

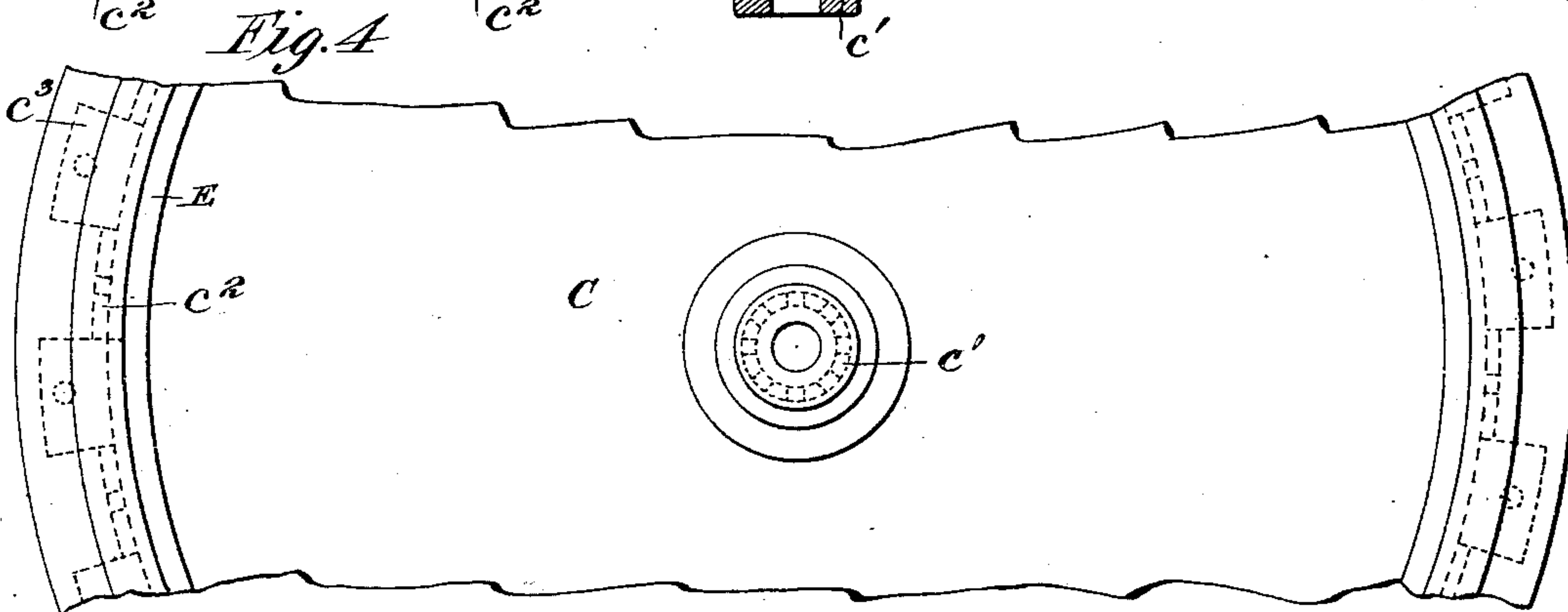
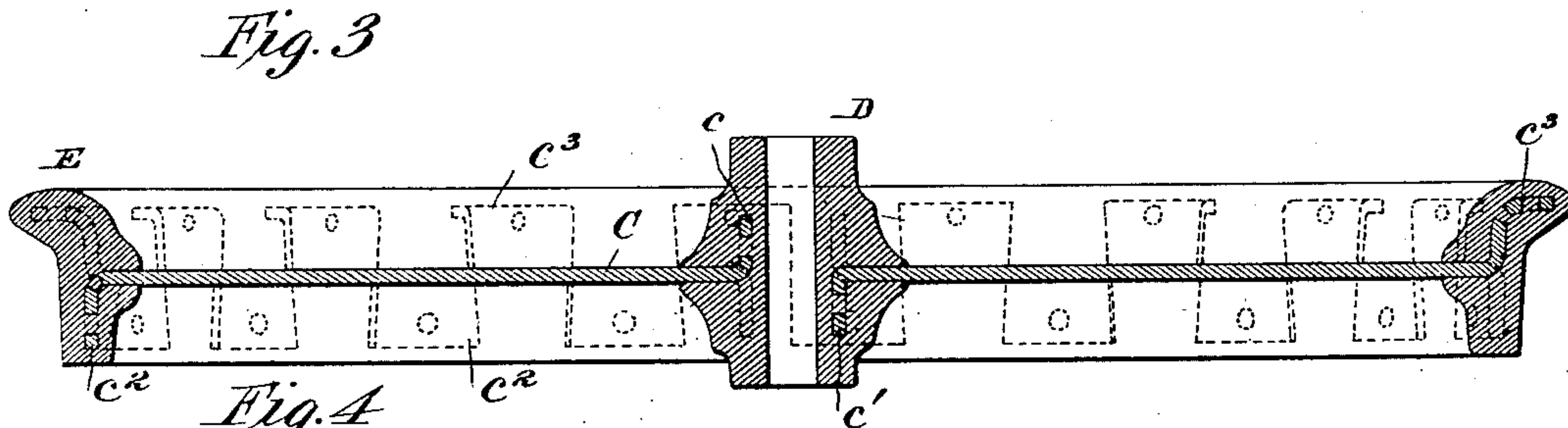
