

No. 878,321.

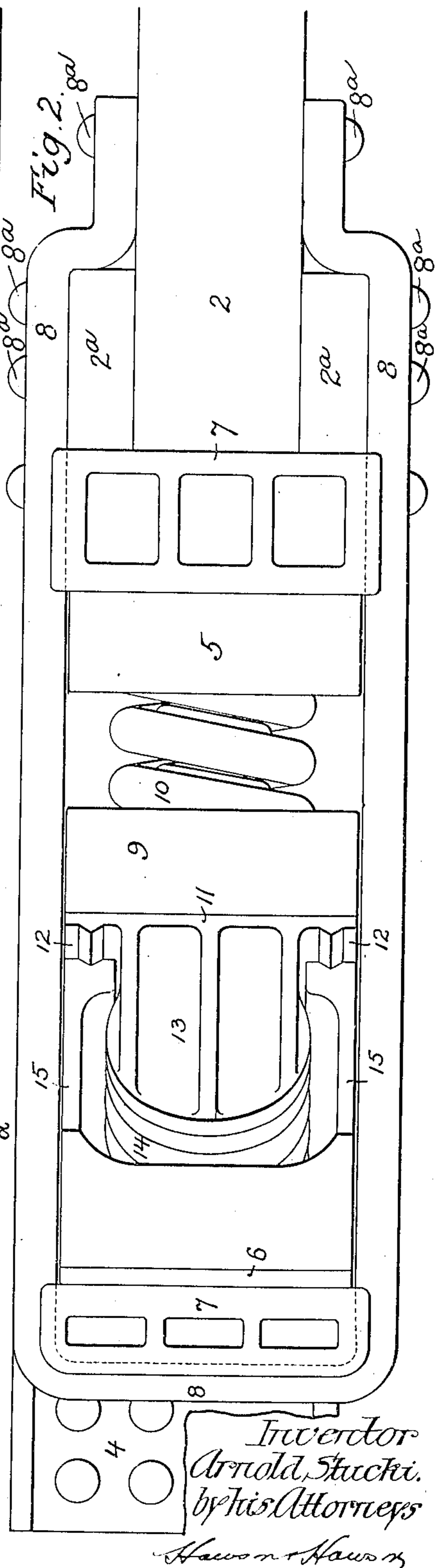
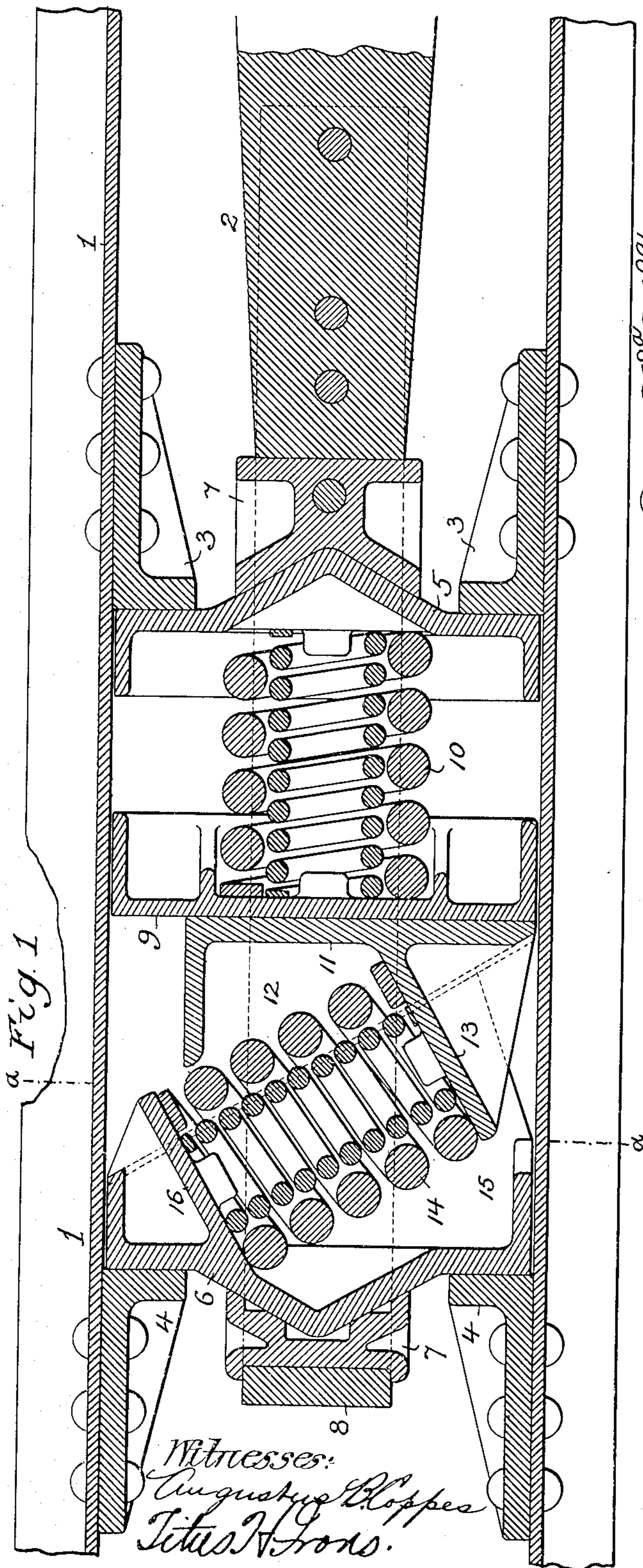
PATENTED FEB. 4, 1908.

