(No Model.) 4 Sheets—Sheet 1.

E. B. COXE & S. SALMON.

MECHANISM FOR SCREENING COAL.

No. 419,113. Patented Jan. 7, 1890.

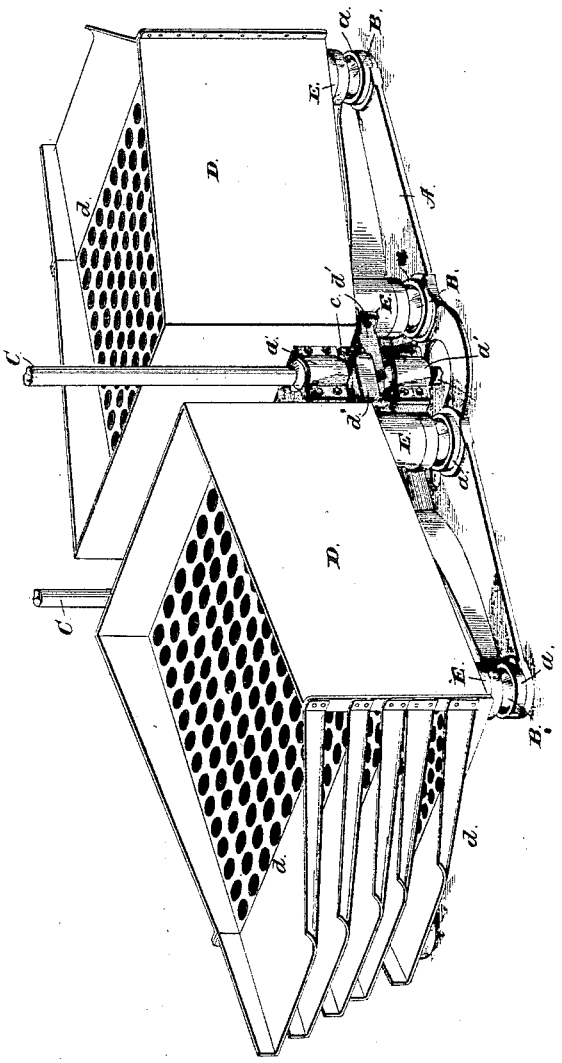

Fig. 1.

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Henry C. Hazard

Inventors.
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Brindle and Russell, their Attys

