

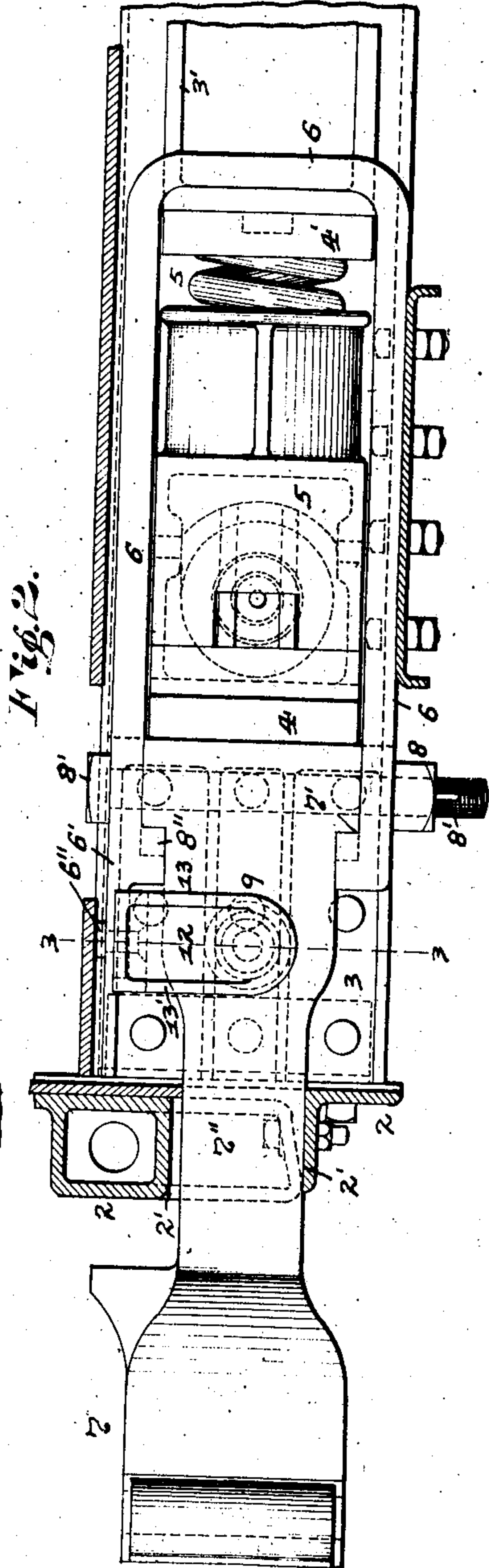
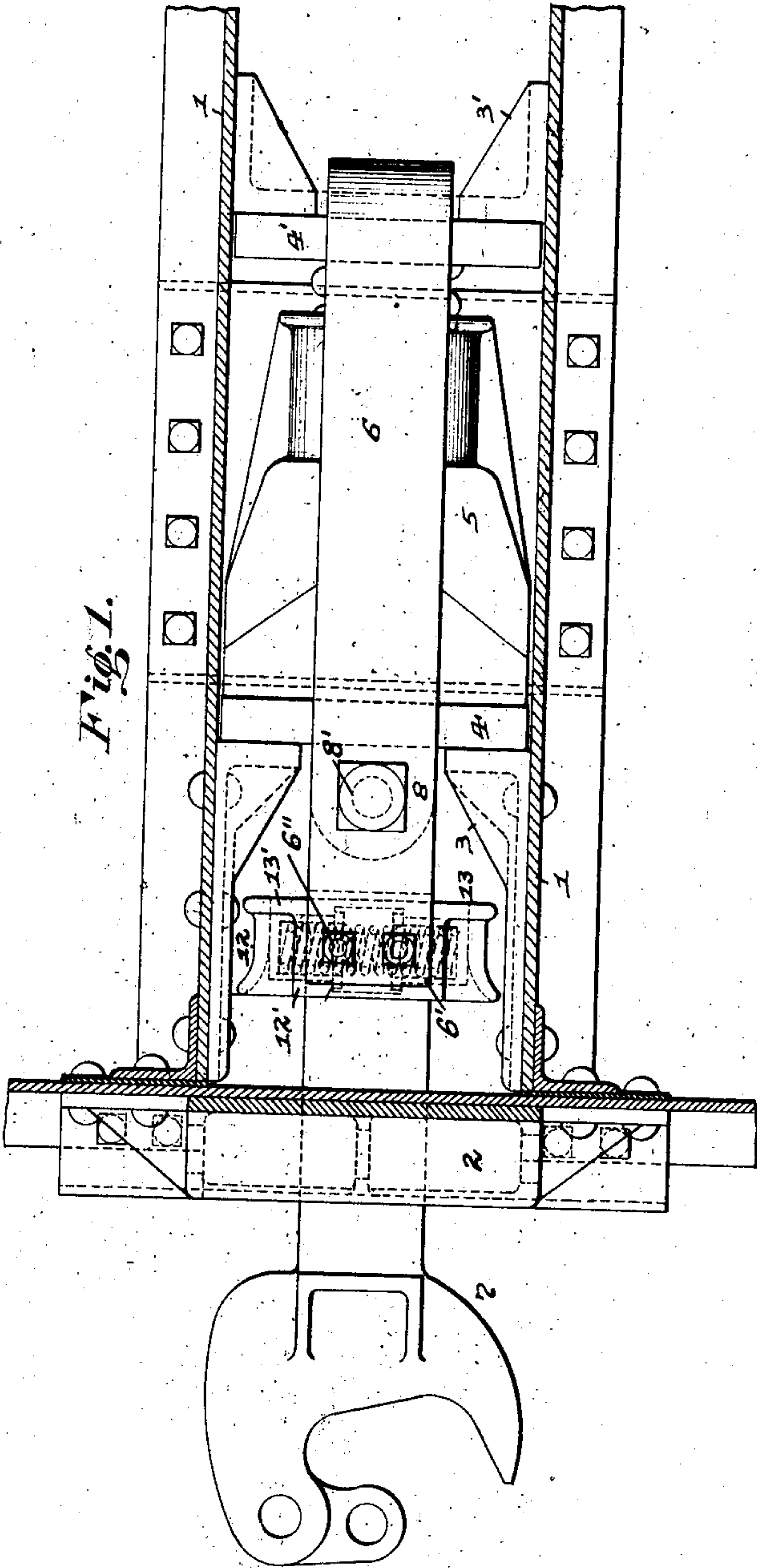
No. 834,833.

