

(No Model.)

H. R. RAUDENBUSH.
SPRING FOR VEHICLES.

No. 482,385.

Patented Sept. 13, 1892.

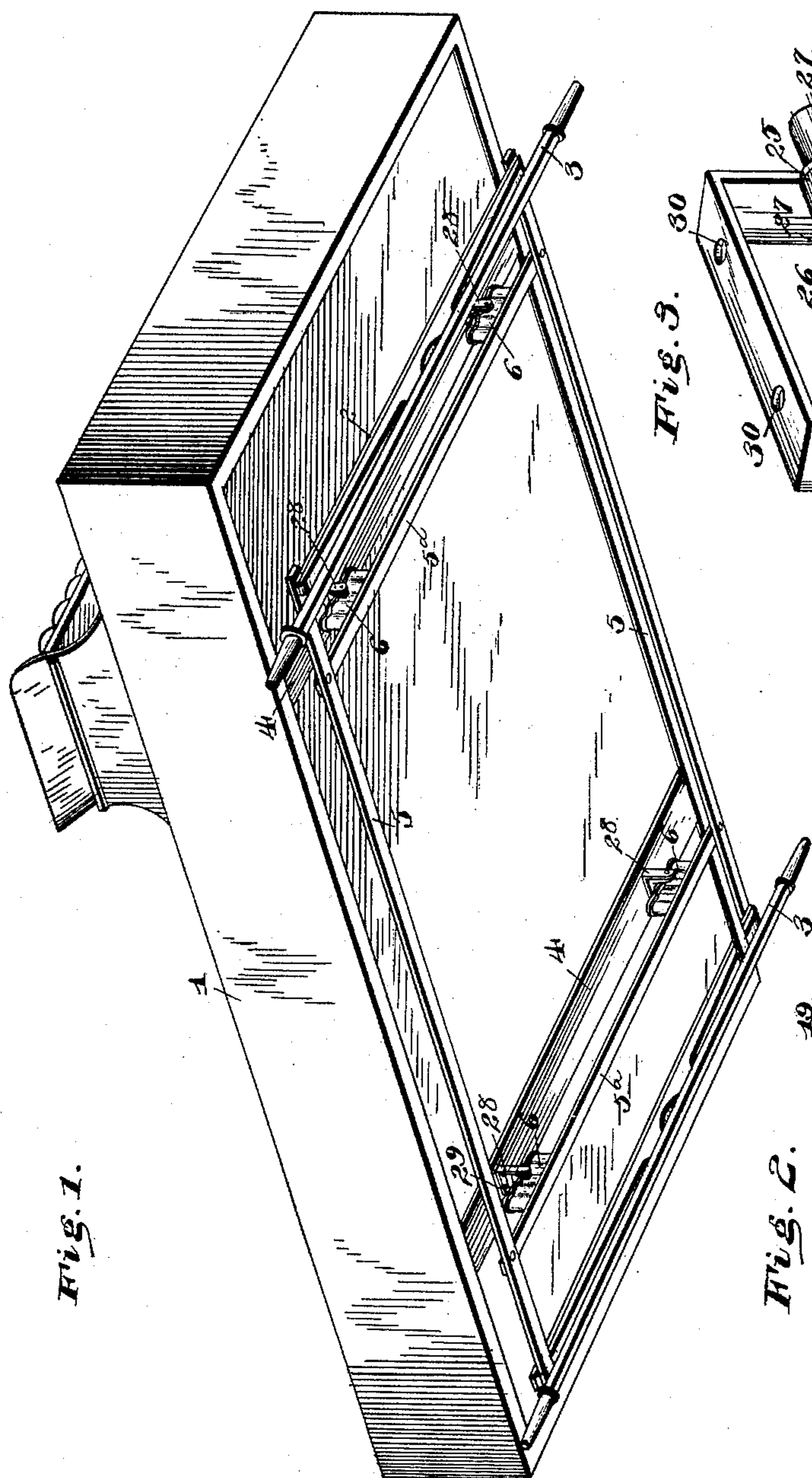


Fig. 1.

