# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN SKIN CARTRIDGES.

Specification forming part of Letters Patent No. **33,611**, dated October 29, 1861.

*To all whom it may concern:*

Be it known that I, WILLIAM MONT STORM, of the city and State of New York, have made certain new and useful Improvements in the Production of Cartridges, of which the following specification embraces a full and fair description.

The points of my invention relate to improvements in the manufacture of a species of cartridges already known as "skin" cartridges, being made of "gold-beater's skin," or more strictly of animal-gut, pigs' intestines being usually employed. The guts being properly cleaned, &c., as if for sausage-making, I soak them in a weak solution of soda or potash, to remove any surplus animal fat that may be so incorporated with the fiber of the intestine as to endanger the integrity of the latter, should mechanical means, as scraping, be resorted to for its removal. I then rinse away the soap thus partially formed, and steep the gut in a strong solution of acetate of lead, or alum, or both, or tannin, for objects presently understood.

The animal-gut will stretch while wet to any required degree to form a cartridge, at least for every species of small-arms, and form when dry a seamless bag to contain the powder-charge, and so much of the ball, &c., which closes the mouth of the bag, as is necessary for the connection and completion of the whole. The skin is stretched while wet, as stated, over formers of smooth wood, metal, or other proper material, of such size and length as it is required the cartridge shall be, on which formers the gut is allowed to dry sufficiently to retain its form prior to removal.

The removal of the animal-fat is necessary, as after a time it would become rancid and produce decay. Its removal is also necessary to permit the permeation of the gut by the astringent solution above referred to, whose purpose is to toughen and shrink the fibers of the gut more firmly together, and thus render the cartridge less easy to rupture longitudinally, a defect to which they have hitherto been liable, particularly near the bottom, where from the necessarily greater stretching the skin is thinner, and whichever way the portion of gut forming a cartridge is stretched over its former, it tends to leave a "grain" running the way of its length. To strengthen the cartridge in this respect, the practice has been hitherto to bind it with a cotton thread, wound around it to and fro, (constituting something like hoops,) nearly its entire length.

These threads not only give too much asperity to the exterior of the cartridge for easy loading in many cases, as in a "chambered" arm, when the arm is getting foul, but parts of the thread remain very frequently in the barrel unconsumed, and, being hard, interfere with the passage of the bullet, and cause unnecessary deviation of the projectile from the intended line of flight. In lieu of the thread, and to avoid its defects, I employ a secondary thickness of animal-gut, or gutta-percha, to surround the cartridge, either its entire length, or (particularly) near the bottom, and enveloping it at right angles to its length, or spirally, in the form of a fillet, in both cases the grain of this outer wrapping crossing that of the inner bag, and made permanently adherent to it. In using a spiral fillet as above, and which is the form I prefer, the fillet may also be satisfactorily employed for tightening and tying the mouth of the bag firmly over the base of the ball, a proper cannelure being left in the latter for the purpose, and thus the tying need not be a separate operation.

Between the powder and bullet, and within the bag, I place a wad of soft cork or felt, which, expanding by the explosion, more effectually wipes out the dirt of the immediately previous discharge than could the ball alone by its passage through the barrel.

The skin bags should not be quite dry when filled, but sufficiently damp (not wet) to be pliable—principally for convenience in tying, and to the end that their shrinkage may cause them to compress upon the contained powder and render the cartridge firm to the feel.

Finally, to render the complete cartridge water-proof, or, at least, to resist dampness, a flexible, adhesive, combustible, and rapidly-drying varnish requires to be applied. Caoutchouc is too fouling, and lac also, beside being too brittle, both having hitherto been used. I find, however, that native gutta-percha dissolved in rectified naphtha, or in chloroform, constitutes a varnish that answers the ends named. Gutta-percha cut into thin scraps will dissolve rapidly in hot melted wax, (or stearine,) and this, thinned to suit by spirits

of turpentine or naphtha, answers, being applied warm, as a substitute, and leaves more gloss.

For the filling of the lubrication cannelures of the bullet, I prefer three parts best tallow, two parts wax, (vegetable preferred,) and one part native gutta-percha, melted together in the order named, and the scum removed while near the boiling-point. This compound will not scale off from the bullet, or grow too soft, or run, under any climate, and is but little greasy to the touch.

Having now described my improved skin cartridge, I claim therein as new and useful—

The application of the spiral fillet of gut adherent to it, in lieu of using thread, muslin, or other material of twisted fibers, dissimilar in nature from the skin body of the cartridge, as heretofore essayed, and possessing the objectionable features explained, all substantially in the manner and for the objects given.

WM. MONT STORM.

Witnesses:
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