No. 883,974. PATENTED APR. 7, 1908.

W. H. ROUGHSEDGE.

GOLD WASHING SCREEN.

APPLICATION FILED FEB. 11, 1907.

3 SHEETS—SHEET 1.

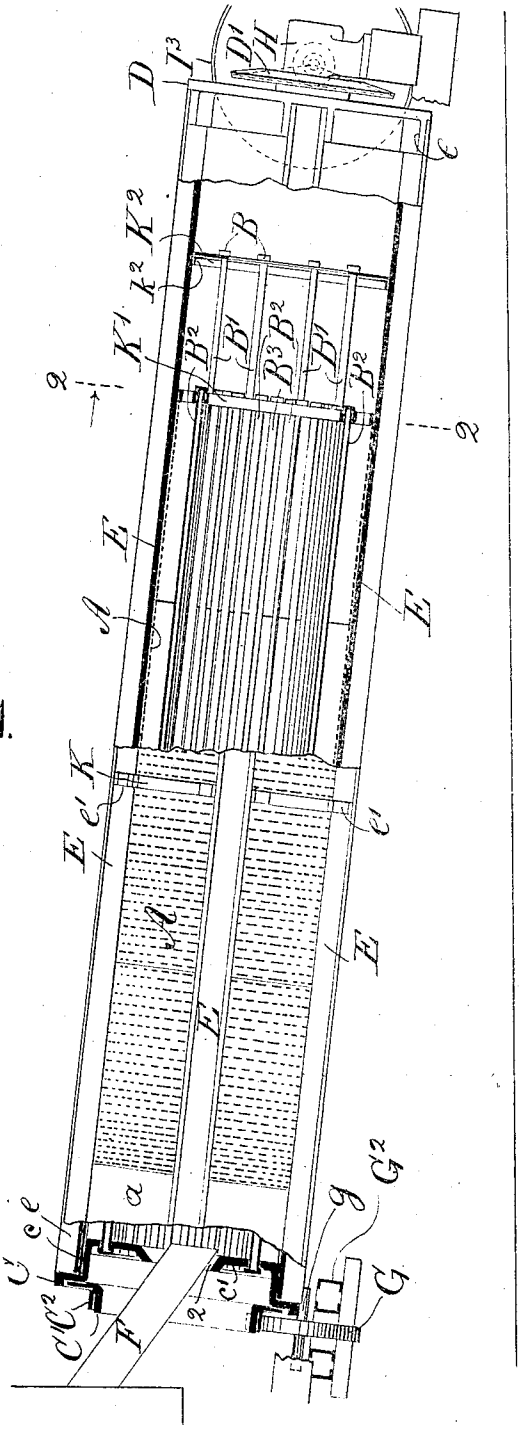


Fig. 1.

Witnesses:

