

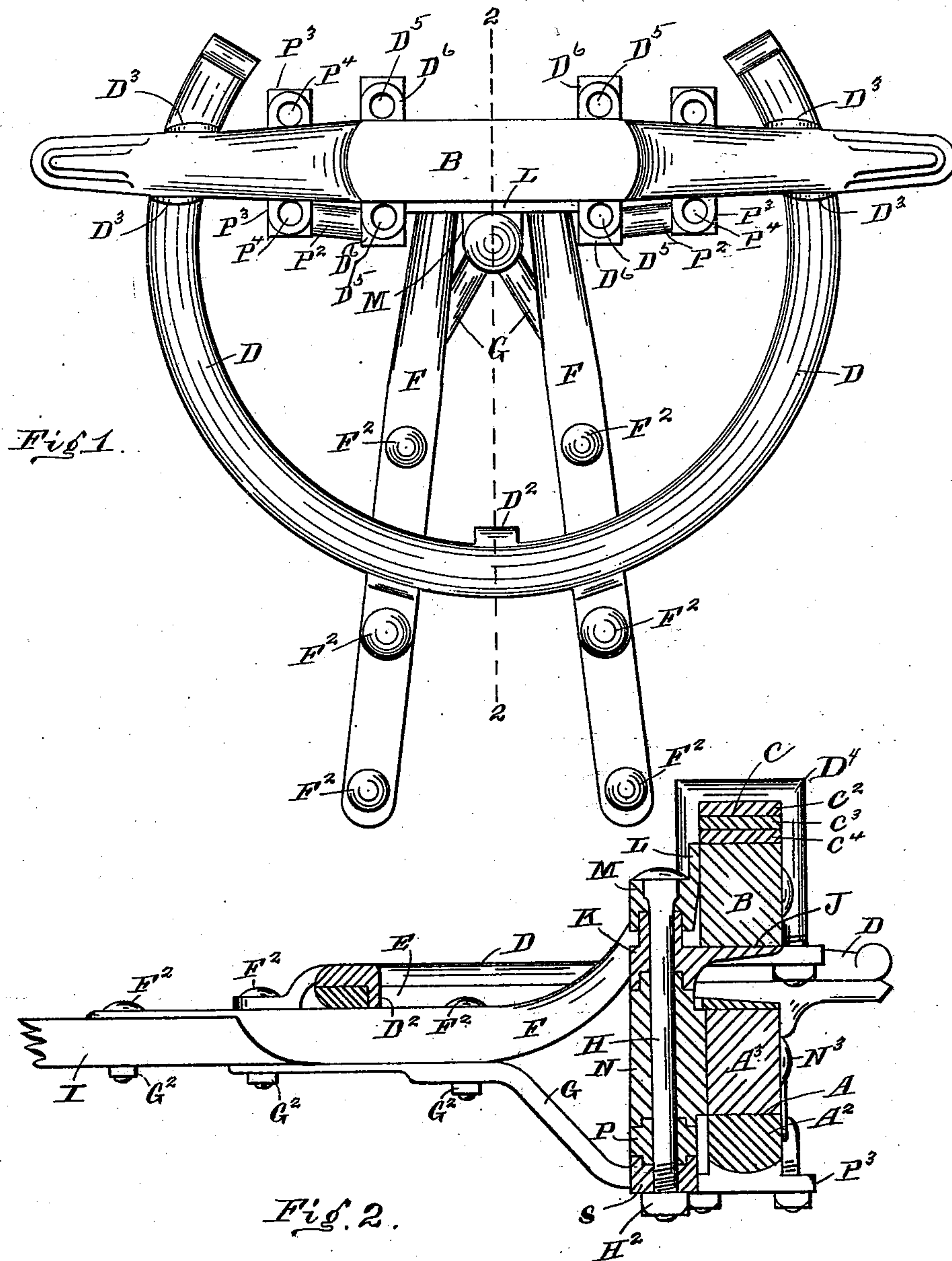
(No Model.)

3 Sheets—Sheet 1.

E. B. SMITH.
FIFTH WHEEL.

No. 548,015.

Patented Oct. 15, 1895.



Witnesses
Charles H. Spiegel.
K. Smith.

Inventor
Ezra B. Smith
per Wm. Hubbell Fisher
Attorney

(No Model.)