PATENTED OCT. 30, 1906.

L. P. MATHER,
CAR COUPLING.

APPLICATION FILED JULY 24, 1905.

2 SHEETS—SHEET 1.



WITNESSES

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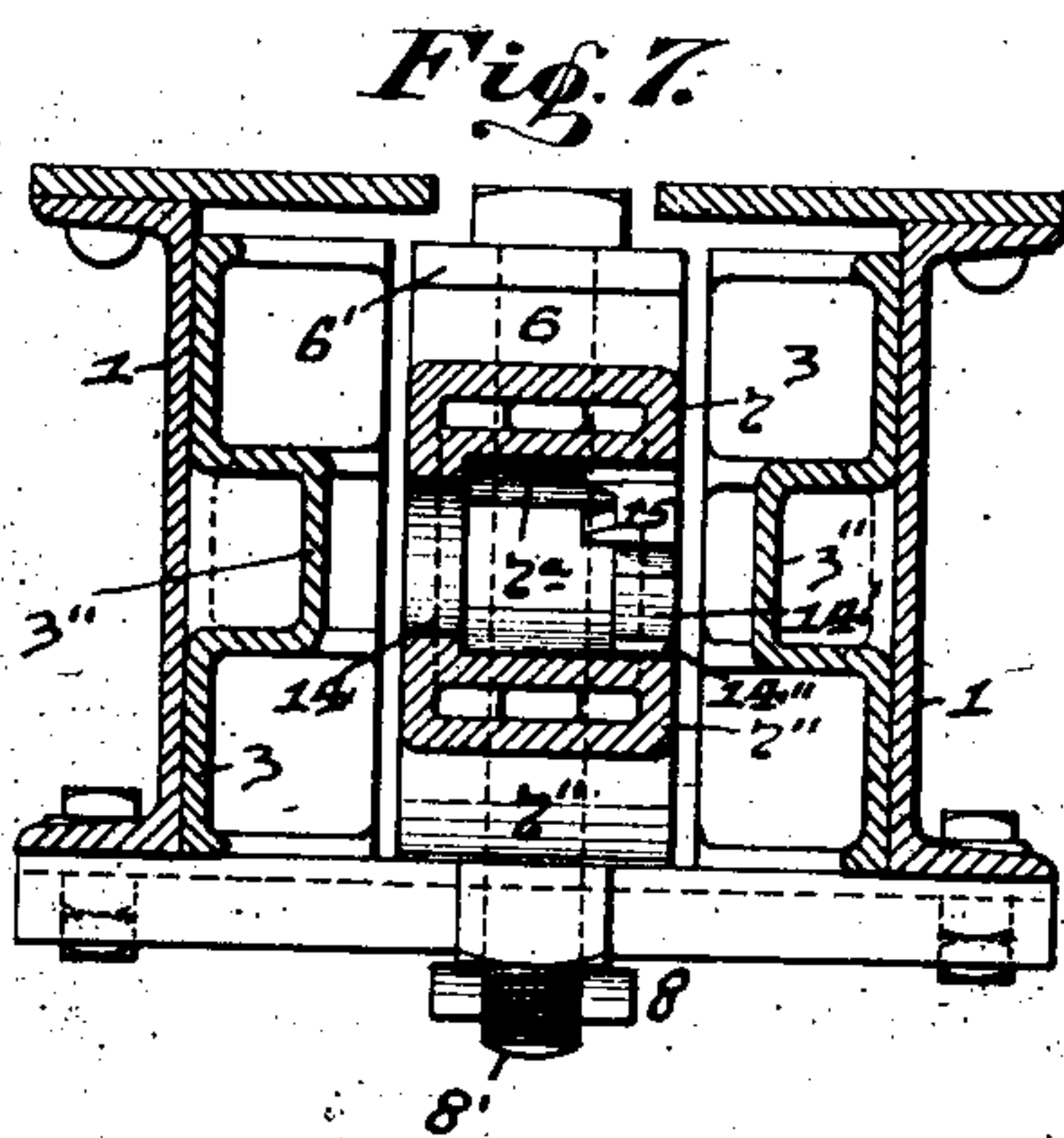
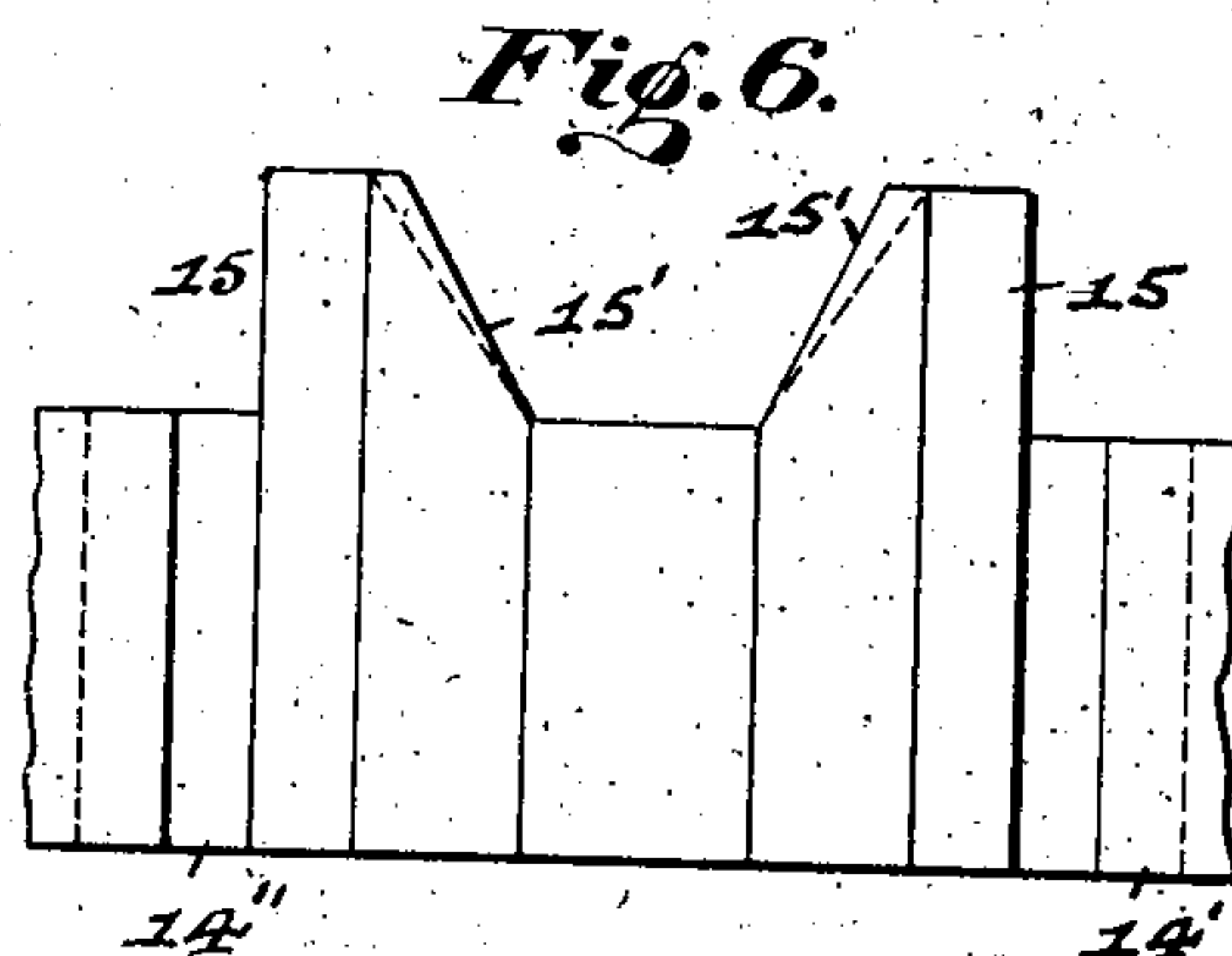
