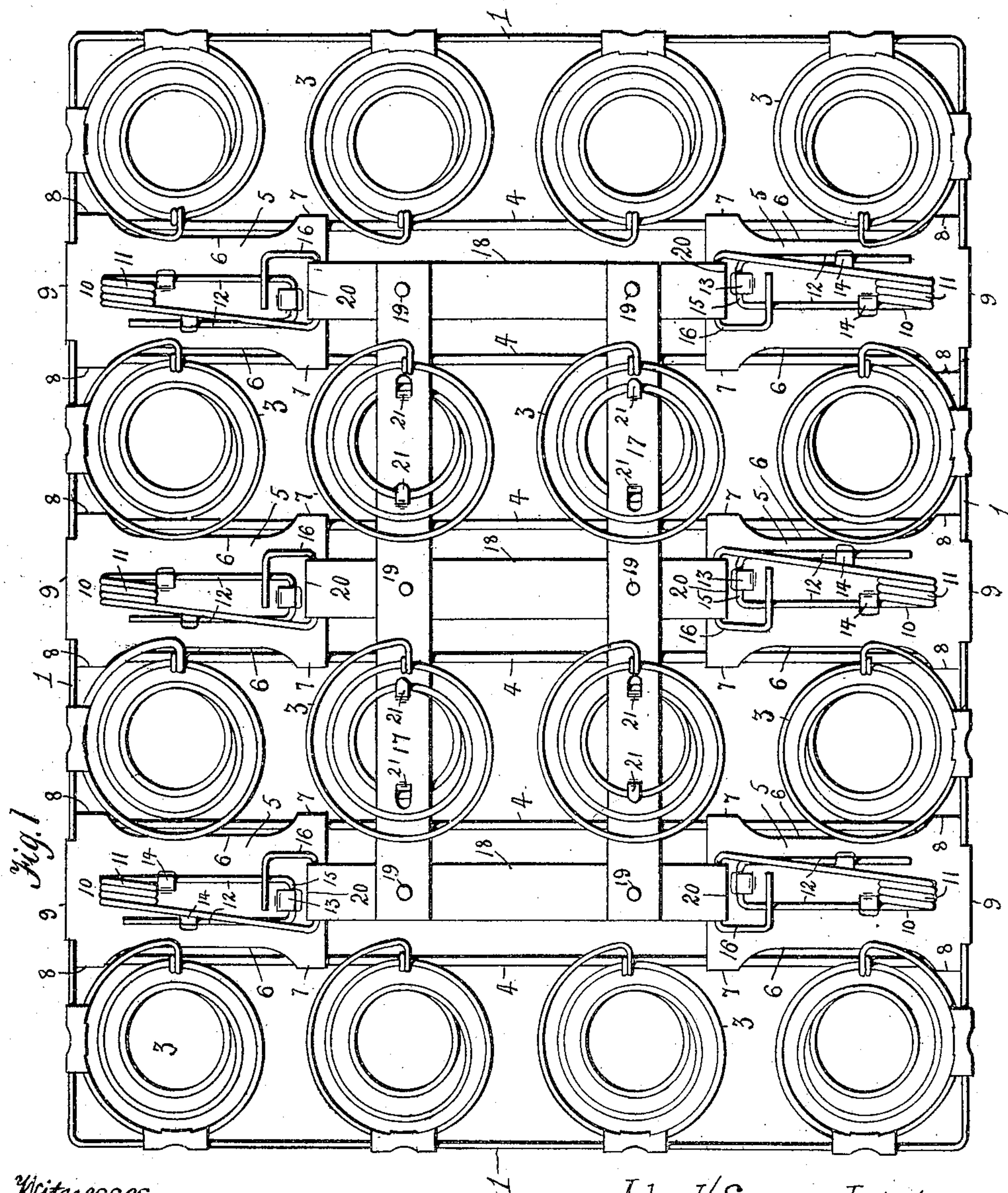


J. H. SNUGGS.
 SPRING CONSTRUCTION.
 APPLICATION FILED DEC. 30, 1907.

976,104.

Patented Nov. 15, 1910.

4 SHEETS-SHEET 1.



Witnesses.

