A. E. OSTRANDER.

DRAW GEAR OR DRAFT RIGGING.

APPLICATION FILED NOV. 2, 1907.

912,723.

Patented Feb. 16, 1909.

6 SHEETS—SHEET 1.

Fig. 1

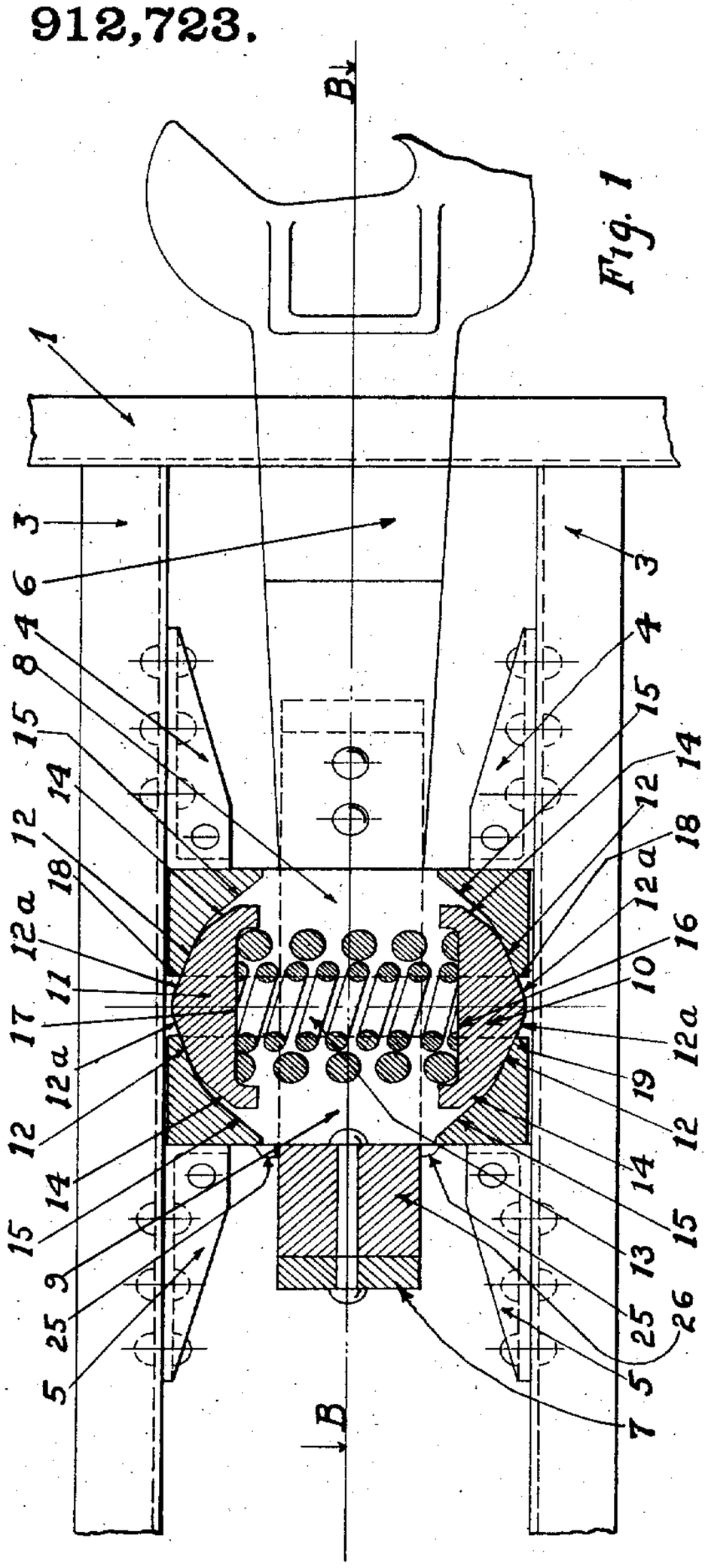
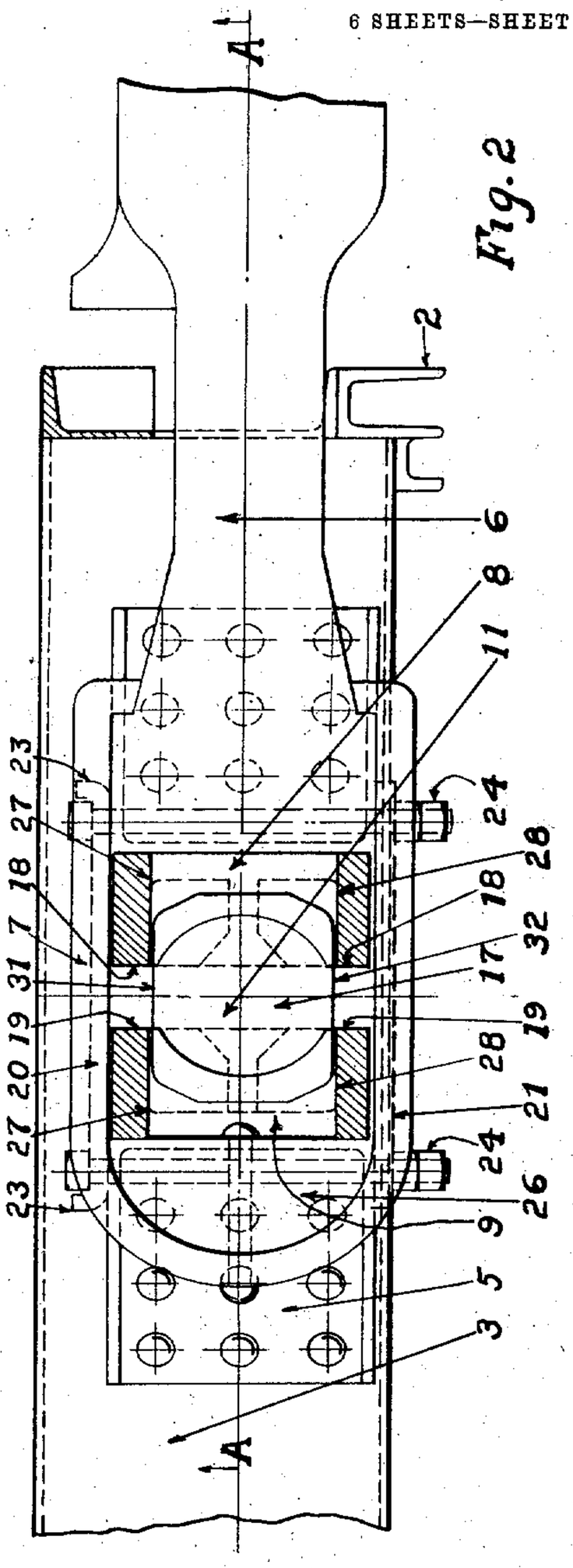


Fig. 2



WITNESSES:

Chas C. Fischer

Frank J. Lynch

INVENTOR

Allen E. Ostrander

BY F. H. Gibbs

ATTORNEY

A. E. OSTRANDER.

DRAW GEAR OR DRAFT RIGGING.

APPLICATION FILED NOV. 2, 1907.

912,723.

Patented Feb. 16, 1909.

