

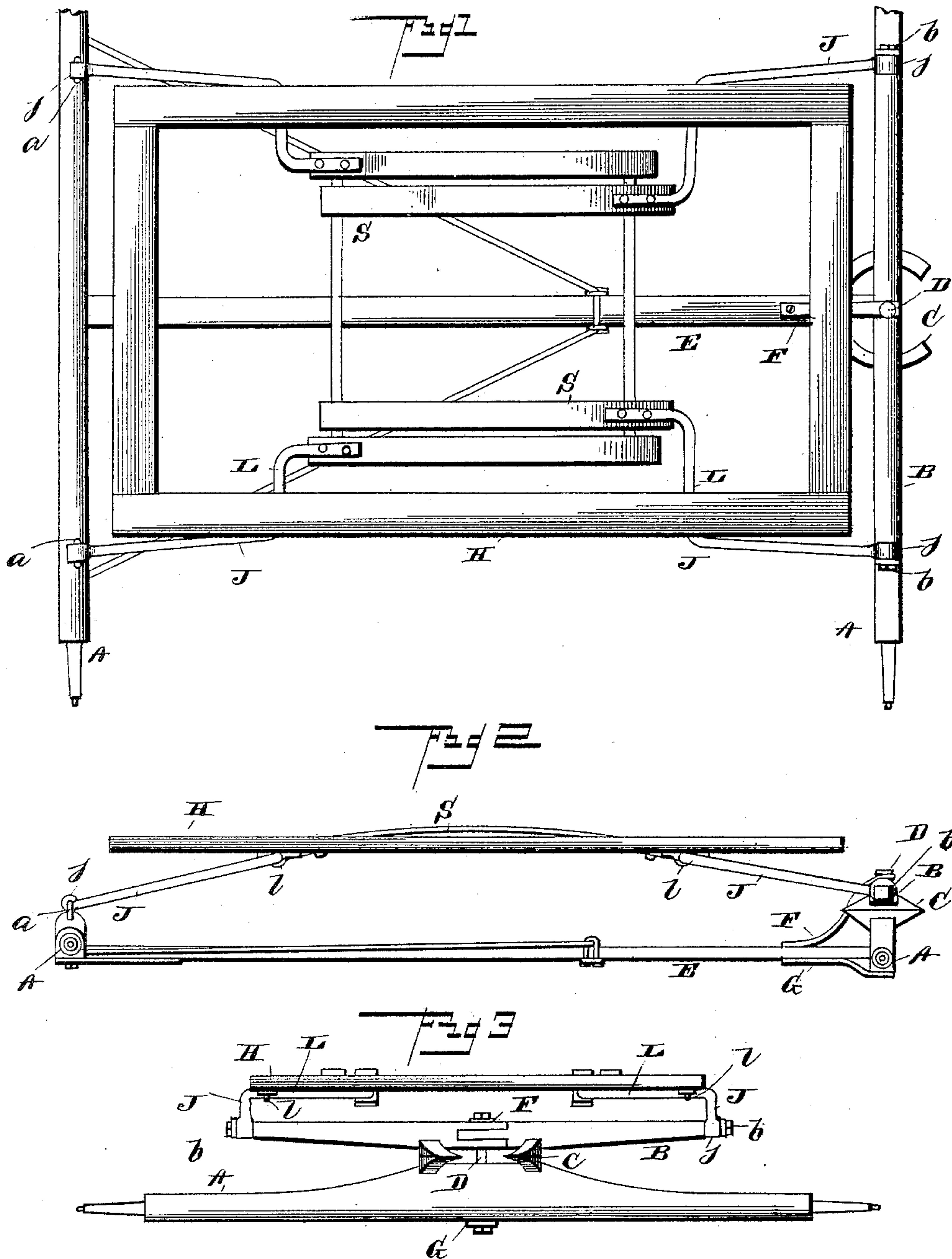
(No Model.)

3 Sheets—Sheet 1.

W. T. SAMPLE.
VEHICLE SPRING.

No. 450,704.

Patented Apr. 21, 1891.



