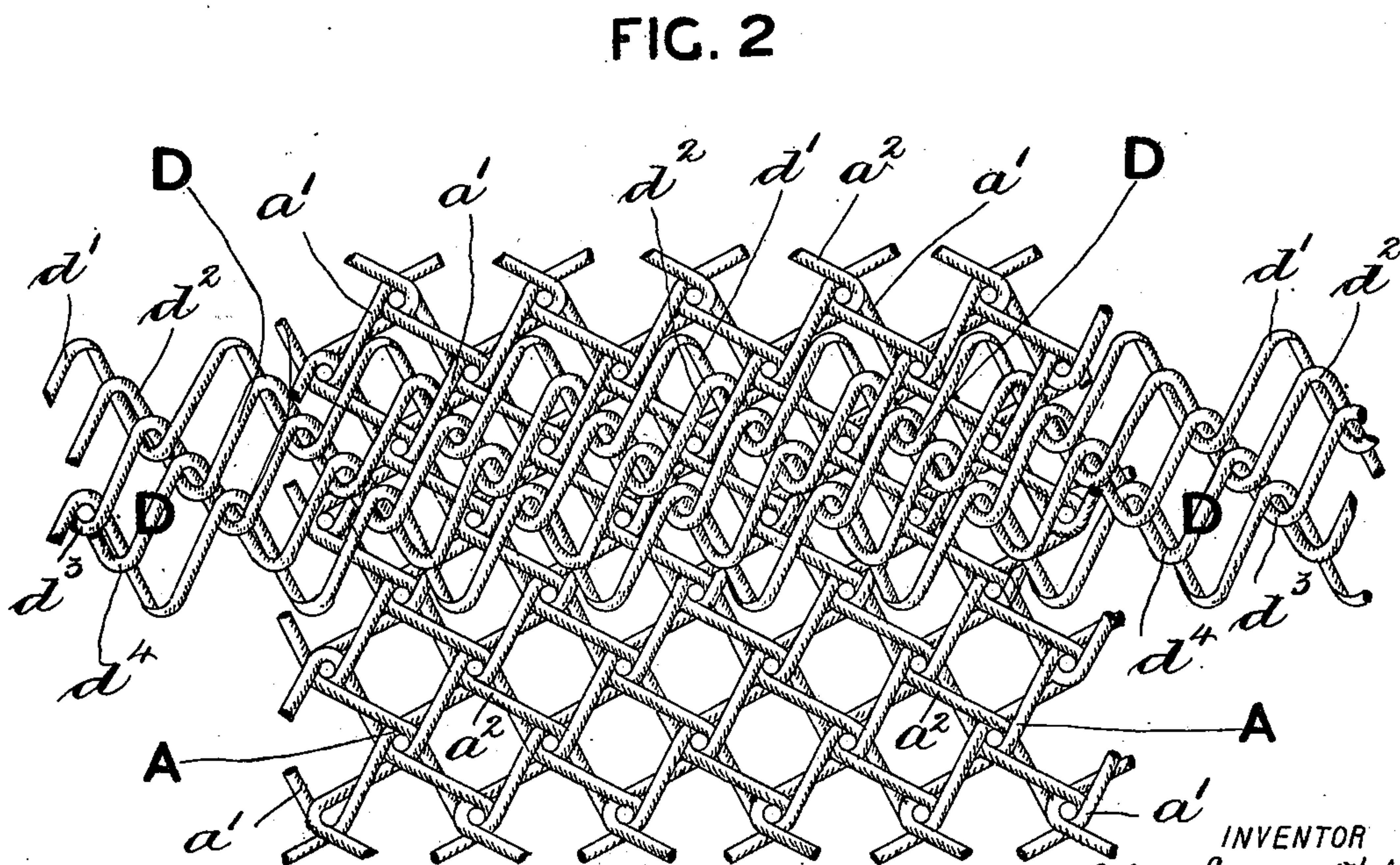