Wm. L. Edmonston
 C. M. Woodward

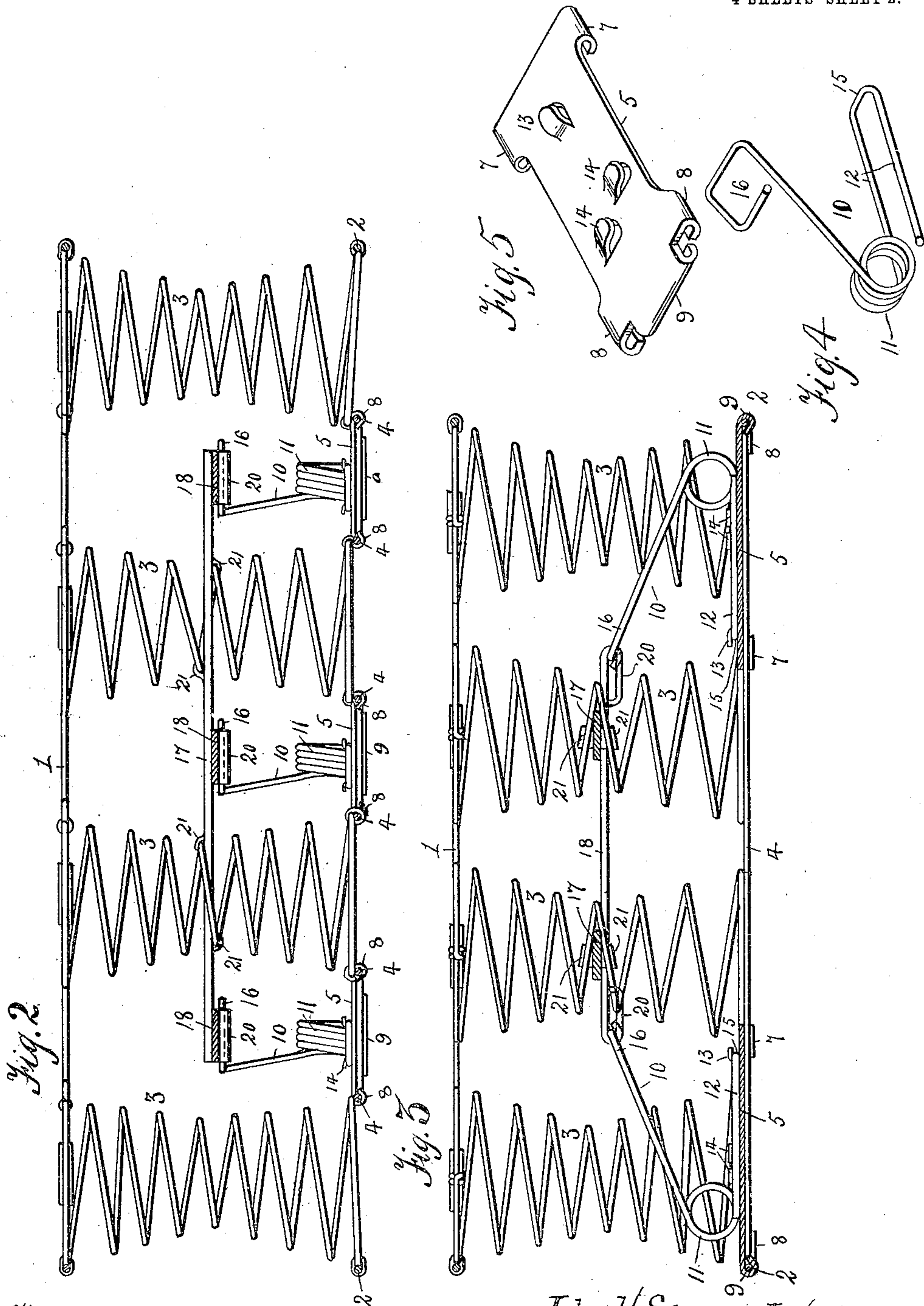
John H. Snuggs, Inventor,
 By Shoemaker & Brown
 Attys.

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4 SHEETS—SHEET 2.



