

No. 674,224.

Patented May 14, 1901.

J. TAYLOR.
TRUCK.

(Application filed Feb. 1, 1901.)

3 Sheets—Sheet 1.

(No Model.)

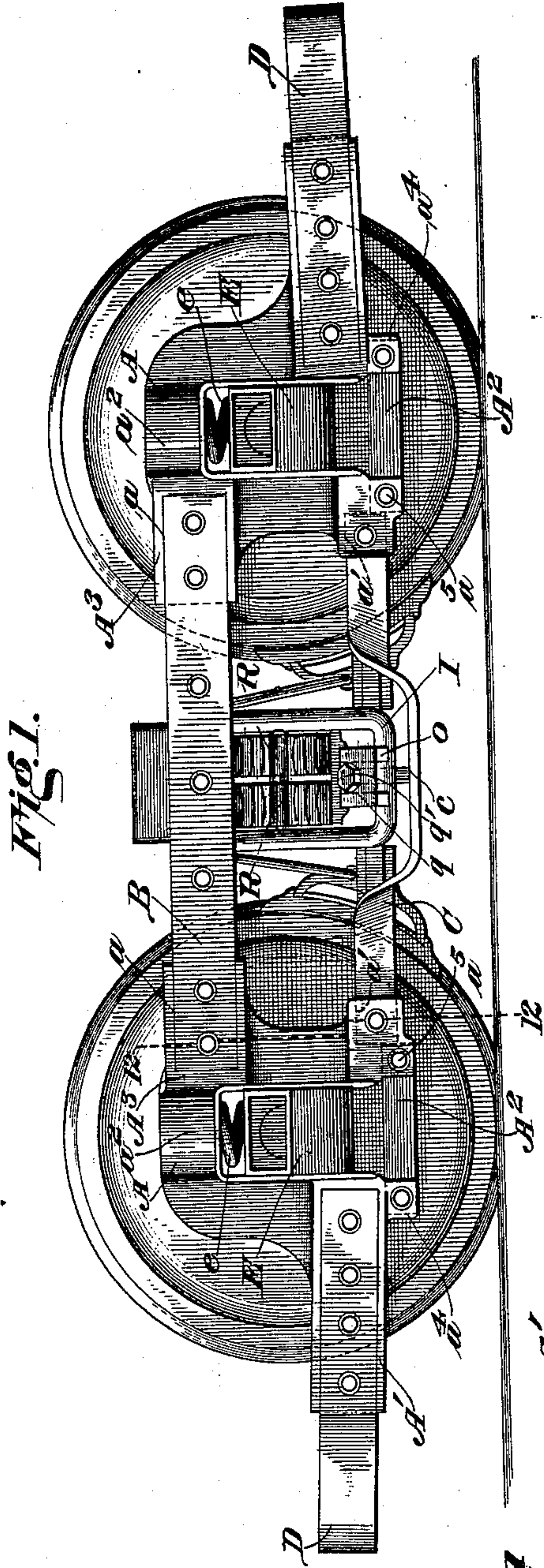


Fig. 1.

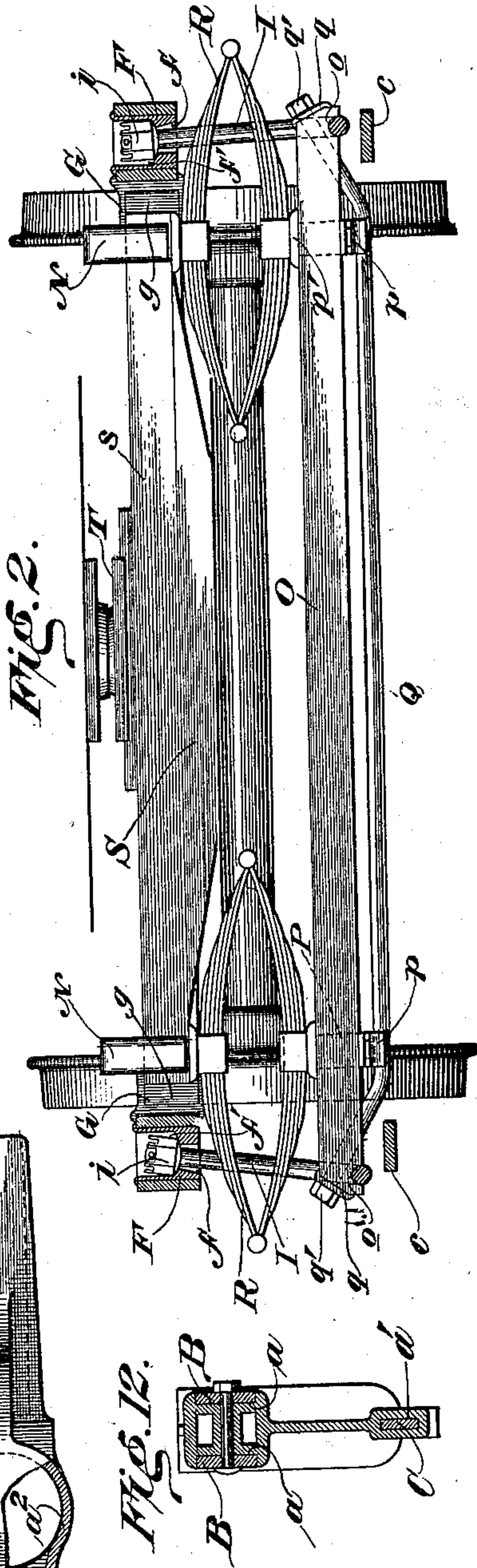


Fig. 2.

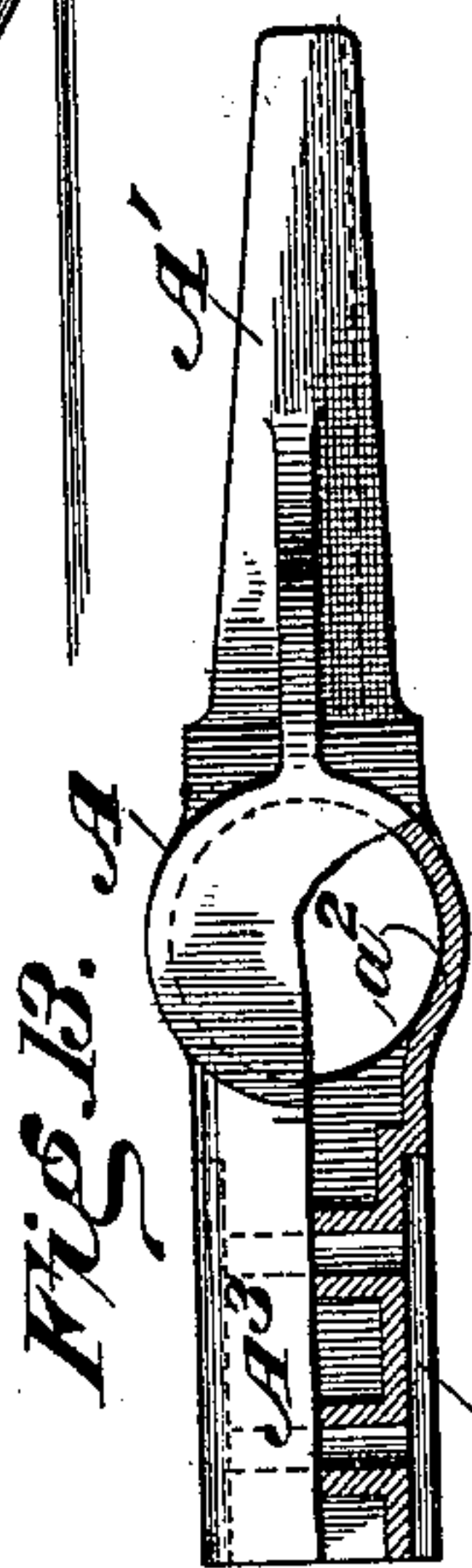


Fig. 13.

