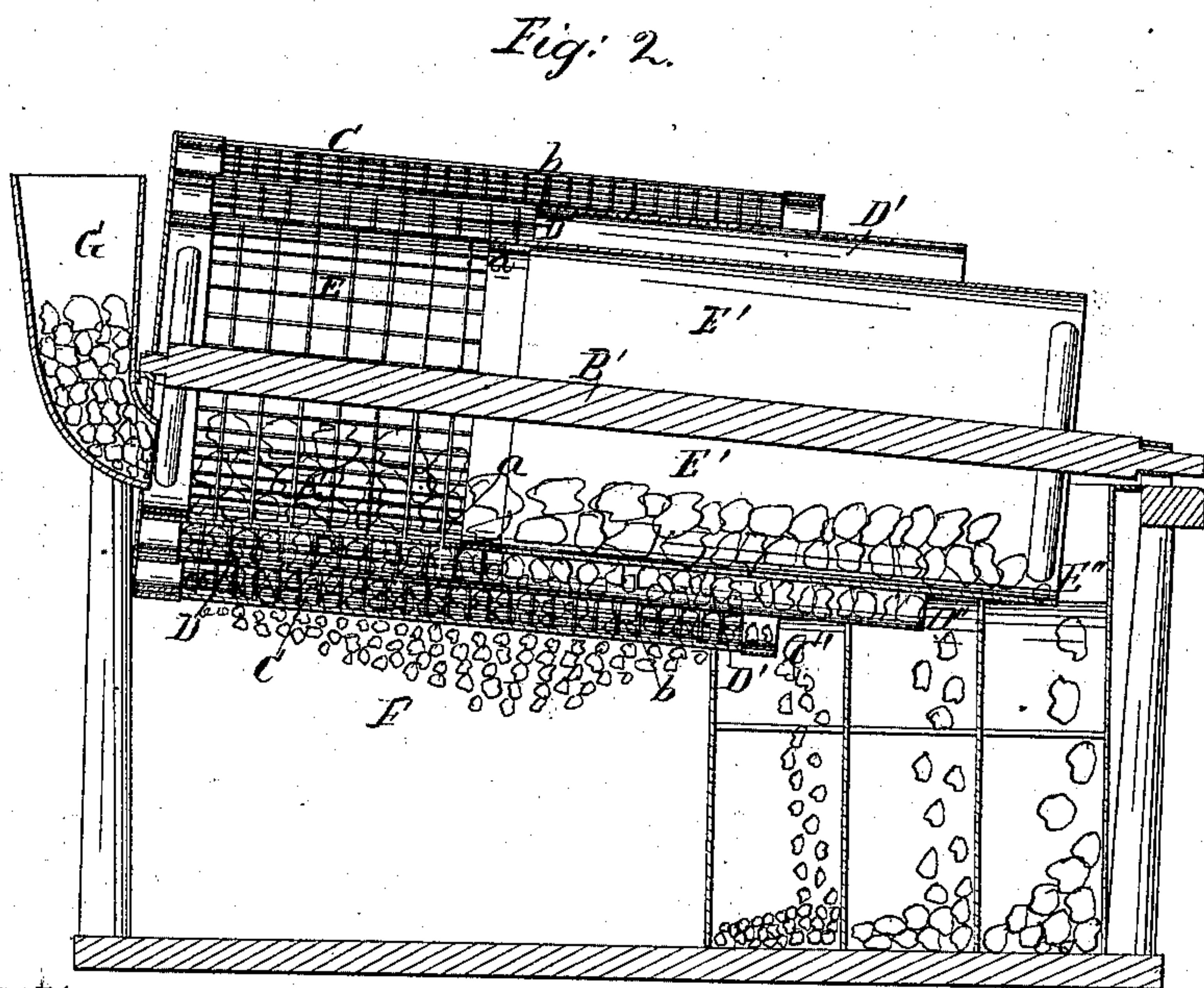
