

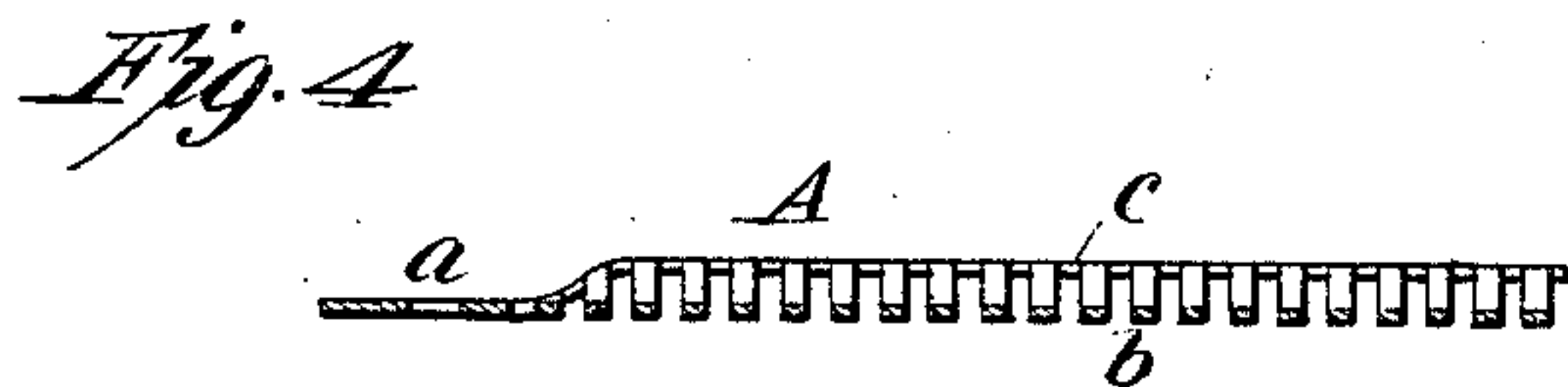
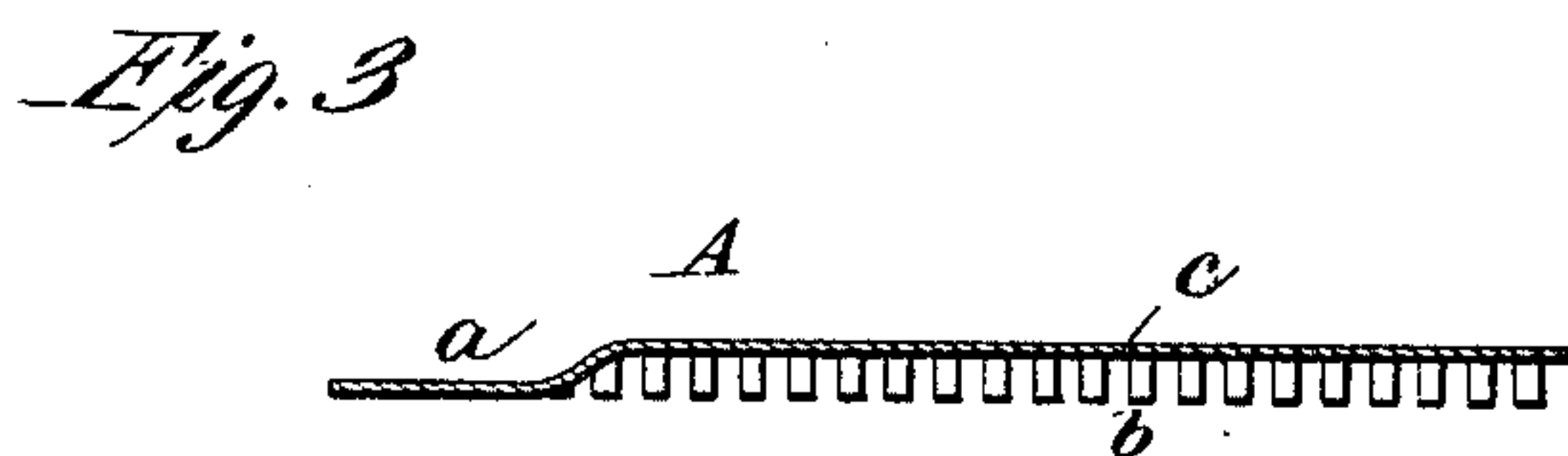
