(No Model.)

L. C. TRENT.

FLANGED BELT.

No. 594,220. Patented Nov. 23, 1897.

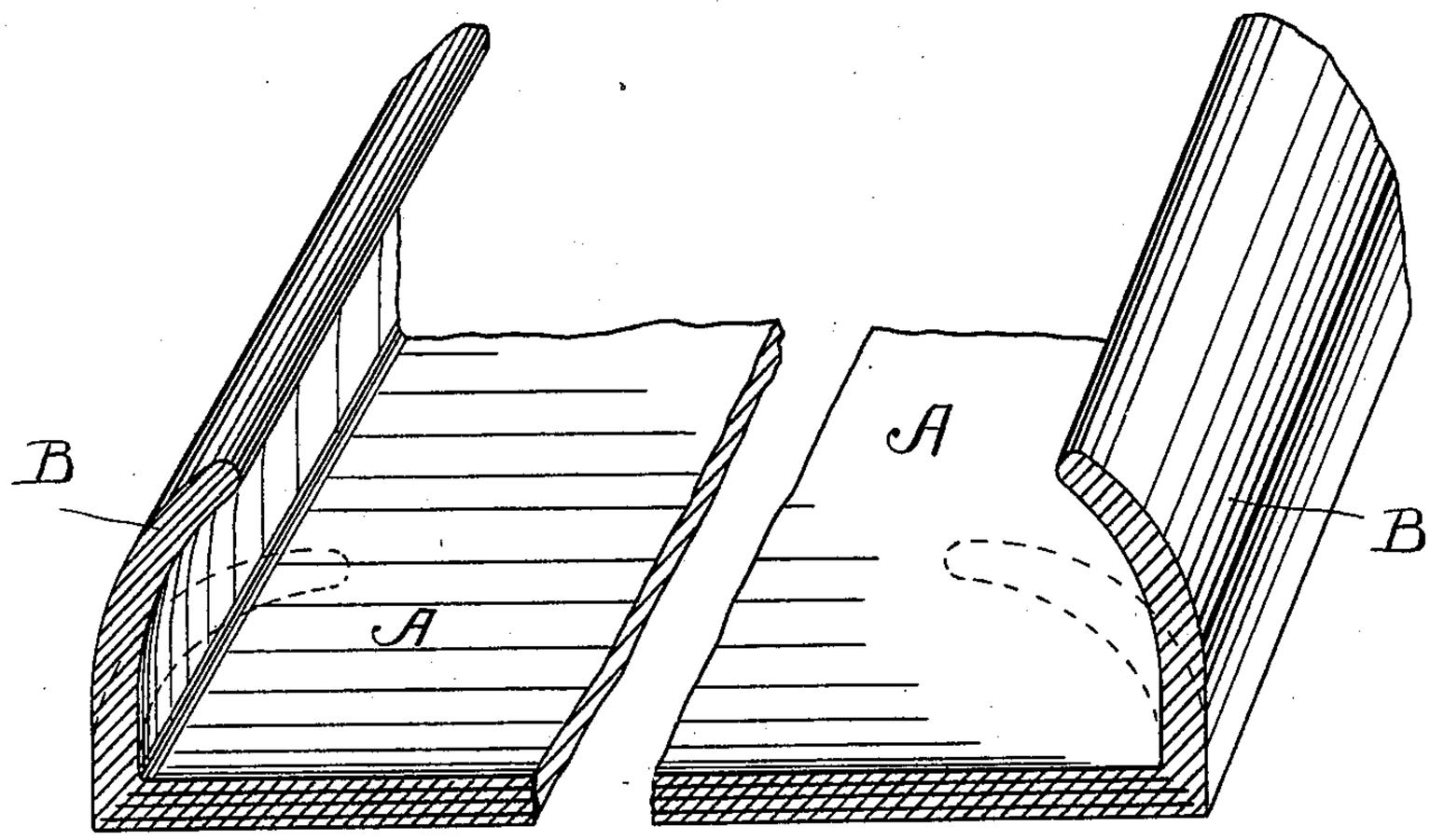

Fig. 1.

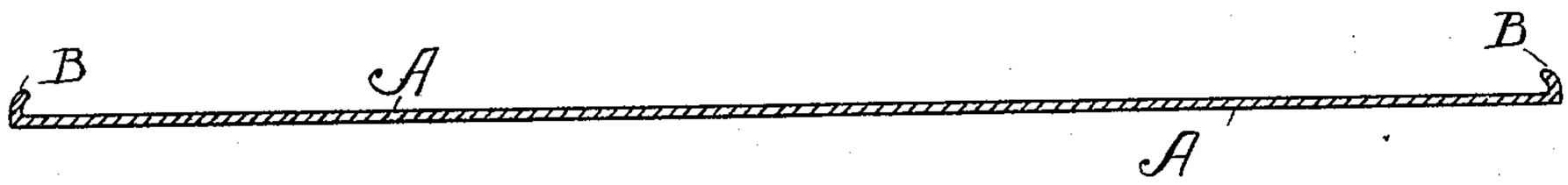

Fig. 2.

WITNESSES.

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LAMARTINE C. TRENT, OF SALT LAKE CITY, UTAH, ASSIGNOR TO THE REVERE RUBBER COMPANY, OF BOSTON, MASSACHUSETTS.

FLANGED BELT.

SPECIFICATION forming part of Letters Patent No. 594,220, dated November 23, 1897.

Application filed October 12, 1896. Serial No. 608,551. (No model.)