Fig. 12.

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No. 674,224.

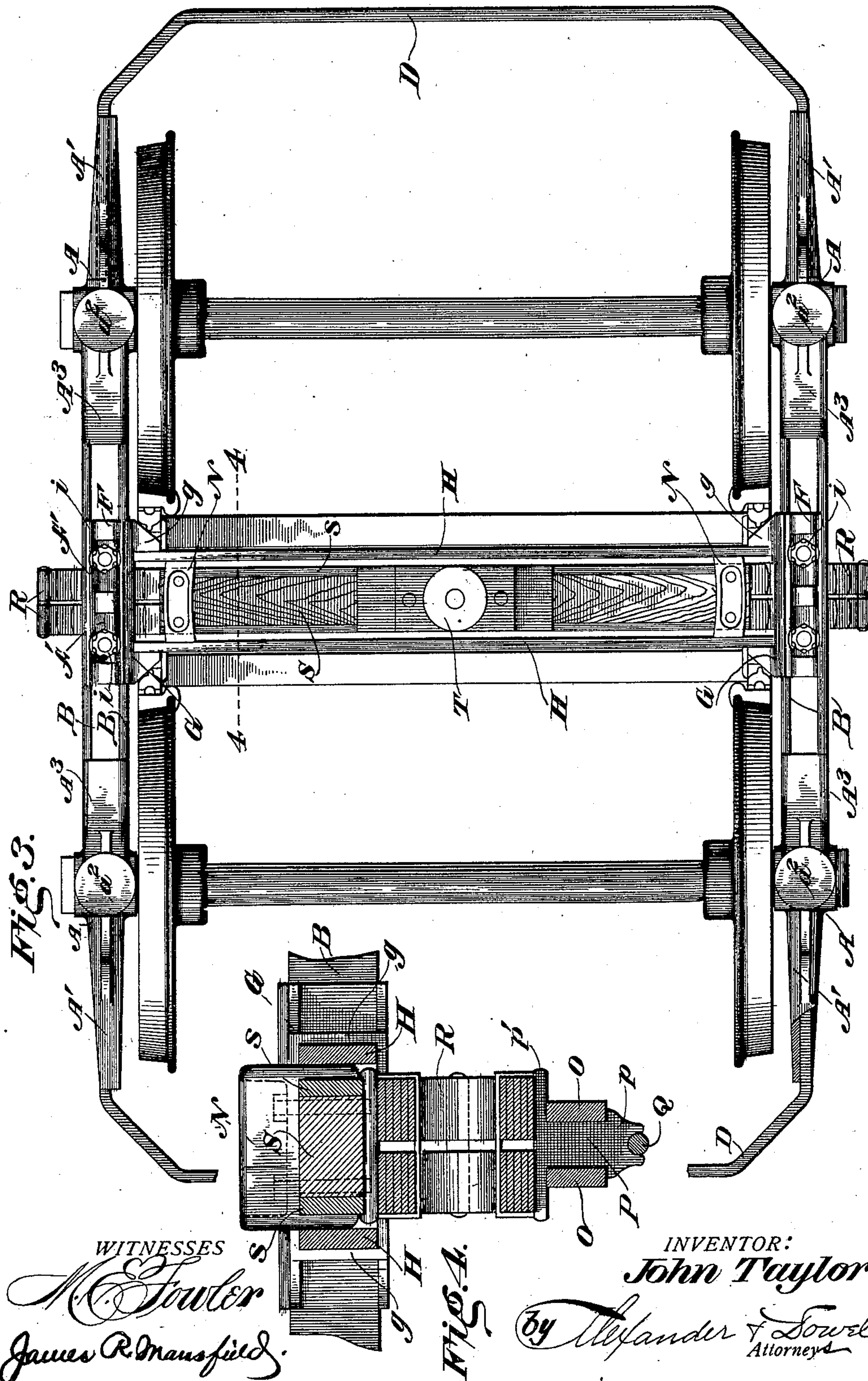
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3 Sheets—Sheet 2.



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Fig. 4.

