May 5, 1964 C. C. ANDES 3,131,405

BOX SPRING TRUSS

Filed July 2, 1962 2 Sheets-Sheet 1

Fig. 1.

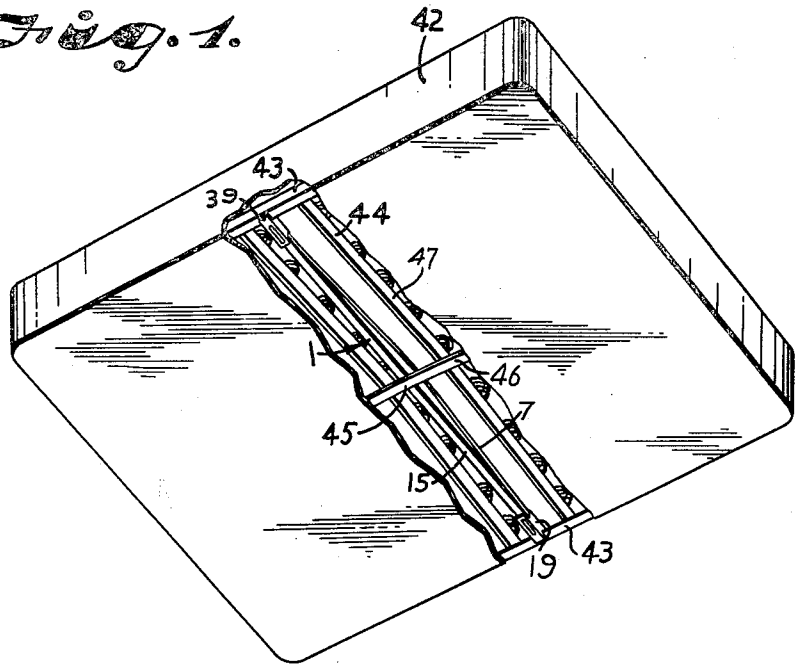


Fig. 2.

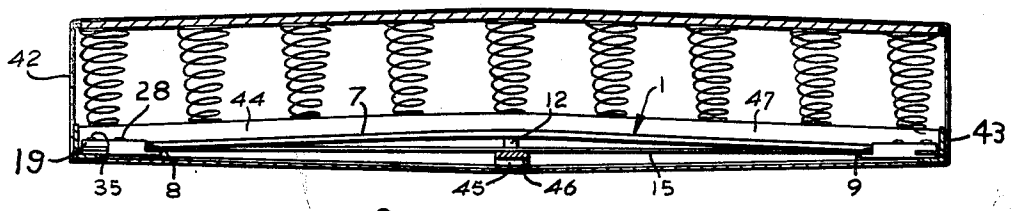
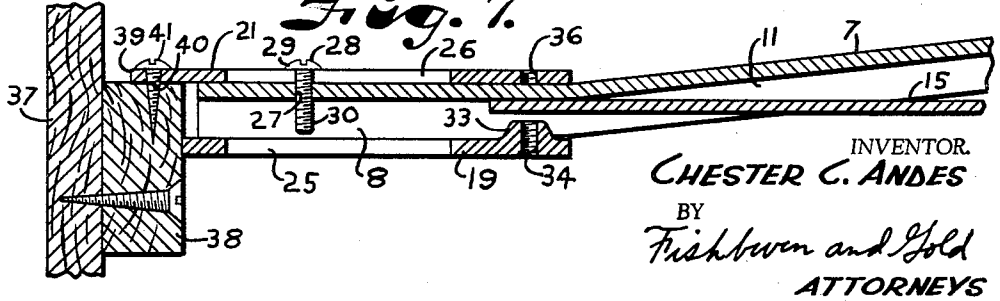


Fig. 7.



INVENTOR.
CHESTER C. ANDES
BY
Fishburn and Gold
ATTORNEYS

May 5, 1964 C. C. ANDES 3,131,405

BOX SPRING TRUSS

Filed July 2, 1962 2 Sheets-Sheet 2

Fig. 3.

