

(No Model.)

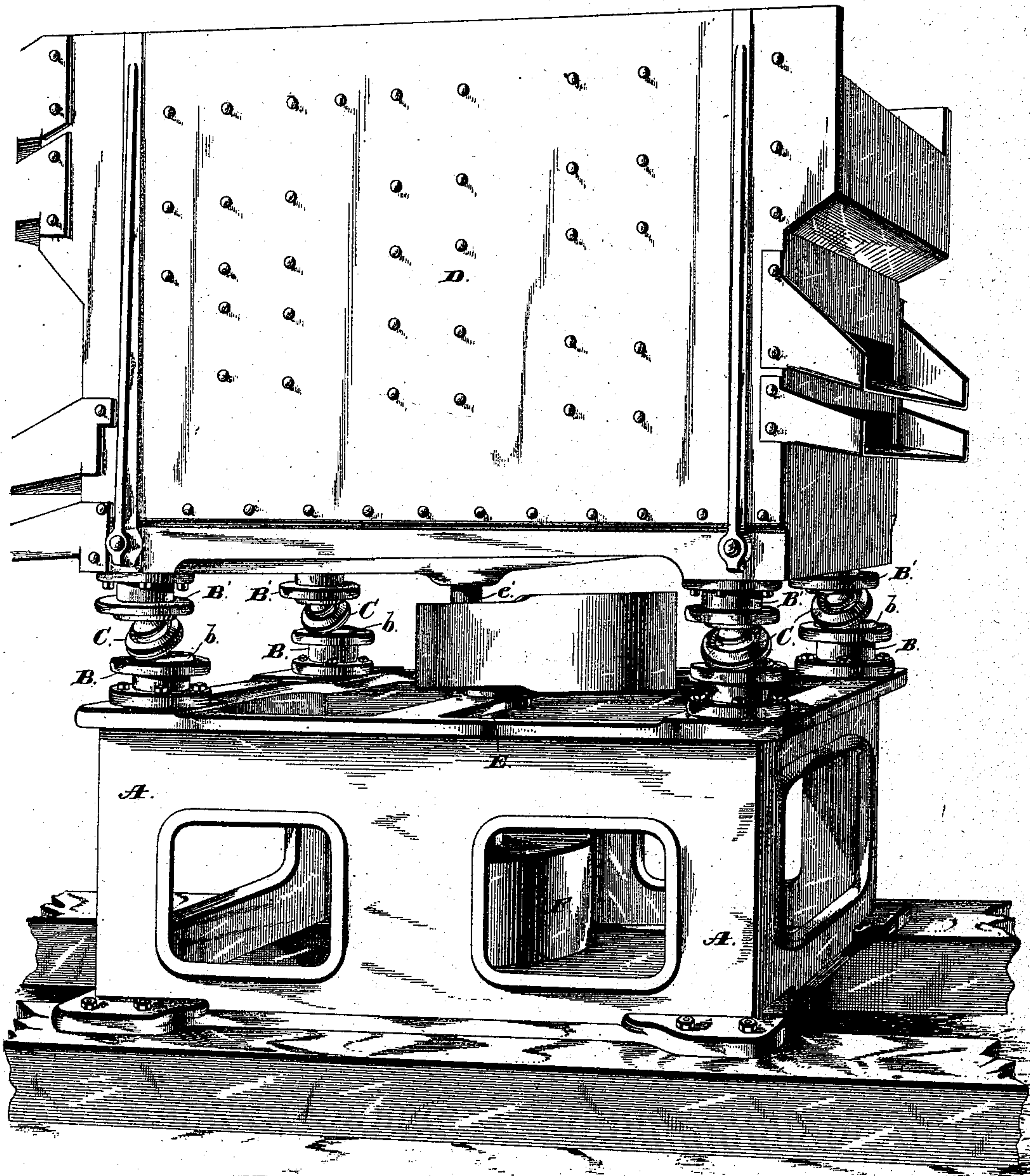
4 Sheets—Sheet 1.

E. B. COXE & S. SALMON.
COAL SCREENING MECHANISM.

No. 380,190.

Patented Mar. 27, 1888.

Fig. 1.



Witnesses:
James E. Hutchinson.
Henry C. Hazard.

