

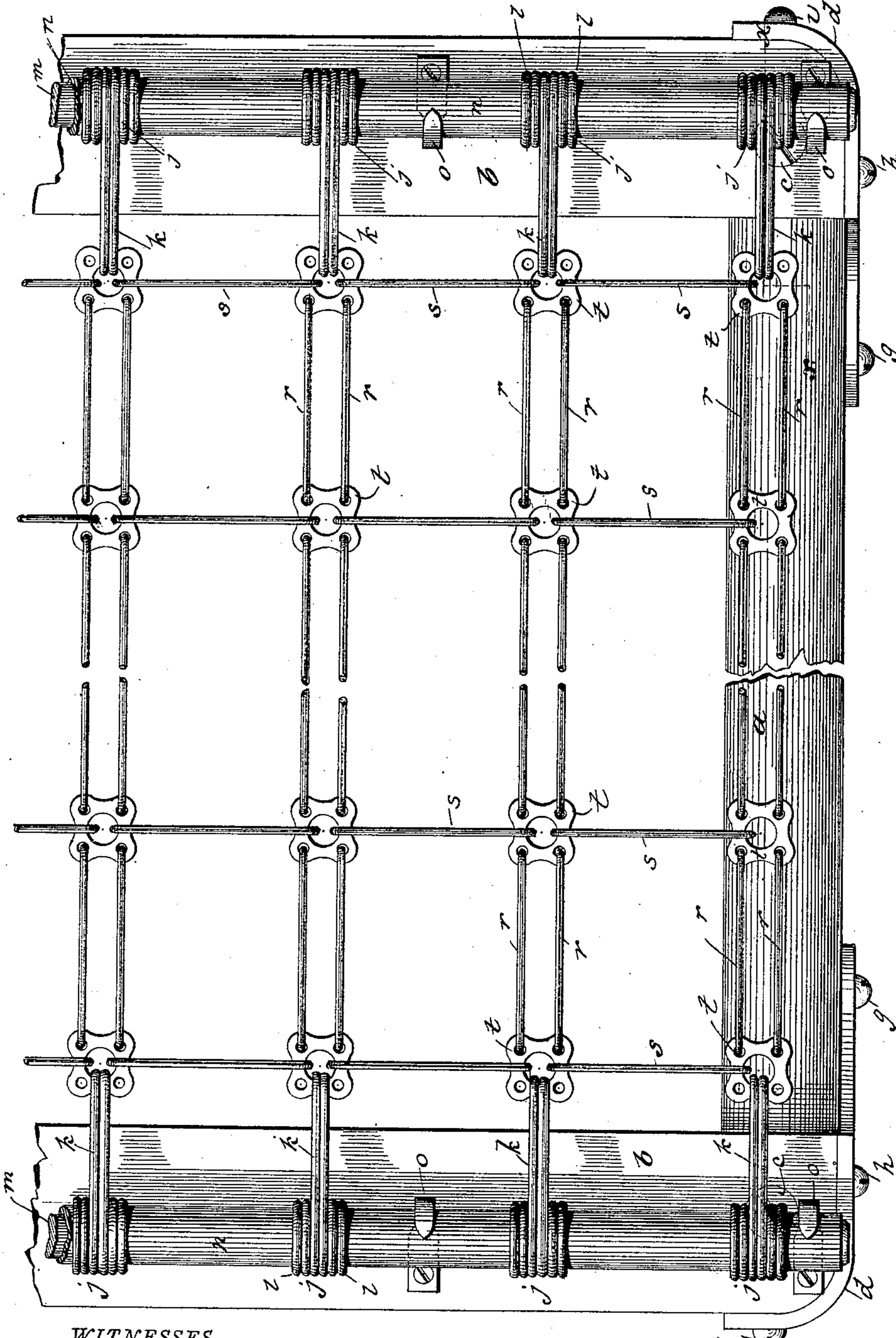
(No Model.)