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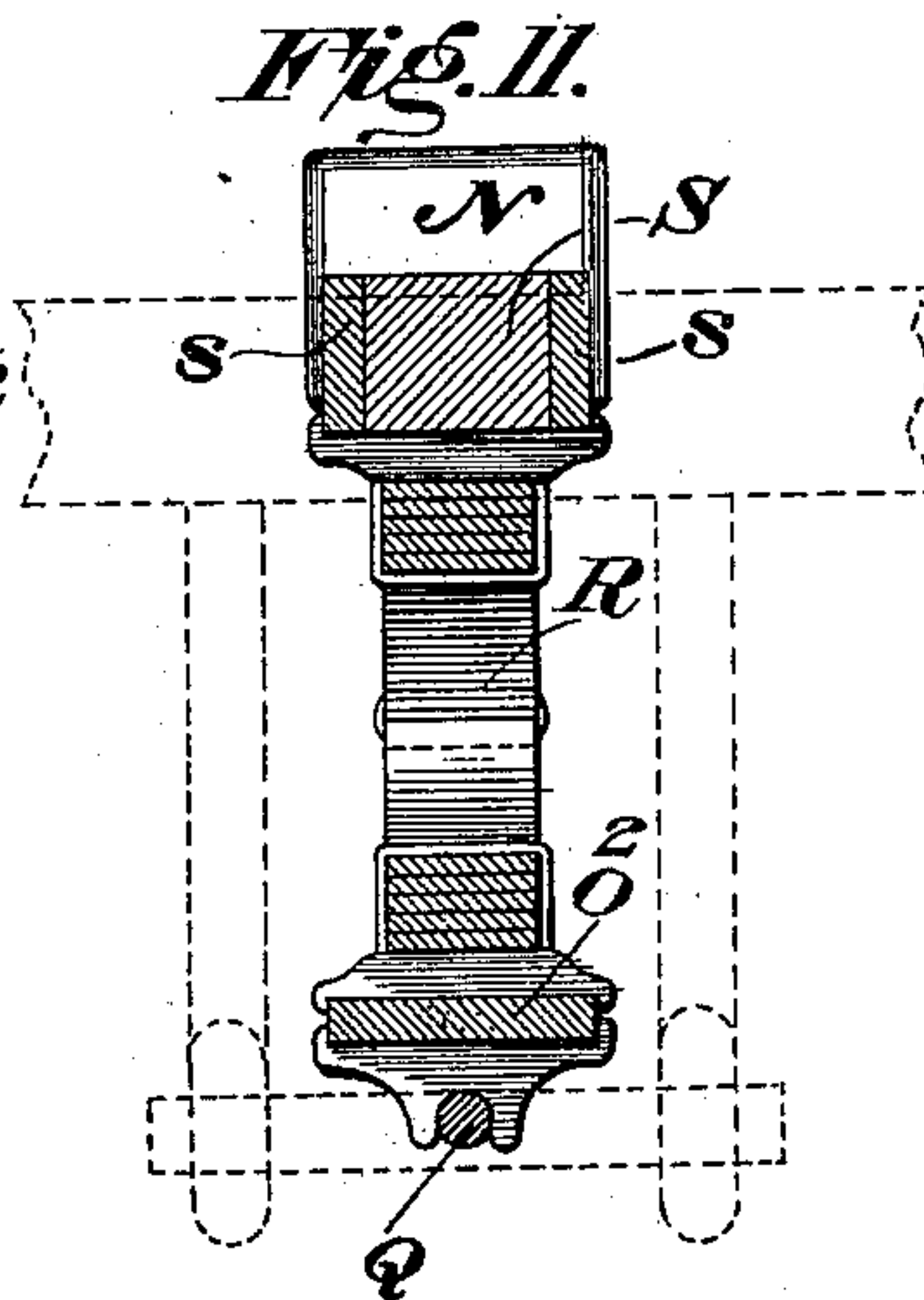
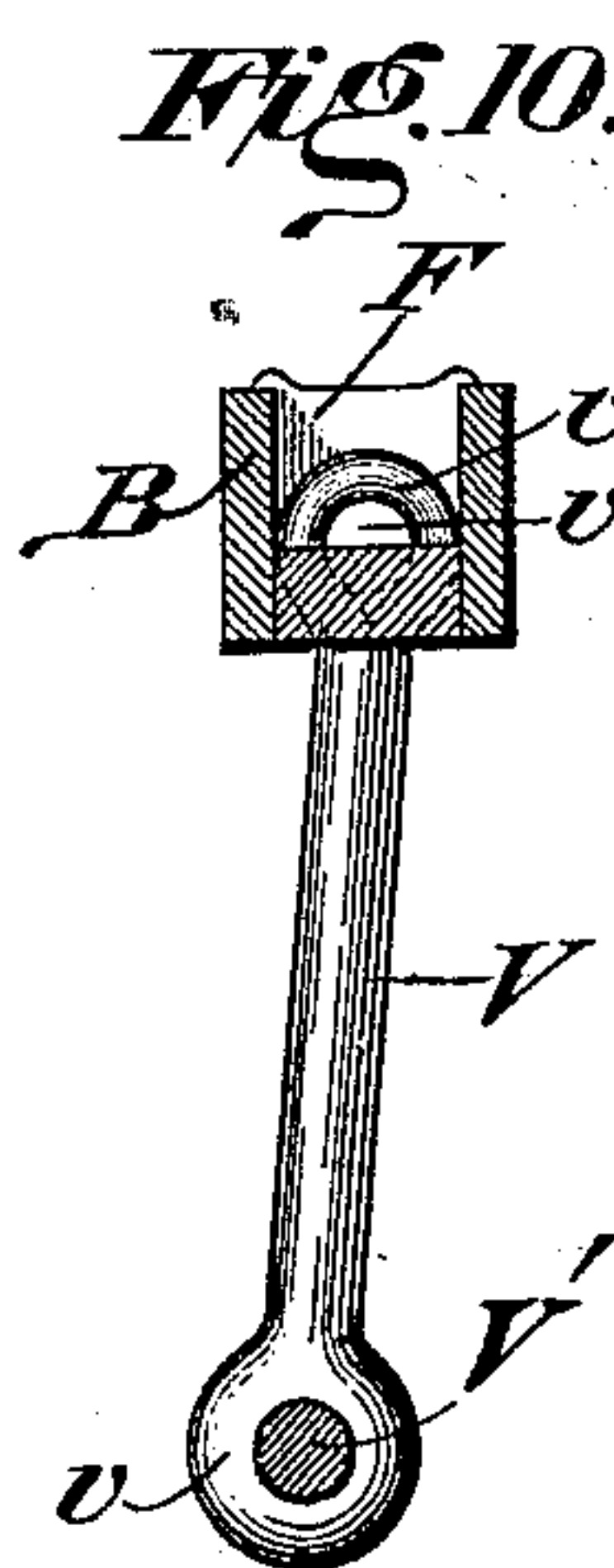
