

(No Model.)

M. McANENY & W. L. RIELEY.

ORE CONCENTRATOR.

No. 338,856.

Patented Mar. 30, 1886.

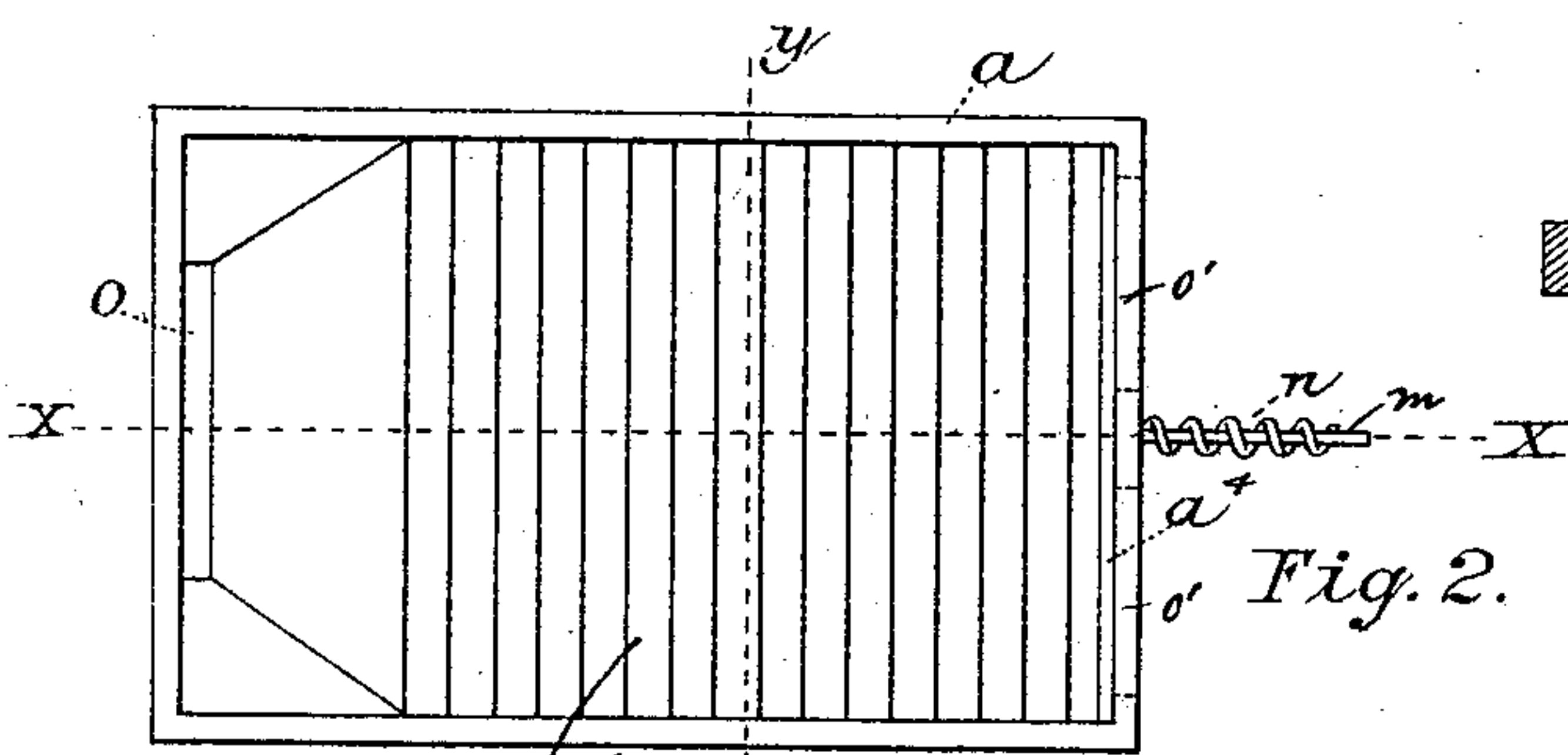


Fig. 2.