Witnesses

John Irvine
W. L. Collamer

By his Attorneys,

Inventor

William T. Sample

C. A. Snow & Co.

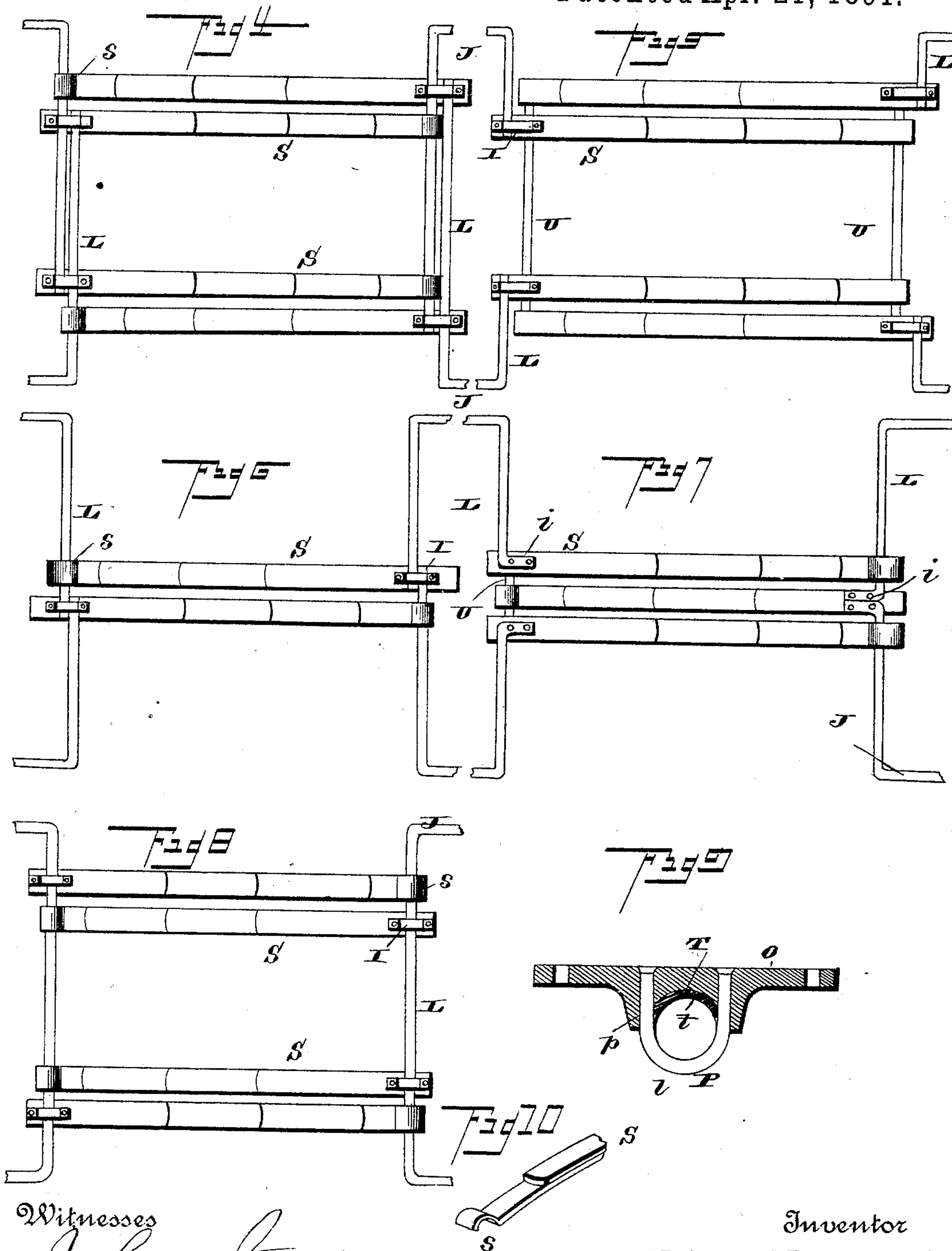
(No Model.)