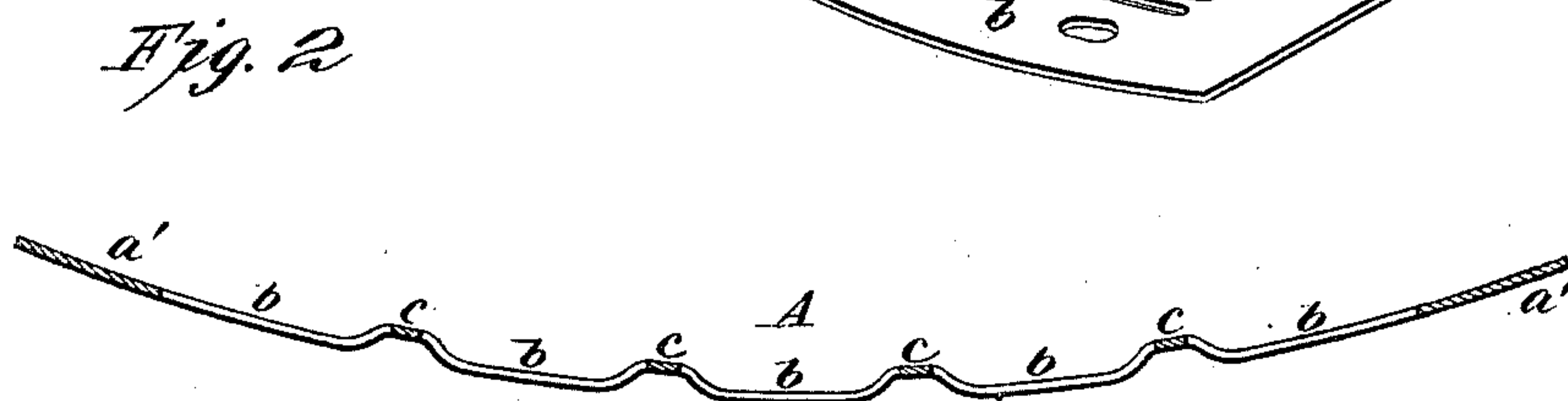
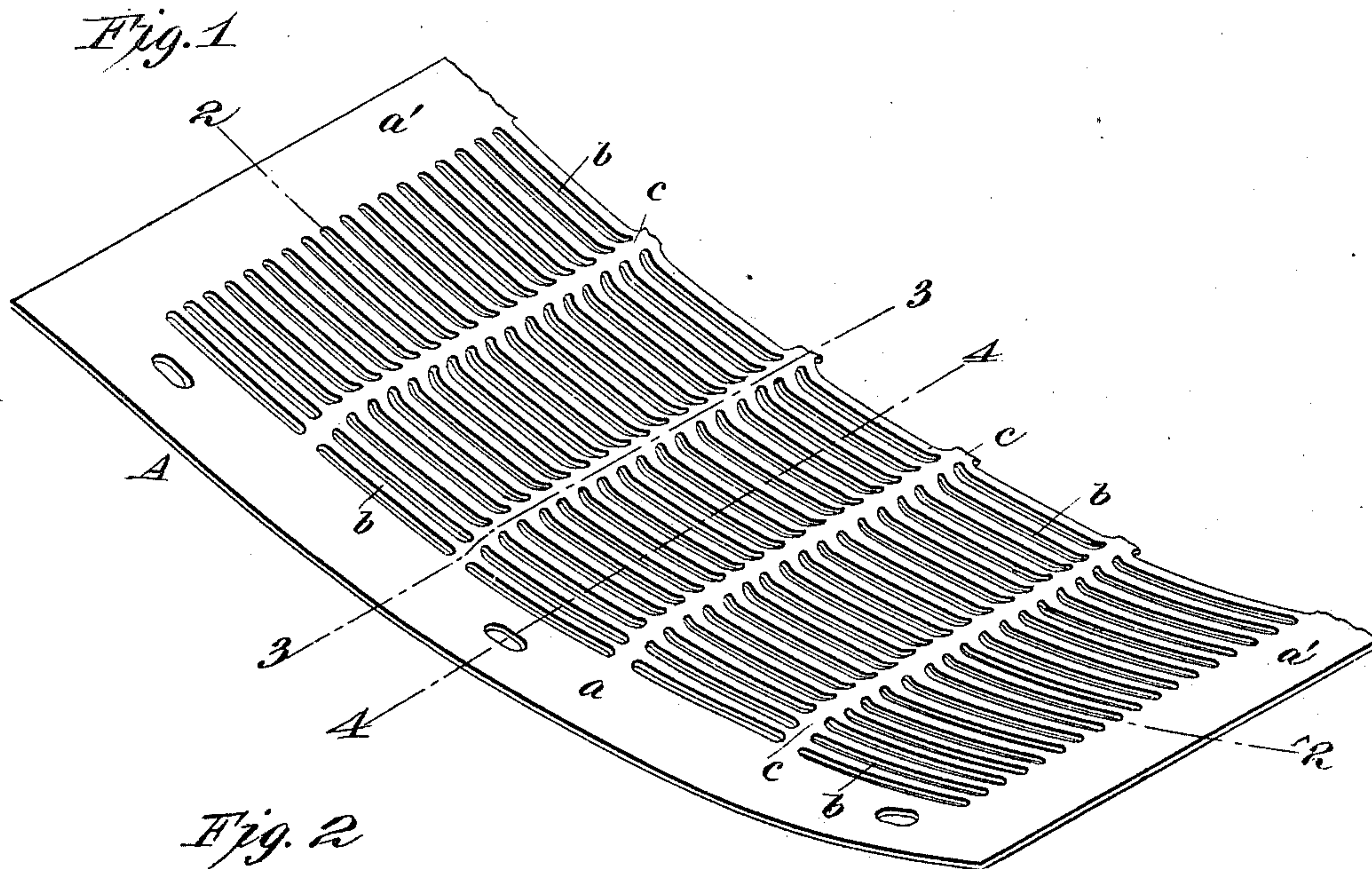
No. 697,071.