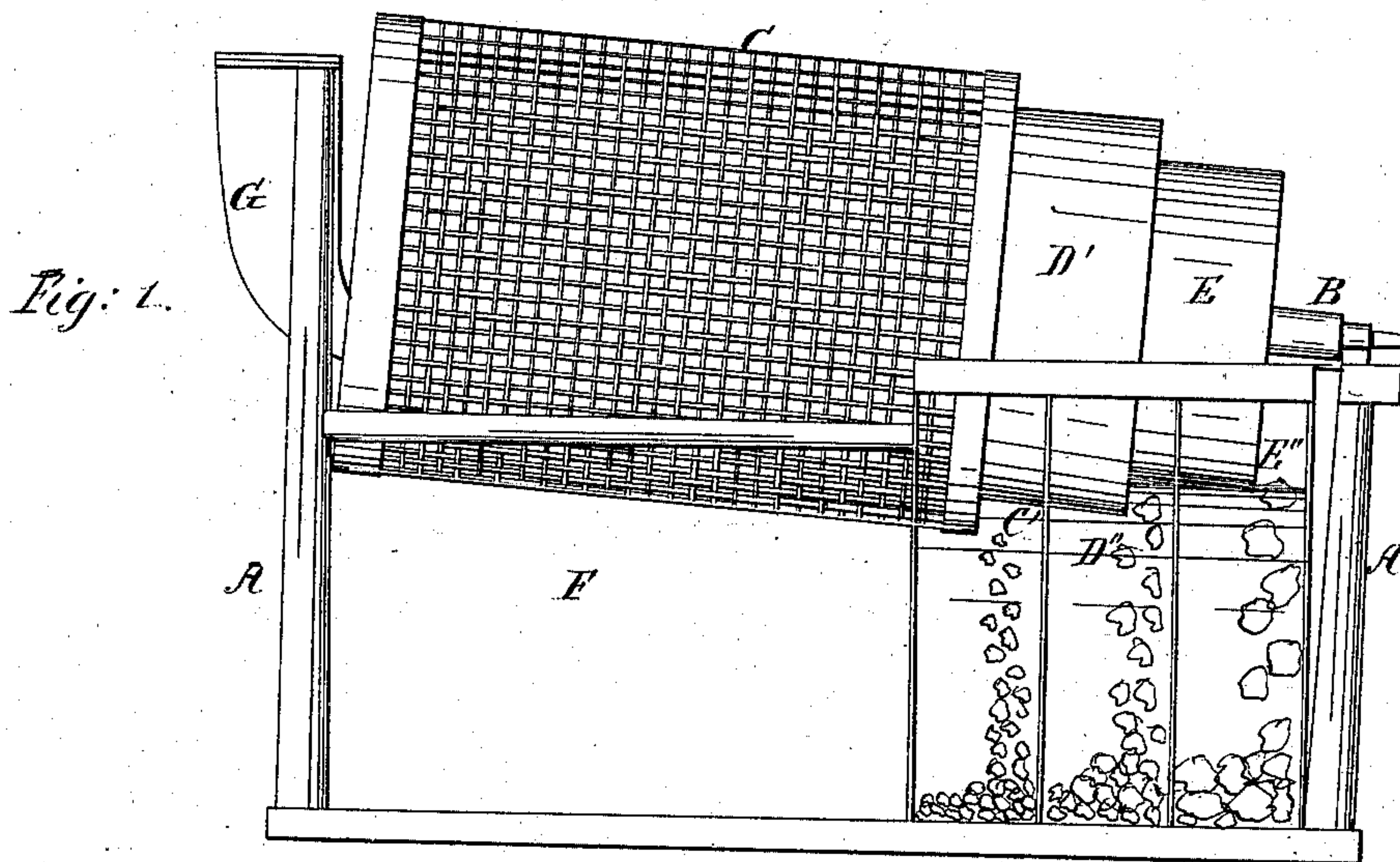


