(Model.)

S. W. WARDWELL, Jr.

Manufacture of Sewed Articles of Leather.

No. 235,050. **Patented Nov. 30, 1880.**

Fig. 1.

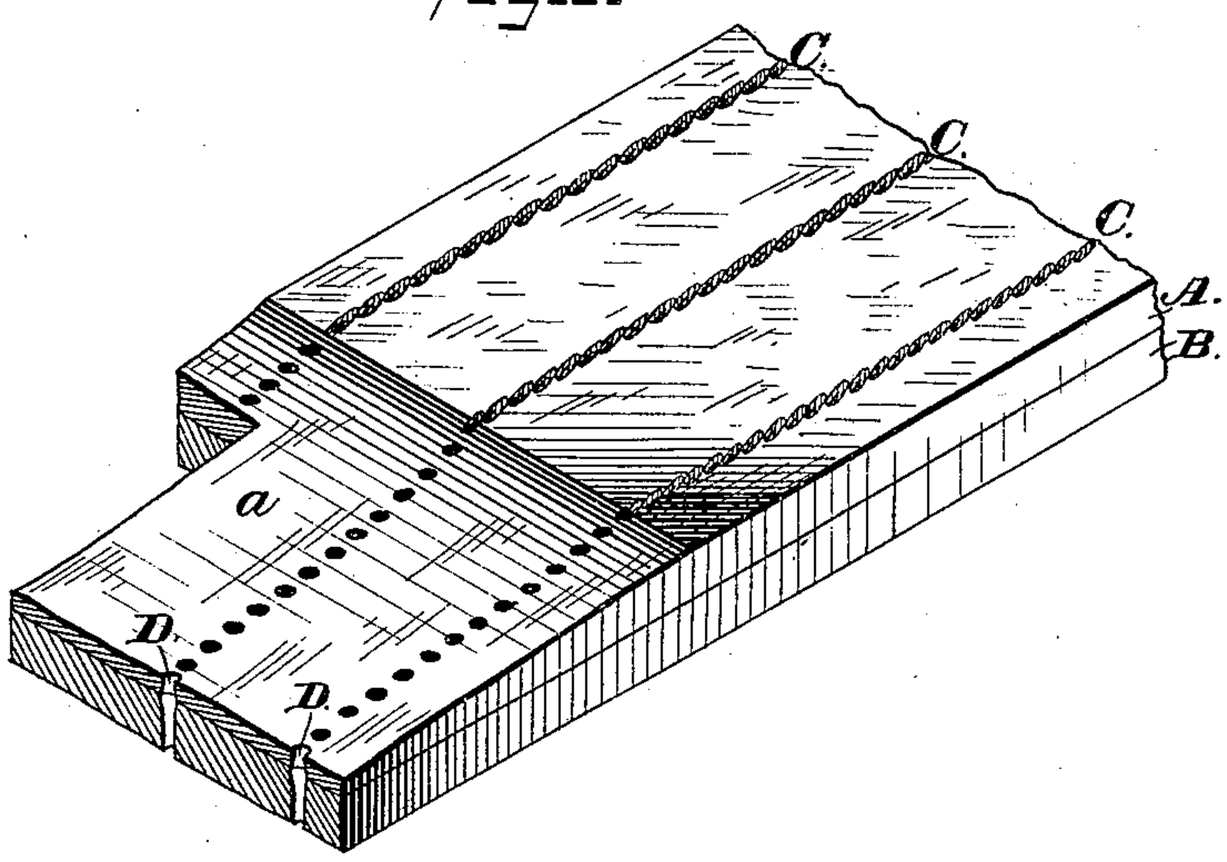
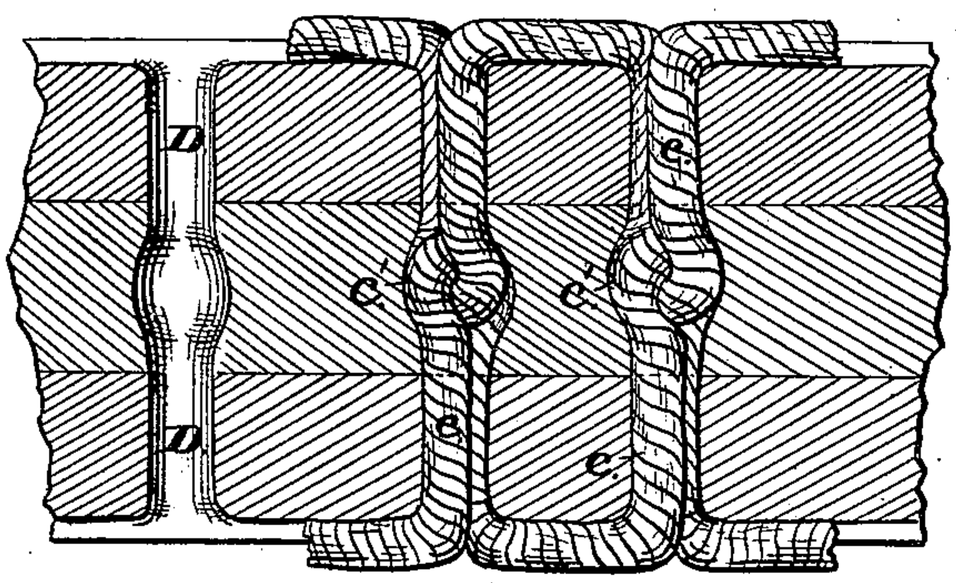


