

No. 610,173.

Patented Sept. 6, 1898.

J. EDGAR.
FIFTH WHEEL.

(Application filed Nov. 20, 1897.)

(No Model.)

4 Sheets—Sheet 1.

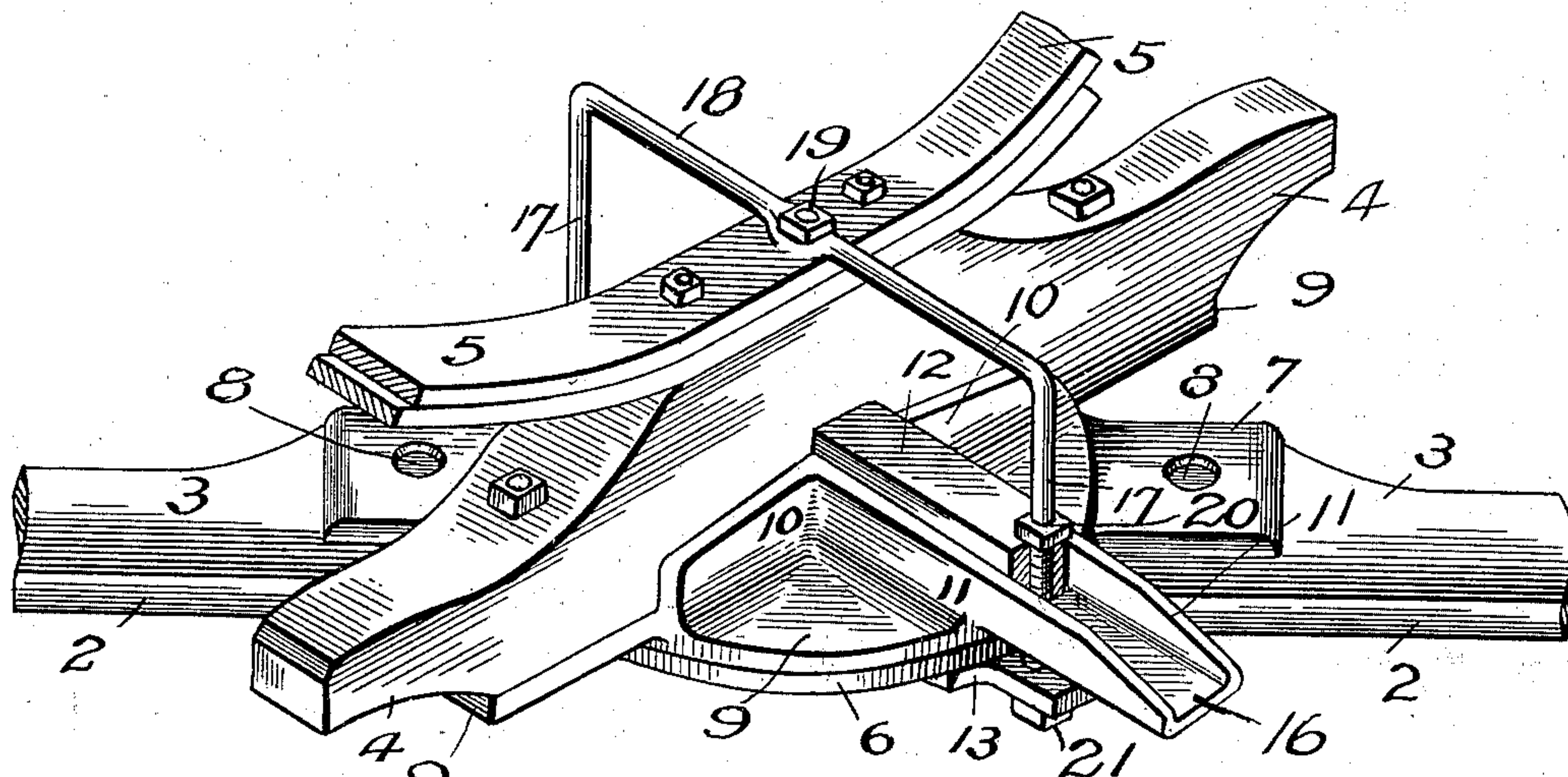


Fig. 1.