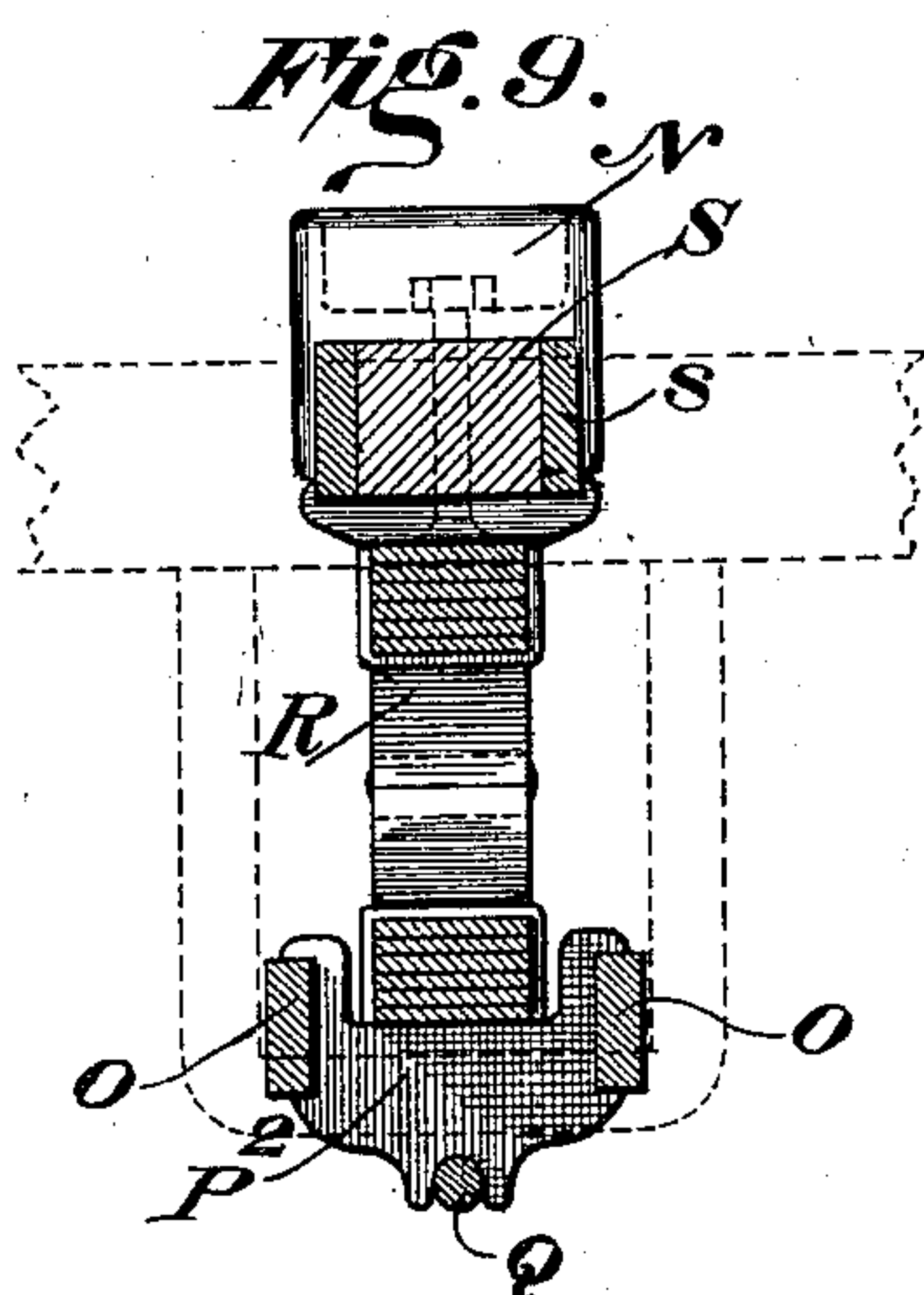
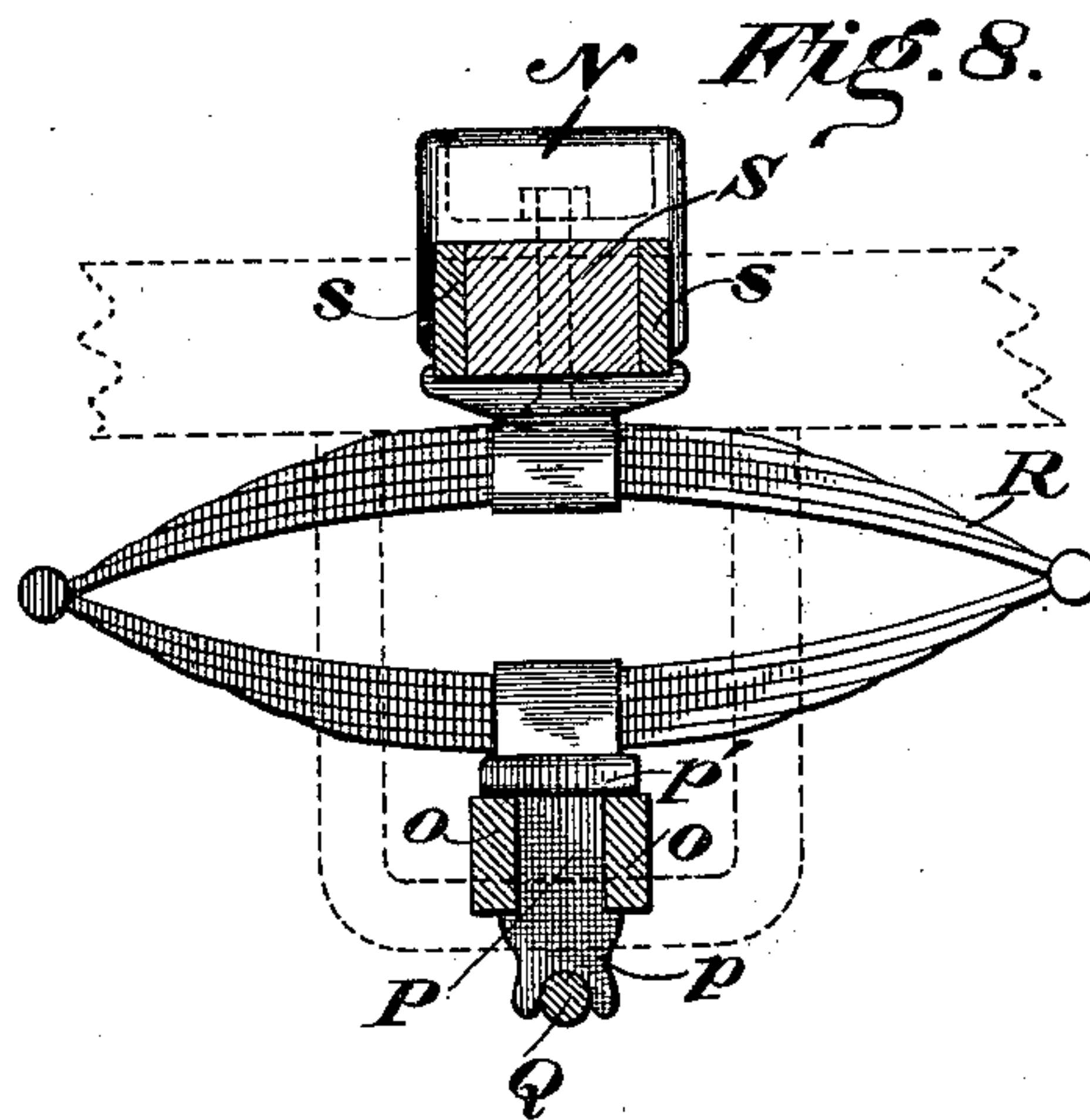
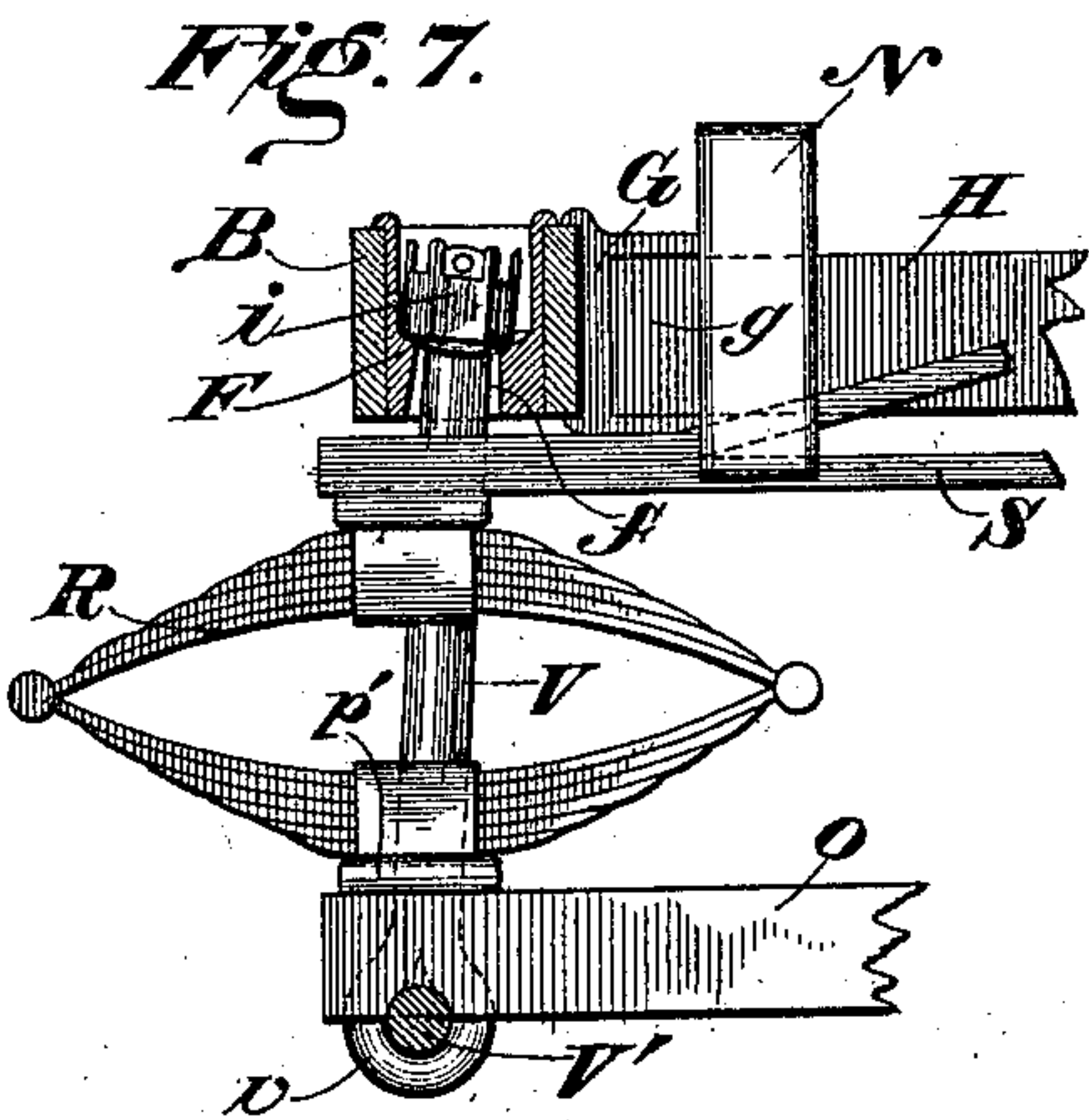
