No. 682,001. Patented Sept. 3, 1901.

A. TROVATON.

SPRING SUPPORT FOR VEHICLES.

(Application filed Sept. 8, 1900.)

(No Model.)

Fig. 1.

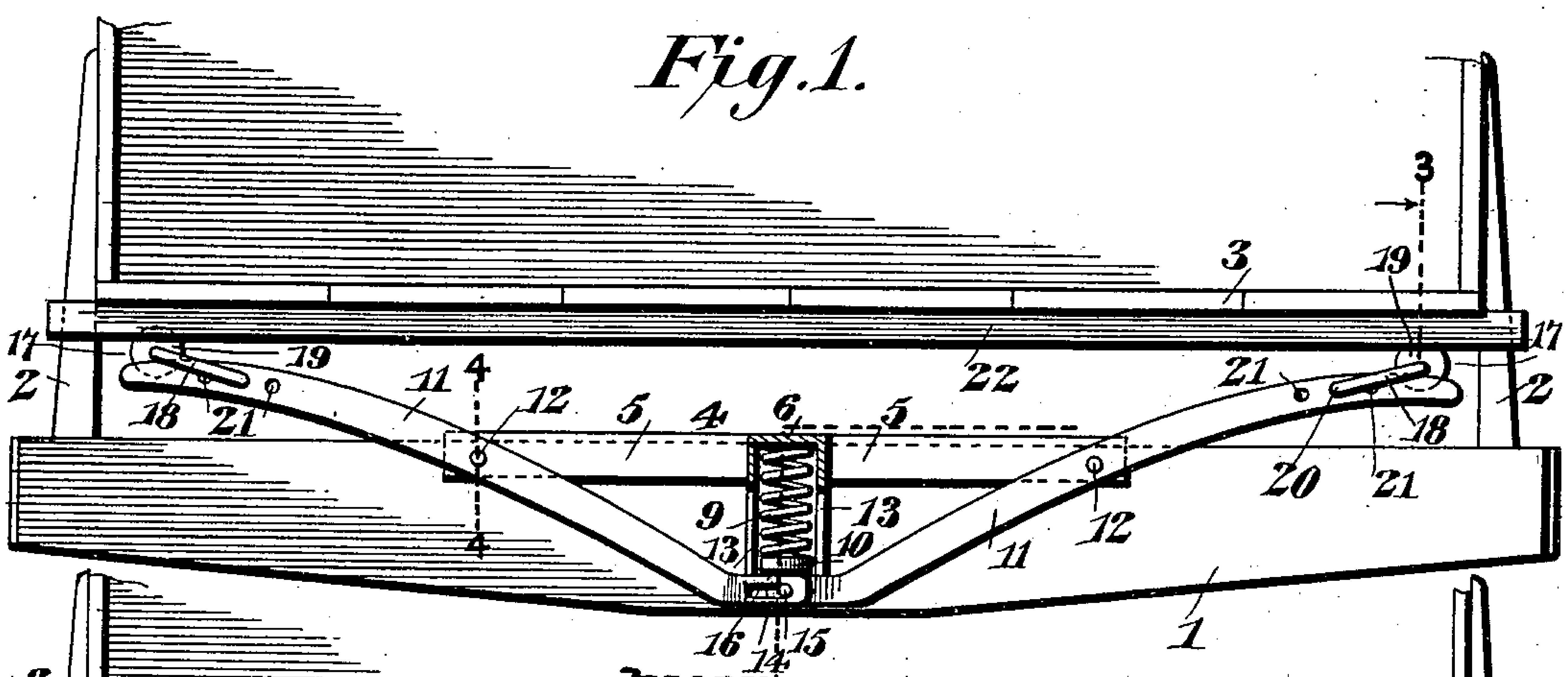


Fig. 2.