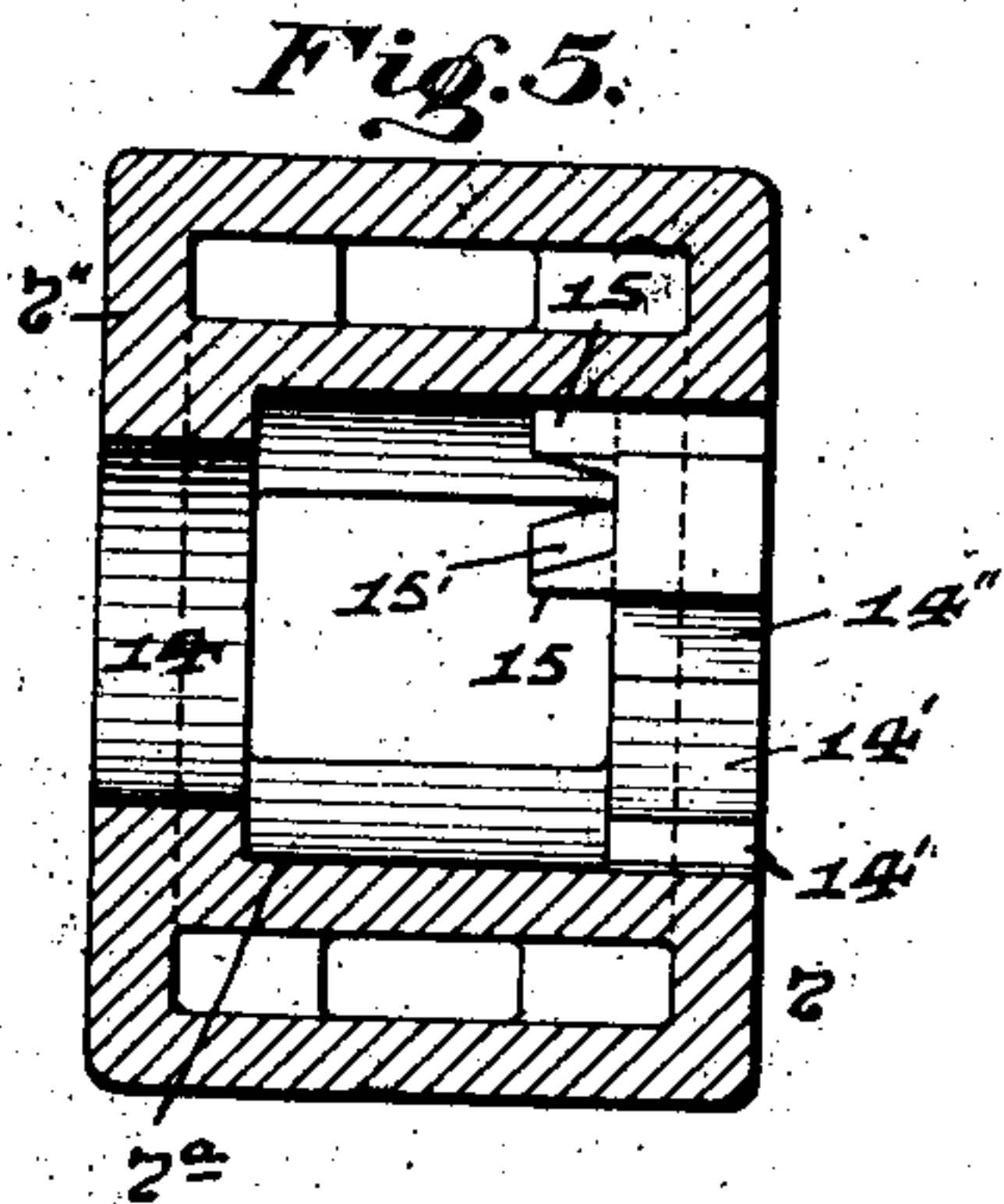
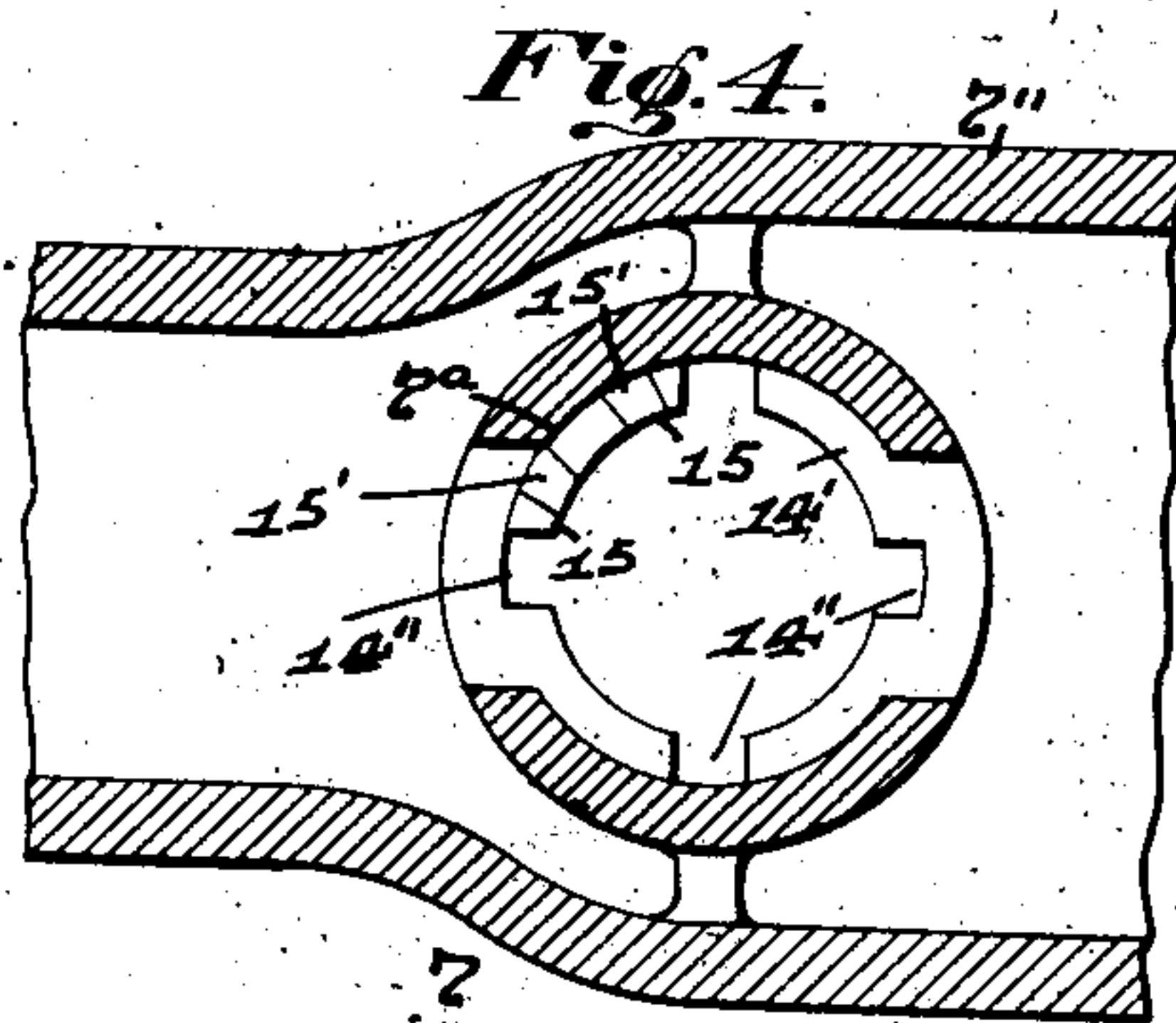
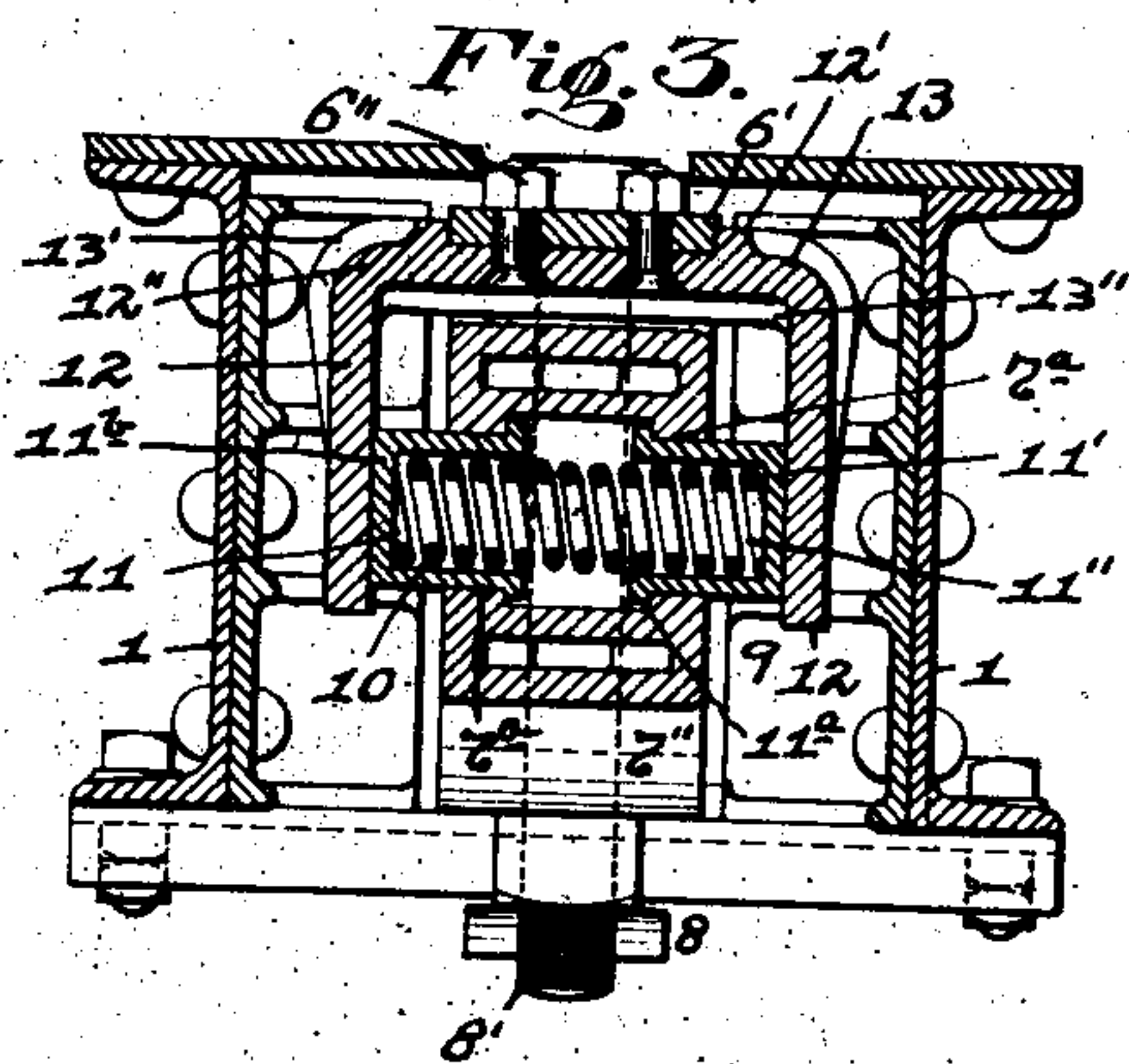
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2 SHEETS—SHEET 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