Inventors.
E. B. Cox & S. Salmon, by
Kindle & Russell, their Attys

(No Model.)

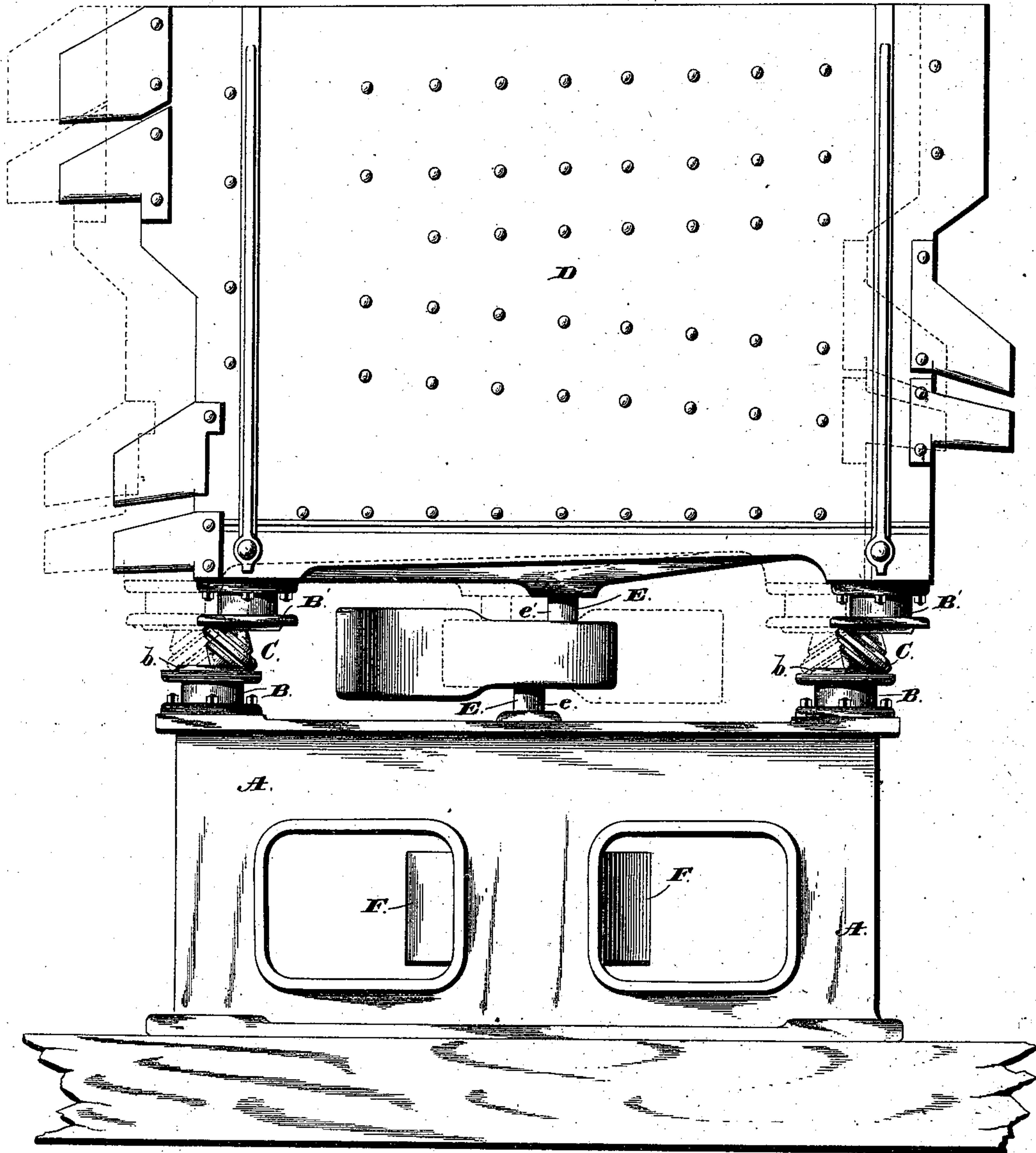
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Fig. 2.



