

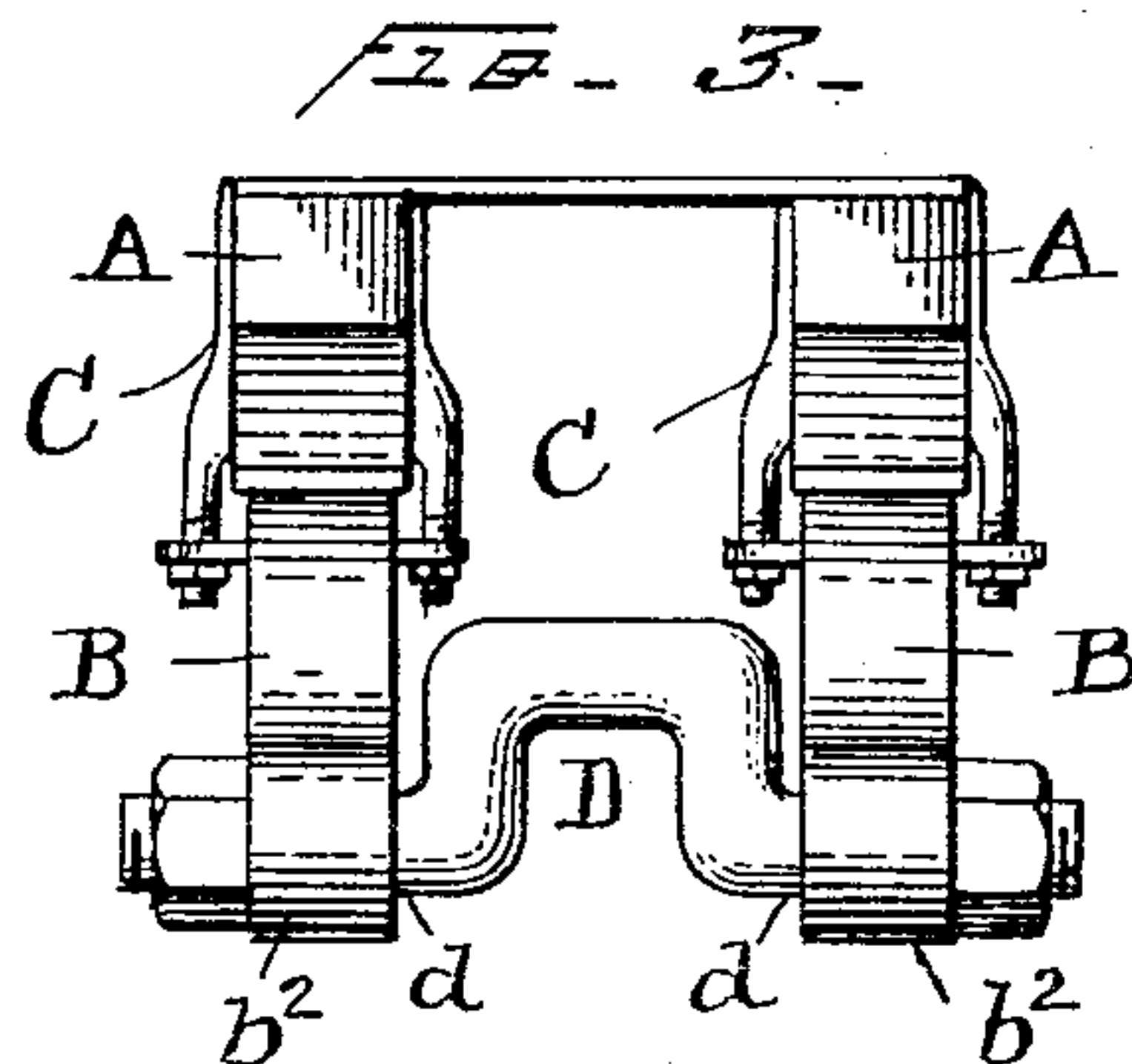
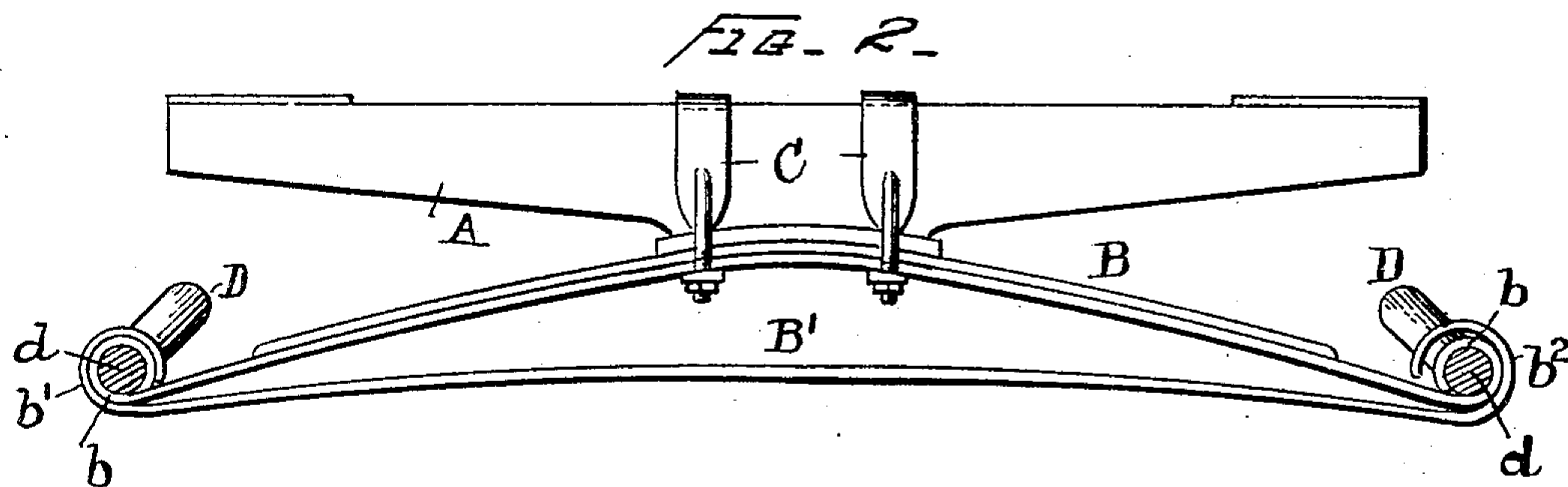