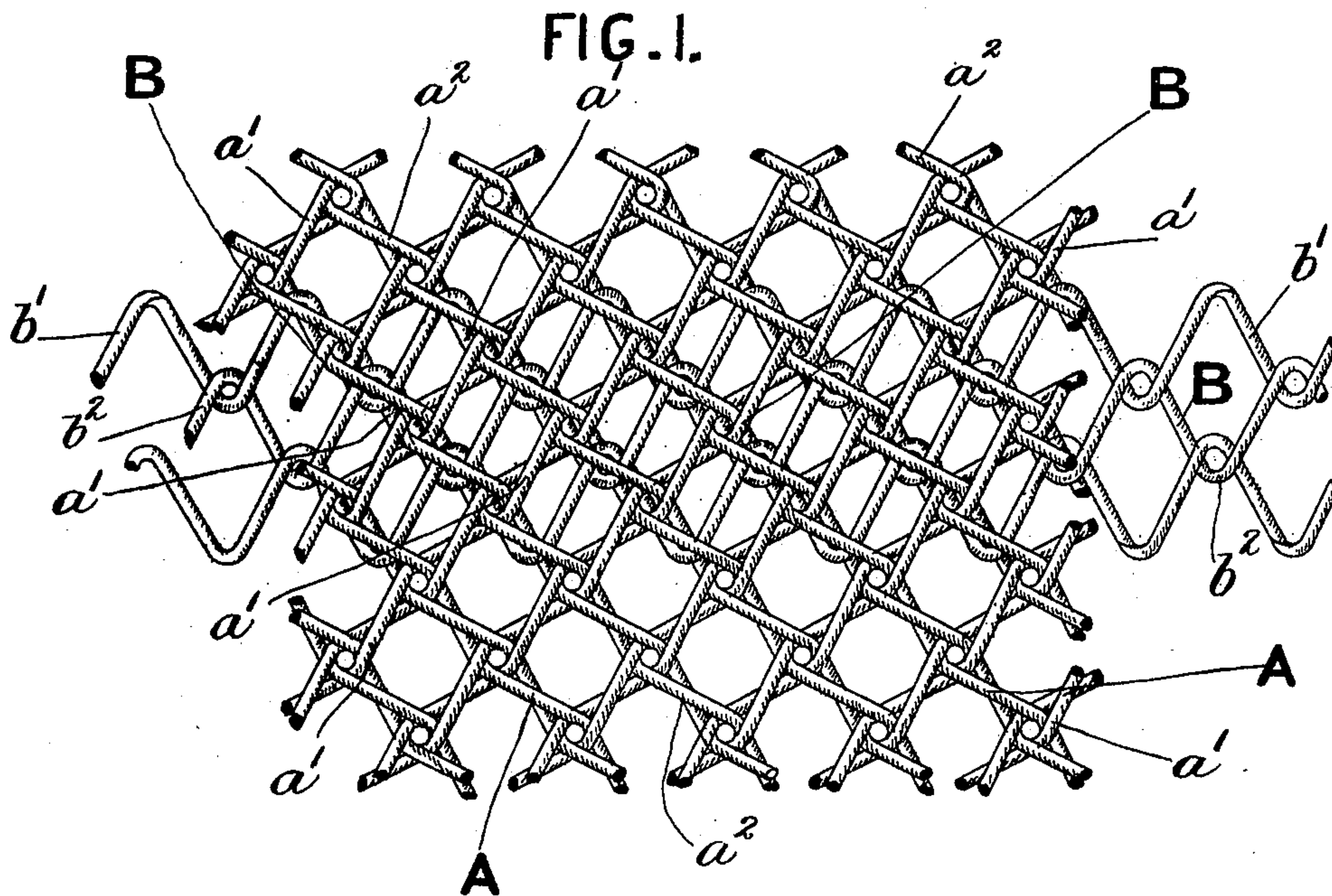


