UNITED STATES PATENT OFFICE.

STEPHEN M. ALLEN, OF WOBURN, MASSACHUSETTS.

IMPROVED BELTING FOR MACHINERY.

Specification forming part of Letters Patent No. **53,095**, dated March 13, 1866.

To all whom it may concern:

Be it known that I, STEPHEN M. ALLEN, of Woburn, in the county of Middlesex and State of Massachusetts, have invented a new and Improved Belting for Running Machinery in Manufactories or for other Purposes, which I call "Leather-Pulped Belting"; and I hereby declare the following to be a full, clear, and exact description of the same.

The composition I use for the manufacture of this new belting is not dissimilar in some respects from pulped-leather fabrics heretofore described and patented by me, but it is differently manufactured and used.

The great cost of ordinary leather belting and the improvements and success attending the india-rubber belting, together with long experience in the practical use of belting, has induced me to try a great many experiments in substituting for these articles one of much less cost, and answering, at least in many particulars, the same purpose. During these experiments I have examined the effects due to the cohesion of the belt to the pulley as well as those of the strain upon it, and I have ascertained that one of the great difficulties attending the use of both ordinary leather and india-rubber belting is their tendency to stretch over the pulley, which in case of leather is due to its porosity, and in the case of rubber belting to the textile body with which it is combined. Another difficulty arises from the roughness of the surface of either, which diminishes frictional contact with the pulley, which it has been found is the more perfect the smoother the surface. I am aware that scientific men have in some cases denied the fact that smoothness of a band is of any practical advantage, but I am satisfied that the expulsion of the air between the belt and the pulley causes the two to adhere more firmly, while the unwinding of the belt from the pulley whose surface is always perfectly smooth is quite as easy as though the belt were rough. It will be understood now that the best conditions of a belt are smoothness, non-porosity, and non-extensibility, so that a vacuum shall be formed between the belt and the pulley during the revolution of the latter.

These desiderata I have in a measure attained in the manufacture of my leather-pulped belting, for I make the same with much less tendency to stretch than either of those named, while I can have a perfectly smooth surface by dispensing with the rough canvass which is the foundation of india-rubber belts. In addition to this, I can make a pulped-leather belting perfectly water and air proof, if need be.

To enable others to make and use my invention, I shall now proceed to describe the manner in which the same is or may be carried into effect.

I take the ordinary scraps or waste of tanneries, or scraps of untanned skins, and pulp the same in the ordinary manner by paper-pulping machinery. With these scraps are mixed, in proper proportions, pulped vegetable fiber, preferring the ordinary long-lined fibers, like flax and hemp, in which the gummy matters with which they are permeated are preserved, or other resinous or gelatinous matter is added, as circumstances may dictate. I then work the same off in sheets, either on an ordinary paper-mill suitable for the purpose or through and between rollers expressly made for the purpose, somewhat similar to the machinery used for making india-rubber sheets.

Sheets thus produced may be used single or folded or cemented together by the adhesiveness of the resinous or gelatinous matter already in the sheets, or by the aid of additional adhesive substances suitable for the purpose and by the aid of any proper machinery to produce the required result. Sometimes it is necessary to expose the product to heat to expel excess of moisture.

Having thus described my invention, I claim—

As a new article of manufacture, belting and banding for driving machinery, prepared and possessing the qualities substantially as herein set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

STEPHEN M. ALLEN.

Witnesses:

WM. W. GILBERT,

GEORGE H. POLLOCK.