LEWIS P. MATHER, OF PITTSBURG, PENNSYLVANIA.

CAR-COUPLING.

No. 834,833.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed July 24, 1905. Serial No. 270,947.

To all whom it may concern:

Be it known that I, LEWIS P. MATHER, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Car-Couplings; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to car-couplings, and especially to the application of the same to the cars.

One of the objects of my invention is to provide a coupler-fastening by which the coupler is allowed to swing radially when the car passes a curve without, however, subjecting the pivot-pin to any shearing strains; and another object of my invention is to provide effective, simple, and inexpensive means by which the coupler is brought back and held in a central position whenever the cars are uncoupled.

The above objects are accomplished by a peculiar construction and arrangement of details, which will be more fully described hereinafter, reference being had to the accompanying drawings, in which—

Like symbols herein always represent the same details in the drawings regardless to what figures or views they may appear.

Figure 1 is a top elevation of my improved car-coupler with some of the connecting parts shown in section. Fig. 2 is a side elevation of the coupler and showing some of the parts in section. Fig. 3 is a cross-section of the coupler on the line 3 3, Fig. 2. Figs. 4, 5, and 6 are enlarged views of details of the coupler. Fig. 7 is a like section such as is shown in Fig. 3 for showing another modification of the device.

The draft-sills 1 are shown to be composed of rolled channel-bars and are arranged in the usual way by connecting the end sill 2 with the body-bolster. (Not shown.)

The draft-lugs 3 3' are shown to be of a casting and are securely attached to the draft-sills 1, while the followers 4 4' rest against these draft-lugs from the inside and are held in place by the draft-rigging 5 in the usual way.

The draw-bar yoke 6 and the coupler 7 are also located and arranged in the usual way, with the exception that these two details are not united together, but are connected with each other by means of a pivot 8. The yoke

6 is prevented from moving laterally by the draft-lugs 3, while the end sill 2 is cut out, as at 2', so as to allow lateral freedom for the coupler 7 to swing whenever the cars pass curves. The yoke 6 in order to prevent the pivot-pin 8' from being sheared off whenever the coupler is under tension is offset at the end, so as to form a shoulder 8'', against which a similar shoulder 7' on the coupler abuts. There are two such pairs of shoulders, one at the top and one at the bottom, as shown in Fig. 2, and in order not to interfere with the swinging of the coupler the shoulders 8'' on the inside have been made concave and the shoulders 7' convex, while both being curved to the same radius and struck from the center of the pivot-pin 8'. This arrangement will also enable us to obtain a maximum amount of bearing-surface between the yoke 6 and the coupler 7 no matter what position the latter may be in. The pivot-pin 8' is there simply to prevent the yoke 6 from spreading, but is not subjected in any way to the forces coming upon the coupler 7, as the latter when under compression transmits the strains directly to the front follower-plate 4, against which it abuts, while the tensile strains are taken care of by the shoulders 8'' and 7', as explained above.

To understand the working of the whole device better, it may be mentioned that under compression the rear follower 4' seats against the rear draft-lugs 3', and the follower 4 with the yoke 6 and the coupler 7 move inward under tension, while the front follower 4 seats against the front draft-lugs 3, and the coupler, yoke, and rear follower move outward.

To make an automatic coupling between cars possible, it is necessary to hold the coupler 7 in a central position, and to do this and still allow the same to swing laterally when under strains a yielding and double-acting resistance element has been placed in the coupler draw-bar or shank 7'', as shown at 9, and this device consists of a spring 10, two spring-sockets 11 11', and two cheek-plates 12. These cheek-plates 12 are prevented from moving laterally either by being attached to the yoke 6 or to the draft-sills 1, as shown in Fig. 7. In this last case the draft-lugs 3 have been swelled out toward the center line of the car, so as to form flat and stationary cheek-plates 3'' for the spring-sock-

