

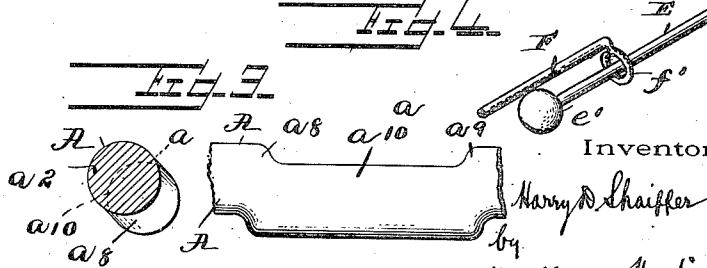
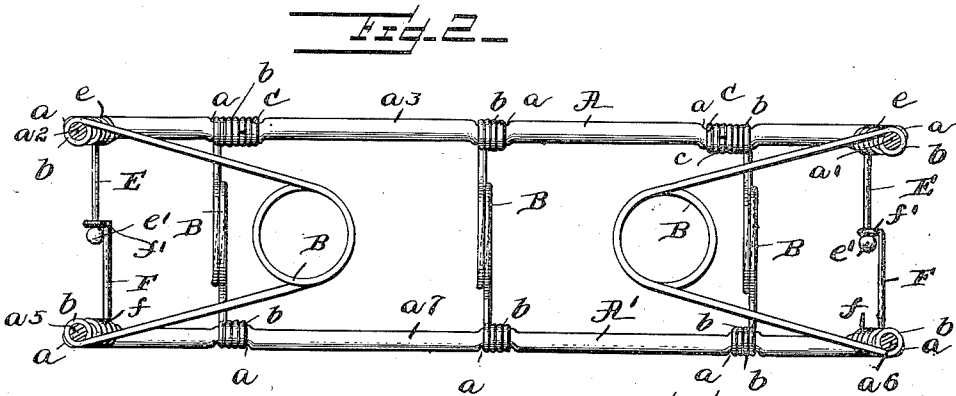
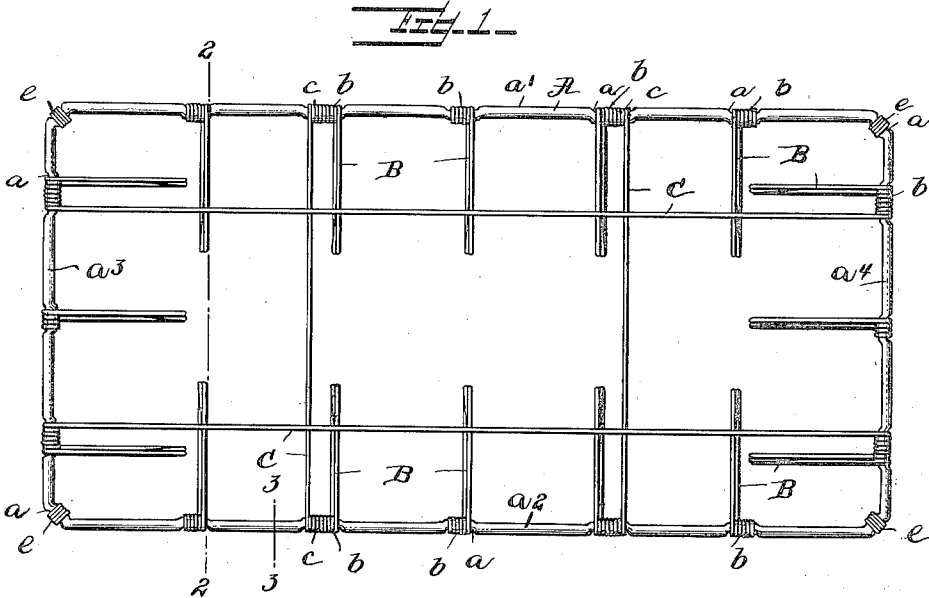
No. 747,002.

PATENTED DEC. 15, 1903.

H. D. SHAIFFER.  
SPRING FRAME.

APPLICATION FILED JULY 15, 1902.

NO MODEL.



Witnesses.

Jesse B. Heller  
Richard Lynn

Inventor.

