

July 12, 1938.

H. FLEISHER

2,123,847

INLAID KNITTED FABRIC

Filed Feb. 23, 1938

2 Sheets-Sheet 1

Fig. 1.

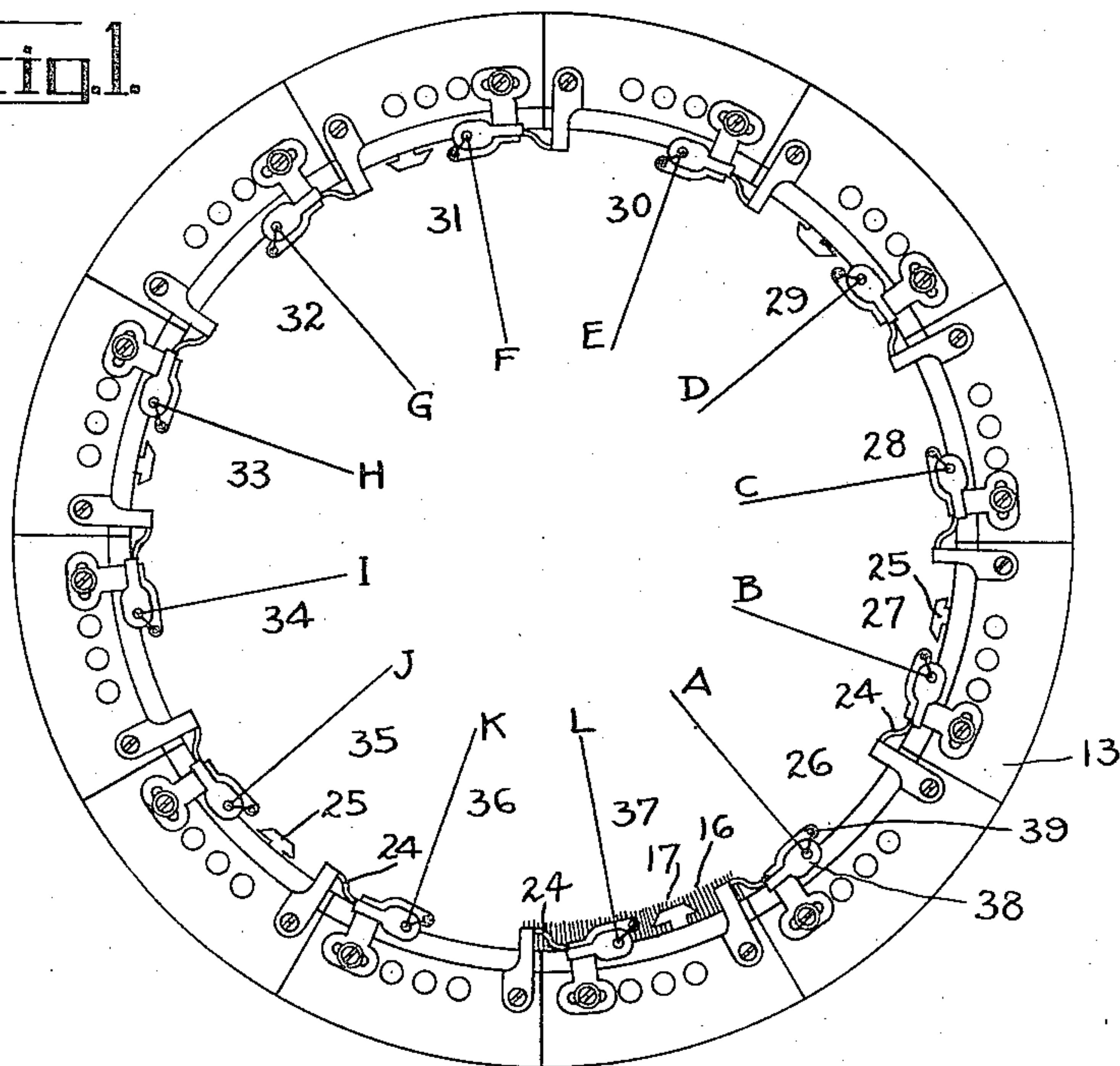


Fig. 2.

