

No. 641,974.

Patented Jan. 23, 1900.

P. S. KINGSLAND.

CAR BRAKE.

(Application filed June 28, 1899.)

(No Model.)

5 Sheets—Sheet I.

Fig. I.

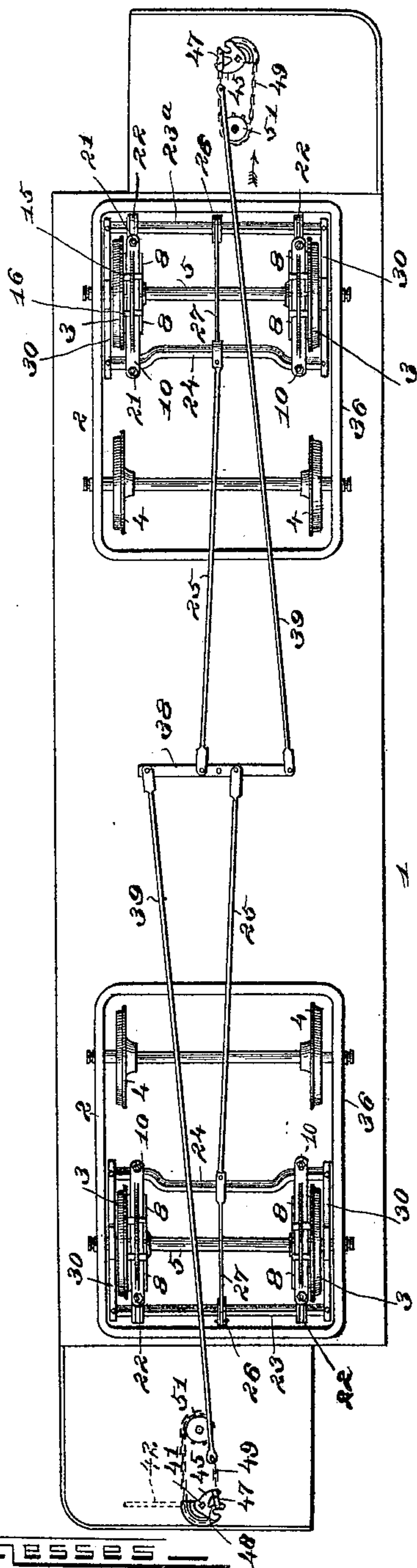
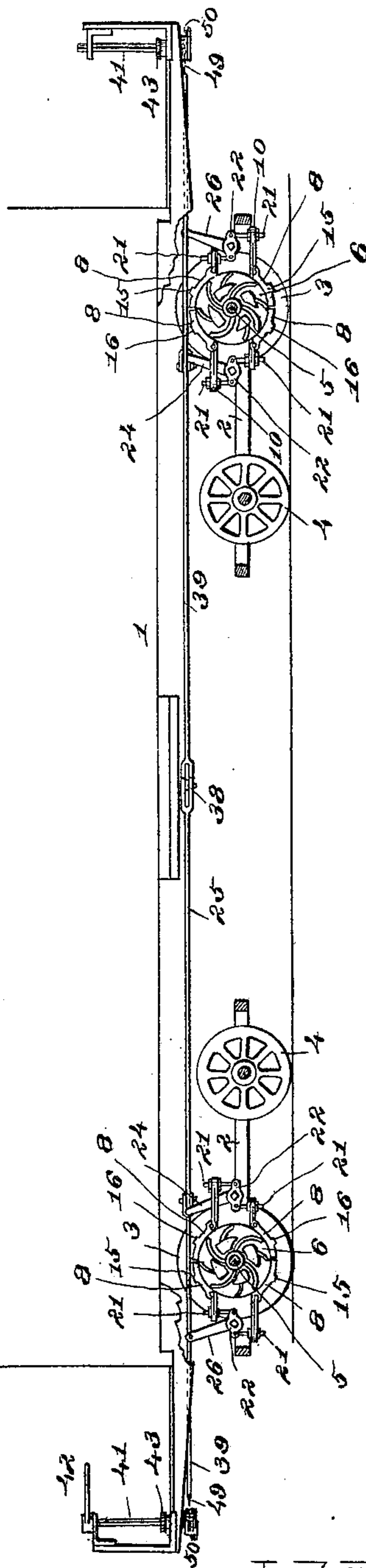


Fig. II.



WITNESSES

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Fig. III.

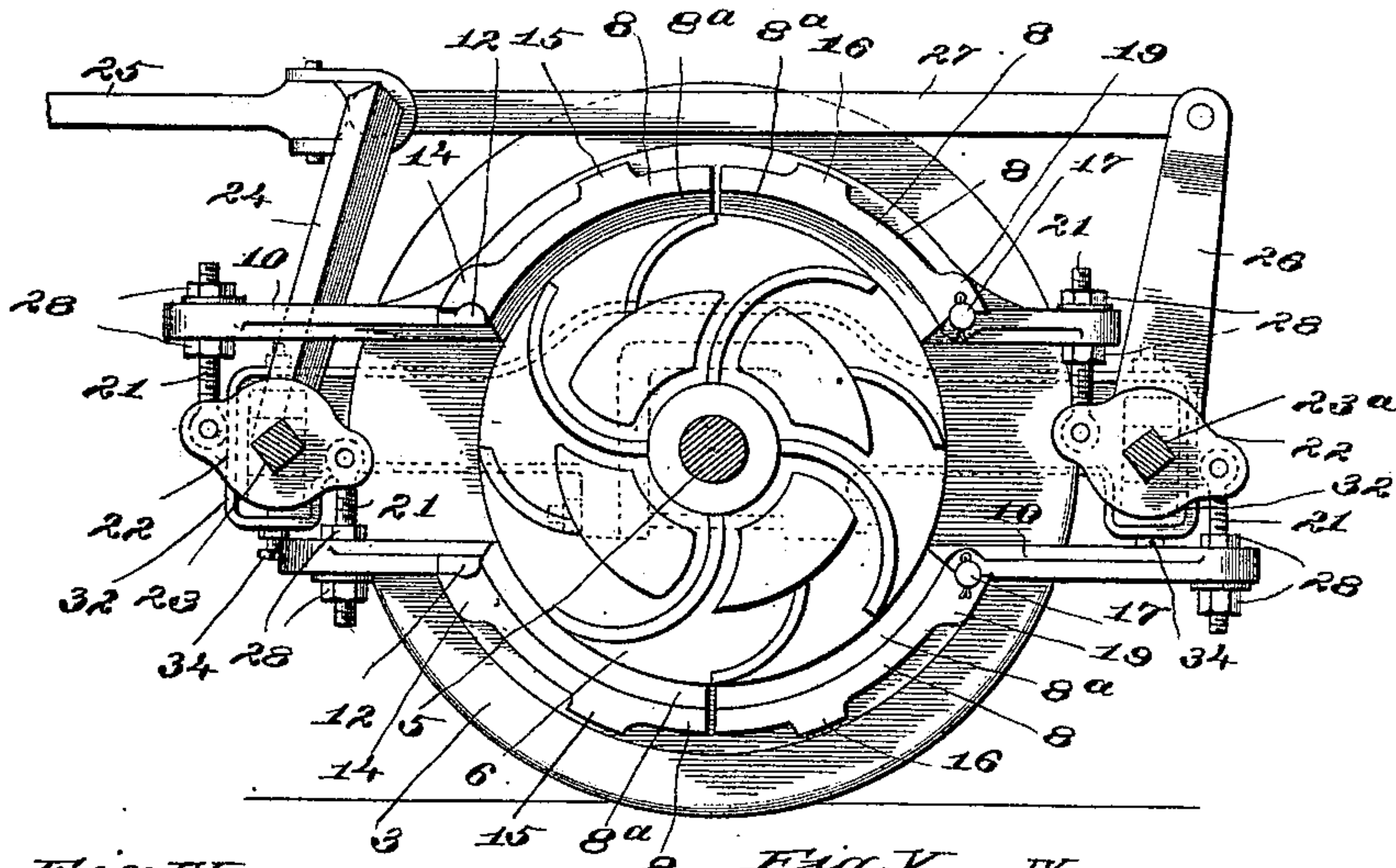


Fig. IV.