6 SHEETS—SHEET 2.

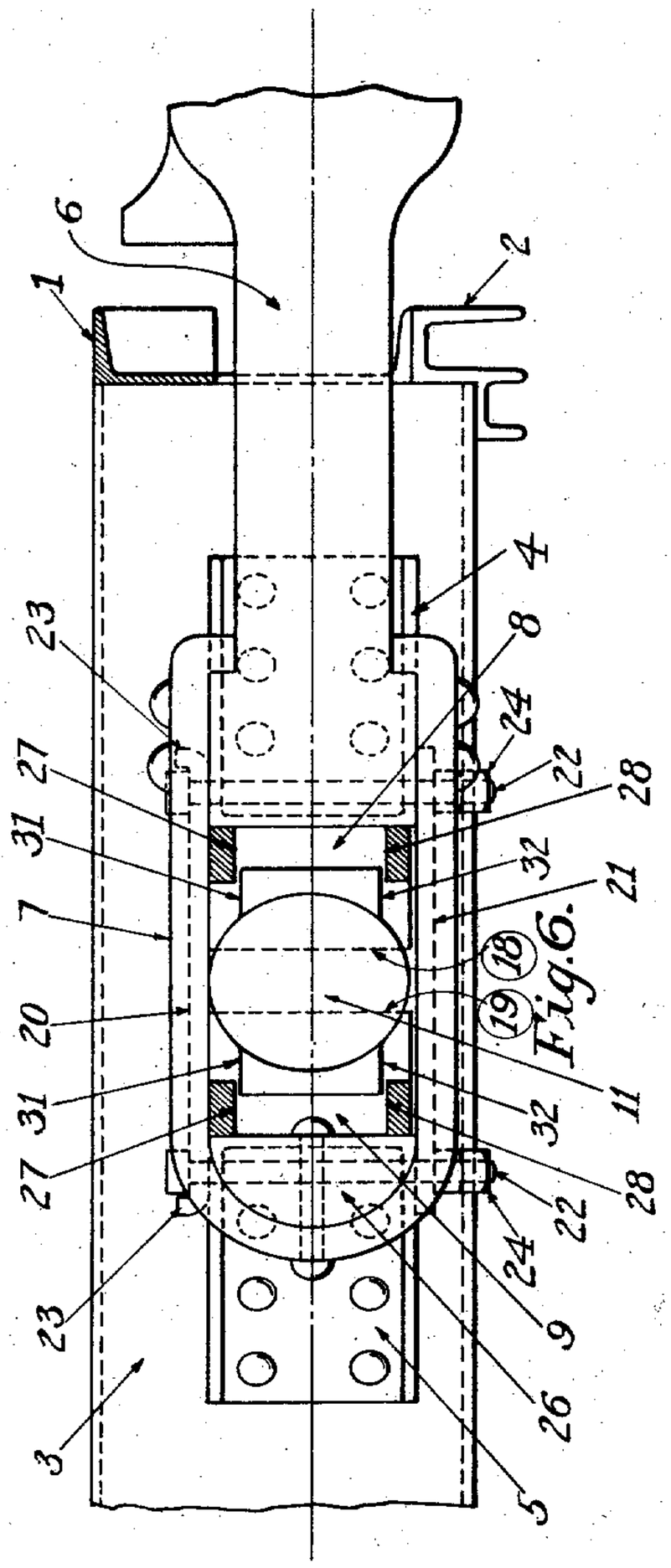


Fig. 6.

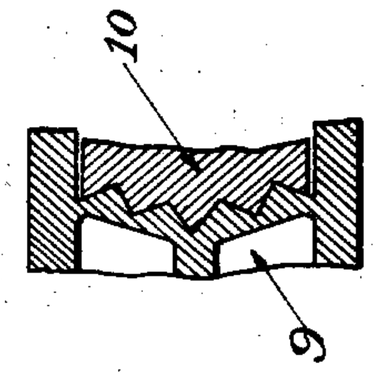


Fig. 5.

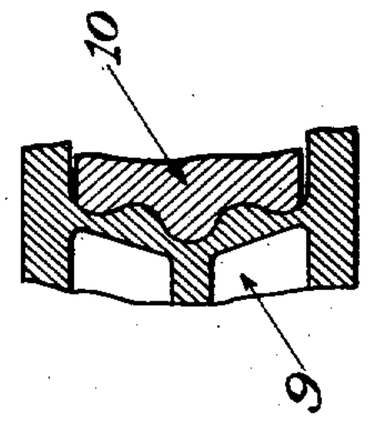


Fig. 4.

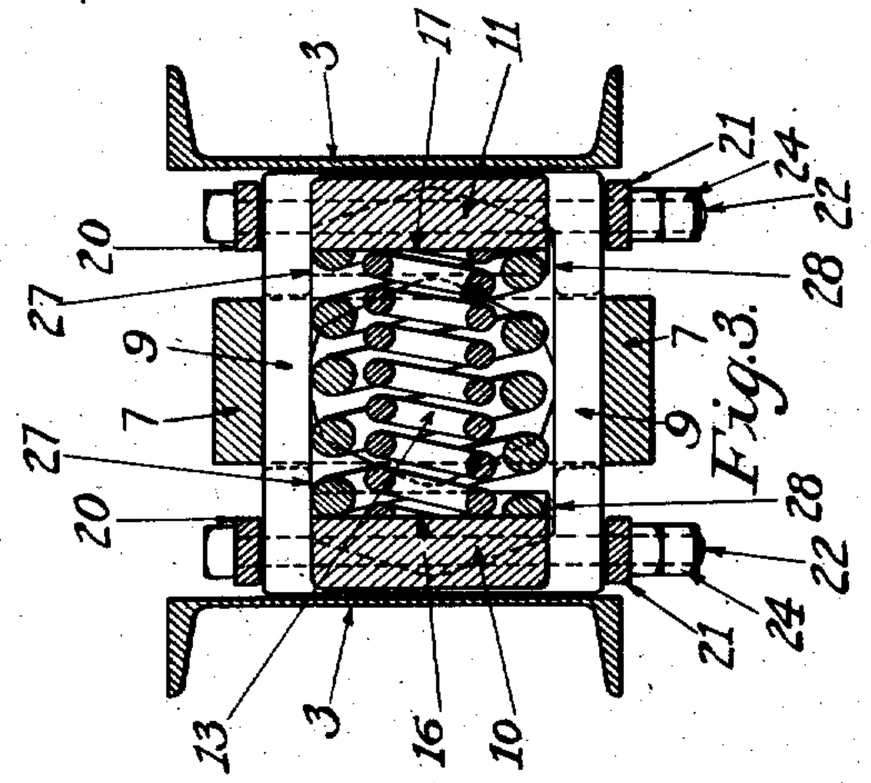


Fig. 3.

WITNESSES:

Frank J. Lynch

Wallace N. Davis

INVENTOR

Allen E. Ostrander

BY F. H. Gibbs

ATTORNEY

A. E. OSTRANDER.

DRAW GEAR OR DRAFT RIGGING.

APPLICATION FILED NOV. 2, 1907.

912,723.

Patented Feb. 16, 1909.

