

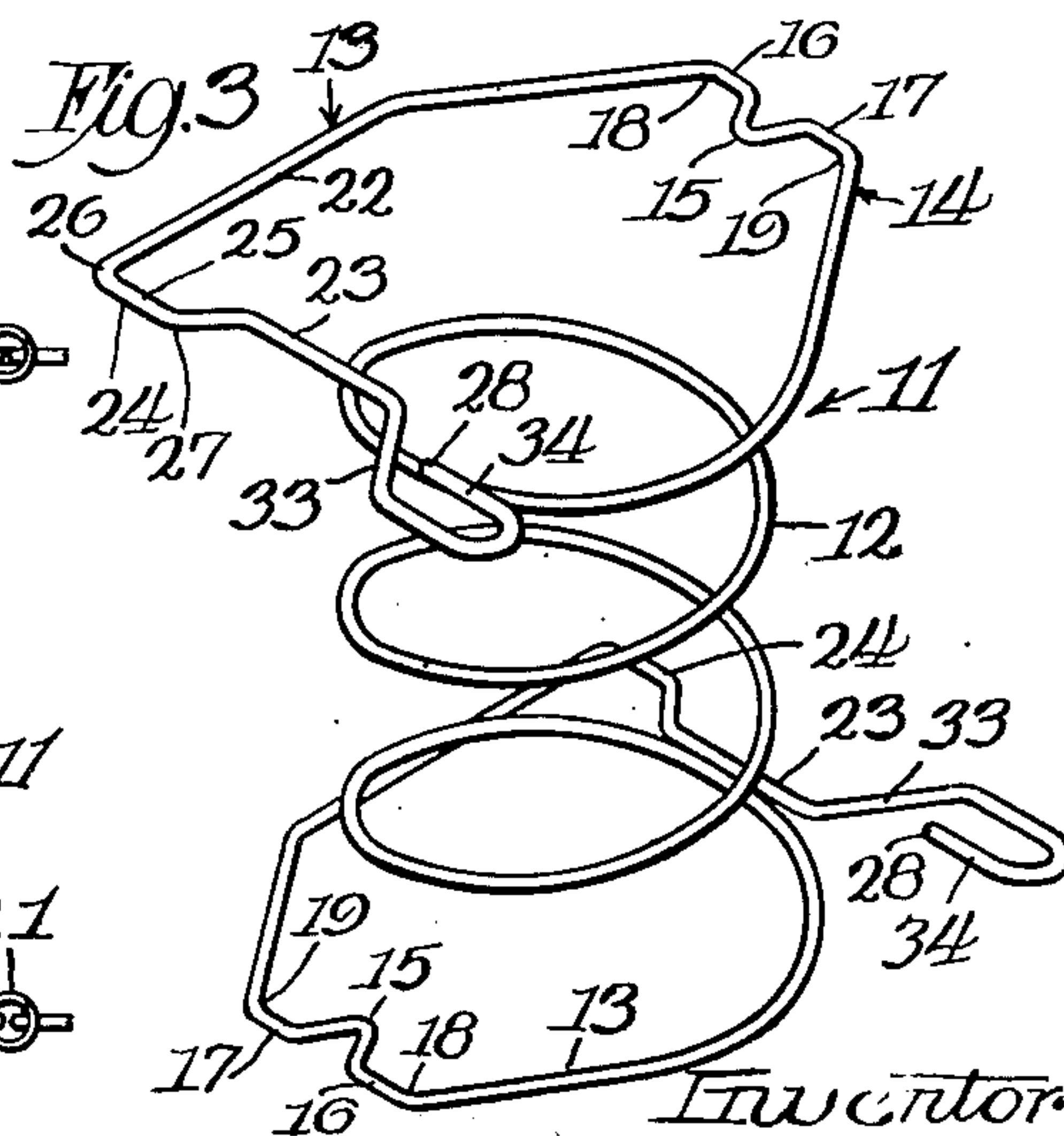
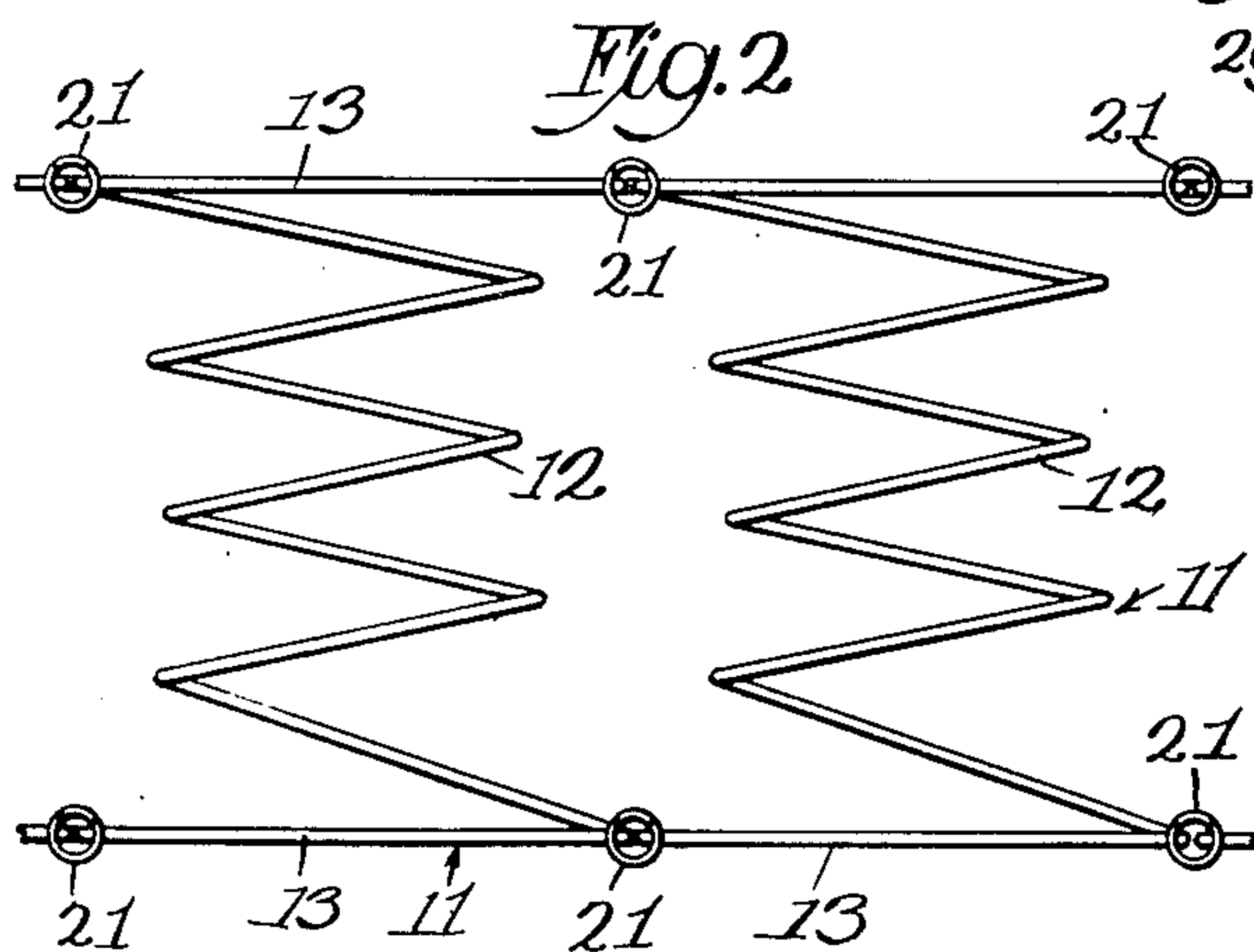