A. STUCKI.

FRICITION DRAFT GEAR FOR RAILWAY CARS.

APPLICATION FILED MAY 14, 1904.

3 SHEETS—SHEET 1.



No. 878,321.

PATENTED FEB. 4, 1908.

A. STUCKI.

FRICITION DRAFT GEAR FOR RAILWAY CARS.

APPLICATION FILED MAY 14, 1904.

3 SHEETS—SHEET 2.

Fig. 3.

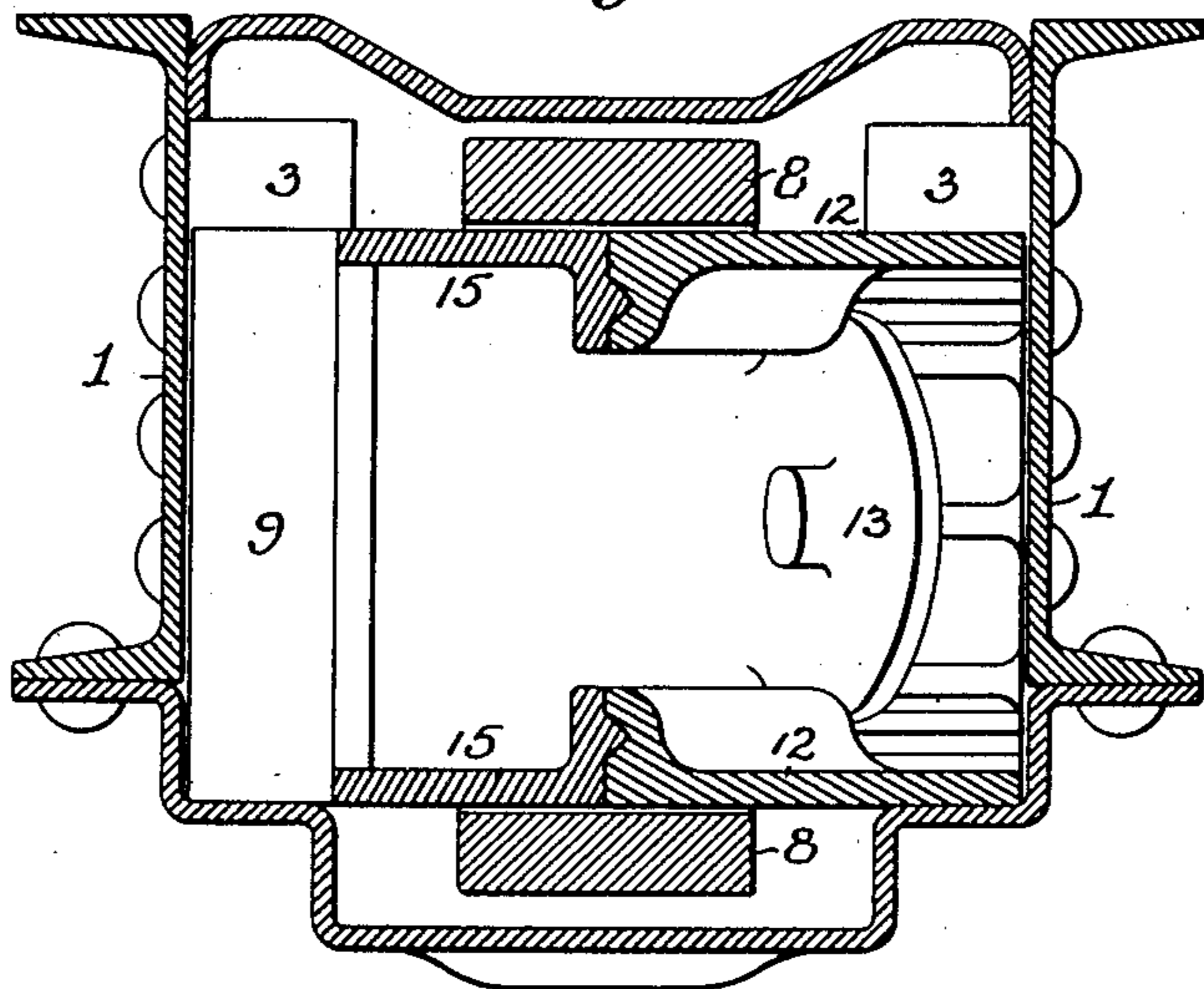
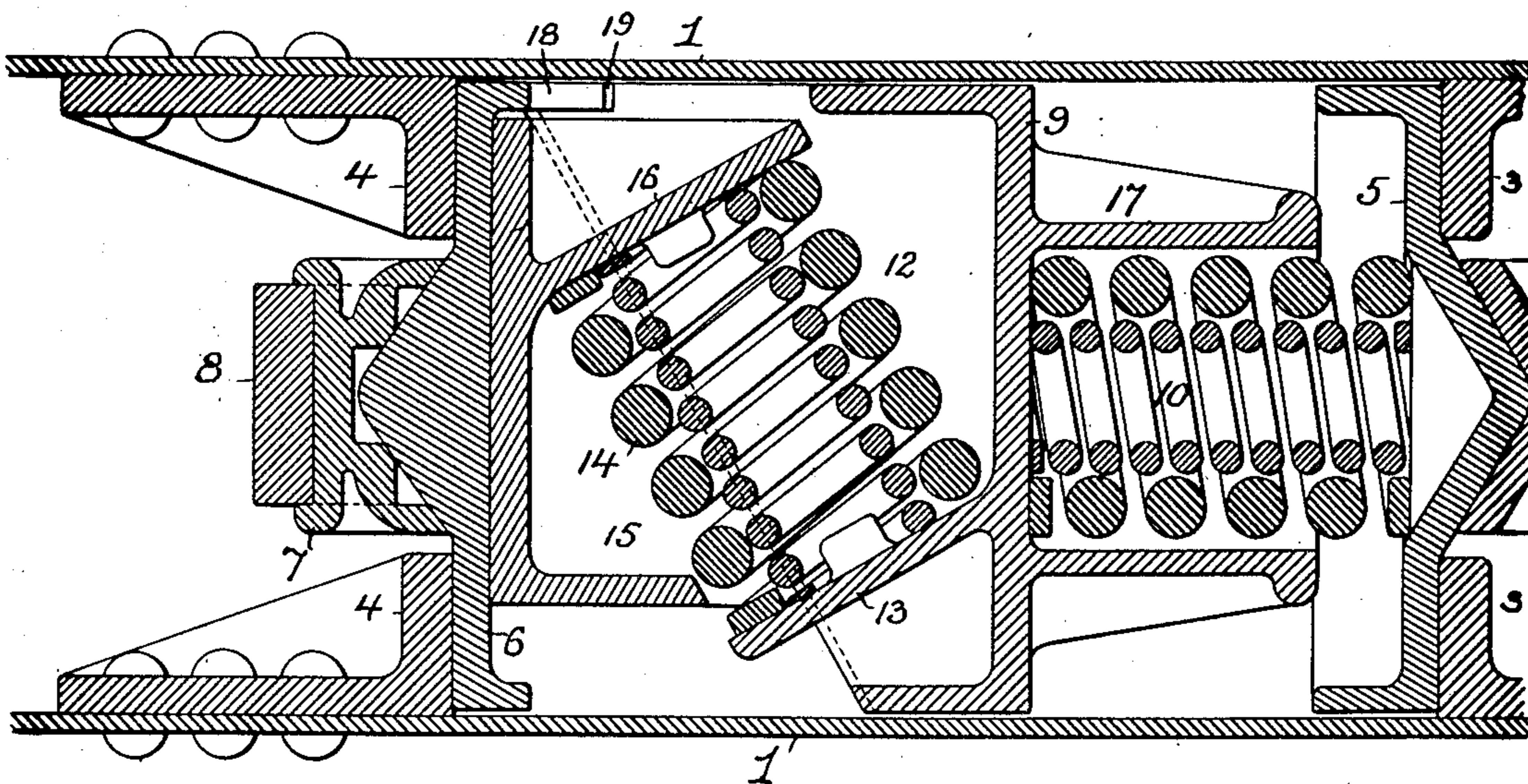


