No. 704,004. Patented July 8, 1902.

G. W. CROSS.

SCREEN.

(Application filed Mar. 6, 1899.)

(No Model.)

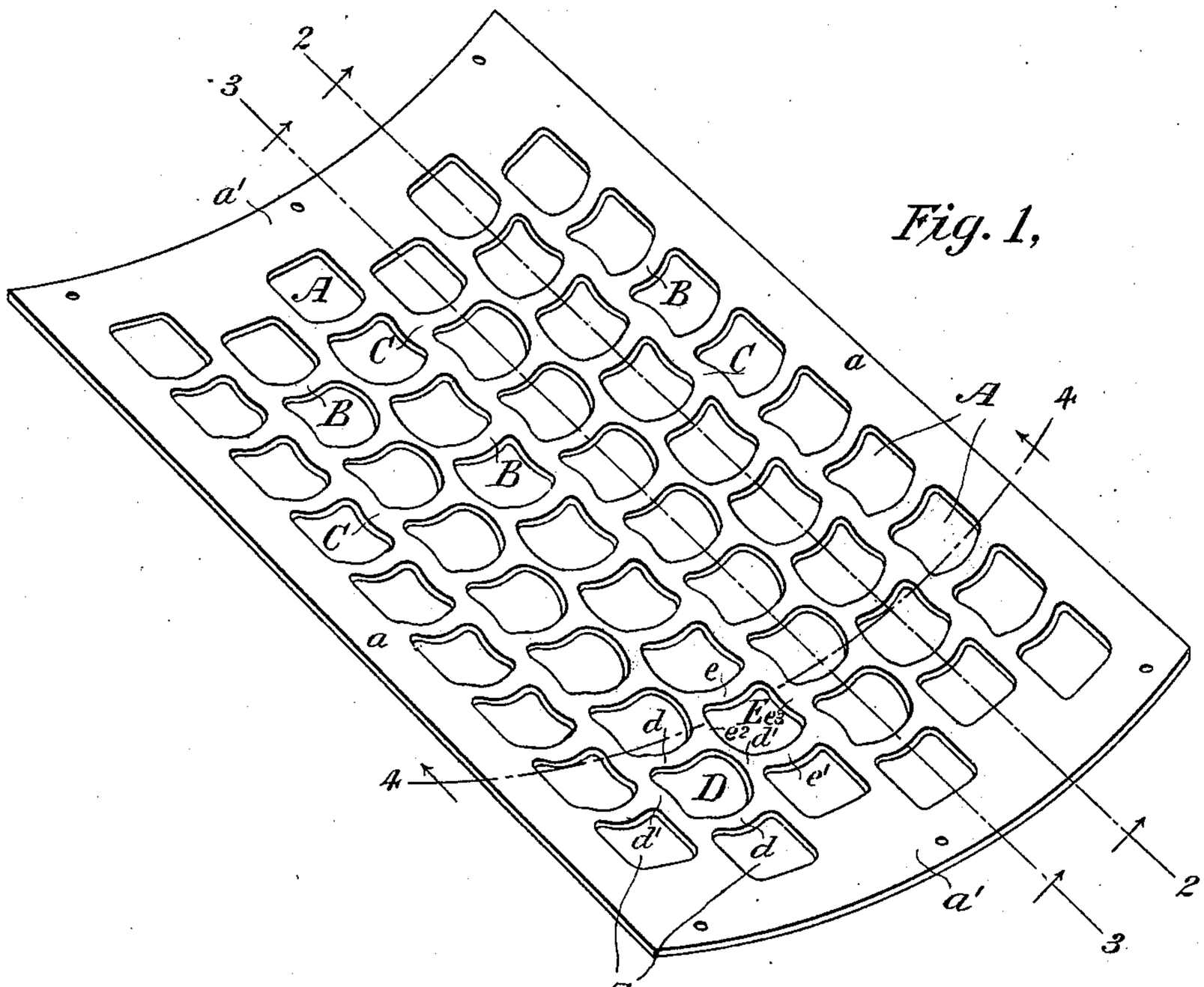


Fig. 1,

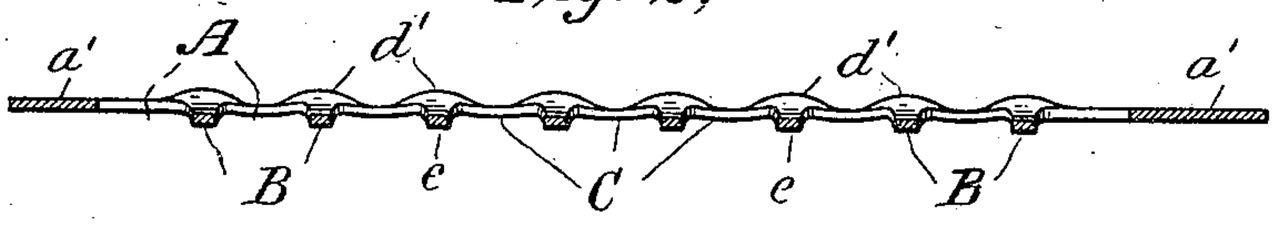


Fig. 2,

Fig. 3,

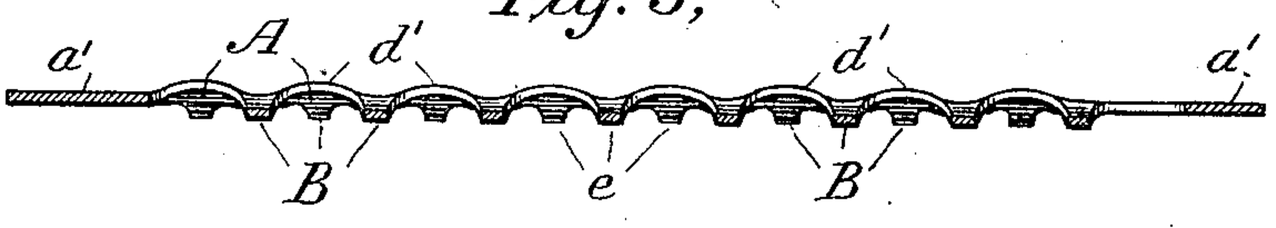
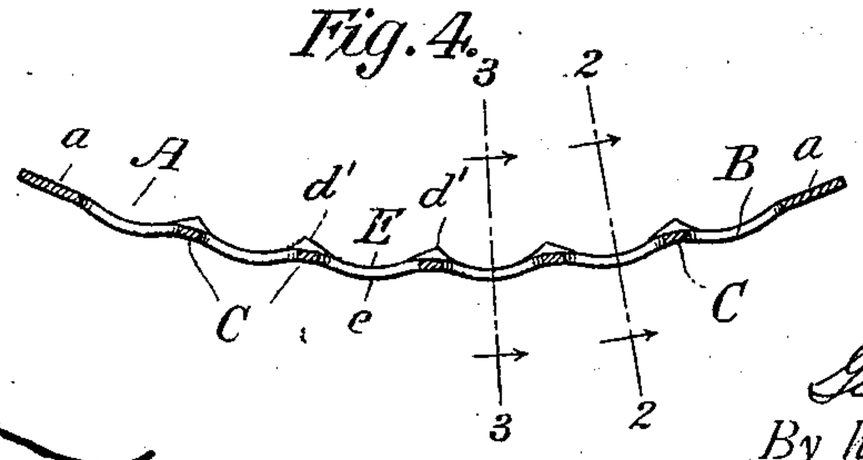


Fig. 4.



WITNESSES:

C. E. Ashley

Jno. R. Taylor

INVENTOR:

George W. Cross

By his Attorneys

Dyer, Edmonds & Dyer

UNITED STATES PATENT OFFICE.

GEORGE W. CROSS, OF CARBONDALE, PENNSYLVANIA.

SCREEN.

SPECIFICATION forming part of Letters Patent No. 704,004, dated July 8, 1902.

Application filed March 6, 1899. Serial No. 707,970. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. CROSS, a citizen of the United States, residing in the city of Carbondale, county of Lackawanna, State of Pennsylvania, have invented certain new and useful Improvements in Screens, of which the following is a specification.

This invention relates to screens for the separation of particles of material of various sorts into different sizes. It is designed especially for use in the separation of the various sizes of coal.

The invention is directed particularly to that type of coal-screens known as "crimped" screens, examples of which type are shown in Letters Patent Nos. 513,890 and 523,515 heretofore granted to me.

It further relates particularly to that class of the type of screen mentioned known as "staggered mesh." As an instance of this class of screens I refer to the construction shown in the Patent No. 523,515, above mentioned. In screens of the staggered-mesh class all of the interstices are in line in one direction, while only the alternate interstices are in line in the direction at right angles thereto. In other words, the interstices of one row are opposite the webs separating and forming the crimped or curved sides of the interstices of the adjacent rows.