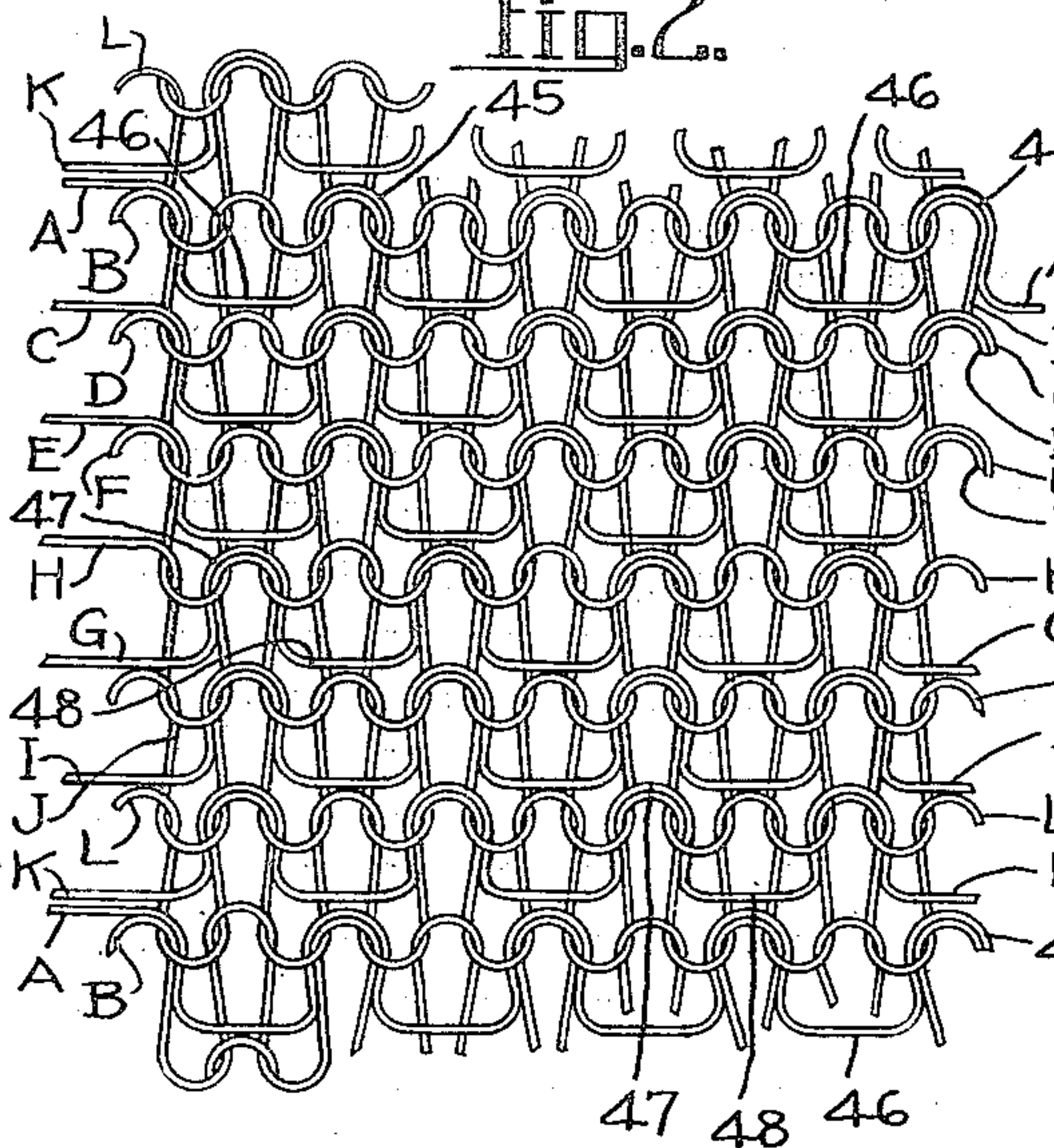