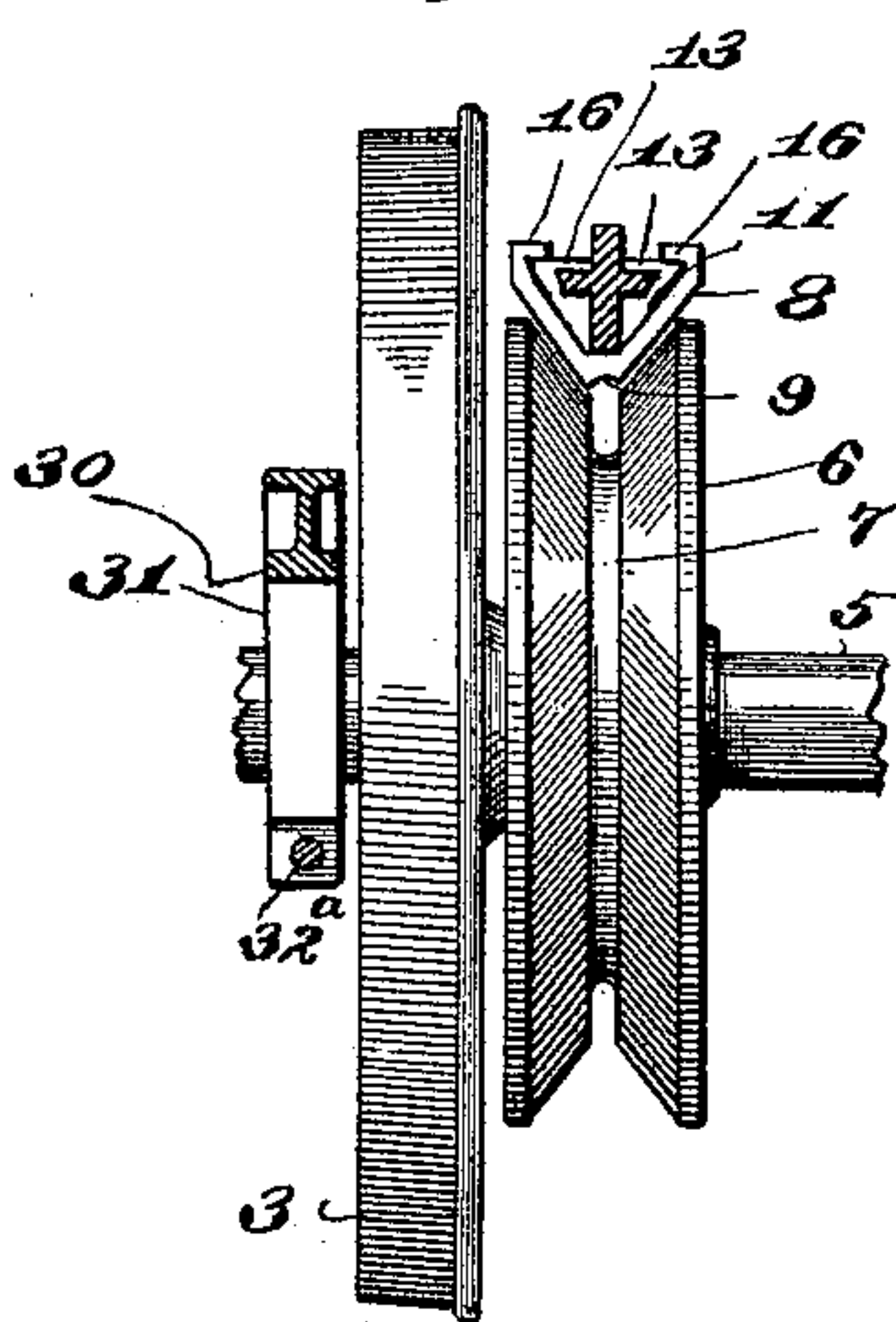


Fig. V.

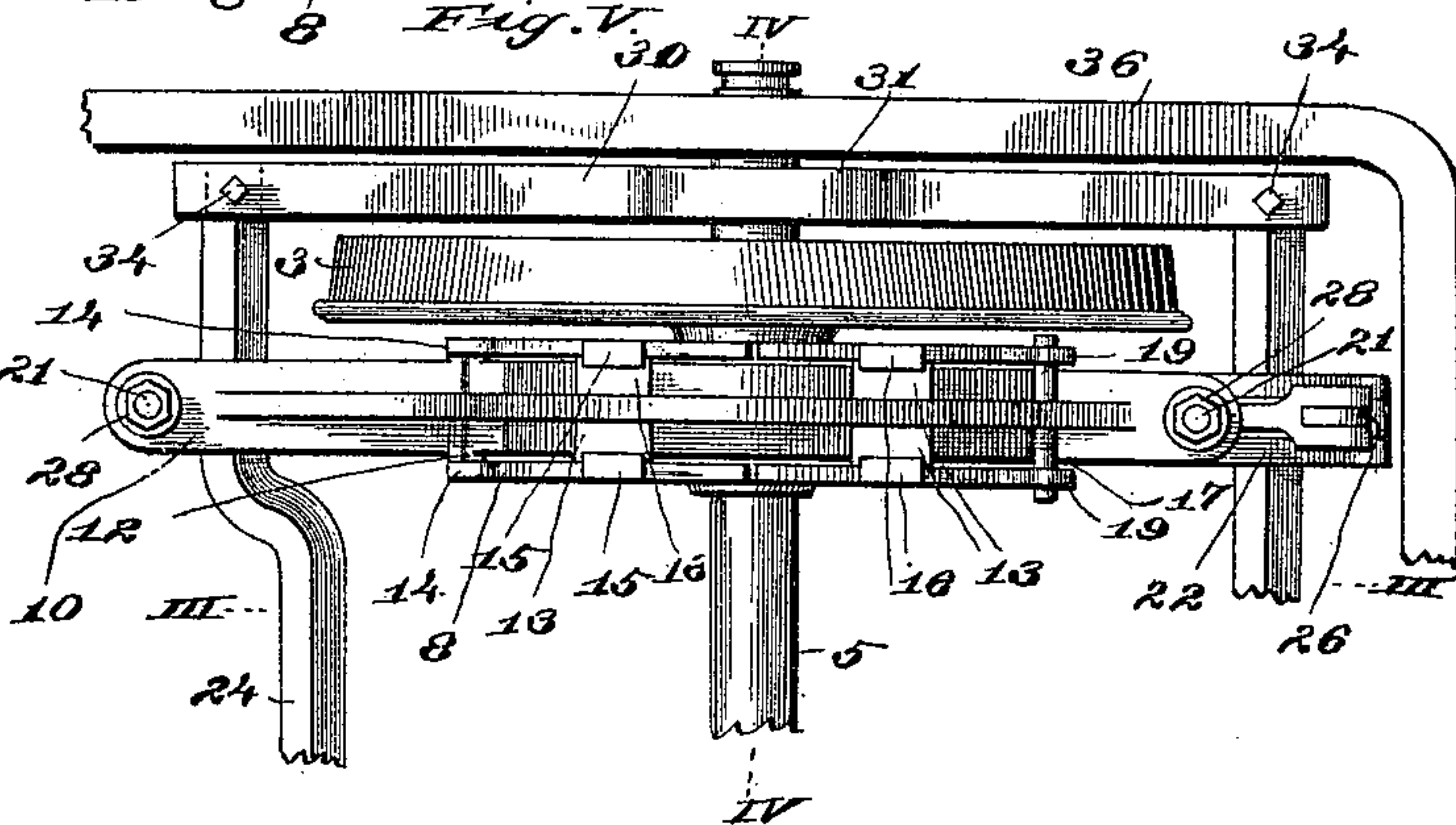


Fig. VI.