6 SHEETS—SHEET 3.

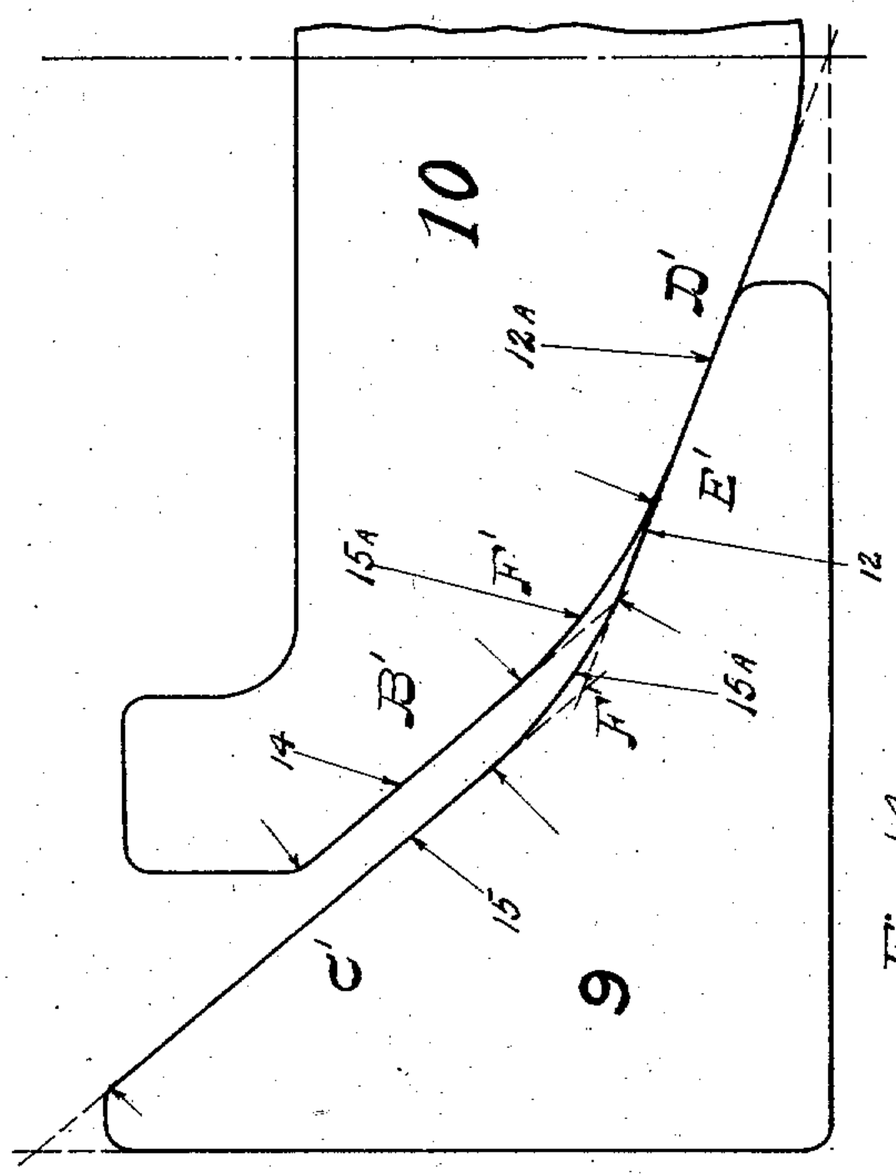


Fig. 14

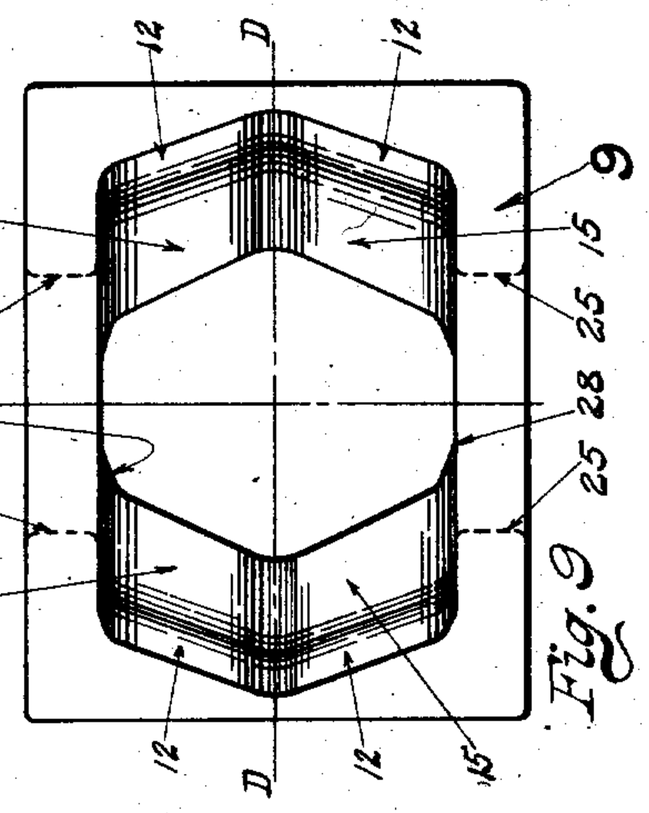


Fig. 9

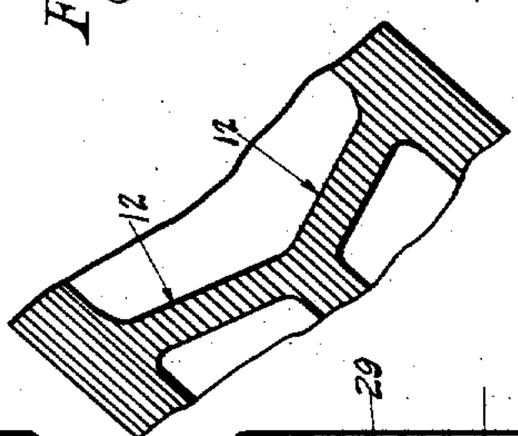


Fig. 10

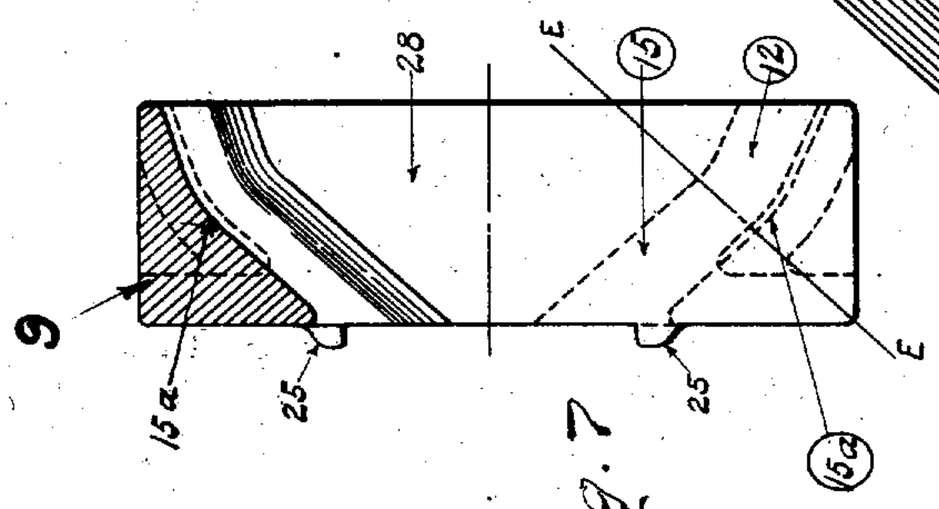


Fig. 7

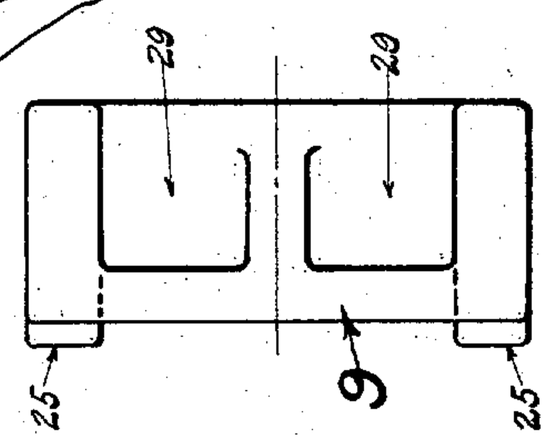


Fig. 8

WITNESSES:

Frank J. Lynch

Edward W. Siegel

INVENTOR

Allen E. Ostrander

BY

F. H. Gibbon

ATTORNEY

A. E. OSTRANDER.

DRAW GEAR OR DRAFT RIGGING.

APPLICATION FILED NOV. 2, 1907.

912,723.

Patented Feb. 16, 1909.