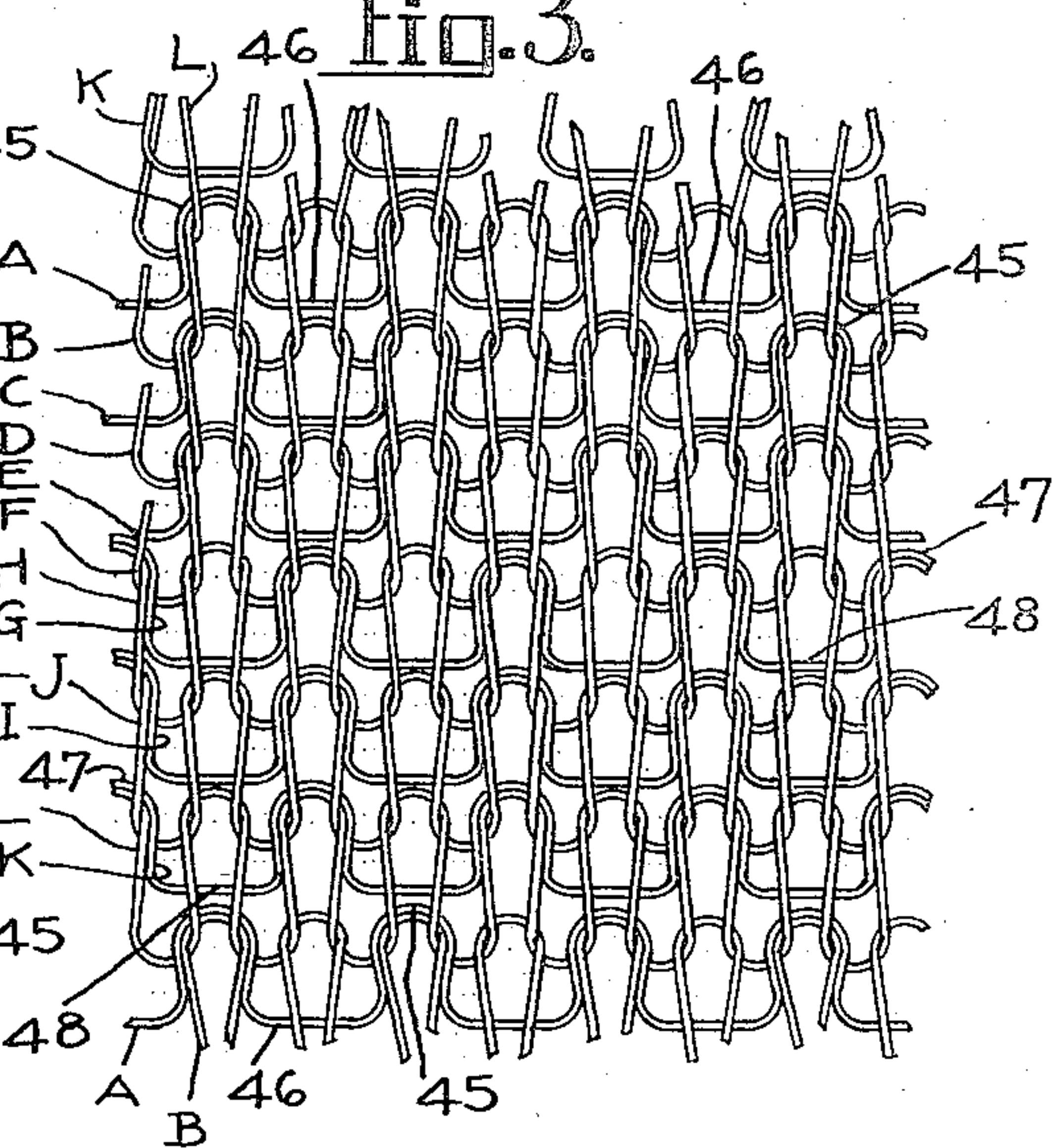


