No. 650,034. Patented May 22, 1900.

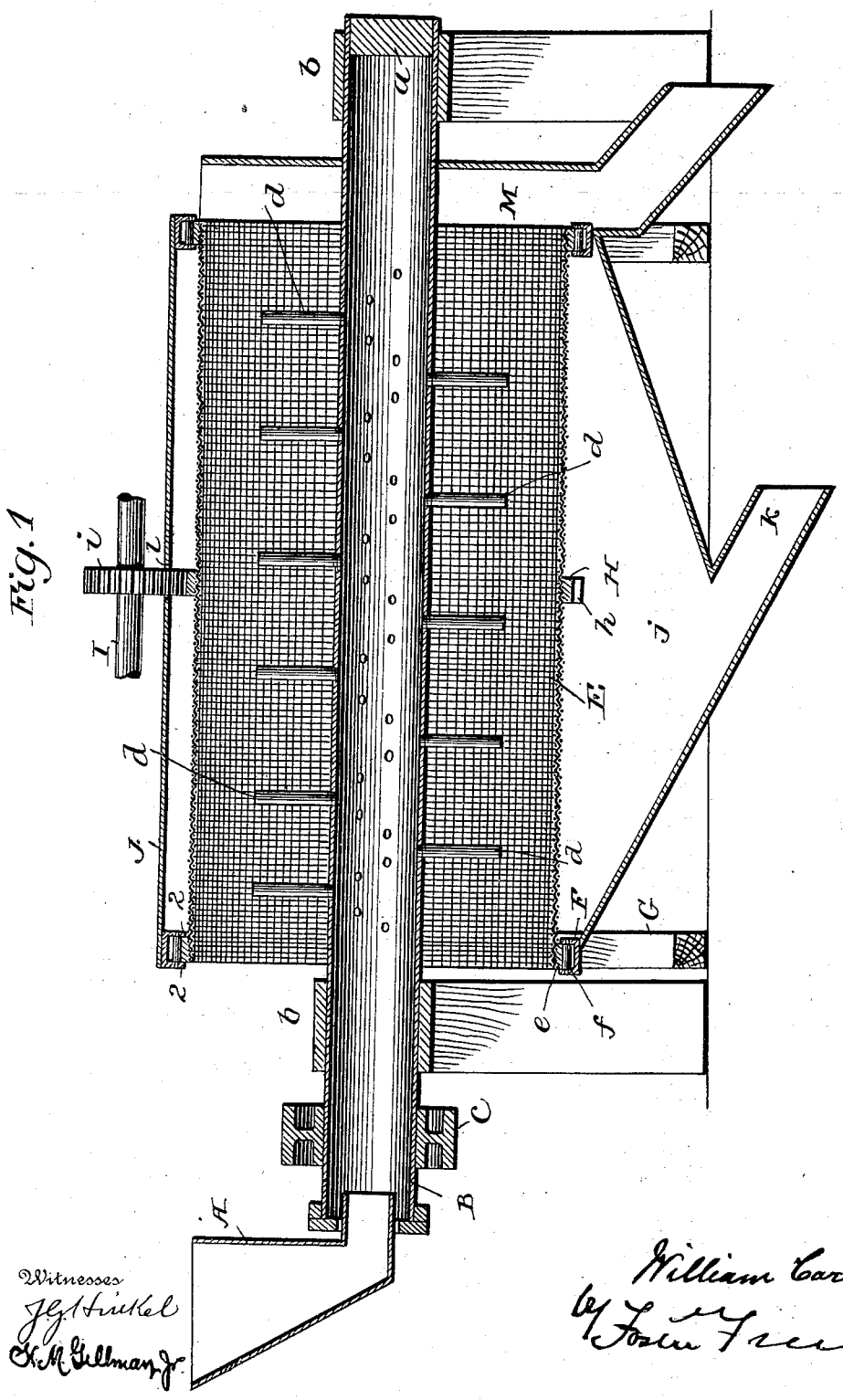
W. CARKEEK.

SCREENING DEVICE.

