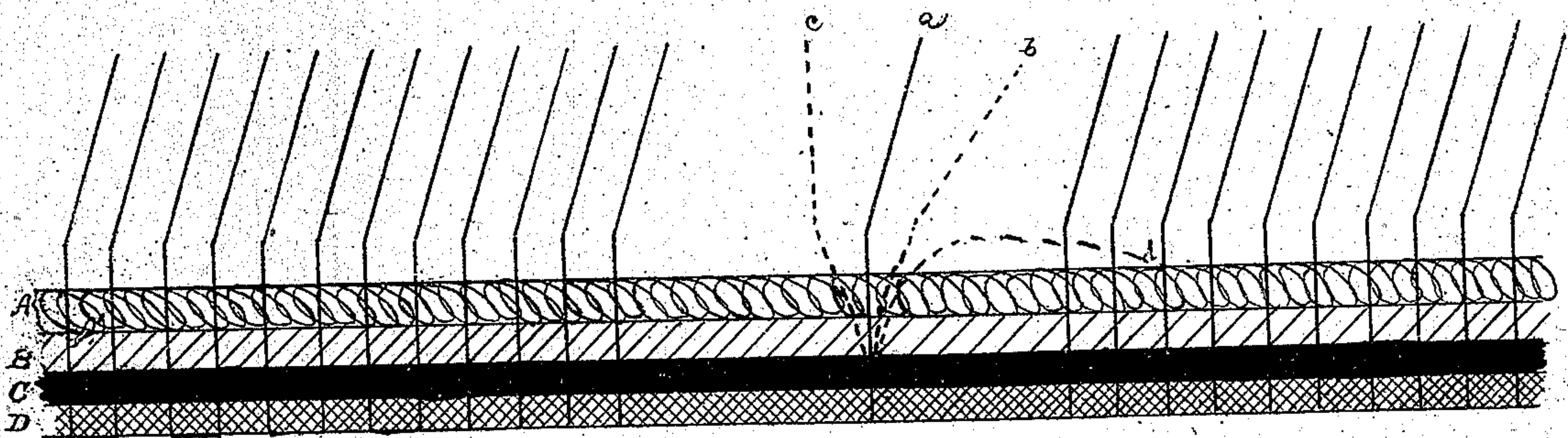


FIG 2



Witnesses

Jas M Smith

A W Eate

Inventor

Frank Prescott



# United States Patent Office.

ARTEMAS W. GATES, OF NEW YORK, N. Y.

Letters Patent No. 104,445, dated June 21, 1870.

## IMPROVEMENT IN CARD-CLOTHING.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ARTEMAS W. GATES, of the city of New York, in the State of New York, have invented certain new and useful Improvements in Card-Clothing, of which the following is a specification.

My invention relates particularly to the backing or body in which the wire is set, forming a card, and

The object of my invention is to secure at a low cost, and by a single fillet, a backing that shall aid the wire in performing its functions, protect the teeth from breaking, and overcome generally the objections which apply to leather when used for card-backs.

The prime qualities needed to secure the best ends in card-clothing are strength, pliability, uniformity, and elasticity.

Leather and cloth, either singly or combined with elastic and non-elastic substances, have been largely used for the purpose.

The objections to leather lie principally in its want of uniformity and want of elasticity.

A strip of leather will be finer or coarser grained, and will stretch more or less, according to the part of the animal from which it is taken, which, together with the callous spots, and imperfections caused by abuse to the animal, and also imperfections of tanning, renders it difficult to clothe a cylinder with a perfectly uniform leather.

### Description of Accompanying Drawing.

Figure 1 is a transverse sectional view of my card-backing.

Figure 2 is a transverse section of the card completed.

In the construction of my card-backing, I take a burlap, B, made from jute or some other very cheap fabric of a similar nature, for the center, and open one side, by the ordinary process of felting, which may be aided by applying a thin solution of glue or other cement; at A, I affix and intimately join a layer of fine wool, A, which forms the face of the card, and a very soft and elastic cushion for the teeth, just at the point where they are most liable to break or become bent by use.

Upon the other side of the burlap I place a thin sheet of India rubber, C, properly prepared for vulcanization.

I then add a strong and firm fabric, a heavy duck, D, being preferred, which last is inelastic, but, as it is on the back of the card where the wire enters, it does not hinder or prevent the full action of the elastic substances, which impart to teeth that life and spring so much desired.

These materials, being placed together in the manner described, are then laid between steam-tables,

and pressure applied sufficient to bring them into a very close union, and then, by means of heat, which is controlled in the ordinary way, the rubber becomes thoroughly vulcanized, and the compound body united into a single homogeneous fillet, possessing the desirable qualities above mentioned, being strong enough for all practicable purposes, very pliable, perfectly uniform, and highly elastic where the elasticity is most needed.

The wire is then set with any ordinary machine, and in the ordinary way, except that a needle, smaller by one or two sizes, is used, than is customarily employed in setting the same-sized wire in leather.

If the tooth *a* is deflected to *b* or to *c*, it will, through the action of the parts combined, return again precisely to *a*.

The short arm of the lever is within the firm fabric D, and, instead of there being a single fulcrum for the wire to bend over, there are many fulcrums graduated through the compound fabric, so as to protect the wire from breakage. This is shown by bending the tooth *a* to the face *d*, when it will be found to have taken something of a curve instead of an angle.

My backing has sufficient body and tenacity to hold up the teeth to their work, and prevent them from dragging under the heavy work to which American manufacturers subject their cards; the teeth are closely grasped, and yet, by its elastic qualities, more than usual life and pliability is given to the wire, and it will bear more deflecting without being bent or broken, and return exactly to place each time.

I am aware that the materials of which my backing is composed, with the exception of the coarse, cheap fabric or burlap, have before been used for the purpose in some form, but the most distinctive feature of my backing, and one that I claim to be entirely novel and important, and to distinguish it from all others, is the peculiarity of its construction, being made up of differently-constituted layers of cloth and gum, each having a distinct function to perform, affording a very strong and firm base where the wire enters, and rising to a soft and elastic cushion on the face, and the whole united in a peculiar manner into a single uniform fillet, and their combined action being such as to secure the greatest amount of benefit from the elastic parts in aiding the wire to perform its work without detriment to the strength of the card.

I might vary my process of manufacture by inserting a second layer of India rubber between the burlap and the wool, and use a woven cloth instead of felt, but I do not recommend this course.

My backing varies in weight, but ordinarily I make it to weigh about six ounces per square foot, and as follows:



Wool, one ounce; jute or hemp, two ounces; gum, one and a quarter ounce; and cotton, one and three-quarter ounce.

I do not consider it indispensable to use vulcanized India rubber in the construction of my backing, as some other elastic substance or cement might be employed.

Having now fully described my invention,  
What I desire to secure by Letters Patent, is—

1. The central fabric B of the nature described,

faced with a layer of soft fiber, A, as indicated, and having a firm fabric, D, attached to the back by means of a thin layer of gum, substantially as specified, and for the purposes set forth.

2. The above-described compound fabric, set with wire for the purpose of card-clothing.

A. W. GATES.

Witnesses:

J. R. STURGES,

R. C. MCCLURE.