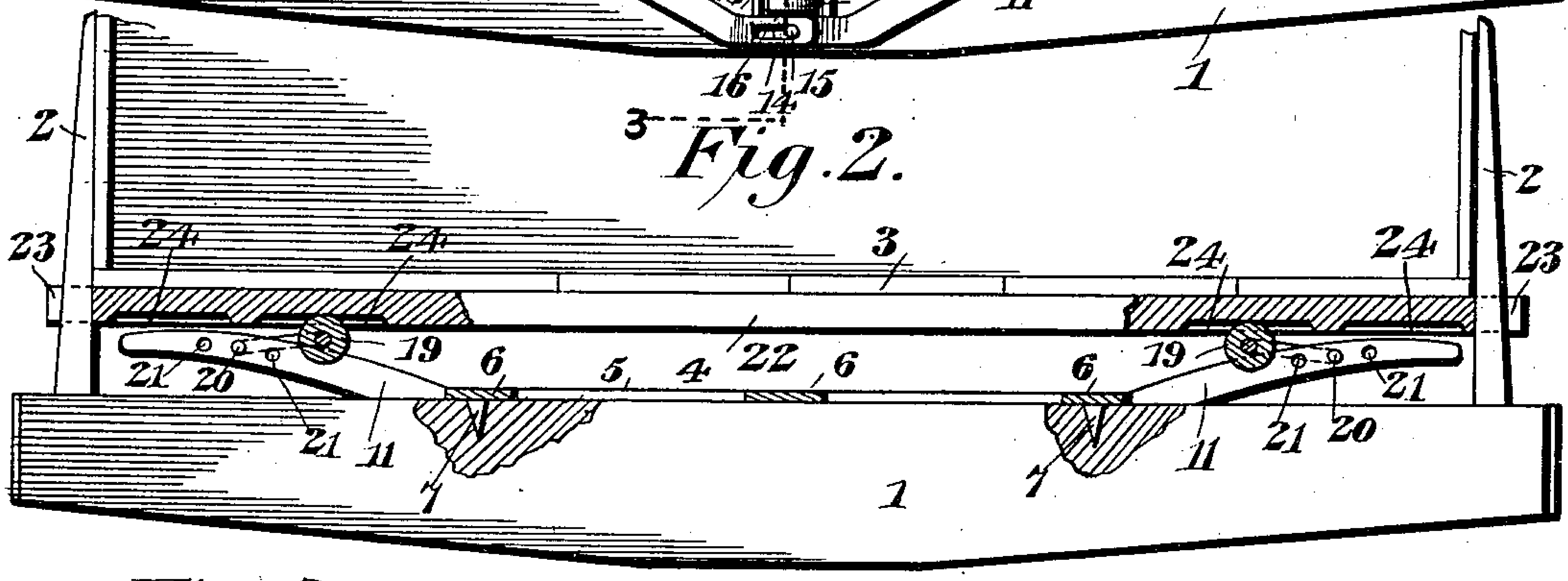


Fig. 3.