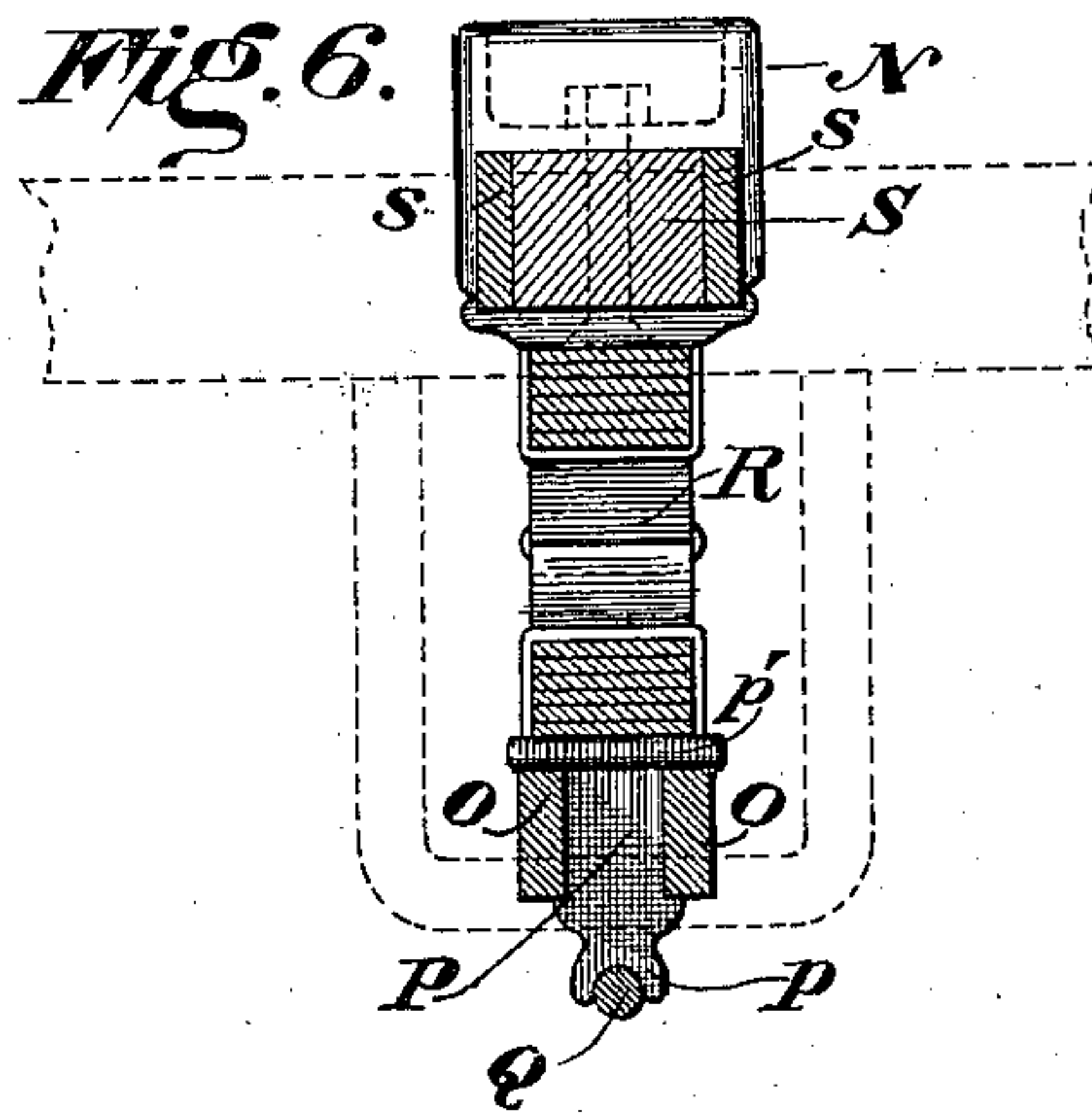
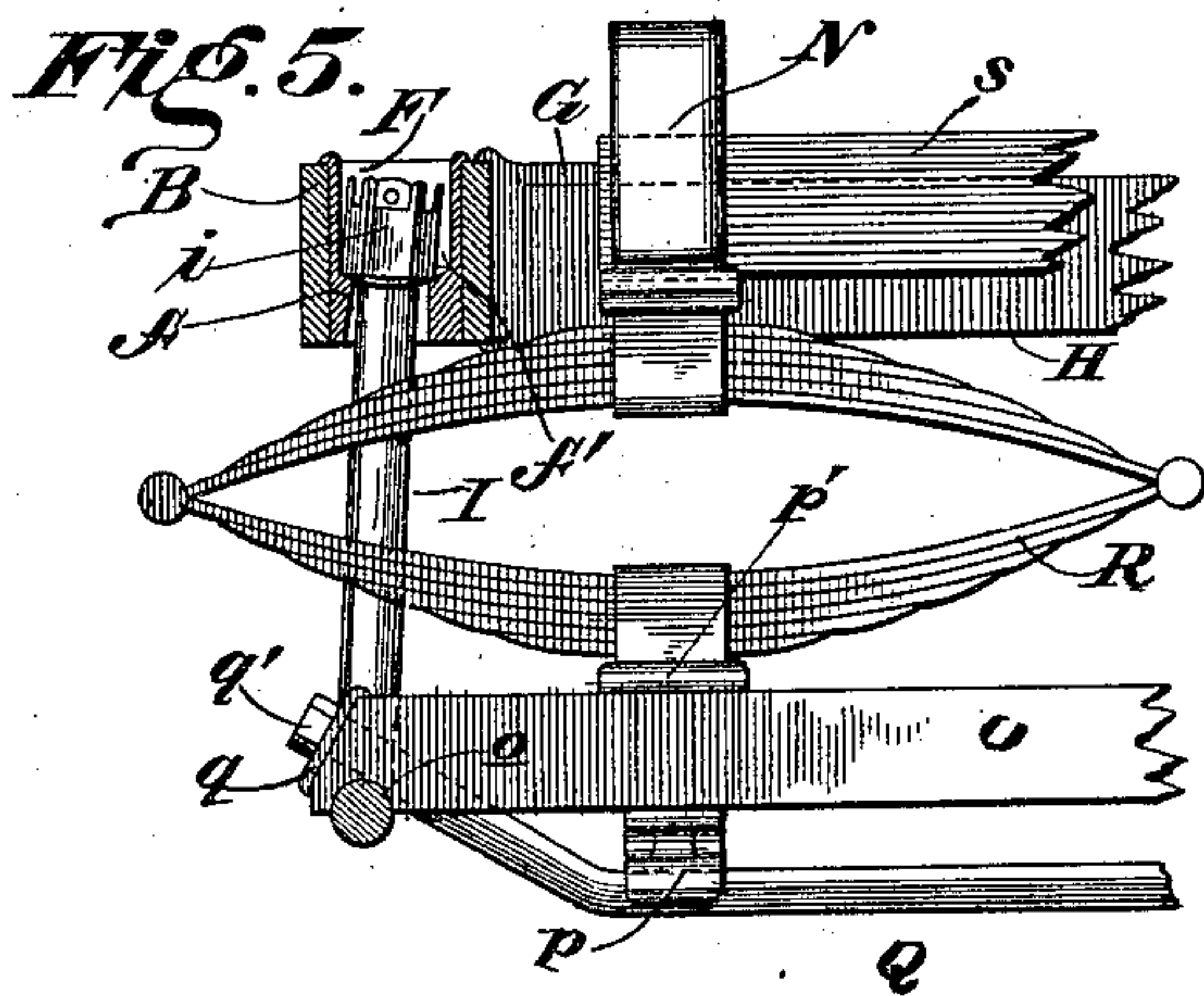
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TRUCK.