To all whom it may concern:

Be it known that I, LAMARTINE C. TRENT, of Salt Lake City, in the county of Salt Lake and State of Utah, have invented a new and useful Improvement in Flanged Belts, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of this invention is to provide an improved elastic flanged belt for use on concentrators and like mining machinery, whereby the objections heretofore arising in the use of belts of this class are avoided.

Belts having vertical flanges at their edges are well known for treating wet pulp—that is, finely-pulverized ore with abundance of water. In practice a stream of this liquid pulp runs downwardly on the ascending face of the belt, which runs in an inclined position. The belt travels against the descending stream and is subjected to a violent shaking motion from side to side. The flanges tend to retain the pulp on the belt-surface; but they are subject to great strain and stretch in passing around the supporting-rollers, and the stretch soon breaks the extreme tip or edge of the flange, allowing the liquid pulp to break out and splash or slop over, wasting valuable material and fouling the machine. In some prior belts the flanges taper to a thin upper edge, such edge being turned back upon itself outwardly or inwardly, so that the extreme edge of the flange is nearer to the plane of the belt than is its intermediate portion. Hollow flanges have also been proposed and solid ones of greater breadth than height. Another form has oblique flanges, which meet the surface of the belt at an acute angle and in passing over the rollers they lie down on the belt. None of these forms possesses the advantages of my belt in facility of manufacture, proper lateral resistance to the escape of the pulp, and inward folding of the flanges in passing the rollers without lying down upon and into the pulp.

By my improvement the belt-flanges curve inwardly toward each other and the longitudinal center of the belt with a slight taper from their vertical base to the rounded upper edge, and when the strain comes in passing around the supporting-rollers the upper edge of the flange, instead of being broken by undue stretch, inclines downwardly toward the body of the belt on the periphery of the roller and flattens out or tends to fold thereon. The flanges thus bend instead of breaking. At the same time the inward curvature of the flanges has the mechanical advantage of presenting a more effective resistance to the splashing of the material than any other form. The violent sidewise motion given to the entire belt and its load of pulp is at the rate of about two hundred strokes per minute, and the tendency to slop over is very great. These belts are used in mining-camps remote from any source of supply; hence the importance of durability and of such shaped flanges as will prevent waste of the precious metal. The shaking motion drives the liquid pulp against the marginal flanges, which on my belt are vertical at base, and their upper curved walls deflect the pulp thrown against them, tossing it inwardly toward the center of the belt, while the non-folding vertical portion at the base of each flange prevents pinching and holding some of the material in the angle of the flange with the belt-surface. The pulp cannot slop over at the end rollers, because the flange does not lie down into it, but merely bends toward it.

My improvement therefore consists in an endless belt provided at its edges with yielding flanges, vertical at base, tapering slightly, blunt and rounded at top, and curving inwardly toward the longitudinal center of the belt, so as to throw inwardly the material being treated and to allow the edges of the flanges to fold downwardly somewhat in passing around the supporting-rollers. The flat body of the belt is non-extensible, of cloth insertion or alternate layers of cloth and rubber, while the flanges are of vulcanized rubber only. The inward curvature begins about one-fourth inch above the upper surface of the belt.

The drawings show, in Figure 1, a sectional perspective view of a portion of my improved belt, the center being broken away and the section taken through the flanged edges to show their curvature. Fig. 2 is a complete cross-section on a reduced scale.

A represents the flat body of the belt, made of any desired width and thickness, of firm

duck and rubber in alternate layers, or what is known as "cloth-insertion" belting. This body is made endless, of the exact length required when all the stretch is taken out of it.

B is the flange, formed on each edge of the body A, preferably about the same thickness at base as the belt, and rising vertically above it, say one-fourth of an inch, thence curving inwardly toward the center of the belt, with a total inward extension of about five-sixteenths of an inch and a total height above the bottom of the belt of about one and one-eighth inches. The curved flange tapers slightly and its upper edge is blunt and rounded.

The flanges are molded and vulcanized with the body of the belt and are integral with it.

Now when the belt passes around its supporting rollers or pulleys the inward curvature of the flanges B enables their upper portions to yield downwardly toward the pulp-carrying surface of the belt, as indicated by the curved dotted lines. As no part of the flange inclines outward and as it is made to curve uniformly inward from a point immediately above the base, the effect in operation is that the highest part of the flange is not subject in the flexion of the belt to the destructive tension due to its greater radial distance from the roller than that of the rubber beneath, but curves over inwardly in a movement which begins at the summit of the flange and extends downward gradually. This yielding action lessens the distance through which the edge of the flange would otherwise travel, thus preventing the stretching it would be subject to if vertical and adding greatly to its durability. Furthermore, by reason of the base of the flange being vertical the folding movement does not extend quite to the angle formed between the body of the belt and the flange and the material is not pinched and held in said angle. The inward curvature of the flange resists the tendency of the pulp to splash incident to the lateral shaking motion and throws the material back toward the center of the belt, while the uniform thickness of the flange prevents its doubling down upon the belt, keeping it, on the contrary, out of contact therewith.

I claim as my invention—

An endless belt having the flat, non-extensible body A and the raised, extensible marginal flanges B, blunt and rounded at the upper edge, vertical at base, and curving uniformly toward each other, from a point immediately above the base to said upper edge, and adapted to fold bodily inward and downward, toward the face of the belt, without dipping into the material thereon in passing around the supporting-rollers, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 1st day of May, A. D. 1896.

LAMARTINE C. TRENT.

Witnesses:
GEO. O. BRADLEY,
CHAS. W. L. STEVENS.