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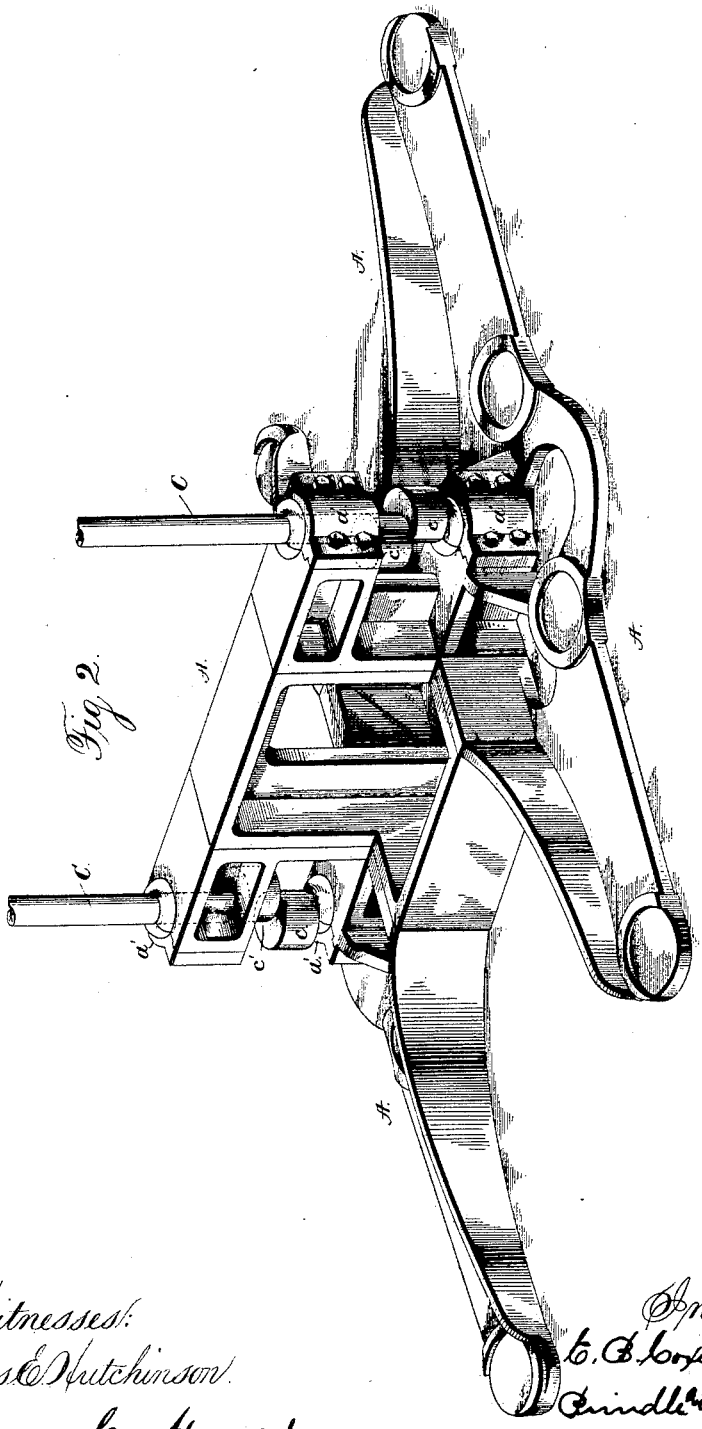

Fig. 2.

Witnesses:
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