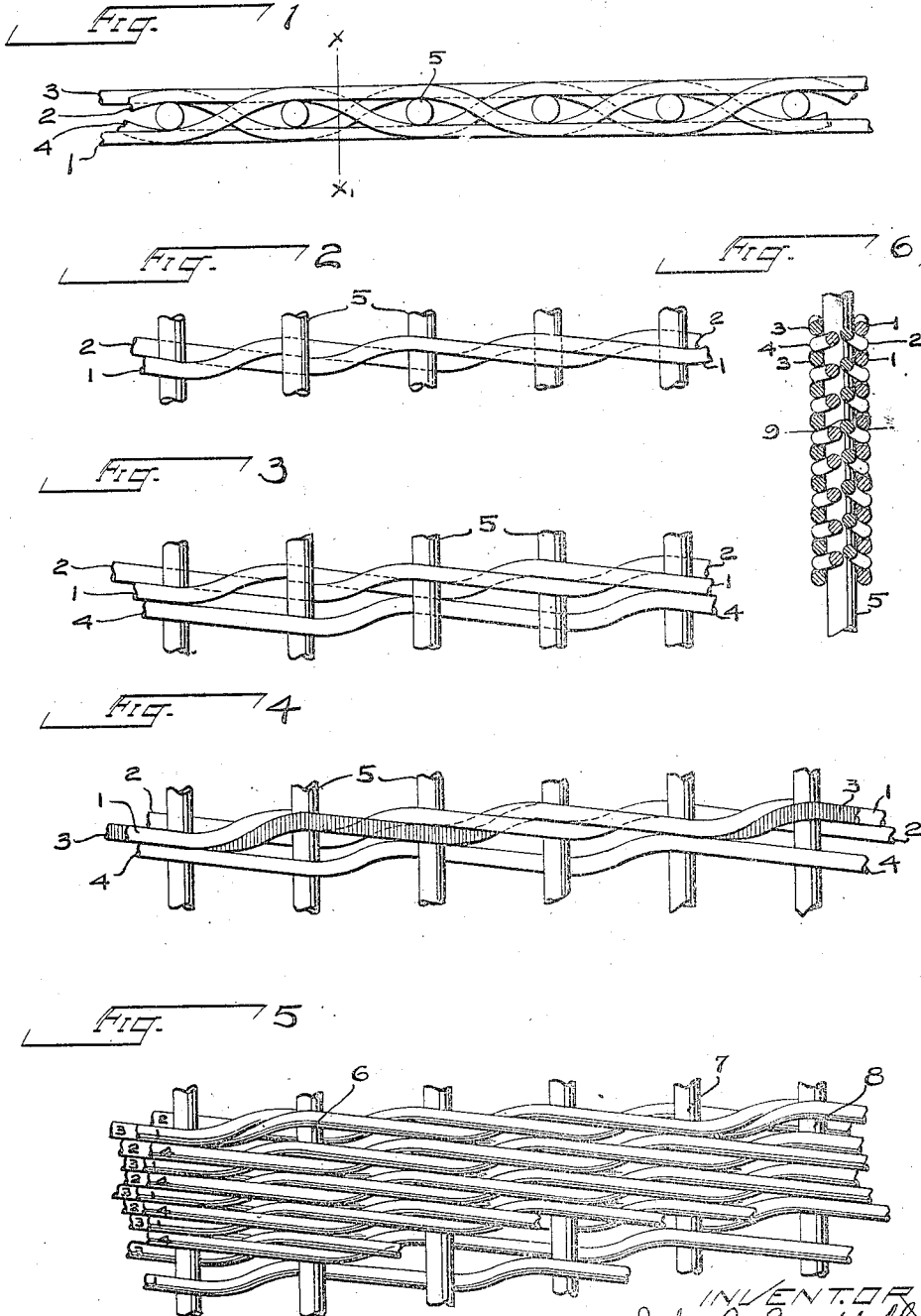


J. C. CAMPBELL.
WIRE CLOTH.
APPLICATION FILED MAY 31, 1917.

1,288,504.

Patented Dec. 24, 1918.



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WIRE-CLOTH.

1,288,504.

Specification of Letters Patent.

Patented Dec. 24, 1918.

Application filed May 31, 1917. Serial No. 171,939.