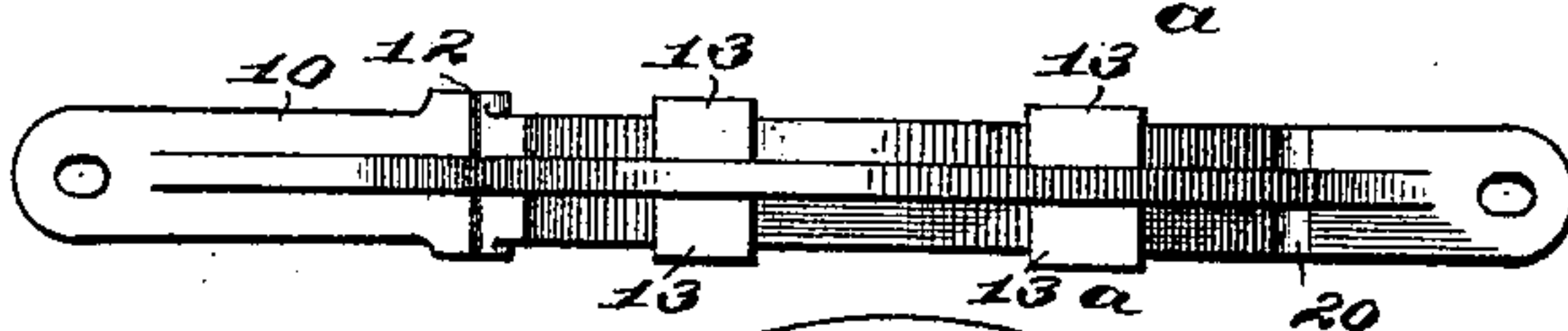
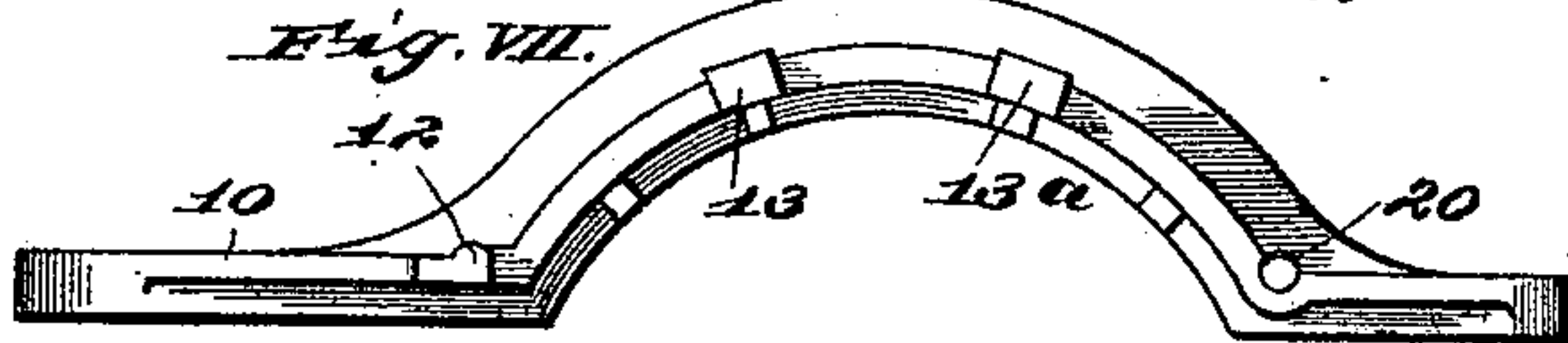


Fig. VII.



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Fig. VIII.

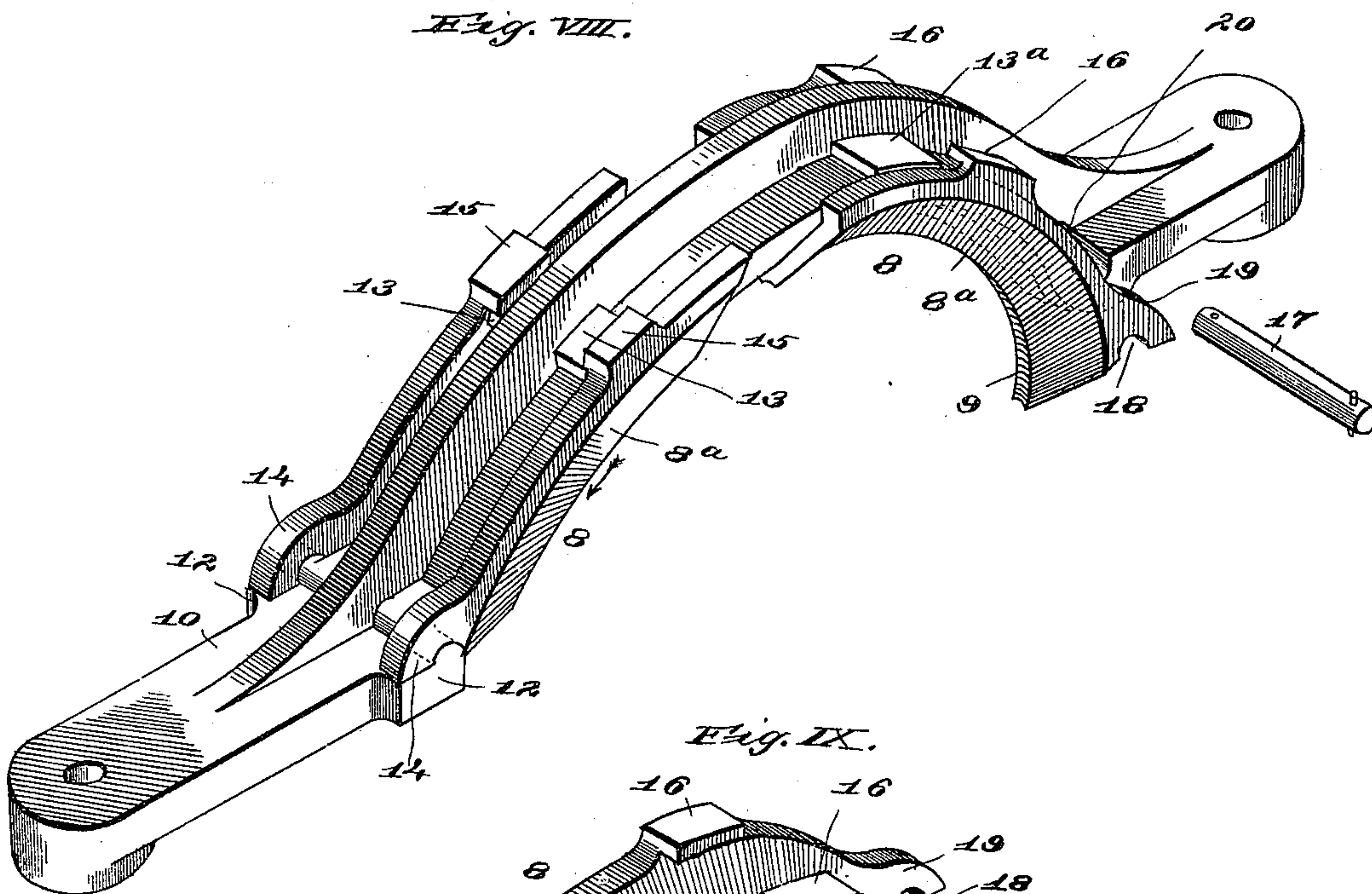


Fig. IX.