W. Wichhorst

W. H. Roughsedge
Inventor
by A & B Harvey
his Attorneys

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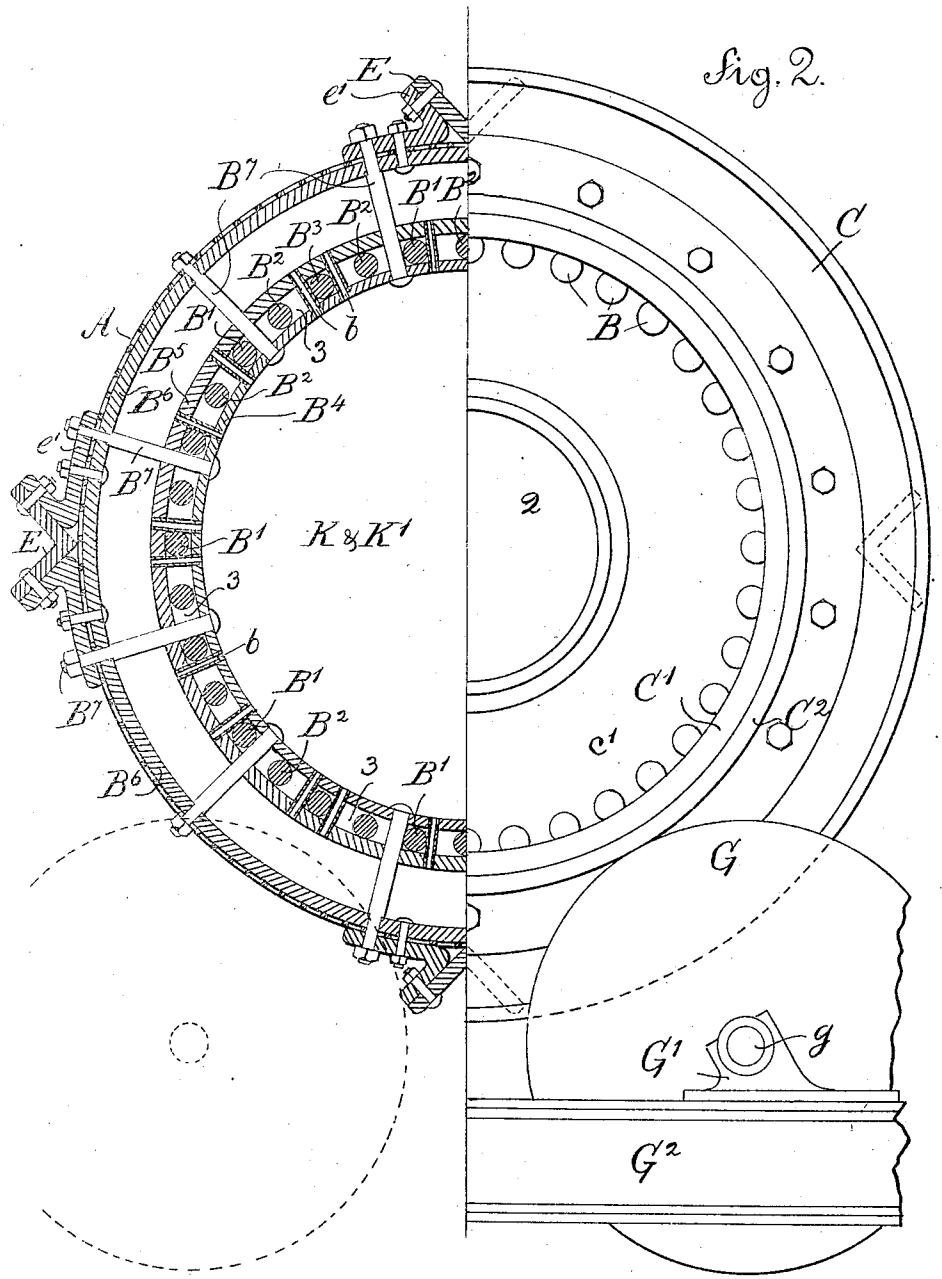
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

W. W. Brunell

W. Wichhorst

W. H. Roughsedge
Inventor

by A & B Harvey
his Attorneys

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3 SHEETS—SHEET 3.

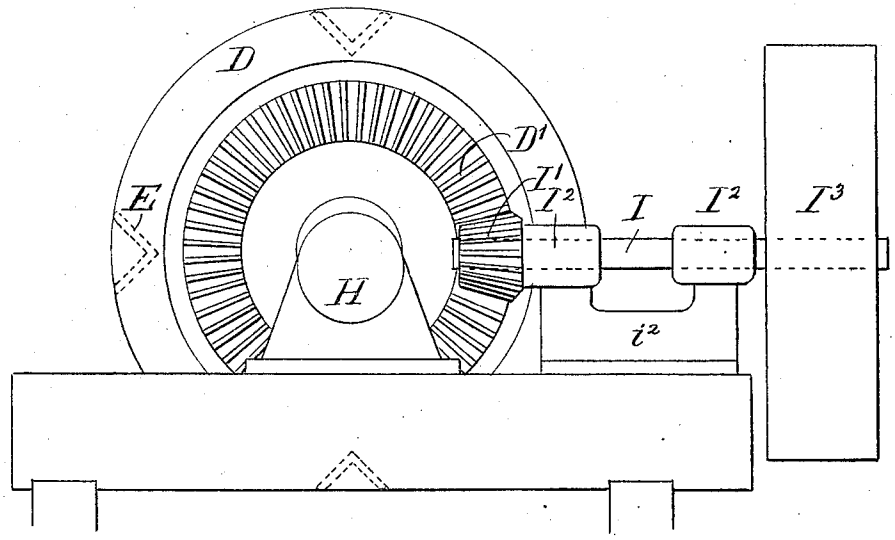


Fig. 3.

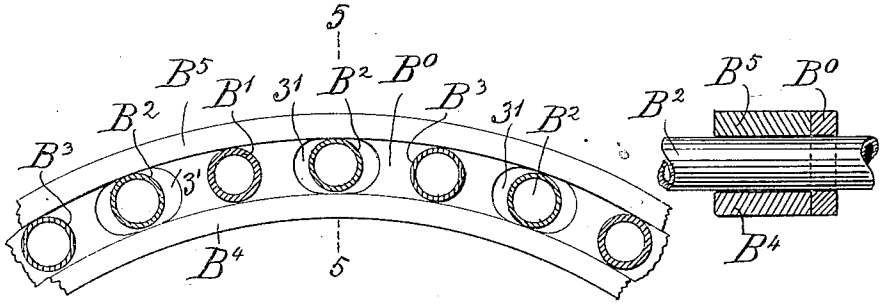


Fig. 4.

Fig. 5.

