

F. KARR.

MATTRESS.

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908,273.

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Fig. 1.

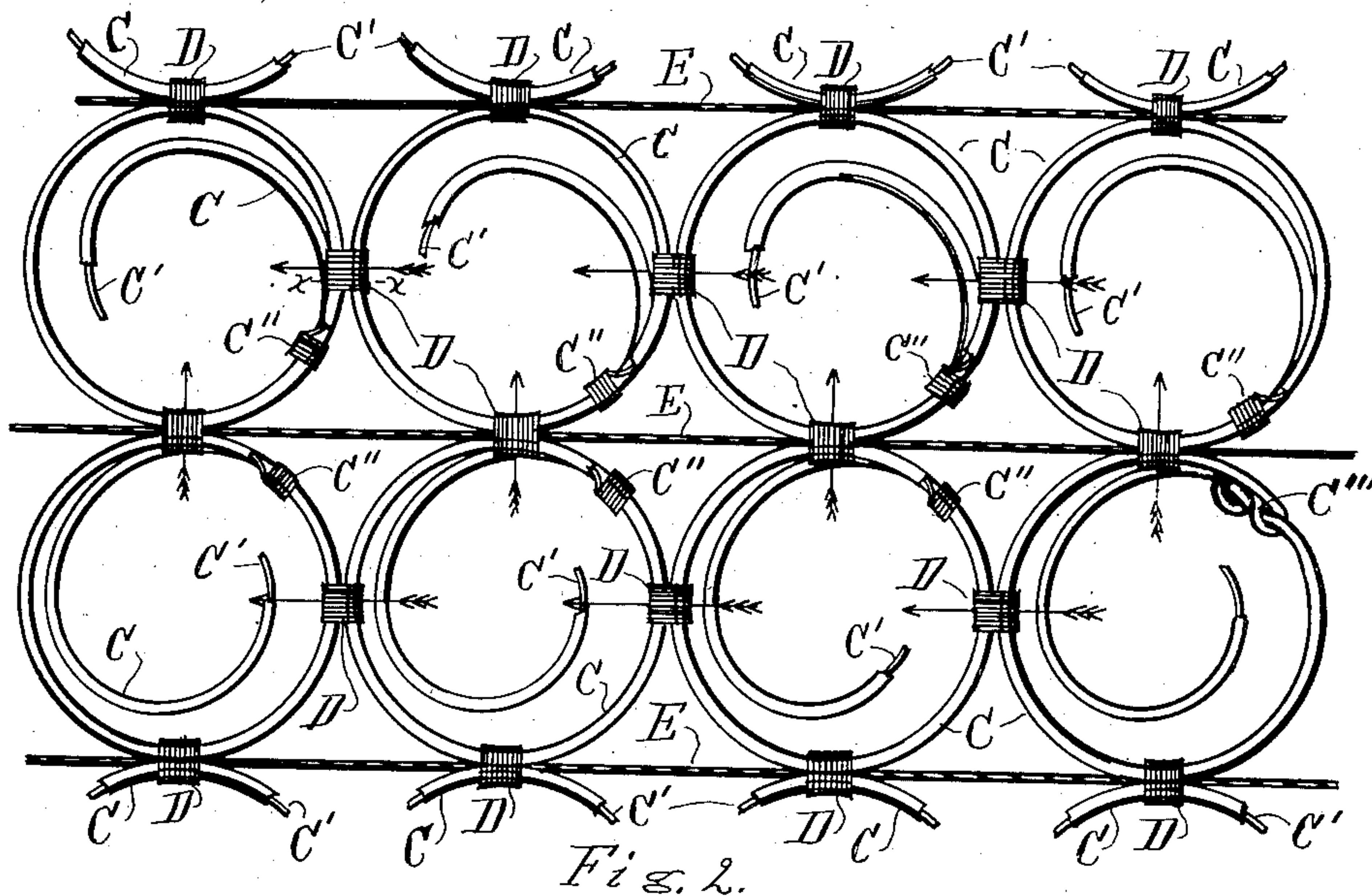
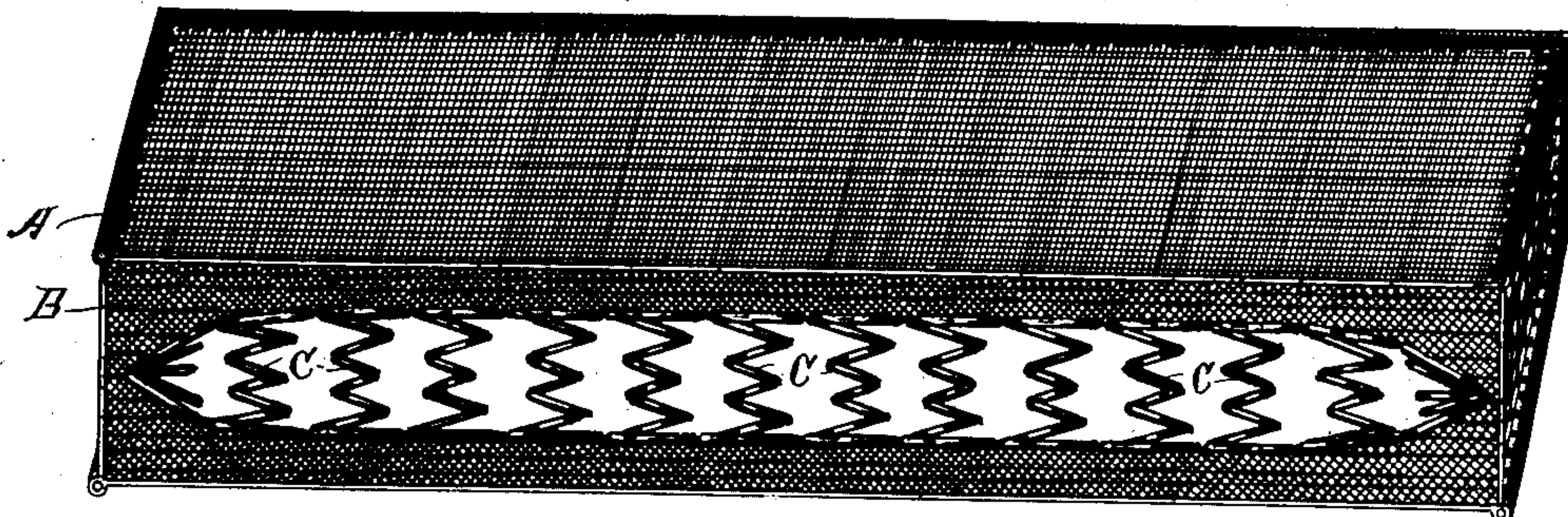