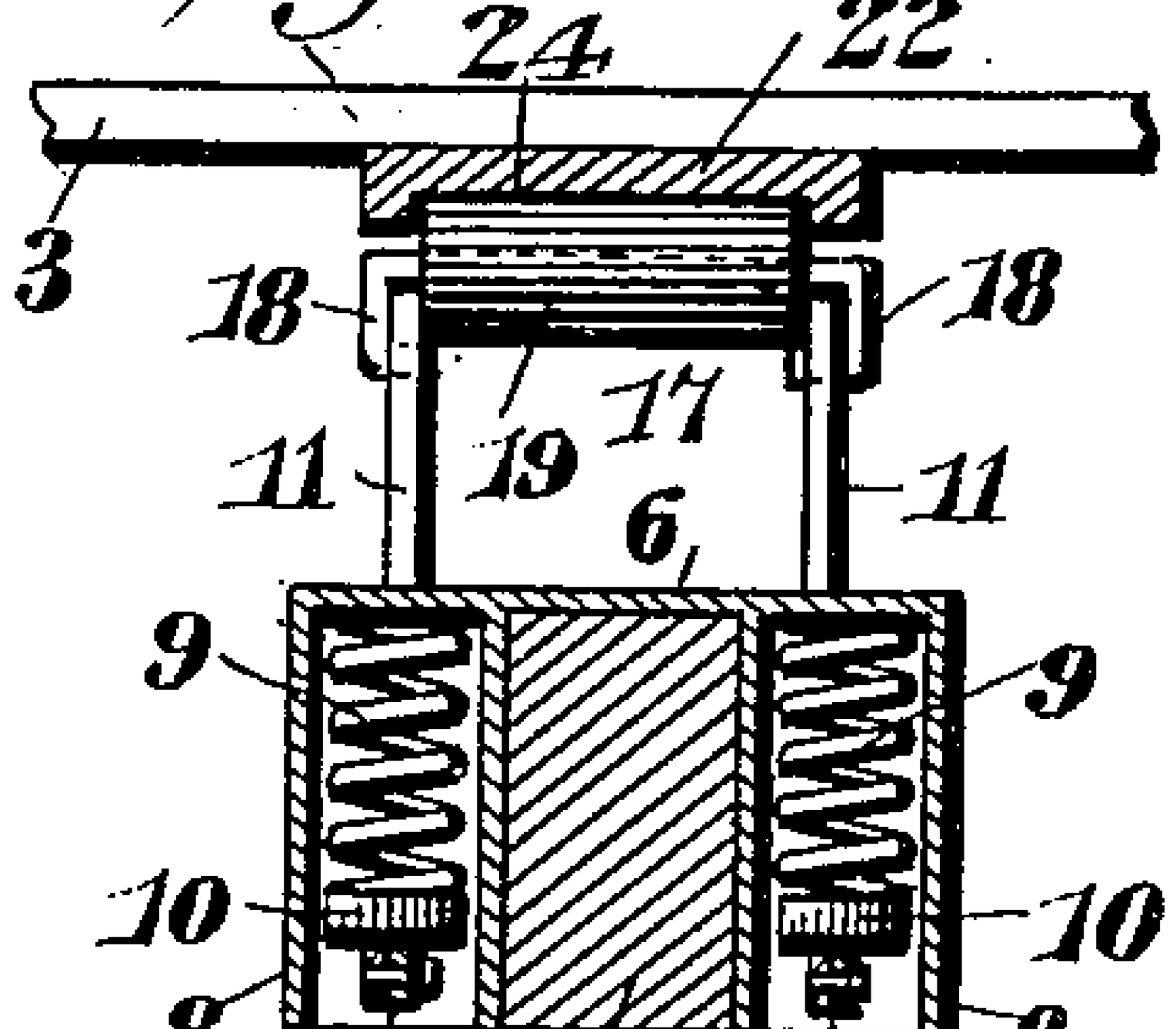


Fig. 4.