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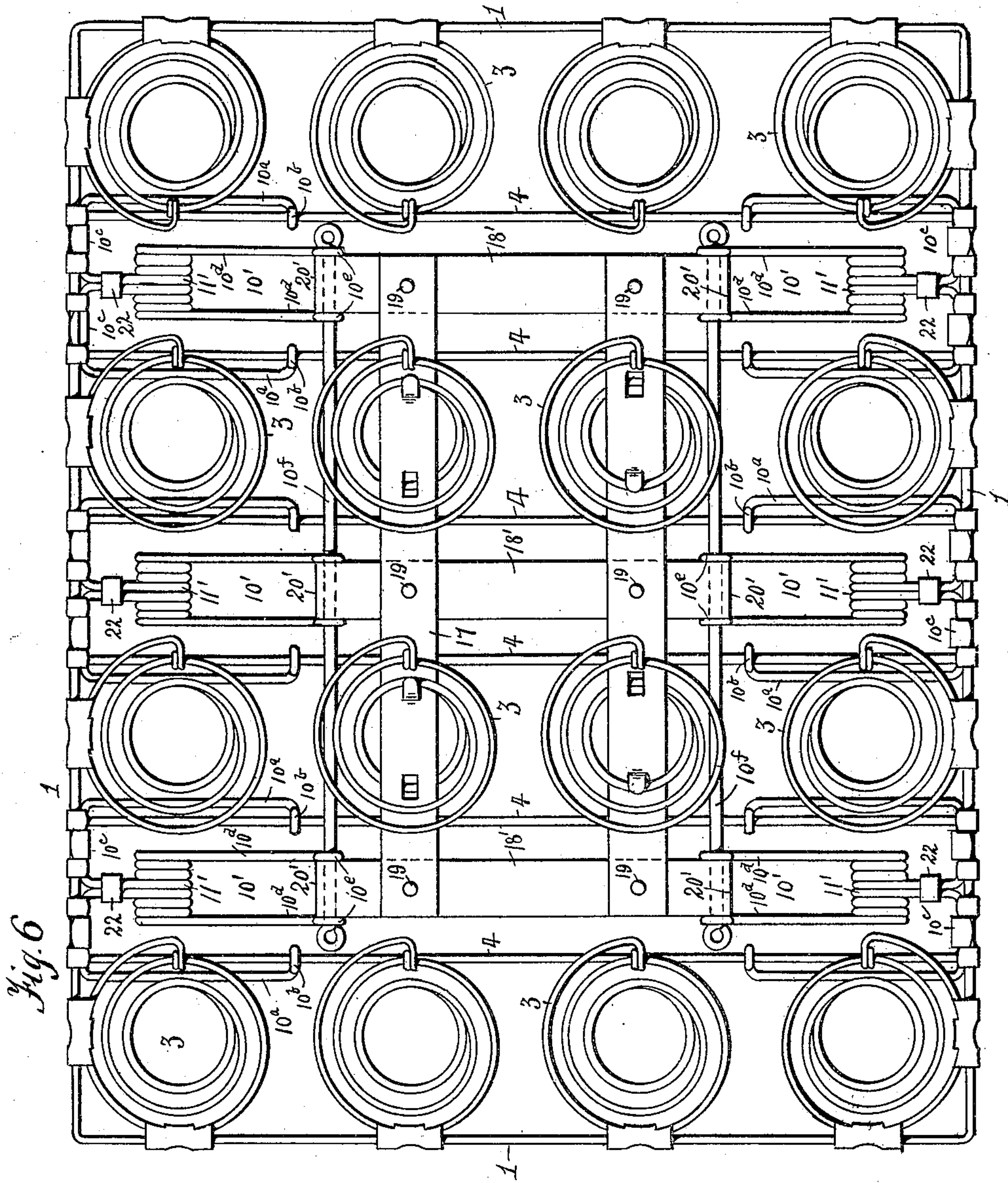
John H. Snuggs, Inventor,
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4 SHEETS—SHEET 3.