3 Sheets—Sheet 2.

W. T. SAMPLE.
VEHICLE SPRING.

No. 450,704.

Patented Apr. 21, 1891.



Witnesses

John Murie
A. L. Hollamer

Inventor

William T. Sample

By his Attorneys

C. A. Snow & Co.

(No Model.)

3 Sheets—Sheet 3.

W. T. SAMPLE.
VEHICLE SPRING.

No. 450,704.

Patented Apr. 21, 1891.

Fig. 11.

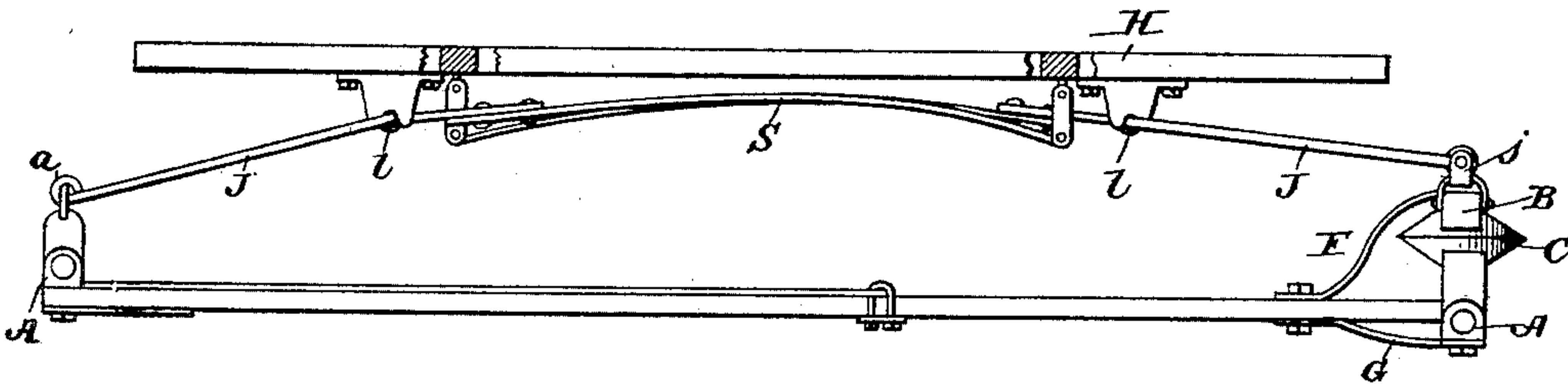


Fig. 12.