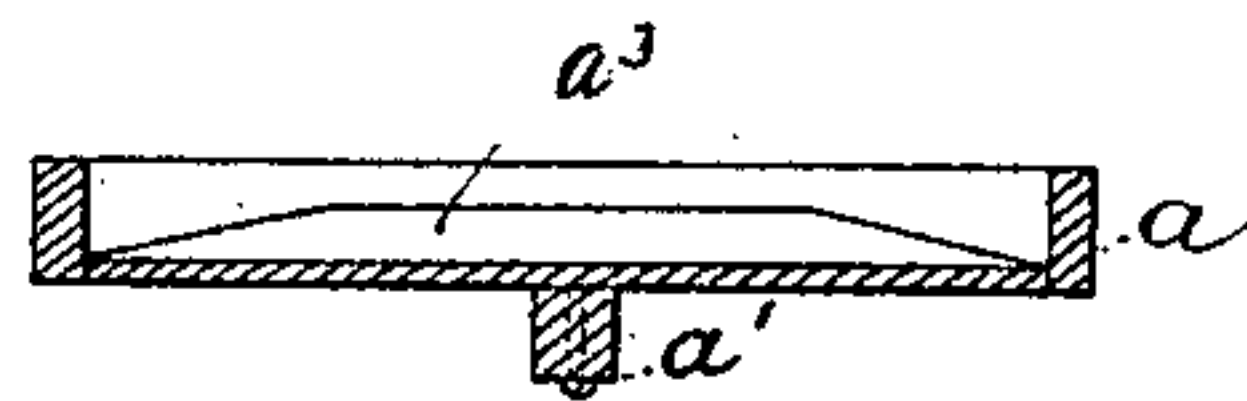


Fig. 3.

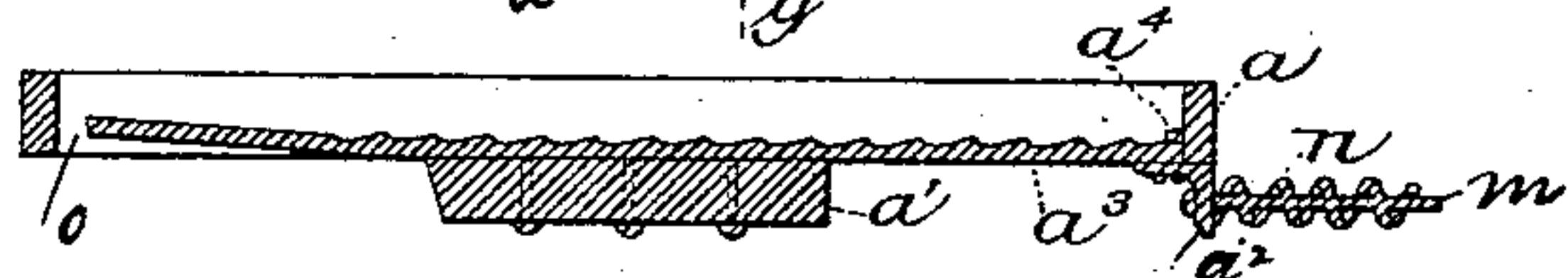


Fig. 4.