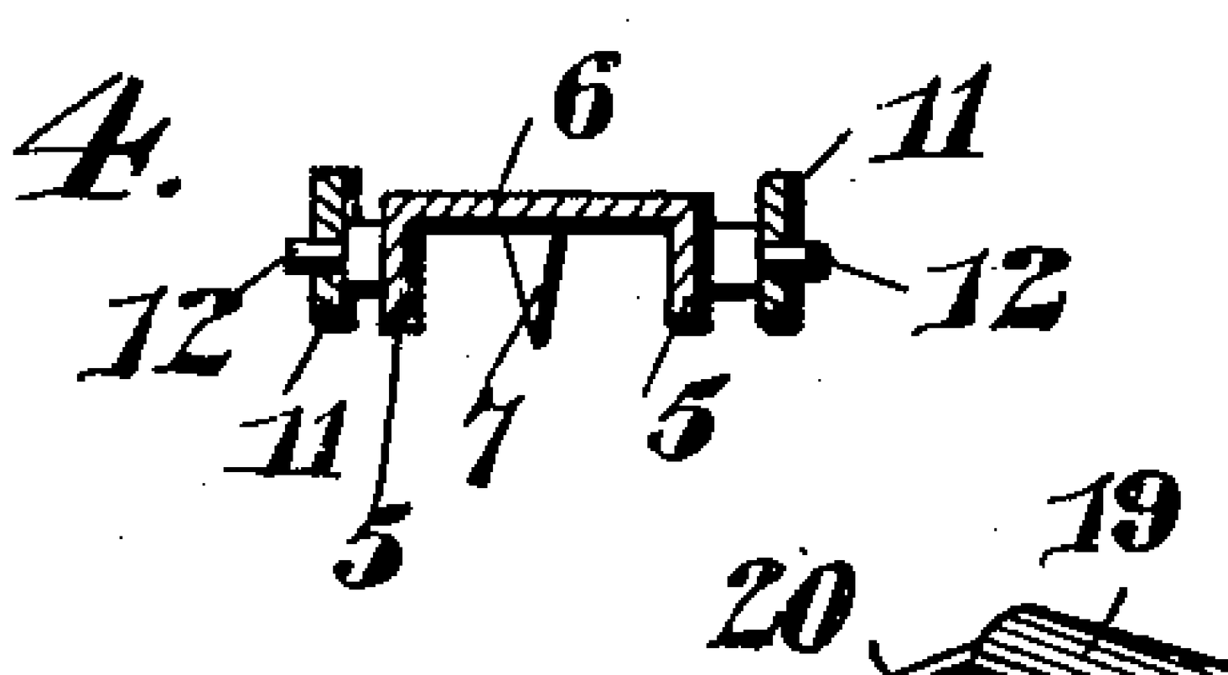
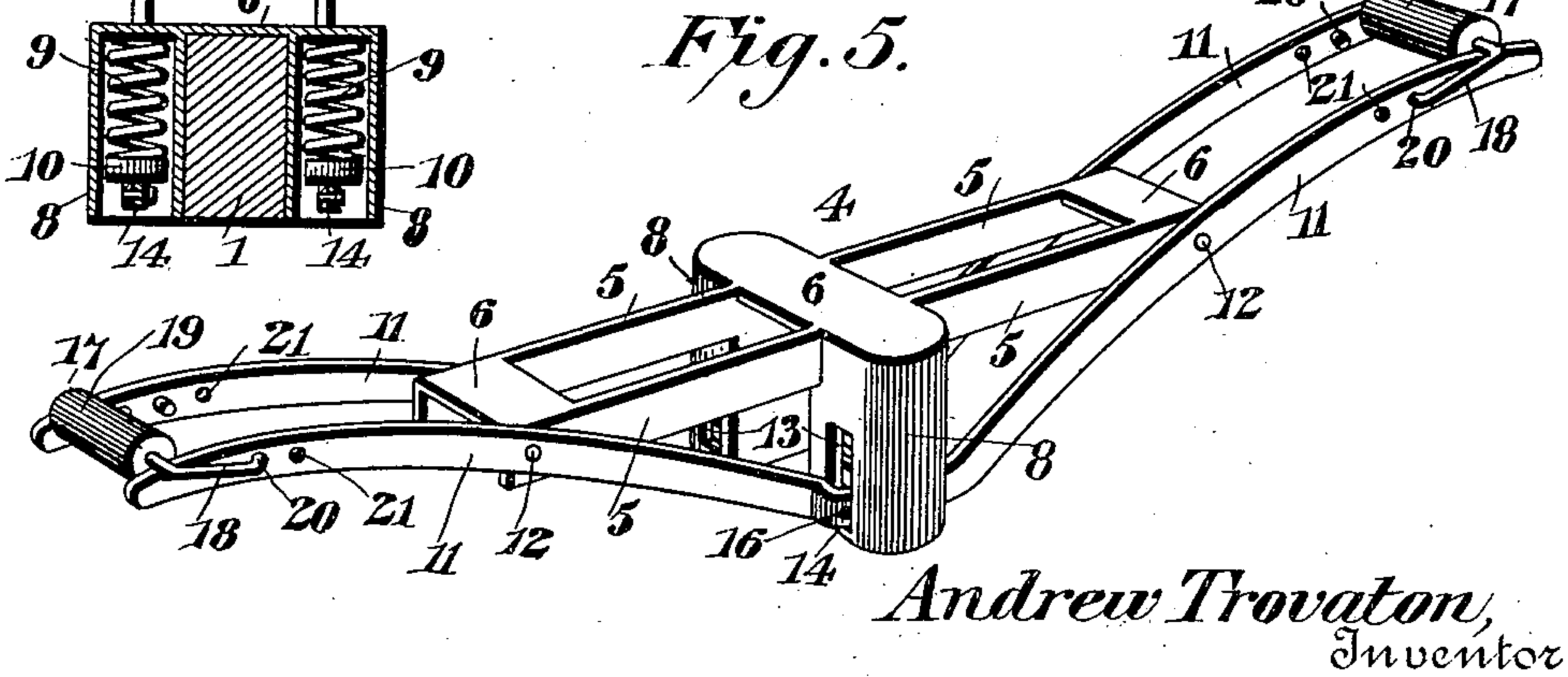


Fig. 5.



