

(No Model.)

2 Sheets—Sheet 1.

S. M. HOYT.
CENTRIFUGAL SCREEN.

No. 507,815.

Patented Oct. 31, 1893.

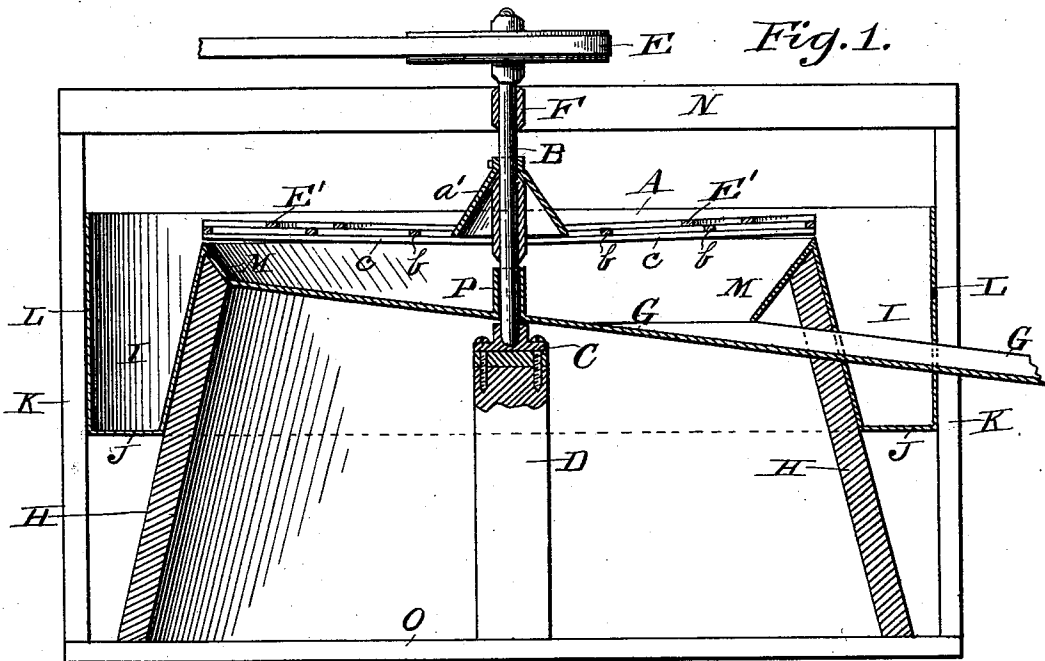
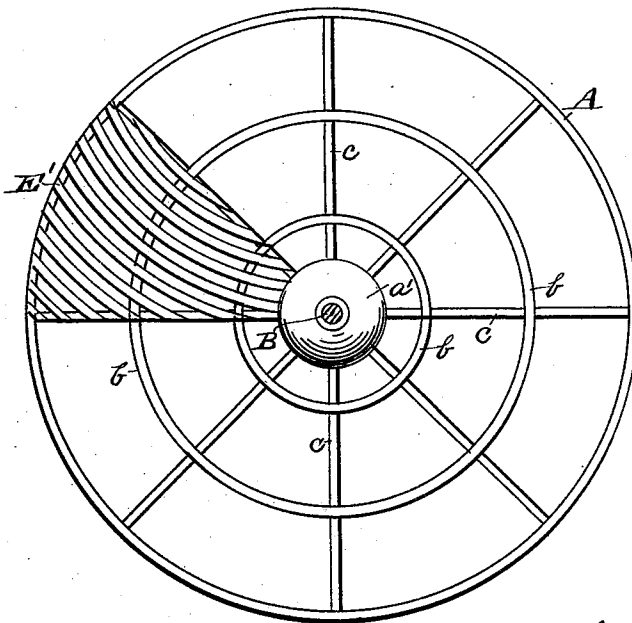


Fig. 2.



