

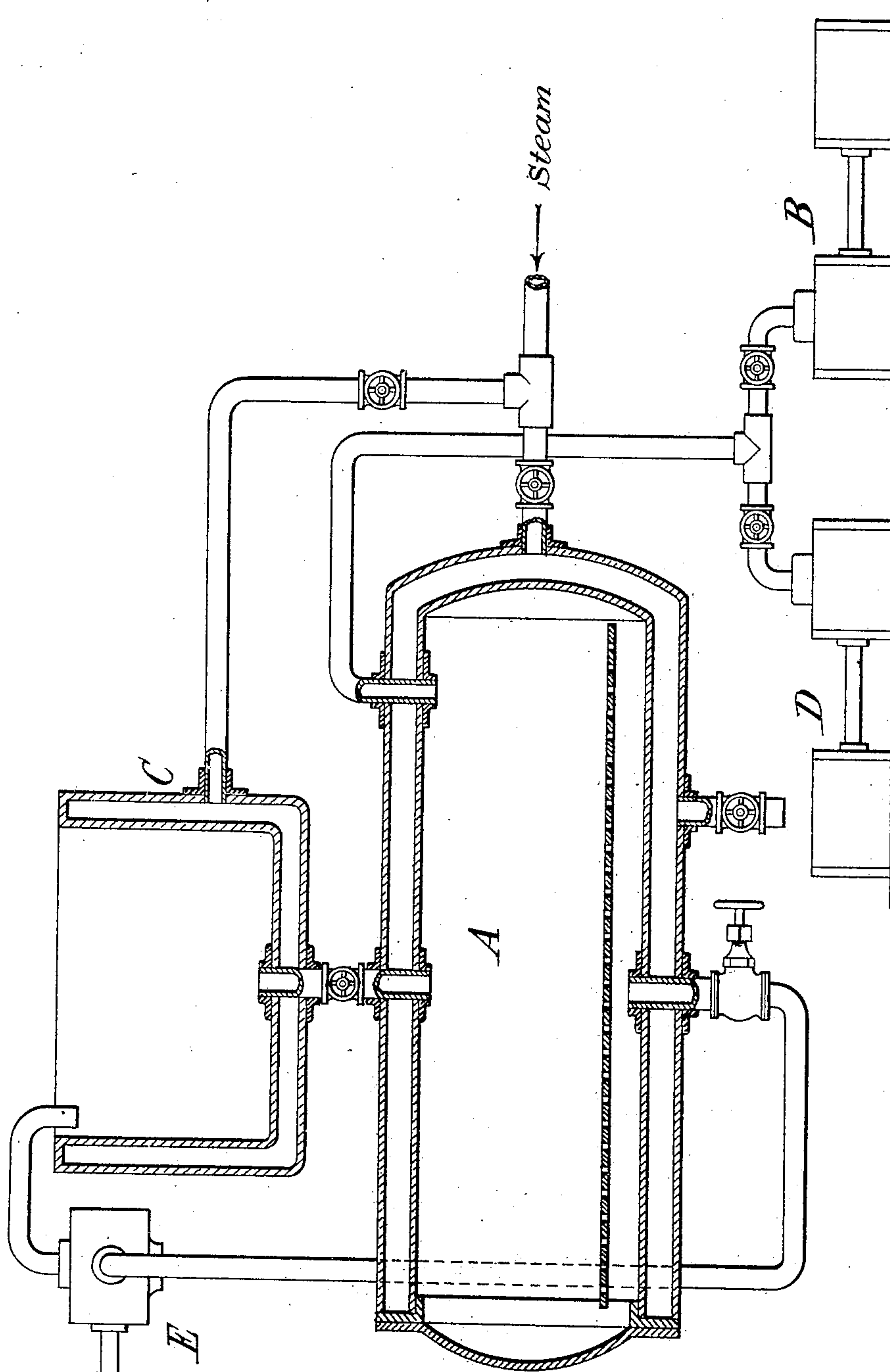
No. 803,781.

PATENTED NOV. 7, 1905.

J. S. PATTERSON.

PROCESS OF MANUFACTURING BELTING OR THE LIKE.

APPLICATION FILED JUNE 27, 1905.



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PROCESS OF MANUFACTURING BELTING OR THE LIKE.

No. 803,781.

Specification of Letters Patent.

Patented Nov. 7, 1905.

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To all whom it may concern:

Be it known that I, JOHN S. PATTERSON, a citizen of the United States, residing at Revere, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Processes of Manufacturing Belting or the Like, of which the following is a specification.

This invention relates to the manufacture of belting or the like from textile fabrics, and aims to provide certain improvements therein.

In the manufacture of belting, hose, and other articles from textile fabrics it is customary to impregnate the latter with a filling material the nature of which is dependent upon the character of the article and the use to which it is to be put. My invention, while susceptible of use with other materials, is more especially adapted to the impregnation of fabrics with thick heavy compounds containing tar, rubber-cement, asphaltum, or other materials of a similar nature. Such filling mixtures are employed principally in the manufacture of belting for power-transmission purposes, their use rendering the belting less extensible, materially increasing its tensile strength, and imparting to it a greater capacity for frictionally engaging the pulleys. Such mixtures are also used in the manufacture of hose for conducting fluids to render them liquid-tight, rubber usually entering largely into compositions employed for this purpose.