(Application filed Feb. 1, 1901.)

3 Sheets—Sheet 3.

(No Model.)



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UNITED STATES PATENT OFFICE.

JOHN TAYLOR, OF TROY, NEW YORK.

TRUCK.

SPECIFICATION forming part of Letters Patent No. 674,224, dated May 14, 1901.

Application filed February 1, 1901. Serial No. 45,636. (No model.)

To all whom it may concern:

Be it known that I, JOHN TAYLOR, of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful
5 Improvements in Trucks; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

10 This invention is an improvement in what are known as "short-wheel-base swing-motion double trucks," particularly adapted for electrical street-railways, and especially designed to radiate on short curves and to be
15 used under long open cars.

The invention consists in the novel construction of the truck-frame and also in the means for suspending the bolster-springs and spring-plank on swinging supports for the
20 truck-frame, so as to permit swing motion or lateral movement of the bolster relative to the truck.

The invention further consists in the novel details of construction of the truck-frame
25 illustrated in the accompanying drawings and hereinafter clearly described and claimed with reference thereto.

In said drawings, Figure 1 is a side elevation of the complete truck-frame. Fig. 2 is
30 a transverse section thereof; Fig. 3, a plan view thereof; Fig. 4, a detail longitudinal section on line 4 4, Fig. 3. Fig. 5 is a detail showing the swinging bail-hanger, spring-plank, and truss-rod in correct position; Fig. 6, a
35 transverse section through Fig. 5 with one elliptic spring shown instead of two; Fig. 7, a detail showing the elliptic spring arranged directly over the center of the swing-hanger. Fig. 8 shows the elliptic spring arranged longitudinally of the truck. Fig. 9 shows the
40 elliptic spring set down between the members of the spring-plank. Fig. 10 shows a modification of the swing-hanger. Fig. 11 shows a modification of the spring-plank.
45 Fig. 12 is a detail vertical section through the pedestal on line 12 12, Fig. 1. Fig. 13 is a part plan and part longitudinal section through one of the pedestals.

50 The truck is constructed of four malleable or steel pedestals A, the adjoining pedestals at the same side of the truck being connected at top by two parallel bars B, set edgewise and

secured to suitable recesses or seats *a* in projections *A*³ at the tops of the inner jaws of the pedestals, as shown, and the adjoining
55 pedestals are also connected below the bars B by a single transverse bar C, whose ends are fitted in sockets *a'* in the lower ends of the inner jaws. The bars C are arranged
60 vertically edgewise at their ends, but are given a quarter-turn intermediate their ends, so that the central portions *c* thereof shall lie flatwise, as shown, thus giving more room for the accommodation of the swinging hangers
65 I, carrying the spring-seat, springs, and bolster, as hereinafter described, thus permitting longer hangers to be used. The opposite pedestals A at each end of the truck are connected by stout metal end bars D, set vertically
70 edgewise and rigidly secured to extensions *A'* on the outer jaws of the pedestals. The contour of these end bars D may be modified to adapt the truck to receive any style or
75 make of motor which it is desired to use in connection therewith, and in this form of truck the motors are hung between the end bars D and the adjoining axles instead of between the axles. The pedestals are fitted
80 over the journal-boxes E of the axles as usual, springs *e* being interposed between the journal-boxes and enlargements or caps *a*² on the upper ends of the pedestals to cushion the truck-frame upon the axles. The lower ends
85 of the jaws of the pedestals are connected by short bars *A*², the ends of which are fitted into rabbets or recesses *a*⁴ in the jaws and secured thereto by bolts or rivets *a*⁵, as shown, to prevent spreading of the jaws. Secured
90 between the bars B B and located centrally between the adjoining pedestals at each side of the truck are hanger-castings F, which are preferably lipped over the upper edges of the bars B to relieve their securing-bolts of strain, and to the inner face of the inner bars B and
95 centrally between the adjoining pedestals A are fastened bolster-guide castings G, which are preferably lipped over and under the bars and provided with inwardly-projecting end lugs *g*, to which are secured the ends of
100 transverse stay-bars H, by which the truck-frame is centrally stayed and lateral spreading thereof prevented. The truck as thus constructed has few parts, but is very stiff and strong.

The hanger-castings F are provided with two vertical conical openings f , through which pass the ends of U-shaped hangers I, which are suspended from said castings by means of nuts i on their upper ends, said nuts being preferably convexed on their under sides and adapted to fit in enlarged concaved recesses f' at the upper ends of openings f , thus permitting the hangers I to swing freely laterally of the truck-frame.

Supported upon the hangers I is a spring-support O, or what is commonly termed a "spring-plank," consisting, as shown, of two metallic bars set vertically edgewise and having their ends notched on their under sides, as at o , to fit on the lower portion of the hangers I, these bars being securely connected together and held a proper distance apart by means of interposed castings P, which project below the bars sufficiently to form steps p for a truss-rod Q, which lies intermediate and below the bars O; but its ends are carried up over the lower portions of the hangers and through cap-plates q , fitted over the ends of the bars O, as shown in Figs. 5 and 6, and secured in place by nuts q' . Thus a very strong spring plank or support is formed. The castings P also extend above and are lipped over the upper edges of bars O to form spring-seats p' , upon which are supported pairs of elliptical springs R R, which are arranged transversely of the truck-frame, but parallel with the spring-plank. Each pair of springs is set a little inward from the ends of the spring-plank, as shown, so that their outer ends will not project inconveniently beyond the sides of the truck. On these springs R is supported the bolster S, which may be of any suitable construction, but is preferably made of a stout truss-shaped wooden beam S, strengthened by two metal side bars s , set vertically edgewise and properly secured to the wood beam. The bolster lies between the bars H H and the castings G and is guided thereby. It is, however, shorter than bars H, so that it can have a certain amount of longitudinal movement transversely of the truck-frame, the bolster having the same extent of movement transversely of the truck-frame that the spring-plank O has and in addition has an independent movement on the spring-plank due to the springs R. By reason of this capability of swing motion of the bolster the truck can easily round curves without disagreeable tilting of the car-body and without binding of the wheel-flanges on the rails or in the rail-grooves.

The bolster S is provided with a plate and socket or other suitable connection T for attaching the car-body thereto, as is usual, and is also provided with the side bearing-plates N, attached to bars s near each end to prevent undue lateral oscillation of the car-body on the bolster. It will be observed that by reason of the twist in the lower bars C of the side frames of the truck I am enabled to use

longer hangers above these bars and can thus get in larger springs and can keep the bolster nearer to the rails than would be possible with the same size of spring if bars C were straight. By this construction a very short wheel-base is obtained, and the motors are to be hung on the outside of the axle with the ends dropped down. This truck can swing around very short radii curves without interfering with the side steps on open-car bodies, and the car-bodies can also be carried very low down and only one step need be used.