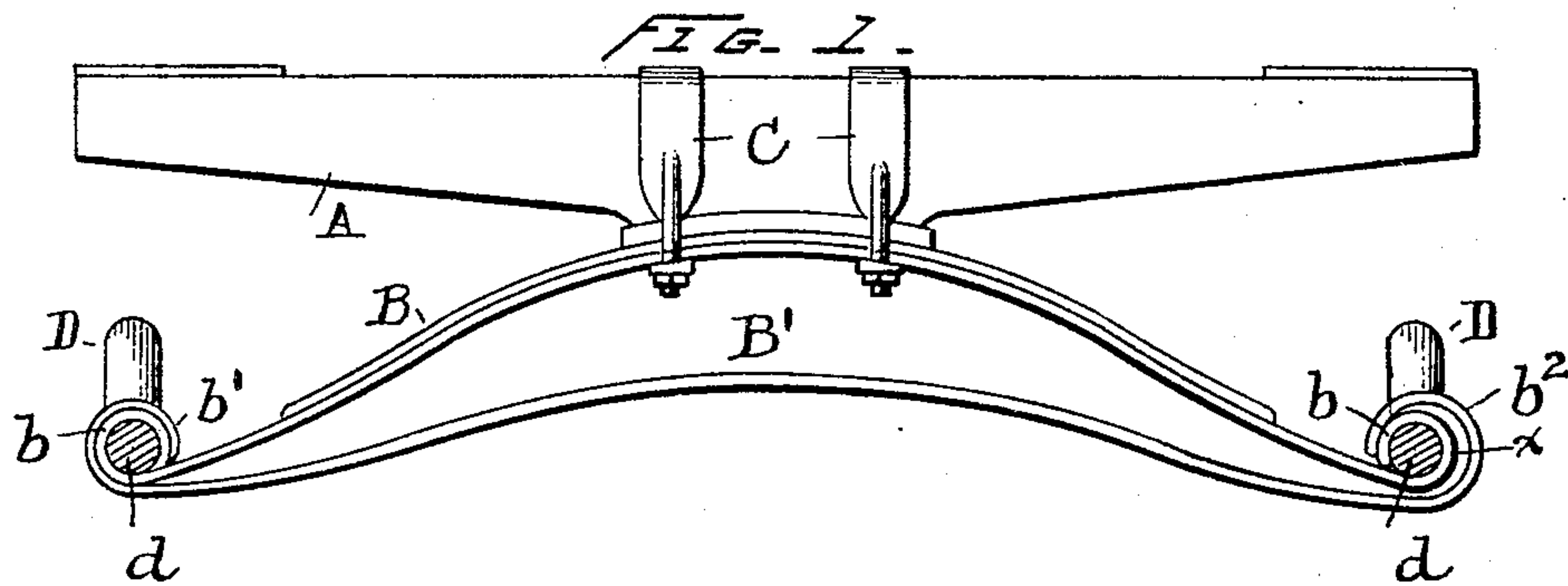
No. 710,969.