Fig. 3.



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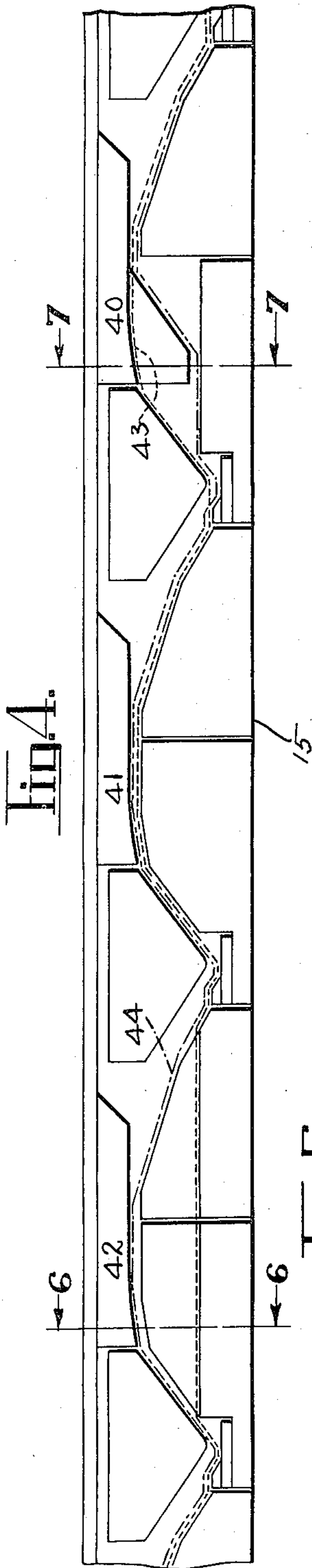