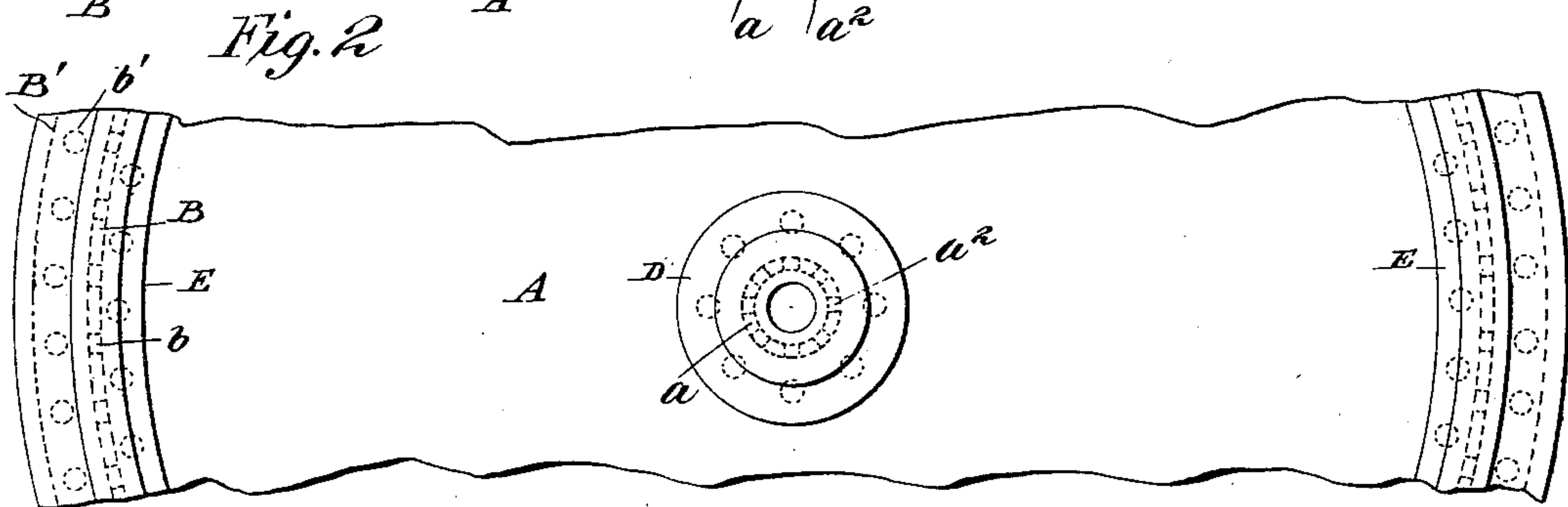
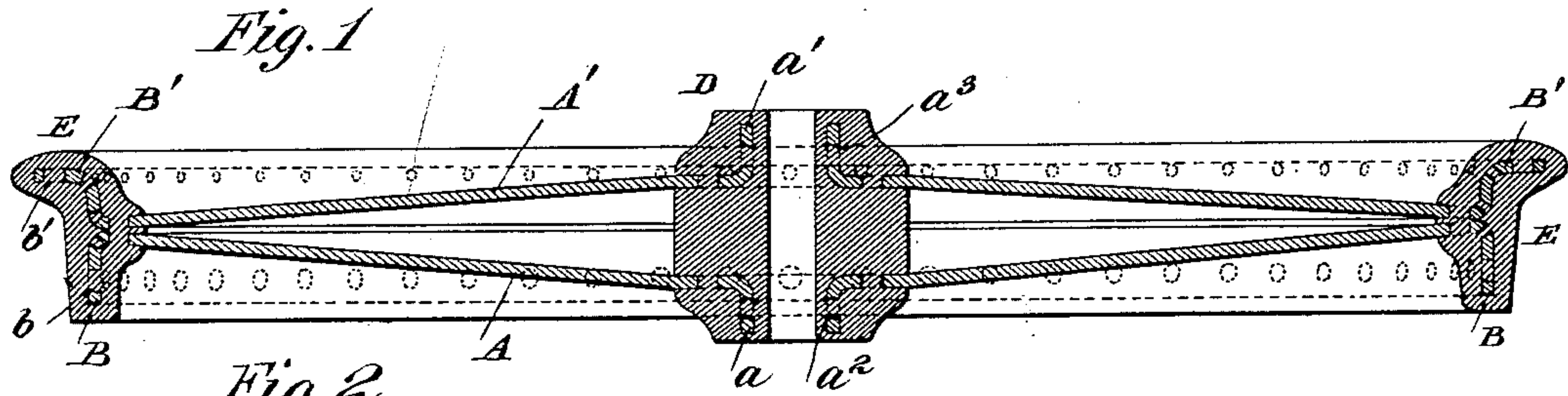
No. 677,120.