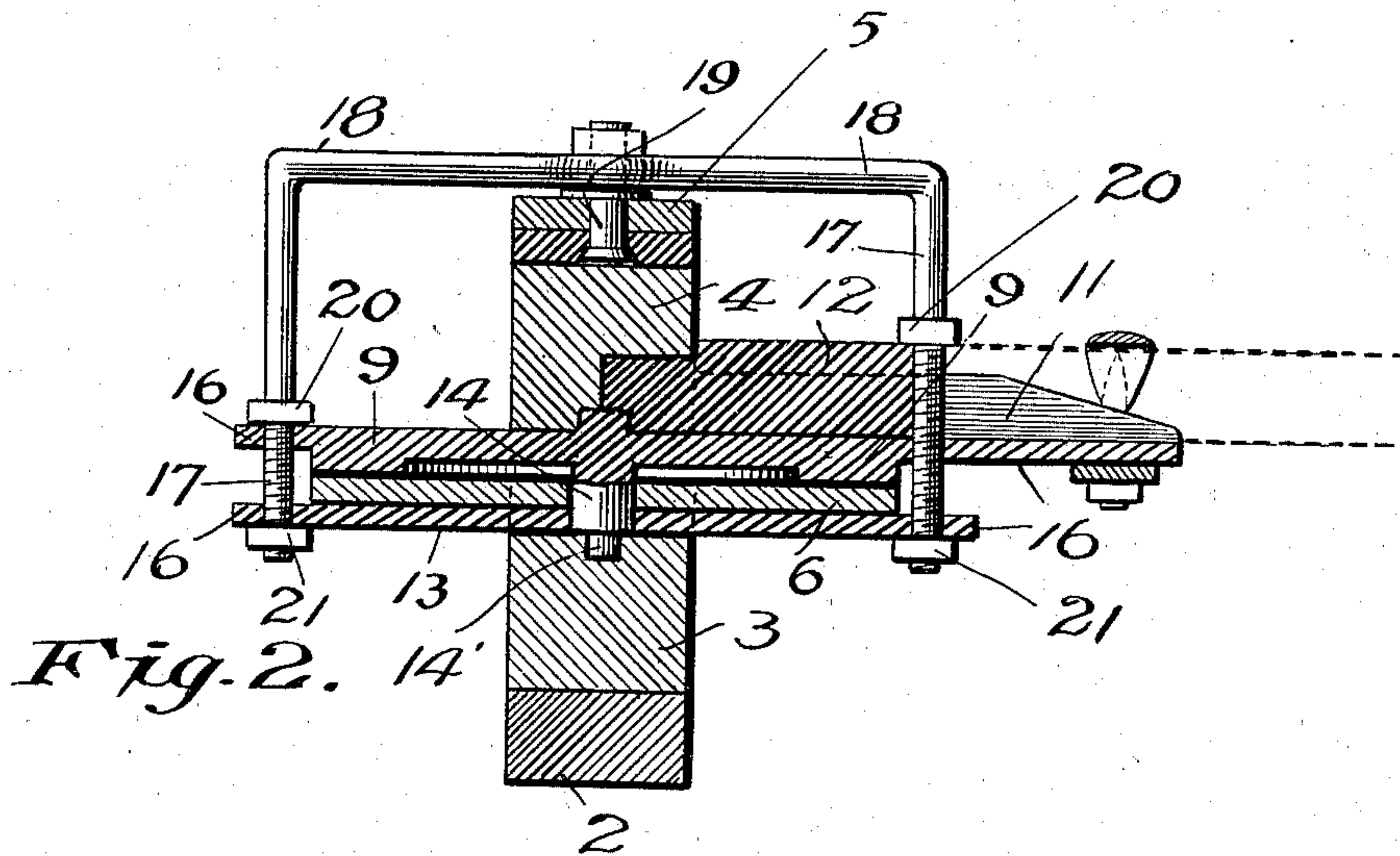


Fig. 2.