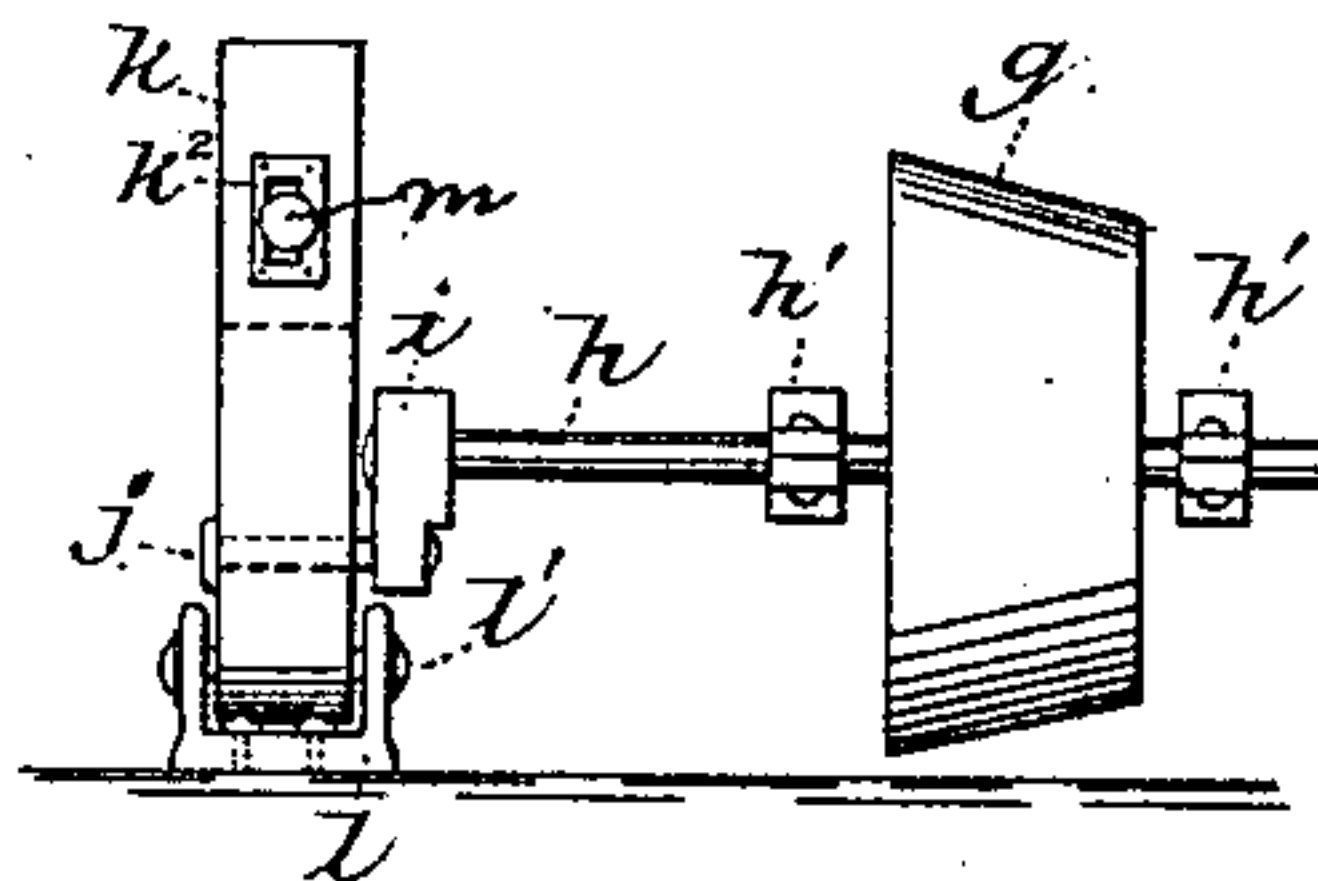


Fig. 5.