Witnesses.
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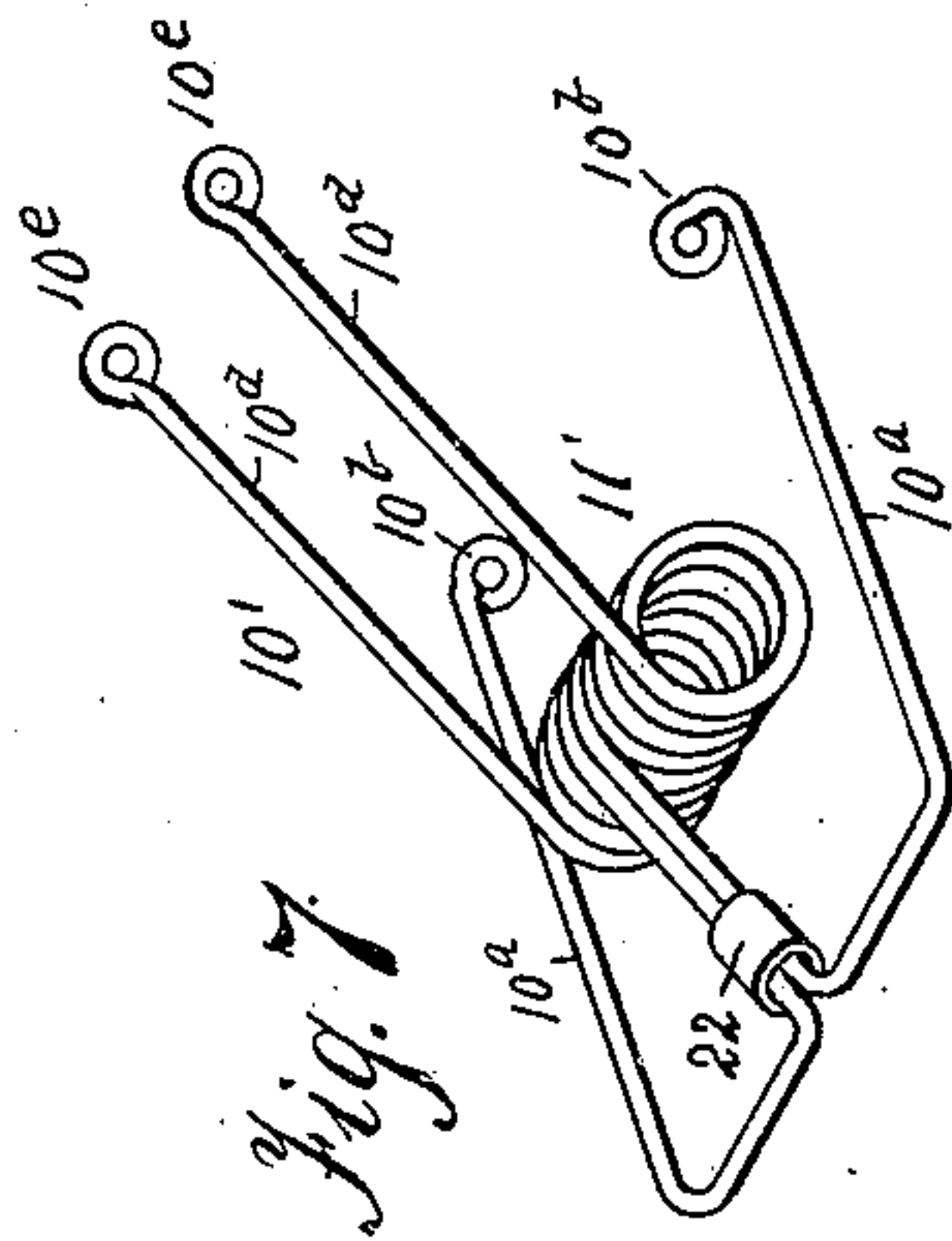
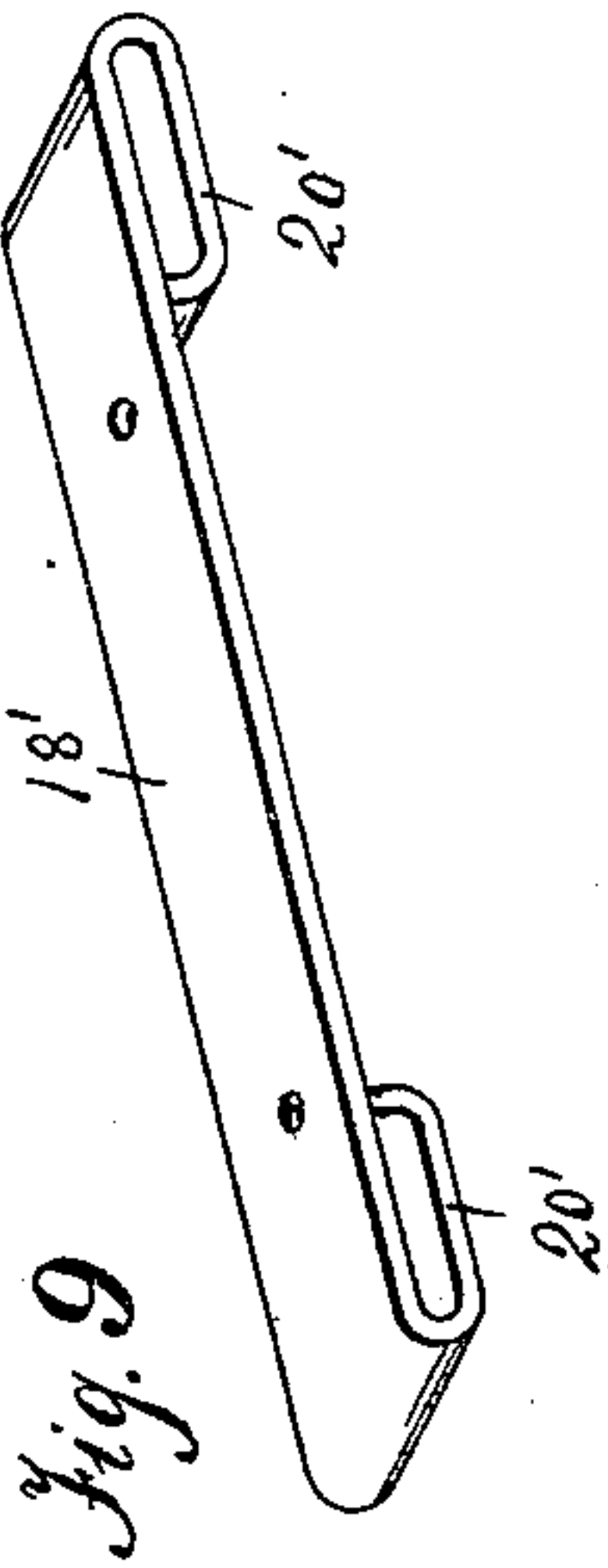