Fig. 6.

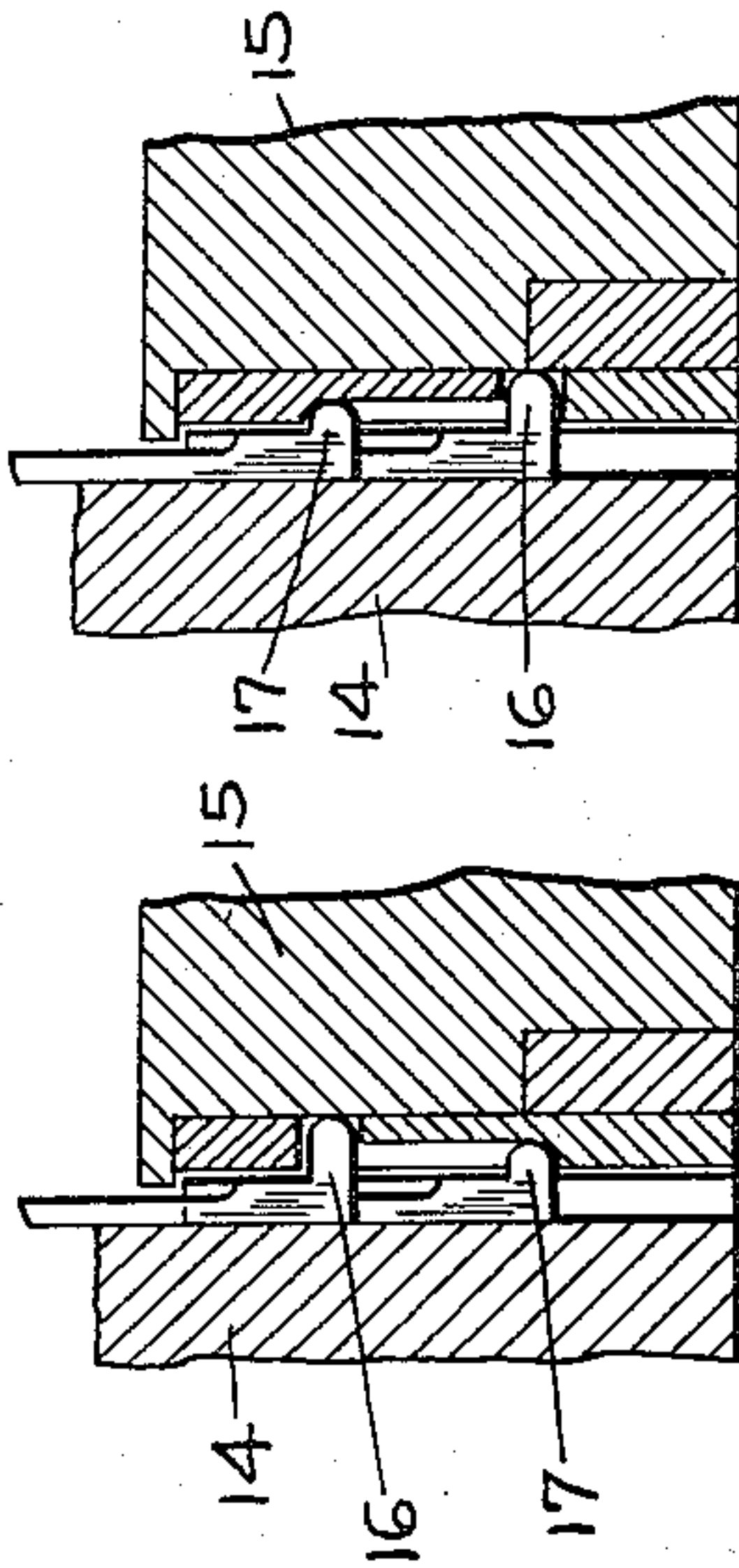
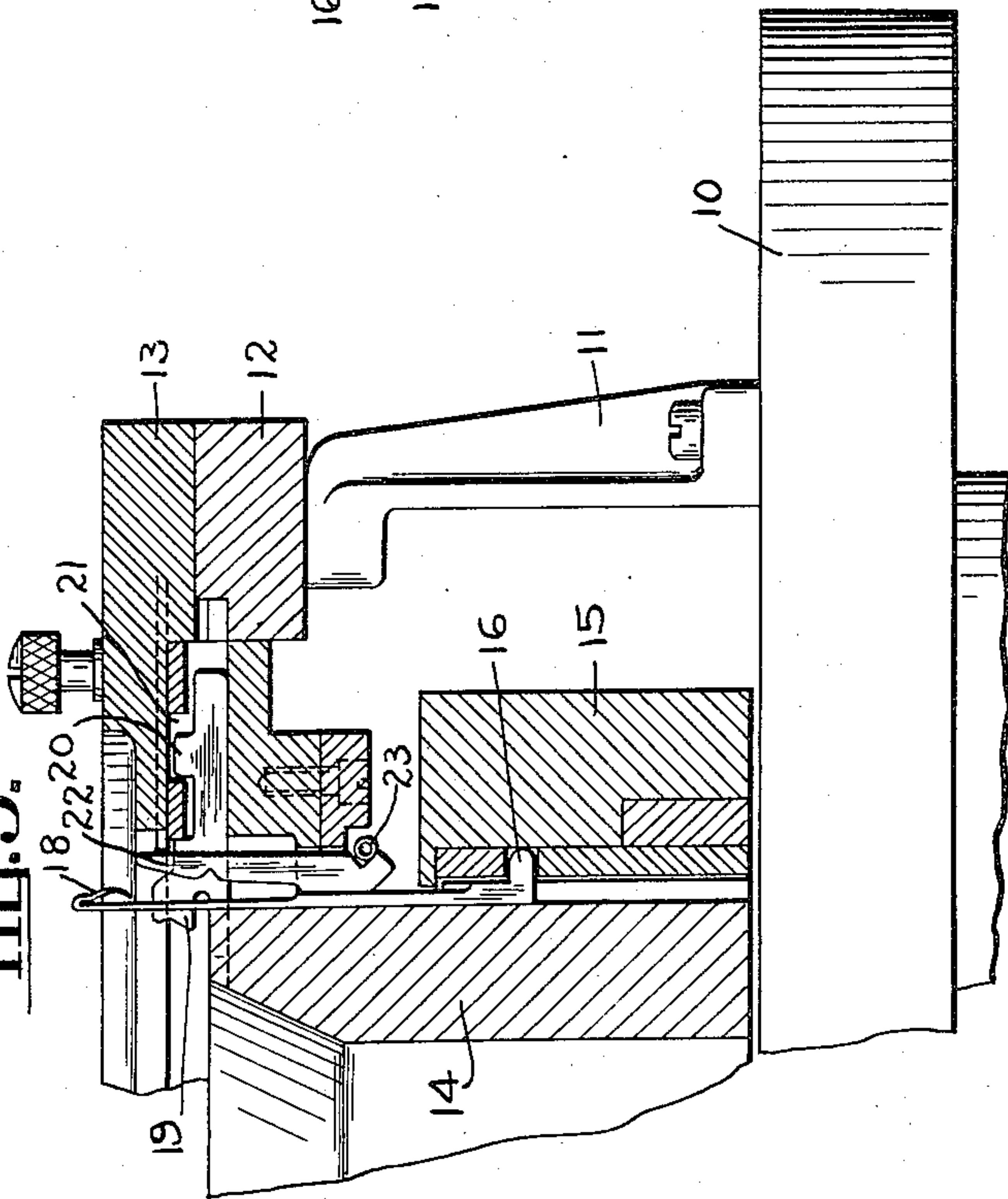


Fig. 5.