E. B. COXE & S. SALMON.

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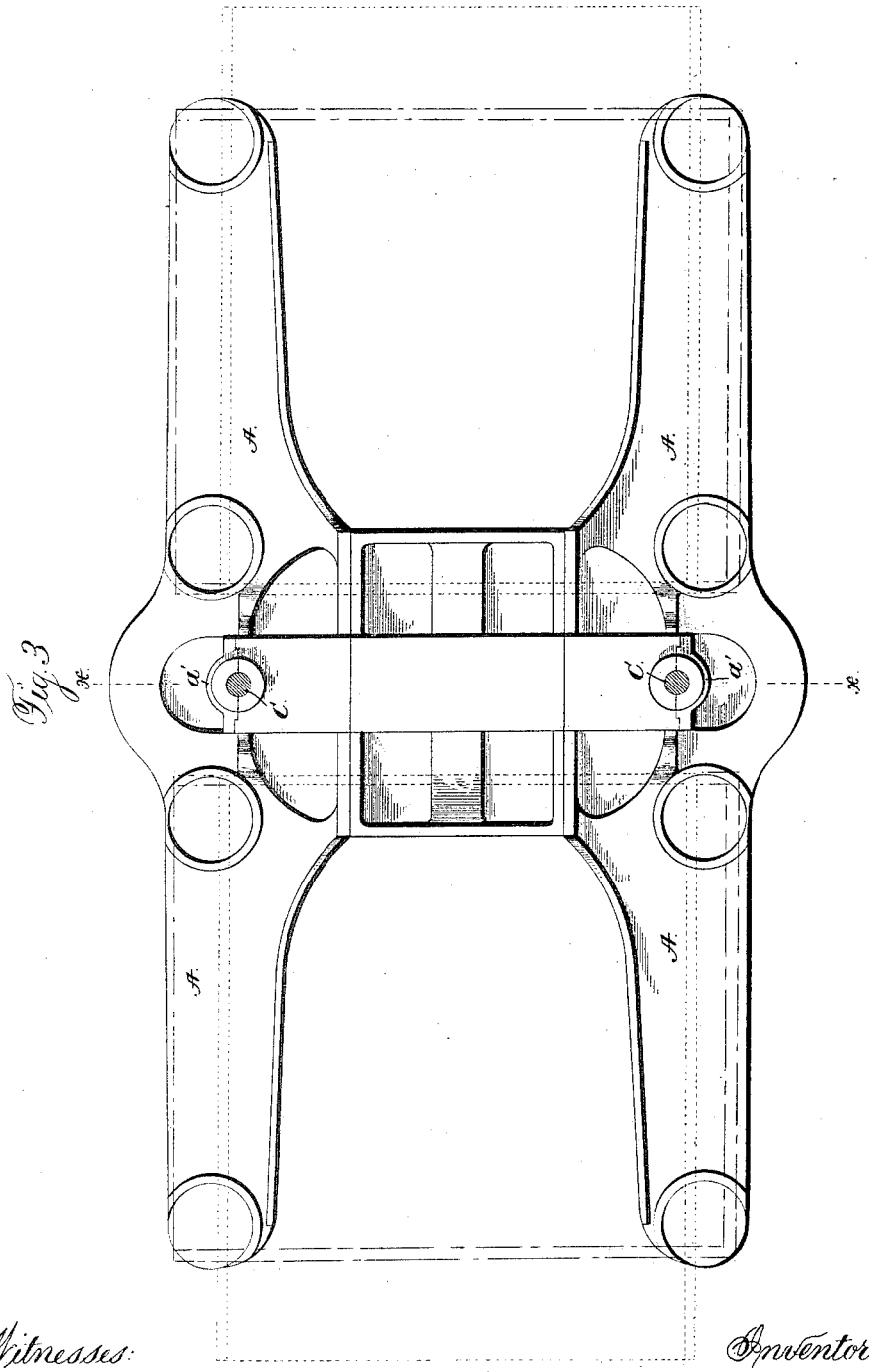