6 SHEETS—SHEET 4.

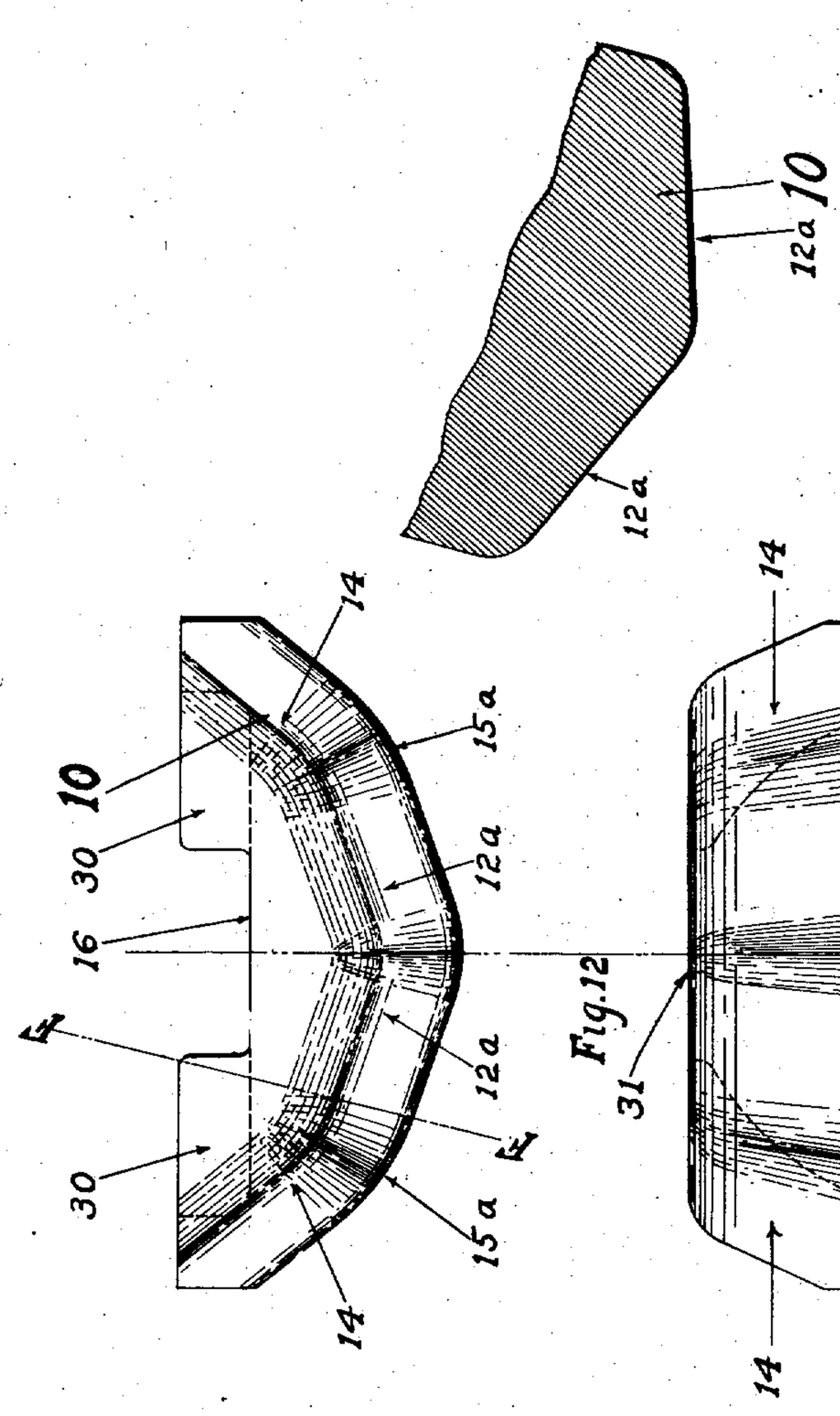


Fig. 12

Fig. 13

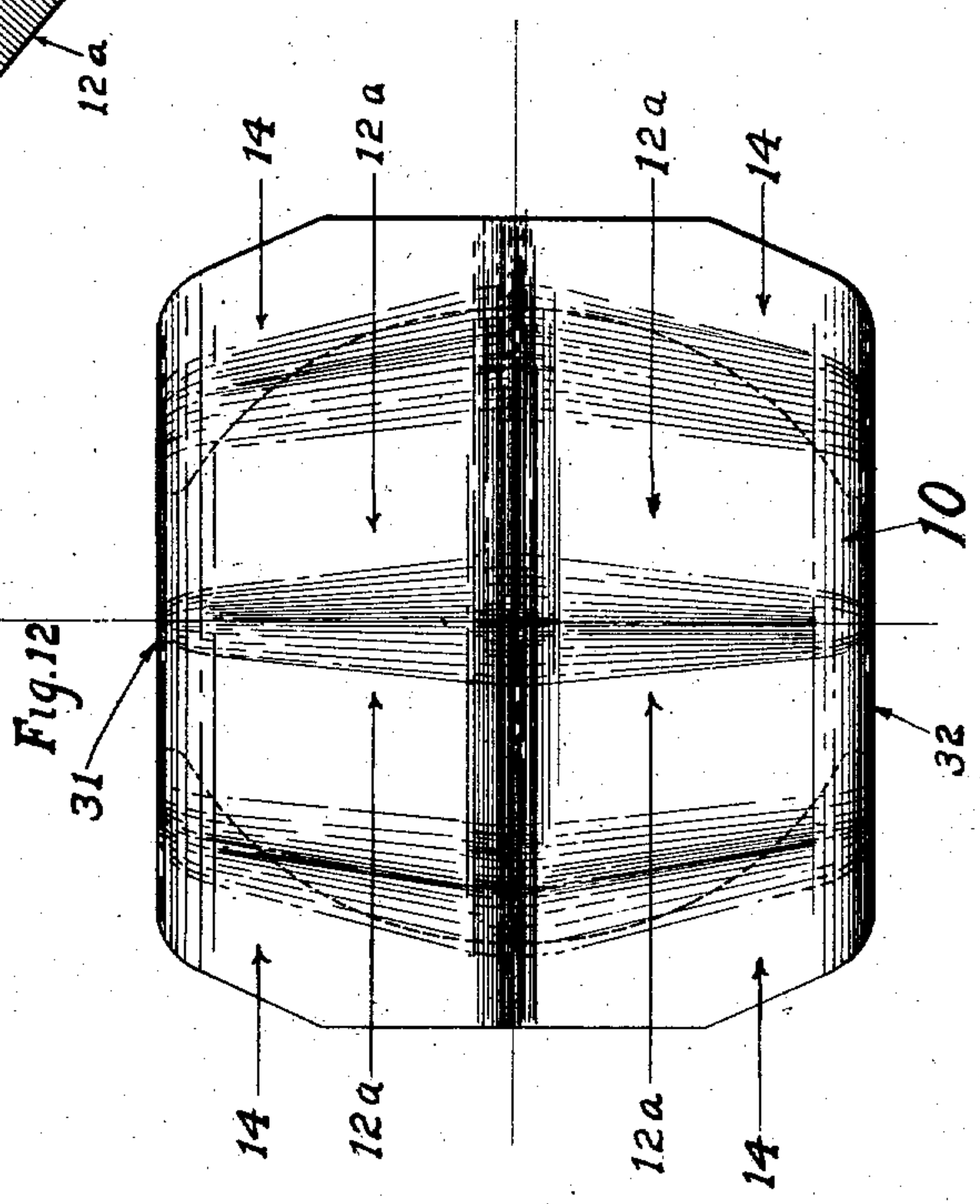


Fig. 11

WITNESSES:

Charles A. Turner

Edward W. Siegel

INVENTOR

Allen E. Ostrander

BY F. H. Gibbs

ATTORNEY

A. E. OSTRANDER.

DRAW GEAR OR DRAFT RIGGING.

APPLICATION FILED NOV. 2, 1907.

912,723.

Patented Feb. 16, 1909.