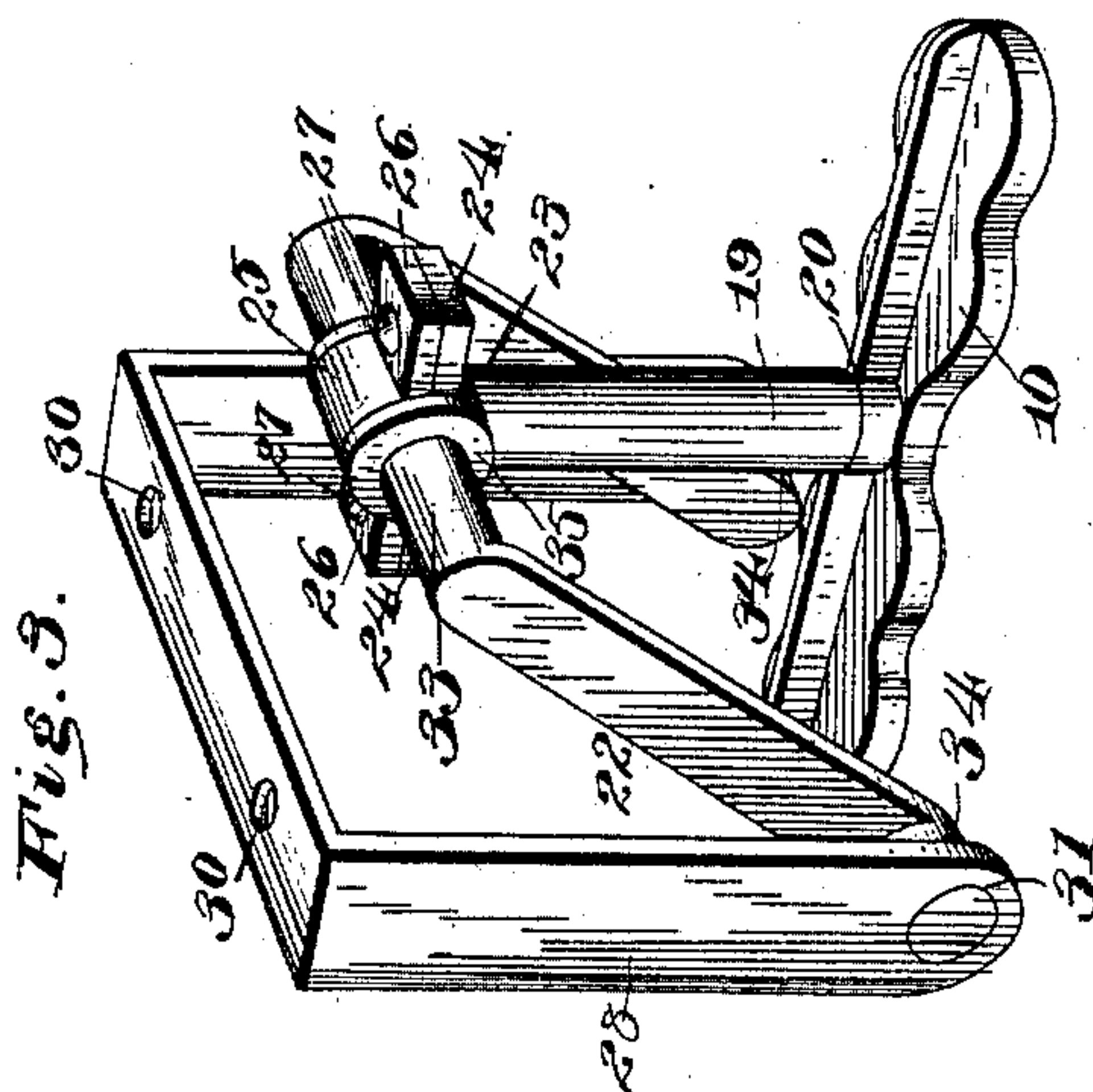


Fig. 3.