Fig. 2.



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SIMON W. WARDWELL, JR., OF PROVIDENCE, RHODE ISLAND.

MANUFACTURE OF SEWED ARTICLES OF LEATHER.

SPECIFICATION forming part of Letters Patent No. 235,050, dated November 30, 1880.

Application filed April 8, 1880. (Model.)

To all whom it may concern:

Be it known that I, SIMON W. WARDWELL, Jr., of Providence, Providence county, Rhode Island, have invented Improvements in the Manufacture of Sewed Articles of Leather, of which the following is a specification.

My improvement relates to a class of leather fabrics used in the manufacture of harness, belting, and for other purposes, and especially in fine work heretofore sewed by hand, and in which several thicknesses of leather are secured together by being sewed with waxed threads; and my invention consists of a fabric composed of two or more superposed pieces of leather sewed together with two threads which are covered with wax and are interlocked between the surfaces of the fabric and completely fill the perforations through the fabric in which the two threads are respectively inserted from opposite sides.

It is not new to join superposed pieces of leather by machine-sewing with waxed thread; but as heretofore practiced the thread has been locked at one side of the fabric either by a chain-stitch or by another thread lying nearly parallel with or upon the surface of the fabric. The rib or chain of thread formed upon the surface of the fabric by either of these modes of sewing is especially exposed to wear, and when the interlocked portion of the thread or threads is cut or worn away the stitches are disconnected into a series of separate loops having but little or no hold upon the fabric. In such modes of stitching the tension of the thread is usually insufficient, because of the difficulty in drawing a tight tension upon a thread carried double entirely through the several thicknesses of leather.

Attempts have heretofore been made to fasten together several pieces of leather by waxed threads interlocked between the exterior surfaces of the superposed pieces; but in these attempts the wax has been dissolved, stripped, or scraped from the thread in the act of sewing, the thread has been untwisted, and the perforations through the fabric have been made larger than the heads formed by the bights of the interlocked threads, which therefore were loosely contained in said perforations.