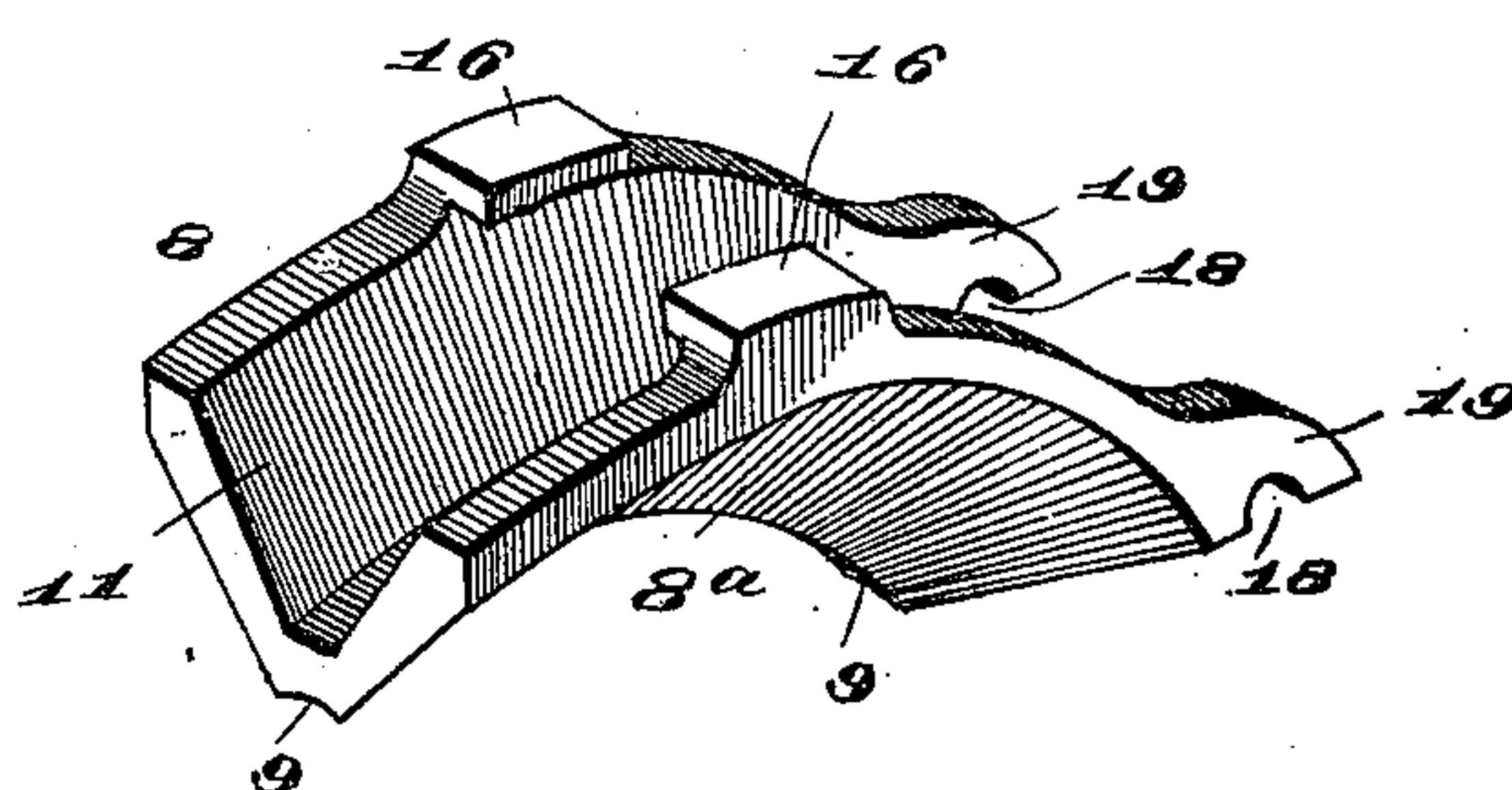
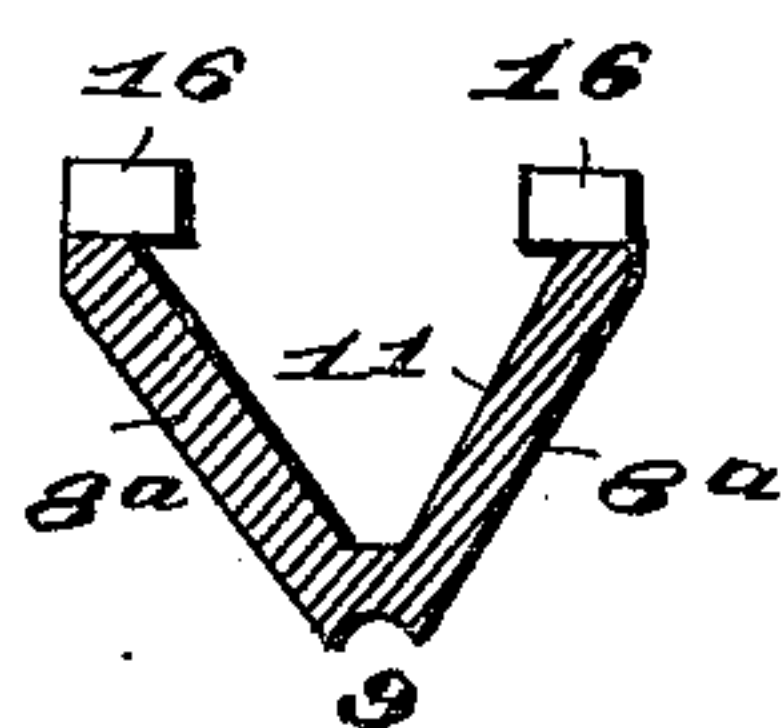


Fig. X.