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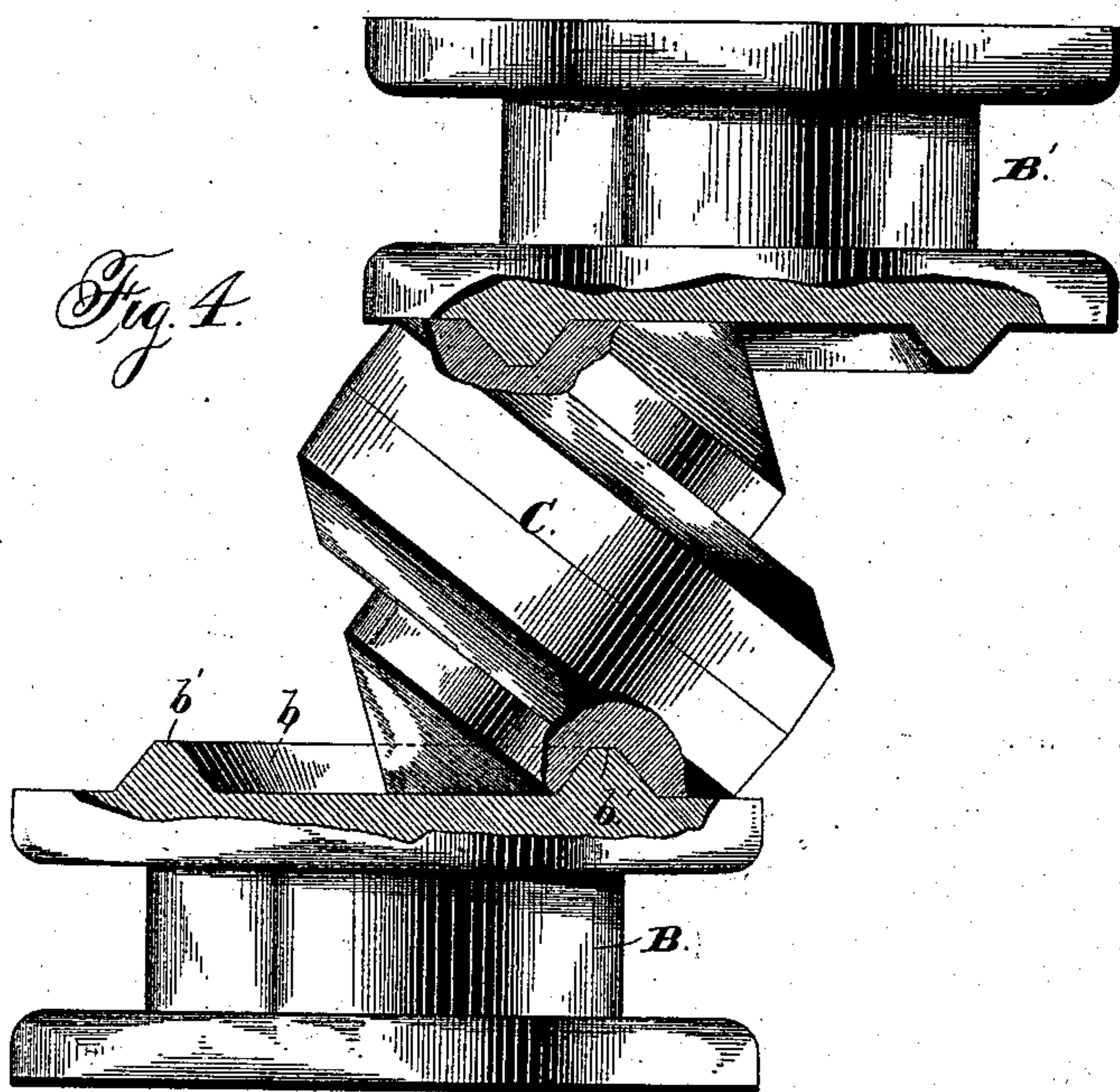
