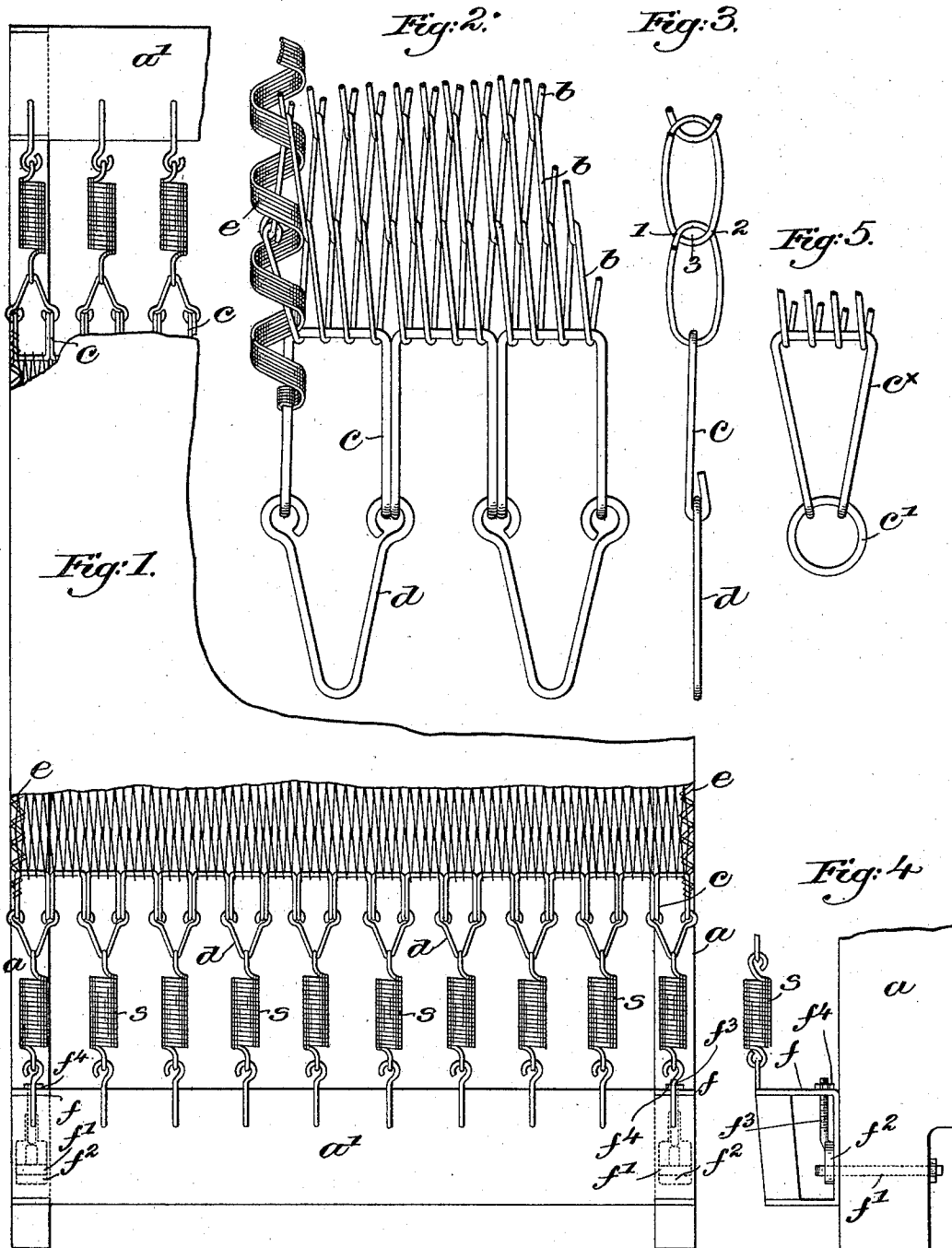


(No Model.)

F. G. GALE.
WIRE MATTRESS AND FRAME THEREFOR.

No. 585,665.

Patented July 6, 1897.



Witnesses.

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WIRE MATTRESS AND FRAME THEREFOR.

SPECIFICATION forming part of Letters Patent No. 585,665, dated July 6, 1897.

Application filed May 22, 1895. Serial No. 550,208. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS G. GALE, a subject of the Queen of Great Britain, residing at Waterville, Province of Quebec, Canada, have invented an Improvement in Wire Mattresses and Frames Therefor, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide a novel and improved woven-wire mattress and frame therefor.