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UNITED STATES PATENT OFFICE.

ANDREW TROVATON, OF SLETTEN, MINNESOTA.

SPRING-SUPPORT FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 682,001, dated September 3, 1901.

Application filed September 8, 1900. Serial No. 29,457. (No model.)

To all whom it may concern:

Be it known that I, ANDREW TROVATON, a citizen of the United States, residing at Sletten, in the county of Polk and State of Minnesota, have invented a new and useful Spring-Support for Vehicles, of which the following is a specification.

This invention relates to vehicle-springs, and has special reference to that type of spring-supports for vehicles ordinarily termed "bolster-springs," which are associated with the bolster of the vehicle and constitute a spring-support for the body or bed of the vehicle.

To this end the invention contemplates a novel form of spring-support in the form of a detachable attachment for the bolster, while at the same time comprising positive and effective means for yieldingly supporting the wagon body or bed to insure the proper cushioning of the load.

The invention also has in view improved means for adjusting the operative elements of the support to meet the varying conditions of the load, whereby the leverage of the yielding elements may be varied to suit the load, whether light or heavy, and thus provide means for positively adjusting the spring attachment or support to suit the load within a wagon bed or body.

Another object is to provide an improved spring-support or bolster-spring having means for evenly supporting or sustaining the load in such a manner as to obviate the tendency of the same to tilt or shift on uneven roads, as is often the case in many types of spring-supports which yield to a greater extent at one side of the body or bed than at the other when the wagon or other vehicle is traveling over uneven roads.

With these and other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction and arrangement of parts hereinafter more fully described, illustrated, and claimed.

While the essential features of the invention are necessarily susceptible to some modification without departing from the spirit or scope thereof, still the preferred embodiment of the improvements is shown in the accompanying drawings, in which—

Figure 1 is an elevation, partly in section, of a spring-support for vehicles embodying the present invention and shown associated with the bolster of a vehicle and the body or bed. Fig. 2 is a vertical longitudinal sectional view of the construction shown in Fig. 1. Fig. 3 is a sectional view on the line 3 3 of Fig. 1. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 1. Fig. 5 is a detail in perspective of the complete spring-support or bolster-spring constituting the present invention.

Like numerals of reference designate corresponding parts in the several figures of the drawings.

In carrying out the present invention the same is designed to be associated with any ordinary form of vehicle employing the usual bolster, above which is arranged the body or bed of the vehicle; but inasmuch as the same possesses special utility in connection with the common type of wagons there is shown for illustrative purposes in the drawings an ordinary wagon-bolster 1, carrying at the opposite ends thereof the usual upstanding standards 2, between which is arranged the vertically-movable wagon body or bed 3. The present invention contemplates no change in these parts of a wagon or vehicle and is therefore capable of general application to vehicles, inasmuch as the spring attachment or support is designed to be interposed between the bolster and the body or bed to provide for the yielding support of the latter at all times and irrespective of the varying conditions of the load therein.

Referring more particularly to the preferred construction of the spring attachment or support, the working parts thereof are carried by a bolster-saddle 4, which is adapted to be placed astride the upper side of the bolster 1, so as to have a firm support thereon, while at the same time being readily removable and replaceable in order to carry out the idea of a detachable attachment for the bolster. This saddle may necessarily be constructed of different shapes so long as the general saddle formation is preserved to per-

mit of the same being placed astride the bolster; but a practical construction of the saddle is illustrated in the drawings, and essentially comprises an oblong rectangular skeleton casting substantially consisting of the parallel side flanges 5, adapted to fit upon opposite faces or sides of the bolster, and a plurality of intermediate cross-webs 6, formed integrally with the side flanges and connecting the same at different points. This provides a complete saddle open at its lower side, so as to fit over the bolster, and while auxiliary fastening means are not entirely necessary to hold the bolster-saddle 4 in place upon the bolster, still it is preferable to provide the same at the terminals thereof with the pendent holding-prongs 7, adapted to be forced or embedded in the bolster when the saddle is placed thereover, so as to obviate longitudinal movement or slipping thereof.

