

No. 817,692.

PATENTED APR. 10, 1906.

F. BRISCOE.  
RADIATOR.

APPLICATION FILED MAR. 24, 1905.

Fig. 1.

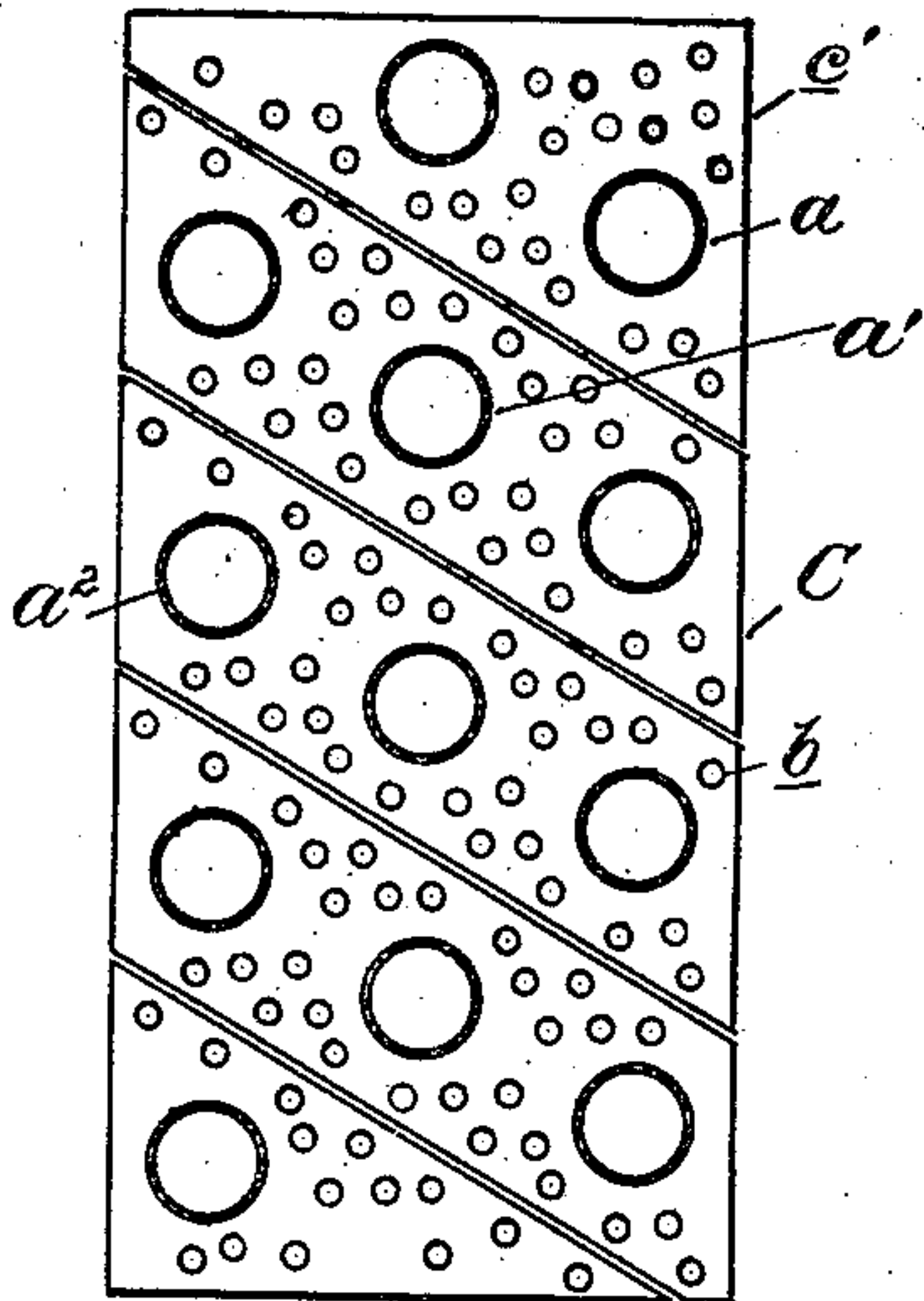


Fig. 2.

