No. 679,248. Patented July 23, 1901.

F. W. WOOD.

BELT FOR ORE CONCENTRATORS.

(No Model.) (Application filed Mar. 15, 1900.)

Fig. 1.

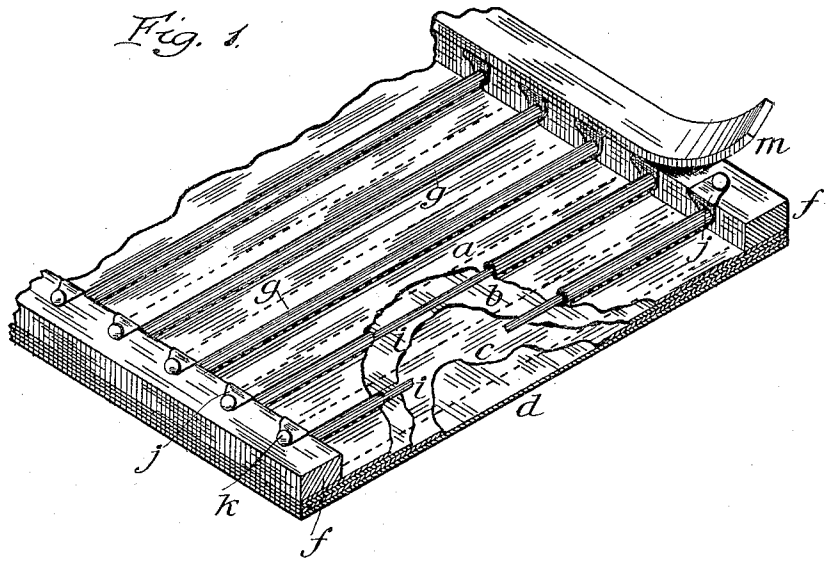


Fig. 2.

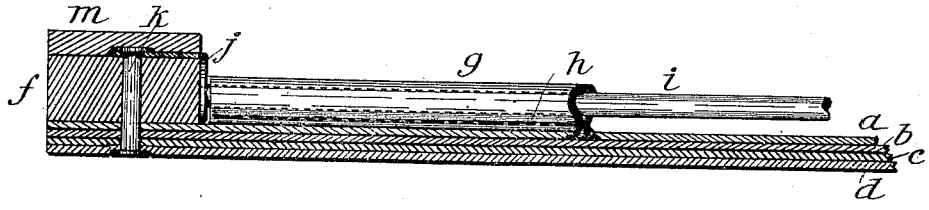
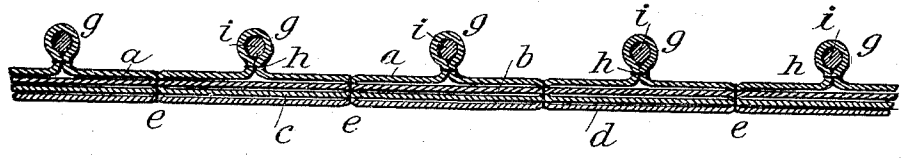


Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK W. WOOD, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO CROWN GOLD MILLING COMPANY, OF SAME PLACE.

BELT FOR ORE-CONCENTRATORS.

SPECIFICATION forming part of Letters Patent No. 679,248, dated July 23, 1901.

Application filed March 15, 1900. Serial No. 8,837. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. WOOD, 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 Belts for Ore-Concentrators, of which the following is a specification.

This invention relates to separating-surfaces upon which dry pulverized material containing precious particles is concentrated. It may be embodied in a stationary or vibrating surface, or in an endless traveling belt, or in a traveling and vibrating belt.

A part of the present invention which relates particularly to the construction of the body of the belt or other concentrating device is especially adapted for use in machines in which air is forced through the belt to act upon the material on the surface. A machine of this character is shown in my Letters Patent No. 633,254, granted September 19, 1899.

Another part of the invention which relates particularly to the formation of the working surface itself into riffles of peculiar construction is also adapted for use in machines of that kind, but is capable of use in other situations.

The invention is fully hereinafter described, and I desire to have it understood that although in the detailed description I refer uniformly to a "belt" I intend that term to include any working surface for concentrating precious material.

In the accompanying drawings, Figure 1 is a perspective view of enough of a concentrating-surface to render my construction clearly intelligible, parts being broken away to illustrate the preferred construction of the belt-body. Fig. 2 is a cross-section of one side of the belt and part of its body and surface. Fig. 3 is a longitudinal section through a portion of the belt-body and surface.

In the concentrating means described in the patent referred to it was my intention to bring the separation of ore by the dry process of concentration to a high degree of scientific accuracy by providing means for a careful regulation and complete control of the ore feeding and separating means. The present invention is intended to still further improve the construction of the separating-surface in its relation to an air-blast process of concentration. I find that in practice a belt or separating-surface composed of a single ply or thickness of textile or fibrous material, no matter how finely woven, permits the passage of the blast too freely, especially when separating very fine light material. I accordingly construct the body of such a belt of a plurality of plies or thicknesses of suitable textile or fibrous material, which is preferably silk, and have shown in the drawings four of such thicknesses for illustration, although I do not limit myself to any specific number. These plies are pervious to air; but their plurality causes an overlaying of threads which resists the air and breaks up, distributes, spreads, and equalizes the blast throughout the surface acted upon.