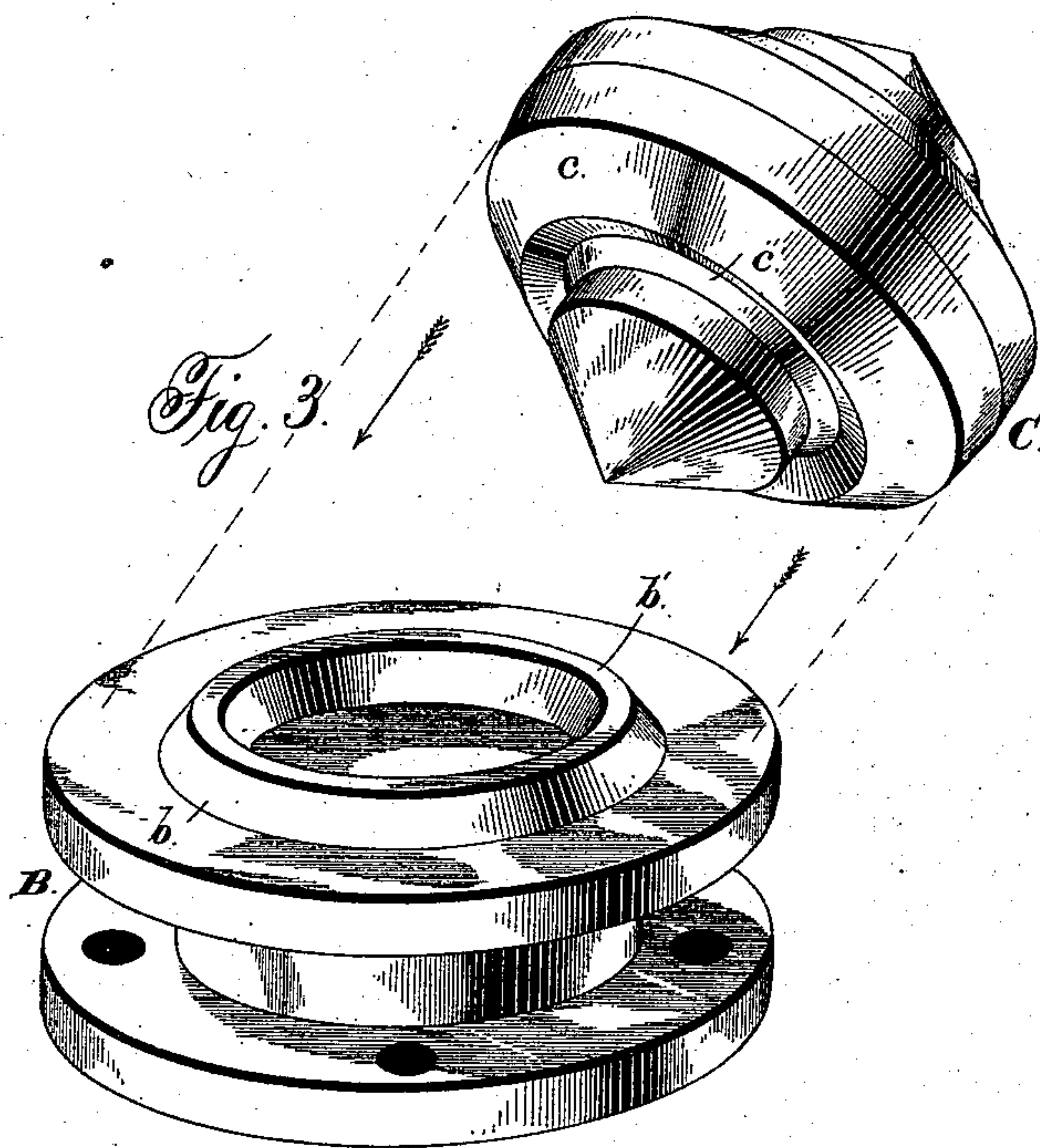
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Fig. 5.