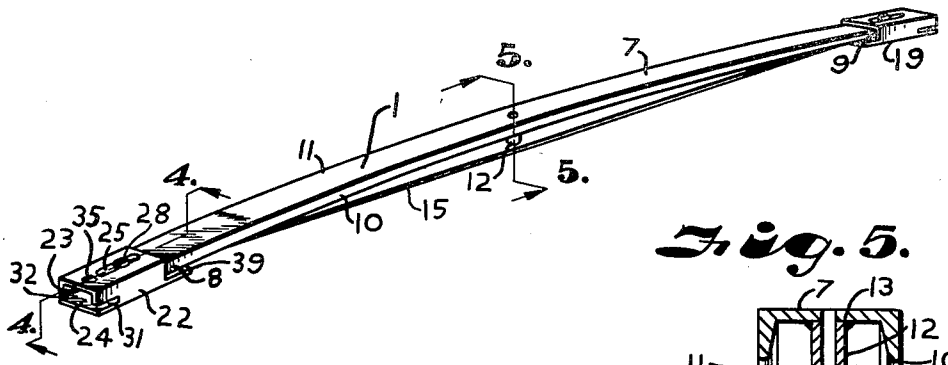


Fig. 4.

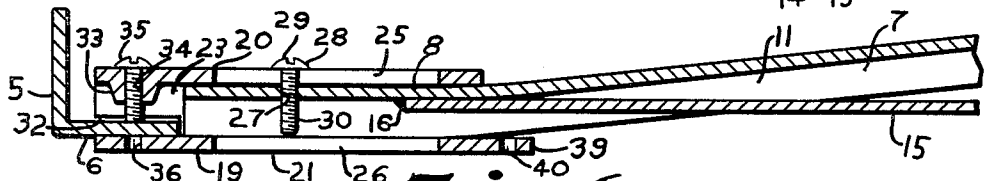


Fig. 5.

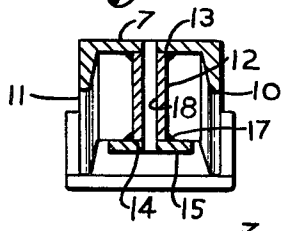
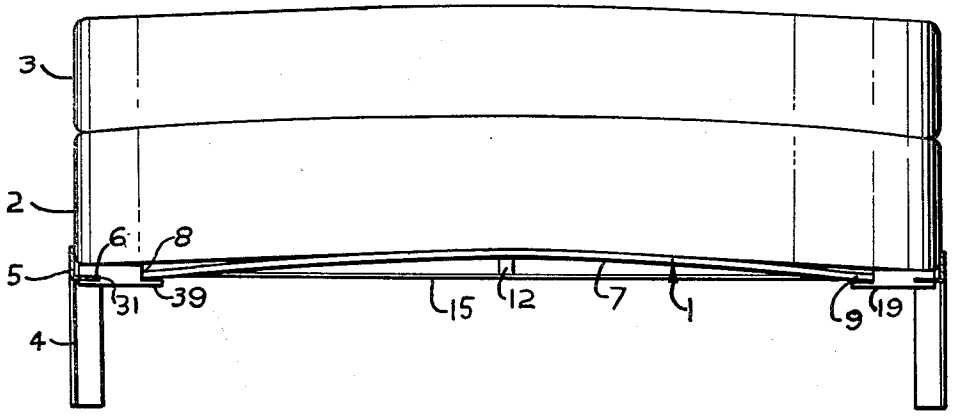


Fig. 6.



INVENTOR.
CHESTER C. ANDES
BY
Fishburn and Gold
ATTORNEYS

United States Patent Office 3,131,405 Patented May 5, 1964

3,131,405

BOX SPRING TRUSS

Chester C. Andes, R.R. 2, Box 198–1, Blue Springs, Mo.

Filed July 2, 1962, Ser. No. 206,891
9 Claims. (Cl. 5—263)

This invention relates to a span truss adapted to prevent sagging in bed box spring under load.

It is desirable that box springs be light in construction to maintain low production costs, however, this often results in a disagreeable sag under load. Although slats are commonly used between a box spring and bed frame, they usually offer little span strength and tend to bend downwardly under load offering little resistance to aid the sagging box spring.