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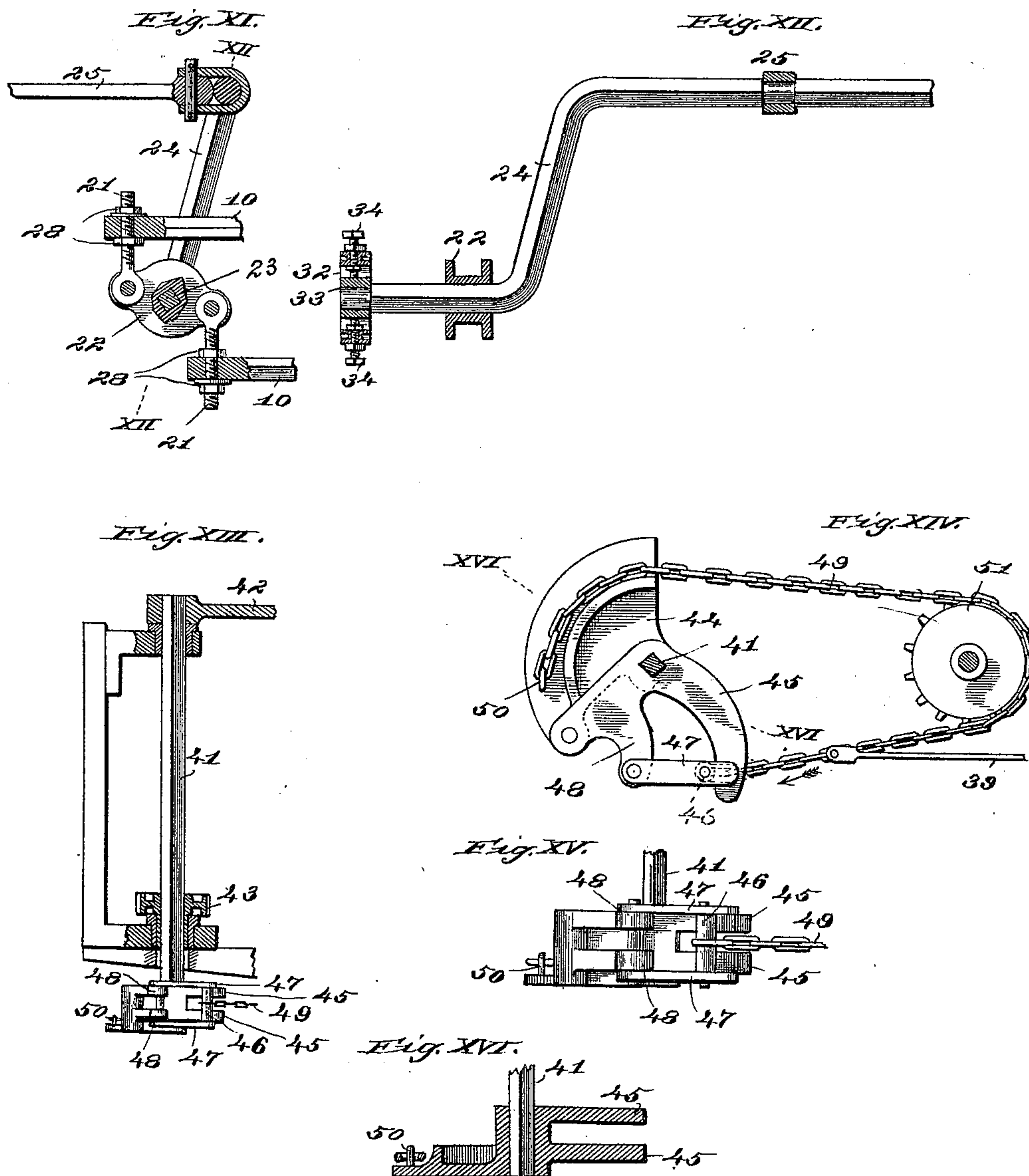
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5 Sheets—Sheet 4.



Witnesses

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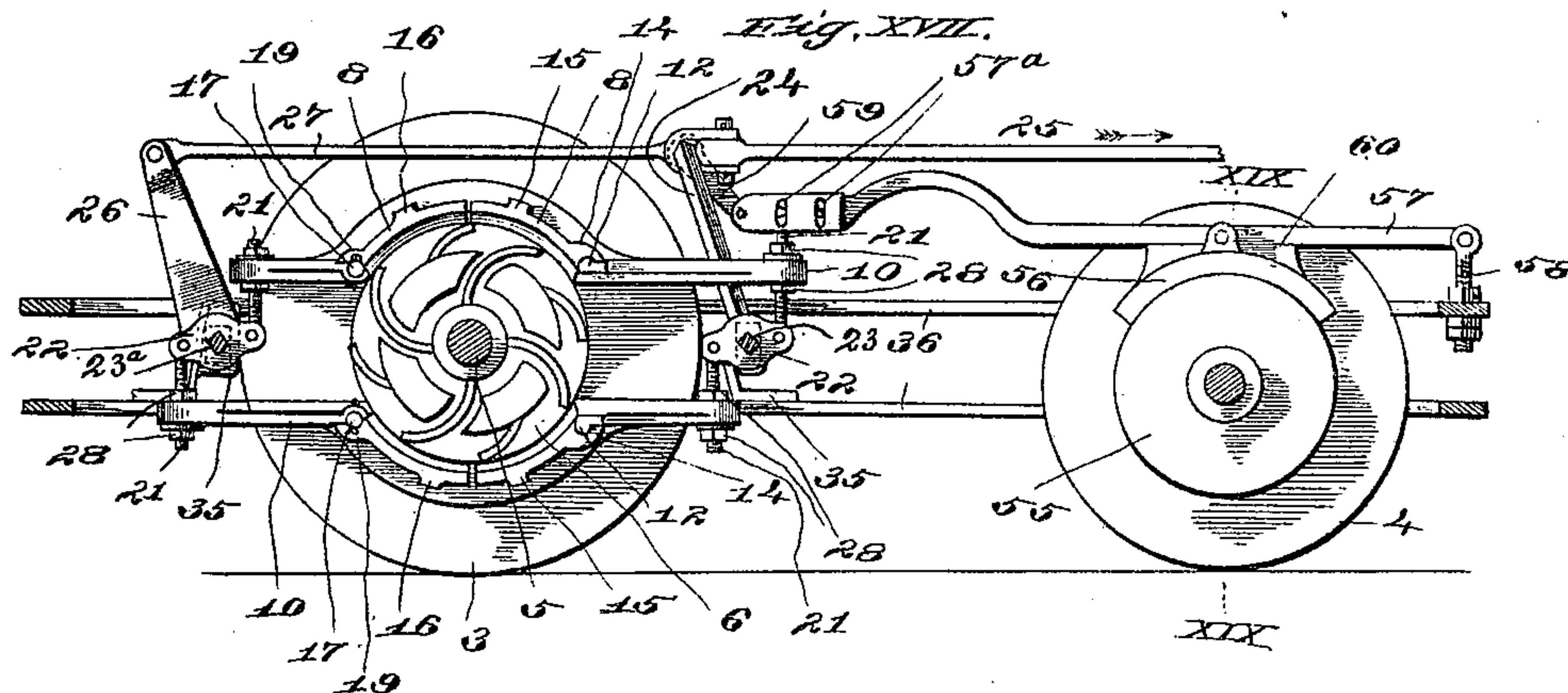


Fig. XVIII.

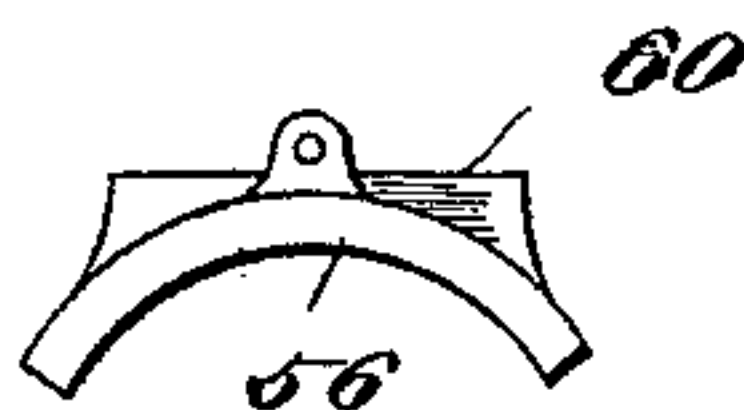


Fig. XIX.

