

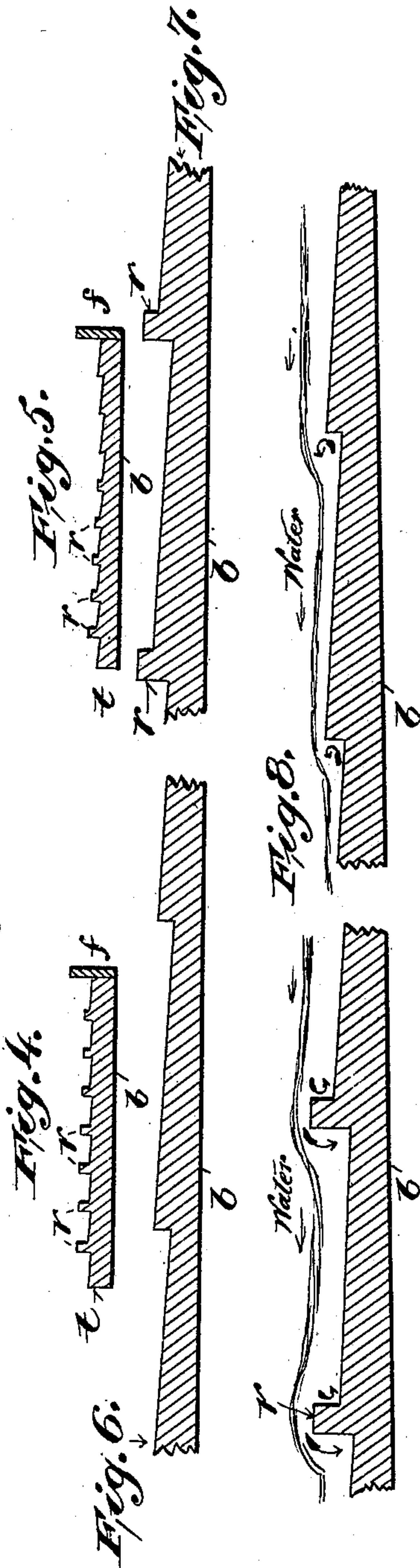
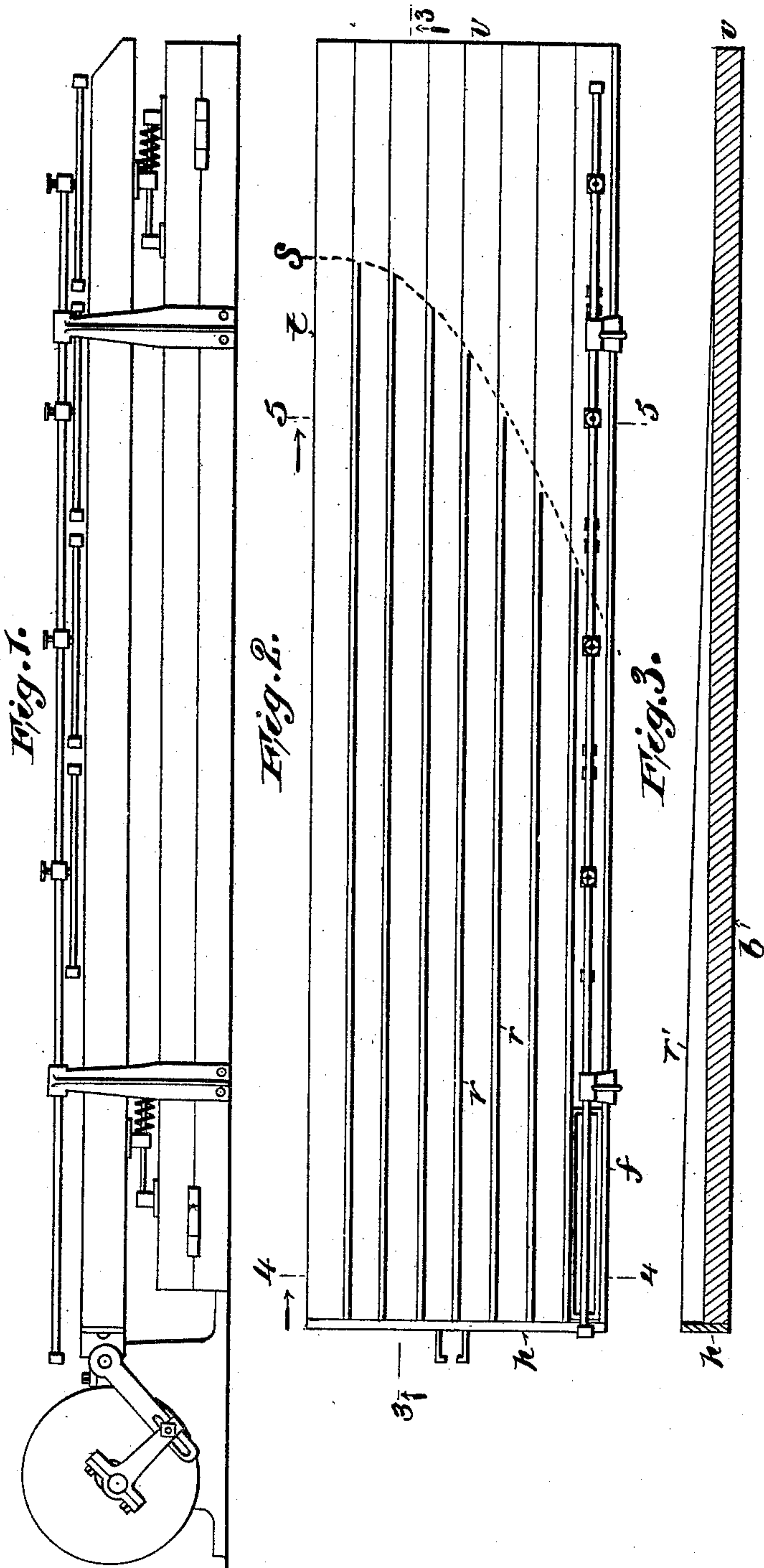
No. 713,747.