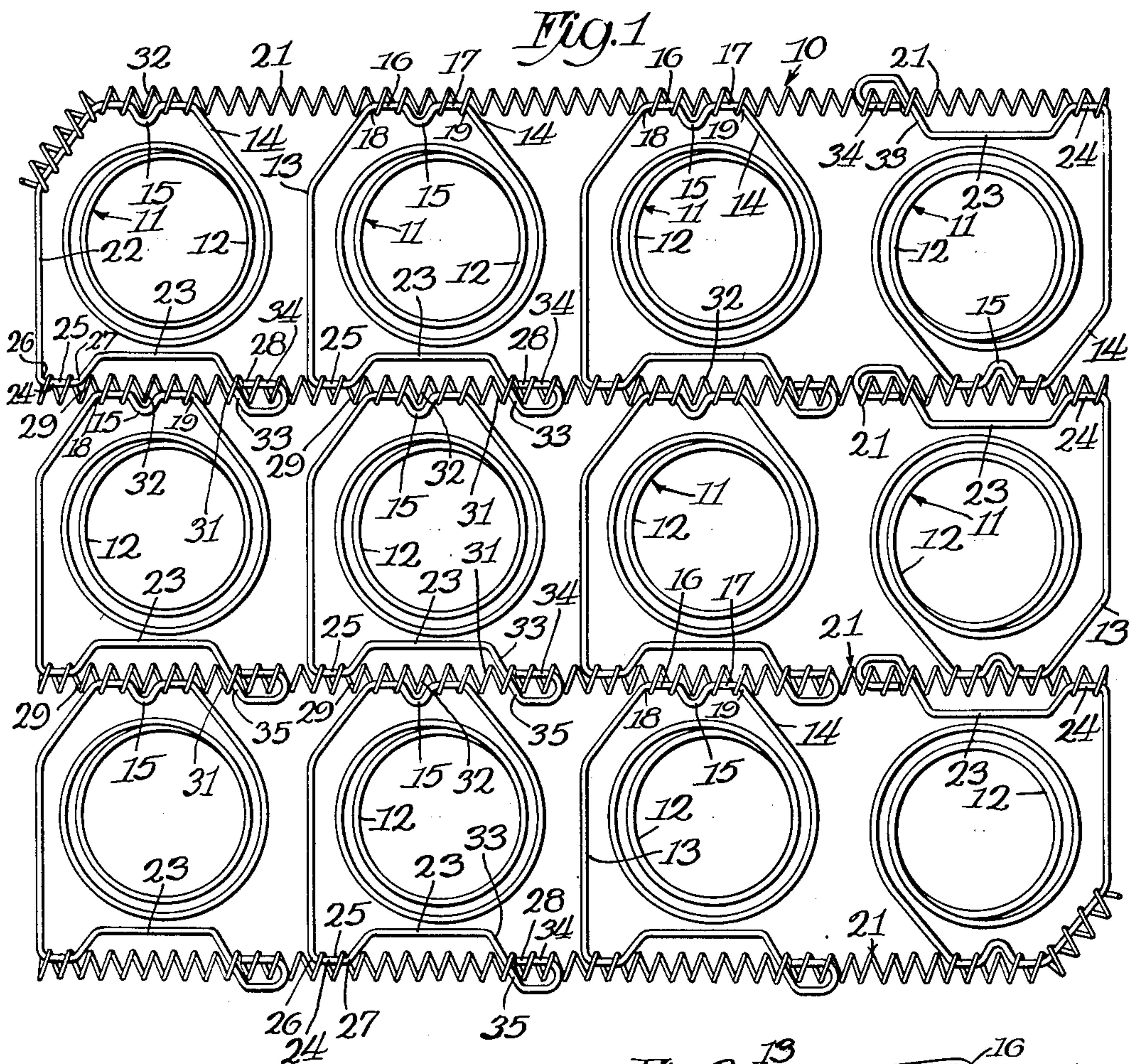
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SPRING ASSEMBLY