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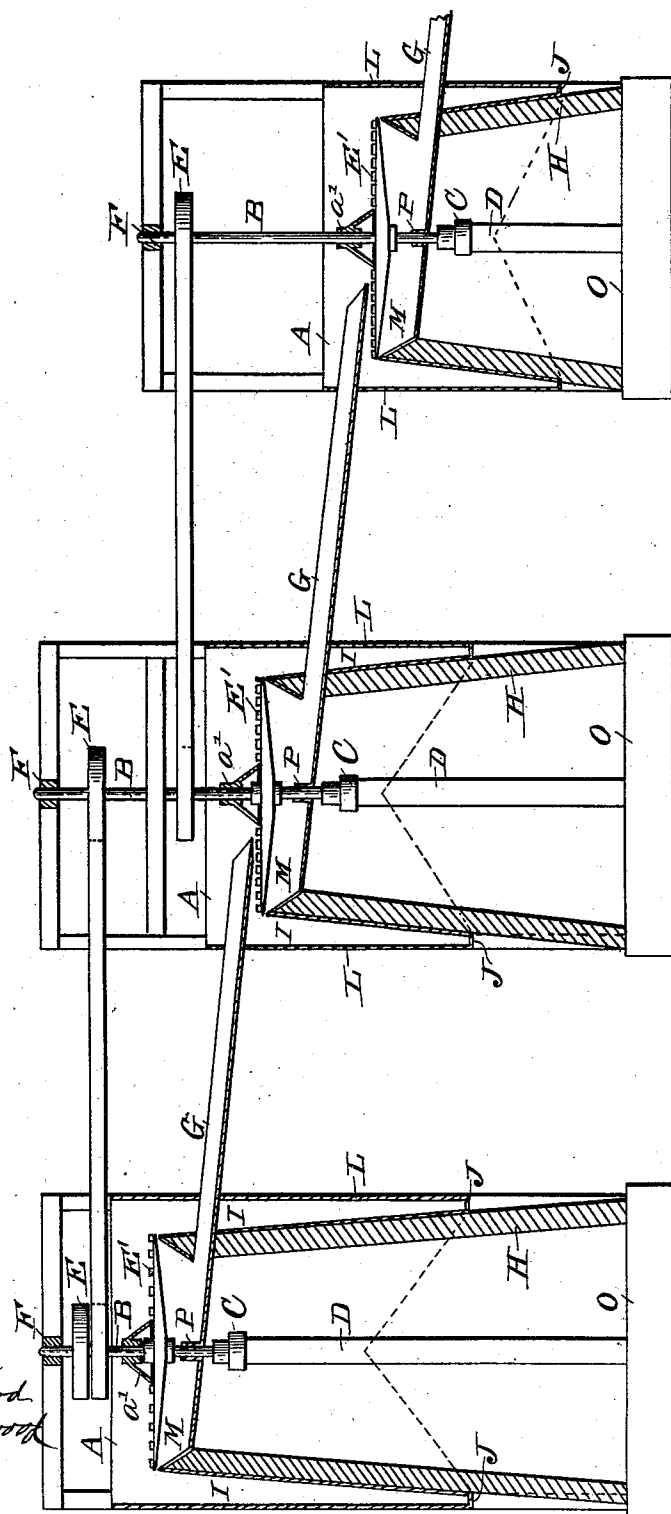
2 Sheets—Sheet 2.

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Fig. 3.



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UNITED STATES PATENT OFFICE.

SARAH M. HOYT, OF CHICAGO, ILLINOIS.

CENTRIFUGAL SCREEN.

SPECIFICATION forming part of Letters Patent No. 507,815, dated October 31, 1893.

Application filed July 6, 1893. Serial No. 479,699. (No model.)

To all whom it may concern:

Be it known that I, SARAH M. HOYT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Centrifugal Screens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in centrifugal screens, and relates to that class of screens for separating sand and gravel, coal, &c., into separate and distinct sizes.

The object of my invention is to produce an apparatus which will be able to handle a large quantity of material rapidly and cheaply, and is designed as a specific improvement upon that form of apparatus set forth in Patent No. 474,662, to F. Hoyt, May 10, 1892. The apparatus is so constructed that while it will stand a great amount of wear, yet the cost of its construction is greatly less than many machines used at the present time for similar purposes.

My invention provides for the use of a circular screen of very large diameter and owing to the manner of attaching curved bars to the screen frame as hereinafter fully described, sand and gravel can be separated more effectually than in those screens having straight bars.

In carrying out my invention two or more screens are employed having different size meshes, and set up separate or distinct from each other, but so arranged that the material to be screened is carried by suitable means from one screen to another. The material is fed into the first screen which is revolved at a certain rate of speed, and as the meshes of the first screen are the largest the coarsest material is thrown off and the rest drops through the screen and is conveyed by a sluice to the next machine all as more fully described hereinafter.