Fig. 4.



Witnesses:

Augustus D. Coppes
Titus H. Gross.

Inventor:

Arnold Stucki,
by his Attorneys,
Hewson & Hewson

No. 878,321.

PATENTED FEB. 4, 1908.

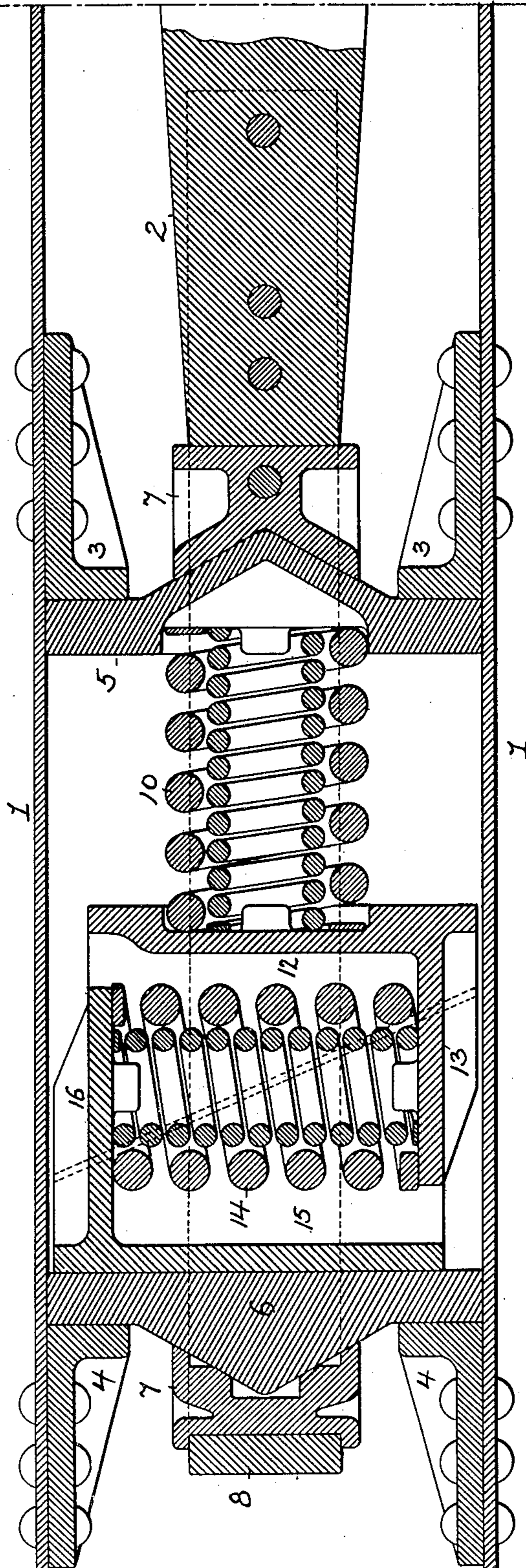
A. STUCKI.

FRICITION DRAFT GEAR FOR RAILWAY CARS.

APPLICATION FILED MAY 14, 1904.

3 SHEETS—SHEET 3.

Fig. 5.