Figs. 5 and 6 show the construction and arrangement of the springs and hangers as I propose to build them, only one elliptic spring being shown in these figures, which will be sufficient in trucks for some makes of car-bodies and will enable me to make shorter wheel-base trucks.

In Fig. 7 the elliptic spring is shown as arranged directly over the center of the swing-hanger. This hanger may be made of a single U-shaped bar, as shown in Figs. 1 to 6, or, as shown in Figs. 7, 10, and 11, it may be made of two side pieces V, having eyes v on their bottom connected by a rod V' , as shown. These side rods V may be suspended from the castings F by nuts i , as indicated in Fig. 7, or they may have eyes v' on their upper end, through which are passed pins v'' to hang them from the castings. This pin can be made long enough to extend across to take in both of the eyes on the upper end of the swing-hanger, if desired. Fig. 7 also shows another form of bolster that may be used. Such form of bolster is not claimed herein.

Fig. 8 shows how the elliptic springs may be arranged longitudinally of the truck, the center of the spring being in the same position as in Fig. 5, but the spring being turned around so as to lie parallel with the side frame of the truck.

In Fig. 9 the bars O of the spring-plank are set farther apart and the castings P are replaced by drop-castings P^2 , which allow the spring-seats to come below the top of the bars O, thus enabling me to use higher springs without raising the bolster in relation to the truck-frame.

Fig. 11 shows a modification of the spring-plank, which in this case is formed of a single flat bar O^2 , laid flatwise and trussed by the rod Q, the springs being arranged thereon as in Figs. 5 and 6. In any case the springs can be arranged as in Fig. 7, if desired—that is, with the center of spring directly over the swing-hanger, in which case the truss-rod might be dispensed with.

Any suitable braking mechanism may be used with these trucks, the brakes being hung on the inside of the truck-frame and between the wheels, as partially indicated in the drawings, so as not to interfere with the motors or any of the movable parts of the truck.

While I prefer to use full elliptic springs to support the bolster on the spring-plank, it is obvious that other forms of springs might

be employed, and therefore I do not limit myself to the use of full elliptic springs, nor do I limit myself to the employment of the twisted bottom bar C, except where specifically mentioned in the claims, in which I have summarized the essential features of my present invention.

I do not herein claim, broadly, the employment of U-shaped hangers between the pedestals carrying the springs and bolster, as these form the subject-matter of a companion application filed herewith, (Case No. 387,) the present application being designed to cover more particularly the construction of the truck-frame and the arrangement of hangers, spring-plank, springs, and bolster.

What I claim is—

1. In a truck-frame, the combination of the pedestals, the top side bars uniting the same and the bottom side bar connected vertically edgewise to the pedestals but twisted therebetween so as to lie flat intermediate the pedestals, for the purpose and substantially as described.

2. In a truck, the combination of the pedestals, and a pair of parallel flat bars connected to the upper parts thereof, said bars being arranged vertically parallel, with a single flat bar connected to the lower parts of the pedestals having its ends arranged vertically edgewise but twisted intermediate its ends so as to have its central portions flatwise, for the purpose and substantially as described.

3. In a truck, the combination of the pedestals, the top bars uniting the same and the bottom bars connected vertically edgewise to the pedestals but twisted so as to lie flat at a point intermediate the pedestals; with the end bars connecting opposite pedestals, for the purpose and substantially as described.

4. In a truck, the combination of the pedestals, a pair of parallel flat bars connected to the upper parts thereof, and a single flat bar connected vertically edgewise to the lower parts of the pedestals but twisted so as to lie flat at a point intermediate the pedestals; with bars forming the end portions of the truck and connected at their extremities to outwardly-projecting extensions on opposite pedestals, substantially as described.

5. In a truck, the combination of the pedestals, the top side bars uniting the same and the bottom side bars connected vertically edgewise to the pedestals but twisted so as to lie flat at a point intermediate the pedestals; with bars forming the ends of the truck arranged vertically edgewise and connected at their ends to projections on directly opposite pedestals, substantially as described.

6. In a truck, the combination of the pedestals, a pair of flat bars connected to the upper parts of adjoining pedestals and arranged vertically edgewise, and single flat bars connected to the lower parts of adjoining pedestals having their ends arranged vertically edgewise but twisted intermediate the pedestals so as to have their central portions flat-

wise; with flat bars arranged vertically edgewise forming the end portions of the truck-frame and connected at their extremities to the outer jaws of opposite pedestals, substantially as and for the purpose described.

7. In a truck, the combination of the pedestals, the top side bars uniting the same and the bottom side bars connected vertically edgewise to the pedestals but twisted so as to lie flat at a point intermediate the pedestals; with the castings attached to the inner upper bars and transverse stay-bars attached to said castings, for the purpose and substantially as described.

8. In a truck, the combination of the pedestals, pairs of parallel flat bars connected to the upper parts of adjoining pedestals and arranged vertically edgewise; with single flat bars connected to the lower parts of adjoining pedestals also having their ends arranged vertically edgewise but twisted so as to have their central portions flatwise, and transverse stay-bars attached to the upper side bars, for the purpose and substantially as described.

9. In a truck, the combination of the pedestals, a pair of parallel flat bars connected to the upper parts of adjoining pedestals and arranged vertically edgewise; and single flat bars connected to the lower parts of adjoining pedestals having their ends arranged vertically edgewise but twisted so as to have their central portions flatwise; with the end bars connected to opposite pedestals, castings attached to the upper side bars, and transverse stay-bars attached to said castings, for the purpose and substantially as described.

10. In a truck, the combination of the pedestals, the top bars uniting adjoining pedestals and the bottom bars connected vertically edgewise to adjoining pedestals but twisted so as to lie flat at a point intermediate such pedestals; with bars forming the ends of the truck arranged vertically edgewise and connected at their ends to directly opposite pedestals; and transverse stay-bars attached to the side bars, for the purpose and substantially as described.

11. In a truck, the combination of the pedestals, a pair of parallel flat bars connected to the upper parts of adjoining pedestals and arranged vertically edgewise; with single flat bars connected to the lower parts of adjoining pedestals having their ends arranged vertically edgewise but twisted so as to have their central portions flatwise; with bars forming the end portions of the truck and connected at their ends to opposite pedestals, bars closing the mouths of the pedestals, and transverse stay-bars attached to the upper side bars, for the purpose and substantially as described.

12. In a truck, the combination of the pedestals, a pair of parallel flat bars connected to the upper parts of adjoining pedestals, and bars connecting the lower parts of adjoining pedestals; with flat bars arranged vertically

edgewise forming the end portions of the truck and connected at their ends to outwardly-projecting extensions on opposite pedestals, bars closing the mouths of the pedestals, castings attached to the upper bars, and transverse stay-bars attached to said castings, for the purpose and substantially as described.

13. In a truck, the combination of the pedestals, a pair of parallel flat bars connected to the upper parts thereof, said bars being arranged vertically parallel, and single flat bars connecting the lower parts of adjoining pedestals having their ends arranged vertically edgewise but twisted so as to have their central portions flatwise; with flat bars arranged vertically edgewise forming the end portions of the truck and connected at their ends to outwardly-projecting extensions on the lower leg and outer side of the pedestals, bars closing the mouths of the pedestals, castings attached to the upper bars, and transverse stay-bars attached to said castings, for the purpose and substantially as described.

14. In a truck, the combination of the pedestals, the top bars uniting the same and the bottom bars connected vertically edgewise to the pedestals but twisted so as to lie flat at a point intermediate the pedestals; with the hangers suspended from the upper members of the frame between the pedestals, said hangers being capable of swinging transversely of the frame over the flat portion of the lower bars, and the springs and bolster suspended on the hangers, substantially as described.