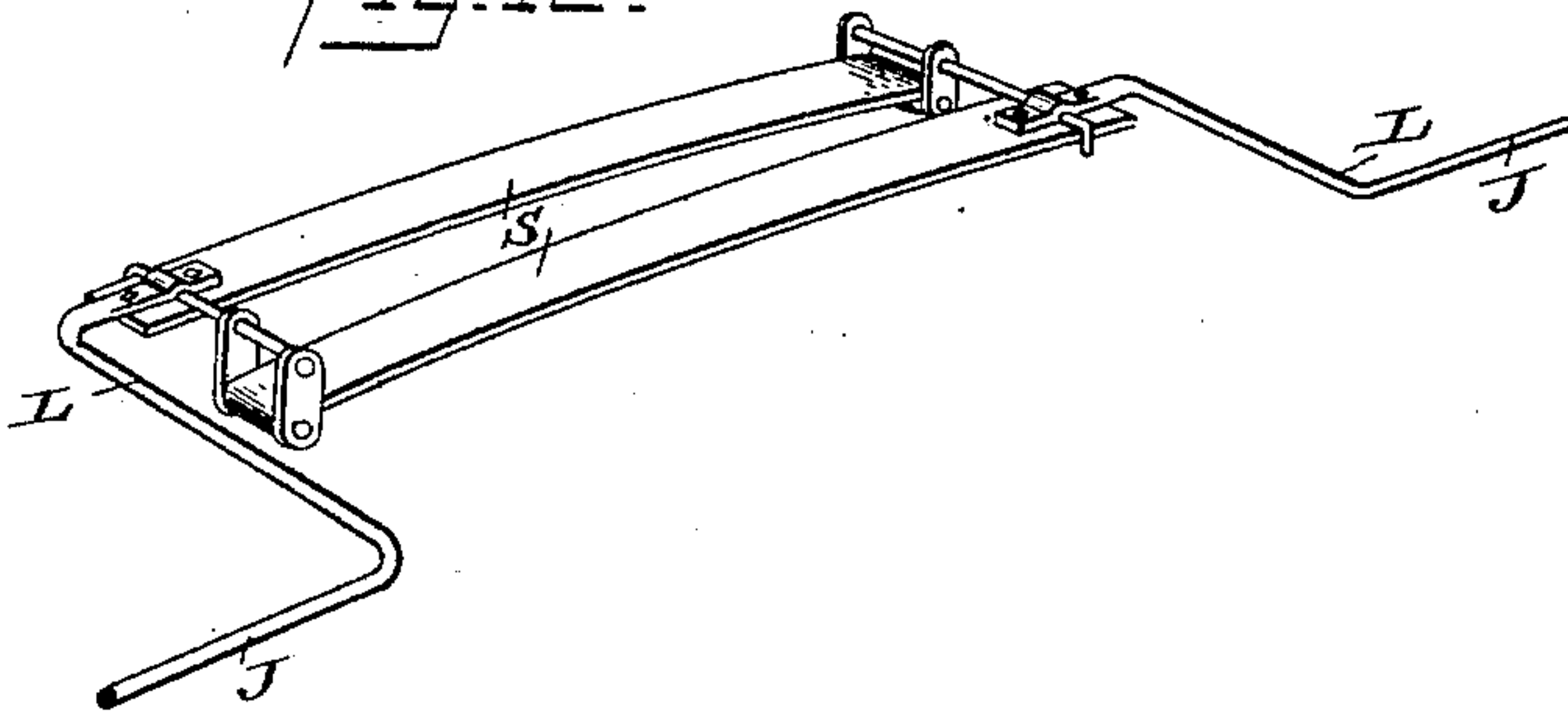
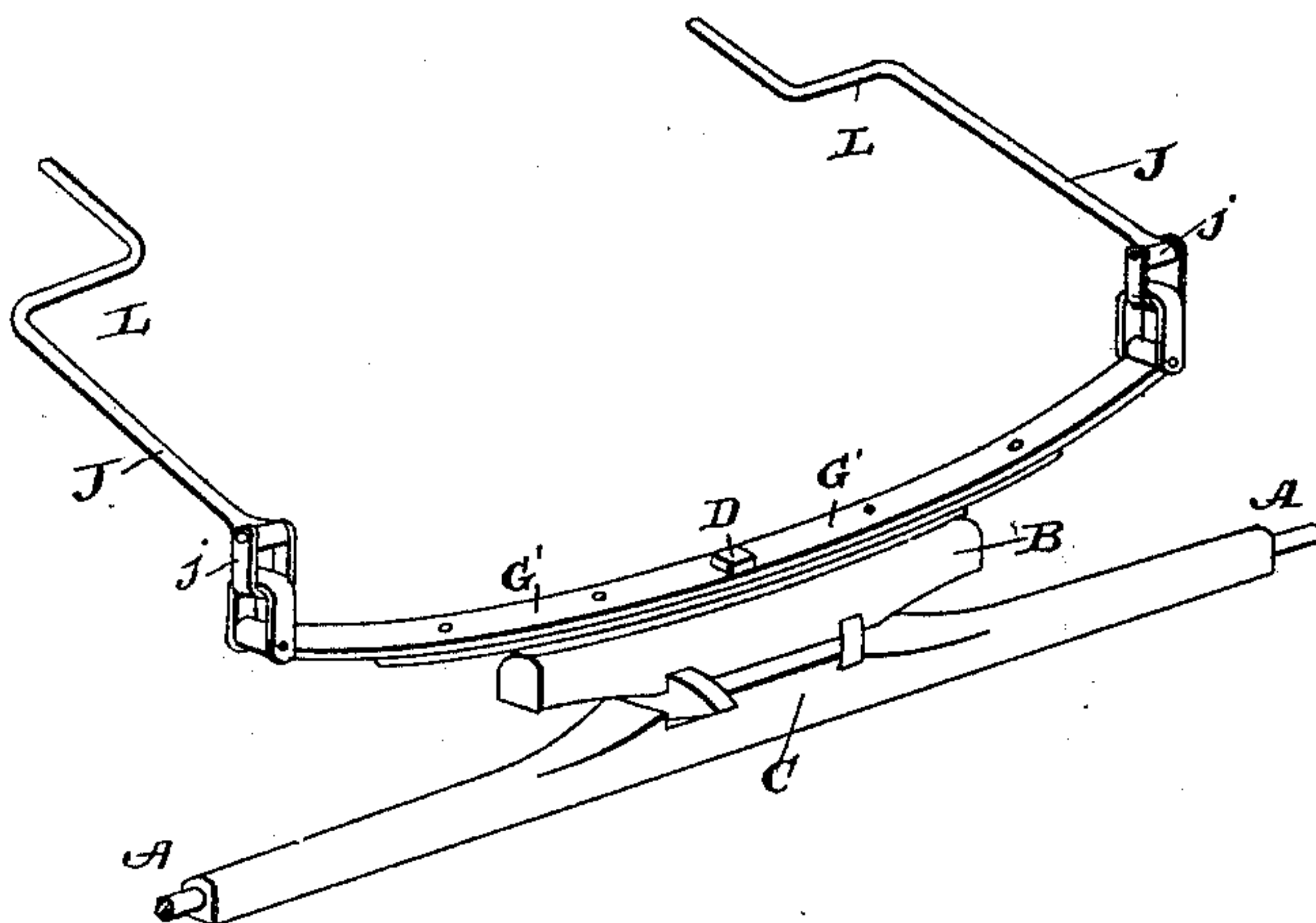