3 Sheets—Sheet 2.

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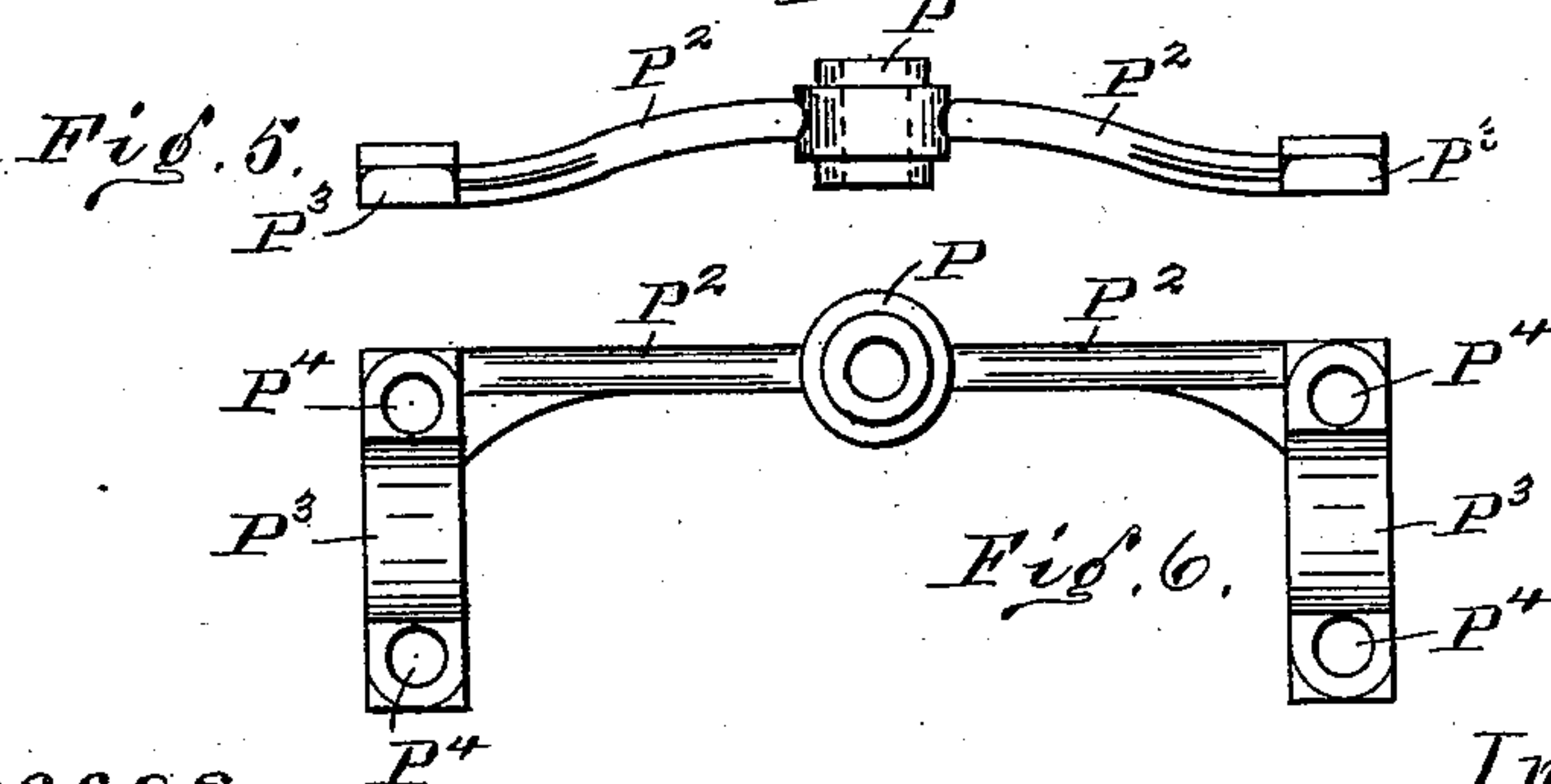
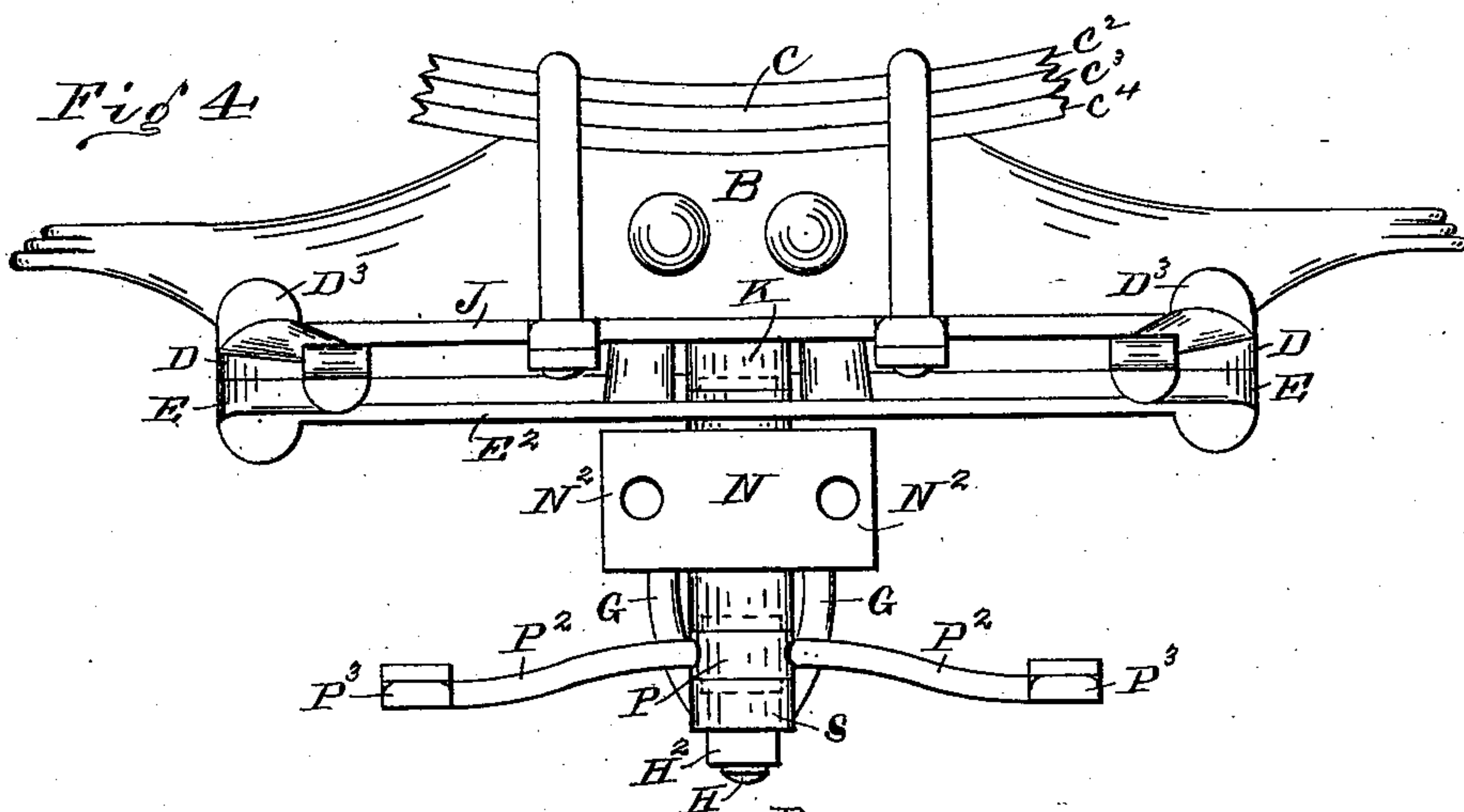
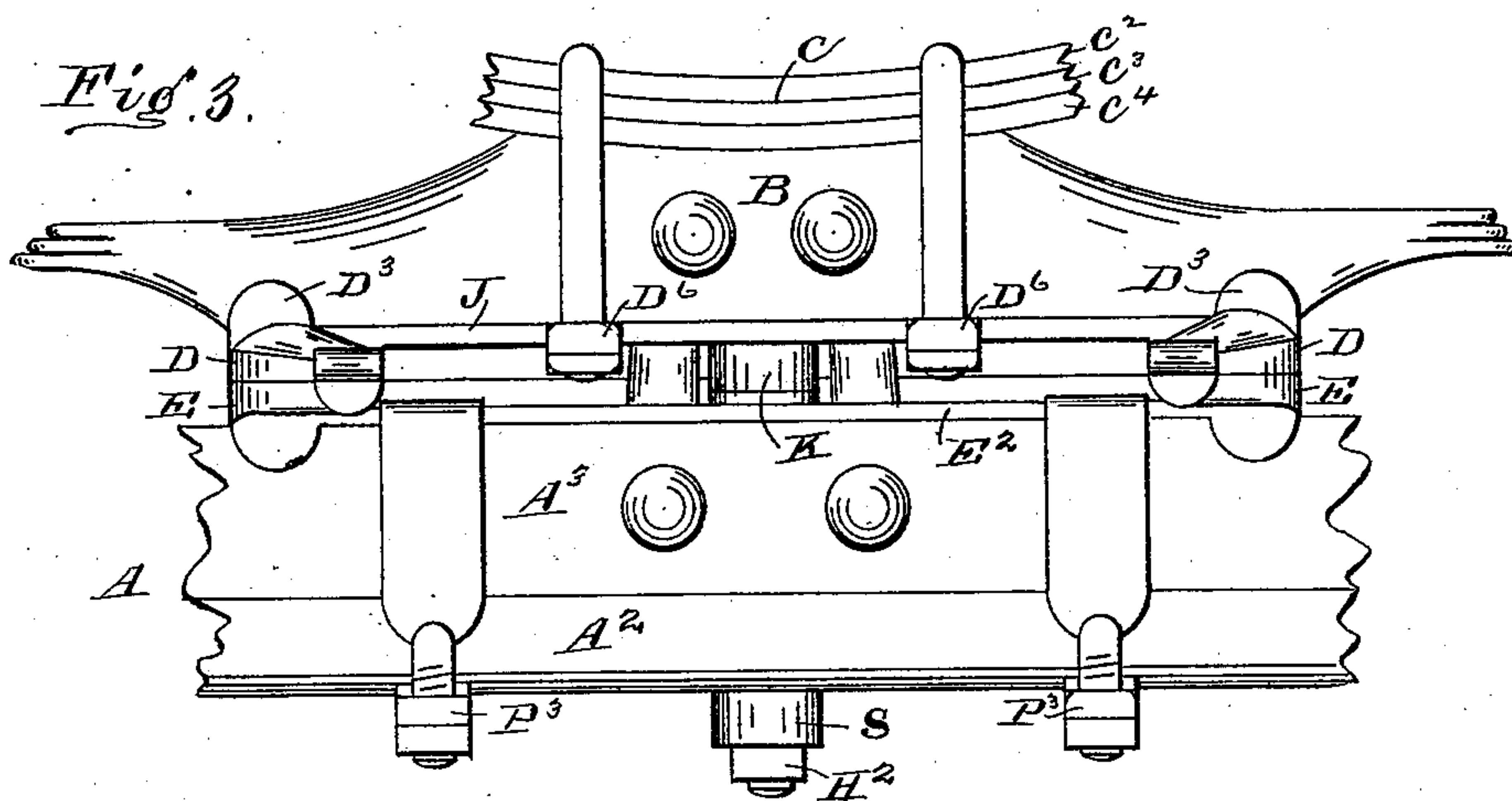