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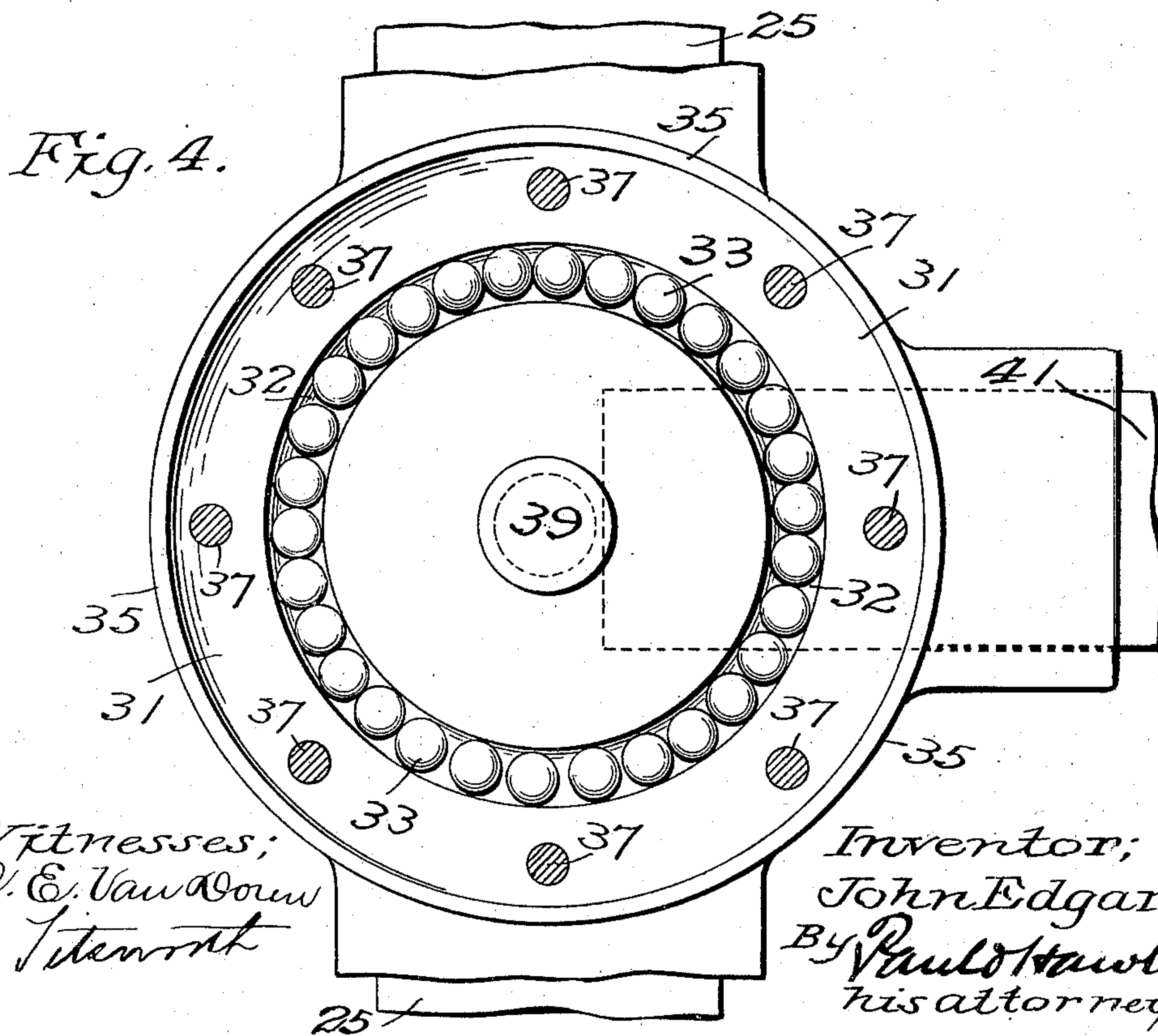