Harry D. Shaiffer  
by  
Harding & Harding  
Attorneys.

# UNITED STATES PATENT OFFICE.

HARRY D. SHAIFFER, OF PHILADELPHIA, PENNSYLVANIA.

## SPRING-FRAME.

**SPECIFICATION** forming part of Letters Patent No. 747,002, dated December 15, 1903.

Application filed July 15, 1902. Serial No. 115,829. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY D. SHAIFFER, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Spring-Frames, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to spring-frames for railway-car and carriage seats and bodies, beds, and furniture generally, and has for its object the production of a spring-frame that may be easily and cheaply constructed, while not lacking in the necessary resiliency.

It also has for its object to dispense with bolts, screws, rivets, or retaining devices of any kind, thus simplifying the construction and adding to its durability.

My invention also has for its object to prevent the springs on one side from being expanded by the contraction of the springs on the other side—that is, to prevent one side of the frame being forced upwardly by the depression of the other side.

The invention also has for its object to provide a frame which will be smooth on the sides and top—that is, a frame devoid of any elevations, ridges, or projections, such as are formed by the usual spring-securing devices present on ordinary spring-frames.

The invention consists of a novel construction of frame, of novel spring supporting and engaging devices, preferably integral with the frame, of the combination therewith of a special construction of spring, of devices connecting the top and bottom members of the frame for restricting the upward movement of the former with respect to the latter, while permitting an unrestricted relative movement of the top and bottom members within fixed limits, and of certain details of construction hereinafter fully described.

In the drawings, Figure 1 is a plan view of the spring-frame. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is an enlarged section on the line 3 3 of Fig. 1, also a side elevation thereof; and Fig. 4 is a perspective view of the retaining device.

A is the top member of the frame, and A' the bottom member thereof. The top mem-

ber consists of a rectangular frame forming two side bars  $a^1$  and  $a^2$  and two end bars  $a^3$  and  $a^4$ . The bottom member consists of a rectangular frame forming two side bars  $a^5$  and  $a^6$  and two end bars  $a^7$ . These frames may be formed of flat or round bar material and are dropped at intervals—that is, bent inwardly to form spring securing and engaging devices  $a$ , each of which consists of the inwardly-extending members  $a^8$  and  $a^9$  and the connecting member  $a^{10}$ . B represents springs, each of which is coiled at the ends  $b$  to embrace the connecting members  $a^{10}$  of two of the devices  $a$ , one on the upper member and the other on the lower member of the frame, the end coils abutting, respectively, against the members  $a^8$  and  $a^9$ . The springs extend inwardly and at their central part are bent or looped upon themselves to strengthen and increase their resiliency.

The bars are dropped or bent in to form the spring engaging and supporting devices  $a$ , preferably at an oblique angle, preferably at an angle of about forty-five degrees to the horizontal, thereby avoiding any ridges, elevations, or irregularities on the top or side edges of the upper member of the frame or on the bottom or side edges of the lower member of the frame.

Extending longitudinally of the top member of the frame and joining the end bars thereof and extending transversely of the top member of the frame and joining the side bars thereof are preferably one or more connecting-bars C. These bars are shown connected to opposite bars of the frame by being bent or looped around one of the connecting members  $c$ , although it is obvious that special cross-bar-securing devices similar to the devices  $a$  may be formed in the frame or the cross-bars may be otherwise secured to the frame.

Depending from the bars of the upper member of the frame are rods E, which are secured thereto by being looped; as at  $e$ , around members  $a$ , (similar to the spring engaging and securing members,) located at the corners, although they may be similarly secured, if desired, to a plurality of the spring engaging and securing members, or the rods may be otherwise secured to the frame. Projecting upwardly from the bars of the lower

member of the frame are rods F, which are secured thereto by being looped, as at f, around members a, (similar to the spring engaging and securing members,) located at the corners, although they may be similarly secured, if desired, to a plurality of the spring engaging and securing members or the rods may be otherwise secured to the frame. The rods E and F are arranged, respectively, in approximate vertical alignment with each other, and each rod E engages a corresponding rod F. I have shown each rod E upset at the lower end to form a ball-head e', while each rod F is looped at the top to form the loop f', the loop embracing the rod E above the enlarged end thereof. It is obvious that no pressure applied to the edge of the frame at one point can uplift the edge of the frame at any other point, owing to the engagement of head e' and loop f', the construction, however, permitting the member A to be depressed toward the member A' at all points to as great an extent as ordinary conditions require.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a spring-frame, the combination with the frame dropped at intervals to form integral spring and cross-bar engaging and securing devices, of springs and cross-bars the ends of which engage said devices by being coiled about the same, substantially as described.

