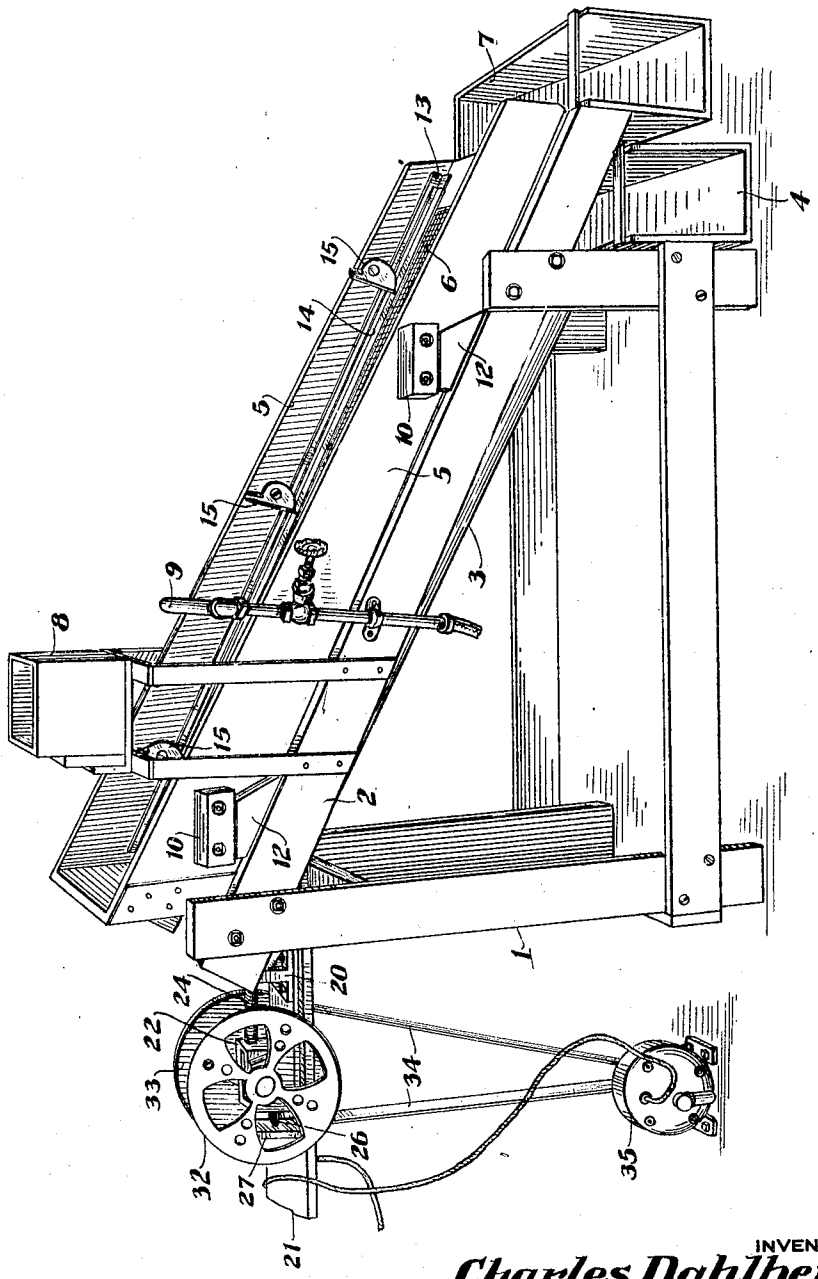
Nov. 8, 1927. 1,648,543

C. DAHLBERG

SHAKING SCREEN

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Fig. 1.



INVENTOR

Charles Dahlberg

BY E. G. Siggers

ATTORNEY

WITNESSES

L. Goodyear

E. N. Lovewell

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C. DAHLBERG

SHAKING SCREEN

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Fig. 2.