Fig. 6.

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(No Model.)

3 Sheets—Sheet 3.

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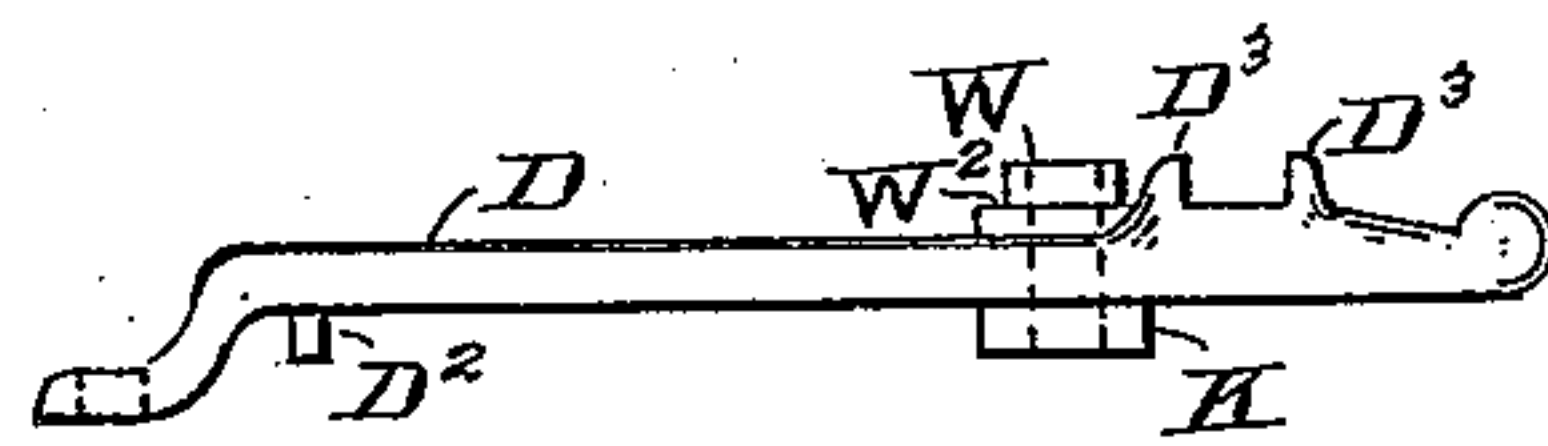
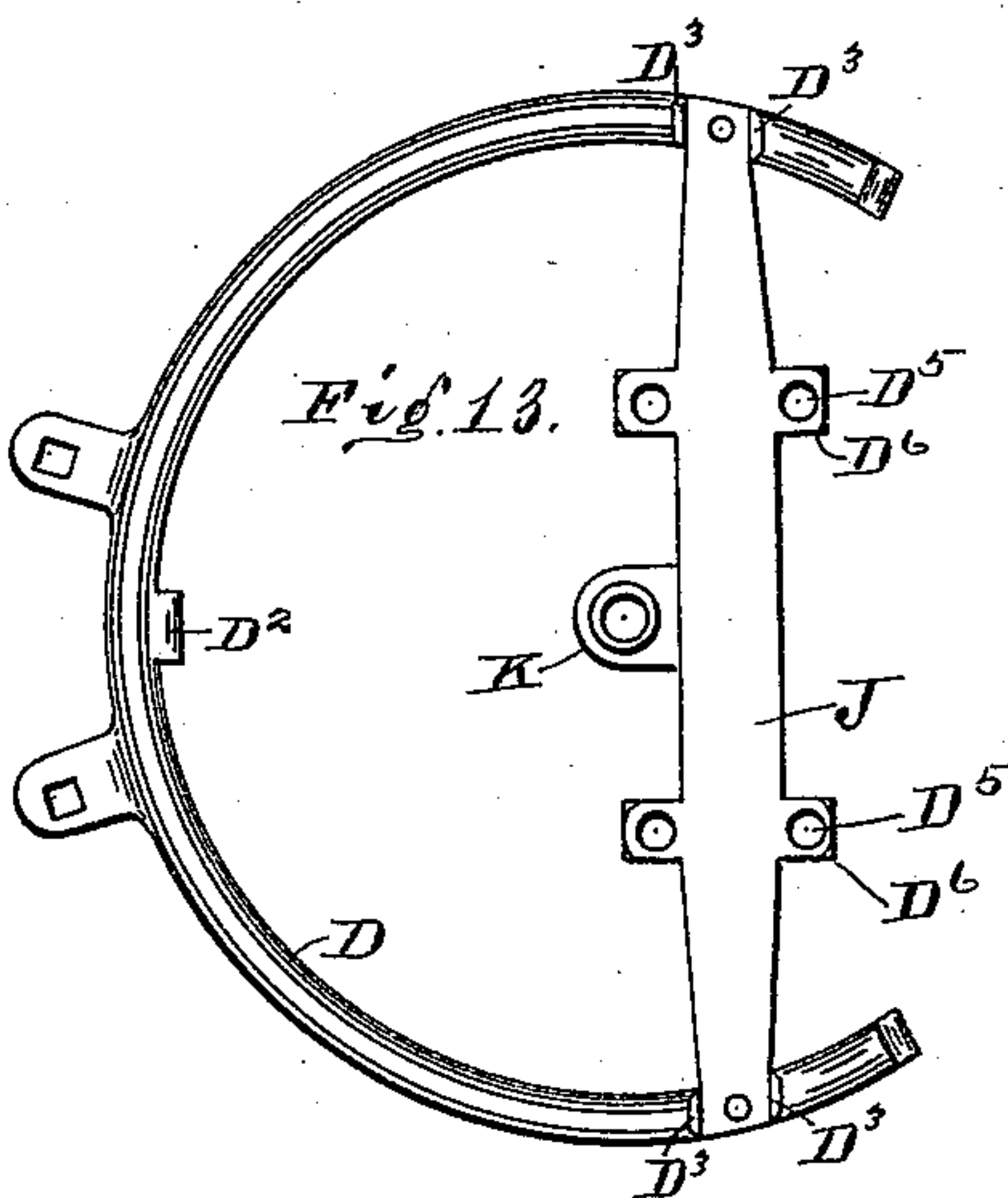
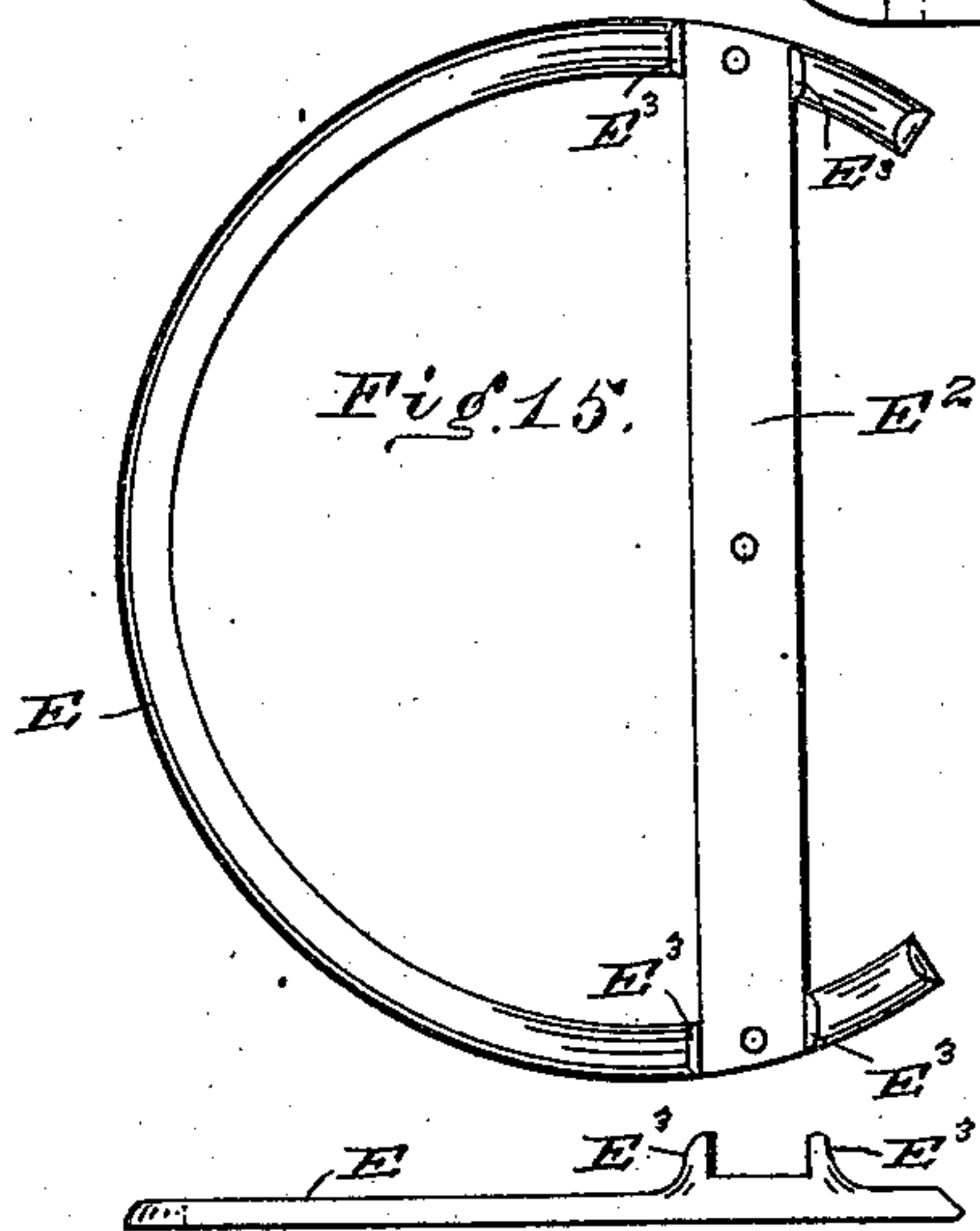