Fig 13.



Witnesses

Inventor

Jas. K. McLathran

William T. Sample

By his Attorneys,

M. L. Gollamer.

Chas. Snow & Co.

UNITED STATES PATENT OFFICE.

WILLIAM T. SAMPLE, OF GREENVILLE, PENNSYLVANIA.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 450,704, dated April 21, 1891.

Application filed March 19, 1890. Serial No. 344,532. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. SAMPLE, a citizen of the United States, residing at Greenville, in the county of Mercer and State of Pennsylvania, have invented a new and useful Vehicle-Spring, of which the following is a specification.

This invention relates to vehicle-springs of that class which are adapted to support the body of the vehicle on springs carried by said body and connected with the rear axle and with the outer ends of the bolster.

The object of the present invention is to provide a device which shall be simple in construction and cheap in manufacture, but which will perfectly cushion the wagon-body against vertical jolts, which will permit of no lateral or longitudinal motion of the body, and which is adapted to allow a comparatively short cramping of the vehicle. These objects I accomplish by my improved construction, which consists, essentially, of angular spring-jacks pivoted at their outer ends to the rear axle and to the bolster and near their inner ends to the under side of the wagon-body, as well as of springs arranged in any one of the several efficient ways shown and described and connecting the inner ends of the spring-jacks below the wagon-body.

The invention also consists of certain adjunctive and specific details of construction which assist in carrying out said object and several auxiliaries which serve to enhance the mechanical value of the completed structure, all as hereinafter more fully described, and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the axles, reach, spring-jacks, springs, and the frame of a wagon-body embodying my invention. Fig. 2 is a side elevation, and Fig. 3 a front elevation, of the same. Figs. 4 to 8 are plan views of various arrangements of the spring-jacks and springs. Fig. 9 is a central longitudinal section of the journal-box. Fig. 10 is a detail perspective view of the bent end of one spring. Fig. 11 is a side elevation showing the free ends of the springs supported by shackles from the frame. Fig. 12 is a perspective detail showing the free ends of the springs supported by shackles from the heavy ends of other springs. Fig. 13 is a perspec-

tive view of the front axle and bolster, showing the cross-spring and spring-jacks connected thereto.