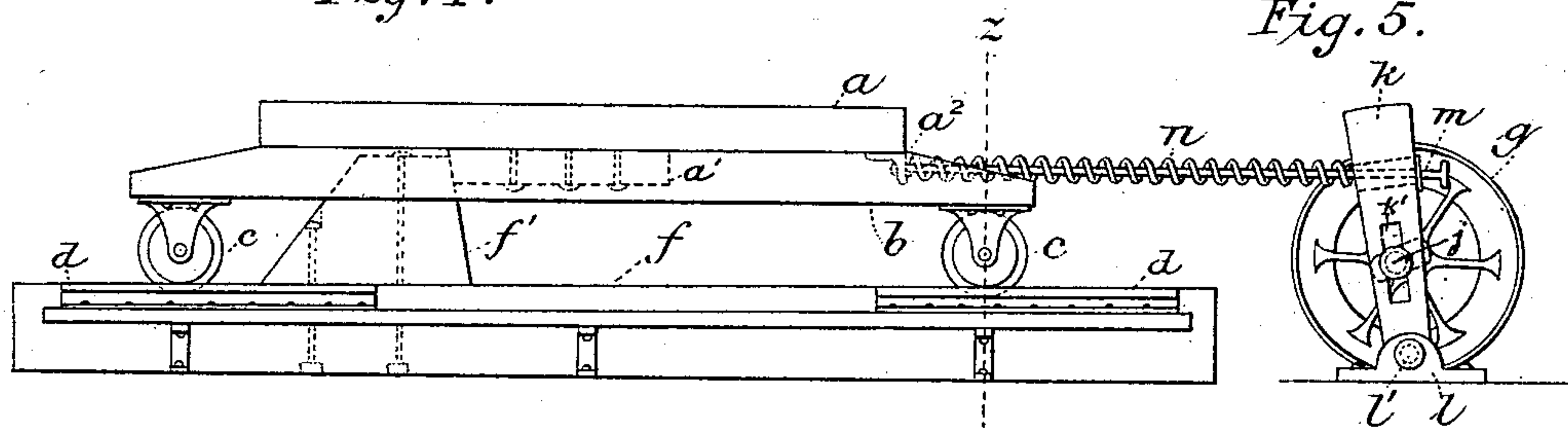


Fig. 1.

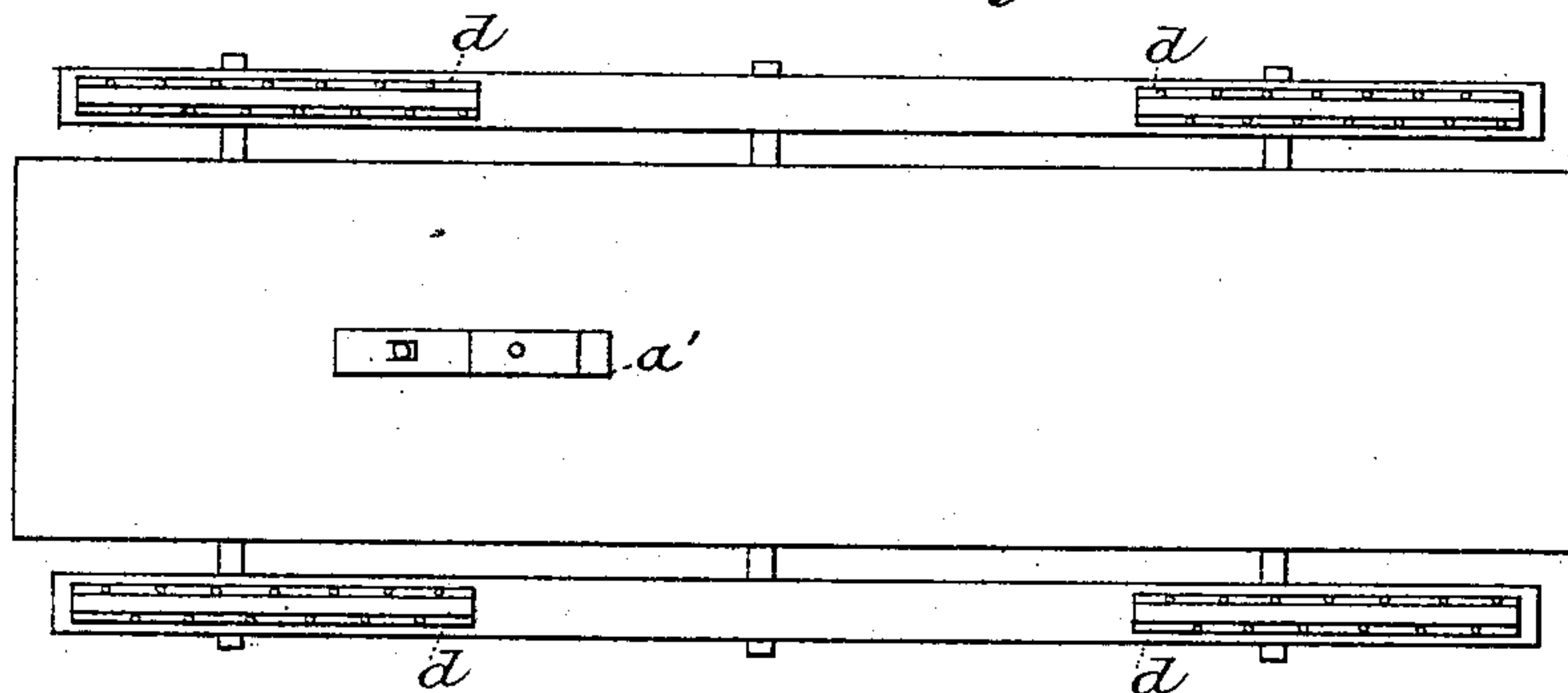


Fig. 6.