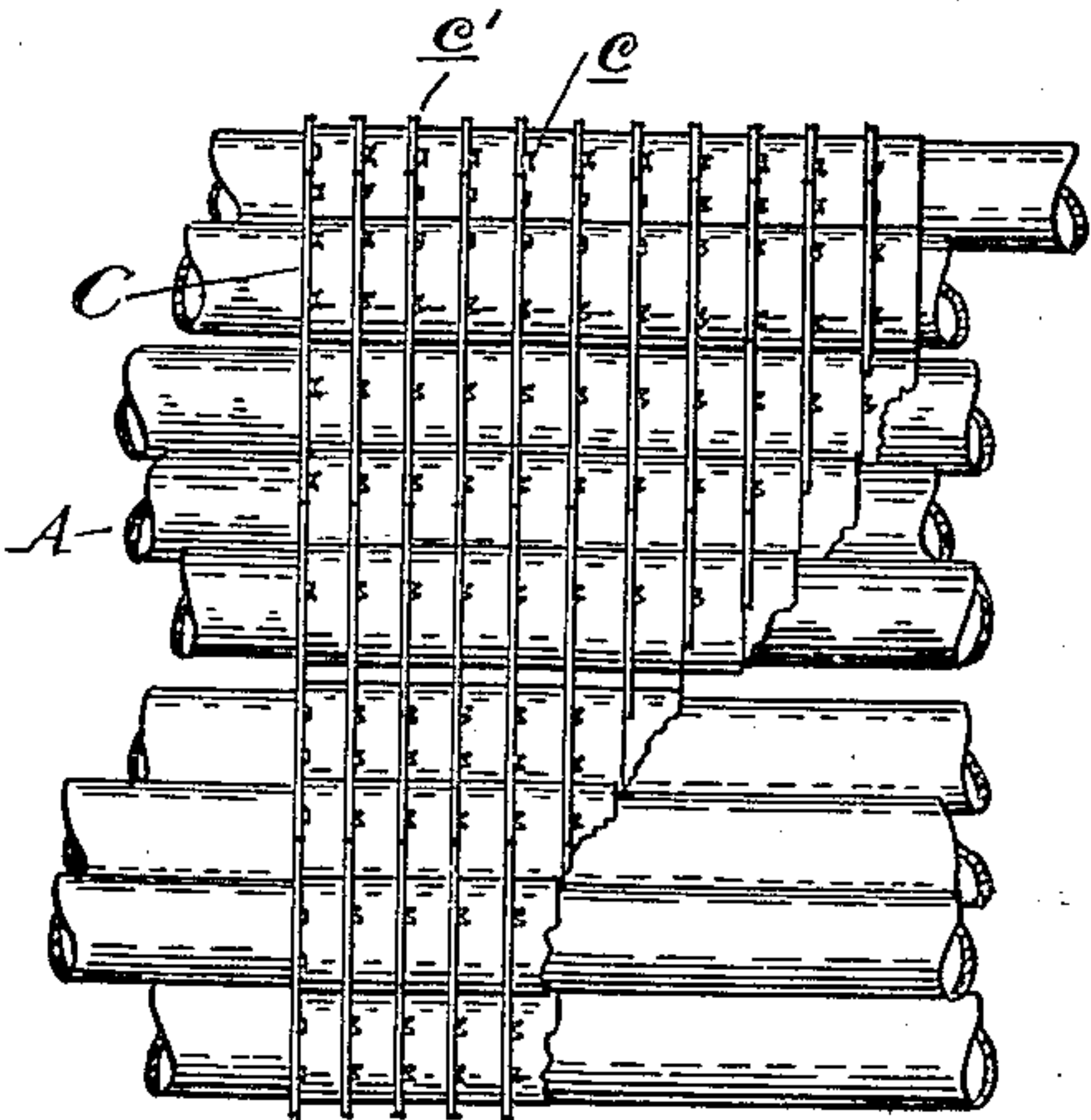
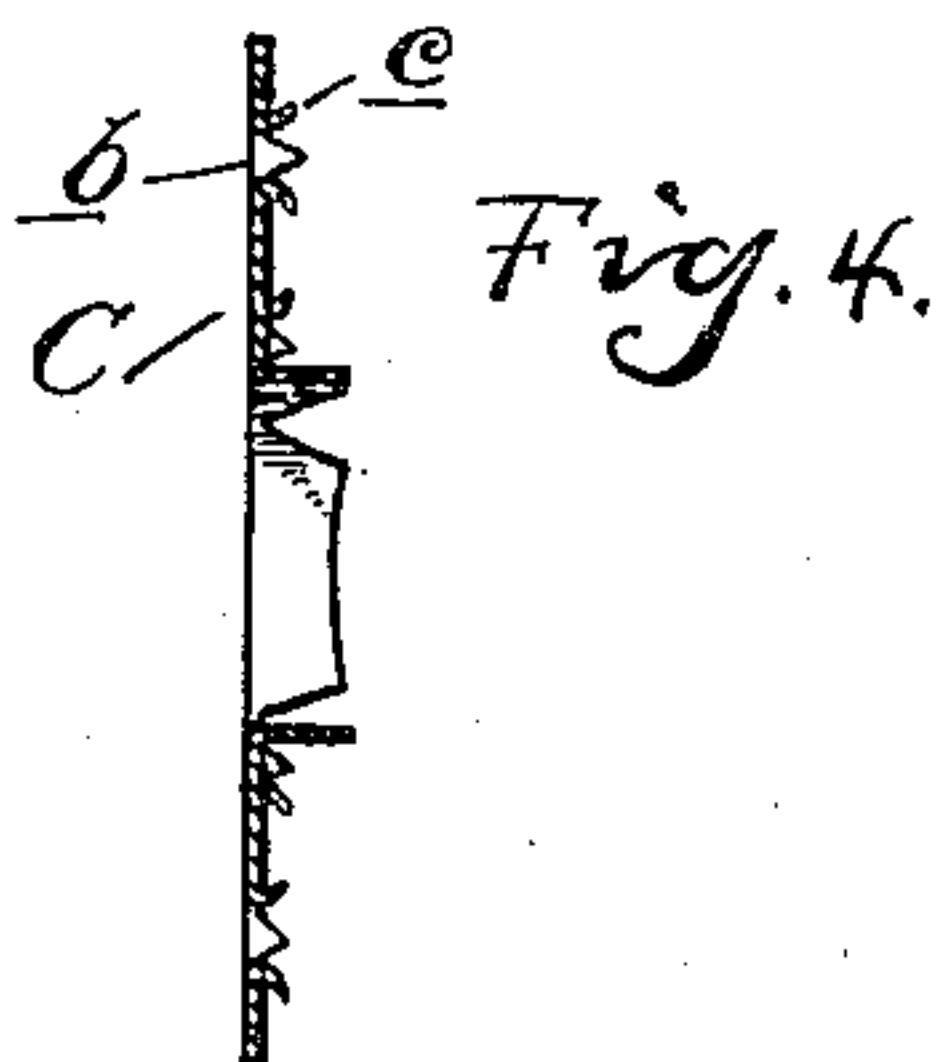