The characteristic features in my improved fabric which make it distinguishable and give it superiority are, first, the union of the several thicknesses of leather by two threads interlocked within the body of the fabric, whereby the interlocked portions are protected from wear, and whereby any wax displaced from the surface of the interlocked portion is lodged against the central portion of the wall of the perforation in which the threads are deposited; second, the presence of a wax coating upon all portions of the threads, both those which are visible externally and those contained within the perforations, whereby the absorption of water and consequent rotting of the threads are effectually prevented; third, the complete filling of the perforations of the fabric by the waxed threads, which thus present the appearance of and are in fact substantially like glued tenons, serving by their adhesion to the walls of the perforations to hold together the several thicknesses of leather of which the fabric is composed and preventing by the complete filling of the perforations the entrance of moisture therein; fourth, the smallness of those parts of the perforation in which the parallel legs of each loop of thread are respectively contained in comparison with the central part of the perforation, which is distended by the interlocking of the loops, the parallel legs of each loop completely filling the awl-perforation on either side of the center thereof respectively, and the distended central part of the perforation being also completely filled by the interlocked bights of the loops, such interlocking forming a head so much larger than the awl-perforation that it holds both loops and prevents either of them from being easily drawn out.

In conducting the manufacture of my improved fabric it is necessary that the machine employed shall be capable of forming a lock-stitch, and that the mechanism of the machine shall be such that the waxed threads shall be kept from contact with any oiled surfaces, which would dissolve the wax, and shall not be drawn over any relatively stationary surface or abrupt obstruction, which would scrape the wax off. It is especially desirable that there shall be the least possible movement of the thread while it is bent in the eye of the needle, and hence that there should be the greatest possible reduction in the extent to

which it is carried through the material by the needle. The needle-thread should be passed through the material only far enough to permit it to be seized beneath, and the needle should ascend before the loop is made, so that the thread need not be drawn along or in contact with the needle or through the eye of the needle while the latter is within the perforation. By the employment of these precautions the wax will neither be scraped nor dissolved off the thread.

Finally, the perforations through the fabric should be made by an awl of small area in cross-section, and the needle-thread should be carried by a very thin needle. Any tendency of the downwardly-projecting portion of the needle to bend or spring out of alignment with the looper may be prevented by the use of a gage beneath the fabric. A needle may therefore be used which is proportionately so fine that the awl-perforation need only be large enough to receive the thread alone, the fabric being sufficiently elastic to yield when the needle and its thread enter the perforation, and being sufficiently resilient to close around the threads after the needle is withdrawn.

In the accompanying drawings, representing a fabric embodying my invention, Figure 1 is an isometrical perspective of a fabric composed of superposed strips or sheets of leather secured together by two waxed threads interlocked within the body of the fabric, a portion of the surface of the fabric being shaved off, and exhibiting the shape in cross-section of the perforations and the complete packing of the perforations by the inserted threads. Fig. 2 is a transverse section of the fabric through a line of stitches upon a magnified scale, further illustrating the packing of the perforations by the waxed threads and the shape of the perforations in which the threads are packed.

It will, of course, be understood that the number of stitches to the inch and the number of thicknesses of leather of which my improved fabric is composed may be varied at will without departing from my invention.

The drawings represent a fabric made of two superposed sheets of leather, A and B, secured together by three parallel rows of stitches, C C C.

A portion, *a*, of the fabric is represented as having been shaved down from the surface for the purpose of exhibiting the contour of the perforations D and the complete filling of these perforations by the looped portions *c* of the waxed threads.

It will be observed that the interlocked bights form the knot or head C′, which enlarges the middle part of the perforation and serves to hold the stitching in the fabric.

My improved fabric may be manufactured by the employment of any suitable mechanism having the capacity of operation hereinbefore set forth; but that which I prefer, and which I have invented for the purpose, is fully shown and described in Letters Patent of the United States No. 218,464, dated August 12, 1879, granted to me for improvement in wax-thread sewing-machines.

I claim—

1. As a new article of manufacture, a fabric made of two or more thicknesses of leather, sewed together by two wax-coated threads, respectively entering from opposite sides within and completely filling transverse perforations in the fabric and interlocked between the opposite surfaces thereof, substantially as and for the purpose set forth.

2. The combination, in an article of leather, of two or more layers of leather with two interlocked wax threads, respectively inserted from opposite sides in and tightly filling series of openings through the superposed parts of the leather, and by their interlocking forming heads larger in cross-area than those parts of the perforations in which the parallel portions of the thread are packed, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SIMON W. WARDWELL, JR.

Witnesses:

NELSON P. EDDY,

FRED. H. BISHOP.