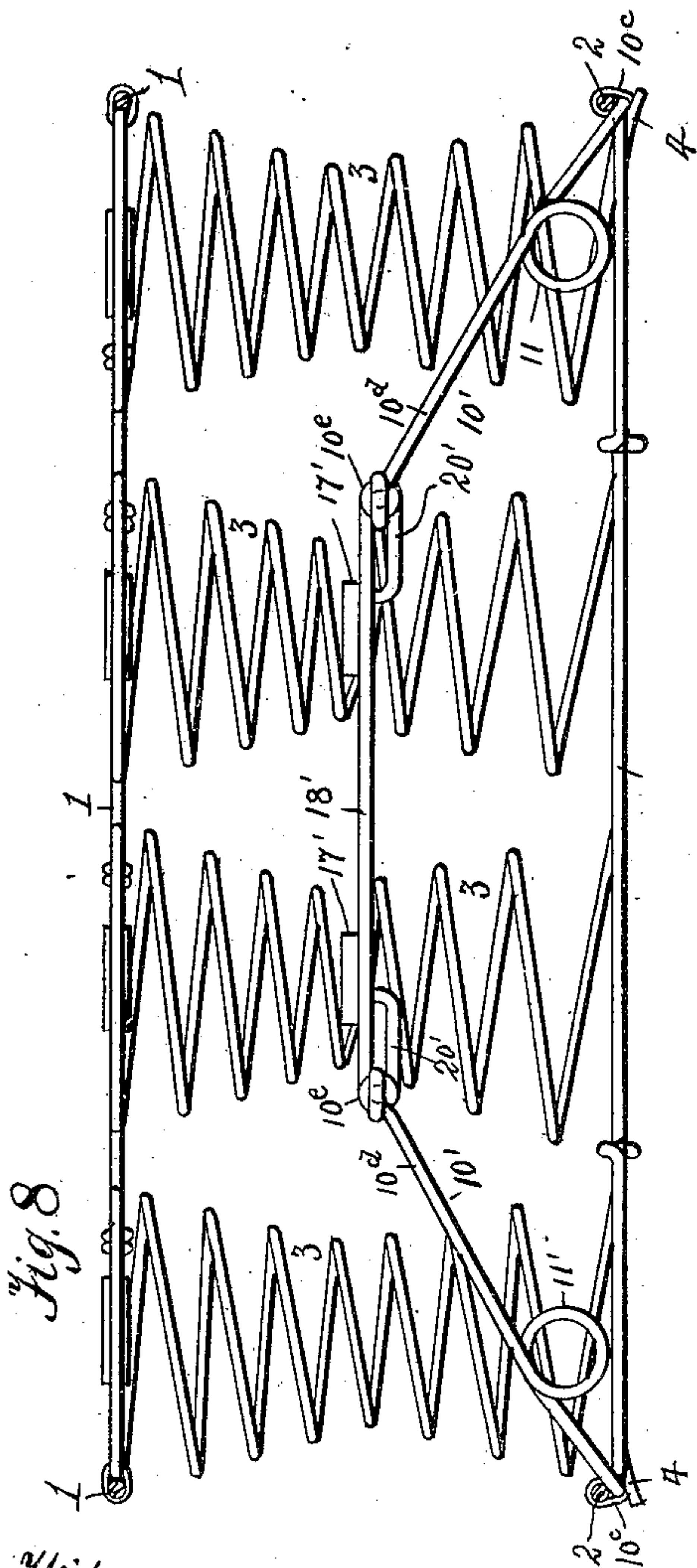
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4 SHEETS—SHEET 4.