A. E. WALE.  
WIRE MESH FOR CYCLE SEATS.

(Application filed Dec. 23, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

Ella L. Guler

Oldman

INVENTOR

Alfred Edmund Wale

BY

*Richard R. [Signature]*

ATTORNEYS



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WIRE MESH FOR CYCLE SEATS.

(Application filed Dec. 23, 1899.)

(No Model.)

2 Sheets—Sheet 2.

FIG. 3

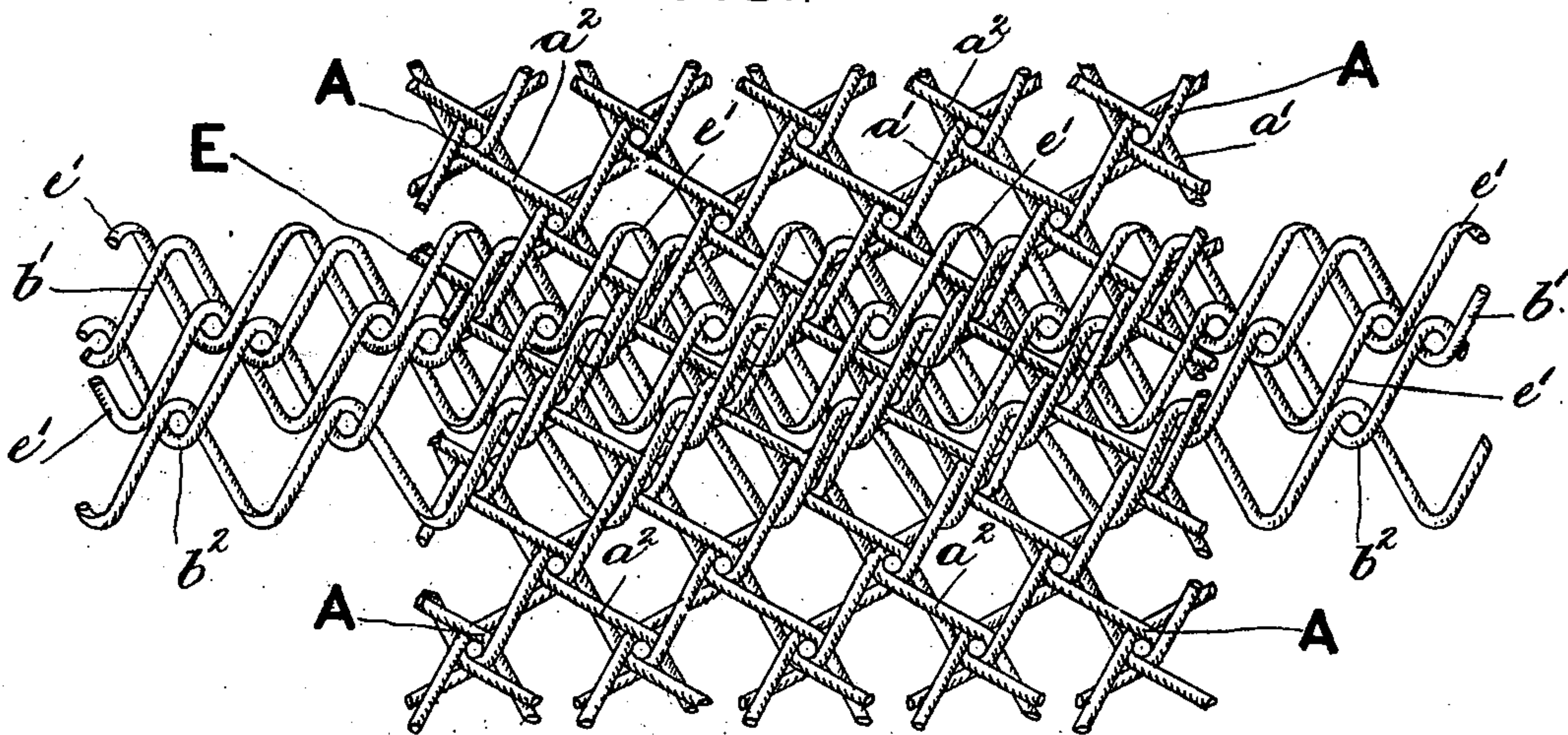


FIG. 5

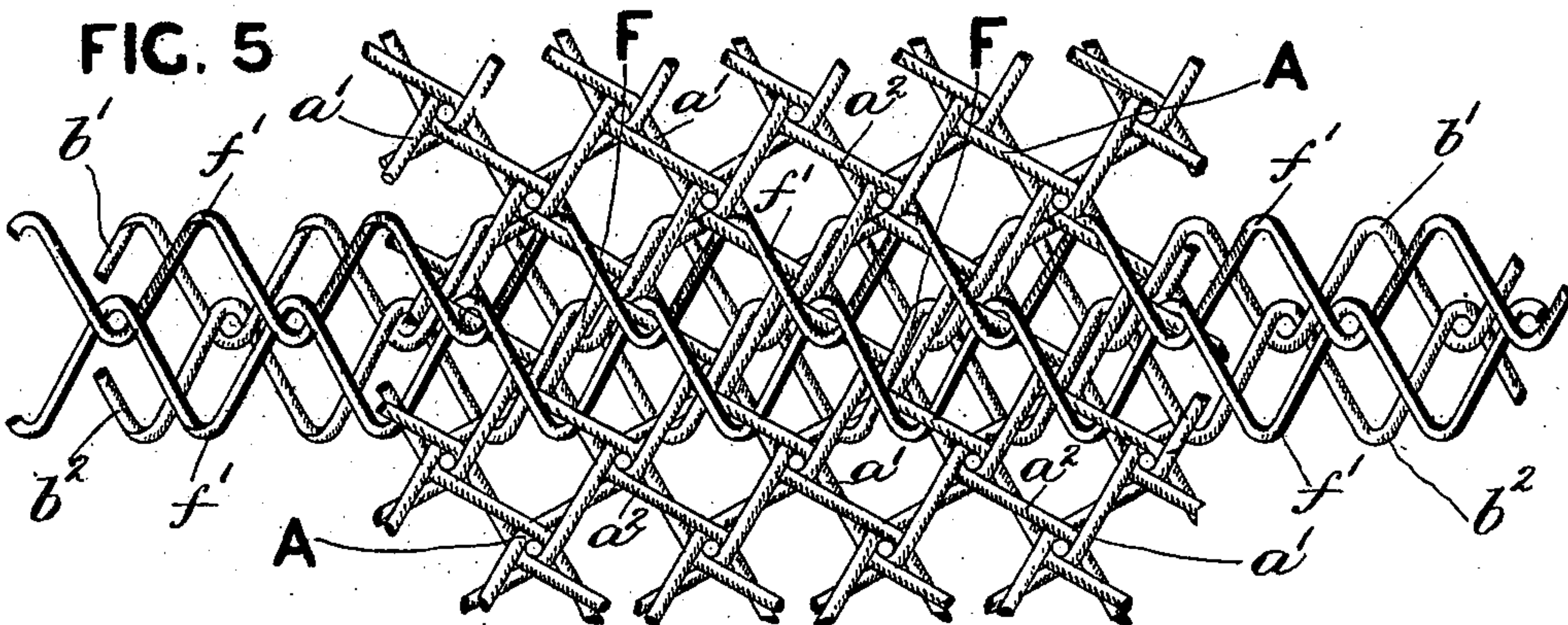
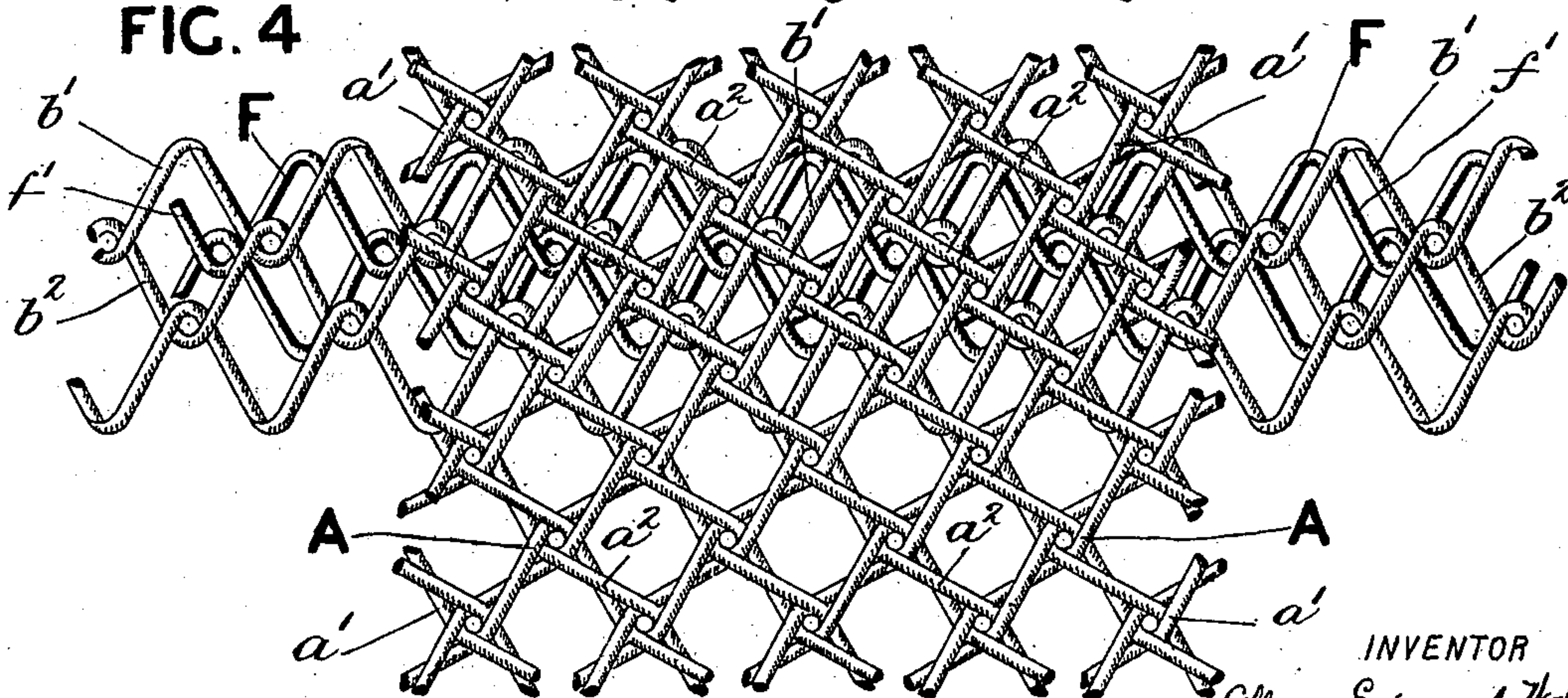