The principal objects of the present invention are:

To provide a span truss to be used either in box spring construction or in the place of one or more bed slats to support the box springs against sagging under load; to provide such a span truss which is adapted to straighten out under load, whereby a person lying on the bed produces a straight span support for the box springs; to provide such a box spring support truss which combines the longitudinal compressibility of a channel with the tensile properties of a bar to produce a combination which exhibits high span strength and predictable deflection under load; to provide an improved span truss which is easily adjustable in length to accommodate width variations in box springs and bed frames and to provide ease of installation thereof; to provide such a truss having clamp members on the opposite ends thereof which are easily adaptable for use with box springs or bed frames having side rails of structural metal, as well as bed frames having side rails of wooden construction; and to provide such a box spring truss which is simple in construction, easily mass produced and highly reliable in use.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings, wherein are set forth, by way of illustration and example, certain embodiments of this invention.

FIG. 1 is a perspective view of a bed box spring with a lower portion broken away illustrating a truss embodying this invention assembled therewith.

FIG. 2 is a cross-sectional view through the box spring of FIG. 1 showing details of the assembled combination.

FIG. 3 is a perspective view of the box spring truss particularly showing end clamp members forming a part thereof.

FIG. 4 is a cross-sectional view through the truss, taken on the line 4—4, FIG. 3, on an enlarged scale, showing details of a clamp member.

FIG. 5 is a cross-sectional view through the truss, FIG. 3 showing details of a post secured centrally thereof.

FIG. 6 is a cross-sectional side elevational view through a bed frame showing a box spring with a mattress thereon and supported on structural metal rails by a span truss embodying this invention.

FIG. 7 is a detailed cross-sectional view on an enlarged scale showing the clamp member of FIG. 4 reversed and rotated for use on a bed frame side rail of wooden construction.

Referring to the drawings in more detail:

The reference numeral **1** generally indicates a box spring supporting span truss embodying this invention. Referring to FIG. 6, the span truss **1** is shown supporting a box spring **2** under a conventional mattress **3** on a bed frame **4** having side rails **5**. In the example of FIG. 6, the side rails **5** are formed of elongated structural metal angles each having a horizontal, inwardly extending leg or support member **6** thereon.

The span truss **1** comprises an elongated channel member **7** having oppositely extending horizontal end portions **8** and **9** and spaced continuous depending flanges **10** and **11**. The channel member **7** opens downwardly and is normally slightly arched upwardly between the end portions **8** and **9**. A downwardly extending post **12** has an upper end **13** and a lower end **14**. The post upper end **13** is suitably secured, in the illustrated example by welding, to the channel member **7** longitudinally centrally thereof and between the flanges **10** and **11**.

An elongated normally straight truss bar **15** extends longitudinally of and beneath the channel member **7** and is secured at opposite ends **16** thereof to the channel end portions **8** and **9** between the flanges **10** and **11**, in the illustrated example by welding. The lower end **14** of the post **12** is secured, in the illustrated example by welding, to the truss bar **15** longitudinally thereof at **17** for transmitting thereto downward force experienced by the channel member **7**.

A bore **18** adapted to receive a bolt, rivet or the like extends vertically through the channel member **7** and longitudinally through the post **12** and vertically through the truss bar **15** for a purpose to be later described.

An elongated clamp member **19** is provided for each of the end portions **8** and **9** and is comprised of spaced upper and lower horizontal walls **20** and **21** and laterally spaced vertical walls **22** and **23** forming a rectangular passageway **24** extending longitudinally therethrough for slidably receiving the respective end portions **8** and **9**.