To all whom it may concern:

Be it known that I, JOHN C. CAMPBELL, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in a Wire-Cloth, and do hereby declare the following specification, taken in connection with the drawings forming part of same, to be a full, clear, concise, and exact description of the invention and the best mode contemplated to apply the principle thereof; so as to distinguish it from other inventions and to enable any person skilled in the art to which it appertains or with which it is most nearly connected to make, construct, and use the same.

This invention relates primarily to a metallic fabric or wire cloth and more particularly to a cloth which is especially adapted as a filter medium.

Wire filtering cloth has heretofore been made wherein the warp and weft wires were composed of twisted bundles of wires. After weaving, the cloth was rolled to flatten the bundles of wires. This method produced a non-uniform cloth.

This invention contemplates a metallic fabric consisting of a single wire for the warp and a single wire for the weft, the cloth being produced by a single process of weaving which results in a very uniform filter medium having substantially rectangular openings evenly spaced.

Other objects will be apparent from, and are incorporated in the annexed drawings, and in the following description, which sets forth in detail certain constructions embodying means, constituting, however, but one of the various mechanical forms in which the principle of this invention may be used.

The novelty of this invention will be readily understood from the drawings, which show a construction for practising the invention in its preferred form, and from the following description thereof, and is more specifically pointed out and distinctly claimed in the claims annexed to said description.

In the drawings;—

Figure 1 is a magnified end elevation of a portion of the fabric.

Fig. 2 is a plan view depicting the relation between the warp wires and two of the weft wires.

Fig. 3 is a view similar to Fig. 2, but showing three weft wires.

Fig. 4 is also a plan view and illustrates four weft wires.

Fig. 5 is a plan view of a portion of the fabric and represents the recurring series of weft wires.

Fig. 6 is a sectional view at XX₁ of Fig. 1, plainly exhibiting the straight warp wires.

The drawings depict a wire fabric magnified many times. The wires used for filter cloth are generally only a few thousandths of an inch in diameter.

A cloth produced in accordance with this invention may be adapted to any kind of filtering by selecting the warp and weft wires of suitable proportions as to diameters and spacing the warp wires in accordance with the relative diameters and the substance to be filtered.

Referring particularly to Fig. 6 of the drawings, it will be observed that the cloth resulting from this invention is substantially a double cloth with one intermediate layer of wires.

The warp wires in this invention are straight throughout their entire length and are not crimped or twisted as in weaves heretofore produced.

The weft wires numbered 1, 2, 3 and 4 respectively are preferably arranged in a recurring series of four wires to a series. Two of each series of weft wires are arranged on one side of the warp wire and two on the other side. The weft wires of the same series and on the same side of the warp wire are adjacent. Each weft wire is arranged to rest on the same side of two consecutive warp wires, then crosses between two warp wires and rests on the opposite side of the two succeeding warp wires and then again crosses to the other side of the cloth as clearly shown in Figs. 2 to 4.

The weft wires are started so that 1 and 3 are opposite each other as shown in Fig. 4. Weft wires 2 and 4 are also started opposite each other so that 1 and 4 and 2 and 3 are adjacent. The weft wire 4 which is

started opposite weft 2 is not shown in Fig. 4 because it would confuse the drawing. However, the weft wire 4 of the next series is shown.

5 In Fig. 5 the first weft wire 4 has also been omitted for the sake of clearness and exposes the warp wires at 6, 7 and 8.

Viewing the weft wires as illustrated in Figs. 2 to 5, it will be observed that they are crimped in the direction of the warp wires. The crimping of the weft wires as shown permits the maximum number of wires to be arranged on either side of the warp wires for any given length of cloth and produces

15 substantially a double weave. The substance which passes through the cloth is constrained to take a circuitous path by reason of the arrangement of the weft wires. The path of the substance is similar

20 to the line 9 shown in Fig. 6. A cloth made in accordance with the invention shown and described, when held to the light and viewed at right angles, will not permit any light to be seen, but if the cloth

25 is tilted to an angle, small regularly arranged openings are readily discernible.

Having described my invention I claim as new, and desire to secure by Letters Patent:

1. A woven fabric consisting of uncrimped 30 warp wires, and a recurring series of weft wires which overlap to produce a double surface.

2. A woven fabric consisting of uncrimped warp wires, and a recurring series of weft 35 wires, part of which series are arranged alternately above and below the warp wires and beaten closely together.

3. A woven fabric consisting of uncrimped warp wires, and a recurring series of weft 40 wires arranged on each side of said warp wires so that each weft wire overlaps the next preceding weft both above and below said warp wires.