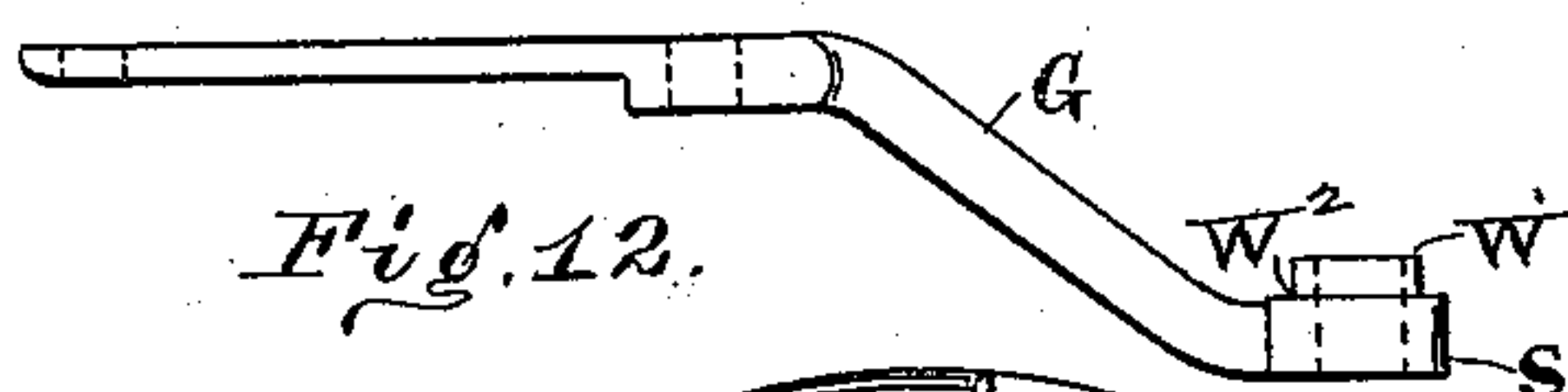
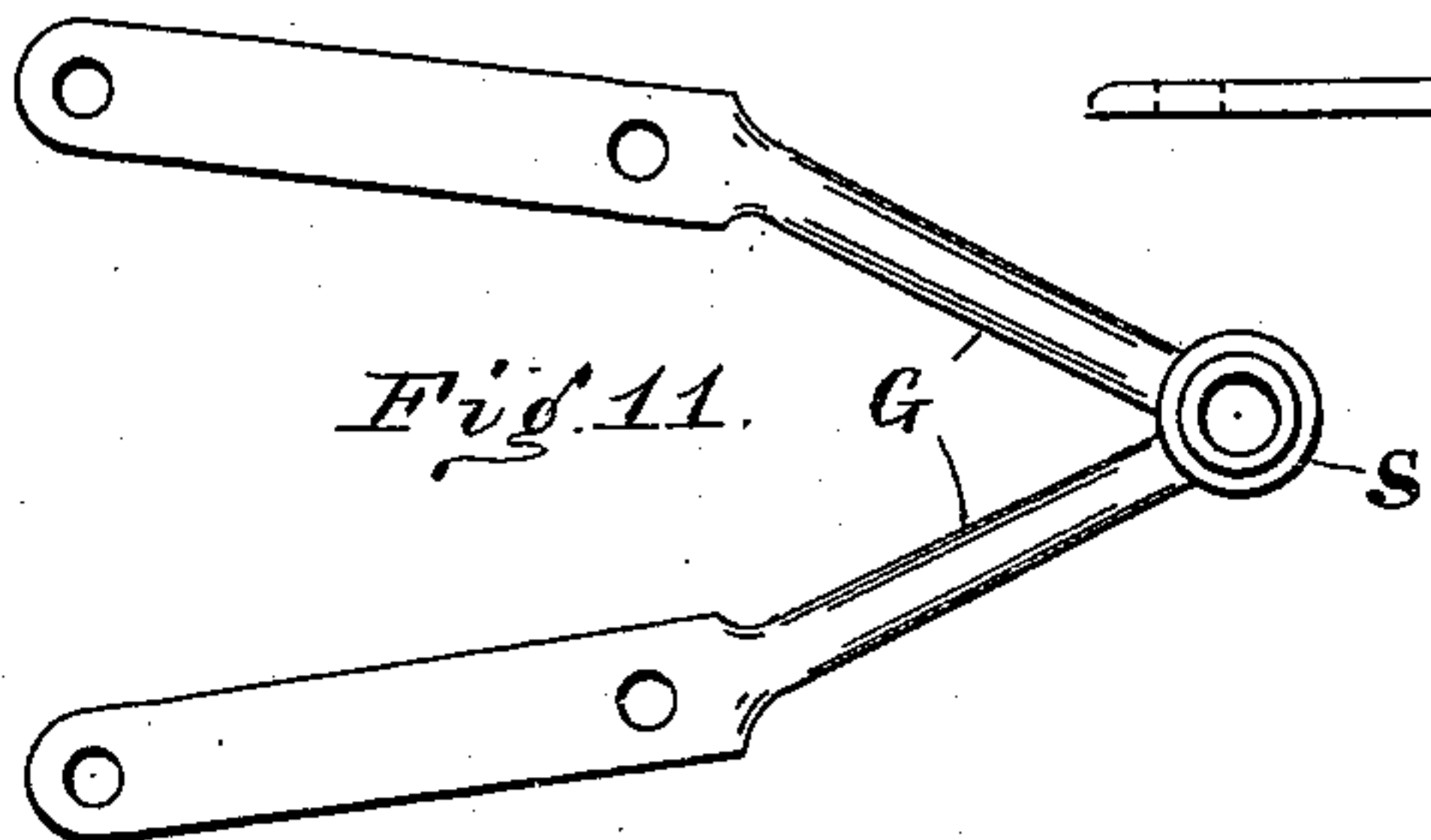
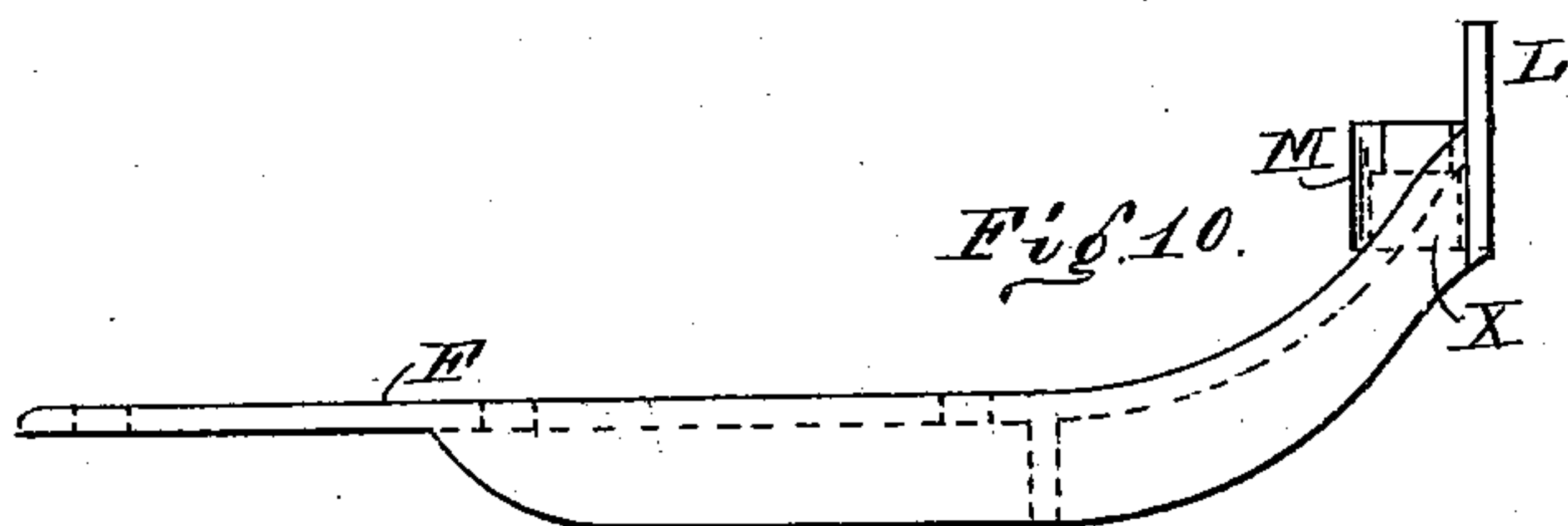