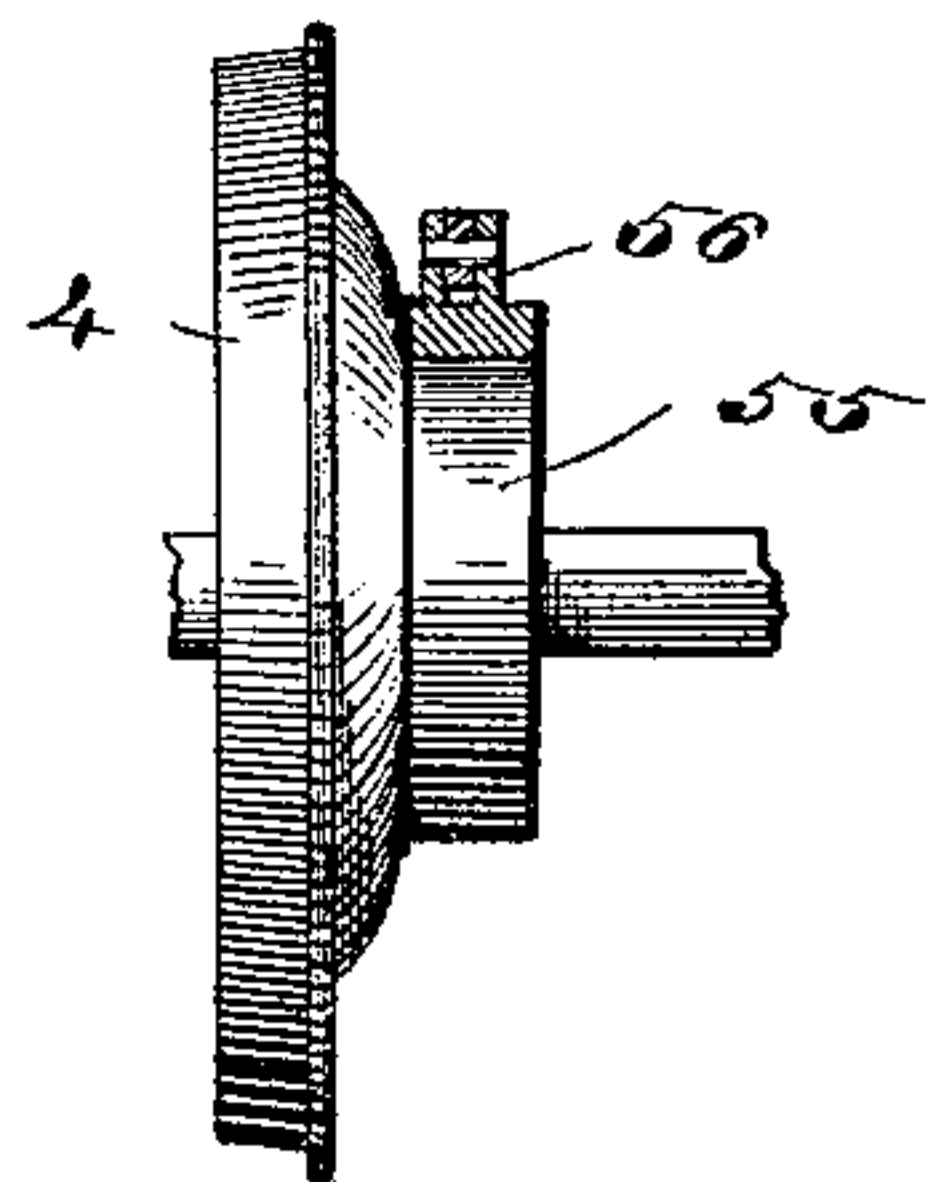


Fig. XX,

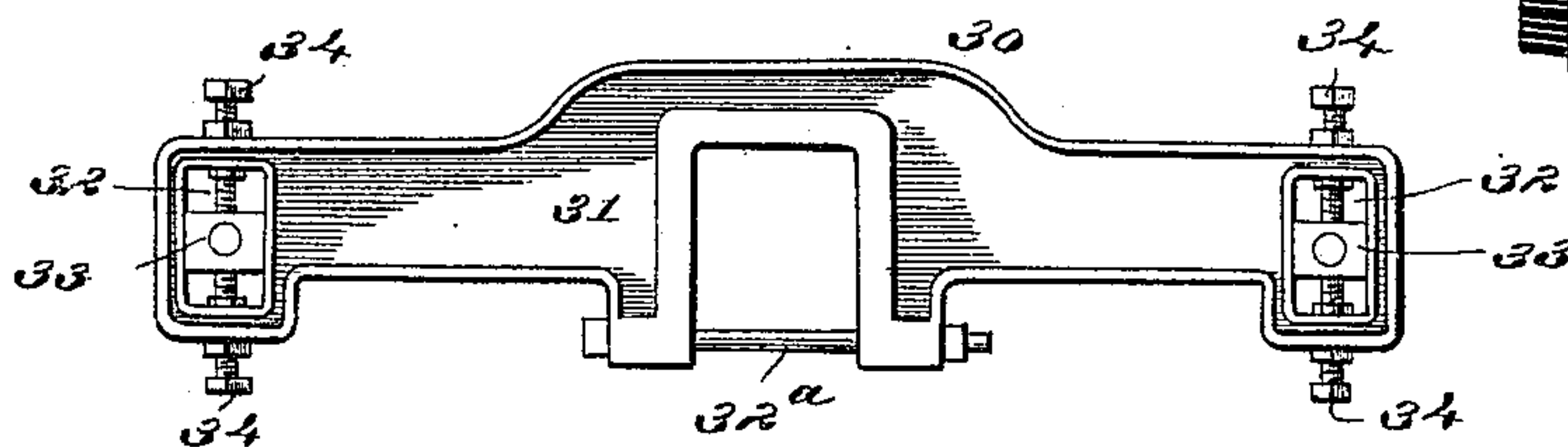
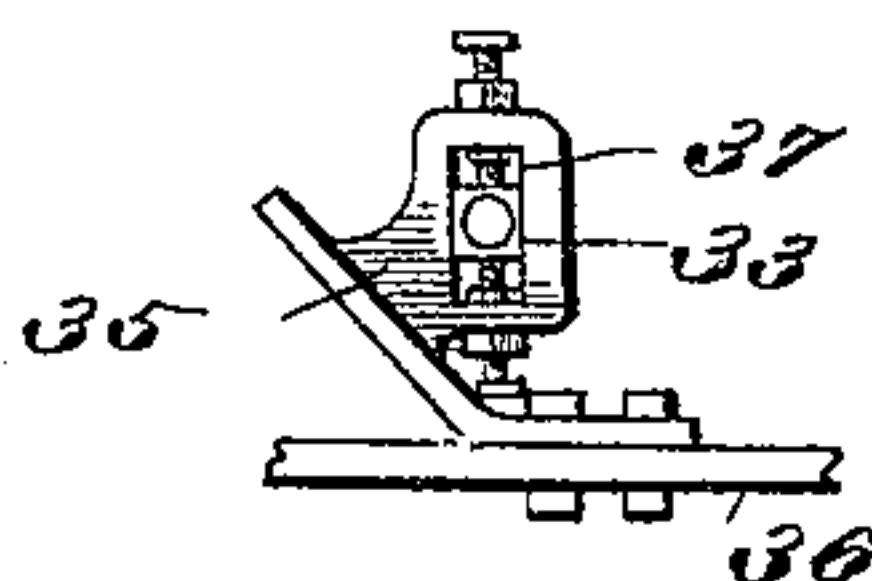


Fig. XXI.