Fig. 2.

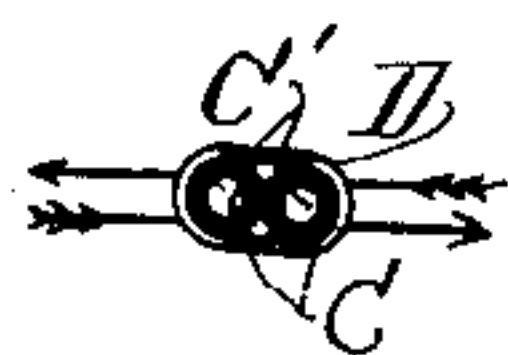


Fig. 3.

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MATTRESS.

No. 908,278.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANCIS KARR, a citizen of the United States, residing at Holland, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Mattresses, of which the following is a specification.

My invention relates to improvements in bed mattresses, and other kindred articles, and its objects are: First, to provide a cotton filled bed mattress, pillow, cushion or other like article which will have and retain the property of conforming to the form that is lying upon it and that will immediately resume its normal position as soon as an object is removed from it. Second, to provide a mattress of the kind mentioned that will be self renovating, changing the air through its entire filling whenever it is compressed and allowed to resume its normal form, or, in other words, whenever a person lies down upon, or arises from it. Third, to provide a means for securing the springs that are used for the purposes hereinbefore mentioned so that they will be firmly held against the danger of twisting or crawling out of position. Fourth, to so protect the springs as to avert the danger, first, of the several layers coming in contact with each other and making a disagreeable or grating sound as they are compressed or expanded, and second, of any of the several springs being perceivable through the intervening filling. Fifth, to provide a mattress of the kind stated that will retain its normal shape at all times when not occupied or compressed by a person or object lying upon it, and, sixth, to provide a mattress that may be folded crosswise, lengthwise or otherwise. I attain these objects by the mechanism illustrated in the accompanying drawing, in which—

Figure 1 is a perspective of a mattress cut in two longitudinally to show the position of the actuating springs. Fig. 2 is a plan of several of the springs removed from the mattress to show the manner of securing them against turning as pressure is brought upon them. Fig. 3 is an end view of the upper coil of two adjacent springs showing the manner of securing them together, cut off on the line *x x* of Fig. 2.

Similar letters refer to similar parts throughout the several views.

This mattress is made like any ordinary cotton, hair or other fiber mattress having a woven fabric tick or cover A and a fiber or

hair filling, B, except that a large number of very pliable, and, at the same time, very resilient springs, as C, are placed between two layers of the fiber, as indicated in Fig. 1, which springs must be sufficiently pliable to fully compress without danger or possibility of being perceptible through the fabric or fiber filling B, and sufficiently elastic to immediately force the fabric of the mattress to normal position and form as soon as any resistance thereon is removed. There must be a sufficient number of these springs in a mattress or pillow to fill the length and width of the mattress to about the proportional extent that is shown in Fig. 1. Their interior coils must be so formed that they will readily slip by each other without touching, and the end coils must not be large enough to allow them to be thrown upon edge so that their presence may be detected by any person lying upon the mattress or pillow, and the terminal coils of the spring portion of the mattress should be drawn together, both at the ends and sides of the spring structure, as shown to the right and left of Fig. 1, so that the ends and sides of the fabric portion B of the mattress may be built up square, and be made to retain its form without danger of breaking down with constant use.