In the drawings the body of the belt is composed of the plies *a*, *b*, *c*, and *d*, stitched together at intervals, as shown at *e*, and secured to side pieces *f*, which act as a frame to hold and strengthen the structure. These side pieces can be made of any suitable material; but when my invention is applied to a flexible belt I prefer to make them of leather bands or straps, which are strong and durable and travel easily upon guide-rollers. The plural layers of material may be secured to the lower surfaces of the side pieces in any suitable way, as by rivets; but I have devised a special construction for this purpose in connection with another special construction of the working surface, both of which constitute parts of my invention.

In my patent referred to I showed surface riffles extending transversely across the belt and which were separately attached thereto. The riffles in the present case are formed in or by the material of the belt and are of peculiar shape. In the outer layer of material *a*, at suitable intervals, are formed tucks or loops *g*, which extend across between the side pieces and are stitched through close to the surface, as shown at *h*. In order to keep these tucks in shape, rods of wire *i* are inserted in them, as shown. The outer layer is sufficiently longer than the others to allow sufficient material for these tucks and may be

cut out at intervals along the edges to remove the extra fullness beneath the side piece. The shape of the riffles is approximately indicated in Fig. 3, although the corners formed are sharper and deeper than the drawings show, on account of some exaggeration in the thickness of material to insure clearness of illustration. These corners afford lodging-places for fine particles of precious material, and I have found this shape much superior to straight-faced riffles. Of course similar riffles can be formed in a belt or surface of a single thickness.

The wires *i* are preferably secured to the side pieces by metal clips *j*, bent at right angles, so as to form two arms. These clips fit the inner corners of the side pieces, as shown, and project over the tops and the inner faces thereof. An end of each rod *i* fits a hole in the downwardly-projecting arm, while a rivet or pin *k* is passed through the end of the other arm and through the side piece and the material beneath. The arms of the clips, as well as the holes at their extremities, are out of transverse line with each other, Fig. 1, so that the thin metal of which the clips are composed can spring, bend, or buckle slightly under any strain, such as that caused by tension around guide-rollers. The clips shown can be used on either side of the belt, the arms being reversible and the holes in the two extremities of the same size and fitted to receive either the rods *i* or the rivets *k*.

I prefer to cover the clips and rivet-heads with a strip *m* of thin leather or other suitable material, which can be cemented or otherwise secured in place.

I do not limit myself to the precise construction and arrangement shown and described, as I desire to avail myself of such modifications and equivalents as fall properly within the spirit of my invention.

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

1. A flexible belt for dry-ore concentrators comprising a body composed of a plurality of layers of fibrous material pervious to air in close contact and secured together at intervals so as to be capable of traveling as a single structure.

2. A flexible belt for dry-ore concentrators, comprising a plurality of plies or layers of fibrous material pervious to air, the outer layer being formed with integral transverse tucks, and a fastening through each tuck at its base whereby its lower edges are drawn together to form corners.

3. A flexible belt for dry-ore concentrators, comprising a plurality of plies or layers of fibrous material pervious to air, the outer layer being formed with integral transverse tucks, a fastening through each tuck at its base whereby its lower edges are drawn together to form corners, and transverse fastenings between tucks for securing the said plies together.

4. A flexible belt for dry-ore concentrators comprising a body composed entirely of a plurality of plies or layers of textile material pervious to air.

5. A flexible belt for dry-ore concentrators comprising a plurality of plies or layers pervious to air, the outer layer being formed with integral transverse tucks, and a fastening through each tuck at its base whereby its lower edges are drawn together to form corners.

6. A flexible belt for dry-ore concentrators comprising a plurality of plies or layers of silk pervious to air, the outer layer being formed with integral transverse tucks, a fastening through each tuck at its base whereby its lower edges are drawn together to form corners, and transverse stitching between tucks for securing the said plies together.

7. A belt or surface for ore-concentrators comprising side pieces, a working body or surface composed of a plurality of similar plies of textile material having their edges secured to said side pieces, tucks or plaits formed in the outer ply between the side pieces and rods inclosed by said plaits, the edges of said outer ply being cut away where the fullness comes, substantially as described.

8. A belt or surface for the described purpose, having side pieces, and a body or working surface composed of a plurality of plies of material, tucks formed in the outer ply, rods inclosed by said tucks, right-angular clips fitting the inner corner of said side pieces and each having an arm attached to one of said rods, and another arm overlying the face of said side piece and secured thereto.

9. In combination with a textile belt and its side pieces or flanges, the reversible and interchangeable clips *j*, having arms at right angles, and two holes placed out of line with each other and transverse rods connecting opposite clips together.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 13th day of February, 1900.

FREDERICK W. WOOD.

Witnesses:
FRANCES M. BURT,
L. W. SEELY.