Patented Apr. 8, 1902.

G. W. CROSS.
SCREEN.

(Application filed Feb. 9, 1901.)

(No Model.)



Witnesses:

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Geo. R. Taylor

Inventor

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UNITED STATES PATENT OFFICE.

GEORGE W. CROSS, OF CARBONDALE, PENNSYLVANIA.

SCREEN.

SPECIFICATION forming part of Letters Patent No. 697,071, dated April 8, 1902.

Application filed February 9, 1901. Serial No. 46,665. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. CROSS, a citizen of the United States, residing at Carbon-
dale, in the county of Lackawanna and State
5 of Pennsylvania, have invented a certain new
and useful Improvement in Screens, of which
the following is a description.

The object of the invention is to provide a
screen of maximum efficiency for the separa-
10 tion of various materials—such as coal, ore,
gravel, &c.—into various sizes or grades.

Although applicable to screens of all sorts,
the invention is particularly adapted for the
separation of coal, and its greatest efficiency
15 will probably be realized in its use in connec-
tion with the separation of the finer sizes of
such material.

Among the objections which have been
found to screens heretofore employed is the
20 tendency of the screen-surface to become
clogged or choked by small particles of the ma-
terial lodging in the interstices, thereby pre-
cluding the passage of any portion of the ma-
terial therethrough. To overcome this ob-
25 jection, various means have been resorted to,
such as the employment of brushes so mount-
ed as to bear upon the exterior of a circular
screen and designed to open the interstices
in which particles of material have lodged.

30 In the present invention provision is made
for guarding against the clogging or choking
of the interstices, so as to increase the effi-
ciency of the screening-surface by maintain-
ing the same at all times operative for the sep-
35 arating operation.

In carrying out the invention I employ
either a continuous perforated plate or jacket
or one made up of a series of segments which
may be provided with imperforate margins.
40 Such a plate or segment I provide with inter-
stices of suitable size and preferably of greater
length than width, such greater length ex-
tending transversely of a circular or rotary
screen where the invention is employed in a
45 structure of this description. Intermediate
of the various rows of interstices the material
of the plate is bent or curved inwardly to-
ward the axis of the screen to provide for the
necessary tumbling or agitation of the mate-
50 rial as it passes over the separating-surface.
This may be accomplished in either of two
ways. Assuming the invention to be em-

bodied in a screen-segment having imperfo-
rate margins, the necessary projection of the
imperforate portions of the segment between
55 the rows of interstices may be obtained either
by bending such portion inwardly toward the
axis of the screen, and therefore out of the
plane of the imperforate margins, or such
portion may be left in the same plane as the
60 imperforate margins and that portion of the
screen-plate containing the interstices may
be bent outwardly or away from the screen-
axis, and therefore out of the plane of the
imperforate margins. In either event that
65 portion of the plate in which the interstices
are formed will be exposed to the action of
the brush or brushes commonly employed
upon the exterior of the screen, so that in the
rotation of the screen-barrel the same may
70 readily pass into the interstices and free them
from such particles as have become lodged
therein.