6 SHEETS—SHEET 5.

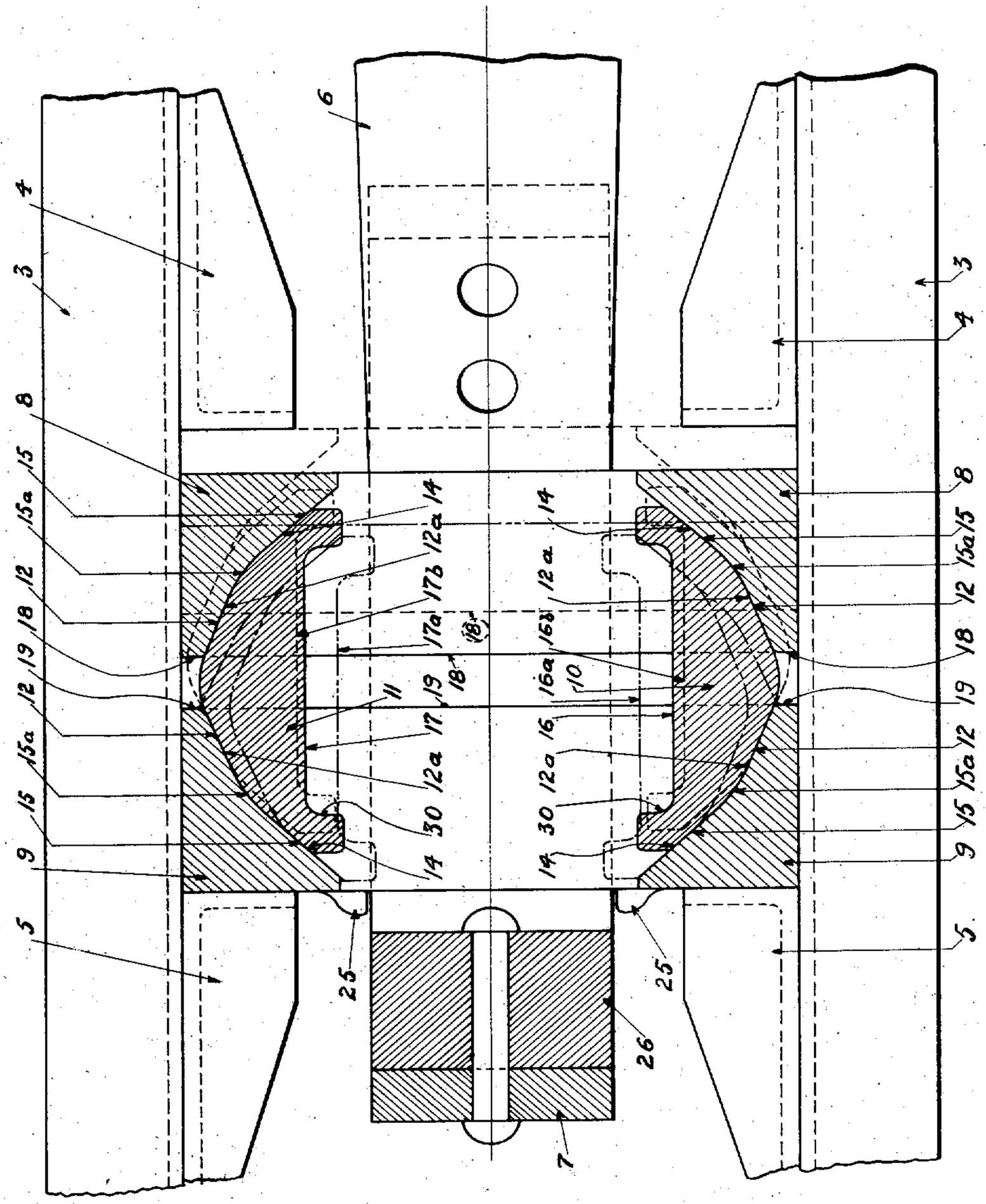


FIG 15

WITNESSES:

Hadie Blythe.

Edward W. Siegel.

INVENTOR

Allen E. Ostrander

BY T. H. Gibbs

ATTORNEY

A. E. OSTRANDER.

DRAW GEAR OR DRAFT RIGGING.

APPLICATION FILED NOV. 2, 1907.

912,723.

Patented Feb. 16, 1909.

6 SHEETS—SHEET 6.

Fig. 17

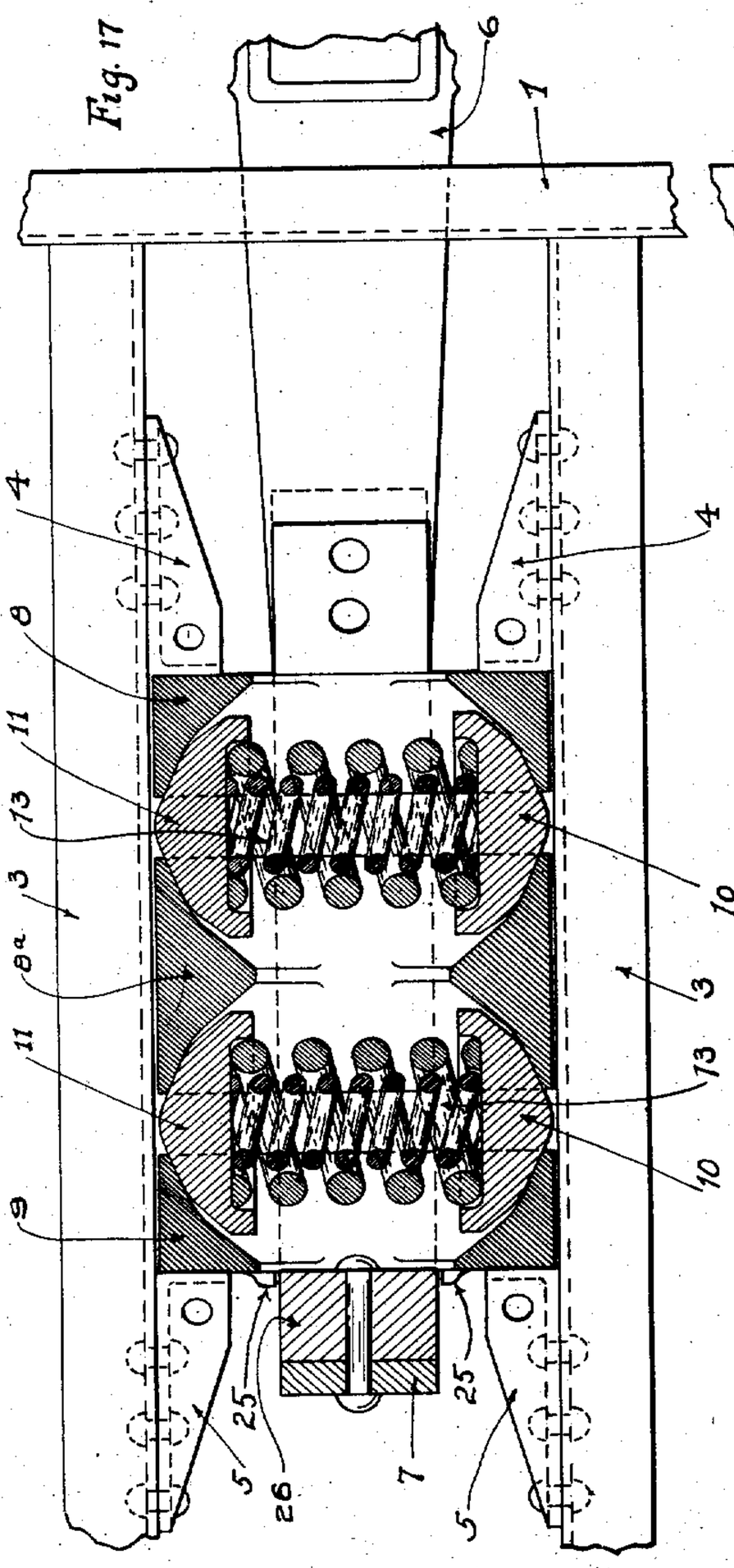
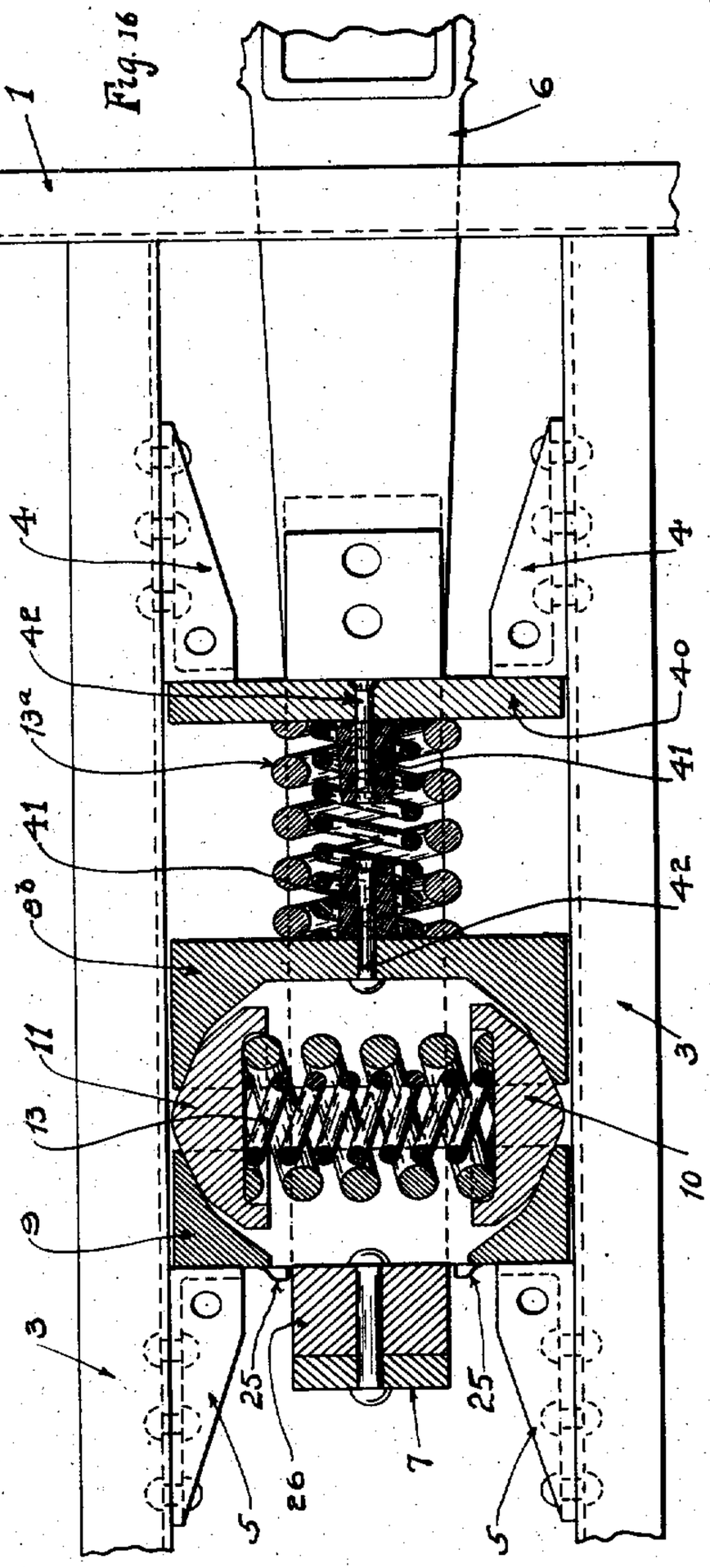