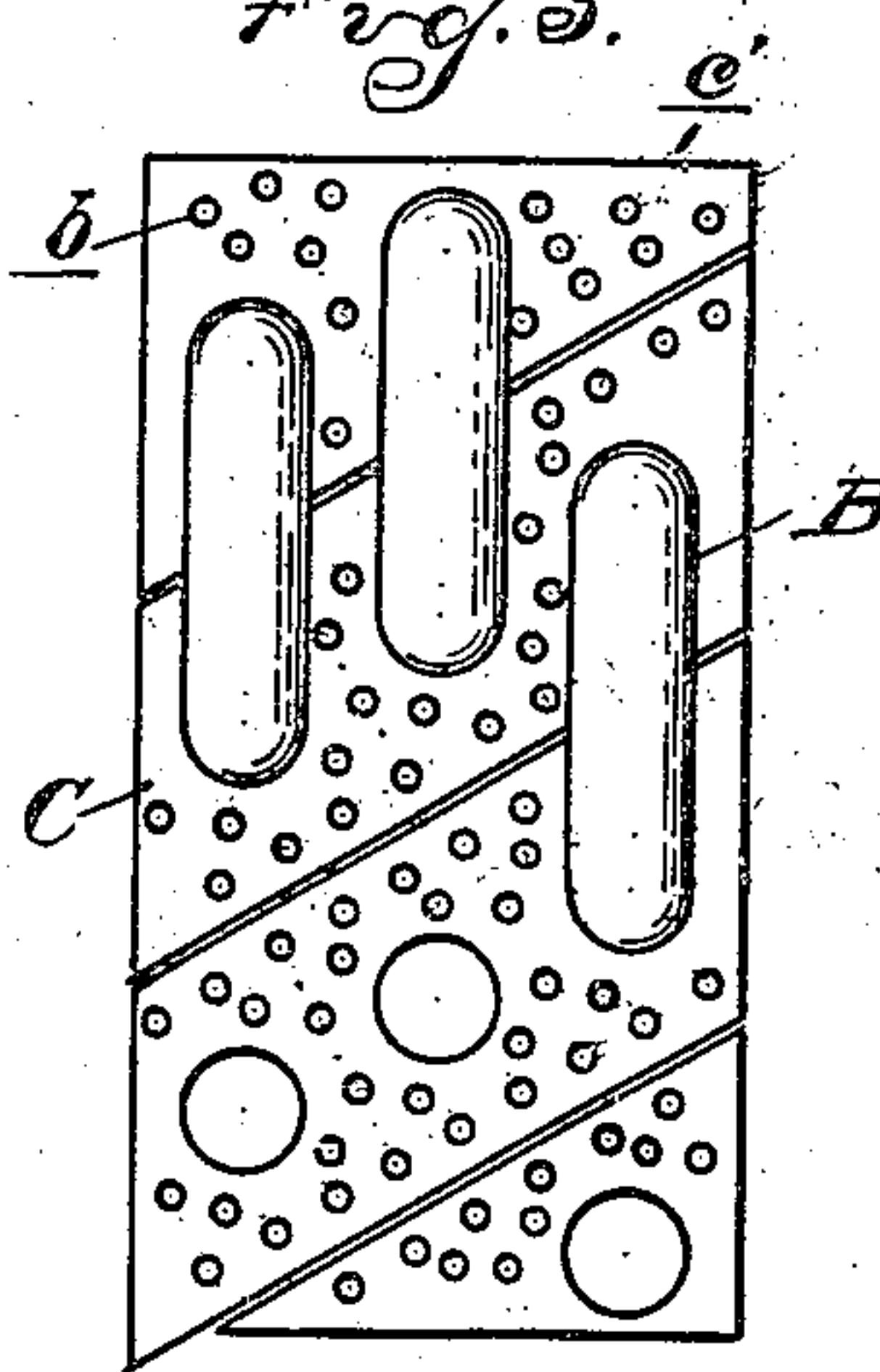