The clamp members **19** each have central elongated slots **25** and **26** respectively extending longitudinally of the horizontal upper and lower walls **20** and **21**. The end portions **8** and **9** each have a threaded bore **27** extending vertically therethrough and aligned with the slots **25** and **26**. Suitable screws **28** have heads **29** for contacting a horizontal wall, in the illustration of FIG. 4 the upper horizontal wall **20**. The screws **28** also have threaded shanks **30** adapted to selectively extend through the slots, in the example of FIG. 4 slots **25**, and threadedly engage the threaded bore **27** in the respective end portions **8** and **9**. The screws **28** and respective slots and end portions cooperate for locking the respective clamp members **19** in a variable outwardly extending relation from the end portions of the truss **1**. The clamp members **19** have aligned horizontal open-ended slots **31** and **32** extending inwardly into the vertical walls **22** and **23** respectively adjacent the lower horizontal wall **19**. A depending boss **33** is formed on the upper horizontal wall **20** and has a threaded bore **34** extending vertically therethrough and adapted to receive and support a screw **35** projecting downwardly to a position substantially between the open-ended slots **31** and **32**. The open-ended slots **31** and **32** are adapted to receive and engage the structural metal side rail leg support member **6** therein and the screw **35** is adapted to be urged against the leg support member **6** for clamping same in the respective clamp member **19**.

Threaded bores **36** are provided in the lower horizontal walls **21** in alignment with the threaded bores **34** for use in the event that it is desired to clamp the leg support member **6** in the slots **31** and **32** from the bottom of the clamp members **19**. The threaded bores **34** also may be used in the event that it is desired to rotate the clamp members **19** so that the lower horizontal walls **21** are uppermost to permit a lowering of the truss **1** with respect to the rails **5** and then clamp from the upper side of the clamp members.

Referring particularly to FIG. 7, a clamp member **19** is turned end for end and rotated bottom to top from the showing of FIG. 4 to adapt the truss **1** for use with a bed frame **37** having side rails or support members **38** of

wooden construction. For this purpose, the lower horizontal walls 21 (as seen in FIG. 4) extend inwardly of the clamp member 19 forming a lip 39 with a bore 40 extending vertically therethrough. When used for the purpose illustrated in FIG. 7, the lip 39 rests on the wooden side rail 38 for securing the respective clamp members 19 in resting position thereagainst. In the illustrated example of FIG. 7, the screw 28 is extended through the slot 26 and engages the end portion 8 in the same manner as illustrated in FIG. 4.

It is to be understood that when a person lies on the mattress 3, a downward force is transmitted to the channel member 7 which, in turn, is transmitted through the post 12 to the truss bar 15. The channel member 7 resists the load by longitudinal compression, and the truss bar resists the load by longitudinal tension, the two cooperating to provide high load support with a minimum of weight in structural material. It is contemplated that the channel member and truss bar be suitably chosen in respective size to produce approximately ½-inch deflection under about a 500-pound load on the mattress 3 and that this deflection will straighten the channel member 7 to provide flat span support across the under side of the box spring 2.

Referring to FIGS. 1 and 2, the span truss 1 is shown assembled with a box spring 42 to provide a transverse supporting truss therein for preventing undue sagging under load. In the combination of FIGS. 1 and 2, the clamp members 19 rest on elongated longitudinal side beams or angles 43 forming a part of the box spring frame 44, and a suitable connecting member, in the illustrated example a tensile force supporting rivet 45, extends through the central bore 18 in the truss 1. The rivet 45 also extends through a central normally upwardly bowed longitudinal span bar 46 crossing centrally beneath the span truss 1 and which forms a part of the box spring frame 44. The span bar 46 receives load from transverse spring supporting members 47. The combination of the truss 1 and box spring 42 may be used in the manner of a conventional box spring, but will prevent undue sagging under load without a significant increase in box spring weight. Under design load the span bar 46 and the channel member 7 together straighten out to provide flat support for the box spring.

It is to be understood that while certain forms of this invention have been illustrated and described, it is not to be limited to the specific forms or arrangement of parts herein described and shown except insofar as such limitations are included in the claims.