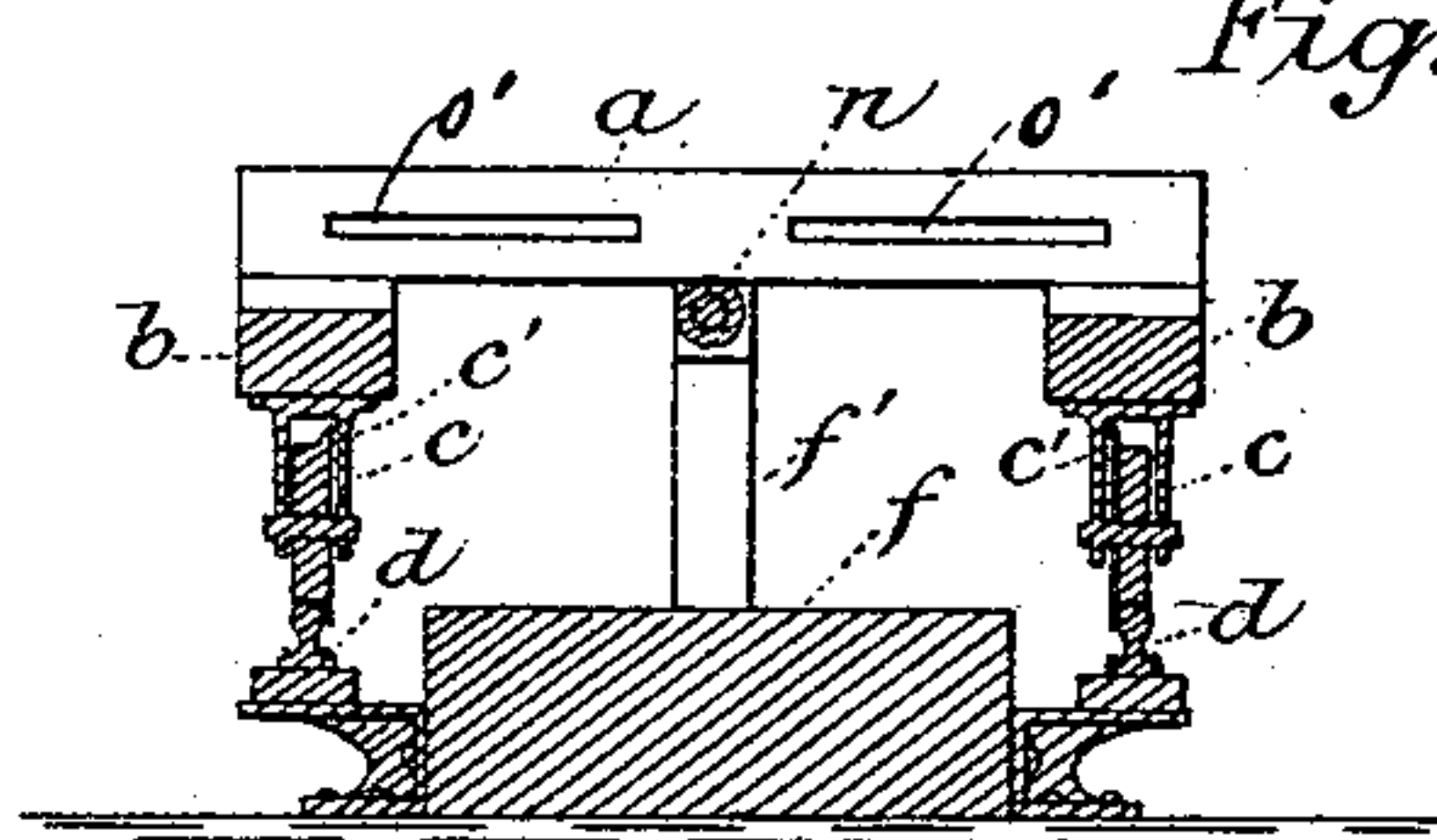


Fig. 7.