Prior to my invention wire mattresses have been composed of a plurality of transverse series of independent V-shaped links or transverse zigzag flat bent wires, with the links or wires of one series interlocking with the links or wires of the series at either side, the end or outside transverse series being suitably connected by springs with the mattress-frame. Mattresses have also been produced composed of a plurality of longitudinal spirally-twisted wires arranged with the coils of one longitudinal wire interlocked or twisted into and connected with the coils of the adjacent wires at either side, such mattress being usually connected at its ends with a suitable board or bar mounted upon the mattress-frame. In the latter construction the resilience of the spirally-coiled longitudinal wires is depended upon to give elasticity to the mattress, and so far as known to me no end springs independent of the mattress-body are provided. In the former class of mattresses the links or zigzag flat bent wires are provided principally to give pliability to the mattress-surface, the elasticity or resiliency being derived from the end supporting-springs, which are supposed to receive the weight of the mattress or any body thereupon.

In this present invention I combine the advantageous features of both types of mattress in one by a novel construction consisting in a plurality of transverse interlocking spirally twisted or coiled wires, the outside or end transverse coils being connected in suitable manner by springs with the mattress-frame, a selvage or edge being also provided consisting of a longitudinally spirally twisted or coiled wire or wires interlocked or connected with the ends of the transverse coils.

In the preferred embodiment of my invention the spirally-twisted wires or coils instead of having their turns or spirals truly circular in end view are flattened or made elliptical, so that the surface of the mattress more nearly approximates a flat woven surface.

The above, together with other features of my invention, will be hereinafter fully set forth in the specification, and particularly pointed out in the claims.

In the drawings, Figure 1, in top or plan view, partially broken away, shows one embodiment of my invention. Fig. 2, on an enlarged scale, shows a section of the mattress, Fig. 1; Fig. 3, an edge view of Fig. 2; Fig. 4, a detail looking at the end of the mattress-frame, the same showing the means for adjusting the tension upon the mattress; Fig. 5, a detail illustrating a modified construction.

In the particular embodiment of my invention selected for illustration and shown in the drawings the mattress-frame, composed of the side rails *a a* and the end rails *a' a'*, may be of usual or desired construction.

The mattress proper consists of a plurality of transverse spirally-twisted wires *b*, arranged parallel and with the spirals or turns of one wire passing through and interlocking with the spirals or turns of the wires at each side, the several transverse wires together forming a mattress-surface, as best shown in Figs. 1 and 2.

The outside or end transverse spirals or wires are shown as engaged by a series of U-shaped holders *C C*, each of which in the present instance engages a plurality, preferably four, turns of the end spiral or wire, the said U-shaped holders being connected in suitable manner with the springs *s s*, in turn suitably connected with the end rails of the frame.

In the present instance of my invention the U-shaped holders *c* are connected with the said springs through the medium of interposed V-shaped links *d*, each V-shaped link being attached at its apex to one of the springs *s* and having each of its legs engaging two of the U-shaped holders, as clearly shown in the drawings.

Referring to Fig. 3, showing the spirally-twisted wires in end view, it will be seen

that in the preferred embodiment of my invention the spirals or coils are not truly circular, but are elliptical or flattened in order to provide an approximately flat mattress-surface. For example, any weight sustained upon a single point in the vicinity of the middle of the mattress is, owing to the angularity of the spiral turns in the several wires, distributed through a constantly-increasing area toward the opposite ends of the mattress and is received at the ends of the mattress upon a plurality of (usually four or more) springs. The wires are also preferably twisted in such manner that in interlocking each turn in one wire contacts with its interlocking turn of the adjacent wire at two points 1 and 2, (see Fig. 3,) the advantage of two points of contact providing a lateral support for each turn. Viewing Fig. 2, for instance, the second spirally-twisted wire from the end has its turns supported at their left sides, and along the upper edge of the spiral by the coils of the third wire, and having their right sides along the lower edge of the coil supported by the coils of the first wire, so that it is next to impossible to flatten out the coils of any of the wires.

At the edges of the mattress I have provided suitable selvages, (herein shown as the longitudinal coils *e e*,) preferably consisting of several wires coiled together, as shown, and connected, preferably, by interlocking with the ends of the transverse coils of body-wires.

In the ordinary woven-wire mattress with the interlocking spiral wires extended longitudinally of the mattress an excessive weight placed upon the middle of the mattress depresses the latter and tends to straighten out the longitudinal coils, and nothing but the resiliency of the wires can restore them to their normal positions, the result being that the mattress soon sags when it is required to sustain a weight for any considerable time.

Should end springs be placed upon a mattress of such construction it would not remedy matters, for the springs acting in the directions of the length of the wires would tend rather to pull them out straight than to restore them to their original coiled condition. Mattresses have also been proposed having interlocked spiral wires of loose twist extending transversely of the mattress and attached by tacking or otherwise at the sides only, leaving the ends entirely free. In my mattress, however, the springs *s*, by reason of their transverse action upon the coils, tend to restore the same always to their normal and proper condition, for if by reason of excessive weight or strain in any particular spot any of the transverse wires should tend to straighten out, the action of the springs *s*, when the weight is removed, is to extend the coils laterally—*i. e.*, to shorten them lengthwise and restore them to their normal condition.