Fig. 3

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(No Model.) 4 Sheets—Sheet 4.

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MECHANISM FOR SCREENING COAL.

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Fig. 4

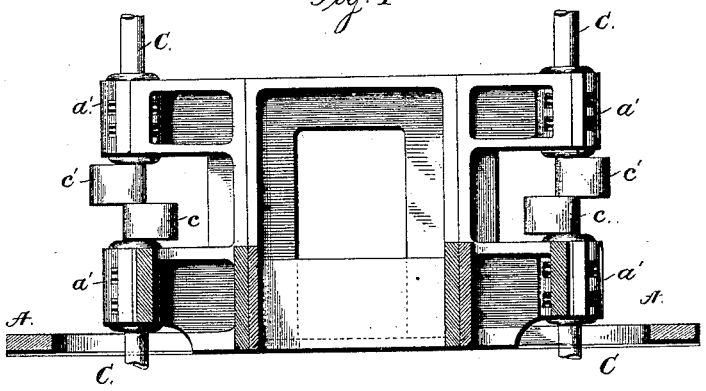


Fig. 5.

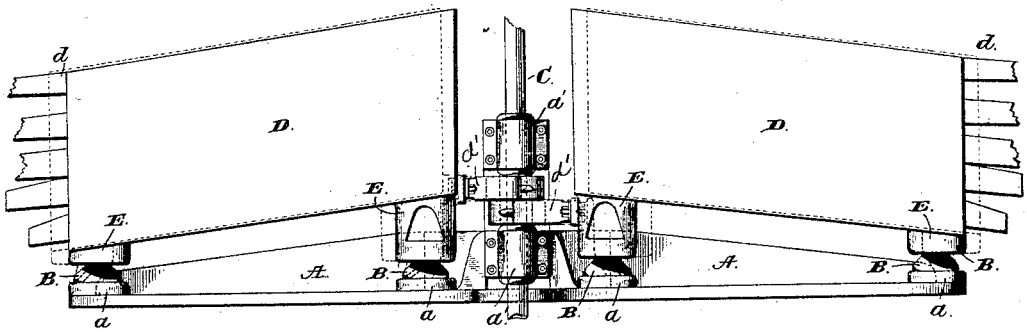
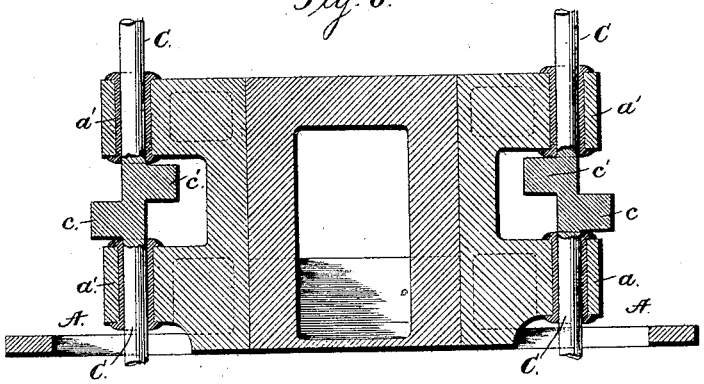


Fig. 6.



Witnesses:
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Inventors.
E. B. Coxe and S. Salmon by
Brindle and Russell, their Attys.

UNITED STATES PATENT OFFICE.

ECKLEY B. COXE AND SAMUEL SALMON, OF DRIFTON, PENNSYLVANIA; SAID SALMON ASSIGNOR TO SAID COXE.

MECHANISM FOR SCREENING COAL.

SPECIFICATION forming part of Letters Patent No. 419,113, dated January 7, 1890.

Application filed April 24, 1889. Renewed December 16, 1889. Serial No. 333,840. (No model.)

To all whom it may concern:

Be it known that we, ECKLEY B. COXE and SAMUEL SALMON, of Drifton, in the county of Luzerne, and in the State of Pennsylvania, have invented certain new and useful Improvements in Mechanism for Screening Coal; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of our apparatus as arranged for use. Fig. 2 is a like view of the bed-plate and operating-shafts separate from the screening mechanism. Fig. 3 is a plan view of said bed-plate and shafts, the interrupted and dotted lines showing different relative arrangements of the screening mechanism. Fig. 4 is a side elevation of the central portion of the bed-plate, showing the operating-shafts. Fig. 5 is a side elevation of the apparatus complete, the full lines showing one position of the screen-frames and the dotted lines another position of the same; and Fig. 6 is a vertical section upon lines *x x* of Fig. 3.

Letters of like name and kind refer to like parts in each of the figures.

Our invention is an improvement upon a coal-screening mechanism for which Letters Patent No. 380,190 were issued upon the 27th day of March, 1888, in which mechanism a screen-holding frame was arranged to have a gyratory motion in a horizontal plane, and its weight was counterbalanced by means of a weight which was attached to or formed upon the operating-crank.

The object of our present invention is to simplify the construction of screening mechanism by causing one of the operative parts to counterbalance the weight of another operative part, and thus avoid the necessity for weights which only perform the office of counter-balances; and to such end our said invention consists in an improved apparatus for screening coal in which the parts are constructed and combined to operate in the manner and for the purpose substantially as hereinafter specified.

In the carrying of our invention into practice we employ a base A, which, as seen in Fig. 3, has in plan view the general form of the letter H, and at each of its ends and at points at each side of its longitudinal center is provided with circular bearings *a* and *a*, that are each adapted to receive and furnish a path for a double-cone roller B. At the longitudinal center of said frame and upon opposite sides of its transverse center are journaled two vertical shafts C and C, each of which at points between its bearings *a'* and *a'* is provided with two eccentrics *c* and *c'*, that are arranged directly opposite to each other, as shown. Said shafts are connected with each other and with driving mechanism at points above or below said base, as may be most convenient, and are relatively arranged so that they shall revolve in the same direction and time, and the upper and lower eccentrics of one shaft shall rotate in exact unison with the corresponding eccentrics of the other shaft.