Fig. 3.



Witnesses  
A. L. Hobby  
Amelia Williams

Inventor  
Frank Briscoe  
By James Whittington  
att'y.



# UNITED STATES PATENT OFFICE.

FRANK BRISCOE, OF DETROIT, MICHIGAN, ASSIGNOR TO BRISCOE MANUFACTURING COMPANY, OF DETROIT, MICHIGAN, A CORPORATION.

## RADIATOR.

No. 817,692.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed March 24, 1905. Serial No. 251,730.

*To all whom it may concern:*

Be it known that I, FRANK BRISCOE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Radiators, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to radiators, particularly designed as coolers, for use on motor-vehicles; and the invention consists in the construction as hereinafter set forth.

In the drawings, Figure 1 is a cross-section through the radiator. Fig. 2 is a side elevation thereof. Fig. 3 is an end elevation, and Fig. 4 is a cross-section through one of the fins.

My invention relates to radiators, and more particularly to that type in which the conduits for the fluid-circulating medium have sleeved thereon radiating disks or fins, which are exposed to contact with transversely-passing air-currents. With this type of radiator it is desirable to have a uniform amount of radiating-surface on the fins for each of the conduits, and to further effect the cooling it is desirable to expose the surface of the conduits between the fins to the air-currents. To effect the latter result, a staggered arrangement of the conduits is preferable; but with such an arrangement it is difficult to provide radiating-fins of equal surface upon said conduits and to arrange them compactly within the space. There is also an advantage in tying the conduits of adjacent rows together by sleeving thereon a common or gang fin. With my improved construction I have secured a very compact arrangement of parts and one in which the conduits are staggered and in which the radiating-fins provide an equal amount of surface for each conduit. This is effected by employing gang-fins for engagement with a plurality of conduits and arranging these fins diagonally, so as to connect the staggered conduits.

A represents the conduits for the fluid-circulating medium, which are arranged in a

plurality of parallel rows  $a$   $a'$   $a''$ , the adjacent members of each row being connected at their ends by return-bends B. The conduits of adjacent rows are staggered in relation to each other, so as to interrupt a direct air-passage between conduits in a direction perpendicular to the longitudinal axis of the radiator.

C represents the radiator-fins. For this purpose I employ a gang-fin, which preferably extends completely across the radiator and is sleeved upon a conduit in each of the parallel rows. These fins are also arranged to extend diagonally, so as to engage with the staggered conduits in the different rows, which are out of line in a direction perpendicular to the planes of the rows. The ends of the fins are, however, cut at such an angle to the sides that they extend parallel to the rows of conduits. At the opposite ends of the rows of conduits are arranged a series of fins  $c'$ , which are of substantially triangular form and with their outer sides completing the rectangle of the radiator.

With a radiator constructed as described the cooling air-current, which is directed at right angles to the longitudinal axis of the radiator or the planes of the rows of conduits, will come into contact with the conduits in each row, while the common fin connecting these conduits will uniformly distribute and equalize the heat conducted thereto. All of the available space between the conduits is filled with the fins C, and an equal area of the surface of said fin is within range of each of the conduits upon which it is sleeved.

To further increase the effectiveness of the radiating-fins, they are preferably punctured to form apertures  $b$  therein and projecting points  $c$ .

What I claim as my invention is—

1. A radiator comprising a plurality of rows of conduits with the individual conduits of adjacent rows staggered in relation to each other, gang-fins sleeved upon and connecting the conduits of adjacent rows, said fins together completing and substantially filling

the rectangle surrounding said rows of conduits, whereby all available space for radiating-surface is utilized.

2. A radiator comprising a plurality of  
5 rows of conduits with the individual conduits of adjacent rows staggered in relation to each other, gang-fins of rhomboidal form sleeved upon and connecting the staggered conduits of adjacent rows, triangular fins sleeved upon

conduits at opposite ends of the rows, said fins together filling the area of the rectangle, bonding said rows of conduits.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK BRISCOE.

Witnesses:

AMELIA WILLIAMS,  
JAS. P. BARRY.