

# UNITED STATES PATENT OFFICE.

ALGERNON K. JOHNSTON AND LORENZO DOW, OF NEW YORK, N. Y.

## IMPROVED FABRIC FOR ENVELOPES FOR CARTRIDGES.

*Specification forming part of Letters Patent No. 42,668, dated May 10, 1864.*

*To all whom it may concern :*

Be it known that we, ALGERNON K. JOHNSTON and LORENZO DOW, of the city, county, and State of New York, have invented a new and Improved Method of Manufacturing the Envelopes of Cartridges, whereby the requisites of strength, durability, and firmness of texture, so necessary in breech-loading arms, are given to the cartridge in a better and more economical manner than has ever before been done.

The great demand at present existing for metallic cartridges to be used in pistols loading at the breech has given rise to various experiments on the part of inventors, looking to the production of a cartridge that shall combine the same elements of strength and imperviousness to fire possessed by metallic cartridges as now made, and yet be manufactured without the use of copper or other as expensive material.

It has been found, moreover, that it is impossible to use in the copper cartridge a quantity of gunpowder sufficient to give the greatest possible penetration to the missile, because the use of more than a certain limited quantity of powder causes so great an expansion of the metallic covering of the cartridges that it is impossible to withdraw it readily from the barrel after the explosion.

To obviate these difficulties, cartridges have been made of strong brown paper, and of thin sheets of brass, and of brass and paper combined; but it is found that paper of every kind, and all fabrics made from vegetable fiber, are so easily penetrated by the fire from the gunpowder that the passage of gas and of flame, even at the instant of the explosion, is admitted through the crevices always existing, to a greater or less degree, in breech-loading arms where the parts of the barrel are joined together; and it is, moreover, found that in such cases the texture of the covering is injured to such an extent that it is impossible to remove the remainder from the barrel readily after the explosion.

The use of thin strips of brass or other metal in combination with the paper makes a much better cartridge, but it is much more expensive.

After many experiments, we have estab-

lished the fact that paper or other fabric of vegetable fiber can be so treated and prepared as to render it, when used as a covering for a cartridge for fire-arms, entirely impervious to the fire from the gunpowder, and apparently uninjured by the explosion of the same within the gun; thus retaining its strength and form, and answering every requisite found in the metallic cartridges heretofore used.

To enable others skilled in the art to make and use our invention, we declare the following to be a full and exact description thereof.

We take paper, cloth, or other fabric or tissue, and soak it in melted bees-wax, tallow, oil, paraffine, soap, or glue, or in a mixture of any or all of these, until it is thoroughly saturated, and then form the covering of the cartridge with such saturated material, filling it with powder, and attaching the bullet in the usual manner, and making a minute aperture at the end of the cartridge for the passage of fire from the cap or fulminate used to explode the charge. The covering may be first formed in due shape for filling with powder, on a mandrel or otherwise, and then be soaked, as above described, until thoroughly saturated, when it may be filled with powder and the bullet attached in the usual way.

Upon firing a gun loaded with a cartridge so made, the heat is so rapidly absorbed by the saturated material composing the covering of the cartridge, and the material itself by such saturation has been rendered so firm, that it is impervious to the burning particles of powder, and permits no gas to escape through its tissue. The envelope is thus left comparatively uninjured by the firing of the gun, and may be readily removed thereafter to give place to another cartridge.

In practice, we have found that both bees-wax and paraffine answer the purpose well, and we give the preference to paraffine, using paper for the basis of the covering; but we are aware that other substances of an oily or penetrating nature sufficient to fill all the interstices of the covering, and capable of the rapid absorption of heat, may be used with similar effect.

We do not claim the application of any of the above-named substances to the exterior of the cartridge as a covering therefor, or to pre-

serve the same, or to render the same water-proof or otherwise; but

We claim as our invention and desire to secure by Letters Patent—

The application to the fabric or tissue forming the covering of cartridges of a substance or preparation which shall thoroughly fill the interstices thereof, and render it firm and impenetrable to the burning gases within the chamber of the gun at the instant of discharge,

using for that purpose the aforesaid substances, as above described, or any other of similar nature which will produce the intended effect.

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Witnesses:

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