The invention is illustrated in the accom-
panying drawings, in which—

75 Figure 1 is a perspective view of a portion
of a screen-segment embodying my invention.
Fig. 2 is a transverse section on the line 2 2
of Fig. 1. Fig. 3 is a longitudinal section on
the line 3 3 of Fig. 1, and Fig. 4 is a longitu-
80 dinal section on the line 4 4 of Fig. 1.

Referring to the drawings, in which similar
letters denote corresponding parts, it will be
observed that the invention has been illus-
85 trated as embodied not in a continuously-per-
forated screen-jacket, but as embodied in one
of the plates or segments A, preferably of
sheet-steel or other similar material, with
which such a screen-jacket may be built up.
This segment, the material of which is of
90 uniform thickness throughout, is provided
with end margins *a* and side margins *a'* *a'*,
either or both of which may be provided with
bolt-holes to facilitate attachment of the seg-
ment to the screen-frame.

95 *b* designates the screening interstices, here
shown as of considerably greater length than
width and arranged in longitudinal rows or
series, the greatest dimension of the inter-
stices extending, however, transversely of the
100 plate. Also, as here shown, the interstices *b*
are arranged in rows not only longitudinally,
but transversely. This, however, may, if de-
sired, be so modified as that while such in-

terstices are in rows longitudinally of the plate only the interstices of alternate longitudinal rows shall be in line transversely of the plate, this arrangement of the mesh being known in the art as "staggered."

c designates integral imperforate tumblers formed of those portions of the screen-plate which bound the ends of the elongated interstices *b*. As here shown, these tumblers *c* are formed by bending inwardly toward the axis of the screen the imperforate portion of the plate. They are illustrated in the drawings as lying out of and above the plane of the imperforate margins of the segment. As heretofore explained, however, they may lie in the same plane as the imperforate margins, but be adapted for the tumbling or agitation of the material by lying above the surface of the screening-mesh, the latter surface being in such case curved or bent outwardly away from the axis of the screen, and therefore out of the plane of the tumblers and the imperforate margins. In either event the tumblers *c* will be so arranged as not to interfere with the action of the brush or brushes located on the exterior of the screen-barrel; but such brushes will be free to penetrate into the interstices *b* in the rotation of the screen-barrel, thereby freeing such interstices from such particles as may have lodged therein, and thereby rendered such interstices inoperative for separating purposes. This will be more readily appreciated on reference to Fig. 2 of the drawings, from which it will be seen that the imperforate tumblers interpose no obstacle to the passage of the brush or brushes through the entire length of each and every perforation in the screen.

So far as the tumbling operation is concerned this is most efficiently performed by the integral tumblers *c*, which lying above the plane of the perforate surface of the plate interrupt the stream of material passing over such surface, prevent it from sliding upon the webs bounding the interstices, and assure

such agitation of the mass as that the particles designed for separation at the portion of the screen-barrel at which segments of a certain mesh are employed will be prevented from riding upon larger particles and thereby escaping the separating operation.

What I claim is—

1. In a screen-surface, a plate of uniform thickness throughout, provided with integral, imperforate tumblers, substantially straight from end to end and interstices each bounded by webs lying in the same plane but out of the plane of said tumblers, substantially as set forth.

2. In a screen-surface, a plate of substantially uniform thickness throughout, provided with transverse elongated interstices disposed in longitudinal series and having parallel side webs, and integral, imperforate tumblers between said series, said tumblers being substantially straight from end to end and arranged out of the plane of said webs, substantially as set forth.

3. In a screen-surface, a plate of uniform thickness throughout, provided with interstices arranged in longitudinal series, the imperforate material of said plate between each series being straight and continuously elevated above the webs bounding the said interstices, substantially as set forth.

4. In a screen-surface, a plate of uniform thickness throughout provided with interstices arranged in longitudinal series and having parallel side webs, the imperforate end webs of the interstices of each series being substantially straight and arranged continuously out of the plane of said side webs, substantially as set forth.

This specification signed and witnessed this 1st day of February, 1901.

GEORGE W. CROSS.

Witnesses:

E. D. YARRINGTON,
J. R. VANDERFORD.