Witnesses:

W. A. Brunel

W. Wichhorst

W. H. Roughsedge
Inventor
by A & B Harvey
his Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM H. ROUGHSEDGE, OF OTTAWA, ONTARIO, CANADA.

GOLD-WASHING SCREEN.

No. 883,974. Specification of Letters Patent. Patented April 7, 1908.

Application filed February 11, 1907. Serial No. 356,815.

To all whom it may concern:

Be it known that I, WILLIAM H. ROUGHSEDGE, residing at Ottawa, in the county of Carleton, Province of Ontario, and Dominion of Canada, have invented new and useful Improvements in Gold-Washing Screens, of which the following is a specification.

My invention which will be hereinafter fully set forth and claimed relates to devices for separating stones, ores, gravel, sand and the like one from the other or into different sizes.

The object of my invention is a screen having a greater screening area than screens of the same size but other construction; to reduce the cost of construction; to reduce the wear of the screening surface; to increase the efficiency of the separation; to reduce the liability to clogging, to operate more efficiently upon the material in breaking it up; and to increase the facility for repair.

Figure 1 is a side elevation of my improved screen, parts being broken out and show n in section. Fig. 2 is part transverse section, on line 2—2, Fig. 1, and part elevation of the feed end, on a larger scale. Fig. 3 is an end view of the discharge and driving end. Fig. 4 is a representation of part of a tail ring, showing a modification of the method of holding the rods, and Fig. 5 is a section of the same, on line 5—5, Fig. 4.

My improved screen consists essentially of two concentric screening surfaces, an outer cylinder, A, of perforated sheet metal or other perforated or meshed material and an inner cylinder of considerably smaller diameter, formed of longitudinal rods, bars or pipes, B^1 B^2 B^3. The screen being, as is usual, placed in an inclined position, one end may be spoken of as the head, upper or feed-end and the other as the tail, lower, discharge or drive end; the illustration showing an example of some twenty feet in length, it being understood that this dimension may vary according to the particular requirements of each case.

C is what is technically known as the head ring, and D the tail ring, both being formed with seats *e* for longitudinal beams, consisting of sectional or angle bars, E, which latter connect the two firmly. The head ring has a shoulder, *c*, for carrying the screening cylinder, A, is provided with an inner flange c^1, in which the bars B^1 B^2 B^3 are secured and is formed with a central opening, 2, for the introduction of the feed chute, F. It is also provided with a tread ring, C^1, preferably bolted to it and having a tire, C^2, shrunk upon it which rests upon a pair of carrying rolls, G. The latter have axles, *g*, which are suitably journaled upon a proper frame or support, such as G^1 and G^2; these rolls forming the support of the head end of the screen.

The tail ring D is provided with a trunnion *d* Fig. 1 journaled in a thrust bearing, H, suitably supported, and also with a bevel wheel, D^1, into which gears a pinion I^1 on a transverse driving shaft, I, journaled in a bearing, I^2, on a pillow block, i^2, and carrying a driving pulley, I^3.

The example illustrated in Fig. 1 shows the outer cylinder A to be blank or non-perforate for some distance from the head ring, as at *a*, and to terminate entirely some distance from the tail ring, coincident with the discharge end of the inner screen, as at a^1. The perforations for certain purposes are preferably oblong, but they may be of any description, as the requirements of the case may demand. Instead of perforated sheet, meshed web may also be used.

For the inner screen, bars or rods may be used and for certain purposes piping is preferable; they will be referred to as "longitudinal" screen bars. These may be placed any distance apart, as the requirements of each case may demand. These longitudinal screen bars B^1 B^2 B^3 are secured in holes drilled in the flange c^1 of the head ring and, the screen being a long one, they may pass through an intermediate supporting ring, K, a tail ring, K^1, and some of them through a terminal tail ring, K^2, the latter being placed some distance from the tail ring D, and K^1, being the termination or tail of the inner screen proper, some distance from that. Every fourth longitudinal screen bar, B^1, preferably of extra strength, if piping, extends the full length from C to K^2 and is fitted tight, while the remainder terminate in the supporting ring K^1 and each one, B^2, adjacent to the fixed one, B^1, is fitted loosely, capable of turning and having in the supports K and K^1 lateral play by being placed in oblong openings, 3 (Fig. 2). Each intermediate longitudinal screen bar B^3 fits tight into its place. A cap, B, is placed upon the end of each. The space between the rings K^1 and K^2 is the discharge of the screened material issuing from the inner screen and the space between

K^2 and the tail piece D the discharge for the coarsest debris.

The supporting rings K K^1 consist each of two tire-like hoops B^4 and B^5, one inside and one outside of the longitudinal screen bars B^1 B^2 B^3. The longitudinal screen bars are separated by radial separator rods or bolts, *b*, preferably tubing, secured in the rings B^4 and B^5. An outer ring or hoop B^6 is secured to the angle bars E by straps or cleats, e^1, and connected to the double ring B^4 B^5 by stay bolts, B^7, Fig. 2.