Witnesses.

Wm. L. Edmonston
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UNITED STATES PATENT OFFICE.

JOHN H. SNUGGS, OF JACKSON, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
VENTILATED CUSHION AND SPRING CO., OF JACKSON, MICHIGAN.

SPRING CONSTRUCTION.

976,104.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed December 30, 1907. Serial No. 408,653.

To all whom it may concern:

Be it known that I, JOHN H. SNUGGS, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Spring Constructions, of which the following is a specification.

This invention relates to spring construction.

In the spring constructions now in general use for seats, the upper convolutions of the springs are often forced into engagement with the lower convolutions thereof, thereby causing more or less inconvenience to the rider or occupant of the seats of carriages, automobiles and other vehicles. This undue compression may occur in the event of a heavy rider on the seat or as the result of an uneven road or when the vehicle contacts with stones or similar objects in the roadway. These defects or disadvantages not only inconvenience the rider incident to contact with the bottom of the seat or the support upon which the seat is mounted, but subjects the structure to unnecessary strain and possibly in some instances to the derangement of certain of the elements embodied in the structure, especially the fastening devices.

It is therefore one object of my invention to overcome the above disadvantages or defects by incorporating in the structure an auxiliary frame yieldably mounted within the main frame to prevent undue compression in the event that the springs of the structure are compressed suddenly or by an unusual weight to more than their maximum resistance.

Another object of the invention is to provide a spring construction embodying a main frame, springs mounted within the frame, an auxiliary frame yieldably mounted within the main frame substantially midway of the top and bottom of the structure and connected to certain of the springs so that when the springs are unduly compressed there will be a resistance that will prevent undue compression.

A still further object of the invention is to provide a peculiar form of clip adapted to secure the supporting wires to the frame and also to support the springs or other yieldable elements which support the auxiliary frame.

With the above and other objects in view, the invention consists in the combination and arrangement of parts as hereafter more fully described, illustrated in the accompanying drawings and particularly pointed out in the appended claims, it being understood that changes may be made in the form, proportion, size and minor details without departing from the spirit or sacrificing any of the advantages of the invention.

Referring now to the drawings:—Figure 1 is a top plan view of the invention. Fig. 2 is a longitudinal sectional view. Fig. 3 is another transverse sectional view. Fig. 4 is a detail perspective view of one of the auxiliary frame supporting springs. Fig. 5 is a detail view of the clip adapted to secure the supporting wires to the lower edge wire. Fig. 6 is a plan view of a modified form of the invention. Fig. 7 is a detail perspective view of one of the auxiliary frame supporting means shown in Fig. 6. Fig. 8 is a transverse section of Fig. 6. Fig. 9 is a perspective view of one of the end members of the intermediate frame.