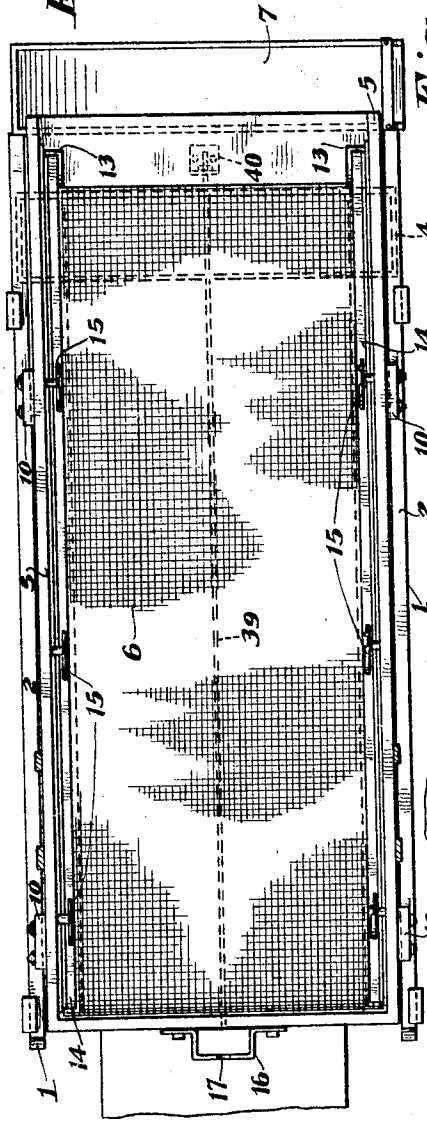


Fig. 4.

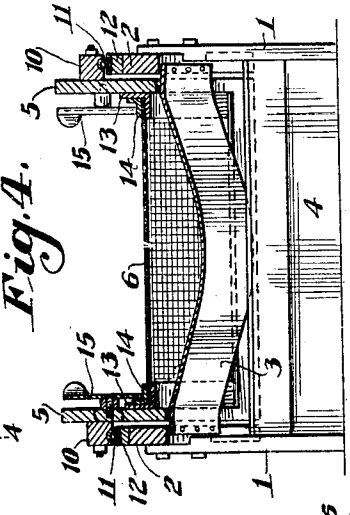


Fig. 3.

WITNESSES

L. Goodyear.

E. N. Lovewell

INVENTOR

Charles Dahlberg

BY E. G. Siggers

ATTORNEY

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C. DAHLBERG

SHAKING SCREEN

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Fig. 7.

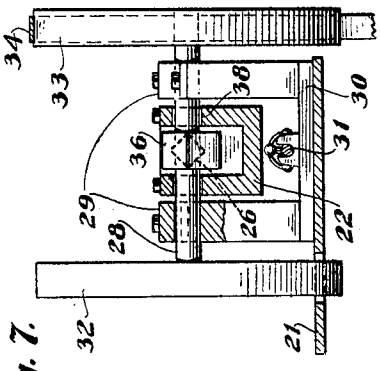


Fig. 8.

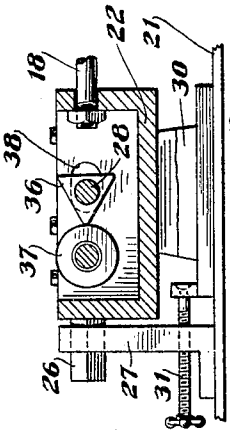


Fig. 10.

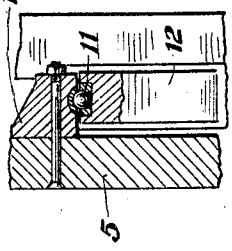


Fig. 5.

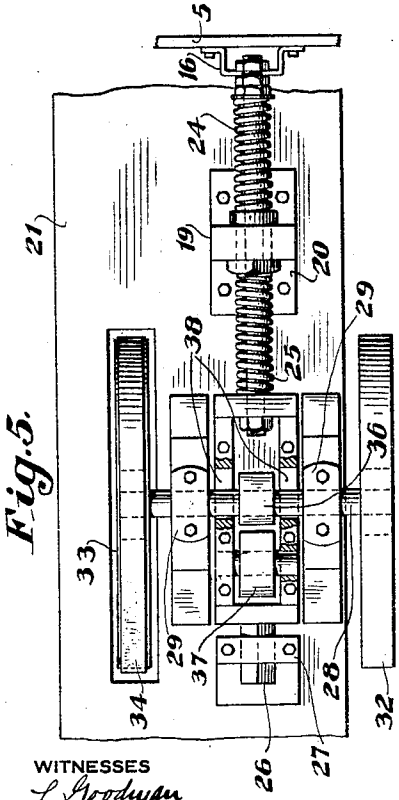


Fig. 6.