ets 11 to abut against, and since the coupler 7 and these sockets move lengthwise it is necessary to make these cheek-plates 3" long enough so as to form a bearing even if the 5 spring-sockets are in the extreme front or rear positions. Instead of extending the draft-lugs 3 to form such cheek-plates separate castings or forgings can be employed. The preferred form of forming these cheek-plates is shown in Fig. 3, in which case the 10 two cheek-plates 12 are formed by a single casting or forging of an inverted-U shape and forming what may be called a "fork" 13. This fork 13 is secured to an extension 15 6' of one of the lugs of yoke 6 by bolts 6'', and to relieve these bolts of any shearing strains brought about by the coupler 7 swinging to one side or the other lips 12' have been employed on the fork to embrace 20 said yoke extension 6 on each side. To strengthen the fork 13 itself and to exclude any possibility of its breaking, ribs 13' and 13'' have been added, and the yoke extension 6' has been cut short, so as to be able to 25 increase the thickness of the material of the fork at the top for a certain distance at least, as shown at 12'', and this will act as a substantial brace across the top of the fork 13 and will still more strengthen the same. In- 30 stead of making the fork a separate piece and fastening the same to the yoke 6 it might be made integral with the yoke without affecting the proper working of the device in the least, and in either case the fork will travel 35 lengthwise with the yoke and coupler 7, thus being always opposite the spring-pockets 11. This will obviate the necessity of long cheek-plates, as shown at 3'', and will also do away with relative lengthwise movement between 40 the spring-pockets 11 and the cheek-plates 12, while this in turn will prevent the consequent wear resulting from such a movement.

The spring-sockets 11 11' consist of a cylindrical shell 11'', a bottom 11^b at one end, 45 and segments 11^a of an outside collar at the other end, which segments simply form lugs and the number of which can be varied at will, although four are provided for in Fig. 4 of the drawings.

50 The coupler 7 is cored out at 7^a, so as to receive the spring-sockets 11, and such cylindrical cores 7^a are arranged to suit the cylindrical shells 11'', while the lugs 11^a shoulder from the inside against the collars 14 and 14', 55 formed within said coupler, collar 14 being continuous and collar 14' being notched out in four places, as at 14'', which notches are made wide enough to allow the lugs 11^a to pass whenever the spring-sockets are being 60 inserted into the coupler-shank.

It is obvious that one socket 11 has to be inserted first, spring 10 following, after which the other socket 11' with the lug end foremost is entered, while the lugs 11^a will 65 pass through the notches or slots 14'', and in

order to prevent the sockets from leaving they are rotated so that the lugs 11^a will come approximately half-way between the two adjoining notches or slots 14''. It is desirable that the spring with the two sockets 70 11 11' in place is slightly compressed, and it is self-evident that the number of slots 14'' must correspond with the number of lugs 11^a.

To prevent the socket 11' from turning in service, which would allow the lugs 11^a to 75 come opposite the slots 14'' and the socket to leave its place, two guides 15 have been shown on the opposite sides of two adjoining slots 14'' with the function of holding one lug 11^a in place, which in turn will prevent any 80 circular or turning motion of the said socket 11.

It will presently be shown that either one of the sockets 11 11' will be forced inwardly by the cheek-plates 12 whenever the coupler 85 7 swings laterally, which means that the lugs 11^a leave their respective collars 14 and 14', and to prevent a gradual turning-movement of the one socket 11', held by the guides 15 during a succession of such movements, such 90 guides are provided with inclined surfaces 15' on the inside, which will bring the lug 11^a between them back into the proper position every time the said socket 11' returns to rest against the collar 14'. It is clear that by 95 such an arrangement the spring 10 is double-acting—i. e., no matter which side of the coupler 7 is being forced to swing the tendency of the spring will bring it back as soon as the coupler is free to do so, the spring- 100 sockets 11 thereby acting as followers and free to move inwardly, but prevented from moving outwardly. For instance, if the coupler swings to the left spring-socket 11 will be forced inward and the spring com- 105 pressed, while the socket 11' will be taken along by the coupler, leaving the cheek-plates 12 and 3'', all as shown on Figs. 3 and 7, and if the coupler swings to the right the function of each detail will just be reversed. 110

The amount of lateral travel to be allowed to the coupler 7 can easily be governed by the width of the opening 2' in the end sill.

A great many minor changes can be made in the details just described without affect- 115 ing the principles of my invention, and therefore I do not wish to limit the same to the forms shown.

What I claim is—

1. In a car-coupling, the combination of a 120 swinging coupler, a draw-bar yoke, an extension on said yoke for forming a laterally-fixed point to bring said coupler into its central position.

2. In a car-coupling, the combination of a 125 coupler, a draw-bar yoke, an extension on said yoke, and cheek-plates on said extension for forming stops to bring said coupler into its central position.

3. In a car-coupling, the combination of a 130

coupler, a draw-bar yoke, an extension on said yoke, and cheek-plates on said extension for forming stops for a yielding attachment to bring said coupling into its central position.

4. In a car-coupling, the combination of a swinging coupler having a shank or draw-bar, and a laterally-disposed spring element connected to and extending through the walls of the draw-bar of said spring-coupler for the centering of said shank or draw-bar.

5. In a car-coupling, the combination of a coupler, laterally-fixed cheek-plates, and a laterally-disposed yielding element inclosed within and extending through the shank of said coupler for bringing the coupler into its central position by pressing against said cheek-plates.