Witnesses:
Augustus B. Oppen
John W. Jones

Inventor:
Arnold, Stucki,
by his Attorneys
Haworth & Haworth

UNITED STATES PATENT OFFICE.

ARNOLD STUCKI, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO FORSYTH BROTHERS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

FRICTION DRAFT-GEAR FOR RAILWAY-CARS.

No. 878,321.

Specification of Letters Patent.

Patented Feb. 4, 1908.

Application filed May 14, 1904. Serial No. 208,013.

To all whom it may concern:

Be it known that I, ARNOLD STUCKI, a citizen of the United States, residing in Pittsburg, Pennsylvania, have invented certain
5 Improvements in Friction Draft-Gears for Railway-Cars, of which the following is a specification.

My invention consists of certain improvements in the draft gear for railway cars, forming the subject of my Letters Patent, No. 727,485, dated May 5th, 1903, the objects of my present invention being to provide a flexible and easy draft gear for ordinary service when the shocks are only nominal, to prevent distortion of the spring interposed between the friction members of the gear without resorting to rounded or swinging bearings for said spring, to simplify and cheapen the construction of certain parts of the gear, and to increase the frictional bearing surface presented. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawing, in which

Figure 1, is a sectional plan view of a friction draft gear for railway cars constructed in accordance with my present invention, Fig. 2, is a side elevation of the same, Fig. 3, is a transverse section of the line *a-a*,
30 Fig. 1, but omitting the spring interposed between the friction members of the gear, Fig. 4, is a sectional plan view of another form of friction draft gear embodying my invention, and Fig. 5, is a sectional plan view showing still another embodiment of the invention.

Referring in the first instance to Figs. 1 and 2 and 3 of the drawing, 1, 1, represent the opposite draft sills of the car and 2 the draft bar of the coupling head. To the opposite sills 1 are secured front and rear bearing plates or brackets 3 and 4, which serve, respectively, as stops for front and rear followers 5 and 6, the forward brackets serving
45 to prevent forward movement of the front follower 5, and the rear brackets serving to prevent rear movement of the rear follower 6.

Against the front face of the forward follower 5 bears a block 7, which is secured to the draft bar 2 of the coupling head and against the back face of the rear follower 6 bears a similar block 7, which is secured to the usual yoke 8 with which the draft bar is provided.

55 In order to insure absolute rigidity in

the longitudinal connection of the yoke 8 and draft bar 2, and to relieve the securing bolts of shearing strains to which they might otherwise be subjected, I provide the draft bar 2 with an enlarged head or boss 2^a and contract the ends of the yoke to overlap and engage the shoulders of the draft bar thus formed, as shown in Fig. 2, bolts 8^a serving to secure the yoke to the boss 2^a and also to the contracted portion of the draft bar in advance of said boss. A single shoulder and overlapping portion of the yoke may be sufficient in some cases, but I prefer to employ the pair of shoulders and the double overlap, as shown.

In the draft gear of my previous patent there was interposed between the front and rear followers a combined spring and friction structure, comprising two members with diagonal side plates bearing upon each other and end plates providing bearings for an interposed spring element, whereby, when said structure was subjected to strain in the direction of the longitudinal axis of the draft gear, the diagonally engaged members were caused to move laterally, compressing the spring element between them. This structure I have, for convenience, called a spring friction structure.

In the draft gear shown in Figs. 1 to 3, an intermediate follower 9 is employed, which can move rearwardly in buffing, and forwardly in draft, and between said intermediate follower and the forward follower 5 is interposed a combined buffer and draft spring 10, which may be of any suitable character, that shown in the drawing being a duplex spring with heavy outer coil and lighter inner coil. The forward member of the spring friction structure resembles that of the former patent in having a front plate 11 for bearing against the follower 9, side plates 12 with diagonal edges, and an end plate 13, which constitutes one of the bearings for the interposed spring 14, the latter, in the present instance, being similar to the spring 10, although it may differ therefrom if desired.