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UNITED STATES PATENT OFFICE

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SPRING ASSEMBLY

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This invention relates to spring assemblies and more particularly to spring assemblies for cushions, pads, mattresses and the like.

One of the objects of the invention is the provision of new and improved means for connecting the individual coils constituting a spring assembly for mattresses and like constructions.

Another object of the invention is the provision of a spiral spring for spring assemblies which is provided with a new and improved terminal coil or turn having novel means for attaching a helical to said terminal coil for connecting adjacent spirals together.

A further object of the invention is the provision of a new and improved spring assembly that is resilient, flexible, noiseless, and one in which the parts are securely held in position while in use.

A further object of the invention is the provision of a new and improved spring assembly together with novel means for connecting the spring units together whereby the ends of the spring units will be encircled and protected from catching on the bedding during use.

A still further object of the invention is the provision of a new and improved spring assembly, that is cheap to manufacture, easily assembled, efficient in operation, and that is not likely to become distorted, broken, or the parts become detached.

Other and further objects and advantages of the invention will appear from the following description taken in connection with the accompanying drawing in which

Fig. 1 is a plan view of a mattress or cushion embodying the invention;

Fig. 2 is a side elevation thereof with parts removed and parts broken away;

Fig. 3 is a perspective view of one of the spring units.

Referring now to the drawing, the reference character 10 designates generally a spring assembly which comprises a plurality of spring units 11 arranged in rows across the mattress. Preferably they are arranged in rows longitudinally and transversely as shown in Fig. 1.

Each unit comprises a coil 12 having its terminal turn 13 at each end thereof provided with an outwardly extending offset 14 having a distorted portion 15 therein. The spring wire at each side of the distorted portion 15 is straight as at 16 and 17 thereby forming with the adjacent section of the spring the shoulders 18 and 19 which are adapted to engage coils of the helical connecting member 21 for preventing rotation of the units as will presently appear.

The terminal turn 13 is preferably, though not necessarily, provided with a straight portion 22 which is substantially at right angles to the straight portions 16 and 17 of the offset 14. The end portions of the turn 13 are offset inwardly as at 23 to form an angular portion 24 having a straight side 25 extending substantially at right angles to the straight side 22. The angular portion 24 forms the shoulders 26 and 27 as clearly shown in Figs. 1 and 3 of the drawing. The extreme end 28 of the terminal turn is return bent to form a loop in the plane of the terminal coil, the sides of the loop occupying a position parallel with the opposite portion 23, as shown in Fig. 1. The end 28 is preferably in alignment with the straight portion 25 of the spring and terminates in spaced relation thereto. The offset portion 23 is preferably though not necessarily arranged on the opposite side of the spring from the distorted portion 15.

In assembling the spring units, they may be arranged in any suitable manner.

In describing the spring unit assembly, the rows extending across the sheet will, for convenience, be termed the longitudinal rows and the rows extending from top to bottom of the sheet will be referred to as the transverse rows.

In the form of construction shown, the straight sides 22 of the coils in the transverse rows are arranged in alignment, the rows at each end being so arranged that the straight portion 22 constitutes the margin of the assembly.

In assembling the springs, the offset 14 of the spring of one row is arranged opposite the off-set portion 23 between the end 28 and

the shoulder 27 of a spring of an adjacent row, in such a position that the straight portions 16 and 17 of one spring will be in alignment with the end 28 and straight portion 25 of an adjacent spring.

A plurality of helicals 21 are employed for holding the parts in assembled relation. The helicals are threaded onto the portions of the springs in any suitable manner and are adapted to encircle the straight portions 25 and the return bent end 28 of each spring and the straight portions 16 and 17 of the offset portions 14 of the opposite spring in the adjacent row.

The parts are so constructed that preferably one or more free coils 29 of the helical 21 is interposed between the shoulders 27 and 18 of adjacent springs and one or more free coils 31 of the helical 21 are interposed between the shoulder 19 and the return bent end 28 as clearly shown in Fig. 1 of the drawing.

Likewise one or more free coils 32 of the helical are adapted to be embraced by the distorted portion 15 of the adjacent coils, whereby the spring units are prevented from rotating, by said helicals; are held sufficiently spaced to prevent clicking while in use; and are properly held at all times in operative position. The return bent end 28 of the springs being embraced by the helical, the same will be protected and prevented from engaging the bedding.

The springs of each assembly may be right or left handed or a mixture of the two. Fig. 3 shows one of the spring units, in which the terminal end of the spring beyond the offset portion 23 is first bent outwardly as at 33 and then return bent as at 34, the return bent portion 34 being substantially in alignment with the straight portion 25 as previously described. The portion 33 is preferably arranged at the same angle as the coils of the helical 21 so that it will enter between the coils as clearly shown at 35 in Fig. 1 of the drawing. See the middle spring at the left side of the drawing.

The offset or distorted portions of the spirals are provided for forming shoulders for engaging the connecting helicals for preventing rotation of said spirals, and while specific forms of distorted or offset portions are provided, it is understood that these portions may be of any suitable form so long as shoulders are provided for engaging the helicals and ends of the springs return bent and arranged to be encircled by the helical.

While the provision of the distorted portions 15 is desirable it is understood that they are not absolutely necessary to applicant's construction, as they may be eliminated without departing from the spirit of the invention.

It is thought from the foregoing taken in connection with the accompanying drawing

that the construction and operation of my device will be apparent to those skilled in the art, and that various changes in size, shape, proportion and details of construction may be made without departing from the spirit and scope of the appended claims.