15. In a truck, the combination of the pedestals, the top bars uniting the same and the bottom bars connected vertically edgewise to the pedestals but twisted so as to lie flat at a point intermediate the pedestals; with U-shaped hangers suspended from the upper members of the frame between the pedestals, said hangers being capable of swinging transversely of the frame, the spring-plank carried by said hangers and the springs and bolster mounted on the spring-plank, substantially as described.

16. In a truck, the combination of the pedestals, a pair of parallel flat bars connected to the upper parts thereof, said bars being arranged vertically edgewise; with a single flat bar connected to the lower parts of the pedestals having its ends arranged vertically edgewise but twisted intermediate its ends so as to have its central portion flatwise; the castings secured between the upper bars, the hangers swinging from said castings, the spring-plank mounted on said hangers and the springs and bolster mounted on said plank, for the purpose and substantially as described.

17. The combination with a truck-frame, of the castings secured to the sides thereof, the stay-bars connecting the side frames adjacent to the castings, U-shaped hangers suspended from said castings and capable of swinging transversely of the frame, the spring-plank supported by said hangers, the springs

on said plank, and the bolster supported by said springs and guided between said stay-bars.

18. In a truck, the combination of the pedestals, a pair of parallel flat bars connected to the upper parts thereof, said bars being arranged vertically edgewise; with a single flat bar connected to the lower parts of the pedestals having its ends arranged vertically edgewise but twisted intermediate its ends so as to have its central portions flatwise; the castings secured between the upper members of the side frames and provided with openings for the passage of the hangers, the U-shaped hangers suspended from said castings capable of swinging transversely of the frame, the spring-plank supported on said hangers and the springs supported on said plank, the bolster on said springs and the transverse side bars connecting the side members of the truck-frame on opposite sides of the bolster.

19. The combination with a truck-frame, of U-shaped hangers suspended from the side members thereof, the spring-plank mounted on said hangers, the springs on said plank and the bolster supported on the springs.

20. The combination with a truck-frame, of the U-shaped hangers suspended from the side members thereof, the spring-plank mounted on said hangers, the elliptic springs on said plank, and the bolster supported on said elliptic springs.

21. The combination of the truck-frame, the castings secured to the upper side members thereof, the U-shaped hangers suspended from said castings and capable of swinging transversely of the frame, the spring-plank mounted on the hangers, springs on said plank and the bolster supported on the springs, substantially as described.

22. The combination of a truck-frame having a pair of transverse stay-bars connecting its upper side members and castings secured to the side members opposite the ends of said stay-bars, the U-shaped hangers depending from said castings, the spring-plank mounted on the hangers, the springs on said plank, and the bolster mounted on the springs and lying between and guided by said stay-bars, for the purpose and substantially as described.

23. The combination of a truck-frame having a pair of transverse stay-bars connecting its upper side members and castings secured to the side members opposite the ends of said stay-bars, the laterally-swinging U-shaped hangers depending from said castings, the spring-plank mounted on and connecting the hangers, the elliptic springs on said plank, and the bolster mounted on the springs and lying between and guided by said stay-bars, for the purpose and substantially as described.

24. In a truck-frame, the combination of the U-shaped hangers suspended from the upper side bars thereof intermediate the wheels and capable of swinging transversely to the frame, the trussed spring-plank carried by said hang-

ers, springs mounted on said plank, and the bolster supported on said springs.

25. In a truck-frame, the combination of the U-shaped laterally - swinging hangers suspended from the upper side bars thereof intermediate the wheels and capable of swinging transversely of the frame, the spring-plank carried by and connecting said hangers, pairs of elliptic springs mounted on said plank, and the bolster supported on said springs.

26. In a truck, the combination of the pedestals, a pair of parallel flat bars connected to the upper parts thereof, said bars being arranged vertically edgewise, with a single flat bar connected to the lower parts of the pedestals having its ends arranged vertically edgewise but twisted intermediate its ends so as to have its central portion flatwise; with hangers suspended from said upper bars, the spring-plank on said hangers, the springs mounted on said plank, and the bolster supported on the springs, substantially as described.

27. In a truck, the combination of the pedestals, a pair of parallel flat bars connected to the upper parts thereof, said bars being arranged vertically edgewise, with a single flat bar connected to the lower parts of the pedestals having its ends arranged vertically edgewise but twisted intermediate its ends so as to have its central portions flatwise; with the castings secured between the upper bars of the side frames, hangers suspended from said castings, the spring-plank on said hangers, the elliptic springs mounted on said plank, and the bolster supported on said springs, substantially as described.

28. The combination of the pedestals, the pair of parallel side bars connecting adjoining pedestals and twisted bottom side bars connecting the same, the castings attached to the inner upper side bars, and the transverse stay-bars attached to said castings; with U-shaped hangers suspended from the upper side bars and capable of swinging transversely of the frame, a spring-plank carried by said hangers, the springs supported on said plank, and the bolster supported on said springs and lying between and guided by said stay-bars, for the purpose and substantially as described.

29. The combination of the pedestals, the pair of parallel bars connecting adjoining pedestals and twisted bottom bars connecting the same, hanger-castings secured to and between the upper side bars of the frame and the stay-castings attached to the inner of said bars, and transverse stay-bars attached to said stay-casting; with hangers suspended from the first-mentioned castings so as to be capable of swinging transversely of the frame, a spring-plank on said hangers, elliptic springs supported on said plank, and the bolster supported on said springs and lying between and guided by said stay-bars, for the purpose and substantially as described.

30. In a truck-frame, a spring-plank composed of metal bars, set vertically edgewise, bearing or cap plates on the ends of said bars and a truss-rod arranged between the bars having its ends bent up and attached to said plates.

31. In a truck-frame, a spring-plank composed of metal bars, set vertically edgewise, spacing-castings interposed between said bars, cap-plates at the ends of said bars and a truss-rod arranged between and beneath the bars and having its ends bent up and attached to said plates, for the purpose and substantially as described.

32. For a truck, a spring-plank composed of opposite parallel bars, castings interposed between said bars extending below the same to form truss-rod seats and above the same to form spring-seats, the truss-rod lying beneath and between said bars, and end plates on the ends of said bars to which the ends of said truss-rod are attached.

33. In a truck, the combination of swinging hangers suspended from the side frame, and a spring-plank supported on said hangers and composed of opposite metal bars arranged vertically edgewise, castings interposed between said bars extending below the same to form truss-rod seats and above the same to form spring-seats, the truss-rod lying beneath and between said bars and the end plates on the ends of said bars to which the ends of said truss-rod are attached; with the springs supported on said seats, and a bolster carried by said springs, substantially as described.

34. In a truck, the combination of swinging hangers suspended from the side frames, a spring-plank supported on said hangers composed of opposite metal bars, spacing-castings interposed between said bars and extending above the same to form spring-seats; with the elliptic springs secured to said spring-seats and the bolster supported on and connecting said springs.

35. In a truck, the combination of the swinging hangers suspended from the side frames, and a spring-plank supported on said hangers composed of opposite bars arranged vertically edgewise, castings interposed between said bars extending below the same to form truss-rod seats and above the same to form spring-seats, the truss-rod lying beneath and between said bars and end plates on the ends of said bars to which the ends of said truss-rod are attached; with the elliptic springs secured to said spring-seats, and a bolster supported on and connecting said springs, for the purpose and substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN TAYLOR.

Witnesses:

FRANK SHRAUDER,
W. S. HOPKINS.