The rear member of the spring friction structure has side plates 15 with diagonal edges bearing upon those of the side plates 12 and an end plate 16 which constitutes the other bearing for the spring 14, but said rear member instead of having a sliding bearing upon the rear follower 6, forms part of the same, and hence has no movement except a

forward movement with said follower when the latter is subjected to the strain of draft. Another difference between the present gear and the one formerly patented is in the disposition of the end plates 13 and 16, these plates being perpendicular to the diagonal bearing faces of the side plates 12 and 16, instead of being parallel with the longitudinal axis of the draft gear. By reason of these differences in construction, several important advantages are attained. In the first place, the use of the spring 10 relieves the gear from many slight shocks and jars to which the former gear was subjected by the constant vibrations of the cars in ordinary service, which shocks were not of sufficient force to cause movement of the frictionally engaged members of the transverse spring structure, and hence had the same racking effect upon the gear as though no spring structure had been used.

By making the rear member of the spring structure in one piece with the rear follower, the number of parts is correspondingly reduced, and, by disposing the bearing plates 13 and 16 for the spring 14 perpendicular to the diagonal bearing faces of the members of its casing, compression and expansion of said spring 14 are in a line parallel with the axis of the same instead of oblique to said axis, hence all tendency to twist or distort the spring when the forward member of the spring structure moves laterally under pressure, is prevented.

The front and rear followers 5 and 6 are, as in the former draft gear, provided with wedge-like bearing surfaces for the front and rear blocks 7, so that longitudinal movement of said front and rear followers will be caused by lateral swinging of the coupling head draft bar, as well as by direct buffing or draft strain thereupon.

In that embodiment of my invention shown in Fig. 4, the relation of the parts is slightly changed, that is to say, the laterally sliding member of the casing for the spring 14 is the rear member, and has its bearing acter as that shown in my former patent, the forward member of the spring casing constituting part of the intermediate follower 9. The action of the draft gear in other respects however, is similar to that shown in Figs. 1, 2 and 3.

In the structure shown in Fig. 4, the intermediate follower 9 has a projecting tubular casing 17 for the spring structure 10, which serves to limit the approach of the followers 5 and 9, and thus prevents the exertion of excessive pressure upon the spring 10 when the coils of the same have been closed.

As, in the structure shown in Fig. 4, the frictional contact of the laterally sliding member of the spring casing with the follower 6 would tend to impart corresponding movement to the latter, and thus cause it to press

upon one of the side sills 1, I provide said rear follower with forwardly extending tongues 18, which engage recesses 19 in the side plates 12 of the follower 9, whereby this tendency to lateral movement on the part of the follower 6, is arrested and said follower is properly retained in its central position.

In Fig. 5, I have illustrated a draft gear which is, in many respects, similar to that of my former patent, the casing for the spring 14 comprising two members with diagonal bearing upon each other, and each adapted to move laterally when subjected to pressure in the direction of the longitudinal axis of the gear, the main difference between this structure and that of the former patent being that the spring 10 is interposed between the forward follower 5 and the forward member of the casing for the spring 14.

In considering that feature of my invention which consists in making one of the members of the casing for the spring 14, integral with the adjoining follower, it is, of course, to be understood that it is immaterial which member of the casing is thus constructed, and it is also immaterial whether the spring 10 and the intermediate follower are used in connection with the front follower or with the rear follower. While I prefer also that the end plates 13 and 16 of the spring structure shall be perpendicular to the diagonal bearings of the opposed members of said structure slight departures from such perpendicular disposal of the plates may be adapted within the scope of my invention.

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

1. A spring friction structure for the draft gear of railway cars, comprising a spring element and frictionally engaged devices meeting in one diagonal plane and imparting pressure thereto, and a supplementary spring through which pressure is transmitted to said spring friction structure, substantially as specified.

2. A spring friction structure for the draft gear of railway cars, said structure comprising a spring element, members with side plates having diagonal bearing upon each other and end plates providing bearings for the interposed spring element, and a supplementary spring, through the medium of which pressure is applied, substantially as specified.

3. A spring friction structure for the draft gear of railway cars, having a spring element disposed diagonally in respect to the longitudinal axis of the draft gear, substantially as specified.

4. A spring friction structure for the draft gear of railway cars, having a spring element disposed diagonally in respect to the longitudinal axis of the draft gear, and a supplementary spring parallel with the longitudinal axis of the draft gear and through which

pressure is exerted upon said spring friction structure, substantially as specified.

5. A spring friction structure for the draft gear of railway cars, having a spring element disposed diagonally in respect to the longitudinal axis of the draft gear, and frictionally engaged devices for imparting pressure to said spring element in the direction of its axis, substantially as specified.