In addition to the elements described the saddle casting or body is provided at diametrically opposite sides and intermediate the ends thereof with the pendent tubular combined spring and guide casings 8. These guide and spring casings 8 are also formed integrally with the remainder of the saddle and constitute extended side portions which reach well down upon the sides of the bolster to secure a firmer hold thereon. The said tubular casings are closed at the top and accommodate therein the coiled cushion-springs 9, beneath the lower ends of which springs are arranged the movable pressure blocks or heads 10, beneath which pressure-blocks are loosely arranged the inner slidable interlocked ends of the pairs of pivotal supporting-levers 11, arranged upon opposite sides of and carried by the bolster-saddle 4.

In the practical construction of the spring attachment or support there are employed separate pairs of the pivotal supporting-levers 11, respectively, at opposite sides of the transverse center of the saddle. The levers 11 of each pair at opposite sides of the transverse center of the saddle are arranged in parallelism and are pivotally mounted intermediate their ends on the pivot studs or pins 12, carried by the bolster-saddle upon opposite sides and at or contiguous to the ends thereof, as plainly illustrated in Figs. 1 and 5 of the drawings. The said levers 11 are preferably of a segmental or arcuate form, so as to curve outwardly and upwardly from a point beneath the plane of the upper face of the saddle to a point a sufficient distance above the plane of such face to permit of the necessary play or vertical movement of the wagon body or bed under the varying conditions of its load. The inner lower ends of each pair of levers 11 project through and work in the vertically-disposed guide-slots 13, formed in the sides of the tubular casings 8, carried by the bolster-saddle, and said inner lower ends of the levers loosely engage beneath the pressure blocks or heads 10 at the lower ends of the cushion-springs 9. Those levers 11 which are at the same side of the bolster-saddle have a slidable interlocking connection, as at 14, which connection preferably consists of a pin 15 and slot 16, formed, respectively, in the separate lever ends. This slidable interlocking connection permits the inner ends of the levers beneath the springs to have a free vertical movement to accommodate the swinging movement of the levers occasioned by the pressure of the wagon body or bed thereon. The outer portions of each pair of levers at opposite sides of the transverse center of the bolster 7 have adjustably mounted thereon a shiftable rest 17, which is designed to be shifted toward and from the pivotal support 12 of the levers to change the leverage thereof according to the load within the wagon bed or body. Any suitable form of shiftable rest may be utilized in connection with each of said pairs of levers; but a practical construction is shown in the drawings and consists in providing each pair of levers with a shiftable rest comprising a swinging U-shaped bail 18, carrying a bearing-roller 19 and having pivotal connection at its extremities, as at 20, with any of a series of pivot-openings 21, formed in the outer ends of the levers. The swinging bail 18 of each rest is designed to have a swinging movement above the pair of levers carrying the same, thus permitting the bearing-roller 19, loosely supported thereby, to be swung to either side of the pivotal points 20 of the bail, thus carrying the roller to variable distances from the pivotal point 12 for the levers. The series of pivot-openings 21 also provide for a greater adjustment in this particular inasmuch as the swinging bail may be shifted from one pair of said openings to another. There is preferably associated with the shiftable rests 17 of the oppositely-located pairs of levers a vertically-movable rest-bar 22, lying above and parallel with the bolster. The said rest-bar is designed to receive thereon the wagon body or bed 3 and is preferably provided with notched extremities 23, slidably engaging the standards 2. The said bar 22 is also preferably provided, in the under side thereof contiguous to its opposite ends, with a plurality of channeled spaced seats 24, adapted to receive therein the bearing-rollers 19 in their different positions. When thrown to their extreme inner position, as shown in Fig. 2 of the drawings, the bearing-rollers 19 engage within the innermost channeled seats 24, and when swung outward to the position indicated in Fig. 1 engage in the outermost of said seats. It will be understood that with the shiftable rests or rollers thrown to their innermost position the leverage of the levers is lessened, so that the cushion-springs will sustain a greater load without extra strain than when the rests or rollers are shifted to their outermost position, in which position the leverage is necessarily increased and is

better adapted for light loads to quickly transfer the motion of the wagon bed or body to the cushions or cushion-springs.