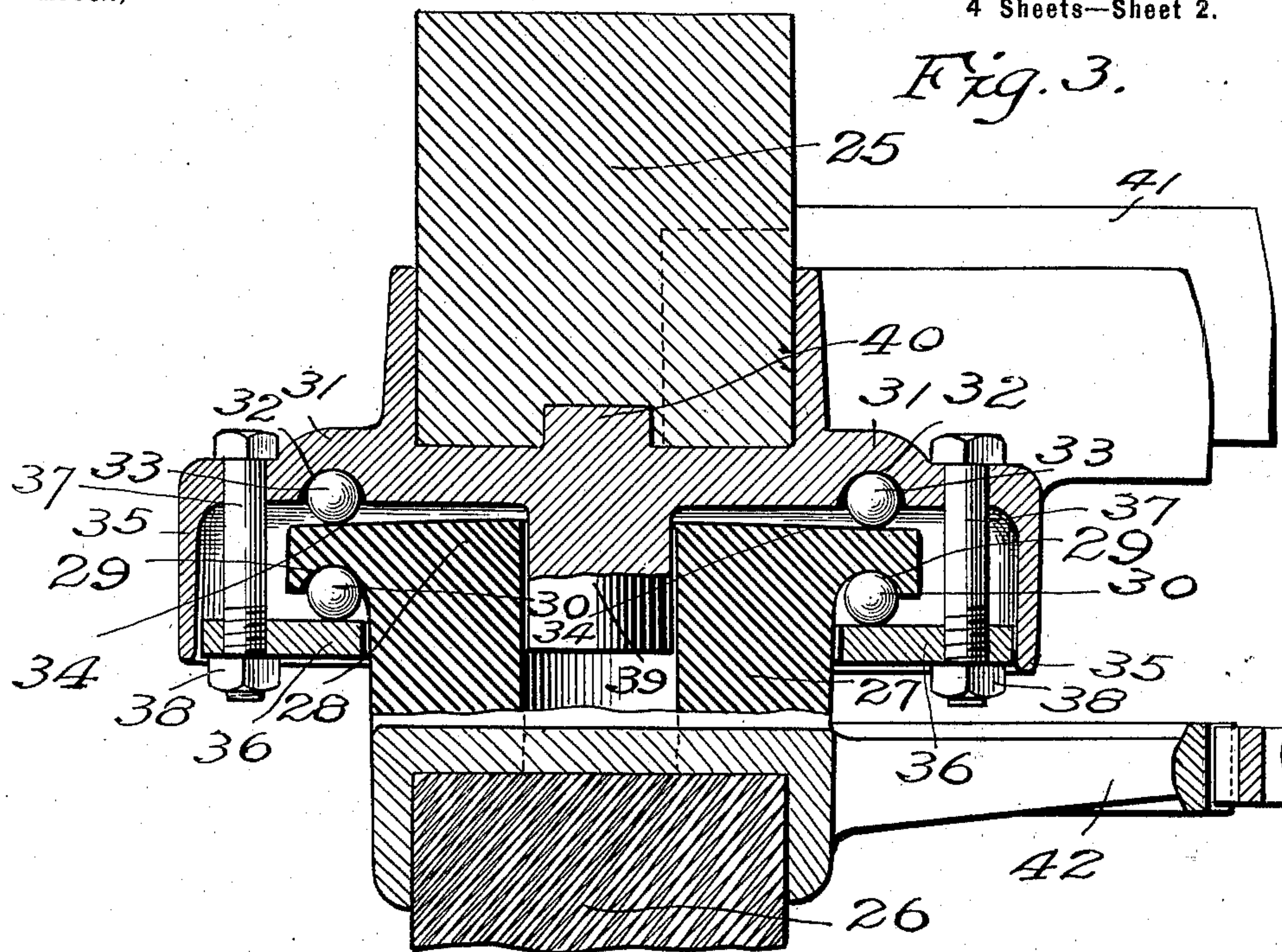
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