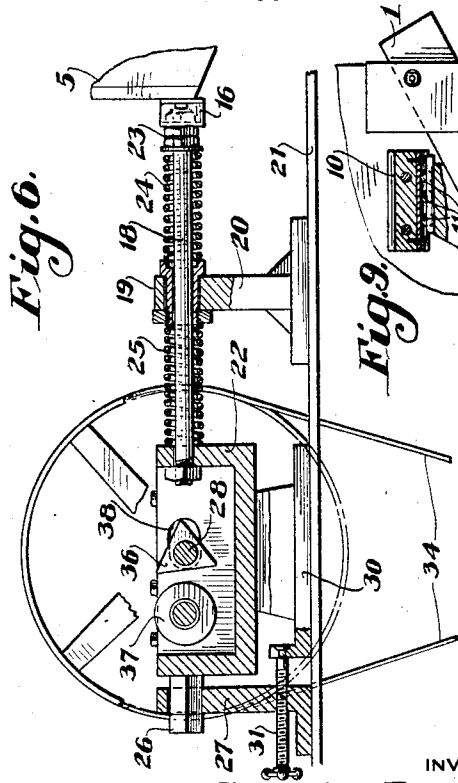


Fig. 9.

WITNESSES

L. Goodyear

E. N. Lovewell

INVENTOR

Charles Dahlberg

BY E. G. Siggers

ATTORNEY

Patented Nov. 8, 1927. 1,648,543

UNITED STATES PATENT OFFICE.

CHARLES DAHLBERG, OF ANACONDA, MONTANA.

SHAKING SCREEN.

Application filed January 22, 1925. Serial No. 4,048.

This invention relates to a shaking screen, especially adapted for use in the concentration of ores, either wet or dry.

The general object of the invention is to provide a simple and practical actuating device, which may be operated rapidly so that the screen will have a continuous and rapid reciprocatory motion, and a large amount of ore may be handled with a screen of comparatively small size, thus reducing the initial cost of the plant and the resultant cost of the concentration. To this end, the invention includes means for agitating the screen continuously by a succession of short quick jerks, the length and force of which may be adjusted according to the character of the work to be performed.

The detailed construction of the invention and its mode of operation will be more specifically explained in connection with the accompanying drawings, which illustrate one embodiment thereof.

In the drawings:

Figure 1 is a perspective view of the invention.

Figure 2 is a plan view of the screen.

Figure 3 is a longitudinal vertical section thereof.

Figure 4 is a transverse section taken on the line 4—4 of Figure 3.

Figure 5 is a plan view of the screen actuating mechanism.

Figure 6 is a vertical longitudinal section thereof.

Figure 7 is a transverse section through the actuating means.

Figure 8 is a longitudinal view similar to Figure 6, but showing the parts in a different position.

Figure 9 is a detail sectional view showing the manner in which the screen is supported.

Figure 10 is a detail view taken at right angles to the plane of Figure 9.

The invention as herein shown is supported by a frame 1, having inclined longitudinal bars 2 to which is secured a trough 3, adapted to deliver the screened material to a trough 4, secured beneath its lower end to the frame 1. Above the trough 3 is a screen frame 5 in which is secured a screen 6, and the coarser particles are delivered from the lower end of the screen to a trough 7, which is secured beneath the same to the lower ends of the bars 2. Any suitable feed box or hopper 8 may be supported above the upper end of the screen, and a water pipe 9 may be provided for spraying the feed when its character or condition requires it.

The screen frame 5 is supported by means of blocks 10, which are secured to its sides and rest on ball bearings 11 mounted in blocks 12, which are secured to the bars 2. Angle bars 13 are secured to the inner sides of the frame 5, and receive the edges of the screen 6 which are clamped thereto by angle bars 14, the latter being removably held by cams 15, which are rotatably supported by the sides of the frame 5.

A bracket 16 is secured to the front end of the screen frame 5, and is provided with a slot 17 for receiving the end of a rod 18, by means of which the screen is agitated. The rod 18 is reciprocably mounted in a bushing 19 secured in a post 20, which in turn is secured to a table 21 supported at the front end of the frame 1. The rod 18 is adjustably connected at its front end to a small box 22, and adjustably connected at its rear end to the bracket 16 by means of lock nuts 23, so that the force of the forward motion may be adjusted. The rod is yieldably held in its intermediate position by expansile coil springs 24 and 25, which surround it upon opposite sides of the bushing 19.