3 Sheets—Sheet 1.

C. H. FITCH.
SPRING BED BOTTOM.

No. 371,497.

Patented Oct. 11, 1887.



WITNESSES
H. L. Orvand
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HEC-1

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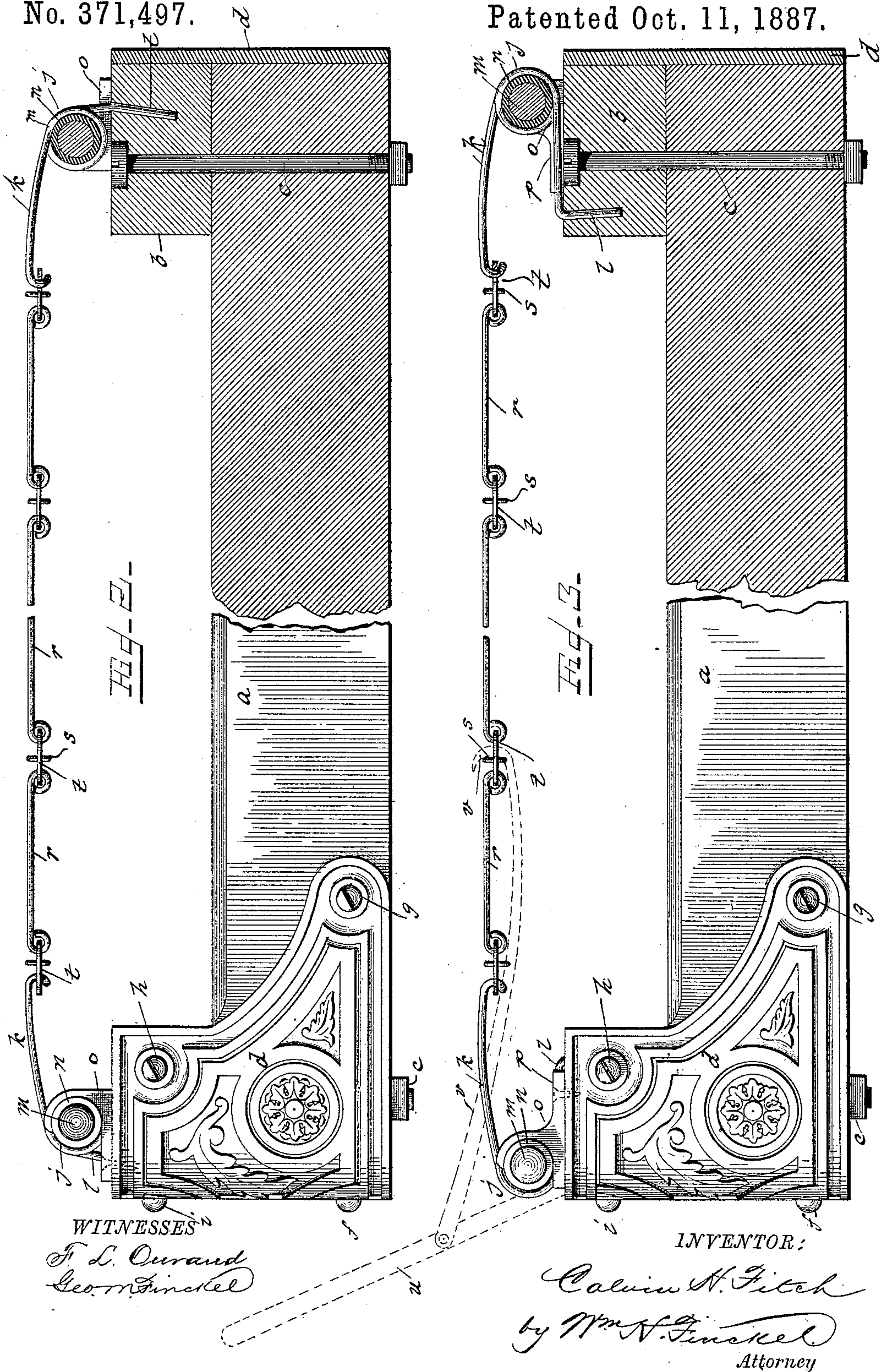