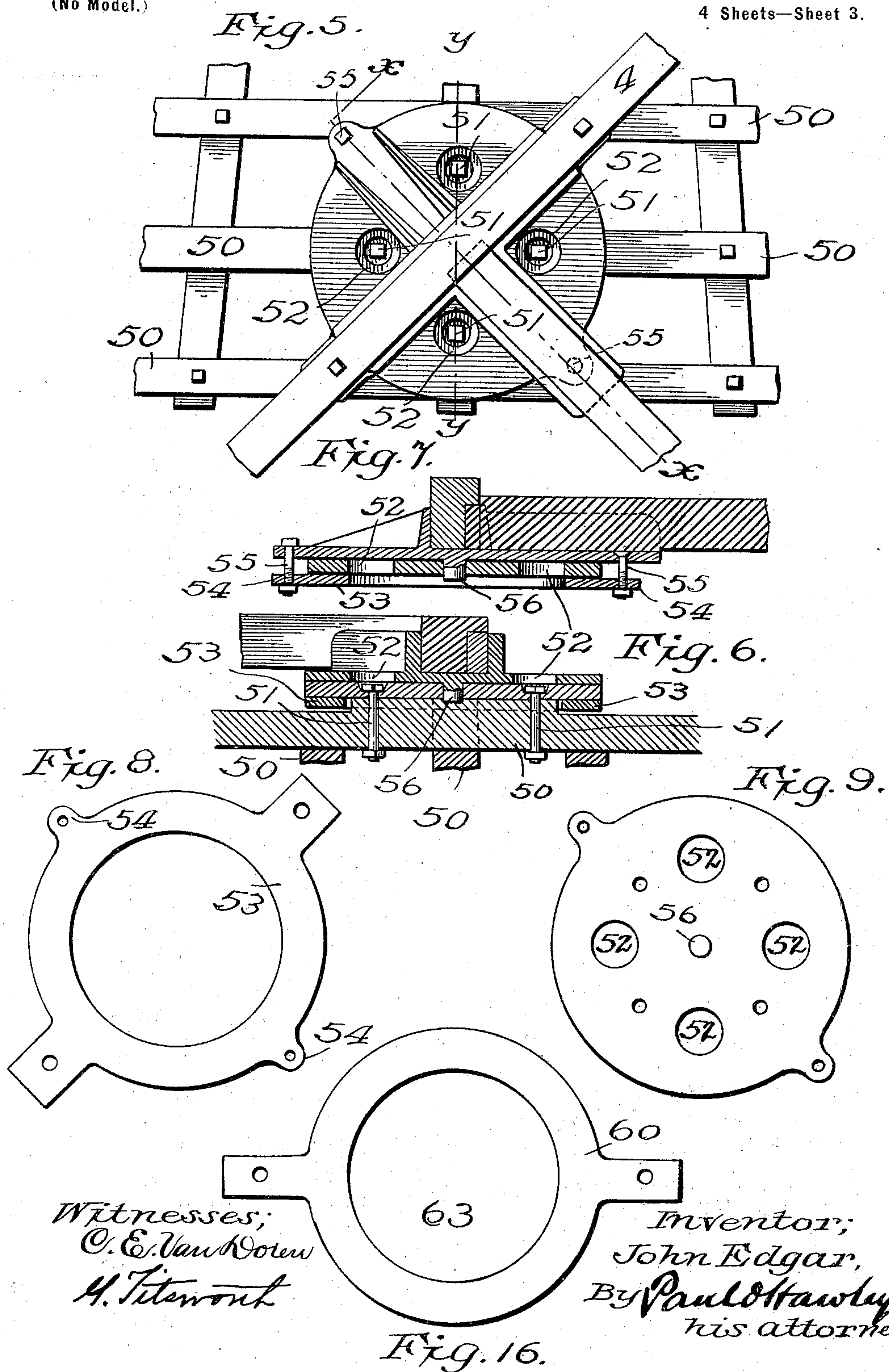
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4 Sheets—Sheet 3.