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2,123,847

INLAID KNITTED FABRIC

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Application February 23, 1938, Serial No. 192,000

4 Claims. (Cl. 66—191)

This invention relates to knitted fabrics, and more particularly to an inlaid knitted fabric wherein the threads or yarns constituting the same are so arranged that the fabric is substan-
5 tially run-resisting and includes plain stitches, floats and loose laid-in yarns.

One object of this invention is to provide an inlaid knitted fabric of the above nature having a novel sequence of stitches, floats and loose laid-in
10 yarns.

A further object is to provide a knitted fabric of the above nature which will be simple and easy to manufacture, flexible and elastic, non-crush-
15 able, substantially run-resisting, and very efficient and durable in use.

With these and other objects in view, there has been illustrated on the accompanying draw-
20 ings one form in which the invention may be conveniently embodied in practice.

In the drawings:

Fig. 1 represents a diagrammatic plan view of a circular "twelve-feed" knitting machine for producing the improved fabric.

Fig. 2 is an enlarged open view of the rear sur-
25 face of an improved inlaid knitted fabric embodying the invention.

Fig. 3 is a similar view of the reverse surface of the fabric.

Fig. 4 is a development view of a portion of the
30 needle-actuating cylinder cam.

Fig. 5 is an enlarged vertical sectional view of a portion of the knitting machine.

Fig. 6 is a sectional view of a portion of the needle-actuating cam, taken on the line 6—6 of
35 Fig. 4, and

Fig. 7 is a sectional view of another portion of the needle-actuating cam, taken on the line 7—7 of Fig. 4.

One important advantage obtained by the pres-
40 ent invention is that the improved inlaid knitted fabric may be made on an ordinary plain knitting machine without employing complicated mechanisms or special attachments, it merely being necessary to omit the use of the usual needle
45 beard-closing or "presser" cams wherever laid-in threads or yarns are desired, and to arrange the needle-actuating cams to produce floats at any desired points.

Referring now to the drawings, wherein like
50 reference numerals denote corresponding parts throughout the several views, the numeral 10 (Fig. 5) indicates a circular stationary base or table upon which a plurality of upstanding angle brackets 11 are mounted. The brackets 11 sup-
55 port a stationary ring member 12, which carries

a plurality of horizontal arcuate plates 13 form-
ing a segmental substantially circular sinker-
operating cam member.

Provision is also made of a needle-carrying
cylinder 14 which is adapted to rotate within a
stationary annular needle-actuating cam cylinder
15, the latter being rigidly secured to the sta-
tionary table 10 in the usual manner and located
below the level of the stationary ring member 12.
The rotary needle cylinder 14 carries a plurality
of long butt needles 16 and short butt needles 17
which are arranged alternately around the cir-
cumference of the needle cylinder 14. The
needles 16 and 17 are adapted to be successively
engaged by the grooves of the cam cylinder 15
(see Figs. 4-7) to cause said needles to travel
upwardly and downwardly during the operation
of the machine. Each of the needles 16 and 17 is
provided at its upper end with a spring beard 18
which, when in the open position shown in Fig. 5,
is adapted to catch the yarn or thread on its
downward stroke.

Operating between the successive needles 16
and 17 are a series of horizontal reciprocating
sinker-
19, which are provided on their upper
edges with substantially rectangular projections
20 adapted to travel within a horizontal cam
groove 21 formed in the sinker-operating arc-
uate cam plates 13. The cam groove 21 serves to
control the outward and inward movement of the
sinker-
19 at the proper times.

Provision is also made of a series of vertical
pressers 22 which are adapted to close the spring
beards 18 of the needles 16 and 17 when engaged
by the presser cams 25, herein shown as located
at every alternate one of the twelve feeding points.
In order to hold the pressers 22 away from the
spring beards 18 of the needles 16 and 17 at
other times, provision is made of a circular coiled
spring 23 which surrounds the lower notched
ends of said pressers 22. In order to line up the
pressers 22 just in advance of the knitting points,
provision is made of a plurality of guide cams 24
(see Fig. 1), which serve to direct said pressers 22
into position to avoid striking the stationary yarn
carriers as the pressers revolve past said carriers.
The T-shaped presser cams 25 serve to push the
pressers 22 against the spring beards 18 of the
needles 16 and 17 as they pass by so that the yarn
will be knitted off the needles to form loops or
stitches. It will be understood, however, that
where the presser cams 25 are omitted or released,
the thread or yarn will not be knitted off, but will
be carried in the needle beards until the next

station where the yarn will be knitted off and inlaid with the thread or yarn of this course.