2. In a spring-frame, the combination with the top and bottom members thereof, each consisting of the side and end bars, dropped at intervals to form spring engaging and securing devices integral with the frame, of springs bent upon themselves intermediate of their ends and engaging at their ends the spring engaging and securing devices of the top and bottom members respectively, the top and bottom members being also bent in at the corners, rods the ends of which are coiled about the bent-in corners, corresponding rods of the top and bottom members engaging each other so as to limit the upward movement of the former with respect to the latter while permitting free downward movement of the top member, substantially as described.

3. In a spring-frame, the combination with the top and bottom members thereof, each consisting of the side and end bars, dropped at intervals to form spring engaging and securing devices integral with the frame, of springs bent upon themselves intermediate of their ends and engaging at their ends the spring engaging and securing devices of the top and bottom members respectively, the top and bottom members being also bent in at the corners, rods the ends of which are coiled about the bent-in corners of the top member and depend therefrom and provided at their lower ends with enlarged heads, and rods the ends of which are coiled about the bent-in corners

of the bottom member and project upwardly therefrom and provided at their upper ends with loops embracing the shanks of the rods depending from the top members, substantially as described.

4. In a spring-frame, the combination with the top and bottom members thereof, each consisting of the side and end bars, dropped at intervals to form spring engaging and securing devices integral with the frame, of springs bent upon themselves intermediate of their ends and engaging at their ends the spring engaging and securing devices of the top and bottom members respectively, each of said devices consisting of the inwardly and downwardly extending members  $a^8$  and  $a^9$  and the connecting member  $a^{10}$ , the spring end being engaged therewith by being coiled around the connecting member  $a^{10}$ , the top and bottom members being also bent in at the corners, rods the ends of which are coiled about the bent-in corners, corresponding rods of the top and bottom members engaging each other so as to limit the upward movement of the former with respect to the latter while permitting free downward movement of the top member, substantially as described.

5. In a spring-frame, the combination with the top and bottom members thereof, each consisting of the side and end bars, dropped at intervals to form spring engaging and securing devices integral with the frame, of springs bent upon themselves intermediate of their ends and engaging at their ends the spring engaging and securing devices of the top and bottom members respectively, and a cross bar or bars joining opposite bars of the top member, the ends of which are connected thereto by being coiled around the spring engaging and securing devices, the top and bottom members being also bent in at the corners, rods the ends of which are coiled about the bent-in corners, corresponding rods of the top and bottom members engaging each other so as to limit the upward movement of the former with respect to the latter while permitting free downward movement of the top member, substantially as described.

6. In a spring-frame, the combination with the top and bottom members thereof, each consisting of the side and end bars, dropped at intervals to form spring engaging and securing devices integral with the frame, of springs bent upon themselves intermediate of their ends and engaging at their ends the spring engaging and securing devices of the top and bottom members respectively, each of said devices consisting of the inwardly and downwardly extending members  $a^8$  and  $a^9$  and the connecting member  $a^{10}$ , the spring end being engaged therewith by being coiled around the connecting members  $a^{10}$ , a cross bar or bars joining opposite bars of the top member, the ends of which are connected thereto by being coiled about the spring engaging and securing devices, the top and bottom members being also bent in at the cor-

ners, rods the ends of which are coiled about  
the bent-in corners, corresponding rods of  
the top and bottom members engaging each  
other so as to limit the upward movement of  
5 the former with respect to the latter while  
permitting free downward movement of the  
top member, substantially as described.

In testimony of which invention I have here-  
unto set my hand at Philadelphia on this 11th  
day of July, 1902.

HARRY D. SHAIFFER.

Witnesses:

FRANK S. BUSSEY,  
RICHARD EYRE.