Patented Nov. 18, 1902.

I. A. CAMMETT.
ORE CONCENTRATING TABLE.

(Application filed Mar. 19, 1901.)

(No Model.)



Witnesses:
C. N. Benjamin
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by *[Signature]*

UNITED STATES PATENT OFFICE.

IRA AUSTIN CAMMETT, OF DENVER, COLORADO, ASSIGNOR TO THE DENVER ENGINEERING WORKS COMPANY, OF DENVER, COLORADO, A CORPORATION.

ORE-CONCENTRATING TABLE.

SPECIFICATION forming part of Letters Patent No. 713,747, dated November 18, 1902.

Application filed March 19, 1901. Serial No. 51,877. (No model.)

To all whom it may concern:

Be it known that I, IRA AUSTIN CAMMETT, of Denver, in the county of Arapahoe, in the State of Colorado, have invented certain new and useful Improvements in Ore-Concentrating Tables, of which the following is a description accompanied by drawings.

There are several types of concentrators which may be regarded as tables, whether similar to buddles or traveling belts or true tables of the Rittinger type that do not travel, but have vibratory or percussive movements. The present invention, while applicable in a greater or less degree to certain forms of these divers constructions, is especially valuable for tables of the Rittinger type, and therefore specially applicable to them. It has been customary to give to such tables an inclination in one direction and a percussive motion or peculiar vibrating motion at right angles or at nearly right angles to the inclination. The inclination determines the natural direction or flow of the water, and the percussive motion determines the direction in which the values will be mechanically carried by the table. Of course the values are also acted upon by the flow of the water, so that they follow diagonal paths which correspond neither with the flow of the water nor with the line of mechanical vibration. It must, however, be understood that although I am describing the invention in connection with a flow of water this does not prevent the principles of operation of the invention from being utilized in a dry separator.

For the purposes of definition the term "longitudinal" will be used in this specification to mean where the sense so permits a direction transverse to the inclination of the table and preferably parallel or nearly parallel with the percussive or vibratory movement. The inclination of these tables is usually adjustable to at least a slight extent in the direction of the mechanical movement, as well as at right angles thereto.

The present invention relates, primarily, to the riffled or partly-riffled surfaces of such concentrating-tables.

The object of the invention is to improve and perfect the table-surface so as to produce

better and, indeed, substantially perfect concentration and separation of certain grades of ore than has heretofore been possible.

The advantages of tapered riffles, whether in the form of raised ribs or depressed grooves, are now well known. Such tapered riffles are illustrated, for example, in the Cammett & Shepard patent, No. 632,892, of September 12, 1889, and in others. In the Cammett & Shepard patent a series of riffles are described and claimed which are reduced in height and continue at a lower level before their termination toward the values end of the table. The present improvement is a particular form of riffling which is in some respects closely related to that patent.

The nature of the present invention will now be readily understood by a description of the accompanying drawings.