From the foregoing it is thought that the construction of the herein-described spring attachment for vehicle-bolsters will be readily understood by those familiar with the art, and I would also have it understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

While the invention has been specially described as an attachment for a vehicle-bolster, still it will be understood that the invention should not be restricted in its scope to the employment of a removable saddle for the reason that the spring-pressed supporting-levers and the parts associated therewith may be fitted directly to the bolster as a permanent part thereof and still subserve the several important functions of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a support of the class described, the same comprising a bolster-saddle, supporting-levers mounted upon the saddle and both carrying similar rests to loosely support thereon the vehicle-body, but disconnected therefrom, and cushions also carried by the saddle and arranged to resist the movement of said levers, said cushions and levers constituting the sole spring or yielding support for the vehicle-body.

2. A spring-support for vehicles comprising a bolster-saddle, and separate pairs of duplicate spring-pressed levers, mounted upon the saddle respectively at opposite sides of the transverse center thereof, both pairs of levers carrying similar rests for the loose support of the vehicle-bed thereon, substantially as set forth.

3. A spring-support for vehicles comprising a bolster-saddle, and spring-pressed supporting-levers mounted upon the saddle and carrying rests shiftable to different positions on the levers.

4. A spring-support for vehicles comprising a bolster-saddle, and separate pairs of spring-pressed pivotal supporting-levers mounted on the saddle respectively at opposite sides of the transverse center thereof, each pair of levers carrying rests shiftable to different positions on the lever.

5. A support of the class described, comprising spring-pressed supporting-levers constituting a yielding support for the vehicle-body, body-supporting rests carried by said levers, and means for shifting said rests to different points on the levers to vary the leverage thereof, the rests having no connection with the vehicle-body.

6. A spring-support for vehicles comprising oppositely-arranged pairs of spring-pressed supporting-levers, each pair of levers carrying at the outer end thereof a shiftable rest consisting of a swinging bail and a bearing-roller supported thereon, substantially as described.

7. A spring-support for vehicles comprising a bolster-saddle, oppositely-arranged pairs of spring-pressed supporting-levers, and individual rests comprising means for varying the leverage of each pair of levers, said rests being carried by and adjustable upon the levers, substantially as described.

8. A spring-support for vehicles comprising a bolster-saddle carrying cushions, oppositely-located pairs of supporting-levers pivotally mounted upon the saddle and having their inner ends coöperating with said cushions, and a shiftable rest associated with the outer ends of each pair of levers, substantially as described.

9. A spring-support for vehicles comprising a bolster-saddle having oppositely-located tubular casings, cushion-springs housed within said casings, and separate pairs of supporting-levers arranged respectively at opposite sides of the transverse center of the saddle, and having their inner ends coöperating with the cushion-springs within said casings, the outer ends of said levers carrying similar rests for the loose support of the vehicle-body thereon, substantially as described.

10. A spring-support for vehicles comprising a bolster-saddle consisting of a skeleton casting open at the lower side and provided at an intermediate point upon opposite sides with pendent tubular casings, cushion-springs housed within said casings and opposite pairs of pivotal supporting-levers mounted upon the casting respectively at opposite sides of the transverse center thereof, the pair of levers at the same side of the saddle having loosely-interlocked ends loosely projecting into and engaging beneath the cushion-spring at that side, substantially as described.

11. A spring-support for vehicles comprising a bolster-saddle adapted to be placed astride the bolster of the vehicle, opposite pairs of spring-pressed pivotal supporting-levers pivotally mounted respectively upon opposite ends of the saddle, the levers of each pair being provided in their outer end portions with a plurality of pivot-openings, and a shiftable rest associated with each pair of levers and consisting of a U-shaped bail adjustably associated with the said pivot-openings and a bearing-roller supported by said bail.

12. A spring-support for vehicles comprising spring-pressed levers carrying shiftable rests at one side of their pivotal supports, and a rest-bar for the vehicle body or bed having spaced seats to engage with said rests in different positions.

13. A spring-support for vehicles comprising oppositely-arranged pivotal supporting-

levers carrying similar rests, adapted to loosely support thereon the vehicle-body, but disconnected therefrom, and cushion-springs associated with the inner ends of the levers to provide for a normal elevation of the ends carrying the rests, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ANDREW TROVATON.

Witnesses:
S. P. JOHNSON,
ED. HOWE.