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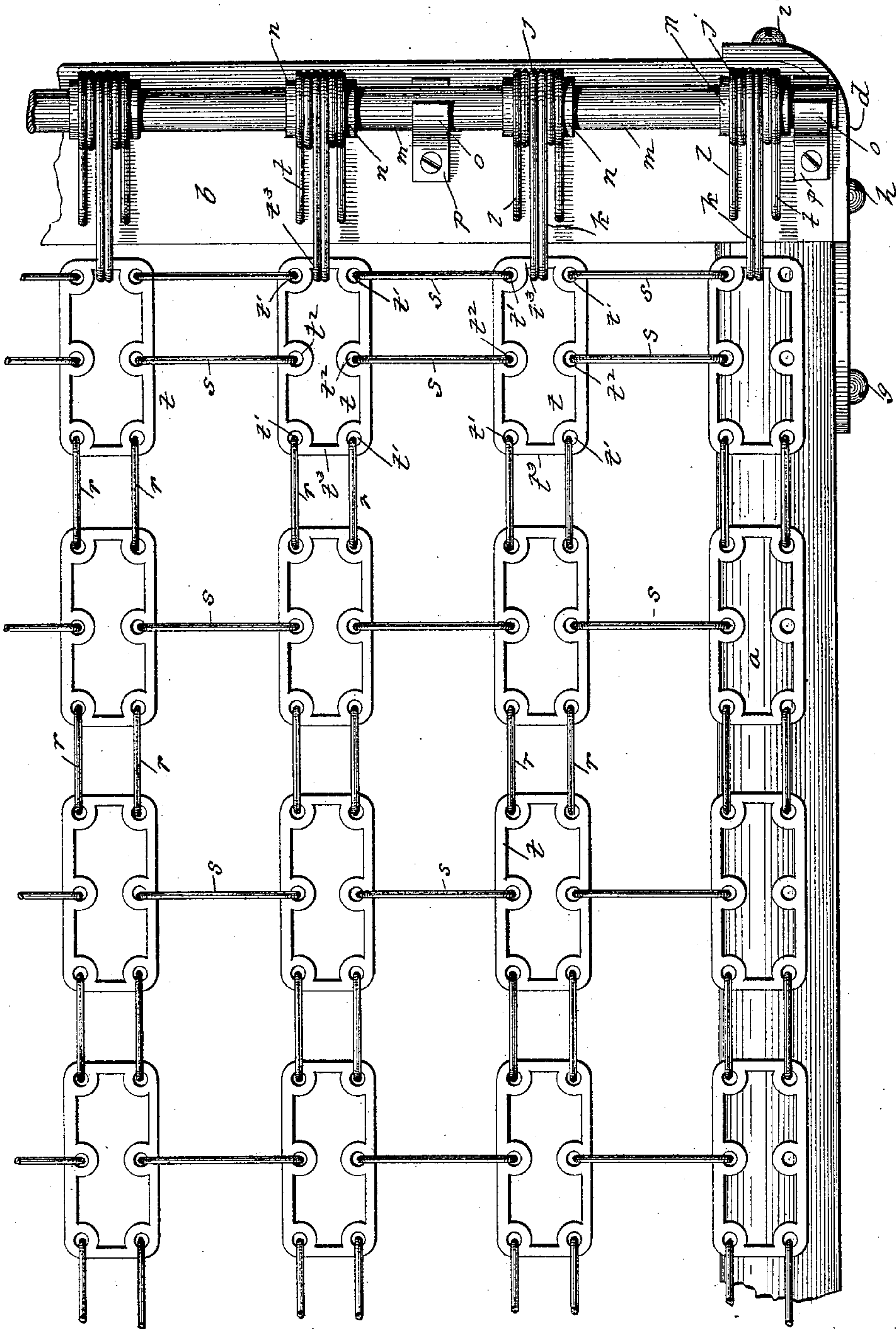
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4-4

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UNITED STATES PATENT OFFICE.