My invention provides an improved process of manufacturing these and other similar articles whereby a more thorough impregnation is attained and a more efficient and durable article is produced.

According to my invention the belting or other fabric which is to be impregnated is subjected to the action of a vacuum for a sufficient length of time to substantially exhaust the air from the pores thereof, whereupon the filling material in a heated condition is applied to the fabric and the vacuum is relieved. Preferably at this point the article is placed under pressure, whereby the capillary action which tends to draw the filling material into the pores of the fabric is considerably augmented. After the desired degree of impregnation is attained the surplus material is removed from the fabric, and the latter is then subjected to such further treatment as is desired to fit it for the intended use.

In the drawing I have shown a form of apparatus which is suitable for use in practicing

my invention, which I will now proceed to describe in detail in connection with such apparatus.

As a specific illustration of the preferred mode of practicing my invention I will describe it in connection with the manufacture of belting, it being understood that the steps thereof will be suitably modified when the process is applied to the manufacture of other articles.

The belting, consisting of a textile material, such as cotton suitably woven or braided into a strip of the desired dimensions, is placed in a receptacle or tank A, which is suitably heated by a steam-jacket, as shown. A vacuum-pump B is then operated to exhaust the air and moisture from the tank A, with the result that the fabric is thoroughly dried and the air is substantially exhausted from its interstices. The degree of vacuum and the length of time which it is maintained will differ with the fabric employed and the amount of moisture which it initially contains. The more complete the exhaustion of the air and moisture from the fabric the better the impregnating material will be found to penetrate the interstices thereof. Under ordinary conditions a vacuum of twenty-eight inches maintained from one and one-half to two hours will give good results. When the fabric has been subjected a sufficient length of time to the action of the vacuum, the filling material is introduced in a heated condition into the tank A until the fabric is submerged. Such filling material may be of a bituminous character—such as asphaltum, tar, or pitch—or may be any other suitable substance. Most of the materials which are effective for this purpose require to be heated in order to reduce them to a sufficiently fluid condition before applying them to the fabric. A steam-jacketed tank C is therefore provided for this purpose. After the filling material is introduced into the tank A the vacuum in said tank is relieved, and the mixture being unopposed by any substantial quantity of air or moisture within the fabric thoroughly penetrates the interstices of the latter under the action of capillary attraction. This action is preferably augmented by subjecting the contents of the tank to a considerable degree of pressure. This may be effected by an air-compressor D or by any other suitable means, as by admitting steam, if the filling material used is of such a nature that the steam or condensation-water does not impair its efficiency. Such pressure

is preferably maintained for two or more hours, depending upon the character of the fabric and filling mixture used and the degree of pressure employed. With a pressure of 5 seventy-five or eighty pounds the treatment may usually continue for about two hours with good results. After the belting is thoroughly impregnated the pressure is relieved and the filling material drawn out of the tank 10 A, a pump E being provided for this purpose. The tank A may then be again placed under a vacuum to remove any excess of material from the belting, preferably by operating the pump E. The belting is then re- 15 moved from the tank and passed between rolls to remove any surplus quantity of the filling material and is subsequently treated in any suitable manner, depending upon the end which is to be attained. Ordinarily the bel- 20 ting is placed in a press of the usual construction and stretched to the desired extent, heat being applied thereto during the stretching operation in any suitable manner.

The process just described is that which is 25 preferred by me for the manufacture of belting having a filling of tar, asphaltum, or similar material; but it will be understood that it is susceptible of considerable modification without departing from the invention, an es- 30 sential feature of which consists in placing the fabric under the action of a vacuum before the application of the filling mixture.

If the belting is to be provided with a rubber cover, the latter is preferably applied 35 thereto immediately after the belting has been withdrawn from the impregnating-tank and passed between rollers, and it is then vulcanized upon the belting while the latter is in a stretched condition in the belt-press. If a fill- 40 ing mixture containing rubber is employed, the belting is also preferably vulcanized in a similar manner even though no cover is used.

It will be understood that the process herein

described may be considerably modified without departing from the invention so long as 45 the filling material when applied to the fabric is not obstructed by air or other substances which tend to prevent such material from adequately filling the interstices of the fabric.

I claim as my invention the following-de- 50 fined novel features, substantially as hereinbefore specified, namely:

1. In the manufacture of belting or the like from textile fabrics, the process which consists in subjecting the fabric to the action of a vacu- 55 um, applying a filling material thereto, relieving the vacuum, drawing off the filling material, and again subjecting the fabric to the action of a vacuum, whereby to remove any excess of material. 60

2. In the manufacture of belting or the like from textile fabrics, the process which consists in subjecting the fabric to the action of a vacu- 65 um, applying a filling material thereto, and subsequently vulcanizing such material. 70

3. In the manufacture of belting or the like from textile fabrics, the process which consists in subjecting the fabric to the action of a vacu- 75 um, applying a filling material thereto, and subsequently stretching said fabric and heating it while in its stretched condition.

4. In the manufacture of belting or the like from textile fabrics, the process which consists in subjecting the fabric to the action of a vacu- 80 um, applying a filling material thereto, and subsequently applying a rubber cover to said fabric, stretching the belt thus formed, and vulcanizing it while in its stretched condition.

In witness whereof I have hereunto signed my name in the presence of two subscribing 80 witnesses.

JOHN S. PATTERSON.

Witnesses:

EUGENE V. MYERS,
THEODORE T. SNELL.