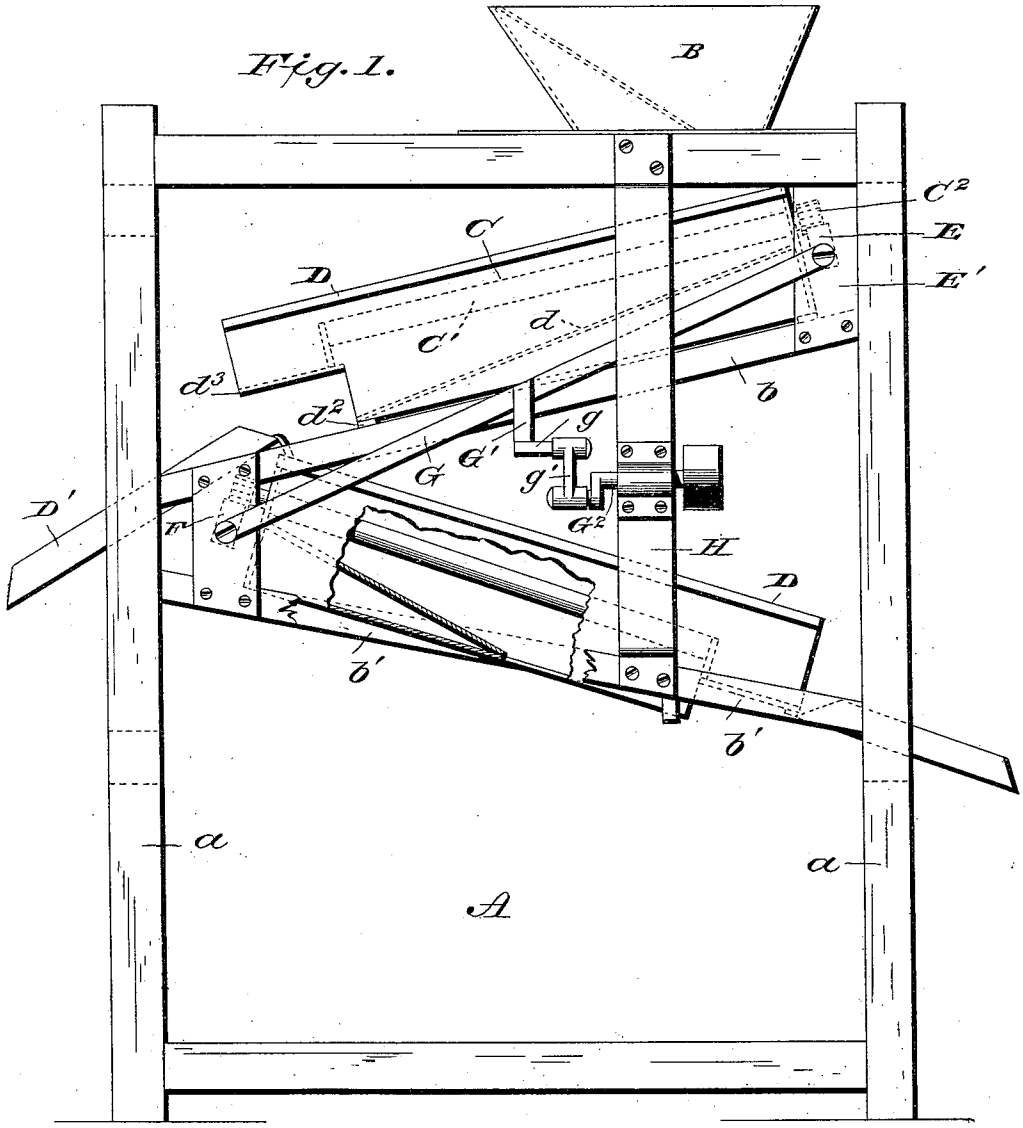
(No Model.) 3 Sheets—Sheet 1.

J. F. H. KING.

SCREENING APPARATUS.