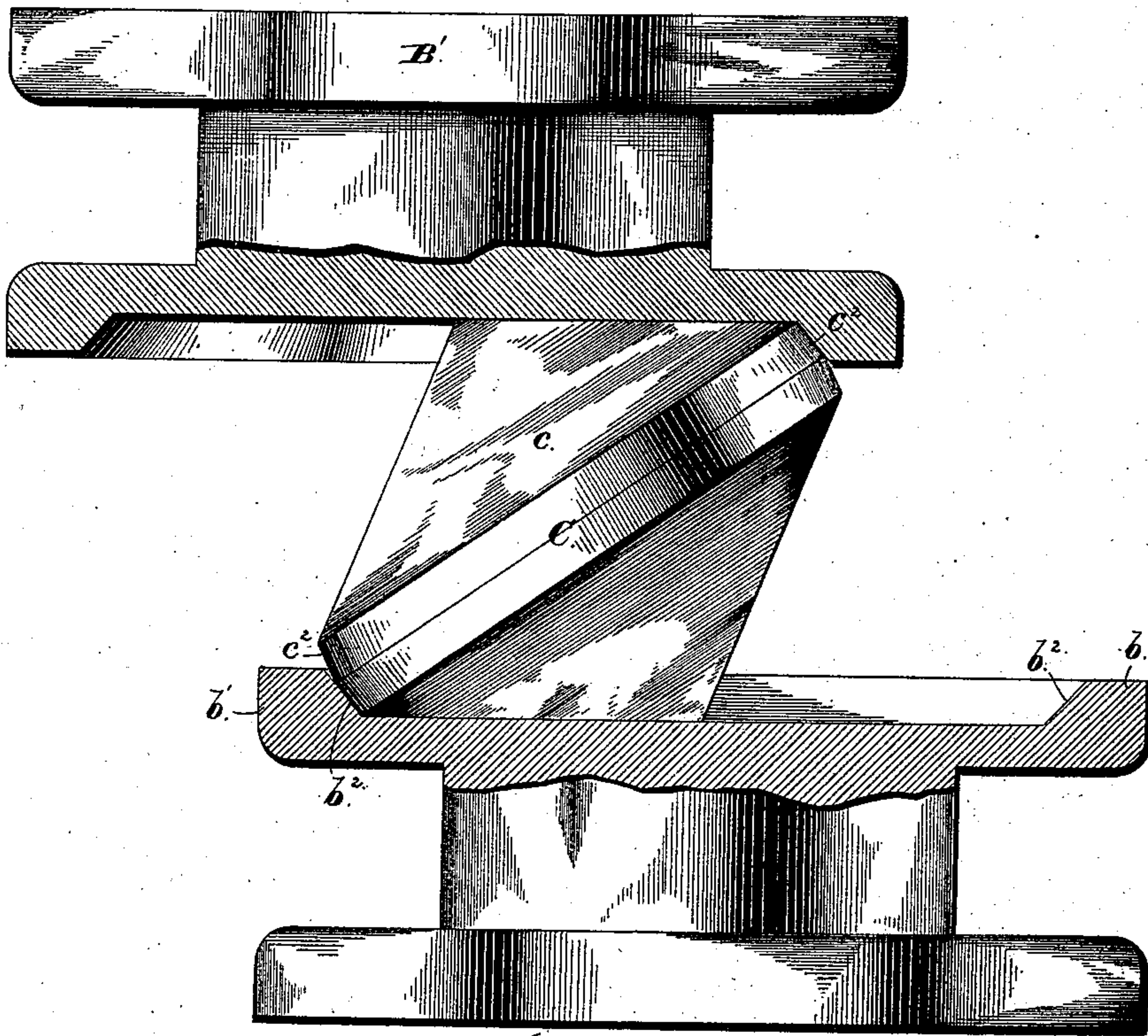
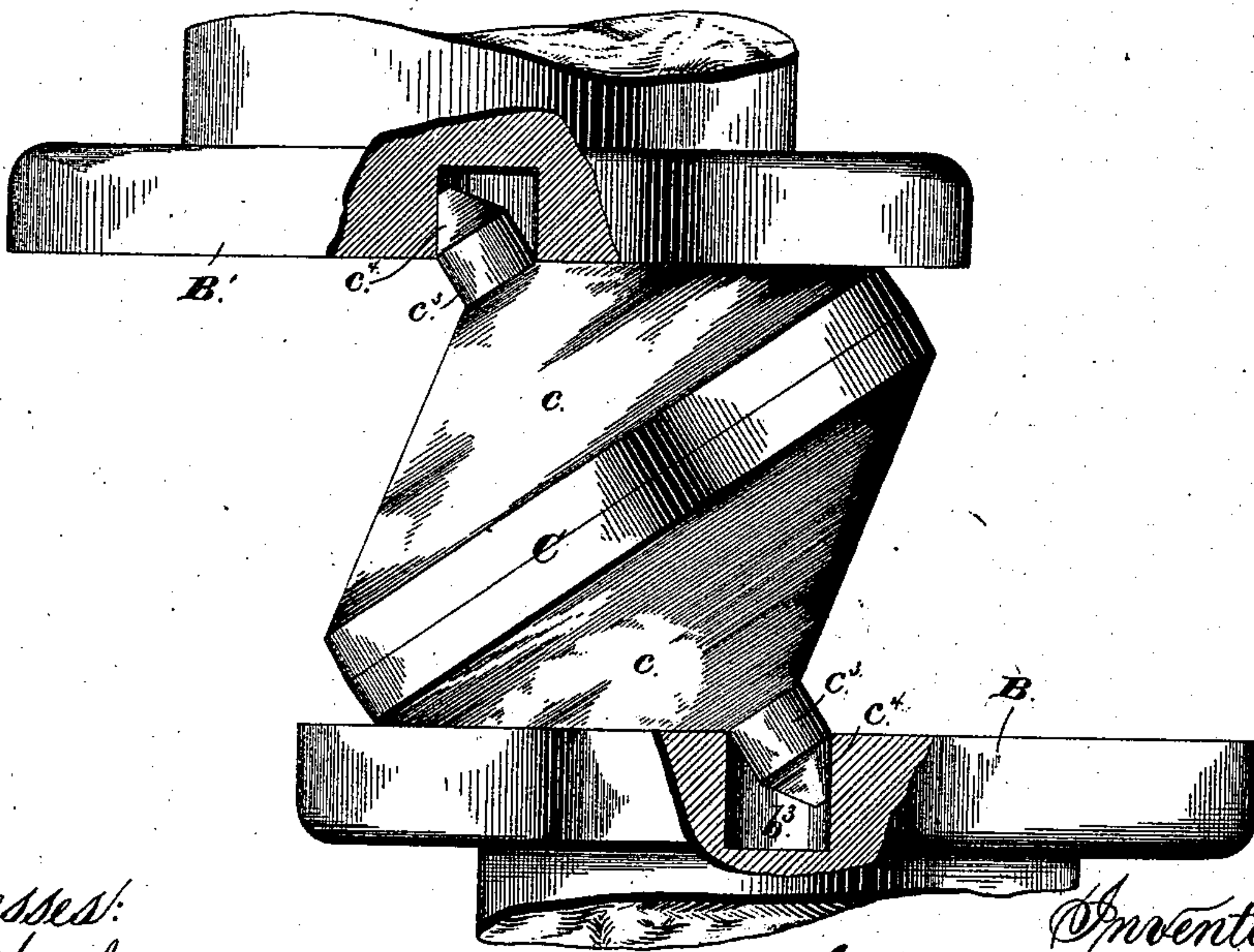