What I claim and desire to secure by Letters Patent is:

1. In combination with a box spring having frame members including longitudinal side beams with a plurality of spaced transverse spring supporting members connected to said side beams and extending therebetween and a longitudinal span bar extending under and engaged by said transverse spring supporting members, a transverse span truss comprising:

(*a*) an elongated member having oppositely extending end portions, said elongated member normally being arched upwardly between said end portions,

(*b*) a downwardly extending post having an upper end and a lower end,

(*c*) an elongated truss bar extending longitudinally of and beneath said elongated member and being secured at opposite ends thereof to said end portions, said post being fixed to said truss bar and said elongated member for connecting the mid-portions thereof, said truss bar extending across and above the span bar,

(*d*) means for securing said span truss to said longitudinal span bar, and

(*e*) means extending outwardly of said span truss and engaging said side beams for receiving support therefrom,

(*f*) whereby said box spring exhibits high resistance against sagging with loads thereon.

2. The combination of claim 1 wherein:

(*a*) said elongated member is a channel member having spaced continuous depending flanges.

3. The combination of claim 2 wherein:

(*a*) said box spring longitudinal span bar extends centrally of said box spring and is secured to said truss bar at said post.

4. The combination of claim 3 wherein:

(*a*) said means for securing said span truss to said longitudinal span bar includes a connecting member receiving bore extending vertically through said elongated member and said post and said truss bar.

5. A span truss adapted to support a box spring on a bed frame having side rails with inwardly extending support members thereon, said span truss comprising:

(*a*) an elongated member having oppositely extending end portions, said elongated member being arched upwardly between said end portions,

(*b*) a downwardly extending post having an upper end and a lower end, said post upper end being secured to said elongated member,

(*c*) an elongated truss bar extending longitudinally of and beneath said elongated member and being secured at opposite ends thereof to said end portions, said post lower end being secured to said truss bar for transmitting thereto downward force from said elongated member,

(*d*) a clamp member for each of said end portions, said clamp members each having a passageway for slidably receiving said end portions,

(*e*) means for locking the respective clamp members in outwardly extending relation from said end portions, and

(*f*) means on said clamp members and extending outwardly of said elongated member for engaging said support members,

(*g*) whereby downward force on said elongated member is resisted by tension said truss bar and compression in said elongated member.

6. A span truss adapted to support a box spring on a bed frame having side rails with inwardly extending support members thereon, said span truss comprising:

(*a*) an elongated channel member having oppositely extending horizontal end portions and spaced continuous depending flanges, said channel member opening downwardly and normally being arched upwardly between said end portions,

(*b*) a downwardly extending post having an upper end and a lower end, said post upper end being secured to said channel member centrally thereof and between said flanges,

(*c*) an elongated normally straight truss bar extending longitudinally of and beneath said channel member and being secured at opposite ends thereof to said channel end portions between said flanges, said post lower end being secured to said truss bar centrally thereof for transmitting thereto downward force from said channel member,

(*d*) an elongated clamp member for each of said end portions, said clamp members having spaced upper and lower horizontal walls and spaced vertical walls forming a rectangular passageway extending longitudinally therethrough respectively for slidably receiving said end portions,

(*e*) means for locking the respective clamp members in outwardly extending relation from said end portions, and

(*f*) means on said clamp members and extending outwardly of said channel member for engaging said side rail support members,

(*g*) whereby downward force on said channel member is resisted by tension in said truss bar and compression in said channel member.

7. The span truss of claim 6 wherein:

(*a*) said means on said clamp members for engaging

said support members comprises aligned horizontal open-ended slots in said vertical walls, and a threaded bore extending vertically through said upper horizontal wall and adapted to support a screw projecting downwardly substantially between said open-ended slots.

8. The span truss of claim 6 wherein:

(*a*) said means for locking the clamp members comprises a slot extending longitudinally of a horizontal wall,

(*b*) a threaded bore in the respective end portion and aligned with said slot, and

(*c*) a screw having a head contacting said horizontal wall and a shank extending through said slot and

threadedly engaged in said threaded bore for locking the clamp member in variable outwardly extending relation from the end portion.

9. The span truss of claim 6 wherein:

(*a*) said lower horizontal wall extends inwardly of said span truss forming a lip adapted to engage said side rail support members by turning said clamp members end for end on said end portions.

References Cited in the file of this patent

UNITED STATES PATENTS

207,959	Felch	Sept. 10, 1878
2,414,978	Richardson	Jan. 28, 1947
2,983,931	Nelson	May 16, 1961