Referring now more particularly to the accompanying drawings the reference characters 1 and 2 indicate upper and lower edge wires, 3 the springs and 4 the supporting wires, the ends of the lowermost edge wire 2 coöperating with adjacent supporting wires for the support of the end springs, all as clearly shown in the drawings.

To secure the supporting wires against displacement I fasten them to the lower edge wire through the instrumentality of suitable clips 5. Each clip engages two adjacent supporting wires 4 and as the springs 3 are mounted upon the supporting wires, and especially because the clips 5 are disposed between the lower convolutions of the adjacent springs, I cut away the opposite longitudinal edges of each clip, as indicated at 6. The rear end of each clip 5 is provided with a pair of fingers 7 turned in from the body of the clip at the sides of the latter to embrace the corresponding supporting wires. The outer end of each clip is provided with pairs of fingers 8 turned from the sides of the body of the clip to embrace the same supporting wires which the clip embraces at its inner end, and the outer end of the clip is also provided with a fifth finger 9 which is of a comparatively long length and

which is adapted to embrace the lower edge wire for the purpose of securely fastening the supporting wires to the lower edge wire. These clips 5 perform still another function in that they support the supporting elements on the springs 10, which latter support the auxiliary frame hereinafter described. Thus the clips 5 perform a dual function.

The yieldable elements or springs 10 just alluded to are formed of a single piece of material and each has a coil 11 intermediate its ends, the material at one end of the coil 11 being formed to provide a pair of substantially parallel members 12 adapted to rest upon the clips 5 and secured to the latter by means of tongues 13 and 14 struck up from the body of the clips 5, the tongues 14 preferably embracing the substantially parallel members 12 and the tongue 13 preferably engaging the bight portion 15 of the said parallel members 12, whereby each auxiliary frame supporting element or spring 10 will have a substantial bearing engagement upon the corresponding clip 5 and be prevented from becoming accidentally disengaged therefrom. The material or arm upon the opposite or upper side of the coil 11 is preferably directed upwardly upon a slight incline and has its extremity formed into a substantially large, if not elongated loop 16 for a purpose presently understood.

The auxiliary frame hereinbefore mentioned is preferably formed of a pair of longitudinal members 17 and a series of cross bars or members 18, the members 17 and 18 being riveted or otherwise secured together at their points of intersection, as indicated at 19. The ends of the members 18 project beyond the sides of the members 17 and each has its opposite ends bent backwardly on itself to provide substantially elongated loops 20 to receive the aforesaid loop 16 of the corresponding auxiliary frame supporting elements 10. The members 17 have tongues 21 struck up therefrom between the cross members 18, the tongues 21 being arranged in pairs and one of each pair being directed above and the other of each pair being directed below the members 17 so as to properly and efficiently engage the corresponding coils or convolutions of the main springs 3, the said members 17 being directed through the coils of the main springs 3 substantially midway of the ends of the latter and the cross members 18 being preferably between alining springs, all as clearly shown in the drawings.

From the foregoing it will be understood that the auxiliary frame is mounted independently of the main frame and it will also be appreciated that upon undue compression upon the main springs 3 that the auxiliary frame will resist undue compression by reason of the fact that it is connected with cer-

tain of the main springs and also because it is yieldably supported. A certain amount of pressure may be exerted upon the main springs without affecting the auxiliary frame, the auxiliary frame being preferably provided to take up the resistance upon the main springs only when the latter are subjected to sudden or undue compression. When this undue compression takes place, the auxiliary frame may have a downward movement by reason of the looped engagement of the auxiliary spring with the supporting elements or springs 10, the loops 16 and 20 of the springs 10 and auxiliary frame, respectively, sliding upon one another upon downward movement of the auxiliary frame. The springs 10 are so constructed as to yield upon downward movement of the auxiliary frame and return the latter to its normal position when the structure is relieved of pressure.