(Application filed Nov. 10, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1



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(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

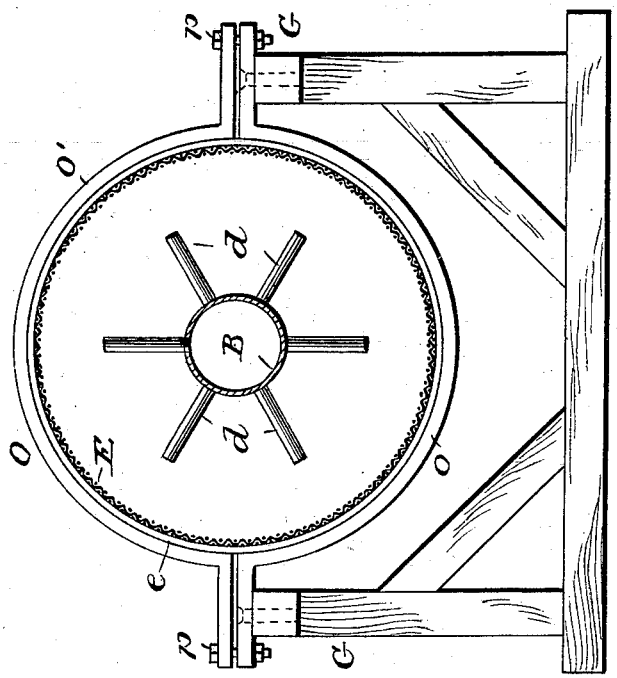
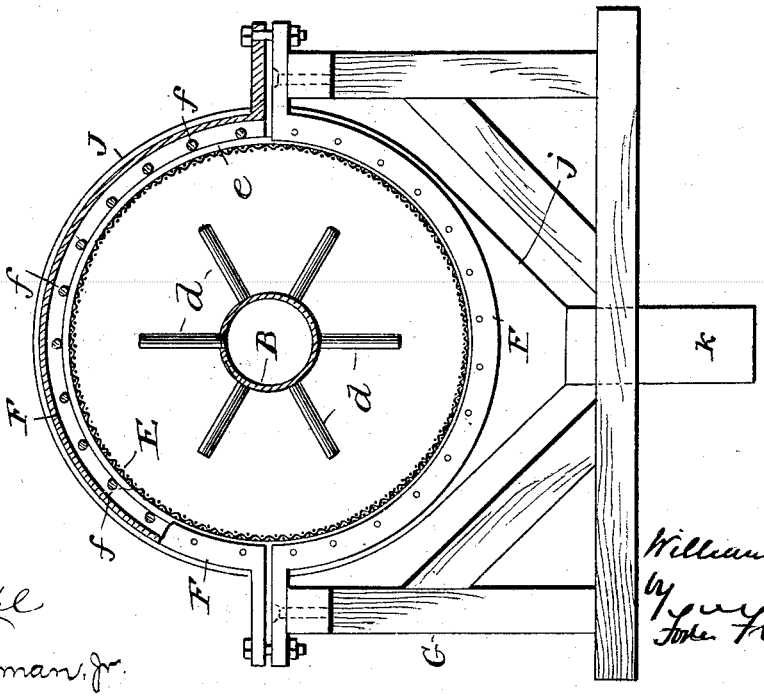


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM CARKEEK, OF BUTTE, MONTANA, ASSIGNOR OF TWO-THIRDS TO JOHN CARKEEK AND PHILIP WISEMAN, OF SAME PLACE.

SCREENING DEVICE.

SPECIFICATION forming part of Letters Patent No. 650,034, dated May 22, 1900.

Application filed November 10, 1899. Serial No. 736,512. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CARKEEK, a citizen of the United States, residing at Butte, in the county of Silverbow and State of Montana, have invented certain new and useful Improvements in Screening Devices, of which the following is a specification.

This invention relates to apparatus for screening ore, tailings, or similar substances, and is especially adapted for screening by what is known as the "wet process."

The object of the invention is to provide an improved apparatus for this purpose whereby the screening will be accomplished in a better and more expeditious manner.

The invention will be fully described hereinafter, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a screening apparatus constructed in accordance with my invention. Fig. 2 is an end view, partly in section and partly broken away. Fig. 3 is an end view showing a modification.