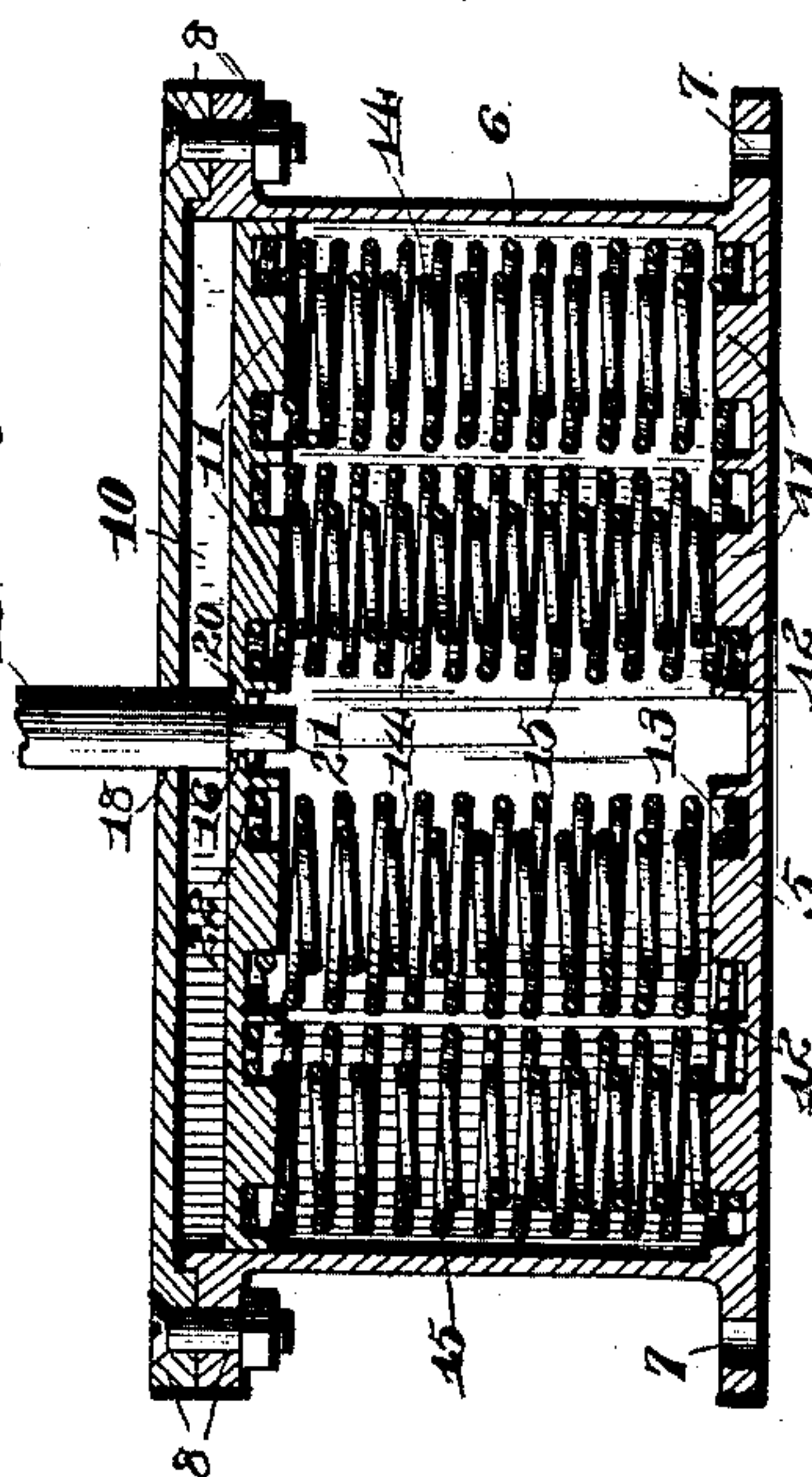


Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

HARRY RUHLE RAUDENBUSH, OF VICKSBURG, PENNSYLVANIA.

SPRING FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 482,385, dated September 13, 1892.

Application filed June 23, 1892. Serial No. 437,752. (No model.)

To all whom it may concern:

Be it known that I, HARRY RUHLE RAUDENBUSH, a citizen of the United States, residing at Vicksburg, in the county of Union and State of Pennsylvania, have invented a new and useful Spring for Vehicles, of which the following is a specification.