FIG. 4



WITNESSES:

Ella L. Giles  
[Signature]

INVENTOR

Alfred Edmund Wale

BY

[Signature]

ATTORNEYS



# UNITED STATES PATENT OFFICE.

ALFRED EDMUND WALE, OF ELMDON, ENGLAND.

## WIRE MESH FOR CYCLE-SEATS.

SPECIFICATION forming part of Letters Patent No. 656,231, dated August 21, 1900.

Application filed December 23, 1899. Serial No. 741,468. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED EDMUND WALE, a subject of the Queen of Great Britain, residing at Dunstan House, Elmdon, near Birmingham, England, have invented certain new and useful Improvements in Woven-Wire Mesh for Cycle-Saddles, Seats, and other Articles, of which the following is a specification.

My invention has for its object improvements in woven-wire mesh for cycle-saddles, seats, and other articles, by which I produce or weave a fabric of greater fineness and smoothness of surface than has hitherto been possible and which will be found especially suitable for the covers or seats of cycle-saddles.

In order that my invention may be more clearly understood and easily carried into practical effect, I have appended hereunto drawings, upon which I have shown several examples of my woven-wire mesh.

Figure 1 is a plan view showing a portion of my new fabric and a portion of the foundation or primary fabric. Fig. 2 is a plan view showing a portion of a finer-woven fabric and a portion of the primary or foundation fabric. Fig. 3 is an inverted plan view of Fig. 1, showing an additional mesh interwoven on the under side. Fig. 4 is a plan view showing another form of my fabric with a strengthening fabric woven on the under side. Fig. 5 is an inverted plan view of Fig. 1, showing the strengthening under fabric engaging with every transverse coil.

In carrying my invention into practice I first weave the foundation or primary fabric A of sufficient fineness from two separate and similar sets of helices  $a'$  and  $a''$ , which are interwoven with one another at right angles and in the same horizontal plane. I then take another helix  $b'$  of the same diameter, pitch, and thickness of wire and engage it with two of the longitudinal helices  $a'$ , but not with the transverse helices  $a''$ . The helix  $b'$ , however, lies within their convolutions, as clearly shown at Fig. 1, and has its upper and lower surfaces immediately below the upper and lower surfaces of the transverse helices  $a''$ . I now take another similar helix  $b''$  and engage it with one of the two longitudinal helices  $a'$  already engaged with the helix  $b'$  and also

with the next longitudinal helix  $a'$  and with the helix  $b'$ , thus engaging two of the helices  $a'$  of the foundation fabric A in the same manner as with the helix  $b'$ . This process is repeated until the full width of the primary or foundation fabric A has been so treated and converted into the finer-surface fabric B, or I also obtain a finer-surface fabric by weaving the double-woven fabric D upon the upper surface of the cross-woven primary or foundation fabric A in the following manner, as shown at Fig. 2: I first take the additional helix  $d'$ , of the same diameter and pitch and preferably of the same thickness of wire, and interweave it with one of the longitudinal helices  $a'$  of the primary or foundation fabric. I then take another or second helix  $d''$  of the same diameter and pitch and intercoil it with the helix  $d'$  and also with the same longitudinal helix  $a'$ . The third additional helix  $d'''$  is then interwoven with the next longitudinal helix  $a'$  of the primary or foundation fabric A and also with the helices  $d'$  and  $d''$ . I then take the fourth additional helix  $d''''$  and intercoil it with the same longitudinal helix  $a'$  as the additional helix  $d'''$  and also with the additional helices  $d''$  and  $d'''$ , as clearly shown at Fig. 2. This process is repeated until the desired width of fabric is obtained by adding two additional helices to each longitudinal helix of the primary or foundation fabric A, thereby producing the fabric D, which has a fine upper surface; but the additional helices  $d'$ ,  $d''$ ,  $d'''$ , and  $d''''$  are not in the same horizontal plane as the helices  $a'$  of the cross-woven primary fabric or foundation fabric A.