J. B. Smith,

Coal Screen.

N^o 57,002.

Patented Aug. 7. 1866.



Witnesses;
J. D. Pallam
Theo. Charnelain

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UNITED STATES PATENT OFFICE.

J. B. SMITH, OF DUNMORE, PENNSYLVANIA.

COAL-SCREEN.

Specification forming part of Letters Patent No. 57,002, dated August 7, 1866.

To all whom it may concern:

Be it known that I, J. B. SMITH, of Dunmore, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Coal-Screens; and I do hereby declare, that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents an elevation of one of the screens in question, and Fig. 2 represents a vertical longitudinal section through the same.

Similar letters of reference, where they occur in the separate figures, denote like parts of the screen in both of the drawings.

In coal-screens as at present constructed and used the coal travels over more meshed surface and rubs, wears, and produces more culm or refuse than is necessary in its separation into the several sizes in which it is prepared for market.

The object and purpose of my invention is to obviate this hitherto waste, while I attain the same ultimate separation of the coal into regulated sizes; and my invention consists in the use of a series of smooth cylinders in connection with the series of concentric screens of graduated mesh, so that when the coal of each individual screen is separated from that which is to be again separated into uniform sizes it shall not be required to travel over any meshed surface to its place of delivery, but over a smooth surface, where it is not rubbed, ground, or abraded, or worn away by attrition, as heretofore done.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

On a suitable frame or support, A, I arrange a substantial shaft, B, around and on which are made a series of concentric cylindrical screens, C D E, of such graduated mesh as will separate the broken coal into such uniform sizes as may be required, and usually termed "grate," "range or egg," "stove," and "chesnut." The inner screen, E, is the coarser meshed of the series, and retains only the larger-sized coal, all that is less in size than its meshes dropping through into the next screen, which has finer meshes and retains all

pieces larger than its meshes, and so on throughout the series.

At or about the point *a* of the inner screen, E, I attach a smooth metallic cylinder, E', which forms a continuation of the screen itself, but acts as a conveyer for carrying out to the place of delivery the coal that is retained in E, or that does not pass through its meshes, which coal is delivered at E'' without any further rubbing or wearing, which produces so much waste or culm.

At or near the point *b* of the screen D, I connect a smooth cylinder, D', which serves as a conveyer for that screen, and which takes and carries out the coal retained by the screen D in a similar manner and for a similar purpose as that above described in connection with the inner screen, and delivers it at D''.

The external screen, C, of the series need not require the conveying-cylinder, as its coal can be delivered from the end of the screen itself, as at C', while the coal that passes through the meshes of the screen C, and which is finer than its meshes, may be retained at F. Where, however, it is necessary to carry the coal any farther than is required to separate the finer from that which is retained, then the smooth conveyers should be used for such carrying, for all unnecessary agitation of the coal over meshed surfaces, where it is rubbed, ground, and worn away, or more than is just sufficient for the separation, is injurious and begets great waste.

I have shown but three screens, which separate the coal into four sizes; but, of course, more or less may be used without departing from the general characteristics of my invention, my object being to allow the coal to pass off without agitation after it has gone through the screening process.

The shaft B and its screens may be rotated by any first moving power, and by any known mechanical devices for that purpose, and, as the screens may have to carry a heavy weight of coal, the shaft, which eventually sustains all the weight, should be made correspondingly strong and rigid.

The screens may be supported on the shaft by radial arms, or in any other well-known way to give them sufficient firmness thereon.

The coal to be screened and delivered into

assorted sizes is fed in through a hopper, G, which carries it into the interior of the inner screen, E, where the larger size is retained and passes out, as heretofore stated, everything smaller than its meshes dropping through into the next screen, D, where another separation takes place, and the pieces less than its meshes, which are finer than those of E, drop through, and so on.

I find by this system of screening and conveying that from ten to fifteen per cent. less waste or culm is produced, which, in the quantity of coal screened annually, amounts to a very large sum.

Having thus fully described the nature, object, and purpose of my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

Combining with a series of graduated meshed screens a series of smooth conveyers, so that as soon as the coal is separated it shall be carried out of the machine without any further unnecessary agitation, which only produces waste, substantially as herein described.

JOHN B. SMITH.

Witnesses:

D. G. SMITH,
S. G. BARKER.