In the present invention I have departed from the form of crimping heretofore employed in screens, my object being to attain maximum efficiency of the screening-surface, while at the same time not sacrificing the strength of the screen as a whole.

In the drawings, Figure 1 is a perspective view of a screen-segment embodying my invention. Fig. 2 is a cross-section on the line 2 2, Figs. 1 and 4. Fig. 3 is a cross-section on the line 3 3, Figs. 1 and 4. Fig. 4 is a cross-section on the line 4 4, Fig. 1.

Of the last three views, Figs. 2 and 3 are longitudinal sections, while Fig. 4 is a transverse section.

Referring to the drawings, in which similar characters of reference denote the corresponding parts, it will be seen that I have therein illustrated a screen-segment having imperforate side margins *a* and imperforate end margins *a'*. The interstices A therein are substantially quadrilateral in form, the corners being made somewhat rounding to avoid weakening the webs at the junctions. It will also be seen that these interstices are in line or opposite each other in one direction, (longitudinally, in this instance;) but in the direction at right angles thereto only the alternate interstices are in line. In other words, the segment is of the staggered-mesh class. It will also be seen that the interstices A are bounded by longitudinal and transverse webs and that each and every one of these webs is curved or crimped relatively to the plane of the segment.

Referring first to the transverse webs B, it will be seen that all of these are here shown as curved or crimped downwardly or away from the axis of the screen upon which the segment is mounted—that is to say, they are depressed below the plane of the segment. These transverse webs connect longitudinal webs C. The latter are continuously undulatory or sinuous in form, the length and position of the concavities and convexities being so arranged as that considering any one longitudinal row of interstices the longitudinal webs opposite each interstice shall be convex, while the longitudinal webs in the diagonally opposite interstice of the next adjacent longitudinal row shall be concave opposite that interstice. Thus referring to the interstice D it will be seen that this is bounded by four webs. Of these the transverse webs *d* are concave or crimped below the plane of the segment, while the two longitudinal webs *d'* are convex or crimped above the plane of the segment. The interstice E in the next adjacent longitudinal row is also bounded by four webs, the two transverse webs *e e'* being concave or crimped below the plane of the segment, the two opposite longitudinal webs e^2 e^3 having the same characteristic. In other words, the alternate interstices lying in the latitude of the segment are provided each with four webs, of which the opposite transverse webs are concave, while the opposite longitudinal webs are convex. The interstices which alternate with those just described are likewise bounded by four webs, all of which, both transverse or longitudinal, are concave or crimped below the plane of the segment.

As a result of the construction which I have

just described, all of the transverse webs being depressed below the plane of the segment, unnecessary interference with the progress of the mass of coal through the screen is avoided; but the longitudinal webs attain maximum efficiency in the tumbling or agitating of the particles of coal by reason of the fact that they project above the plane of the segment or inwardly toward the axis of the screen, and this in a screen-surface of the staggered-mesh class. The efficiency of these longitudinal convexities for the purpose indicated will be readily understood when it is borne in mind that the coal does not pass over the segment exactly in the longitude thereof, but in a direction oblique to the longitude. Now it will be seen that the longitudinal webs *d'* of the interstice D are convex, while the longitudinal webs e^2 e^3 of the interstice E are concave. A particle of coal passing over but failing to pass through the perforation D will be guided by the concavity e^2 (having a convexity on either side) toward the interstice E and its further passage over the surface of the screen will be opposed by elevated junction connecting the webs *e* and e^3 of the latter interstice, with the result that the particle is passed through the interstice at once instead of being allowed to slide farther over the screening-surface.

What I claim is—

1. An integral screen-surface having substantially quadrilateral interstices, each bounded by four webs, two, opposite, webs of which are parallel and concave from end to end, the other two, opposite, webs being also parallel and curved relatively to the plane of the screen-surface, the interstices of one row being opposite the webs separating and forming the sides of the interstices of the adjacent rows, substantially as described.

2. An integral screen-surface having substantially quadrilateral interstices arranged in staggered relation, one interstice being bounded by four webs, of which two are concave and two convex, while the diagonally adjacent interstice is bounded by four webs all of which are concave, substantially as described.

This specification signed and witnessed this 3d day of March, 1899.

GEORGE W. CROSS.

Witnesses:
L. M. SMITH,
J. R. VONDERFORD.