CALVIN H. FITCH, OF MIDDLETOWN SPRINGS, VERMONT.

SPRING BED-BOTTOM.

SPECIFICATION forming part of Letters Patent No. 371,497, dated October 11, 1887.

Application filed August 29, 1884. Serial No. 141,039. (No model.)

To all whom it may concern:

Be it known that I, CALVIN H. FITCH, a citizen of the United States, residing at Middletown Springs, in the county of Rutland and State of Vermont, have invented certain new and useful Improvements in Spring Bed-Bottoms, of which the following is a full, clear, and exact description.

This invention relates to the class of spring bed-bottoms represented in my Letters Patent No. 252,654, dated January 24, 1882, No. 274,925, dated April 3, 1883, and No. 304,717, dated September 9, 1884. As a class these inventions may be called "suspension-bottom beds," for in all of them the web or bottom proper is sustained above the frame and at its ends only. The object in so suspending the bottom is to make the bed more comfortable to the user and prevent contact with the wood-work of the frame. In all of these patents the bed-bottom is applied by hooking it to the springs at one end, and then moving the opposite end of the frame toward the first-named end, hooking the other end of the bottom to such end, and then, using such end as a lever, by depression bringing the bottom out taut. Obviously, the frames in these patents are not rigid throughout all their parts at all times, and experience has shown me that it is of prime importance to avoid all movable parts and adjustments in this class of beds. A series of experiments made by me have demonstrated the advisability of still further modifications of the original plan set forth in my first-named patent, and the present invention is the practical reduction of such experiments.

The invention is comprehended in a construction, substantially as hereinafter set forth and claimed, whereby the greatest effective length of the web or bottom proper is obtained, and also the obviating of stretch, and consequently the dispensing with bottom-tightening or take-up devices is had and a stronger and handsomer bed secured.

In the accompanying drawings, in the several figures of which like parts are similarly designated, Figure 1 is a top plan view of two corners of the same side of the bed. Fig. 2 is a side elevation, with one end in vertical section, on the line *x x*, Fig. 1. Fig. 3 is a similar view of a modification, and Fig. 4 is a plan

view of a preferred construction of bottom proper and other modifications.

The frame is composed of side rails, *a*, and superposed end rails, *b b*, the corners of the several rails being rounded, and the said rails being secured by vertical bolts *c*, and rounded, ornamental, or other pieces or castings, *d*. These corner-pieces are shaped, substantially as shown, to embrace the side rails and end rails on their heads and sides, and each rail has a screw, *f g* and *h i*, respectively, passed through the corner-piece into its head and side, so as to make, in conjunction with the vertical bolts, a most solid and firm fastening. Furthermore, the rounding of the corner takes away the sharp angles heretofore common in bed-bottoms and adapts them to a style of round-cornered bedsteads now more or less common, and as I make my metal corner-pieces preferably quite ornamental, and gild or nickel-plate them or make them of brass, a very novel and pleasing effect is produced in addition to their mechanical excellence.

The side and end rails are each made of a single piece, in order to secure that stability of the frame I deem absolutely essential for this latest form of my invention, for I design to have said frame perfectly rigid in every member. The end rails are set at the extreme ends of the side rails, as shown, and these end rails receive the springs *j*. The springs shown in Figs. 1 and 2 are of the double-coil pattern, with the up and over stretching hook portion *k* and the fastening ends *l*, which last, as shown in Fig. 2, are driven at less than a right angle into the end rails as near their outermost edges as will leave sufficient stock to sustain them, and so as to get the effective ends of the springs as near the extreme limits of the frame as possible. A spring or springs provided with a bar or series of bars for each or several of the springs arranged in their coils is now common; but around said bar or bars I place a covering, preferably of rubber, or I may make the bar wholly of such material or substance. The office of this bar is to hold the springs in position and to retain their shapes, and the function of my covering to the bar is to give greater resilience to the springs and to impart to the springs a freer, easier, and softer action than