6. A spring friction structure for the draft gear of railway cars, having a spring element disposed diagonally in respect to the longitudinal axis of the draft gear, frictionally engaged devices for imparting pressure to said spring element in the direction of its axis, and a supplementary spring parallel with the longitudinal axis of the draft gear and through which pressure is exerted upon said spring friction structure, substantially as specified.

7. A spring friction structure for the draft gear of railway cars, said structure comprising a spring element, and members with side plates having diagonal bearing upon each other and end plates providing bearings for the interposed spring element, said end plates being substantially perpendicular to the diagonal bearings, substantially as specified.

8. A spring friction structure for the draft gear of railway cars, said structure comprising a spring element and members with side plates having diagonal bearing upon each other and end plates providing bearings for the interposed spring element, said end plates being substantially perpendicular to the diagonal bearings, and a supplementary spring through which pressure is imparted to said spring friction structure, substantially as specified.

9. The combination, in a draft gear for railway cars, of a draft bar, a follower acted upon thereby, a spring friction structure comprising a spring element and members with side plates having diagonal bearing upon each other and end plates providing bearings for the interposed spring element, and a supplementary spring through the medium of which pressure is exerted by said follower upon one of the members of said spring friction structure, substantially as specified.

10. The combination, in a draft gear for railway cars, of a draft bar, two followers acted upon thereby, one movable with the draft bar in buffing and the other in draft, a spring friction structure comprising a spring element and members with side plates having diagonal bearing upon each other and end plates providing bearings for the interposed spring element, and a supplementary spring through the medium of which pressure is exerted by one of the followers upon one of the members of said spring friction structure, substantially as specified.

11. In a draft rigging mechanism, the combination with a draw-bar, of a plurality

of followers, an elastic friction structure and a supplemental elastic structure disposed between said followers, and a secondary follower located between said elastic friction structure and supplementary elastic structure and having bearing upon a member of said elastic friction structure, substantially as specified.

12. In a draft rigging mechanism, the combination with a spring element disposed at an angle to the longitudinal axis of the device, of a pair of members frictionally engaging each other and containing said spring element between them, one of said members constituting a follower, substantially as specified.

13. In a draft rigging mechanism, the combination with a pair of end followers, of a combined friction and elastic resistance medium and a supplemental elastic resistance medium interposed between said followers, and a follower located intermediate of said resistance mediums and having frictional engagement with one element of said combined friction and elastic resistance medium, substantially as specified.

14. The combination in a draft gear for railway cars, of a spring friction structure comprising frictionally engaged members, and an interposed spring element, a main follower acted on by the draft mechanism, an intermediate follower acting upon the spring friction structure, and a supplementary spring interposed between said main and intermediate followers, substantially as specified.

15. The combination, in a draft gear for railway cars, of a draft bar, two followers acted upon thereby, one movable with the draft bar in buffing and the other in draft, an intermediate follower movable with the draft bar either in buffing or draft, a spring friction structure comprising a spring element and members with side plates having diagonal bearing upon each other and end plates providing bearings for the interposed spring element, said spring friction structure being contained between the intermediate follower and one of the end followers, and a supplementary spring interposed between the other end follower and the intermediate follower, substantially as specified.

16. The combination, in a draft gear for railway cars, of a draft bar, a follower acted upon thereby, and a spring friction structure comprising a spring element and members with side plates having diagonal bearing upon each other, and end plates providing bearings for the interposed spring element, one of the members of said spring friction structure constituting part of the follower, substantially as specified.

17. The combination, in a draft gear for railway cars, of a draft bar, a spring friction structure comprising a spring element and

70

75

80

85

90

95

100

105

110

115

120

125

130

members with side plates having diagonal bearing upon each other and end plates providing bearings for the interposed spring element, and followers between which said spring friction structure is located, one of said followers constituting part of one of the members of the spring friction structure, and the other follower providing a bearing on which the other member of the said spring friction structure can slide laterally, substantially as specified.