A modification is shown in Figs. 4 and 5, showing the screen bars B^1 B^2 B^3 passing through a plate ring B^0 and having oval holes, 3^1, for the loose rods B^2. The supporting ring K^2 is a flat plate ring drilled to receive the fixed rods B^1. An angle iron ring k^3 is secured to this at the outer edge which extends to the angle bars E to which it is secured by suitable cleats or straps, e^1.

It will be observed that the coarse and heavy material is first fed into the inner screen which is of considerable strength, retains the coarse and heavy parts and prevents them coming into contact with the outer finer screen which is of much lighter construction; damage and expensive wear and tear of the latter is thereby prevented. The manner of securing the screen bars of the inner screen is of importance. Every alternate one is loose and free to turn and also to move laterally at the tail end. By turning, new wearing surface is presented and the wear is therefore even and by moving laterally as the screen rotates, stones and clods that have become jammed are set free. The double screening surface facilitates the action of each and each becomes more efficient.

I claim as my invention;—

1. In a screen, the combination with a head ring and a tail ring each having seats for longitudinal beams, longitudinal beams having their ends secured in said seats and connecting the said rings, a shoulder on said head ring to receive the end of the outer screening cylinder, a disk flange on said head ring to receive the ends of longitudinal screen bars forming the inner screening cylinder, a tread ring secured to said head ring, carrying rolls upon which the tread ring is supported, journal supports of said rolls, a bevel wheel on said tail ring with trunnion, a journal bearing for said trunnion suitably supported, a cross shaft suitably journaled, means for giving motion to said shaft, a bevel pinion on said shaft, gearing into said bevel wheel, a plate ring secured to the longitudinal beams some distance from the tail ring and having secured in it the ends of some of the longitudinal screen bars forming the inner screen, a pair of tire-rings placed some distance from said plate ring and between which the ends of the shorter longitudinal screen bars are placed, an outer tire-ring in the same plane as the other two tire rings secured to the longitudinal beams and supporting the outer screening cylinder and stay bolts passing from the said outer ring to the inner ring, substantially as set forth.

2. In a screen, the combination with a head ring, means of supporting the same rotatively, a disk flange forming part of said ring and having holes disposed in a circle, a tail ring with trunnion, a journal for said trunnion suitably supported, means for giving a rotary motion to said tail ring, longitudinal beams secured to and connecting said head ring and tail ring rigidly, a plate ring between said head and tail ring secured to said longitudinal beams and drilled with holes in a circle, a tire ring between the last named ring and the head ring and secured to the longitudinal connecting bars, a cylinder screen supported upon said tire ring at one end upon the head ring at the other, a pair of tire rings of smaller diameter in the same plane as the tire ring referred to and a series of longitudinal screen bars secured at one end in the flange of the head ring, some of them held between said two tire rings and some of them secured firmly in the plate ring hereinbefore referred to and stay bolts or rods passing from the outer tire rings to the two inner tire rings, substantially as set forth.

3. In a screen of the character described, the combination of three concentric rings, a series of radial stay bolts passing through and connecting the three rings, the difference between the outer diameter of the inner ring and the inner diameter of the middle ring being a little more than the diameter of the screen bars which are to be placed between them, a series of radial separator rods or bolts secured in the two inner rings and forming with the stay bolts alternately larger and smaller divisions for said screen bars, and a series of screen bars in the spaces formed by the inner rings and radial bolts and rods, substantially as set forth.

4. In a screen of the character described, the combination with an outer screening cylinder of perforated or meshed material, of an inner screening cylinder composed of longitudinal screen bars some of which are fixed and extend from head to tail, while intermediate ones are fixed and shorter and others of the same length as the latter and alternating with the fixed ones are free to rotate and having their tail ends free to move laterally, and means for supporting said cylinder, substantially as set forth.

5. In a screen of the character described, the combination with a head ring and a tail ring, of a series of longitudinal screen bars cylindrically disposed and held longitudinally immovable in the head ring and some held fixed at both ends but intermediate ones free to rotate and move laterally, means for

supporting said rings and means for giving a rotary motion to said cylinder, substantially as set forth.

6. In a screen of the character described, the combination with a head ring and a tail ring, longitudinal beams connecting said rings, a perforated or meshed screening cylinder carried upon said rings and extending from the head only partly towards the tail ring, an inner cylinder composed of longitudinal screen bars held in said rings some rigidly and others free to revolve and move laterally, means of supporting said rings and means of giving a rotary motion to the same, substantially as set forth.

In testimony whereof I affix my signature, in presence of two subscribing witnesses.

W. H. ROUGHSEDGE.

Witnesses:
CHARLES M. FARLEY,
E. M. ROUGHSEDGE.