A represents a feed-box supported in any suitable manner to discharge into the end of a pipe B. This pipe is supported at any desired inclination in suitable bearings *b b* to rotate therein and is provided with a pulley *c*, by means of which it may be driven from any source of power. (Not shown.) The end of the pipe B remote from the feed-box will be closed, preferably, by a removable cap or plug *a*. At intervals in the pipe B holes are bored into which short pieces of pipe *d* are screwed, such pipes forming discharge-nipples. The pipes or nipples *d* will be of such number and size that the combined areas of their discharge-openings will exceed the cross-sectional area of the pipe B, and preferably they will be arranged spirally around the pipe B.

E is a cylindrical screen supported at any desired inclination around the pipe B and of such length that all the nipples *d* are within it, while the pipe B extends beyond it at each end. This screen may be stationary, or it may be supported to have rotary movement in either direction, but preferably in a direction reverse to that in which the pipe B is rotated.

In Figs. 1 and 2 I have shown one way of supporting the screen so that it may have rotary movement, and as there shown it is provided at each end with a band *e*, and these bands are supported and rotate upon a series of rollers, (indicated by *f*,) the latter being journaled in a divided ring F, which in turn is supported upon suitable framework G. The rings F may be made of channel-iron of sufficient depth that the sides 2 thereof may overlap the edges of the bands *e*, and thus prevent to a considerable extent the access of grit to the rollers.

Some means must be provided to positively rotate the screen, and as an illustration I have shown the screen E provided with a band H intermediate its ends, such bands having gear-teeth *h*, which mesh with the teeth of a pinion *i*, carried by a shaft I, adapted to be driven from any suitable source of power. (Not shown.) Any other means may be employed to positively rotate the cylinder E, and it may be otherwise supported to permit such rotary movement, the means shown being merely illustrative of one way in which the rotation may be effected. The essential thing is that the screen shall be driven independently of the pipe B, and preferably the rotation of the screen will be slower than that of the pipe and in the opposite direction.

An outer casing J will be provided around the screen E, the lower portion of which will be in the form of a hopper *j*, from which a delivery-chute *k* may lead and through which the screened ore will be discharged. The upper portion of the casing will be provided with an opening *l*, through which the pinion *i* will project. The casing J may be supported in any suitable manner and may be in sections to permit it to be easily removed when necessary.

A receptacle M is provided into which the material which is over size or too large to pass through the meshes of the screen will be delivered from the end of the screen remote from the feed-box A. This oversize material can be again crushed or otherwise disposed of.

Sometimes it may be preferable to have the screen E stationary, and one way of thus supporting it is shown in Fig. 3, where it will be

seen that the band *e* on the screen is clamped between the two sections of a flat ring O, the lower section *o* being bolted to the framework G and the upper section *o'* being detachably connected to the section *o* by the bolts *p*.

In operation the crushed ore mixed with water will be fed into the box A, from whence it will pass into the pipe B. The latter being rapidly rotated, the centrifugal force will drive the mixed ore and water out through the nipples *d* and against the screen and the fine ore and water will pass through the screen within the casing J and fall into the hopper *j*, while the oversize material will be discharged from the lower end of the inclined screen into the receptacle M. If, in addition, the screen be also rotated, the screening action will be facilitated and the screen will not be as liable to clog up. Further, the tumbling action which will thus be imparted to the oversize material will aid in preventing the screen from clogging and will also facilitate the discharge of the oversize material from the screen.

I do not limit my invention to the specific details of construction illustrated and described, as they may be varied or modified in many particulars; but,

Having described the invention, I claim—

1. In a screening apparatus for ore, &c., the combination with a cylindrical screen supported at an inclination, of a pipe extending longitudinally through said screen to have rotary movement and having its lower end closed, a series of discharge-nipples arranged circumferentially around the pipe within the screen, means to rotate the pipe, means to introduce the ore to the pipe at its highest end, a casing inclosing the screen and into which the screened material is delivered, and a receptacle at the lower end of the screen into which the oversize material is discharged from the screen, substantially as set forth.

2. In a screening apparatus for ore, &c., the combination with a cylindrical screen supported at an inclination, of a pipe extending longitudinally through said screen to have rotary movement and having its lower end closed, a series of discharge-nipples arranged circumferentially around the pipe within the screen, a casing inclosing the screen into which the material passes through the screen, means to feed the ore to the pipe at its highest end, a means to rotate the pipe, and means to rotate the screen independently of the pipe, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM CARKEEK.

Witnesses:
E. F. KILMER,
WILLIAM THOMPSON.