My invention is illustrated in the accompanying drawings, in which—

Figure 1, is a central vertical section of a single machine; Fig. 2, a plan of the screen; Fig. 3, a longitudinal section of a series of machines.

Referring to the drawings A, is the screen,

circular in form, the frame of which consists of several rings *b*, united by cross brace rods *c*, starting from a common center and being attached to the rings *b*, at different points on the said rings.

E, *E'*, are curved bars attached to the screen frame in such a manner that the material fed on the screen follows the contour of the said bars and does not bridge the space between the bars in its passage from the hub of the screen to its periphery. These bars are particularly shown in Fig. 2. These curved bars are a great advantage over the old style of bars used on centrifugal screens, for in those screens in which bars are used the same have been placed in a direct horizontal line from the hub to the periphery, thus forcing the material, when the machine is in motion, to cross the space between said bars and where much speed is used the material is thrown off too readily; that is to say, the smaller sizes are thrown off with the larger instead of the smaller sizes passing down through the screen. But by having these bars arranged as above described this evil is avoided and at the same time I am enabled to run my machine at a much higher rate of speed.

The screen A, is mounted on a shaft B, the shaft resting and revolving in a seat C, at the top of post D. To the opposite end of said shaft is attached a pulley-wheel E, which is revolved by a belt from another shaft, not shown. This in turn imparts motion to the screen and causes the same to revolve at any pre-determined speed.

F, is a journal box in the cross piece N, through which the shaft B, passes and by which it is guided. Surrounding the shaft B, at a point where the screen is attached, is an inclined hub *a'*.

G, is a sluice or a runway placed directly under the screen extending the entire diameter of the screen and is inclined as shown. The purpose of this sluice is to catch the material passing through the screen and to convey it outside the machine into another runway which in turn conveys it to a machine having a screen of finer mesh.

H, is a circular shaped tower having its base O, of greater diameter than its top. The top of said tower is inclined and forms the

bed of the runway G. Extending around the circumference of the tower are inclines M, the purpose of which is to receive the material coming through the screen near its periphery and direct the same into the sluice G.

P, is a guard surrounding and protecting the shaft from the material as it passes down the runway.

The material thrown off the screen is caught in a circular bin I, formed by the outside surface of the tower H, and the inside of a surrounding wall K, and having a bottom J, joining the wall K and the outside surface of tower. The tower H, and the surrounding wall K, are made usually of wood and when thus made a sheet of metal is generally used for lining the wood in places where the wear is the greatest, as for instance, at L, which is a lining of metal on the wooden wall K, placed so that the material when thrown from the screen will strike the wall where it is lined.

As was mentioned above the operation of screening sand and gravel, coal, &c., on my machines is carried out in the following manner:—The machines being set in motion sand, gravel and dirt or whatever the material may be, is fed on to the first machine in such a manner that the material will strike the inclined hub a' . This causes the material to be thrown toward the periphery of the screen. The material travels to the periphery of the screen in the direction given it by the centrifugal force but as that direction is the same as the curved bars the larger sizes pass on these bars from the hub to the periphery of the screen not bridging the space between the bars but following the channel formed by said bars. As the first machine is provided with a screen of large mesh only the larger sizes

are thrown off into the receiving bin I, and the rest dropping through the screen into the runway G, is conveyed from the first machine having a screen of less mesh.

The second machine is on a lower plane than that of the first machine and as the runways are inclined sufficiently to permit the material to pass from one machine to another, no complicated or expensive system of conveyers is necessary.

Having thus described my invention, what I claim is—

1. The combination with a vertical rotary shaft of a circular gravel screen secured thereto, said screen composed of sections of arms, which arms are curved in the direction of the diameter of the screen, whereby the material thrown to the periphery of the wheel by centrifugal action is made to follow the curved direction of said bars, substantially as described.

2. The combination of the series of machines constituting a screening apparatus, each machine provided with a circular screen or curved bars mounted on a revolving shaft, the screen of each machine being of a coarser mesh and set on a higher plane than that of the succeeding one, in combination with an inclined runway for each machine leading from beneath the screen of one machine to above the screen of the succeeding machine, substantially as and for the purpose described.

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

SARAH M. HOYT.

Witnesses:

F. J. HOYT,
E. F. HOYT.