No. 546,891. Patented Sept. 24, 1895.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

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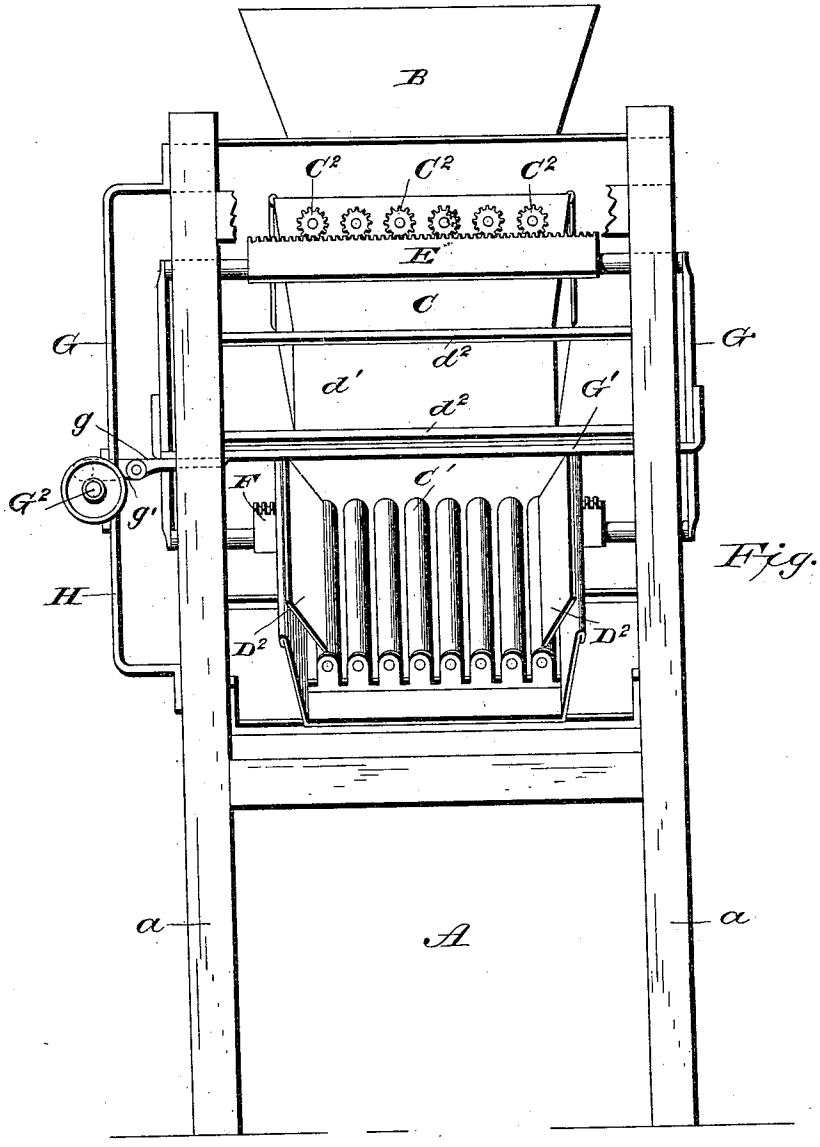

Fig. 2.