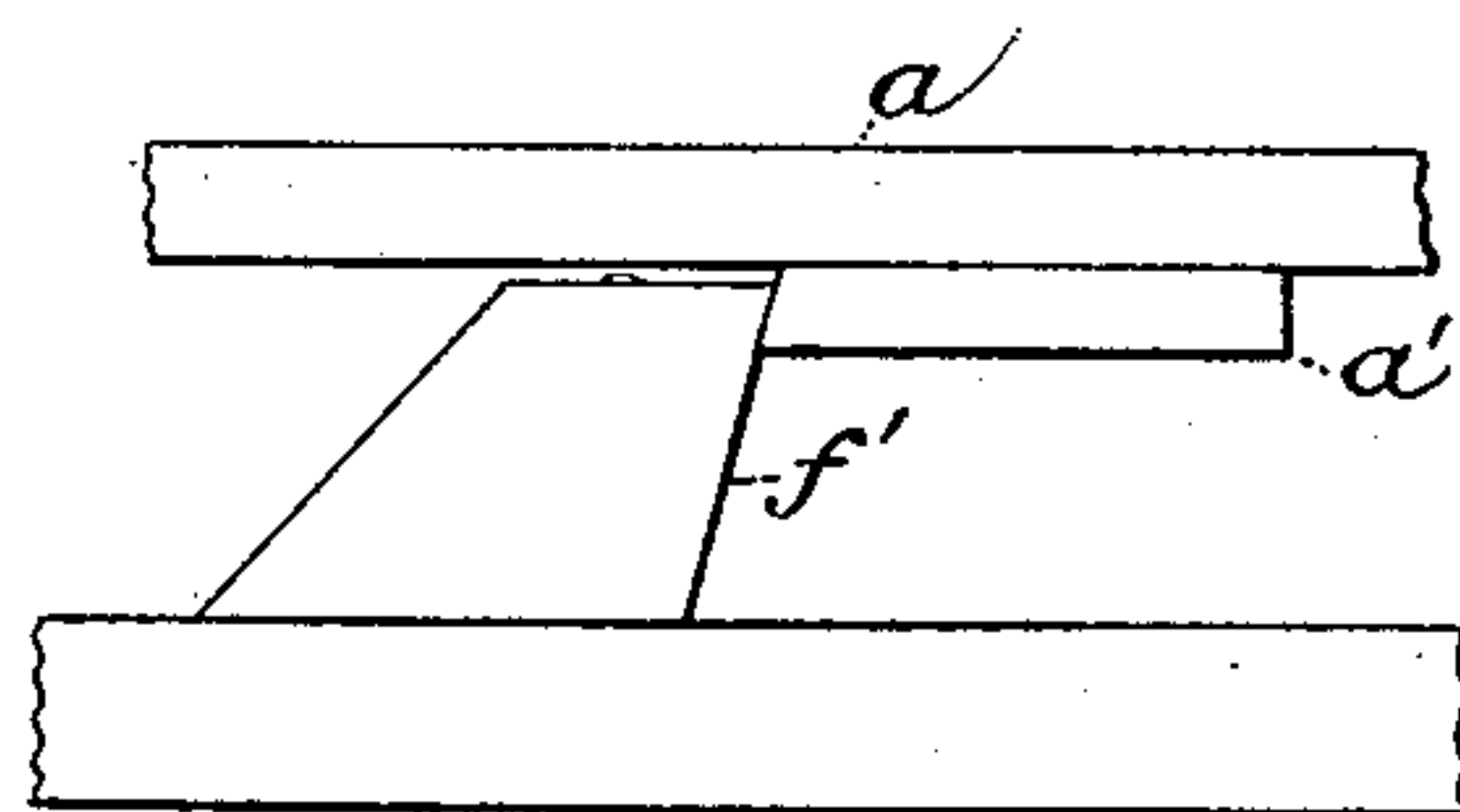


Fig. 8.

WITNESSES:

F. J. Wilsea,
E. P. Harmon

INVENTORS,
Michael McAneny & William L. Riley
BY O'Brien & Co.

their ATTORNEYS.

UNITED STATES PATENT OFFICE.

MICHAEL McANENY AND WILLIAM L. RIELEY, OF DENVER, COLORADO, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO WILLIAM THOMPSON AND JOHN LIVEZEY, JR., BOTH OF SAME PLACE.

ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 338,856, dated March 30, 1886.

Application filed November 9, 1885. Serial No. 182,253. (No model.)

To all whom it may concern:

Be it known that we, MICHAEL McANENY and WILLIAM L. RIELEY, both citizens of the United States, and residents of Denver, in the 5 county of Arapahoe and State of Colorado, have invented a new and useful Improvement in Ore-Concentrators, of which the following is a specification, reference being had therein to the accompanying drawings, in which similar letters refer to corresponding parts.

Our invention relates to improvements in ore-concentrators, and the object of our improvements is to provide a machine for separating the precious metals from the crude substance with which they are found mingled in 15 gold or silver ore, said ore having been first passed through a stamp-mill and pulverized.

In the drawings, Figure 1 is a side elevation of our improved machine. Fig. 2 is a top 20 view of the concentrating-box, showing a part of the motor-rod and spiral spring attached thereto. Fig. 3 is a transverse section of the concentrating-box, taken on the line *y y*, Fig. 2. Fig. 4 is a longitudinal section of the 25 concentrating-box, taken on the line *x x*, Fig. 2. Fig. 5 is a front elevation of the propelling mechanism. Fig. 6 is a top view of the machine after removing the concentrating-box and its supporting-carriage and detaching the 30 propelling mechanism. Fig. 7 is an elevated transverse section taken on the line *z z*, Fig. 1. Fig. 8 is a side elevation of a portion of the concentrating-box, showing the bumper and platform upon which it rests.

35 In the drawings, *a* is a concentrating-box, in the bottom of which is placed the riffled plate *a'*, (distinctly shown in Fig. 4.) The material to be treated, together with the necessary quantity of water, is discharged into box 40 *a*. Concentrating-box *a* rests upon the spring-beams *b b*, said beams being supported by the rollers *c*. Rollers *c* rest upon track *d*, and are further supported, as shown in Figs. 1 and 7. Rollers *c* are provided with flanges *c'*, as usual, 45 to compel them to keep the track. To the bottom of concentrating-box *a* is attached the bumper *a'*.

f is a platform constructed of any suitable

material and made of any desired height. This platform rests upon the floor of the mill 50 in which the machine is used.

To platform *f* is bolted the bumper *f'*, against which bumper *a'* strikes when the machine is in operation. The contact-surfaces of bumpers *a'* and *f'* are oblique, and their 55 obliquity may be as shown in Fig. 1, or it may be reversed, as shown in Fig. 8.

Instead of being supported from beneath, as shown in Fig. 1, the spring-beams *b* may be 60 suspended from above in any suitable manner. In the latter case the bumpers must be fashioned as shown in Fig. 8 in order to accomplish the desired result.

g is a pulley attached to shaft *h*, which shaft works within journal-boxes *h'*. The 65 crank *i* is rigidly attached to the inner end of shaft *h* and turns with it. Crank *i* is attached to pin *j*, which passes through slot *k'* in lever *k*. The lower extremity of lever *k* is attached to socket *l* by pin *l'*, which forms its fulcrum. 70 Through the upper part of lever *k* passes one extremity of the rod *m*. The opening *k''* in lever *k*, through which rod *m* passes, is somewhat longer than the diameter of the rod, as shown in Fig. 5. Opening *k''* allows rod *m* a 75 slight vertical movement, as shown by dotted lines in Fig. 1. The other extremity of rod *m* is attached to a hanger, *a''*, upon the bottom of concentrating-box *a*. Rod *m* has a longitudinal movement within lever *k*, but is stationary within hanger *a''*. Between hanger *a''* and lever *k* is the spiral spring *n*, which is supported and held in position by rod *m*, which 80 passes through said spring.

Our improved machine may be operated by 85 any suitable motor, power being applied by attaching a belt to pulley *g*, which sets shafts *h* in motion. The movement of shaft *h* imparts motion to lever *k* by means of crank *i*. As crank *i* revolves with shaft *h* pin *j* is caused 90 to move in slot *k'*, thus communicating an oscillatory movement to lever *k*. The movement of lever *k* gives motion to concentrating-box *a* by means of rod *m* and spring *n*. As concentrating-box *a* moves forward upon 95 rollers *c* bumper *a'* is brought suddenly in

contact with bumper f' . By reason of the obliquity of the contact-surfaces of the bumpers, as shown in Fig. 1, concentrating-box a is raised slightly at the instant the bumpers come in contact, thus giving said box a vibratory movement caused by the vibration of the spring-beams b , upon which box a rests.