UNITED STATES PATENT OFFICE.

JOHN EDGAR, OF ROCHESTER, MINNESOTA.

FIFTH-WHEEL.

SPECIFICATION forming part of Letters Patent No. 610,173, dated September 6, 1898.

Application filed November 20, 1897. Serial No. 659,236. (No model.)

To all whom it may concern:

Be it known that I, JOHN EDGAR, of the city of Rochester, county of Olmsted, State of Minnesota, have invented certain new and useful Improvements in Fifth-Wheels, of which the following is a specification.

This invention relates to a new and improved vehicle-gearing or fifth-wheel.

It has heretofore been common to pivot the head-block or bolster upon the axle by means of a king-bolt alone.

The object of this invention is to provide a fifth-wheel having parts which are held together at the margin instead of at its center, whereby all tilting or binding of the parts or plates is avoided.

My invention consists in a fifth-wheel comprising relatively-movable concentrically-held parts in combination with means for holding or binding said parts together at their margins, whereby the full bearing of one part upon the other is obtained and tilting or binding thereof is avoided; and the invention also consists in various modifications of the foregoing structure and in combinations of parts, all as hereinafter described, and particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a perspective view of a fifth-wheel embodying my invention. Fig. 2 is a sectional view thereof. Fig. 3 is a vertical section of a modified form of the fifth-wheel. Fig. 4 is a view of the under side of the upper part of the same. Fig. 5 is a plan view of a fifth-wheel adapted for use in connection with a platform-support. Fig. 6 is a view thereof on the line *y y* of Fig. 5. Fig. 7 is a similar sectional view on the line *x x* of Fig. 5. Fig. 8 is a detail view of the under section of the fifth-wheel shown in Fig. 5. Fig. 9 is a similar view of the middle section of the device shown in Fig. 5. Fig. 10 illustrates a further modification of my invention. Fig. 11 is a sectional view thereof on the line *x x* of Fig. 10. Fig. 12 is a sectional view on the line *y y* of Fig. 10. Fig. 13 is a plan view of the middle section of the device shown in Fig. 10. Fig. 14 is a similar detail of the top part or section thereof. Fig. 15 is a similar view of the bot-

tom section. Fig. 16 illustrates a modified form of the middle plate or ring.

As shown in Figs. 1 and 2 of the drawings, 2 represents the axle, and 3 the axle-stock. 4 is the head-block, upon which the springs 5 rest and are secured. The plate 6, which is provided with extensions 7, is secured upon the top of the axle-stock by means of bolts or clips 8. On this circular plate rests the upper part 9 of the fifth-wheel. This plate is preferably circular and may be provided with the webs 10 and 11 to embrace the sides of the head-block 4 and of the reach 12. The axle-stock is notched beneath the plate 6 to receive the under plate or binder 13, which is movable with the plate 9. The plate 9 has a depending central stud 14, which extends through center holes in the plates 6 and 13 to center the same. No force except the lateral strain is exerted on this pin or stud, as it is not bound in the plates 6 and 13. The stud 14 preferably has an extension 14', which extends a short distance into the stock and head-block to aid in securing the parts in place. Both the plates 13 and 9 preferably have extensions or lugs 16 to receive the bolts 17, that adjustably hold and clamp the plates 9 and 13 upon opposite sides of the plate 6 at the margin or periphery thereof. To prevent the bolts 17 from tilting between the two plates 9 and 13, I preferably make said bolts in one piece or U-clip, the top bar 18 of which stiffens and steadies the vertical or bolt portions 17, said bar being secured at the middle by a light bolt 19 in the spring 5 or by a simple pin extending from the upper surface of the spring 5. To provide for desired adjustment, lock-nuts 20 and 21 are arranged on each of the bolts 17 above and below the plates 9 and 13, respectively.

The device shown in Figs. 1 and 2 is particularly intended for light vehicles in which the axle is allowed but a short movement. In Figs. 3 and 4 I have illustrated a fifth-wheel adapted for trucks and other vehicles where it is desirable to allow the axle and front wheels to make an almost or entire revolution about the pivot. In these figures, 25 and 26 represent the head-block or bolster and the axle, respectively. On the axle I secure the block 27, the upper part 28 of which has the form of a disk, in the under surface