In use the yielding or pliability of the mat-

tress results partly in the change of form of the coils and partly by the changing condition or position of the wires at the points of contact 1 and 2, where they interlock one with the other, the opening 3 between said points (see Fig. 3) contracting and expanding according as the weight is placed upon or removed from the mattress.

The coils or spirals being long and comparatively narrow and substantially straight at the top and bottom, as shown, the said straight or top and bottom portions of the coils which form the mattress-surface run nearly lengthwise of the mattress or in the direction of the strains, notwithstanding the wires themselves extend transversely the mattress. The web is also very elastic, for as there are no sharp turns or clenching of the wire very hard and springy wire may be used, for while it will spring lengthwise of the mattress it will not stretch. The yielding of the coils is not at the surface of the mattress, but at the end of the coils below the surface, where it will not affect the bedding, as is the case with other mattresses. By elongating the coils, as shown, considerable economy in wire is had in the manufacture of mattresses and the mattress is made much more rapidly with such coils than with the usual round coils.

Referring to Fig. 4, the end rails *a'* are shown as mounted in the U-shaped supports *f* and adapted to slide on the tops of the side rails at the ends of the latter and are slotted to receive the bolt *f'*, which has an oblong or flattened head *f''*. (Shown by dotted lines, Fig. 1.) This bolt is partially turned to enable its head to be inserted through the slot in the U-shaped support *f*, and is then turned squarely across the slot to prevent the said support from being displaced. A bolt *f''* has also a suitable slot in its head to enable it to be secured to the flat-headed bolt *f'*, the threaded shank of the said bolt *f''* being carried through one of the uprights of the support *f* and threaded outside thereof with a nut *f''*. Rotation of the nut *f''* causes adjustment of the end rail of the mattress.

While I prefer a construction of holders and links, such as shown in Fig. 1, connecting the springs with the mattress-body, because each spring is thus caused to receive the strain from a large number of wires, yet I may use other suitable constructions, such as shown in Fig. 5, wherein the U-shaped holders *c'* are provided with a ring *c'*, to which the springs are connected.

So far as the flattened coiled wires are concerned they may be used either longitudinally or transversely of the mattress to advantage; but a decided advantage is obtained by using either the flattened or even the truly circular coils transversely instead of longitudinally, as heretofore.

My invention is not limited to the particular shape and construction of parts herein shown, for it is evident the same may be va-

ried without departing from the spirit and scope of my invention.

I claim—

1. The combination with a suitable frame, of a mattress suspended at its ends therein, said mattress comprising a series of interlocked spirally-twisted wires or coils extended transversely of the mattress, mattress-suspending springs connecting the endmost coils at different points in their length with said frame, the spiral turns of one transverse wire interlocking with the spiral turns of the next adjacent transverse wire, said interlocking wires at each of said interlocking turns contacting at two points whereby the pull longitudinally of the mattress from one to the other of its end supports, due to a weight carried by said mattress, acts transversely of said interlocked spirals to cause one to laterally brace and support the other, to thereby prevent collapse of any spiral and the stiffening selvage coils or spirals extended lengthwise of the mattress at the side edges thereof, and interlocked with the transverse edges of said body-spirals, substantially as described.

2. The combination with a suitable frame, of a mattress suspended at its ends therein, said mattress comprising a series of interlocked spirally-twisted wires or coils extended transversely of the mattress, mattress-suspending springs connecting the endmost transverse coils, at different points in their length with said frame; and stiffening selvage coils or spirals extended lengthwise the mattress at the side edges thereof said selvage-spirals being interlocked with the ends of said transverse body-spirals and serving to reduce shortening of said transverse spirals and thus reduce the tendency of the mattress

to contract in width under the action of a load, substantially as described.

3. The combination with a suitable frame, of a mattress therefor, composed of a series of transverse interlocking spirally-twisted wires, U-shaped holders each engaging at its extended middle portion a plurality of turns of the outside or endmost spiral wires, and springs connecting the ends of said holders with said frame, substantially as described.

4. The combination with a suitable frame, of a mattress therefor, composed of a series of transverse interlocking spirally-twisted wires, U-shaped holders having extended middle portions engaging thereat a plurality of turns of the outside or endmost spiral wires, springs on the said frame, and A-shaped holders end to end joining the said U-shaped holders to said springs, substantially as described.

5. The combination with the mattress and the end rails to which the same is connected, of the side rails, the slotted support carrying the end rails, bolts f^3 having slotted heads resting above said slotted supports, the threaded ends of bolts f^3 extending through the inner sides of the supports f and provided with nuts f^4 and bolts f^1 extending through the side rails, the slots of supports f and the slotted heads of bolts f^3 to afford rigid bearings for the latter, all combined substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANCIS G. GALE.

Witnesses:

J. T. L. ARCHAMBAULT,
C. B. F. STEVENS.