For producing the improved fabric of this invention, the machine is provided with twelve yarn-feeding stations 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36 and 37, to each of which different threads or yarns are fed through guides 38 and 39. As most clearly shown in Fig. 4, the cam cylinder is provided with a set of needle-actuating cams 40, 41 and 42 to control the up and down motion of the alternating long butt and short butt needles 16 and 17, respectively. Three different arrangements are employed, as indicated in Fig. 4, wherein the dotted line 43 represents the movements of the short butt needles 17, and the dot-and-dash line 44 represents the movements of the long butt needles 16. At the cam 40, only the short butt needles 17 will be held up; at the cam 41, both short and long butt needles will be up; while at the cam 42, only the long butt needles 16 will be up.

At the three feeds "A", "C" and "E", only the short butt needles 17 will be up, causing floats 46 to be formed at every odd numbered wale and, due to the omission of the presser cams 25 at these feeds, the yarns will be retained in the spring beards 18 of the needles 17 and carried along to the next wale where they will be knitted off with the yarns of the next feeds "B", "D" and "F", forming loose inlay loops 45. It will thus be seen that the floats 46 will alternate with the inlay loops 45, as is clearly shown in Figs. 2 and 3.

At the three feeds "G", "I" and "K", the long butt needles 16 will be up, which will cause floats 48 to be formed at every even numbered wale and the yarns will be retained in the spring beards 18 of the needles 16 and carried along to the next wales where they will be knitted off with the yarns of the next feeds "H", "J" and "L", respectively, forming inlays 47.

At the six feeds "B", "D", "F", "H", "J" and "L", all of the needles 16 and 17 (both long butt and short butt) will be up in the knitting position, and the yarns fed at these stations will be knitted into courses and combined with the inlay loops 45 and 47 carried over from the preceding feeds "A", "C", "E", "G", "I" and "K".

The above described sequence will be repeated on each succeeding set of twelve feeds, producing a knitted fabric of repeating courses and wales as long as the machine continues to operate. It will be noted by reference to Figs. 2 and 3 that the floats 46 formed at odd numbered wales at feeds "A", "C" and "E", and the floats 48 formed at even numbered wales at feeds "G", "I" and "K" will form run-resisting means for the fabric, and that the floats 46 and 48, and inlay loops 45 and 47 will provide relatively loose

floats and loops which may be readily napped to give the fabric woolly characteristics. It will be further noted that the inlay loops 45 and 47 and the floats 46 and 48 are all disposed on the rear surface of the fabric, and that the front surface of the fabric will be relatively smooth.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure, but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new and for which it is desired to secure Letters Patent, is:

1. An inlay knitted fabric repeating every six courses, each repeat consisting of six separate yarns each knitted at every wale in one of said six courses, yarns floated at odd-numbered wales and inlay at even-numbered wales in each of the first, second and third courses, and yarns floated at even-numbered wales and inlay at odd-numbered wales in each of the fourth, fifth and sixth courses.

2. An inlay knitted fabric repeating every six courses, each repeat consisting of six separate yarns each knitted at every wale in one of said six courses, yarns floated at odd-numbered wales and inlay at even-numbered wales in each of a plurality of courses, and other yarns floated at even-numbered wales and inlay at odd-numbered wales in each of another plurality of courses.

3. An inlay knitted fabric repeating every six courses, each repeat consisting of six separate yarns each knitted at every wale in one of said six courses, yarns floated at odd-numbered wales and inlay at even-numbered wales in each of a plurality of successive courses, and other yarns floated at even-numbered wales and inlay at odd-numbered wales in each of another plurality of successive courses.

4. An inlay knitted fabric repeating every six courses, each repeat consisting of six separate yarns each knitted at every wale in one of said six courses, yarns floated at odd-numbered wales and inlay at even-numbered wales in each of a plurality of courses, and other yarns floated at even-numbered wales and inlay at odd-numbered wales in each of another plurality of courses, said floats and inlays being located on the same side of the fabric to facilitate napping for producing a wool-like surface.

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