Patented June 25, 1901.

G. W. CROSS.
WHEEL.

(Application filed Apr. 25, 1899.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE W. CROSS, OF CARBONDALE, PENNSYLVANIA.

WHEEL.

SPECIFICATION forming part of Letters Patent No. 677,120, dated June 25, 1901.

Application filed April 25, 1899. Serial No. 714,352. (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-
5 State of Pennsylvania, have invented a certain new and useful Improvement in Wheels, of which the following is a specification.

The object of my invention is to provide a wheel which shall be cheap and durable in
10 manufacture and efficient in operation.

The invention is applicable to wheels designed for many different uses, but will be herein described as applied to a wheel for
15 cars, locomotives, or other similar vehicles. Such wheels are commonly formed of cast and wrought metal, often in several parts, which are bolted or otherwise secured together. Not only is such a method of construction expensive and time-consuming, but
20 the resultant wheel by reason of the jarring and shearing of the bolts lacks the desirable element of durability. Again, wheels have been formed with cast rims or tires and hubs, the former being shrunk upon webs of
25 wrought metal secured to the hubs. These also lack the element of durability. In both types no provision (save the toughness or resisting qualities of the metallic rim or tire) is made against the cracking, splitting, or chip-
30 ping of portions of such rim or tire adjacent to the tread of the wheel.

In accordance with the present invention I employ a hub and a rim or tire, preferably of tough cast metal, and these are joined by an
35 intermediate web either single or double and preferably of wrought-steel. The latter is provided with outwardly-projecting perforated flanges both centrally and peripherally. About these are cast, respectively, the hub
40 and the rim or tire, the cast metal surrounding the flanges and passing through the perforations therein, so as to form an intimate and in practical effect homogeneous union between the several parts without the aid of
45 bolts or other similar securing devices.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a central section, and Fig. 2 a partial elevation, of a wheel embodying my
50 invention. Fig. 3 is a central section, and Fig. 4 a partial elevation, illustrating a modification.

Referring particularly to the wheel shown in Figs. 1 and 2, A A' designate a two-part web, preferably of steel plate. Each part is
55 centrally perforated, that portion of the web adjacent to the center being flanged outwardly, as at $a a'$, and the outwardly-flanged portion is provided with depressions or perforations $a^2 a^3$. The web A A' is also pro-
60 vided with peripheral flanges B B', these flanges having depressions or perforations $b b'$. In the case of the part A of the web the flange B extends outwardly at approximately a right angle to the longitude of the wheel. In the
65 case of the part A' of the web, however, the perforated and flanged portion should, in my belief, follow the form of the subsequently-applied rim or tread. The flanges B' of this member extend, therefore, outwardly in sub-
70 stantially the same plane as the flange B and then upwardly in substantially the same plane as the body of the part A of the web.