The use of spring-beams b and bumpers a' and f' may be more fully explained as follows: The contact-surfaces of the bumpers being oblique, and the obliquity being as shown in Fig. 1, the contact-surface of bumper a' moves upward slightly upon the inclined plane formed by the contact-surface of bumper f' . The greater the degree of obliquity of the contact-surfaces of these bumpers the greater the facility of this upward movement of bumper a' upon bumper f' . The degree of obliquity of the contact-surfaces of these bumpers may be as great as may be desired, in order to accomplish the result sought. The upward movement of bumper a' just described raises concentrating-box a , thus causing the spring-beams b to bend upward between their extremities, which remain stationary, the contact of the bumpers being so sudden that the resistance caused by the weight of the rollers attached to the extremities of the spring-beams is not overcome. After the contact of the bumpers a' and f' , with the result just explained, the beams b spring to their original position, thus giving the vibratory movement to box, as before mentioned. The spring-beams should be so constructed as to facilitate this springing movement, caused by the sudden and forcible contact of the oblique surfaces of the bumpers a' and f' , as aforesaid.

When concentrating-box a is supported from above as before referred to, the supporting-rods must be attached to spring-beams b at or near the extremities of said beams, and then the bumpers used must be fashioned as shown in Fig. 8, or, in other words, the obliquity of the bumpers shown in Fig. 1 must be reversed, thus causing the contact-surface of bumper a' to move downward upon the inclined plane formed by bumper f' , thus giving a downward movement to concentrating-box a , and causing spring-beams b to bend downward between their extremities, said extremities being held in position and given the requisite resistance by the supporting-rods attached as aforesaid. When concentrating-box a is suspended from above and the bumpers are fashioned as shown in Fig. 8, the sudden contact of the bumpers causes a slight downward movement, which also gives box a a vibratory movement. The sudden contact of

the bumpers causes box a with its carriage-support to spring back, forcing rod m through lever k , and causing its extremity to project beyond said lever, as shown in the drawings, thus contracting spiral spring n . Spring n being contracted by the rebound just described, immediately forces box a with its support forward, bringing the bumpers in contact again, by means of which motion the material in box a is separated into two parts—namely, the valuable and worthless. The vibration of box a keeps the material in said box continually in motion, causing the precious metal to settle to the bottom, it being heavier than the crude material. Under the influence of the sudden jar caused by the contact of the bumpers the precious metal, resting upon the bottom of box a and within the riffles, is carried forward upon riffled plate a^3 , and is discharged through the opening o into any suitable receptacle. The jar causes by the sudden contact of the bumpers caused a backward wave in the water contained in box a , which wave carries the light and crude material with it, washing the same over the elevated riffle a^4 , when it is discharged from the machine through the openings o' o' . (Shown in Figs. 1 and 7.)

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In an ore-concentrator, the combination of concentrating-box a , provided with riffled plate a^3 , bumper a' , hanger a^2 , and a movable support, bumper f' , platform f , and mechanism for propelling concentrating-box a , consisting of shank h , crank i , pin j , lever k , provided with slots k' and k^2 , and a suitable fulcrum, rod m , and spring n , substantially as described and shown, and for the purpose set forth.

2. In an ore-concentrator, the combination of concentrating-box a , provided with riffled plate a^3 , and oblique bumper a' , a supporting-carriage for concentrating-box a , consisting of spring-beams b and rollers c , oblique bumper f' , platform f , and suitable mechanism for propelling concentrating-box a .

3. In an ore-concentrator, the combination of a concentrating-box provided with oblique bumper a' , spring-beams b , provided with a suitable support, and oblique bumper f' , provided with a suitable supporting-platform, substantially as described, and for the purpose set forth.

MICHAEL McANENY.
WM. L. RIELEY.

In presence of—

T. D. W. TOWLES,
W. W. WALLACE.