Fig. 16



WITNESSES:

Charles F. Turner.

Edward W. Siegel

INVENTOR

Allen E. Ostrander

BY T. H. Gibbon

ATTORNEY

UNITED STATES PATENT OFFICE.

ALLEN EDWARD OSTRANDER, OF NEW YORK, N. Y.

DRAW-GEAR OR DRAFT-RIGGING.

No. 912,723. Specification of Letters Patent. Patented Feb. 16, 1909.

Application filed November 2, 1907. Serial No. 400,336.

To all whom it may concern:

Be it known that I, ALLEN E. OSTRANDER, a citizen of the United States, residing in New York, in the county and State of New York, have invented a new, useful, and Improved Draw-Gear or Draft-Rigging, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same and which may be readily understood by reference to the accompanying drawings, forming part of this specification.

My invention relates to that class of draft-rigging in which movable elements are used in connection with a spring or springs to develop frictional resistance to coupler travel.

The object of my invention is to provide a draft-rigging, the resisting power of which is increased as and when most required, by means of friction, which shall be of simple, strong and durable construction and which is preferably compact enough to be adaptable for use in connection with the short coupler yoke now ordinarily used with a non-frictional rigging in which latter a spring presents the only resisting power.

By meeting the above conditions I have developed a draw-gear that will give an increased efficiency and can be easily applied for repairs to cars now in service on which the type of rigging used may not be of sufficient strength to meet present service conditions.

Owing to the limited space available in the above short coupler yoke, now adopted as standard by the Master Car-Builders' Association, no other frictional device has been developed which can be applied without change in the proportions of the yoke.

It should be understood that the device is not limited for use in repair work but is equally adaptable to new equipment, which may be any kind of railway rolling stock.

My invention consists in the novel shape and arrangement of friction blocks and follower plates, used in conjunction with the usual coupler, coupler yoke, follower stops, and draft springs, as generally applied to railway cars, which elements will develop frictional resistance to the coupler travel, which resistance may be variable in intensity at different points of said coupler travel. The design can be arranged so that the resistance will come to a maximum at any point of said travel of the coupler, and before the springs have been stressed to, or beyond their safe working capacity.

My invention also consists in certain novel features introduced in the construction of the friction blocks and follower plates as well as the combination and arrangement of the same whereby the desired results are obtained, all as herein shown and described.

In the accompanying drawings, Figure 1 is a plan view, partly in section, of the draft-rigging and attachment for a car in which is embodied my invention; the sectional portion being taken on the line A—A of Fig. 2; Fig. 2 is a vertical section through center of rigging taken longitudinally of the car on the line B—B of Fig. 1; Fig. 3 is a transverse section view of the improved rigging, through center of spring shown in Fig. 1; Figs. 4 and 5 illustrate different methods that may be used for increasing the area of the contact surfaces of friction members by means of corrugations; Fig. 6 is a vertical section similar to Fig. 2 of a modification designed to permit of use in a smaller vertical space. Fig. 7 is the plan view of one of the follower plates which is partly in section, sectional portion being taken on line D—D of Fig. 9; Fig. 8 is the end elevation of follower plate shown in Figs. 7 and 9, showing method of lightening the weight of this detail; Fig. 9 is the front elevation of follower plate looking into the friction pocket; Fig. 10 is a fragmentary view of a portion of the follower plate taken on line E—E of Fig. 7; Fig. 11 is a front elevation of one of the movable friction blocks; Fig. 12 is a plan view of the friction block shown in Fig. 11; Fig. 13 is a sectional view of a portion of the friction block taken on line F—F of Fig. 12; Fig. 14 is an enlarged fragmentary section hereinafter fully explained; Fig. 15 is a diagrammatic plan of the rigging with spring removed illustrating the movement of the four-friction producing elements under stress as may be produced in service; Fig. 16 is a plan view similar to Fig. 1 and illustrates my invention applied in tandem with an auxiliary spring; Fig. 17 is a plan view similar to Fig. 1 illustrating a double tandem arrangement thereof.

In the drawings as shown 1 indicates the end sill of a car which supports the carrier iron 2 and which is secured to the ends of

the center or draft sills 3—3. The front and back follower stops are indicated by the respective numbers 4—4 and 5—5 and are secured to the sills 3—3. The coupler 6 is fitted with the customary yoke or strap 7 and is supported in the usual manner near the head by the coupler carrier iron 2. This arrangement is all in accordance with the usually accepted standard practice of first class American railroads. The coupler yoke 7 passes around the front and back follower plates 8 and 9 which follower plates differing from the usual construction of these details, are made with a pocket portion inclosed by surface 12—15—27—28, Fig. 9. The movable members 10 and 11 which we will call friction blocks extend into the friction pockets of the follower plates 8—9 and bear normally against the friction faces of said plates indicated by number 12, the corresponding bearing faces of the friction blocks being referred to as 12ª said friction blocks being held in place by the spring 13.

In the construction shown in the accompanying drawings I am able to use a spring of the type known as the M. C. B. standard double coil helical draft spring which size while advantageous, because it is standard is not essential to the successful operation of the rigging.

A further advantage gained by this invention is that frictional resistance to longitudinal coupler travel is increased, without excessive wear on the friction elements, in two ways:—

First: By the resisting power of the spring resulting in a certain amount of frictional resistance due to the movement under stress of the elements bearing together on surfaces 12, which resistance increases in proportion to the amount of power required to compress the spring itself.

Second. After a certain point in the travel is reached the resistance is increased by a change in the angle of the surfaces in contact. This change in angle takes place when the friction faces 14 of the friction blocks 10 and 11 have come in contact with the friction faces 15 of the follower plates 8 and 9.

From an inspection of the drawings it is obvious that there will be one point in travel when the friction blocks will bear against the follower plates on all the faces numbered 12—12ª—14—15. This arrangement results in reducing the wear on the frictional contact faces thereby overcoming one of the most serious objections to a device of this class.