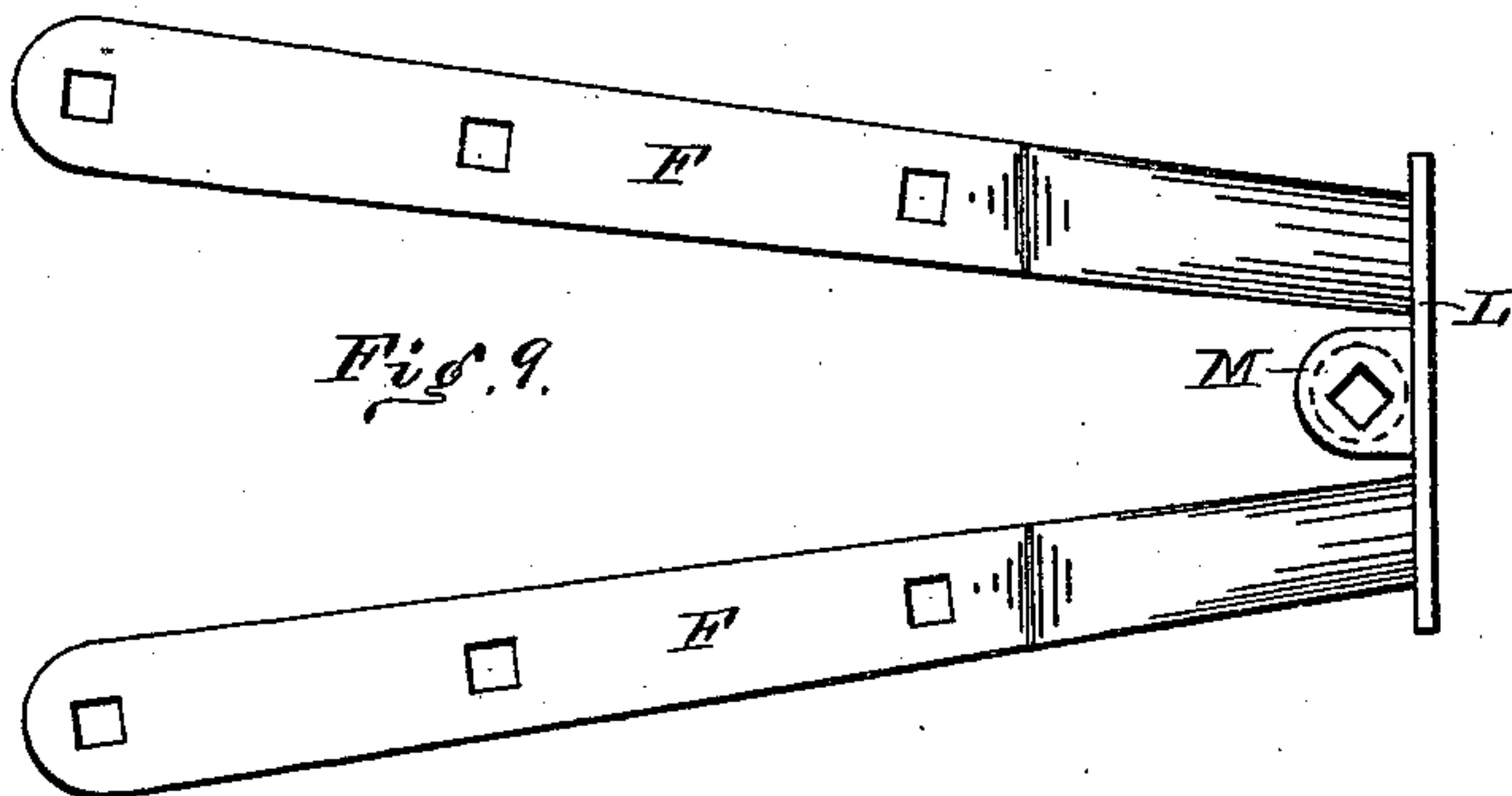
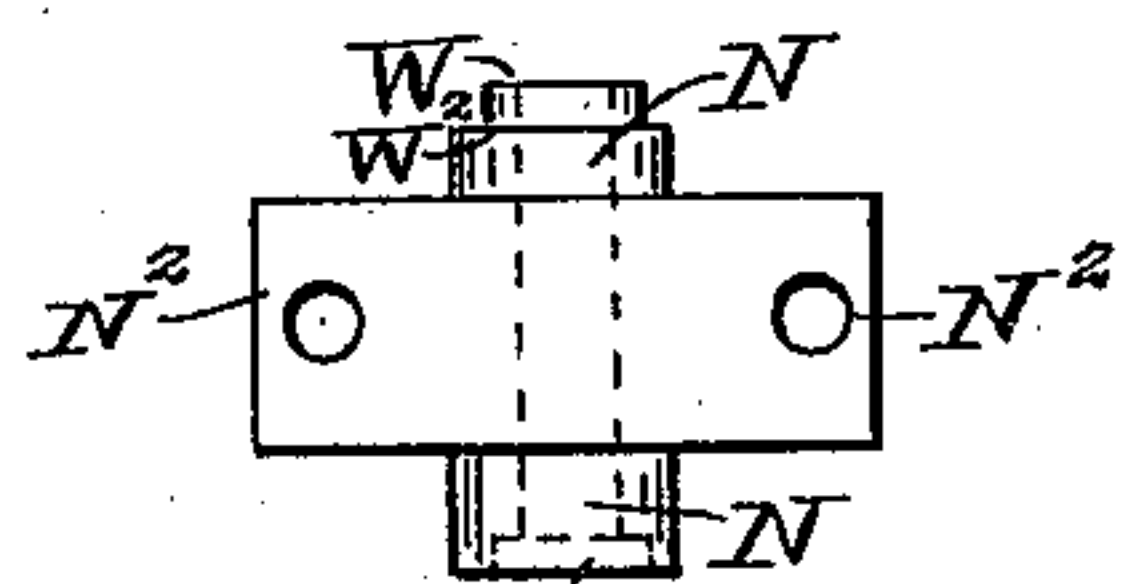
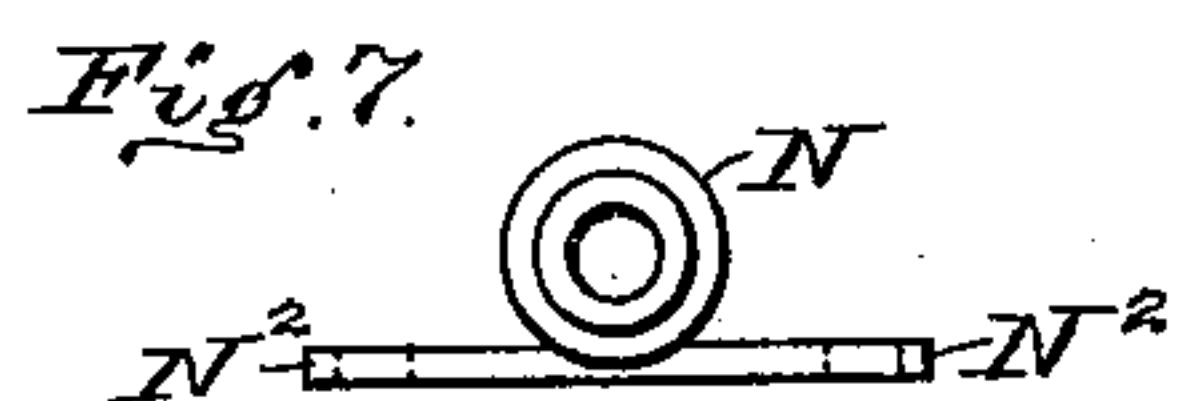