Patented Oct. 14, 1902.

N. HALVERSON.
BOLSTER SPRING.

(Application filed Mar. 22, 1902.)

(No Model.)



WITNESSES

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NELS HALVERSON, OF STOUGHTON, WISCONSIN.

BOLSTER-SPRING.

SPECIFICATION forming part of Letters Patent No. 710,969, dated October 14, 1902.

Application filed March 22, 1902. Serial No. 99,503. (No model.)

To all whom it may concern:

Be it known that I, NELS HALVERSON, a citizen of the United States, residing at Stoughton, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Bolster-Springs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

15 This invention relates to vehicle-springs, and especially to bolster-springs for wagons.

The object of the invention is to provide a spring of this class which automatically increases its resistance when a predetermined load is reached and is absolutely prevented from further compression when a maximum load is reached. I accomplish this by means of a compound spring composed of certain leaves confined at the center and forming a 20 load is reached and is absolutely prevented from further compression when a maximum load is reached. I accomplish this by means of a compound spring composed of certain leaves confined at the center and forming a main spring and one or more additional leaves not so confined, forming an auxiliary spring, which is loosely fastened to the other leaves at one or both ends, so that there is a certain amount of play between the two springs before the auxiliary one comes into use. Not 30 being confined at the center, this additional spring can straighten out under a heavy load until it becomes a chord of the curve in the main spring. The two springs then constitute a truss to carry the load.

35 In the accompanying drawings, Figure 1 is a front elevation of my improved bolster-spring unloaded. Fig. 2 shows the same with a heavy load. Fig. 3 is an end view.

40 The spring is of the usual duplex style, having two parallel similar springs connected at the ends by cranked hangers. Each spring is secured to the under side of a bolster A and comprises a main spring B, fastened to the 45 bolster at the middle by clips C, and an auxiliary spring B', not so fastened.

The ends of the main spring are coiled into eyes *b*, which receive the ends *d* of the cranked hangers D.

50 The auxiliary or truss spring B' contains, preferably, only one leaf, as shown. The ends *b'* of this truss-spring are coiled around the

eyes *b* of the main spring B. One end is preferably coiled closely, so as to permit only the usual angular motion around the end of the hanger; but the other is formed into an eye *b*² of considerably larger diameter than and surrounding the eye *b*, so as to afford a certain amount of lost motion or end play to the main spring with reference to the truss-spring. 55 When there is no load or only a light load on the spring, there is a space *x* between the outer side of the eyes *b* *b*², as shown in Fig. 1. This relieves the truss-spring of all tension until the load has been increased enough to 60 straighten out the main spring B sufficiently to take up the space *x* and bring the eye *b* against the outer turn of the eye *b*², as shown in Fig. 2. The truss-spring now aids in carrying the load until the weight is increased to 65 a point where the truss-spring becomes nearly straight, as shown in Fig. 2, in which case the truss-spring and the main spring form a more or less rigid truss to support the load. With this construction a comparatively light spring 70 can be used to carry heavy loads, since the truss prevents it from breaking when overloaded.

Having described my invention, what I claim is— 80

1. In a bolster-spring, the combination with a main spring, of a truss-spring having one end connected with the corresponding end of the main spring by a loose joint permitting the main spring to have a certain amount of 85 lengthwise movement without affecting the truss-spring.

2. In a bolster-spring, the combination with a main spring composed of a few leaves confined at their middle, of a truss-spring not 90 confined between its ends, and having one end connected with the corresponding end of the main spring by a joint permitting a certain amount of lost motion, whereby the main spring has a given range of lengthwise movement without affecting the truss-spring. 95

3. In a bolster-spring, the combination with a main spring, of a truss-spring connected closely with the main spring at one end, and having a certain amount of lost motion or end 100 play in the joint at the other end.

4. The combination with a bolster and cranked hangers, of a compound bolster-spring, consisting of a main spring secured

to the bolster and the hangers, and an auxiliary spring secured only to the hangers, and having a loose connection therewith at one end providing for a certain amount of lost
5 motion or end play.

5. In a bolster-spring, the combination with the main spring B, having an eye b , of the truss-spring B', having an eye b^2 surrounding the eye b , and of sufficiently larger diameter

than the eye b to permit the main spring to **10** have a certain amount of lengthwise movement without affecting the truss-spring.

In testimony whereof I affix my signature in presence of two witnesses.

NELS HALVERSON.

Witnesses:

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EMMET GORDON.