The web A A', constructed as described, having been provided, the hubs D and rims E,
75 are then applied. These, as before stated, are preferably of tough cast metal. The web is so placed that its center and periphery shall project into the hub and rim molds and the molten metal run into the latter. In as-
80 suming the permanent form such metal will pass through the perforations or into the depressions of both hub-flanges and rim-flanges, permanently binding the whole structure to-
85 gether.

The embodiment of the invention illustrated in Figs. 2 and 3 is substantially the same in general characteristics as that already described and contains the same principle. Here, however, a one-part web C is employed,
90 and this is provided both centrally and peripherally with outwardly-extending flanges formed in sections, certain hub-sections c extending in one direction and the others, c' , in the opposite direction. The same is true as
95 to the peripheral flange-sections $c^2 c^3$.

I do not herein claim, broadly, a wheel in which the hub and rim are cast upon a centrally and peripherally perforated plate, the
100 essence of the invention being the flanging of the perforated central and peripheral portions, as herein described. It should also be understood that by the word "perforation" I do not necessarily imply that the openings

$a^2 a^3 b b'$ extend entirely through the flanges, although I deem this preferable, and that by the word "web" is meant the portion of the wheel intermediate of the hub and rim, regardless of whether this be of one or more parts.

What I claim is—

1. A wheel having a web provided with a central flange, a hub cast about and surrounding such flange, and a rim or tire, substantially as described.
2. A wheel having a web provided with a central perforated flange, a hub cast about and surrounding such flange, and a rim or tire, substantially as described.
3. A wheel having a web provided with oppositely-turned flanges, a hub cast about and surrounding such flanges, and a rim or tire, substantially as described.
4. A wheel having a web provided with oppositely-turned perforated flanges, a hub cast about and surrounding such flanges and a rim or tire, substantially as described.
5. A wheel having a web provided with oppositely-turned, separated flanges, a hub cast about and surrounding such flanges, and a rim or tire, substantially as described.
6. A wheel having a web provided with a peripheral, perforated flange, a rim or tire cast about and surrounding such flange, the material of said rim or tire extending into or through the perforations therein, and a hub, substantially as described.
7. A wheel having a web provided with peripheral, oppositely-turned flanges, a rim or tire cast about and surrounding such flanges, the material of said rim or tire extending into or through the perforations therein, and a hub, substantially as described.
8. A wheel having a web provided with peripheral, separated, perforated flanges, a rim or tire cast about and surrounding such flanges, the material of said rim or tire extending into or through the perforations therein, and a hub, substantially as described.
9. A wheel having a web provided with peripheral, separated, oppositely-turned, perforated flanges, a rim or tire cast about and surrounding such flanges, the material of said

rim or tire extending into or through the perforations therein, and a hub, substantially as described.

10. A wheel having a hub and a rim and a web provided with flanges embedded in said hub and rim, substantially as described.

11. A wheel having a hub and a rim, and a web provided with perforated flanges embedded in said hub and rim, substantially as described.

12. A wheel having a hub and a rim and a web provided with a central perforated flange or flanges embedded in said hub, and a peripheral, perforated flange or flanges embedded in said rim, substantially as described.

13. A wheel having a web provided with perforated, central and peripheral flanges, and a hub and a rim cast about and surrounding such central and peripheral flanges respectively, substantially as described.

14. A wheel having a hub and a rim, and a web provided with oppositely-turned flanges embedded in said hub and rim, substantially as described.

15. A wheel having a hub and a rim, and a web provided with oppositely-turned, perforated flanges embedded in said hub and rim, substantially as described.

16. A wheel having a hub and a rim, and a web provided with a perforated flange or flanges projecting first outwardly and then upwardly from said web and embedded in said rim, substantially as described.

17. A wheel having a hub and a rim and a web provided with a flange or flanges embedded in said rim and conforming generally to the contour of the operative surface of said rim, substantially as described.

18. A wheel having a hub and a rim, and a web provided with a perforated flange or flanges embedded in said rim and conforming generally to the contour of the operative surface of said rim, substantially as described.

This specification signed and witnessed this 21st day of April, 1899.

GEORGE W. CROSS.

Witnesses:

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