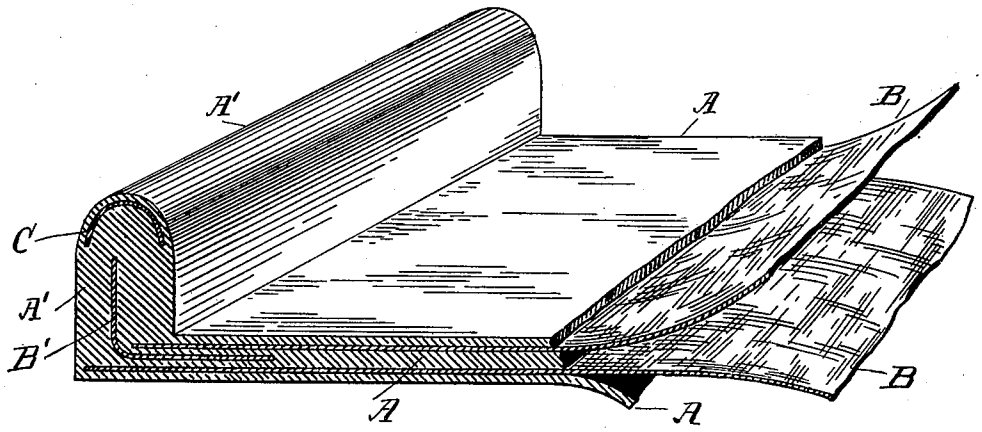
No. 683,547. Patented Oct. 1, 1901.

W. F. BOWERS.

CONCENTRATING BELT.

(Application filed Dec. 16, 1896.)

(No Model.)



Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM F. BOWERS, OF SAN FRANCISCO, CALIFORNIA.

CONCENTRATING-BELT.

SPECIFICATION forming part of Letters Patent No. 683,547, dated October 1, 1901.

Application filed December 16, 1896. Serial No. 615,875. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. BOWERS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Concentrating-Belts; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to a certain new and useful concentrating-belt for use in connection with that style of ore concentrators or machines for recovering precious ore by what is known as "wet concentration;" and the invention is more especially an improvement in that particular class of flexible belts provided with a side flange composed of rubber for preventing the sulfurets from being washed from the sides of the belt proper. The rubber side or edge flanges of these concentrating-belts are subjected or exposed to a greater strain than the body or working portion of the belt as the endless belt is carried over the end roller of the machine on which the belt is mounted, and inasmuch as the flanges are made thin they are liable to and do break away from the body of the belt and also crack or split from their edges toward their bases or point of union with the main or body portion of the belt, thus destroying the continuity of the flanges of the said belt.

The object of the invention is to overcome this difficulty and to increase the durability of the side flanges of the belt by so constructing the same as to render the side flanges equally strong against breaking, tearing, or cracking as the body of the belt without destroying the flexibility or elasticity of the said side flanges, which I accomplish by reinforcing the side flanges with one or more pieces or strips of textile fabric cut on the bias in order that sufficient elasticity of the side flanges is preserved to enable the said flanges to give properly as carried over the end rollers of the concentrator without tearing or splitting, the reinforcing piece or pieces being embedded in the rubber of the said side flanges.

In order to fully comprehend the invention, reference must be had to the accompanying sheet of drawings, wherein the belt is shown as being composed of layers A of rubber and layers B of canvas, duck, or other textile fabric. These layers B of canvas, duck, or other textile fabric are cut straight, so that the warp-threads run parallel with or lengthwise of the layers of rubber. By this construction or arrangement the body or carrying portion of the belt is maintained in proper shape under load and is sufficiently inelastic to prevent the formation of pockets between its carrying-rolls, in which pockets the pulp would necessarily gather, rendering the belt practically useless. At each side of the belt are formed, by means of a suitable mold, the upwardly-projecting flanges A′, which flanges are preferably made of rubber of purer quality than the main body or portion of the belt, although this is an immaterial feature. The side flanges are preferably made as shown in the drawings. In the present case during the manufacture of the belt there is inserted between the layers of rubber at each side of the belt an independent strip or piece of duck, canvas, or other textile fabric B′, which piece or strip runs the entire length of the belt, although only part of its width, or so far therein as to secure a firm hold. This strip or piece B′ is cut on the bias and is extended beyond the sides or edges of the belt proper and is turned upward and embedded in the soft rubber of the side flanges of the belt throughout its entire length. The use of this reinforcing-strip materially strengthens the side flanges of the belt and makes it impossible for the said flanges to break away from the body of the belt, and inasmuch as the reinforcing-strip is cut on the bias it allows of stretching with the rubber of the flange, while not materially interfering with the elasticity of said flanges. This interposed layer of textile fabric cut on the bias unites the said flanges to the body of the belt and prevents the said flanges breaking away from the said belt, although it does not, unless extended to the top of the flanges, prevent the side flanges from splitting or tearing from the top to the edge of the base thereof, as the said flanges are stretched while passing over the end rollers of the concentrator. This is a feature that must be provided against, and I strengthen the said flanges without destroying their elasticity by inserting or embedding in the rubber thereof

during the manufacture of the side flanges near the top edge a transverse strip of textile fabric C. This strip is cut on the bias and runs the entire length of the side flanges. Being cut on the bias, the textile fabric will give as the said flanges stretch as carried over the end roller. Consequently the elasticity of the side flanges is not interfered with. If desired, the same result may be accomplished by running the strip B′ to the top edge of the side flanges; but I prefer to insert in the side flanges near the top edge a separate piece of textile fabric cut on the bias, although I wish to be understood as claiming either form of reinforcing or strengthening the side flanges as my invention.

It will be noted that the textile fabric interposed in the body of the belt is not cut on the bias, but that the warp-threads run lengthwise of the belt. Consequently there is no give or elasticity to the body portion of the belt. Should these strips or layers of textile fabric be cut on the bias, the entire body of the belt would give, the same as the side flanges, which would be objectionable in belts designed for the purposes of the present belt.

While I have found that one piece or strip of textile fabric is sufficient ordinarily to strengthen and provide against tearing of the side flanges of the belt, two or more pieces or strips may be inserted, if so desired.

By reinforcing the side flanges of the belt with canvas, duck, or other textile fabric cut on the bias the life and durability of the belt are considerably prolonged.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent, is—

1. A concentrator-belt having a body reinforced by straight textile material, side flanges and independent strips of textile material cut on the bias inserted in the side flanges.

2. A belt having its body portion composed of layers of rubber and layers of straight-cut textile material, solid-rubber side flanges united to the body portion, and a separate reinforcing-strip of textile material cut on the bias embedded at each side of the body of the belt throughout its length and extended upward and embedded in the rubber side flanges.

3. A belt having a flexible body and rubber side flanges, a reinforcing-strip of textile fabric cut on the bias extended throughout the length of the belt at the sides thereof and extended upward and embedded in the rubber side flanges, and of a second reinforcing-strip of textile fabric cut on the bias embedded in the rubber side flanges throughout the length thereof at or near the top edge of the flange.

4. As a new article of manufacture a belt having its body portion provided with elastic side flanges, and a transverse reinforcing-strip of textile fabric cut on the bias embedded in the elastic side flanges at or near the top edge thereof.

In testimony whereof I affix my signature, in presence of two witnesses, this 10th day of December, 1896.

WILLIAM F. BOWERS.

Witnesses:
N. A. ACKER,
LEE D. CRAIG.