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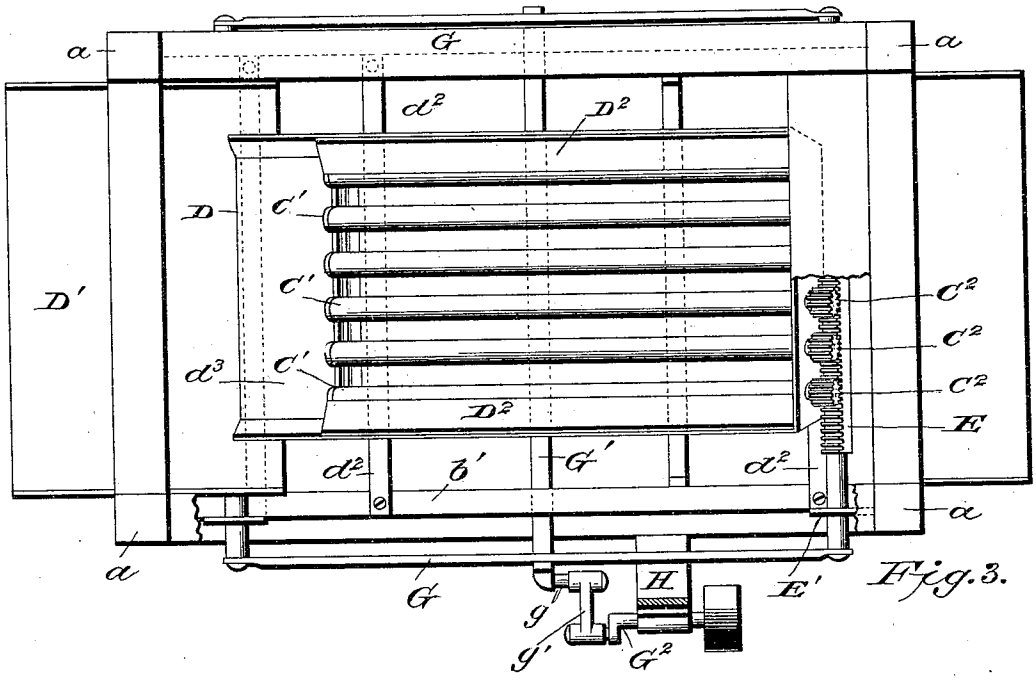
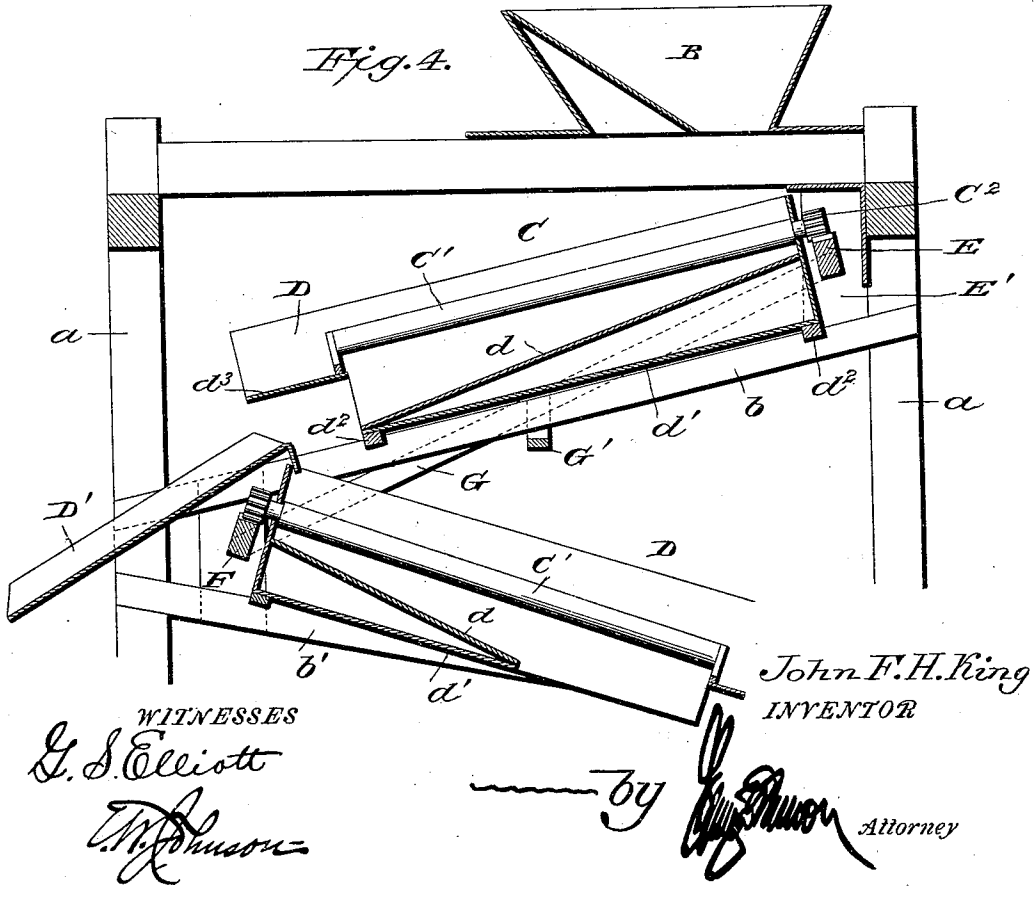


Fig. 3.

Fig. 4.



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SCREENING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 546,891, dated September 24, 1895.

Application filed May 4, 1895. Serial No. 548,169. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. H. KING, a citizen of the United States of America, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Screening Apparatus; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a commercial separator for the separation of ore, gravel, coal, and other minerals, whereby the mineral can be separated or assorted into piles according to the size of the pieces; and it consists in providing a separator which is made up of a plurality of inclined rock-bars which are arranged in series and provided with operating means, the material to be sifted being placed in a hopper, so as to be fed upon the upper series, the rock-bars of which are comparatively widely separated from each other, so that the coarse material will be carried therefrom to a chute and the finer material pass through the bars upon another chute or way, from which it is deposited upon the upper portion of another series of inclined rock-bars spaced closer together than those above, thereby separating the material according to its size, as will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of a separator, showing two screens arranged one above the other in accordance with my invention. Fig. 2 is an end elevation; Fig. 3, a plan view, and Fig. 4 a vertical sectional view.