In order to obtain the necessary strength for cycle-saddles in fine-woven wire fabrics, as above described, I weave another fabric or fabrics upon the lower surface of the cross-woven foundation or primary fabric A in the following manner.

In the case of the fine-upper-surface fabric D, as shown at Fig. 2, I prefer to interweave upon the lower surfaces of the helices  $a'$  of the foundation or primary fabric A a single longitudinally-woven fabric (not a cross-woven) in such a manner that each convolution of each helix engages with the convolutions of the corresponding longitudinal helix  $a'$ . Another fabric of a similar nature is



then woven upon the under surface of this single longitudinal woven fabric, or I may use compound helices formed of two or more helices instead of single helices.

- 5 In the case of the fabric B, woven according to the method of obtaining a fine upper surface, as shown at Fig. 1, I may interweave upon the lower surface of the primary or foundation fabric A another fabric E, the  
10 helices  $e'$  of which engage with one or two of the longitudinal helices  $a'$  of the fabric A and also with the helices of the fabric B, as clearly shown at Fig. 3, or with the helices of the fabric B only; but I prefer to weave the strengthening fabric F on the under side of the pri-  
15 mary or foundation fabric A, and I employ helices  $f'$  of the same diameter and pitch as the helices  $a'$ , but of the opposite hand—that is to say, if the helices  $a'$  of the primary or  
20 foundation fabric A are left-hand pitch the helices  $f'$  of the under strengthening fabric F would be right-hand pitch, as shown at Fig. 4, and preferably of a thicker gage of wire. In this case the helices  $f'$  of the strengthen-  
25 ing fabric engage only with each alternate transverse helix  $a^2$  of the primary or foundation fabric A. The strengthening fabric F may consist of single helices or compound helices formed of two or more helices.
- 30 In some cases when using the strengthening or under fabric F of a right-hand pitch in conjunction with the primary or foundation fabric A of a left-hand pitch each convolution of each helix  $f'$  may engage with  
35 each transverse coil  $a^2$  of the foundation or primary fabric, as clearly shown at Fig. 5.

What I claim is—

1. The new woven-wire mesh or fabric for cycle-saddles seats and other articles consist-  
40 ing of the combination with a primary or ordinary cross-woven wire fabric of longitudinally-woven helices of either right or left hand convolutions engaging and interlocking with the helices of the primary fabric either  
45 on one or both sides of the primary fabric substantially as herein set forth.

2. The woven-wire mesh or fabric for cycle-saddles or the like, comprising a primary

cross-woven fabric A of helices and a supplemental fabric one longitudinal helix of one  
50 fabric engaging two longitudinal helices of the other fabric, substantially as described.

3. The woven-wire mesh or fabric B for cycle-saddles seats and other articles composed of helices  $b'$   $b^2$  in combination with the  
55 primary fabric A each of the helices  $b'$  and  $b^2$  being caused to engage with two of the longitudinal helices  $a'$  of the cross-woven primary or foundation fabric A thus producing one  
60 new fine strong fabric in the manner and for the purpose substantially as herein set forth.

4. In combination with the cross-woven primary fabric A, a supplemental fabric engaging the same consisting of longitudinal helices  
65 engaging longitudinal helices of the primary fabric, and a series of additional helices interwoven with the primary fabric on the under side of the same, substantially as described.

5. In combination with the primary cross-  
70 woven fabric A, a supplemental fabric comprising longitudinal helices engaging with the longitudinal helices of the primary fabric and an additional fabric interwoven on the under side of the primary fabric, said ad-  
75 ditional fabric having its helices of different hand from those of the primary fabric and engaging also with transverse helices of the primary fabric.

6. In combination with the primary cross-  
80 woven fabric A, a supplemental fabric comprising longitudinal helices engaging with the longitudinal helices of the primary fabric and an additional fabric interwoven on the under side of the primary fabric, said ad-  
85 ditional fabric having its helices of different hand from those of the primary fabric and engaging also with each alternate transverse helix of the primary fabric.

In witness whereof I have hereunto set my  
90 hand in presence of two witnesses.

ALFRED EDMUND WALE.

Witnesses:

ERNEST HARRY GALE,  
E. S. FRIEND.