My invention relates to improvements in vehicle-springs, and is intended more particularly as an improvement upon United States Patent No. 463,648, granted me November 24, 1891.

The objects of my invention are to produce a cheap and simple construction of springs especially adapted for buggies and other light vehicles, and to be so constructed as to produce a light easy spring the movement of which is vertical, and to provide for any side play or motion that the undulations of the road may produce.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective from the underside of a buggy-body provided with springs constructed in accordance with my invention. Fig. 2 is a detail in longitudinal section of one of the springs or boxes. Fig. 3 is a detail in perspective of the follower-plate and the shackle.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the buggy or vehicle-body, which is of the usual construction and is preferably provided upon its under side with transverse bolsters 2 near the front and rear ends of the same, and 3 designates the front and rear axles, upon whose upper sides are secured the facing-strips 4 and which are secured to the bolsters, as usual.

The axles are connected by a pair of longitudinally-disposed side bars 5, and these are connected near the axles by intermediate transverse strips 5^a, between which, near their ends and the usual facing-strips secured to the under side of the body, are my improved spring-boxes, which I will now proceed to describe.

The box is cast and consists of a bottom 5, which is surrounded by a wall 6, which in plan has somewhat the appearance of an elongated ellipse.

The upper opposite ends of the wall and the ends of the bottom have projecting therefrom vertically-opposite pairs of perforated lugs or ears 7, the lower ones being bolted to the facing-strips of the axles, while the upper ones pass through corresponding lugs 8, formed at the extremities of a cap 9, of such formation as to adapt it to fit snugly, though removably, upon the upper end of the box.

Within the box there is located a follower-plate 11, the under side of which is provided with short cylindrical lugs 11'. These cylindrical lugs are in this instance four in number, two being arranged at each side of the center of the follower-plate, though, if desired, their number may be increased or decreased. Similar lugs 11' are formed upon the upper side of the bottom 5 of the box, and the lugs of both follower-plate and bottom are surrounded by annular flanges 12, which combine with the lugs to form an intermediate annular space or seat 13. Snugly encircling at their upper and lower ends the lugs 11' of the follower-plate and bottom are intermediate coiled springs 14, and inclosed at their upper and lower ends by the annular flanges and encircling the springs 14 are a series of coiled springs 15. The springs 15 are of greater diameter than the springs 14, and are preferably coiled in an opposite direction to the springs 14, so that their coils cannot intermesh or become tangled.

The follower-plate is provided at its center with a cylindrical flanged opening 16, and a corresponding opening 18 is formed in the cap 9. By reason of the annular flanges with which the bottom is provided it will be seen that the surrounding wall of the box is sinuous or convoluted, and thereby the external contours of the flanges are somewhat followed, the wall thus forming a series of pockets, in which the sets of springs are located and which would prevent or obviate any liability of their leaving their positions.

19 designates a post the lower end of which is slightly reduced to form a shoulder 20, and below the same a tenon 21, the latter being cylindrical, and after passing through the opening 18 of the cap taking through the opening 16 of the follower-plate, the shoulder resting upon the edge of the latter opening.

The post is prevented from withdrawal by any suitable stop located upon the lower end of the tenon—such, for instance, as a pin 22, which I have herein illustrated. The upper
 5 end of the post is flared to form a head and in the same a half-bearing 23, at each side of which the head is perforated, forming securing-lugs 24. A clip 25, terminating in
 10 lugs 26, is mounted upon the head of the post and completes the bearing, bolts 27 being passed through the perforations in the clip and the lug at opposite sides of the head for the purpose of separably securing the two together.

15 A shackle of peculiar construction, and which I will now proceed to explain, serves to connect the four inverted-U-shaped hangers 28, which are secured to the bolsters of the vehicle by means of bolts 29, passed through
 20 openings 30, formed in the upper transverse portion of said frames, such a frame being located adjacent to the four corners of the vehicle-body. These hangers have their lower depending ends provided with transversely-
 25 opposite bearing perforations or openings 31.