4. A woven fabric consisting of a recurring series of four weft wires which overlap 45 to form a double surfaced filtering medium.

5. A woven fabric consisting of uncrimped warp wires, and a recurring series of four 50 overlapping weft wires, so that two weft wires are arranged above, and two below the warp wires to form a double surface.

6. A woven fabric consisting of uncrimped warp wires, and a recurring series of overlapping weft wires arranged so that each 55 weft wire will be alternately on the same side of the cloth for a distance of two warp wires, thereby permitting each weft wire to overlap the preceding weft wire.

7. A woven fabric consisting of warp 60 wires, and a series of overlapping weft wires which are crimped in the nature of a helix and in the direction of the warp wires.

8. A woven fabric consisting of uncrimped

warp wires, and overlapping weft wires 65 crimped in the direction of the warp wires.

9. A woven fabric consisting of uncrimped warp wires, and a series of weft wires progressively interlaced between and overlapping said warp wires.

10. A woven fabric consisting of warp 70 wires, and a series of overlapping weft wires, said weft wires so arranged that the warp wires may be readily withdrawn.

11. A woven fabric consisting of un- 75 crimped warp wires, and a series of four overlapping weft wires arranged so that only two weft wires cross between two succeeding warp wires.

12. A woven fabric consisting of warp 80 wires, a weft wire arranged on one side of two warp wires, then passing in a helical direction to the other side of the two succeeding warp wires, a second weft wire arranged on the opposite side of said first mentioned weft wire, and two weft wires arranged between said first and second mentioned weft wires, all weft-wires being 85 crimped helically.

13. A woven fabric consisting of un- 90 crimped warp wires, a weft wire arranged on one side of two warp wires then passing to the other side of two succeeding warp wires, a second weft wire arranged on the opposite side of said first mentioned weft 95 wire and other weft wires overlapping and interlaced between the warp wires spanned by and overlapping said first and second mentioned weft wires, each of said weft wires crimped in the direction of the warp 100 wires.

14. A woven fabric consisting of uncrimped warp wires, and a recurring series of weft wire arranged on each side of said warp wires, said weft wires crimped heli- 105 cally in the direction of the warp wires to bring the alternate weft wires adjacent.

15. A woven fabric consisting of uncrimped warp wires, and a layer of adjacent weft wires helically crimped and arranged equally on each side of said warp 110 wires.

16. A woven fabric consisting of uncrimped warp wires, a double layer of adjoining weft wires, each overlapping the 115 preceding weft wire over and under said warp wires.

17. A woven fabric consisting of uncrimped warp wires, a double layer of adjoining weft wires, and an intermediate 120 layer of weft wires.

18. A woven fabric consisting of warp wires, and overlapping weft wires, said warp wires being larger in diameter than the weft 125 wires, so that the weft wires will crimp helically in the direction of the warp wires without the pressure of said weft wires crimping the warp wires.

19. A woven fabric consisting of un-
crimped warp wires and a series of recur-
ring weft wires so arranged to form a filter-
ing medium of double surface, one surface
5 above and one below said uncrimped warp
wires, the number of weft wires above and
below being the same per lineal inch.

20. A woven fabric consisting of un-
crimped warp wires and a recurring series
10 of weft wires, so that the fabric has a dou-
ble filtering surface one above and one be-
low said warp wires.

21. A woven fabric consisting of un-
crimped warp wires and a recurring series
15 of overlapping weft wires forming a double
surfaced filter cloth, one surface above and
one below said warp wires, so arranged that
there is a full inch of diameter of adjacent
20 weft wires placed closely on both sides of
the fabric, thereby producing a fabric of

two inches of weft wires placed half on one
side and half on the other side to make a
lineal inch of cloth.

22. A woven fabric consisting of un-
crimped warp wires, and a recurring series 25
of overlapping weft wires, the weft wires
producing two identical sides of the cloth,
so that when the fabric is held to the light
in a vertical position it is opaque, but when
turned from a vertical position in the direc- 30
tion of warp wires and at an angle of 45
degrees wedge shaped apertures are seen
which cause the filtrate that is globular in
nature to elongate and pass through the
wedge shaped apertures, leaving a precipi- 35
tate on either surface of the cloth and regu-
lated by the firmness of the mesh.

Signed this 25th day of May 1917.

JOHN C. CAMPBELL.