Fig. 16.

Witnesses

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UNITED STATES PATENT OFFICE.

EZRA B. SMITH, OF CINCINNATI, OHIO.

FIFTH-WHEEL.

SPECIFICATION forming part of Letters Patent No. 548,015, dated October 15, 1895.

Application filed November 5, 1894. Serial No. 527,889. (No model.)

To all whom it may concern:

Be it known that I, EZRA B. SMITH, a citizen of the United States, and a resident of the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Fifth-Wheels, of which the following is a specification.

My invention has to do with that class of fifth-wheels wherein the center of rotation of the wheel is located to the rear of the head-block and axle, the latter therefore lying in vertical planes passing through sector lines of the forward portion of the wheel or circle.

The several features of my invention and the various advantages resulting from their use, conjointly or otherwise, will be apparent from the following description and claims.

In the accompanying drawings, to which reference is hereby made, and in which similar letters of reference indicate corresponding parts, Figure 1 represents a plan view of a fifth-wheel embodying my invention. Fig. 2 is a vertical central section from front to rear and taken at the dotted line 2 2 of Fig. 1. Fig. 3, Sheet 2, represents a front elevation of the axle and head-block, with spring, and my invention applied thereto. Fig. 4, Sheet 2, represents a front elevation of those parts shown in Fig. 3, with the exception of the axle and axle-cap being removed in order to show the construction and position of certain portions of my invention. Fig. 5, Sheet 2, is an elevation (front) of one of the eyes or sleeves through which the king-bolt passes and showing the braces which it carries. Fig. 6, Sheet 2, is a top view of the parts shown in Fig. 5. Fig. 7, Sheet 3, is a top view of another of the eyes embracing the king-bolt and of the plate whereby this eye is secured to the axle-cap. Fig. 8, Sheet 3, is a front elevation of the parts shown in Fig. 7. Fig. 9, Sheet 3, represents a top view of the upper perch-irons and eye and plate attached thereto. Fig. 10, Sheet 3, is a side elevation of those parts shown in Fig. 9. Fig. 11, Sheet 3, represents a top view of the lower perch-irons and eye thereof. Fig. 12 is a side elevation of the parts shown in Fig. 11. Fig. 13, Sheet 3, is a plan view of the upper half or circle of the fifth-wheel, its eye, and other parts. Fig. 14, Sheet 3, represents a side or edge elevation of the device shown in Fig. 13. Fig. 15 shows

a bottom view of the lower half or circle of the fifth-wheel. Fig. 16 is a side or edge elevation of the parts illustrated in Fig. 15.

A indicates the axle, preferably compound and composed of iron bar A^2 and wooden portion or bar A^3 .

B indicates the head-block. In case there is a front cross-spring C resting on the head-block, C^2 C^3 C^4 indicate the leaves thereof.

D indicates the upper circular portion of the fifth-wheel, and E the lower circular portion of said wheel.

F F respectively indicate the perch upper irons, and G G the perch lower irons.

H is the king-bolt.

I I respectively indicate the perches, of which only a part are shown. Each perch I fits within its adjacent upper iron F and between the latter and lower iron G and is bolted thereto by bolts and nuts, as F^2 G^2 . At rear in the longitudinal center of the vehicle the upper wheel D laps over inside and in front of the lower wheel E in the form of a flange D^2 . The upper wheel has at each side or limb the customary lugs D^3 D^3 , between which latter sits the head-block B. Between the limbs or opposite parts of this upper wheel, from one set of lugs D^3 to the other set, extends a connecting-plate or bar-brace J. This brace J comes against the under side of the head-block and at the middle of its rear edge is connected with an eye or sleeve K, located at rear thereof, but close thereto and to the head-block. This structure, consisting of the upper wheel D, lugs D^3 , bar J, and eye K, is suitably secured to the head-block preferably, by means of screws passing through countersunk openings in the upper wheel between each set of lugs D^3 into the head-block, and also by clips D^4 embracing the head-block and preferably, also, the spring C, if there, the free ends of the clips passing through openings D^5 in the brace-bar J or lugs D^6 extending from the edges thereof and bolted in place with nuts in the usual manner. The eye K, the bar J, and lugs D^5 and D^3 will usually be cast in one piece with the upper wheel. The front ends of the upper perch-irons F F are fixed to a common or bearing piece L, resting against the rear side of the head-block. This piece L may be analyzed as composed of the bent-up forward ends of the perch-irons

and an iron strap connecting said ends. An eye M is connected rigidly to the piece L and forms one of the group consisting of perch-irons F and piece L and said eye. These
 5 all are preferably formed in one piece by casting or otherwise. This eye M and the eye K would be formed in one piece were it not that it is difficult to thus cast them together with the perch-irons and upper fifth-wheel.
 10 In function these two eyes operate as one eye stationary with the head-block.

The lower fifth-wheel E is located, as usual, close up under and against the upper fifth-wheel D. This lower wheel has a brace plate
 15 or bar E^2 extending across from one part of the fifth-wheel to the opposite part in a sector line a little in front of the center of the wheel. At each end of this brace-bar E^2 are lugs E^3 E^3 on the lower side of this wheel,
 20 and between each set of these lugs E^3 lies the upper edge part of the axle. Counter-sunk screws passing from the upper surface of the wheel through it at the end and center of it into the axle hold the latter and said
 25 lower wheel E firmly together. Next below the eye K is the eye or sleeve N. To this sleeve N are connected two bars, plates, or wings N^2 N^2 , the one on one side and the other on the other side of the sleeve. By
 30 means of these wings N^2 N^2 the sleeve K is connected to the rear side of the axle-cap by screws or bolts N^3 , preferably the latter, substantially as shown. Below the sleeve or eye N is an eye P, having the two bars or braces
 35 P^2 extending in opposite directions from it—viz., respectively toward the adjacent ends of the axle. Each of these braces is provided at its free end with a clip-bar P^3 , adapted to be under the axle and to be coupled thereto.
 40 This clip-bar has, therefore, the end bolt-holes P^4 , through which the ends of clips P^5 , embracing the axle A, pass and are secured in place by nuts P^6 . This clip-bar is connected at its rear portion to its bar or brace P^2 , so
 45 that the latter need not pass under the axle, but may lie to the rear thereof. When the bottom of the axle is rounded in cross-section, the upper side of bar P^3 will be concavely curved to fit said rounded portion.
 50 Below the eye or sleeve P is an eye S, rigidly connected to the front ends of the lower perch-irons G. The sleeve or eye N abuts against the eye K above and the eye P below and the latter in turn abuts against the eye S
 55 below. This extension of structure supports the head-block, fifth-wheel, both upper and lower, and axle, in a vertical direction and also in relation to the perches. Through all of these eyes M, K, N, and S passes the king-
 60 bolt H and is located therein, the head of the king-bolt resting on eye M and the other end of the king-bolt projecting below the eye S and there receiving a nut H^2 , whereby it is securely held down in place, and also serves
 65 to hold and bind together the several eyes M, K, N, and S aforementioned.