In the drawings, Figure 1 is a general view without much regard to detail, showing an ore-concentrator of one type to which the present improvements are applicable. Fig. 2 is a plan view of the table-top embodying the present improvements. Fig. 3 is a vertical section of the same on the plane 3 3. Figs. 4 and 5 are cross-sections on the planes 4 4 and 5 5. Figs. 6 and 7 are enlarged sectional views of parts of Fig. 5 toward the right-hand end and left-hand end, respectively, of the said figure. Fig. 8 is a sectional view showing the probable action of water in effecting the riffling.

The bed *b* of the table-top is provided with a series of longitudinal ribs *r*, forming riffles. These ribs when considered separately are of considerable height at the head end *h* of the table and diminish in height toward the values end *v* of the active surface of the table. One side of each rib becomes flush with the bottom of the channel or adjacent table-surface, while the other side of the same rib is still considerably raised above the adjacent table-surface to a height which may vary from a sixty-fourth of an inch, or thereabout, up to an eighth of an inch or more, the upper limit not having been definitely determined by me.

The effect of such obliteration of one side of the table is plainly seen in Fig. 6, and this condition may continue throughout the re-

maintaining active surface of the table toward the values end *v*. Whether or not there is a plain, smooth, or unriffled portion at the extreme values end of the table, I do not mean to make a characteristic of the present invention. In addition to the characteristics of the individual ribs or riffles just described the riffles as considered collectively differ one from another in that the higher ribs—that is, those toward the feed side *f* of the table—diminish in height in advance of those farther down in the table nearer the waste or tailings side *t*. The dotted line *s s*, Fig. 2, shows a point where the upper side or each rib sinks into and is obliterated in the adjacent surface of the table. The curvature of this line *s s* results from the longitudinal distance between the points where adjacent ribs are so obliterated on one side in the table surface, it being greater toward the upper or feed side of the table than toward the lower or tailings side *t* of the table.

From the foregoing it will be seen that one side of each rib sinks into the general table-surface in advance of the other side of the same rib; secondly, that such sinking takes place on the upper ribs considerably in advance of where it takes place on the lower rib; thirdly, that this difference between neighboring ribs is greater toward the upper side of the table than toward the lower or tailings side. While I prefer to have all these three characteristics combined, it is obvious that they need not necessarily be so combined, and I point out in the following claims the features and combinations of features that I desire to protect. The operation of the table constructed as described is peculiarly advantageous for treating some grades of ores where it is considered an advantage not to have well-defined grooves along the portion of the table where the novel separation between fine values and fine gangue or waste takes place. The curve *s s*, convex toward the feed side and values end of the table, represents an approximation to the natural edge of the mass of mineral which covers the table when in operation, though I do not mean that such a curve corresponds in location with the boundary of the bed of mineral upon the table, because it is obvious that the boundary of the unbroken bed of mineral upon the table will

vary its position according to whether the amount of mineral fed onto the table is greater or less. The riffled surface of the table lying on the convex side of the curve *s s* presents a step-like or clapboard-like surface, as shown by Figs. 6 and 7, and when the inclination of the table is very slight, as it frequently is in practice, the surfaces between neighboring riffles will be approximately level, so that values in falling from one level to another will tend to be held by the small eddy or quiet spot which forms beneath the protecting-wall of the riffle, as indicated in Fig. 8.

What I claim, and desire to secure by these Letters Patent, is the following:

1. An improved concentrating-table having a table-surface embodying a series of raised ribs or riffles which diminish in height as they extend toward the tail end of the table and which sink into the adjacent surface of the table on one side of each while continuing farther upon the other side, for substantially the purposes set forth.

2. An improved concentrating-table having a table-surface embodying a series of raised ribs or riffles which diminish in height as they extend toward the tail end of the table and which sink into the adjacent surface of the table on one side of each while continuing farther upon the other side, a portion of the table-surface constituting a series of shallow step-like riffles in a continuous integral surface, for substantially the purposes set forth.

3. An improved concentrating-table having a table-surface embodying a series of raised ribs or riffles which in part are raised on both sides, and in part are raised only on one side, forming a step-like formation, the line or zone of demarkation between such part being less oblique to the ribs on the upper or higher side of the table and more oblique or transverse to the ribs on the lower or tailings side of the table, for substantially the purposes set forth.

Signed this 14th day of March, 1901, at Anaconda, Montana.

IRA AUSTIN CAMMETT.

Witnesses:

R. DE B. SMITH,
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