The base A and rollers B and B are intended for the support of two screen-frames D and D, each of which has a general rectangular shape in plan view and in horizontal size corresponds substantially to the dimensions of said base at one side of its longitudinal center, both of said parts in such respect being adapted to the required capacity of the apparatus.

Upon the lower side of each frame D, at or near the corners of the same, are secured cylindrical bearings E and E, which at their lower ends correspond to the bearings *a* and *a* of the base A, and are adapted to rest upon and travel over and around the upper ends of the cone-rollers B and B, the arrangement being such as to enable said screen-frame to be gyrated horizontally, during which operation the lower halves of said rollers roll around said bearings *a* and *a* and said bearings E and E roll upon and around the upper halves of said rollers.

The bearings E and E of each screen-frame have such relative heights as to cause said screen to have a downward inclination toward the end or to either side of the base, as desired, while each frame is provided interiorly

with such number and character of screens *d* and *d* as will adapt it for the work to be done.

Each screen-frame D is connected with the corresponding eccentrics *c* and *c* or *c'* and *c'* of the shafts C and C by means of straps *d'* and *d'*, each of which is attached to said frame at a point adjacent to said eccentrics, and from thence extends outward to and around the same.

If now the operating-shafts are caused to rotate simultaneously in corresponding time and in the same direction, the screen-frames will be given a gyratory motion upon their rollers in relatively-opposite directions, so that the centrifugal force of one frame will be exactly counterbalanced by the centrifugal force of the opposite frame, and the result will be an entire freedom from vibration, so that the mechanism will run steadily upon any foundation which is capable of sustaining its weight. By thus causing the operating parts to counterbalance each other the weight, cost, and bulk of the mechanism are materially less than it would otherwise be practicable to secure, while from the exceedingly compact form of the apparatus its capacity for a given size and weight is very large.

Having thus described our invention, what we claim is—

1. As an improvement in mechanism for screening coal, two screen-holding frames which are each adapted to have a gyratory motion in a horizontal plane, in combination with driving mechanism that operates to gyrate said frames in relatively-opposite directions, substantially as and for the purpose specified.

2. As an improvement in mechanism for screening coal, two screen-holding frames that rest upon and are supported by double-cone rollers and are adapted to have a gyratory motion in a horizontal plane, in combination with driving mechanism which operates to simultaneously gyrate said frames in relatively-opposite directions, substantially as and for the purpose shown.

3. As an improvement in mechanism for screening coal, two screen-holding frames which are each adapted to have a gyratory motion in a horizontal plane, in combination with two shafts that are journaled vertically between said frames and are provided with eccentrics and connecting-straps, whereby, by the simultaneous rotation of said shafts in one and the same direction, said screen-frames will be simultaneously gyrated in relatively-opposite directions, substantially as and for the purpose set forth.

4. As an improvement in mechanism for screening coal, two screen-holding frames that rest upon and are supported by double-cone rollers and are adapted to have a gyratory motion in a horizontal plane, in combination with two shafts that are journaled vertically between said frames and are provided with eccentrics and connecting-straps, whereby, by the simultaneous rotation of said shafts in one and the same direction, said screen-frames will be simultaneously gyrated in relatively-opposite directions, substantially as and for the purpose shown and described.

5. The combination of the H-shaped base provided with the roller-bearings, the screen-frames having upon their lower sides roller-bearings, the double-cone rollers placed between the roller-bearings of said parts, the driving-shafts, each provided with oppositely-arranged eccentrics, and the straps which connect said eccentrics with said screen-frames, substantially as and for the purpose specified.

In testimony that we claim the foregoing we have hereunto set our hands this 23d day of March, 1889.

ECKLEY B. COXE.
SAMUEL SALMON.

Witnesses:
ELLIOTT A. OBERRENDER,
HARRY J. DAVIS.