6. In a car-coupling, the combination of a coupler, a spring, and a laterally-disposed spring-socket within the coupler shank or draw-bar for confining said spring and for acting as a follower thereto in the centering of said shank or draw-bar.

7. In a car-coupling, the combination of a coupler having a shank or draw-bar, a spring extending through the walls of said coupler shank or draw-bar, and a laterally-disposed spring-follower inclosed within the shank or draw-bar of said coupler for confining said spring in the centering of said shank or draw-bar.

8. In a car-coupling, the combination of a coupler, a spring, a spring-socket within the shank or draw-bar of the coupler for confining said spring and for acting as a follower in the centering of said shank or draw-bar, and means on said spring for engaging with said shank to hold the socket in place.

9. In a car-coupling, the combination of a coupler, a spring, a spring-socket within the shank or draw-bar of said coupler for confining said spring and for acting as a follower in the centering of said shank or draw-bar, and means on said socket and shank to hold said socket in place.

10. In a car-coupling, the combination of a coupler, a spring, a spring-socket within the shank or draw-bar of said coupler for confining said spring and for acting as a follower in the centering of said shank or draw-bar, and lugs on said socket for engaging with said shank to hold said socket in place.

11. In a car-coupling, the combination of a swinging coupler having a shank or draw-bar, a spring within and extending through the walls of the coupler shank or draw-bar, a spring-follower within the shank or draw-bar of said coupler for confining said spring in the centering of said shank or draw-bar, and a collar within said shank or draw-bar to hold said follower in place.

12. In a car-coupling, the combination of a swinging coupler, a spring within and extending through the coupler-shank, a spring-

follower within the shank of said coupler for confining said spring, and a notched collar within said shank for permitting the insertion of said follower within the shank and for holding the same in place.

13. In a car-coupling, the combination of a swinging coupler, a spring within and extending through the coupler-shank, a spring-follower within the shank or draw-bar of said coupler for confining said spring in the centering of said shank or draw-bar, a collar within said shank, and lugs on said follower for engaging with said collar to hold said follower in place.

14. In a car-coupling, the combination of a swinging coupler, a spring within and extending through the coupler-shank, a spring-follower within the shank of said coupler for confining said spring, a notched collar within said shank, and lugs on said follower for permitting the insertion of said follower within the shank and for holding the same in place.

15. In a car-coupling, the combination of a swinging coupler, a spring within and extending through the coupler-shank, a spring-follower within the shank of said coupler for confining said spring, and a collar within said shank and provided with guides therein for engaging with said follower to hold the same in place.

16. In a car-coupling, the combination of a swinging coupler, a spring within and extending through the coupler-shank, a spring-follower within the shank of said coupler for confining said spring, and a collar within said shank and provided with inclined guides for engaging with the follower to hold the same in place.

17. In a car-coupling, the combination of a swinging coupler, a spring within and extending through the coupler-shank, a spring-follower within the shank of said coupler for confining said spring, lugs on said follower, and a collar within said shank and provided with guides therein for engaging with said lugs to hold the follower in place.

18. In a car-coupling, the combination of a swinging coupler, a spring within and extending through the coupler-shank, a spring-follower within the shank of said coupler for confining said spring, lugs on said follower, and a collar within said shank and provided with inclined guides therein for engaging with said lugs to hold the follower in place.

19. A car-coupler, the combination of a coupler and a spring incased within the shank or draw-bar of the coupler and extending through the same, said spring being laterally disposed therein for the centering of said shank or draw-bar.

20. In a car-coupling, the combination of a coupler having a shank or draw-bar, a laterally-disposed spring within and extending through the walls of the draw-bar of said coupler for the centering of said shank or

draw-bar, and circular followers for confining said spring.

21. In a car-coupling, the combination of a coupler, a laterally-disposed spring within the shank of said coupler, circular followers for confining said spring, and laterally-fixed cheek-plates for engaging with said followers.

22. In a car-coupling, the combination of a coupler, a laterally-disposed spring incased within the shank of said coupler, circular followers for confining said spring, and laterally-fixed cheek-plates for engaging with said followers.

23. In a car-coupling, the combination of a coupler, a laterally-disposed spring element within said coupler, and cheek-plates engaging with said spring element for forming stops to bring said coupler into its central position.

24. In a car-coupling, the combination of a coupler, a draw-bar yoke, a laterally-disposed spring element within said coupler, and cheek-plates on said yoke engaging with

said element for forming stops to bring said coupler into its central position.

25. In a car-coupling, the combination of a coupler, a draw-bar yoke, a laterally-disposed spring within said coupler, spring-sockets for said spring, and cheek-plates on said yoke engaging with said sockets for forming stops to bring said coupler into its central position.

26. In a car-coupling, the combination of a coupler, a draw-bar yoke, a laterally-disposed spring within said coupler, spring-sockets for said spring, means on said sockets and coupler to hold said sockets in place, and cheek-plates on said yoke engaging with said sockets for forming stops to bring said coupler into its central position.

In testimony whereof I, the said LEWIS P. MATHER, have hereunto set my hand.

LEWIS P MATHER.

Witnesses:

J. N. COOKE,
R. H. AXTHELM.