18. The combination, in a draft gear for railway cars, of a draft bar, front and rear followers, one movable with the draft bar in buffing and the other in draft, an intermediate follower movable with the draft bar either in buffing or draft, a spring friction structure comprising a spring element and members with side plates having diagonal bearing upon each other and end plates providing bearings for the interposed spring element, said spring friction structure being interposed between one of the end followers and the intermediate follower and one of its members forming part of one of said followers, and a supplementary spring interposed between said intermediate follower and the other end follower, substantially as specified.

19. The combination, in a draft gear for railway cars, of a draft bar, front and rear followers, one movable with the draft bar in buffing and the other in draft, an intermediate follower, movable with the draft bar either in buffing or draft, a spring friction structure comprising a spring element and members with side plates having diagonal bearing upon each other and end plates providing bearings for the interposed spring element, said spring friction structure being interposed between one end follower and the intermediate follower and one of its members forming part of one of said followers and the other having laterally sliding bearing upon the other follower, and a supplementary spring interposed between the intermediate follower and the opposite end follower, substantially as specified.

20. The combination, in a draft gear for railway cars, of a draft bar, front and rear followers, one movable with the draft bar in buffing and the other in draft, an intermediate follower, movable with the draft bar either in buffing or draft, a spring friction structure comprising a spring element and members with side plates having diagonal bearing upon each other and end plates providing bearings for the interposed spring element, one of said members forming a part of the intermediate follower and having lateral engagement with one of the end followers, and the other member having a sliding bearing upon said end follower, and a supplementary spring interposed between said intermediate follower and the other end follower, substantially as specified.

21. The combination, in a draft gear for railway cars, of a spring friction structure comprising a spring element and members having side plates with diagonal bearing upon each other and end plates forming bearings for the interposed spring element, and a follower against which one of said members bears and on which it can slide laterally, said follower having lateral engagement with the other member of the spring structure, substantially as specified.

22. A spring friction structure for the draft gear of railway cars, comprising a spring element and a pair of devices frictionally engaging each other, and containing between them said spring element, and a supplementary spring through which pressure is transmitted to said spring friction structure, substantially as specified.

23. A spring friction structure for the draft gear of railway cars, comprising a spring element and a plurality of devices frictionally engaging each other and forming abutments for said spring element, and a supplementary spring through which pressure is transmitted to said spring friction structure, substantially as specified.

24. In a draft gear for railway cars, a spring friction structure provided with a plurality of members having diagonal frictional bearing on each other, one of said members constituting a follower, and also an abutment for a spring element disposed at an angle to the draw bar.

25. In a draft gear for railway cars, a spring friction structure provided with a plurality of members having diagonal frictional bearing on each other, and a spring element supported at an angle to the longitudinal axis of the device, one of said members being disposed transversely of the draw bar and constituting a follower and also an abutment for the spring member, substantially as specified.

26. In a draft gear for railway cars, a spring friction structure provided with a pair of members having diagonal frictional engagement with each other, and an interposed spring element supported at an angle to the longitudinal axis of the structure, one of said members constituting a follower and also an abutment for the spring element, substantially as described.

27. A frictional draft-rigging having friction elements and yielding mechanism inclined to the line of draft and connecting the friction elements, substantially as described.

28. A friction draft-rigging comprising friction elements and an interposed spring mechanism which is inclined to the line of draft, substantially as described.

29. A frictional draft-rigging comprising opposite followers set between lateral confining surfaces and an interposed inclined spring, substantially as described.

30. A frictional draft-rigging comprising a case, opposite interposed friction followers, and an inclined spring, substantially as described.

5 31. The combination in a draft gear for railway cars, of a draft bar having an enlarged head or boss, with a yoke extending above and below said boss and bent inwardly to engage the shouldered portion of the draft
10 bar produced by the boss, said yoke also extending parallel with the draft bar beyond the bent portions, with rivets passing through the top and bottom of the yoke and the boss, and a rivet passing through the ex-
15 tended parts of the yoke and that part of the draft bar between the same, substantially as described.

32. The combination, in draft gear for railway cars, of the draft bar having an enlarged head or boss formed thereon, with a 20 yoke secured to said boss and bent inwardly to engage the shouldered portion of the draft bar produced by the enlarged head or boss thereon, said yoke also extending beyond the bent portion and having such extension se- 25 cured to the draft bar in advance of the head or boss.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ARNOLD STUCKI.

Witnesses:

J. P. FIFE,
JEAN HENRY.