Fig. 6.



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UNITED STATES PATENT OFFICE.

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

COAL-SCREENING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 380,190, dated March 27, 1888.

Application filed April 25, 1887. Serial No. 236,011. (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 Coal-Screening Mechanism; 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 side elevation of the same, the full lines showing one position of parts and the dotted lines the relatively-opposite position of the same. Fig. 3 is an enlarged perspective view of the form of cone-roller and roller-bearing preferably employed for supporting the screen-frame, said parts being separated from each other. Fig. 4 is a side elevation of the same, combined with its bearings, the latter being partly in section; and Figs. 5 and 6 are like views of modifications of said parts.

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

The object of our invention is to enable a coal-screen to be given a horizontally- gyratory motion without vertical movement, and to lessen the friction produced by and the power required for its operation; to which 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 has a rectangular shape in plan view, and preferably is constructed in the hollow form shown; but may, if desired, consist of a single solid plate, or have such other construction as will adapt it for the position to be occupied.

Near each corner, upon the upper face of the base A, is secured a circular plate, B, which at a point substantially midway between its center and periphery is provided with an annular flange, *b*, that extends upward, and in cross-section has the form of an inverted letter V, with the point preferably cut away, so as to produce at such point a horizontal bearing, *b'*.

Upon the plate B is placed a double cone-roller, C, which within each of its conical faces *c* is provided with a circumferential groove, *c'*, that transversely corresponds to the shape and size of the flange *b*, so that when said cone is placed in position upon said plate, with its point in coincidence with the axis of the latter, its lower periphery will rest upon the face of said plate upon each side of said flange, and its said groove will fit over and engage with the latter, as shown in Fig. 4. If, now, said cone is rotated, it will roll around said flanged plate without change thereon of relative radial position, and its entire bearing-surface, in a radial line, will have contact with the corresponding surface of said plate without slipping, and with no friction other than such as is produced by the rolling together of two surfaces.