With the tangent or flat contact surfaces I have shown there is a frictional resistance which for a limited amount of travel increases only with the increasing power of the spring as compressed until the travel has reached that point where the next series of flat faces come in contact, then the bearing is changed to the more acute angle and we again have a uniform increase of friction due to the spring pressure which will continue until the maximum amount of travel is reached. Moreover the wearer, being distributed over a surface area rather than on a line, would be greatly lessened, and at the instant of leaving one angle of contact for the next both of the adjacent faces would be in contact making a further reduction in the wear at this point where the abrupt change or increase in frictional resistance takes place.

The movement of the separate parts under stress will be more readily understood by reference to the diagrammatic plan Fig. 15 which shows at an enlarged scale the position of the elements under a medium buffing or compressive force. A blow due to buffing or pushing is first received on the coupler and transmitted through the shank to the front follower plate, 8. The tendency of the force is to move the whole device longitudinally of the car which is prevented by the back follower plate 9 having a bearing against the stops 5—5 that are secured to the sills; the front follower 8 is therefore moved toward the back follower 9 thereby imparting a slight movement to the friction blocks 10 and 11, said movement being resisted by the spring 13. When the friction blocks have been moved to the position as shown in full lines in Fig. 15 the spring has been compressed to a height represented by the transverse distance between spring bearing faces 16 and 17 on the blocks 10 and 11 and the frictional contact surfaces 12 12ª 14 and 15 all being in contact any further movement due to pushing of coupler will tend to transfer the frictional bearing from surfaces 12—12ª to the acute angular frictional surfaces 14 and 15 and travel on this acute angle will cause the surfaces 12ª of the friction blocks 9 and 10 to travel away from the surfaces 12 of the follower plates 8 and 9 which travel will continue until the extreme movement of the rigging is reached. This limit is reached when the faces 18 and 19 of the follower plates 8 and 9 are in contact, at which time the spring bearing faces of friction blocks 16 and 17 will have reached the positions indicated by broken lines marked 16ª and 17ª. The several parts are so designed that when this condition is reached the springs would not have been stressed up to the limit of strength consequently unless of defective workmanship or material they could not be broken in service.

The position of the component parts of the device when at rest is indicated by dotted lines at which time the spring bearing faces 16 and 17 of the friction blocks will be in the positions indicated by dotted lines 16ᵇ and 17ᵇ and, therefore, the transverse distances between these lines indicate the degrees of

compression of the spring during movement of the parts.

It is evident that the transverse movement is much greater for the second stage than for the first, which will result in an addition to the increase of friction said addition being due to the change of angle and consequently the spring is being compressed much faster than on the first stage of travel, resulting in a correspondingly faster increase of friction. Thus it is evident that all light shocks will be absorbed or taken up on the first stage of travel when the resistance would be at a minimum and for heavier blows causing more travel there would be a much greater and faster increasing amount of resistance, so that I have produced a rigging with an exceptionally large capacity, and yet one that will be sensitive to light blows on the coupler. It is obvious that if a pull instead of a push was exerted on the coupler the result would be identical so far as the rigging itself is concerned, but the front follower stops 4—4 would offer the resistance to movement instead of stops 5—5 and the movement of the follower plates would be reversed from that described in the first instance.

The rigging may be supported in any convenient manner the means shown being the old M. C. B. standard method used with single spring non-frictional riggings, consisting of top and bottom follower guides 20 and 21 held in place by bolts 22, passing through the follower stops 4 and 5. To facilitate the removal of the rigging from a car in service the ends 23, of the top follower guide 20, are turned up so as to prevent the bolts from turning when nuts 24 are removed.

In Fig. 6 which is similar to Fig. 2 a design is shown whereby rigging may be applied with the yoke, known as the 6½ inch standard M. C. B. type, the yoke shown in Fig. 2 being known as the 9⅛ inch standard M. C. B. type, the operation of the rigging in both cases being identical.

The shape or contour of the friction faces on a vertical plane could be varied indefinitely without in the least interfering with the successful operation of the device.

The preferred construction of the follower blocks and friction blocks is shown in Figs. 7 to 13 inclusive, Figs. 7 to 10 inclusive representing one of the follower blocks. The only difference between the front and back followers 8 and 9, which in the preferred design are box shaped, will be that the lugs 25, are used on detail 9 and omitted on detail 8 the object being to center the coupler yoke between these lugs, which will extend beyond the edge of the reinforcing filler 26, which is used in the back end of the standard yoke, or if a construction of yoke was used that did not have this filler the lugs 25 would lap over the edge of the strap itself. If it were not for the advantage gained by having both follower plates of the same shape I would make the filler 26, when used to fit loosely in the yoke and have it as an integral part of back follower 9. The object of omitting the lugs on the front follower 8, is to permit a certain amount of lateral travel of the coupler without subjecting the yoke to an undue strain.

By reference to the Figs. 9 and 10 it will be seen that I have placed the friction faces 12 and 15 in a relatively V shape the object of this being to increase the area of said faces and also permit of a stronger construction of the friction elements 10, and 11, than would be possible in a limited space if the friction faces were placed vertical. It should also be noted that what I call the friction pocket is the opening in the follower plates inclosed by the surfaces 12—15—27—28 and is shown without any square corners. At the intersection of each plane surface, I have added a radius 15ª (see Figs. 7—12—15) thus removing the sharp corners where in case of failure breakage usually starts. This same construction is also followed out in the design of the friction blocks as will be hereinafter explained. The recesses 29 which appear in the ends of the follower blocks are only for the purpose of reducing weight where strength would have been excessive if this detail were left solid.

The friction blocks 10 and 11 are shown in Figs. 11—12 and 13 and the contour of friction faces 12ª and 14 is made to fit exactly to the contour of the friction faces 12 and 15 of the follower blocks and the width across friction surface of the movable blocks between top and bottom edges 31 and 32 is slightly less than the corresponding distances between faces 27 and 28 of the follower plates. This together with the shape of the faces in contact prevents any binding of the friction block between upper and lower faces 27 and 28 of the friction pocket. The side of the friction block opposite to the friction face is recessed to form a pocket in which the spring rests on faces 16 and 17. This recess also serves to provide a flange 30 which may or may not entirely encircle the spring but in either case would absolutely prevent the spring slipping out of place.

In the modification shown in Fig. 16 the device is coupled with a longitudinally disposed spring 13ª seated between the follower plate 8ᵇ and the forward stop plate 40 said members being each provided with stops 41 to take up strains when said springs 13ª are compressed and to transmit such strain to the friction draft-rigging hereinbefore described. These stops are held in position by rivets 42 extending longitudinally therethrough as shown in said Fig. 16. While this type of draft-rigging will necessarily

occupy more space it may be preferred in some new equipment wherein more space may be obtained therefor.

In the tandem arrangement illustrated in Fig. 17 the parts shown in Figs. 1–15 inclusive are substantially duplicated except that a floating follower block 8ª is interposed between the pairs of friction blocks 10—11, the friction faces of said floating member being multiplied to adapt them for simultaneous coöperation with the front and back pairs of friction blocks in service thereby multiplying the frictional resistance generated.

Having described the invention, what I claim is:

1. In a draft-rigging, the combination comprising friction blocks and follower plates each of which is provided with a plurality of plane friction faces disposed at different angles to the transverse axis of said draft-rigging.

2. In a draft-rigging, the combination comprising friction blocks and follower plates each of which is provided with a plurality of relatively flat friction faces disposed at different angles to the transverse axis of said draft-rigging and intermediate portions in approximately the same arc.

3. In a draft-rigging, the combination comprising follower plates and a plurality of friction blocks, said friction blocks having relatively flat friction faces disposed at relatively different angles to the transverse axis of said draft-rigging.

4. In a draft-rigging, the combination comprising follower plates and a plurality of friction blocks, said friction blocks having friction faces comprising a plurality of plane surfaces disposed at relatively different angles to the transverse axis of said draft-rigging.

5. In a draft-rigging, the combination comprising recessed follower plates and spring actuated friction blocks coöperating therewith, said friction blocks having a plurality of flat friction faces arranged to form a substantially convex shape.

6. In a draft-rigging, the combination comprising recessed follower plates and spring actuated friction blocks coöperating therewith, said friction blocks having substantially convex friction faces, parts of which are plane surfaces.