A designates a suitably-constructed supporting-frame, which is preferably made up of four corner-posts *a a*, connected to each other by horizontal beams and provided with oppositely-inclined braces *b* and *b'*, said braces serving to support parts of the operating mechanism of the separator.

B designates a hopper, which is supported by the upper cross-beams of the frame A, the outlet of the hopper being adjacent to the upper end of the first sieve, designated by the letter C. This sieve consists of a series of rock-bars C', which are supported in an inclined position and are parallel with each other, being positioned a suitable distance apart. The rock-bars are journaled in suitable supports attached to or formed upon the ends of a chute D, having an inclined plate *d*, upon which the material falls that passes between the rock-bars. The chute is also provided with a bottom plate *d'*, which rests upon transverse bars d^2, secured to the inclined braces *b* of the frame. The lower end of the chute D is provided with an inclined plate d^3, located below the lower ends of the rock-bars C', so as to discharge the material that falls from the rock-bars upon an inclined chute or way D'. The upper ends of the rock-bars C' are reduced, so as to pass through openings in the upper end of the chute D, the projecting end of each bar having a pinion C^2 keyed thereon, said pinions being engaged by a reciprocating rack-bar E, one end of which extends through a supporting-plate E' and engages the operating mechanism therefor, while the other end passes through a supporting-plate at the other side of the frame and is connected by a rod G to another rack-bar, hereinafter referred to.

The opening in the lower end of the chute D below the rock-bars C' discharges upon a second sieve, similar to the one above, except that the rock-bars are spaced closer together and are at an opposite inclination from those above. The chute which supports the second series of rock-bars is constructed similar to the chute D, and the pinions at the upper ends of the rock-bars engage with a reciprocating rack-bar F, supported in a similar manner to the rack-bar E, and the rack-bars E and F are connected at their ends by rods G G, said rods being centrally connected to each other by a cross-bar G', having an arm *g*, which is connected by a link *g'* to a crank-shaft G^2, the crank-shaft being journaled in a bearing supported by a bracket H, secured to the frame A. The crank-shaft is provided with a pulley, over which passes an operating-belt; or said shaft may have a crank-handle for operating the same manually. It will be noted that when the crank-shaft is turned the rack-

bars E and F will be reciprocated, and being in engagement with the pinions on the rock-bars will rock said bars or turn them upon their axis in one direction and then the other, so that the bars will constantly free themselves and prevent the material clogging thereon. It will be understood that the material, which is of such a size that it will not pass through the spaces between the bars, will fall upon the extension d^3 of each chute and be led therefrom to the conveyers D′, while the material that passes between the bars falls upon the inclined plate d and is deposited upon the upper ends of the rock-bars beneath, so that the material which is being sifted or screened will be separated into stacks of different qualities.

The chutes D are provided with inclined side pieces D^2, which are adapted to lie over or above the longitudinal center of the side rollers or rock-bars of the sieve and prevent the material clogging between said rollers and the sides of the chute.

It will be noted that the bearing-plates for the lower ends of the rock-bars are cut away between the bearings, so that any material clogging at the lower ends of the rock-bars will not be retained.

The device may be used for sifting or screening coal, ores, gravel, sand, and other such materials, and it may also be advantageously used for separating shot or other substances.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a separator or screening apparatus, the combination, of a frame carrying a hopper, oppositely inclined chutes attached to the frame, the chutes carrying parallel rock-bars provided at their uppermost ends with pinions, reciprocating rack-bars E suitably supported so that the teeth thereof will mesh with the rock-bars, inclined bars G G connecting the reciprocating rack-bars to each other, a transverse bar G′ connected to the bars G, a frame H having a bearing through which passes a crank-shaft, and a link for connecting the crank-shaft to a pin which projects from the bar G′, the parts being organized substantially as shown and for the purpose set forth.

2. A screening apparatus comprising a pair of sieves or separators which are supported one above the other at different inclinations, the sieves being made up of parallel rock-bars having pinions at their uppermost ends which mesh with reciprocating rack-bars carried by the supporting frame, and means for reciprocating the rack-bars to cause a rocking of the rock-bars, together with inclined plates d positioned below the rock-bars, and chutes having plates d^3 which extend beyond the lower ends of the rock-bars and are provided with bearing plates attached to the upper edges of the plates d^3, substantially as shown and for the purpose set forth.

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

JOHN F. H. KING.

Witnesses:
EVERETT MASSEY,
JAMES FORRESTER.