Referring by letter to the said drawings, A designate the axles; B, the bolster; C, the fifth-wheel; D, the king-bolt; E, the reach; F, the upper, and G the lower, brace at the front end of the reach, both of which are pivoted on the king-bolt, and H the frame of a wagon-body, all as is well known in the art.

Coming now to the present invention, J designates spring-jacks having eyes *j* in their outer ends pivotally connected to loops *a* in the rear axle and to bolts *b* in the ends of the bolster. The bodies of these jacks pass inwardly and upwardly and have their upper ends bent, as at L, transversely to the length of the wagon-body. Eyes or journals *l* are provided on the under side of the frame H, in which the bars L of the jacks are journaled, and inside these eyes are located the springs S, as will be presently described. There are preferably four jacks, as shown in Figs. 1, 4, 5, and 8, although with a slight variation I can use three, as shown in Fig. 7, or even two, as shown in Fig. 6.

Each of the springs S consists, preferably, of a number of leaves built from its heavy to its light end in a manner which will be well understood by persons familiar with this art without more explicit explanation.

In the construction shown in Fig. 4 the bars L extend by each other or lap at their inner ends, and four springs S are used, the springs being connected at their heavy ends to both the bars L, as shown, and their points resting on the other bars. In Fig. 5 a supplemental bar U is used, which spans the space between the inner ends of the bars L, four springs being used with their heavy ends connected to the inner ends of the bars L and the outer ends of the supplemental bars U at their lapping points and the free ends of the springs resting upon the other supplemental bar. In Fig. 6 the bars L again lap by each other and but two springs are used, being connected the same as in Fig. 4. In Fig. 7 two bars L are used at one end of the wagon-body and one bar at the other end, or two bars rigidly connected at their inner ends, whereby they are made practically one. A spring S leads from this point forward and rests upon a supple-

mental bar U, which occupies the space between the inner ends of the front bars L, and two other springs S are connected to said inner ends, lead back, and rest upon the rear bar or bars. In Fig. 8 the inner bars L of the jacks J at each end of the vehicle are integrally connected—that is to say, the two rear jacks are in one piece and the two forward ones the same. I have shown in this figure four springs arranged practically the same as in Fig. 4, although the arrangement may be varied to a considerable extent without affecting the jacks J and their arms L. Where possible—for instance, as shown in Fig. 7—the inner ends of the bars L are bent at right angles to their bodies, and the springs S can be bolted or clipped directly to said inner ends *i*; but I find it generally advisable to employ the ordinary well-known clips I, which embrace two of the bars L, or one arm L and the supplemental bar U, and clamp them to the heavy end of a spring, as will be readily understood. The spring is thereby prevented from turning relatively to the bar L, although its free end can yield as the weight on the wagon-body presses the bar L downward. The free ends of the springs may merely rest upon other bars, as shown in Fig. 5, or they may be given a slight upward curvature, as shown at *s* in Fig. 10, to prevent their displacement from the bars upon which they rest, or they may be connected by shackles with the wagon-body, as shown in Fig. 11, or by shackles with the heavy ends of other bars; as shown in Fig. 12.

With the above construction when a weight is put upon the wagon-body the frame H is borne downwardly. The jacks J are thus turned about their outer pivoted ends and their bars L are pressed downwardly with the frame H. This movement naturally oscillates the bars L in their bearings on the under side of the frame H with a tendency to throw the free ends of the springs S downward; but, as such ends are sustained by the other bars L, this tendency is resisted and the wagon-body is given a yielding motion.

When this improved form of spring is employed upon very light buggies or upon vehicles intended for use in an excessively rough country, the temper of the springs S can be regulated accordingly, and when it is designed for use upon heavy wagons or those intended to carry large loads the number of the springs can be increased at will.