To insure the two necessary elements in the spring structure, namely, perfect adjustability and noiselessness, and to render them capable of being readily and securely bound together at the necessary points, I use a very small, but highly spring tempered wire formed into as flat a coil structure as possible for the work to be sustained by them, and cover them with any suitable fabric, or other covering, as indicated in Figs. 2 and 3.

C represents the metal spring and C represents its covering, which I prefer to have cover the entire surface of the wire, though, if preferred, it may be made to cover only such portion of the upper and lower coils of the wire as are brought into immediate contact and are bound together. To secure these spring coils together the cords with which they are bound together are passed through the covering C, as indicated by the arrows in Fig. 2, and, preferably back again, as indicated by the arrows in Fig. 3, and then wound firmly around both adjacent wires and the covering, as indicated by the windings at D

in Figs. 2 and 3, thus enabling the manufacturer to bind these portions as firmly as the conditions may demand, and to render it absolutely impossible for the individual springs to swing or twist out of their normal positions I firmly secure cords to the sides of the coils, as shown at E E in Fig. 2, in such a way that no rotary or twisting motion can possibly be made by the coils, no matter what weight may be placed, or motions made upon the surface of the mattress or pillow.

In Fig. 1 I have indicated the filling B of the mattress as made of laminated cotton, or its equivalent, and it may be readily understood that when weight is placed upon the surface of the mattress sufficient to force the springs downward so that the inner surfaces of the filling approach closely to each other, all the air in the space formed by the spring structure will be forced out of the mattress through every portion of the fabric filling, and when the weight is removed and the mattress resumes its normal form, air must be forcibly drawn through every portion of said filling, thus changing the air in and throughout the mattress every time it is compressed, or expands to assume its normal form, and keeping the mattress thoroughly ventilated or aerated without any exertion on the part of those having it in charge.

In Fig. 2 I have shown, at C''' the most desirable way of securing the ends of the wire from which the springs are made, which consists of looping the covered ends of the wire around, and interweaving it with the terminal coils of the springs. This form of securing the ends is especially advantageous as it secures the ends of the covering so that there is no danger of its sliding on the wire and allowing the wire to become bare, but when very small wire is used the ends may be bared, and wrapped around the terminal coils, as indicated at C''. I have found that it is possible to cover the wires of which this spring construction is made with a fabric covering of sufficient strength so that the terminal coils of the springs may be stitched together, especially if the stitching is made to enwrap the wires inside of the covering by alternate stitching, as indicated by the arrows in Fig. 3, so that it will not be necessary to wind the stitching material around the coils, as shown at D on Fig. 2, though it is not as satisfactory as the additional winding.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is:

1. The combination in mattress construction, with the tick, and the upper and lower layers of pliable filling within the tick, spiral springs made of covered wire and placed between the layers of filling, the end coils of said springs secured together for

surface construction, the opposite surface coils at the ends and sides of the spring construction drawn together and secured to form a thin wedging edge construction around the spring construction, and pliable filling inserted to build up a square edged mattress.

2. In mattress construction, a tick, a layer of filling adjacent to each side of the tick, a spring construction forming an air space between the layers of filling, said spring construction made of a series of small spiral springs, a covering on each of said springs, a cord passed through said covering on adjoining portions of the springs and firmly wrapped around the adjoining end coils to form a firm surface construction, and the upper and lower coils at the ends and sides of the spring construction drawn together and secured in like manner to form a wedging edge around the spring construction.

3. In mattress construction, a spring construction formed of a series of small covered spiral springs, cords passed through the covering on the springs at adjoining points and firmly wound around the two adjoining coils of the springs, the upper and lower coils of the springs at the ends and sides of the spring construction drawn together and secured in like manner, and cords firmly secured lengthwise of the spring construction between the adjoining portions of the coils to avert the danger of the individual springs twisting, a filling above, below and at the ends and sides of the spring construction, and a tick incasing the whole, substantially as shown and described.

4. In combination with the upper and lower fabric construction and the inclosing tick of a mattress, an intermediate spring construction made of a series of small spiral springs covered with any suitable material, cords passed through and around the covering at adjacent points to secure the surface coils of the springs together and to secure the sides and ends of the spring construction to form wedge shaped edges, and bracing cords secured between adjacent coils of the springs and extending the length of the spring construction.

5. In spring construction for hollow mattresses, a series of small spiral springs, a suitable covering over each of said springs, cords passed through the coverings and firmly wound around the upper and lower coils of the adjacent springs firmly securing them together to form the upper and lower surfaces of a spring construction, and bracing cords firmly secured to the adjacent coils of the springs and extending the length or across the spring construction to prevent the individual springs from twisting, as shown and described.

6. In a spring construction for hollow

mattresses, a series of small spiral springs
having a firm covering over each spring and
the adjacent terminal ends of said spring
construction firmly stitched together to form
5 flat surfaces, and the ends and edges of the
construction secured to form a wedge shaped
border to the construction.

Signed at Grand Rapids Michigan May
13, 1908.

FRANCIS KARR.

In presence of—

ITHIEL J. CILLEY,
FRED R. JEAN.