of which is a groove 29 for a row of balls 30. The upper part or disk 31 of the fifth-wheel is secured in any desired manner to the head-block, and it is also provided with an annular groove 32 in its under surface to accommodate the second series of balls 33, which balls rest upon the plain upper surface of the disk 34. The disk or wheel 31 is provided with a circular depending flange or ring 35, which projects down to a point beneath the disk 34. 36 is a binder or follower ring which is inserted in the ring or flange 35 and upon the top of which the balls 30 rest. This ring 36 is adjustably secured to the disk 31 by a series of bolts 37, the heads of these bolts being preferably on the disk 31. The holes in the ring 36 are preferably threaded to receive the ends of the bolts 37, and the bolts are locked by means of nuts 38. By these bolts the disk 31 and the ring 36 may be tightened upon opposite sides of the disk or ring 34 of the fifth-wheel. The disk 28 or the disk 31 may be provided with a central stud or pivot 39, adapted to enter a hole or socket in the top plate. The upper surface of the disk 31 is preferably provided with a short stud or lug 40 to enter a short distance into the under side of the bolster or head-block 25. The reach 41 of the vehicle is connected with the bolster or head-block where the tongue is attached to the axle 26. There is nothing to interfere with a complete revolution of the middle disk 28, which disk is held at the center to prevent lateral movement thereof, while tilting movements are completely prevented by the two parts 31 and 36, which attend or bear upon the middle disk at the margin or periphery thereof. The balls are used to eliminate friction as much as possible, and the grooves for the balls may have flat plain surfaces to run upon the disk 28 and ring 36, which parts will be self-clearing. This device is particularly applicable to motor-cycles and the like, where a tongue is dispensed with and a suitable gear or other steering mechanism 42 is substituted as a means to swing the axle and wheel.

A light and compact fifth-wheel structure adapted to make a complete revolution, if need be, is shown in Figs. 5 to 9. This device is especially adapted for use upon vehicles which are provided with a "platform" in connection with the forward axle. The outer plates—that is, the upper and lower plates—are secured together very much as shown in Figs. 1 and 2, while the middle plate, instead of having extensions from its periphery, is secured to the platform 50 by bolts 51, which pass through the middle or body portion of the middle plate of the fifth-wheel. The upper plate is of the same shape as the under plate, and the holes 52, which are made therein, are preferably situated to allow easy access to the heads of the bolts 51, which secure the middle plate. The reach and the head-block are secured on the top plate, and said top plate is bound upon the middle plate

by means of the ring 53, which is identical with the ring 36 in Fig. 3, with the exception that it is provided with lugs or extensions 54, similar to the extensions of the plate 13 in Fig. 2, and which are bound to the top plate by bolts 55, extending between opposite lugs upon said ring 53 and said top plate. The stud 56, by which the parts are held concentric, preferably depends from the top plate and extends through the middle plate, which is secured on the platform 50 of the vehicle-gearing.

It is not always convenient to secure the middle plate of the fifth-wheel to the vehicle part by fastenings near the center thereof, as in Figs. 3, 5, and 6. As indicated in Figs. 1 and 2 and as also shown in Figs. 10 to 16, the middle plate of the fifth-wheel may be secured by extensions from or lugs upon its periphery or outer edge, while the top and bottom plates, which are clamped upon the middle plate, are secured thereon by bolts or parts which extend through the middle portion or body of the middle plate, said plate becoming a simple ring. In Fig. 10 the middle plate 60 has lugs 61 by which said plate is secured upon the platform-axle or other part 62 of the vehicle-gearing. The plate 60 is a ring having a large hole 63 in its center. The upper and lower plates embrace the middle plate 60 and are connected by bolts 64, which extend through the hole 63 in the middle of the plate 60. Both of the top and bottom plates 65 and 66 are provided with solid webs or cross-bars, and one of the same or the middle plate is provided with a center stud 67, which has bearings in the axle and axle-stock. This stud may be dispensed with, in which case six or more bolts 64, used to secure the outside plates, would be depended upon to center the three plates. A flange upon one of the circle plates or rings may take the lateral bearing of the other plates, and thus the contrivance be made to rotate in or on marginal bearings instead of on a pin or pivot at the center. The tilting or binding of the outer plates is prevented by means of the yoke or clip 68, similar to the device 18 in Figs. 1 and 2. For a straight axle and axle-stock it will be necessary to modify the middle plate 60, as shown in Fig. 16, the same there having but two side lugs or extensions to be fastened upon the top of the axle-stock. In this case the axle-stock will be notched to make room for the lower plate and the bolt-heads or nuts beneath the same.