The bolster B is made in two sections closely fitted together and each accurately pivoted on the king-bolt D, as shown in Fig. 3. The upper member of the fifth-wheel C is integral with the metal bolster B and stands, preferably, at a considerable distance from the king-bolt, in order the better to support the outer ends of the bolster. When the wagon-body descends and the jacks J turn in their bearings beneath it, it will be obvious, because they normally stand at an angle, that the distance between their eyes *j* will be in-

creased, and this continual change of that distance is permitted by a very small movement of the two members of the bolster around their pivot on the king-bolt.

Although I have shown the eyes *j* in the spring-jacks as pivoted directly to the ends of the bolster and to loops *a* in the rear axle, yet it will be understood that they may be connected thereto by shackles, as shown in Fig. 11, or they may be connected to the outer ends of cross-springs G', carried by the bolster and rear axle, as partially shown in Fig. 13, without departing from the spirit of my invention.

The bars L are connected with the frame H, preferably by means of the journals *l*. (Shown in Fig. 9.) Each of these journals comprises a comparatively large metallic base O, having a transverse semicircular depression T at its center, the faces of this depression being provided with Babbitt metal or other good wearing material, as shown at *t*. A simple metallic loop of U shape is provided, and the ends of this loop P are passed upwardly through holes *p* at the sides of the semicircular groove T and riveted (around the bar L) against the upper face of the base. The latter is then secured in position by screws or bolts upon the under side of the frame H. This bearing I have found to give entire satisfaction when used in connection with my improved vehicle-spring. The pressure on the bearing is always upward. Therefore the loop P is sufficient for the lower half of the bearing, and this loop permits any dust or extraneous matter to drop out of the bearing, as will be readily understood.

The construction of the bolster, jacks, and springs and their manners of connection, together with the other details of this invention, are susceptible of a considerable degree of variation without departing from the spirit of this invention, and I therefore do not limit myself to what is specifically set forth above; but,

Having thus described my invention, what I claim as the essential features thereof is—

1. The combination, with the bolster and rear axle, of the jacks J, connected to said bolster and axle and leading inwardly and upwardly therefrom, the inner ends of said jacks being bent beneath the wagon-body into transverse bars L, and springs S, rigidly connected at one end to said bars and loosely at their other ends to other of said bars, substantially as described.

2. The combination, with the bolster and rear axle, of the jacks J, pivotally connected to said bolster and axle, leading upwardly and inwardly therefrom, and then bent into transverse bars L beneath the wagon-body, journal-boxes carried by the body, in which the bars L are journaled, and springs S, rigidly connected at one end to certain of said bars and loosely at their other ends to other of said bars and extending longitudinally beneath the body, substantially as described.

3. The combination, with the front and rear axle connected by a reach, the king-bolt, and the bolster B, consisting of two members having interlocking inner ends pivoted upon said king-bolt, and the fifth-wheel formed integral with said bolster, of spring-jacks pivotally connected to the outer ends of the bolster and to eyes in the rear axle and leading thence upwardly and inwardly to the wagon-body, and springs retaining the jacks normally in this position, substantially as described.

4. The combination, with the bolster and rear axle, of the jacks J, pivoted to said bolster and axle, leading upwardly and inwardly therefrom, and then bent into transverse bars L, journaled beneath the frame H, the supplemental bars U between the inner ends of the transverse arms, and the longitudinal springs S, each of which is clamped at one end to one transverse bar and to the supplemental bar and rests at its other end upon the other supplemental bar, substantially as described.

5. In a vehicle, the combination, with the bar L, journaled beneath the body H, and the spring-jack J, leading from the outer end of

said bar and pivotally connected with and supported by the running-gear, of the spring S, rigidly secured at one end to said bar and provided with an upwardly-curved portion near its other end, and a second bar upon which the free curved end of the spring rests, substantially as described.

6. In a vehicle, the combination, with the rear axle and bolster and the springs G' thereon, of the jacks J, linked to the ends of said springs and leading inwardly and upwardly therefrom, the inner ends of said jacks being bent beneath the wagon-body into transverse bars L, and springs S, rigidly connected at one end to said bars and loosely at their other ends to other of said bars, substantially as described.

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

WILLIAM T. SAMPLE.

Witnesses:

D. C. MOYER,
WM. WIMER.