7. In a draft-rigging, the combination comprising movable elements each having plane friction face portions adapted to be alternately brought into contact.

8. In a draft-rigging, the combination comprising movable elements each having flat friction faces arranged at different angles and adapted to be alternately brought into contact.

9. In a draft-rigging, the combination comprising a plurality of movable elements, each element having a plurality of friction faces, said friction faces so disposed that at certain points of the movement the number of faces in contact will be increased.

10. In a draft-rigging, the combination comprising a plurality of movable elements, each element having a plurality of friction faces, said friction faces being disposed at relatively different angles to the transverse axis of said draft-rigging and so disposed that at certain points of the movement the number of faces in contact will be doubled.

11. In a friction generating device, the combination of movable elements having a plurality of relatively flat friction faces, said faces arranged at different angles with the normal line of the actuating force.

12. In a friction draw-gear, the combination of movable elements having a plurality of plane friction faces, said faces arranged at different angles with the normal line of the applied force.

13. In a friction generating device, the combination of movable elements having a plurality of plane friction faces, said faces having an intermediate connecting portion at the junction of the adjacent faces which faces are arranged at different angles with the normal line of the actuating or resisting force.

14. In a draft-rigging, the combination comprising a plurality of movable elements having a plurality of friction face portions some of which are normally in contact and means for increasing the number of friction face portions in working contact.

15. In a friction rigging, the combination comprising a spring actuated movable element and a coöperating movable element each of said elements having friction faces which are angularly disposed and some of which are normally out of contact, said faces being adapted to be alternately brought into contact.

16. In a frictional device, frictional elements, each having a plurality of adjacent angularly disposed face portions some of which are normally out of contact, said adjacent face portions being so disposed that at one point of movement the major portion of said face portions of both elements will be in contact.

17. In a friction draft-rigging, the combination comprising follower plates and friction blocks having a plurality of relatively flat friction faces arranged at different angles and means for forcing said faces into contact, said friction blocks being arranged to contact on the inner side of a recessed portion of the follower plates.

18. In a friction draft-rigging, the combination comprising follower plates and friction blocks each having a plurality of integral face portions arranged at different angles and means for forcing said faces into

contact, said contact surfaces being arranged with a longitudinally disposed portion extending beyond the general plane thereof.

19. In a friction draft-rigging, the combination comprising follower plates and friction blocks each having a plurality of integral face portions arranged at different angles and means for forcing said faces into contact, said friction blocks being arranged to contact on the inner side of a recessed portion of the follower plates and said contact surfaces being arranged with a longitudinally disposed rib near its middle portion.

20. In a friction draft-gear, the combination comprising movable elements having a plurality of substantially plane friction faces arranged at different angles.

21. In a friction rigging, the combination comprising a movable friction block having a plurality of plane friction faces, said faces being arranged in pairs so disposed that the pair nearest the middle portion of said block form an obtuse angle with relation to each other and each succeeding pair form a lesser angle.

22. In a friction draft-rigging, the combination comprising follower plates, movable friction blocks and a spring, said follower plates and friction blocks having a plurality of plane friction faces so disposed that the angularity of said faces with relation to the center line of the spring will be greater for the faces adjacent than for the faces more remote from said line.

23. In a frictional device provided with plane friction faces, the combination comprising movable elements so arranged that the areas of the friction surfaces in contact will increase and subsequently decrease during movement of the parts.

24. In a frictional device provided with friction faces with curved and plane portions at different angles to the transverse axis of said device, the combination comprising longitudinally movable friction elements and laterally movable elements so arranged that the areas of the friction surfaces in contact will vary during movement of the parts.

25. In a friction device, the combination comprising a series of longitudinally movable friction elements and laterally movable members having plane friction faces arranged at various angles with the normal line of the actuating force, the friction faces of said movable members having longitudinal ribs.

26. In a friction device, the combination comprising a series of longitudinally movable friction elements and of laterally movable members having relatively V-shaped friction faces with curved portions and plane portions arranged at various angles with the normal line of the actuating force, the friction faces of said movable members having longitudinal ribs.

27. In a friction draft-rigging, the combination comprising longitudinally movable friction elements and laterally movable friction elements each having a plurality of friction faces with portions thereof at different angles so disposed that the frictional resistance developed thereby during movement will be increased at certain points of movement thereof.

28. In a friction rigging, the combination comprising longitudinally movable friction elements and actuated friction producing elements having friction faces tangentially disposed, said faces having plane portions.

29. In a friction rigging, the combination comprising friction blocks and follower plates having friction face portions at different angles to the line of movement and adapted to be alternately brought into contact and means for causing a maximum contact area of friction surfaces at an intermediate point in the movement of said friction block.

30. In a tandem friction rigging, the combination comprising a plurality of follower plates, friction blocks coöperating with each follower plate and a floating friction element coöperating with said friction blocks, said floating element having faces each comprising plane surfaces and curved surfaces.

31. In a tandem friction device, the combination comprising friction blocks and follower plates each of which is provided with a plurality of friction faces each of which has portions thereof disposed at different angles to the transverse axis of said friction device and a floating element having angularly disposed plane friction faces coöperating therewith said floating element being movable longitudinally of said device.

32. In a friction rigging, the combination comprising friction blocks and follower plates each of which is provided with a plurality of plane friction faces disposed at different angles to the transverse axis of said friction rigging and with intermediate curved portions in approximately the same arc, one of said follower plates having friction faces normally disposed at each side of said transverse axis.

33. In a tandem friction device, the combination comprising movable elements each having a plurality of friction face portions adapted to be alternately brought into contact, one of said elements being a floating follower provided with friction plane surfaces disposed at each side of the transverse axis of said device.

34. In a tandem friction rigging, the combination comprising a plurality of follower plates, friction blocks coöperating therewith and an interposed friction element having a

plurality of plane face portions and curved portions some of which are normally in contact with all of said friction blocks.

35. In a draft-rigging, the combination comprising movable elements having friction planes at different angles to the transverse axis of said draft-rigging, and adapted to be alternately brought into contact, means for supporting said elements in operative relation and a plurality of separate coöperating springs.

36. In a frictional device, frictional elements, each having a plurality of relatively flat face portions some of which are normally separated and so disposed that at one point of movement the adjacent relatively flat faces of both elements will be in contact.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ALLEN EDWARD OSTRANDER.

Witnesses:
E. W. SNOWDON,
F. V. COOPER.

Correction in Letters Patent No. 912,723.

It is hereby certified that in Letters Patent No. 912,723, granted February 16, 1909, upon the application of Allen Edward Ostrander, of New York, N. Y., for an improvement in "Draw-Gear or Draft-Rigging," an error appears in the printed specification requiring correction, as follows: In line 70, page 2, the word "wearer" should read *wear;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of March, A. D., 1909.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.

plurality of plane face portions and curved portions some of which are normally in contact with all of said friction blocks.

35. In a draft-rigging, the combination comprising movable elements having friction planes at different angles to the transverse axis of said draft-rigging, and adapted to be alternately brought into contact, means for supporting said elements in operative relation and a plurality of separate coöperating springs.

36. In a frictional device, frictional elements, each having a plurality of relatively flat face portions some of which are normally separated and so disposed that at one point of movement the adjacent relatively flat faces of both elements will be in contact.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ALLEN EDWARD OSTRANDER.

Witnesses:
E. W. SNOWDON,
F. V. COOPER.

Correction in Letters Patent No. 912,723.

It is hereby certified that in Letters Patent No. 912,723, granted February 16, 1909, upon the application of Allen Edward Ostrander, of New York, N. Y., for an improvement in "Draw-Gear or Draft-Rigging," an error appears in the printed specification requiring correction, as follows: In line 70, page 2, the word "wearer" should read *wear;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of March, A. D., 1909.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.

Correction in Letters Patent No. 912,723.

It is hereby certified that in Letters Patent No. 912,723, granted February 16, 1909, upon the application of Allen Edward Ostrander, of New York, N. Y., for an improvement in "Draw-Gear or Draft-Rigging," an error appears in the printed specification requiring correction, as follows: In line 70, page 2, the word "wearer" should read *wear;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of March, A. D., 1909.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.