Witnesses

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UNITED STATES PATENT OFFICE.

PHILIP S. KINGSLAND, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE KINGSLAND FRICTION CAR BRAKE COMPANY, OF SAME PLACE.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 641,974, dated January 23, 1900.

Application filed June 28, 1899. Serial No. 722,170. (No model.)

To all whom it may concern:

Be it known that I, PHILIP S. KINGSLAND, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have
5 invented certain new and useful Improvements in Car-Brakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 My invention relates to that class of car-brakes wherein the friction is applied to disks carried by the car-wheels, the disks being secured either directly to the car-wheels or to the axles of the car-wheels.

15 The object of my invention is to construct a car-brake of this character which will be simple and effective in its operation and in which the brake-shoes are bodily moved toward and from the disks, so that when the
20 brakes are applied a uniform frictional contact is effected between the entire surfaces of the shoes and the disks, and in like manner when the brakes are released the shoes are moved bodily away from the disks, so that
25 there is no more friction or wear between the disks on one part of the shoes than on another, the result being a uniform wear and a uniform strain on the parts.

30 My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I shows a bottom view of a car with my improved brake applied thereto. Fig. II is a longitudinal sectional view. Fig. III is
35 a vertical section taken on line III III, Fig. V, the brake mechanism being shown in elevation. Fig. IV is a vertical section taken on line IV IV, Fig. V, the friction-disk and the car-wheel being shown in elevation. Fig. V
40 is a detail top or plan view. Fig. VI is a top view of one of the brake-shoe holders. Fig. VII is a side view of same. Fig. VIII is a perspective view of one of the brake-shoes and its holder, one section of the shoe being
45 partly removed to illustrate how the section can be taken off and replaced. Fig. IX is a perspective view of one section of one of the shoes. Fig. X is a vertical section of one of the shoes. Fig. XI is a vertical section illustrating the manner of connecting the shoe-
50 holders to their operating-shafts. Fig. XII

is a vertical section taken on line XII XII, Fig. XI, and illustrating in section the manner of adjustably supporting the rock-shaft that carries the shoe-holders. Fig. XIII is a
55 detail sectional view of the brake-staff support, the staff itself being shown in elevation. Fig. XIV is an enlarged top or plan view of the cam on the brake-staff. Fig. XV is an end view of the cam arrangement shown in
60 Fig. XIV. Fig. XVI is a section taken on line XVI XVI, Fig. XIV. Fig. XVII is a view showing my brake combined with a brake for the pony-wheels of a car-truck. Fig. XVIII is a side view of the brake-shoes of the pony-
65 wheels. Fig. XIX is a section taken on line XIX XIX, Fig. XVII, the car-wheels and friction-disks being shown in elevation. Fig. XX is a side view of the frame for supporting the rock-shafts of the brake mechanism. 70
Fig. XXI is a detail elevation showing a modification.

Referring to the drawings, 1 represents a car-body; 2, the trucks; 3, the main drive-wheels of the trucks; 4, the pony-wheels, and
75 5 the axles of the main drive-wheels.

6 represents friction-disks carried by the wheels 3, these disks being shrunk or otherwise secured to the axles, so as to be carried
80 with the axles by the wheels. The periphery of each disk is V-shaped, as shown clearly in Fig. IV, and at the bottom of the V-shaped grooves are annular recesses 7, so that as the disks wear away the V-shaped grooves retain
85 their shape, and the points of the shoes do not come in contact with the body of the disks.

8 represents the shoes, which are made in sections 8^a, as shown in Figs. VIII and IX. These shoes have V-shaped exterior surfaces to correspond to the V-shaped grooves of the
90 disks, and the point of each shoe is recessed at 9, so that the exterior V shape of the grooves is maintained, and this recess further prevents the possibility of points of the shoes coming against the body of the disks, 95
so that the frictional contact between the shoes and the disks is maintained between the inclined faces of the two parts. The shoes 8 are carried by holders or cradles 10, the lower faces of which extend into V-shaped
100 grooves 11, formed in the upper faces of the shoes. It is important to have the shoe-sec-

tions so connected to the holders as to permit of their ready removal and renewal, and to accomplish this I provide the holders with shoulders 12 and ledges 13 13^a. The section 5 of the shoe that is held by the end of the holder having the shoulders 12 is provided with ears 14, that are received by the shoulders 12, and the other end of this section of the shoe is provided with projections 15, that 10 rest upon the ledges 13. In putting this section of the shoe in place it is moved up against the holder with the projections 15 forward of the ledges 13. The section is then moved in the direction indicated by the arrow in Fig. 15 VIII until the ears 14 rest against the shoulders 12 and the projections 15 rest over the ledges 13. The other section of the shoe is provided with projections 16, adapted to fit over the ledges 13^a, and in putting this section 20 in place it is moved up against the holder, as shown in Fig. VIII, and is then moved forward until the projections 16 are over the ledges 13^a, and a pin 17 is then passed through recesses 18, formed in the ears 19 of this section 25 of the shoe, the pin passing also through a perforation 20 in the holder. The shoe-sections are thus readily put in place and may be as readily removed when it is desired to renew them.

30 The holders 10 are adjustably connected by means of bolts 21 to blocks or arms 22, secured to rock-shafts 23 23^a, the blocks being caused to turn with the rock-shafts preferably by using non-circular shafts fitting in 35 non-circular openings in the blocks. There is a shoe-holder on each side of each disk, as shown in Fig. III, and there is a rock-shaft 23 23^a for each end of the holders. By connecting the holders to the rock-shafts at each 40 end it will be seen that the shoes will be moved bodily toward and away from the friction-disks, so that the entire surface of the shoes is caused to approach and recede uniformly throughout the length of the shoes toward 45 and away from the disks, and thus no part of the shoes is caused to wear more than another part, and the brakes are quickly applied, as the entire surface of the shoe is brought into immediate action each time the 50 brakes are applied, and in like manner the brakes are quickly released, as the entire surface of the shoes moves bodily away from the disks when the brakes are released.

The rock-shafts 23 have U-shaped portions 55 forming cranks 24, to which the brake-rods 25 are connected, and the rock-shafts 23^a are provided with levers 26, connected to the cranks 24 of the shafts 23 by means of links 27. It will thus be seen that when power is 60 applied to the brake-rods the shafts 23 23^a will be turned and the shoes will be brought to bear against both sides of the friction-disks, and when the rods are moved in the other direction the shoes will be moved away from 65 the friction-disks.

To compensate for wear and to keep the parts in proper adjustment at all times, the

shoe-holders are connected to the blocks 22 by means of the bolts 21, which are provided with nuts 28 above and below the holders, 70 and by adjusting these nuts up or down the wear on the shoes may be compensated for.

To provide a ready means for supporting the rock-shafts and the brake-shoes and their holders, I employ frames 30, such as are 75 shown in Fig. XX, these frames having pedestals 31 to fit over the axle-boxes of the car-wheels, the pedestals extending to a point beneath the axle-boxes, so as to receive bolts 32^a, that extend beneath the axle-boxes and hold 80 the frames in position. The ends of the frames are provided with openings 32 to receive boxes 33, in which the ends of the shafts 23 and 23^a are journaled. The boxes 33 are supported between set-screws 34, so that the boxes can 85 be raised and lowered to adjust the height of the rock-shafts to suit existing conditions, this being an important feature, especially when the brakes are to be applied to cars 90 already in use.