U-shaped bails, comprising opposite terminals 32 and cylindrical transverse connecting portions 33, are employed in connection with
 30 them to the hangers. The lower extremities of the terminals 32 are laterally disposed and rounded to form cylindrical journals 34, each pair of which takes into the bearing-perforations 31 of the inverted-U-shaped hangers,
 35 whereby a loose connection is formed, as will be obvious. The cylindrical portions 33 of the bails are provided at opposite sides of their centers with annular bearing-bosses 35, and when said cylindrical portions take into
 40 the bearings at the upper ends of the posts the bosses take loosely at opposite sides of said bearings and maintain the bails in position.

As before stated, a spring-box thus constructed is located near each of the four corners of the vehicle, and each spring-box is
 45 connected to the body of the vehicle, preferably by the described construction of shackle, though I do not limit my invention, strictly,
 50 to the employment of such a shackle, but hold that I may employ other constructions without sacrificing the benefits of my spring.

From the foregoing description, in connection with the accompanying drawings, it will
 55 be seen that I have provided a cheap, simple, and convenient spring especially adapted for lending ease and comfort, and therefore for use upon buggies and other vehicles; that the springs themselves are protected, whereby
 60 their elasticity is preserved; that their movements are vertical; that side-play is provided for, and that in case of breakage of the spring the broken part may be readily removed and a new one substituted.

65 Having described my invention, what I claim is—

1. The combination, with the vehicle-body

and front and rear axles, of the series of intermediate spring-boxes, each of which consists of a metal box having an opening in its
 70 top, an intermediate follower-plate, a post extending through the opening in the top and connected to the follower-plate, and sets of double springs coiled in reverse directions and interposed between the follower-plate and bot-
 75 tom of the box, substantially as specified.

2. The combination, with the body and axle, of the metal box secured to the axle, the superimposed cover, the intermediate follower-plate, the under side of the follower-plate
 80 and the upper side of the bottom being provided with a series of vertically-opposite cylindrical lugs and encircling flanges, coiled springs located between the follower-plate and bottom of the box and encircling at their
 85 upper and lower ends said lugs, the series of external springs coiled at variance with and encircling the first-mentioned springs and having their ends encompassed by the annular flanges, the post passed through the top
 90 of the box and secured to the follower-plate, and connections between the post and body, substantially as specified.

3. The combination, with the vehicle-body and axle, of the intermediate box having cor-
 95 rugated sides, a bottom having circular flanges, opposite end lugs having perforations and cylindrical lugs located in and concentric with the flanges, perforated lugs at the upper edge of the box, a flanged cover fitting the
 100 box and provided with an opening-bolt connecting the cover with the upper lug and bolts connecting the lower lug with the axle, an intermediate centrally-perforated follower-plate the under side of which is provided
 105 with depending lugs encircled by flanges, sets of inner and outer reversely-coiled springs encircling the lugs of the plate and bottom and encompassed by the flanges of the same, the vertical post passing loosely through an
 110 opening in the cover and having its lower end reduced to form a tenon passing through the follower-plate and secured against withdrawal, and a shackle connecting the upper end of the post with the body, substantially
 115 as specified.

4. The combination, with the body having the facing-strips, the axles, the side-connecting bars, the transverse bars, and the depending U-
 120 shaped hangers secured to the body near the corners thereof and provided near their lower ends with transversely-opposite bearing-openings, of the series of boxes secured to the transverse bars and provided with perforated covers, follower-plates mounted in the boxes,
 125 coiled springs interposed between the bottoms of the boxes and the under sides of the follower-plates, posts extending through the openings in the cover and secured at their lower ends to the follower-plates, said posts
 130 having their upper ends terminating in transverse heads forming opposite perforated lugs and intermediate bearings, clips surmounting the heads, bolted thereto and completing the

bearings, and inverted-U-shaped bails having their transverse cylindrical portions loosely journaled in the bearings and their lower extremities oppositely and laterally disposed to form journal-lugs for engaging with the openings of the inverted-U-shaped hangers, substantially as specified.

In testimony that I claim the foregoing as

my own I have hereto affixed my signature in the presence of witnesses.

HARRY RUHLE RAUDENBUSH.

Witnesses:

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WM. R. FOLLMER,
H. O. KUNKLE.