The base A and rollers C are intended for the support of a screen-frame, D, which has a general rectangular shape in plan view, and in horizontal size corresponds substantially to the dimensions of said base, both in such respect being adapted to the required capacity of the apparatus.

Upon the lower side of the frame D are secured plates B', which in construction, number, and relative position correspond to the like features of the plates B of the base A, and being arranged with their bearing-faces downward are adapted to rest upon and engage with the upper portions of the cone-rollers C, their bearings upon the faces of the latter being precisely the same as in case of the lower portions of said cones and said plates B.

As thus arranged, the entire weight of the screen-frame is supported by the cone-rollers, and said frame may be gyrated horizontally in either direction by applying sufficient power to overcome its inertia and cause said cones to roll around their lower tracks. As the axis of each cone is oblique to the plane of its track, it will be seen that when traveling around said track its upper point will describe a circle the diameter of which will determine the amount of movement of said frame in opposite directions. The contact of said cones with both series of bearing-plates is a rolling contact, and the friction caused by their movements is so slight as to render necessary for the movement of the screen-frame the ex-

penditure of no appreciable power over what would be required to effect such movement were said frame suspended like a clock-pendulum. By the use of cones and bearing-plates having hardened surfaces the wear upon the same will be but slight and their durability correspondingly great. The movement of the screen-frame is preferably secured by means of a crank, E, which has its shaft e journaled vertically at or near the center of the base A, and its upper end or pin, e' , journaled within a suitable bearing at the center of said frame. The throw of the crank coincides with the oscillations of the cone-rollers, so that said crank is subjected to no strain other than such as is necessary in order to start said frame and keep it in motion. Any desired means may be employed for rotating said crank-shaft; but a pulley, F, secured upon its central portion and adapted to receive a belt, is preferably used.

The annular flanges b of the plates B operate to prevent radial displacement of the cone-rollers, and are preferably employed; but such result can be attained by other forms, if desired. In Fig. 5 is shown a modification in the construction of said parts, in which the roller C has plane conical faces c and c and a cylindrical periphery, c^2 , while the bearing-plate B has a plane face surrounded by an annular flange, b' , that has a face, b^2 , which inclines upward and outward at the precise angle necessary to enable it to receive rolling contact from the periphery c^2 of said roller.

In Fig. 6 is shown another modification, in which the faces c and c of the roller C are plane, and at the end or apex of each is provided a small cylindrical boss, c^3 , that is in a line axially with the axis of said roller and terminates in a cone, c^4 , as shown. The bearing-plate B has a plane upper face, and at its center is provided with a cylindrical recess,

b^3 , which is in a line axially with the axis of said plate, and has such size as to enable it to receive the boss c^3 and enable the conical end c^4 of the same to bear against and have rolling contact with its sides, as shown.

Having thus described our invention, what we claim is—

1. As an improvement in mechanism for the screening of coal, the combination of a screen-holding frame, a horizontal supporting-base, and two or more double cones which are placed between and have rolling contact with said frame and base, substantially as and for the purpose shown.

2. As an improvement in mechanism for the screening of coal, the combination of a screen-holding frame, a horizontal supporting-base, two or more double cones which are placed between and have rolling contact with said parts, and a crank that is journaled within said frame and base and is adapted to give to the former a gyratory motion upon or with relation to the latter, substantially as and for the purpose set forth.

3. As an improvement in mechanism for the screening of coal, an organization in which is combined a screen-holding frame, a horizontal supporting-base, double cone-rollers which are placed between said parts and furnish a rolling support for the screen-frame, and means, substantially as shown, whereby said screen-frame may be given a gyratory motion with relation to said base, substantially as and for the purpose shown and described.

In testimony that we claim the foregoing we have hereunto set our hands this 7th day of April, A. D. 1887.

ECKLEY B. COXE.
SAMUEL SALMON.

Witnesses:

ELLIOTT A. OBERRENDER,
HARRY J. DAVIS.