would be obtained if the springs were in direct contact with a hard or unyielding substance like wood or iron. This covering further serves to obviate the noise and squeaking common to and objectionable in bed-bottoms. I do not, however, confine myself to the use of rubber for covering the bar, but may use other material or substance that may or may not be of a resilient nature, but that will give to the springs a more free, easy, or softer action than would be obtained if the coils of the springs came into direct contact with a hard or unyielding substance like wood or iron, or that will have the effect to obviate noise or squeaking. The covering around the rod, it is obvious, may either extend continuously the whole length of the rod, as shown in Fig. 1, or may be confined to those portions within the springs only, leaving space between the springs bare, as shown in Fig. 4; and I attach much importance to this feature of my bed, for I have found it to add very materially to the comfort and ease of the same. The rod or rods, and consequently the coils of the springs, are held up out of contact with the end rails by braces *o*, secured to said rails, as by screws. These braces have their shanks of such thickness as to form a support for the rods, and their curved portions extend up from the same to engage the bars in the direction of the strain upon the bars and springs, so that they subserve the additional purpose of resisting the strain upon the springs, and thereby rendering and keeping them firm, and preventing them from being pulled out of place.

A modified form of spring is shown in Figs. 3 and 4, and it is the spring of my Patent No. 274,925, hereinbefore referred to, it having the forwardly-extended securing ends. With this form of spring the braces *o* have a heel-piece, *p*, for the application of their fastening medium. With this form of spring the springs may be set even nearer the extreme outer edges of the end rails than with the other, and consequently the web or bottom proper may be made to cover yet more of the area or length of the frame.

The bringing of the springs well out to the ends of the frame is a feature of great importance in my invention, for thereby I am enabled to support the mattress throughout its full length, thus preventing it from sagging or dropping onto the wood-work at either end. The bed is thus made much easier and more comfortable to the user than has been possible with any bed-bottom to me known, and so far as I am aware the construction of the frames of common bed-bottoms does not admit of such arrangement of the springs. They are not braced to this end, and in all forms of bed-bottoms of other materials than slats there has been of necessity some sort of take-up or tension device requiring movement of one or both end rails to compensate for slack. In my frame both end rails are rigid and immovable, and, as will appear presently, the yield-

ingness of the bed-bottom proper in my invention is in the springs only; hence there can be no slack or stretch so long as the springs endure, and at the same time the bottom is so constructed that it may be easily and quickly taken down and closely packed for shipment or storage.

My web or bottom proper is composed of non-elastic links *r* and *s* and eye-plates *t*, hooked together and so permanently secured, and without other movement than a close joint would afford in order to give flexibility. The longitudinal links *r* are in pairs, for strength and greater surface to support the mattress, and the transverse links *s* single, and the bottom terminates at each end in eye-plates *t* and connecting transverse links *s*. There is no stretch or elasticity in such a bottom, and only sufficient flexibility to permit a slight movement of the connected parts, but sufficient to conform readily to the weight and form of a person lying upon it; but even this much flexibility is not absolutely essential, for I support or suspend this bottom directly upon the springs, and I design to throw the burden of yielding upon or gain the spring of the bed solely from the said end springs, and I make the bottom of just about the length of the distance between the hooked ends of the springs, so that there must be a strain applied to put the bottom in position on the springs. To do this I employ a lever, *u*, indicated by dotted lines in Fig. 3, having hooked arms *v*, which engage the second row of eye-plates, said lever taking the end rail for its fulcrum. Now, the eye-plates are fastened to the springs at one end, and then the lever is used at the other end to draw up the bottom by the yielding of the first-named springs till the eye-plates at the end of the drawn end shall be in position to be hooked to the springs at that end. Each eye-plate may have to be so drawn; but when in position the bottom cannot by any accident short of breakage of the parts be displaced, and having been so put up at the factory or by the dealer the bottom needs no future attention or adjustment on the part of the user.