The rear end of the box 22 is supported and guided by a non-circular pin 26, which projects rearwardly therefrom through a guide opening in a bracket 27, which is secured to the front part of the table 21.

A drive shaft 28 is journaled in bearing blocks 29, which are supported on a base 30, slidably mounted on the table 21, and adjustable longitudinally by means of a screw 31 connected with the bracket 27. The shaft 28 has a fly wheel 32 secured to one end, and a driving pulley 33 secured to the other end, which may be driven by means of a belt 34 from an electric motor 35, or by any other preferred means. A cam 36, preferably in the shape of an equilateral triangle is secured to the shaft 28 within the box 22, and as the shaft 28 rotates, this cam is adapted to strike an idler roller 37, which is rotatably mounted in the box 22 adjacent the cam. The sides of the box 22 are provided with elongated slots 38 for receiving the shaft 28, so as to permit the longitudinal reciprocation of the box.

As the shaft 28 rotates and the cam 36 strikes the roller 37, the screen is moved backwardly a short distance by a sudden

jerk, and as soon as the roller is disengaged by the cam, the spring 24 immediately jerks the screen in the opposite direction, the extent of this motion being limited by the spring 25. This motion has scarcely been completed when the cam again strikes the roller, and the operation is repeated. The effect of this, therefore, is to impart to the screen a short and continuous oscillation. The box 22 may be partially filled with oil so as to lubricate the cam and roller. By shortening the length of the springs by means of the nuts 23, the forward motion of the screen may be accelerated, and by adjusting the screw 31 the length of the stroke may be increased or diminished. By releasing the cams 15, the screen 6 may be easily removed and replaced by one of different character. Two or more screens may be used, one above the other, if desired. The water pipe 9 will not ordinarily be used for spraying water, except when the feed is very fine.

Owing to the rapid motion of the screen, its capacity is unusually large compared to its size, and the expense of screening is proportionately small. In view of the sudden jerks to which the screen is subjected, it is preferred to reinforce the frame 5 longitudinally by means of a rod 39, which extends through transverse bars 40 secured to the underside of the frame.

While I have shown and described in considerable detail the specific construction of one form in which the invention may be embodied, it is to be understood that this is merely for the purpose of illustration, and that many modifications may be made therein within the scope of the invention as claimed without departing from the salient features thereof.

What is claimed is:

1. In a screening device, the combination of a member mounted for reciprocation, a rod slidably mounted and connected to said member, a bushing in which the rod is mounted, coil springs on the rod at opposite sides of the bushing, a box for containing oil connected to the other end of the rod, means for slidably supporting one end of the box, a drive shaft mounted independently of the box and extending across the same, a cam on the shaft within the box, and a roller mounted in the box adjacent to the cam to be engaged thereby.

2. In a device of the character described, the combination of two members guided for rectilinear reciprocation, a rod connecting the two members, means slidably supporting the intermediate portion of the connecting rod, coiled springs on the rod at opposite sides of the supporting means and bearing against the same, a drive shaft disposed transversely to the direction of reciprocation of said members, and a cam on said shaft engageable with one of said members to move it in one direction and thereby move the other member, one of said springs acting to return said members as soon as they are released by the cam, and the other spring acting as a buffer.

3. In a device of the character described, the combination of two reciprocably mounted members, a spring-held rod connecting the two members, a drive shaft disposed transversely to the direction of reciprocation of said members, a cam on said shaft engageable with one of said members to move it in one direction and thereby move the other member, bearings in which the drive shaft is mounted, a table on which said bearings are slidably supported, a bracket secured to said table, and means cooperating with said bracket to adjust the bearings and drive shaft in the direction of movement of said members so as to decrease or increase the length of the stroke.

4. In a device of the character described, the combination of a member mounted for reciprocation, a slidably mounted spring-held rod connected at one end to said member, a box connected to the other end of said rod, an idle roller mounted within the box, a drive shaft disposed transversely of the box, a cam secured to said shaft within the box and engageable with the roller, as the shaft rotates, to cause longitudinal movement of said member, bearings in which the drive shaft is mounted, a table on which said bearings are slidably supported, a bracket secured to said table, and means cooperating with said bracket to adjust the bearings and shaft, thereby decreasing or increasing the length of the stroke.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

CHARLES DAHLBERG.