In any of these fifth-wheels the strain will at all times be divided between the three plates and upon and across their full surface, so that the full strength of all parts is utilized. Hence the parts may be of much smaller size than those in fifth-wheels of the ordinary construction. As the plates are held flatly upon one another it is impossible for them to separate or bind at the edges, and as the friction is the same at all points between the parts

the movement of the device will be easy and smooth and even. Another advantage of the device grows out of the fact that the center pin does not cut through or weaken either the axle or the head-block, and may be made as heavy and strong as required for any use, and, further, the device may be placed over the axle or in front of or behind the same.

It is obvious that modifications of my device would readily suggest themselves to one skilled in the art, and I therefore do not confine my invention to the specific construction shown and described.

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

1. In a device to connect an axle and a head-block, or equivalent parts, the combination, of three plates, one thereof bound or held between and at the margins of the others and means for taking up the slack caused by the wear of said plates, substantially as described.

2. The combination, with the three concentric plates, of means at or near the margins thereof binding or holding two of said plates upon the other one and whereby the wear of said plates may be taken up, substantially as described.

3. The combination, with three plates, having a common axis, of adjustable means binding together the margins of said plates and permitting the wear of said plates to be taken up, substantially as described.

4. The combination, of three plates, with the common center pivot, means holding said plates together at the margins, means for securing the middle plate upon one part of the vehicle, and means to secure the other plates on another part of the vehicle, substantially as described.

5. The combination, of the three centrally-pivoted plates, with means connecting the outer plates to secure and hold the same on the middle plate and to permit the wear of said plates to be taken up, substantially as described.

6. The combination, of the three centrally-pivoted plates, two thereof having extensions with bolts arranged in said extensions to bind said plates on opposite sides of the other plate, the said two plates and the middle plate being adapted to be secured to relatively-movable vehicle parts, substantially as described.

7. The combination, of the middle plate adapted to be secured to one vehicle part, with the outer plates adapted to be secured to the other vehicle parts, means for holding said plates concentric, bolts at the margins

of said plates binding the outer plates upon the inner plate, and means to prevent the tilting of said bolts, substantially as described.

8. The combination, with the middle plate, of the outer plates, said outer plates carrying bolts holding the same upon the middle plate at the margins thereof, said bolts being connected by means centrally held, substantially as described.

9. The combination, with the middle plate, of the outer plate bound on said middle plate at the margin thereof, and adapted to rotate with respect thereto, and one of said plates provided with a central pivot or stud for the other plates and means at the margins of said outer plates to take up the wear of said plates, substantially as described.

10. The combination, of the two centrally-pivoted disks or plates, one overlapping the other, of a ring carried by said overlapping plate, and means at the margins of said disks or plates for binding the smaller plate or disk upon said overlapping disk and said ring, substantially as described.

11. The combination, of the middle disk, with the outer disk centrally pivoted, the ring, and means at the margins of said disks or plates for adjustably clamping said outer disk and ring upon said middle disk, substantially as described.

12. The combination, of the middle disk, with the outer disk centrally pivoted, the ring, and means at the margins of said disks or plates for adjustably clamping said outer disk and ring upon said middle disk, and a series of balls arranged upon said disks, substantially as described and for the purpose specified.

13. The combination, of the disk, provided with the ball-groove, of the disk also having a ball-groove, the balls in said groove, the ring, and means at the edge of said disk securing said ring upon said disk, as and for the purpose specified.

14. The combination, of three circle parts or members, with a common center, one of them having a flange at right angles thereto, and against which flange one of the other parts at its edge or margin bears and rotates with it and adjustable means at the margins of said parts or members to take up the wear thereof.

In testimony whereof I have hereunto set my hand this 12th day of November, A. D. 1897.

JOHN EDGAR.

In presence of—

C. E. CALLAGHAN,
J. S. BEMIS.