I claim as my invention:

1. In combination, a plurality of spiral springs arranged in rows, the terminal coils of each spiral having distorted portions at opposite sides of the spring, the terminal ends of the spring being return bent and helicals for encircling parts of the distorted and return bent portions of adjacent springs, each helical connecting the springs of one row to those of an adjacent row for holding the same in assembled relation.

2. In a spring assembly, a plurality of coil springs arranged in rows, each spring having a terminal coil provided with a return bent end and with a distorted portion on the opposite side of the coil from said return bent end and a helical for encircling a portion of the terminal coil and said return bent end of each of the coil springs of one row and the distorted portions of each opposite spring in an adjacent row for connecting the springs of one row to those of an adjacent row.

3. In combination, a plurality of coil springs arranged in rows with the springs of adjacent rows opposite each other, each spring having its terminal turn provided with an offset portion, the ends of said springs being return bent, the opposite springs of the adjacent rows being provided with distorted portions opposite said offset portions, and helicals for encircling said return bent ends and portions of the terminal turns of adjacent springs of said rows and extending across said offset portions of said springs, and encircling the terminal turns of the opposite springs of adjacent rows.

4. In a spring assembly, a plurality of spiral springs arranged in rows, the terminal coils of each spring having distorted portions at opposite sides of said spring and having the end of the spring return bent in alignment with a part of said distorted portions, and a helical engaging the return bent end and distorted portion of one row of springs and the distorted portions of the springs of an adjacent row.

5. In a spring assembly, a plurality of spiral springs arranged in rows, the terminal coils of each spring having distorted portions at opposite sides of said spring and having the end of the spring return bent in alignment with a part of said distorted portions, and a helical engaging the return bent end and distorted portion of one row of springs and the distorted portions of the springs of an adjacent row, there being free coils of said helical between said distorted portions and between said return bent ends and said distorted portions.

6. A spring for mattresses, cushions and the like comprising a spiral spring having a terminal coil provided with an outwardly extending offset at one side thereof and with
 5 an inwardly extending offset at its opposite side, said outwardly extending offset being provided with a distorted portion and the end of said coil being return bent to form a loop in the plane of said coil, the return
 10 bent end of said coil being in substantial alignment with that portion of the coil on the opposite side of said offset portion from said loop.

7. In a spring assembly, a plurality of
 15 spiral springs arranged in rows transversely and longitudinally of said assembly, each spring having its terminal turn provided with an inwardly extending offset at one side of said turn and with an outwardly extend-
 20 ing offset at the opposite side of said turn, said outwardly extending offset being provided with a distorted portion and the inwardly extending offsets of one set of springs being arranged opposite the outwardly ex-
 25 tending offsets of another set of springs, the terminals of said inwardly extending offsets being provided with return bent portions, and helicals each extending about the return bent end at one side of said inwardly extend-
 30 ing offset and about that portion of the terminal coil at the opposite side of said inwardly extending offset, each helical also extending about the outwardly extending offset of an adjacent spring and between the in-
 35 wardly offset portion of one spring and the distorted portion of the adjacent spring, for connecting springs of the same row to those of an adjacent row.

8. In a spring assembly, a plurality of
 40 spiral springs arranged in rows, each spring having its ends return bent and having its terminal coils provided with non-circular portions, helical connecting coils extending about certain of said non-circular portions
 45 and return bent ends of the springs of adjacent rows for connecting said springs and rows together.

9. In a spring assembly, a plurality of
 50 spiral springs arranged in rows, the terminal turns of said springs being provided with distorted portions, the distorted portions of the springs of one row being arranged opposite to and spaced from the corresponding springs of an adjacent row, and helicals en-
 55 circling said distorted portions, the free end of each of said turns adjacent said distorted portions extending outwardly around a turn of said helical and terminating within said helical.

10. In a spring assembly, a plurality of
 60 spiral springs arranged in rows, helical connecting members connecting said rows together, each spiral spring having its terminal coil provided with a distorted portion, a
 65 shoulder on said terminal coil inwardly of

the end portion thereof for engaging a turn of said helical to prevent said spiral spring from turning in one direction, the end portion of said terminal extending outwardly from said helical around a coil thereof and terminating within said helical for preventing the spiral spring from turning in the other direction.

In testimony whereof I affix my signature.

FRANCIS KARR.