All of the eyes preferably interfit, and the preferred mode of interfitting is that shown, to wit: In the preferred mode of construction the upper end of each eye, excepting eyes M
 70 and S, is contracted at W, and this contracted portion, except in eye N, which is preferably tapered, terminates in a shoulder W^2 , and the lower end of each eye, excepting eye S, is enlarged into a recess X, greater than the size
 75 of the hole for the king-bolt. This recess receives the adjacent contracted end of the next lower eye. The king-bolt is prevented from rotating in the eye M and consequently in relation to the head-block by having an
 80 angulated or detent portion engaging a corresponding portion of the eye M.

In operation the lower fifth-wheel rotates in place, being held in position at the rear by the back-lap D^2 of the upper wheel D and in
 85 front through the axle A. The upper fifth-wheel is at front held in place on the lower fifth-wheel by the (its) eye N on the king-bolt. As heretofore mentioned, none of the interfittings between these several eyes are abso-
 90 lutely necessary, but they greatly strengthen the king-bolt to resist flexure and generally increase the strength of the wheel as a whole. Of all the connections between the several
 95 eyes the most desirable is the one between the eyes K and N, because the greatest strain in the aforescribed structure comes there, and without such interbracing as this interfit-
 100 ting provides the king-bolt is liable at this point to be bent.

One of the greatest features of my invention is the construction of the lower fifth-wheel without directly coupling it to the king-bolt. Heretofore it has been thought that the
 105 lower wheel must be directly coupled to the king-bolt in structures whose principle of coupling was like mine—to wit, in placing the center of the fifth-wheel or circle immediately in rear of the head-block and axle. I have
 110 ascertained that by means of the peculiar mode in which I unite and couple the various parts I am able to dispense with thus directly coupling the lower fifth-wheel directly to the king-bolt or to an eye around the latter.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. In a fifth wheel, the combination of the axle, headblock, king bolt located back of the axle, upper circle D with rearward projecting
 120 apertured lug for king bolt, lower circle E minus a rearward projecting lug for king bolt, a detachable sleeve bolted to rear of axle, substantially as and for the purposes specified.

2. In a fifth wheel, the combination of the axle, headblock and a king bolt located in the
 125 rear thereof, circle D with a central rearward projecting apertured king bolt lug, circle E with brace plate E^2 without a king bolt projection, perch iron F with king bolt eye M, resting on central rearward projection of plate
 130 J, circles D and E passing over rear projection of perch iron F, an axle plate having an aper-

ture for king bolt and a detachable sleeve bolted to the axle, substantially as and for the purposes specified.

3. In a fifth wheel, the combination of the
5 headblock and axle and king bolt in rear passing through and holding together eyes of plate J, detachable sleeve, axle plate, and upper and lower perch irons, securing eyes interlocking, the plate J of circle D carrying a
10 king bolt eye, the plate E² of circle E fastened to the axle, the sleeve N having wings and bolted to the axle, the axle plate having central eye for king bolt, the lower end of sleeve resting on axle plate and upper end resting
15 against under side of king bolt projection of plate J, substantially as and for the purposes specified.

4. The combination of the upper and lower perch irons, headblock, axle, king bolt in rear
20 of axle, upper and lower fifth wheel circles, eye M for king bolt, connected to perch, king bolt eye connected to upper fifth wheel circle, lower fifth wheel circle fastened to axle, sleeve for king bolt secured to axle and against the
25 eye of the upper fifth wheel circle, independent of the lower circle E, eye secured to the braces P², connected to axle, and lower eye secured to lower perch iron, these eyes embracing the king bolt in the order of their
30 enumeration, substantially as and for the purposes specified.

5. The combination of the perch irons, headblock, axle, king bolt in rear of axle, upper and lower fifth wheel circles, eye M for king
35 bolt connected to perch iron, king bolt eye connected to upper fifth wheel circle, lower fifth wheel circle fastened to axle, sleeve for king bolt secured to axle and against the eye of the upper fifth wheel circle, independent
40 of the lower circle E, eye P secured to the braces P² and connected to axle, and next lower eye secured to lower perch iron, these eyes embracing the king bolt in the order of their enumeration, the eyes interfitting with
45 one another, substantially as and for the purposes specified.

6. In a vehicle fifth wheel having an upper fifth wheel circle provided with rear eye K and perch iron secured thereto by means of
50 the king bolt, the perch iron bolted to the

headblock, and an axle plate and lower perch iron, sleeve bolted to the axle, and king bolt passing through the axle plate, lower perch iron and sleeve, and lugs connecting the top circle to the perch iron, substantially as and
55 for the purposes specified.

7. The combination of a vehicle fifth wheel, having upper and lower circles, both passing over the perch iron F at the rear, the upper circle fastened to the perch F at rear by
60 means of lugs, the upper circle provided with a king bolt eye, and lower circle minus a king bolt eye, axle plate securing lower end of king bolt to axle and perch iron F securing upper end of king bolt to headblock, substantially
65 as and for the purposes specified.

8. In a fifth wheel, the combination of the axle, headblock, and king bolt located back of same, two circles back of axle and over rear end of perch irons, one circle provided with
70 an eye for king bolt, upper end of detachable sleeve resting against and interlocking with said eye, and lower end interlocking with an axle plate, and flange D² at rear of upper circle D, substantially as and for the purposes
75 specified.

9. In a vehicle fifth wheel having upper perch iron carrying a king bolt in rear of axle, with eye resting on rear projection of plate J, sleeve N bolted to axle and journaled to
80 under side of rear projection J, and resting on rearward and upward projecting axle plate, said axle plate carrying an eye for the king bolt, substantially as and for the purposes
85 specified.

10. The combination of a vehicle fifth wheel and an axle plate extending rearwardly, with an eye engaging a sleeve fastened to the rear side of the axle, substantially as and for the
90 purposes specified.

11. The combination of a vehicle fifth wheel and axle plate extending rearwardly and upwardly engaging a sleeve bolted to the axle and a king bolt passing through both, substantially as and for the purposes specified.

EZRA B. SMITH.

Attest:

C. J. McDIARMID,
K. SMITH.