As a modification of the means for supporting the rock-shafts, I have shown in Fig. XXI a casting 35, adapted to be bolted to the truck-frame 36, this casting having openings 37 to 95 receive the journal-boxes 33.

The brake-rods 25 extend to an equalizer 38, located beneath the car and with which the brake-rods 39, extending to the opposite ends of the car, are also connected. The outer 100 ends of the rods 39 are connected to the brake-staffs 41, that extend up beyond the platforms of the car, the upper ends of the staffs being provided with levers 42, as shown in Figs. I and II, and the lower ends of the staffs being 105 provided with the usual ratchet-wheels 43 above the platform. There is an inflexible connection between the brake-staffs and the brake-shoes, so that when the brake-staffs are moved the shoes are moved positively away from and toward the friction-disks. 110

In Figs. XIV to XVI, I have shown a means of connecting the rods 39 to the brake-staffs, which consists of cams 44, connected to the staffs and provided with bifurcated horns 45, that engage rollers 46, carried by links 47, that 115 are pivoted to projections 48 on the cams. The cams are rigidly secured to the brake-staffs. 49 represents a chain one end of which is connected at 50 to the cam 44 and the other end of which is connected to the 120 links 47. This chain passes over an idler 51, that is supported under the car-platform, and to the chain is connected the outer end of the brake-rod 39. It will thus be observed that as the brake-staff is turned to apply the brakes 125 the chain will be moved in the direction of the arrow, Fig. XIV, and as the brakes are applied the roller 46 moves toward the brake-staff, so that the power is increased. When the brake-staff is turned in the opposite direction, the chain is moved in the reverse direction to that indicated by the arrow and the 130 brakes thus released by a positive movement.

Should it be desired to use a brake for the

pony-wheels of the truck in connection with the above-described brakes for the main wheels, this may be done, as illustrated in Figs. XVII to XIX, the axles of the pony-wheels being provided with disks 55, against which shoes 56 bear, the shoes being connected to levers 57, connected, as shown at 58, to the frame of the truck. The other ends of the levers are connected by links 59 to the crank portions of the rock-shafts 23. It will thus be seen that as the shafts are moved in the direction of the arrow, Fig. XVII, to apply the brakes there will be a downward push exerted on the inner ends of the bars or levers 57, forcing the shoes 56 against the disks 55 and braking the pony-wheels.

I prefer to form the shoes 56 with flat tops 60, against which the under surfaces of the bars 57 bear, so as to take the strain from the pivot that connects the shoes to the levers or bars 57 and also preventing the rocking of the shoes, so that they will be moved throughout their entire lengths from and to the disks 55. The bars 57 are each made in two parts, connected together by bolts 57^a, fitting in vertical slots. As the shoes 56 wear away the inner part of the bar 57 may be set up by loosening the bolts 57^a, and thus the wear be compensated for.

I claim as my invention—

1. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to engage the disks, holders supporting the brake-shoes, rock-shafts to which each holder is connected at both ends, and means for simultaneously operating the rock-shafts so that the brake-shoes are moved bodily away from and toward the disks, substantially as set forth.

2. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to engage the disks, holders supporting the brake-shoes, and rock-shafts to which each holder is adjustably connected, at each end, substantially as and for the purpose set forth.

3. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to engage the disks, holders supporting the brake-shoes, rock-shafts, blocks secured to the rock-shafts, and bolts adjustably connecting each end of each holder with said blocks, substantially as set forth.

4. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to engage the disks, and holders supporting the brake-shoes; said disks having V-shaped grooves with annular recesses at the bases of the grooves, substantially as and for the purpose set forth.

5. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to engage said disks, and holders supporting said brake-shoes; said disks having V-shaped grooves with annular recesses at the bases of the grooves, and said brake-shoes be-

ing V-shaped and recessed at 9, substantially as set forth.

6. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to bear against the disks, and formed in sections, and holders carrying the brake-shoes; said holders being provided with shoulders and ledges adapted to receive projections on the brake-shoes whereby the brake-shoe sections can be readily removed and replaced, substantially as set forth.

7. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to bear against disks and formed in sections, and holders supporting the disks; said holders being formed with shoulders 12 and ledges 13 and 13^a, and said brake-shoe sections being formed with ears 14 and 19 and with projections 15 and 16, and a bolt 17, extending through the holder for securing the brake-shoe sections, substantially as and for the purpose set forth.

8. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to bear against the disks, rock-shafts with which the brake-shoes are connected, and means for supporting said rock-shafts consisting of frames provided with pedestals to receive the axle-boxes of the car-wheels inside of the truck-frame, substantially as set forth.

9. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to engage the disks, rock-shafts to which the brake-shoes are connected, and means for supporting the rock-shafts, consisting of frames having pedestals to receive the axle-boxes of the car-wheels, and having openings in which the journal-boxes of said rock-shafts are adjustably held, substantially as set forth.

10. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to engage the disks, rock-shafts to which the brake-shoes are connected, and vertically-adjustable boxes in which said rock-shafts are journaled, substantially as set forth.

11. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to engage the disks, holders supporting the brake-shoes, rock-shafts to which each holder is connected at each end, a crank on one of the rock-shafts to which the other rock-shaft is connected, brake-rods secured to the rock-shafts, and a brake-staff to which said brake-rods are joined by a positive connection, whereby the brake-shoes are moved positively toward and away from said disks, substantially as set forth.

12. In a car-brake, the combination of brake-shoes, brake-rods for moving the brake-shoes, a brake-staff, and a positive connection between said rods and staff, consisting of a cam provided with a horn, a link pivoted to the cam and carrying a roller adapted to be engaged by said horn, and a connection between the brake-rod and the free end of said link and secured at one end to the cam; whereby

when the brakes are applied the point of contact between said horn and roller approaches the brake-staff, substantially as set forth.

13. In a car-brake, the combination of brake-shoes brake-rods for moving the brake-shoes, a brake-staff, and a positive connection between said rods and staff, consisting of a cam secured to the staff and provided with a horn, a link pivoted to the cam and adapted to be engaged by said horn, and a connection between the brake-rod and said link and secured at one end to the cam; whereby when the brake-staff is turned the point of contact between said horn and said link approaches the staff, substantially as set forth.

14. In a car-brake, the combination of brake-shoes, brake-rods for moving the brake-shoes, a brake-staff, and a positive connection between said rod and staff, consisting of a cam provided with a horn, a link pivoted to said cam, and adapted to be engaged by said horn, a chain secured by one end to said cam and by the other end to said link, and an idler over which said chain passes; said brake-rod being connected to said chain, substantially as described.

15. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to engage the disks, rock-shafts to which the brake-shoes are connected, and one of which is formed with a crank portion, disks carried by the pony-wheels of the truck, brake-shoes adapted to engage the last-mentioned disks, bars carrying the last-mentioned shoes, and links connecting said bars to the crank of said rock-shaft, substantially as set forth.

16. In a car-brake, the combination of disks carried by the car-wheels, brake-shoes adapted to engage the disks, rock-shafts to which the brake-shoes are connected, and one of which is formed with a crank portion, disks carried by the pony-wheels of the truck, brake-shoes adapted to engage the last-mentioned disks, bars carrying the last-mentioned shoes, and links connecting said bars to the crank of said shaft; said bars being made in two parts adjustably connected together, substantially as set forth.

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In presence of—

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