In Figs. 6 and 7 I illustrate a construction similar in many respects to the structure hereinbefore described, the main differences between the two structures residing in the construction of the yieldable auxiliary frame supporting elements and the manner in which said elements are connected to the auxiliary frame. For instance, in this second form of invention I dispense with the clips 5 and provide each auxiliary supporting spring 10' with oppositely disposed pairs of supporting arms 10^a which are disposed parallel with the supporting wires 4 beneath the lowermost convolutions of the corresponding springs and which are provided at their inner or free ends with loops 10^b adapted to embrace the corresponding supporting wires, there being suitable clips 10^c to secure the elements 10' to the lower edge wire. Instead of a single coil 11 I provide a double coil 11' from which double coil emerges the pairs of arms 10^a provided at their inner extremities with the hooks 10^c adapted to embrace the corresponding rods 10^d disposed in the eyes 20' of the cross members 18'. Upon compression the rods 10^d slide within the loops 20' longitudinally of the members 18'. The aforesaid supporting arms 10^a are continuations of the innermost sides of the double coil 11', and this double coil may be held in operative position or prevented from spreading by means of a suitable clip 22.

In the first form described, I obviate the use of the rods 10^d and use a different form of means for supporting the auxiliary frame, but nevertheless, the same results are accomplished in the use of either construction.

What is claimed is:—

1. In a spring construction, a main frame, supporting wires, springs mounted upon the supporting wires, an auxiliary frame having a series of loops, and means for supporting the auxiliary frame having looped engagement with the loops of the auxiliary frame.

2. In a spring construction, a main frame, supporting wires, springs mounted upon the supporting wires, clips connecting pairs of the supporting wires to the frame, said clips
5 having tongues, an auxiliary frame having engagement with the innermost springs of the construction, and means held upon said clips by the tongues of the latter to yieldably support the auxiliary frame.

10 3. In a spring construction, upper and lower edge wires, supporting wires, springs mounted upon the supporting wires, clips connecting the supporting wires and the lower edge wire, an auxiliary frame mount-
15 ed between the upper and lower edge wires and having connection with the innermost springs intermediate the ends of the latter, and means mounted upon the adjacent clips for engagement with the auxiliary frame to
20 support the latter.

4. In a spring construction, upper and lower edge wires, supporting wires, springs mounted upon the supporting wires, clips connecting the supporting wires and the
25 lower edge wire, an auxiliary frame mounted between the upper and lower edge wires and having connection with the innermost springs intermediate the ends of the latter, and yieldable elements mounted upon said
30 clips and having slidable engagement with the auxiliary frame.

5. In a spring construction, a main frame including upper and lower edge wires, supporting wires, clips engaging pairs of supporting wires and the lower edge wire to
35 support the former, the clips having tongues, an auxiliary frame having connection with the innermost springs and also having loops in its sides, springs each having parallel members lying upon corresponding clips and
40 secured to the latter by means of said tongues, each of the last named springs also having an arm provided at its end with a loop for slidable engagement with the corre-
45 sponding loop of the auxiliary frame.

6. A clip for spring construction work comprising a body having its sides cut away and also having laterally directed pairs of
50 fingers at each end of said cut away portions and a finger adjacent one pair of the

aforesaid fingers, the material of the body being struck up to provide tongues.

7. A clip for spring construction work comprising a body provided with cut away portions and a series of laterally directed
55 fingers and also provided with a series of tongues struck up from the body.

8. A clip for spring construction work comprising a substantially elongated body provided at one end with a pair of fingers
60 and at its opposite end with a single finger and also provided with a second pair of fingers intermediate the aforesaid pair of fingers and said single finger.

9. A clip for spring construction work
65 comprising a substantially elongated body provided at one end with a pair of fingers and at its opposite end with a single finger and also provided with a second pair of fingers intermediate the aforesaid pair of fin-
70 gers and said single finger, the said clip also having a series of tongues intermediate its edges struck up therefrom.

10. A clip for spring construction work comprising a body provided at each end with
75 laterally directed offset fingers and at one end having a finger between the offset fingers at such end and arranged at a right angle to the offset fingers.

11. In a spring construction, a main
80 frame, springs mounted in the main frame, an auxiliary frame in the main frame and having laterally directed projecting portions, and auxiliary springs having engagement with said projecting portions of the
85 auxiliary frame and adapted to yieldably support the latter.

12. A clip comprising a body provided at each end with a pair of laterally directed fingers, one end having a third finger, the
90 body of the clip having tongues struck up therefrom with one tongue directed longitudinally of the clip and the other tongue directed substantially transversely thereof.

In testimony whereof I affix my signature, 95
in presence of two witnesses.

JOHN H. SNUGGS.

Witnesses:

CLAUDE S. LARNED,
ERNEST I. McCUEN.