In Figs. 1, 2, and 3 I have shown a very simple and economical form of these links and eye-plates; but I find it advantageous to use the form shown in Fig. 4, wherein the eye-plates *t* are oblong and have eyes *t'* at each corner and intermediate side eyes, *t''*. The longitudinal links *r* are in pairs, and engage the end eyes, *t'*, as before, while the transverse links *s* engage the side eyes, *t''*, so as to be more stable in their connection with the eye-plates and less liable to displacement. At each end of the bottom the transverse links are preferably in pairs, one link of each pair engaging the end eyes, *t'*, and the other the side eyes, *t''*, to obtain greater strength. The end bar, *t''*, of the eye-plate serves to engage the hook of the springs.

In order to present the invention on the

largest possible scale within the limits of the sheets, I have in the drawings shown only two of the corners. The opposite corners will be counterparts (lefts where these are rights) of the parts shown. The bed-bottom proper or web will be of the construction indicated throughout. Other common forms of coiled springs may be used; but I deem the forms shown the most effective. So, also, other forms of links and eye-plates may be used, and single instead of double links employed in the longitudinal rows of links; or double links throughout may be used. These modifications I deem wholly within my invention, and not needful of illustration. I, however, wish it distinctly understood that I do not herein claim to be the first inventor of a bed-bottom composed of inflexible longitudinal and cross-links joined by rings or other suitable connections—such as perforated circular plates; but my invention, so far as it relates to the eye-plate, provides an oblong eye-plate having eyes at each corner and intermediate side eyes, so as to separate the links and prevent their hooked ends from being bunched together in a small space, as heretofore, thus avoiding a knotty or lumpy appearance and effect in the bed. Furthermore, by my construction of eye-plates, fewer plates to a bed are required, and hence the bed is lighter and less expensive.

For other forms and arrangements of springs, eye-plates, and corner-irons reference is made to my applications for patents, Serial Nos. 158,333 and 196,476.

What I claim is—

1. The combination, with the coiled springs, of the covered rod inserted in their coils, substantially as and for the purpose described.

2. The combination of the frame, the coiled springs secured thereto and each provided with a covered rod in its coils, and hooks for supporting the springs and rods above the frame, substantially as shown and described.

3. The combination, with the rigid frame, immovable in all its parts, of the attached springs, their covered rods, and the flexible inelastic bed-bottom proper, substantially as set forth.

4. The combination, with the rigid frame, immovable in all its parts, of the attached springs, their covered rods, hooks attached to the frame and engaging the rods, and the flexible inelastic web or bottom proper, substantially as described.

5. The oblong eye-plates t , having eyes t' at each corner and intermediate side eyes, t'' , combined with the pairs of longitudinal links r , engaging the corner eyes, and the single transverse links s , engaging the side eyes, substantially as shown and described.

6. A bed-bottom constructed of a rigid frame having end rails provided with springs overhanging them and yielding in a vertical direction only, combined with a bottom composed of inelastic eye-plates and independent inelastic links connecting the said eye-plates longitudinally and transversely, and forming a flexible bottom yielding under a superposed load, but without stretch, and of a length equal to the distance between the free ends of the springs on opposite end rails, and applied to such springs on one rail loosely by one end and thereafter drawn under tension applied to its other end, and attached to the springs on the other rail while under such tension to suspend the bottom under tension of the springs by its ends from such springs, substantially as set forth.

In testimony whereof I have hereunto set my hand this 26th day of August, A. D. 1884.

CALVIN H. FITCH.

Witnesses:

A. A. GREENE,
A. Y. GRAY.