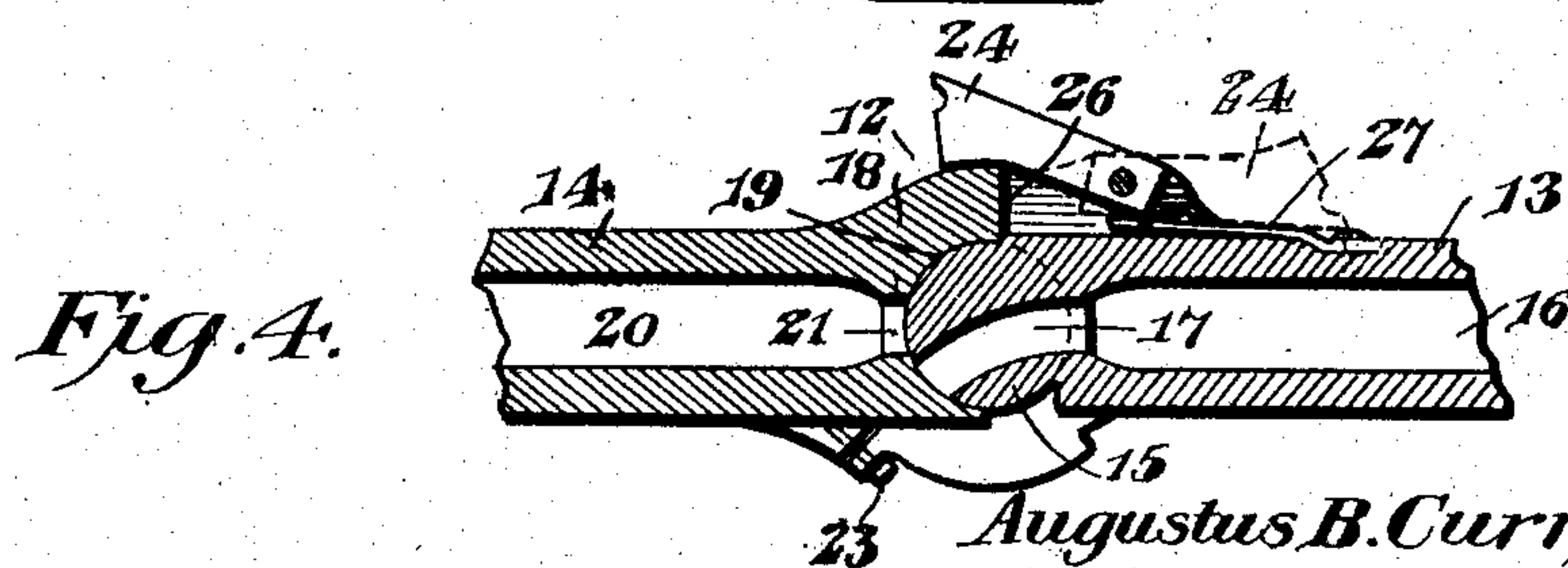
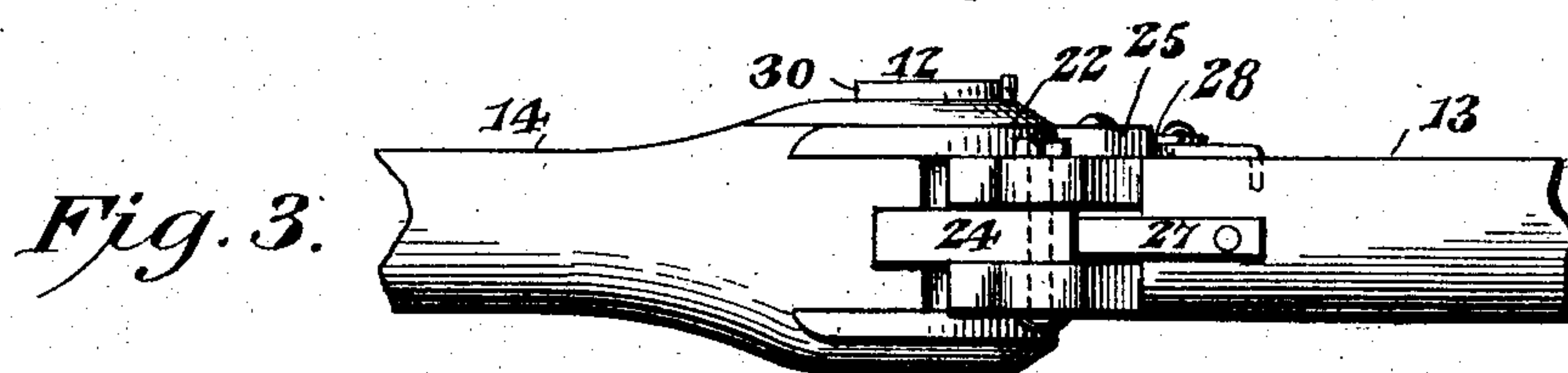
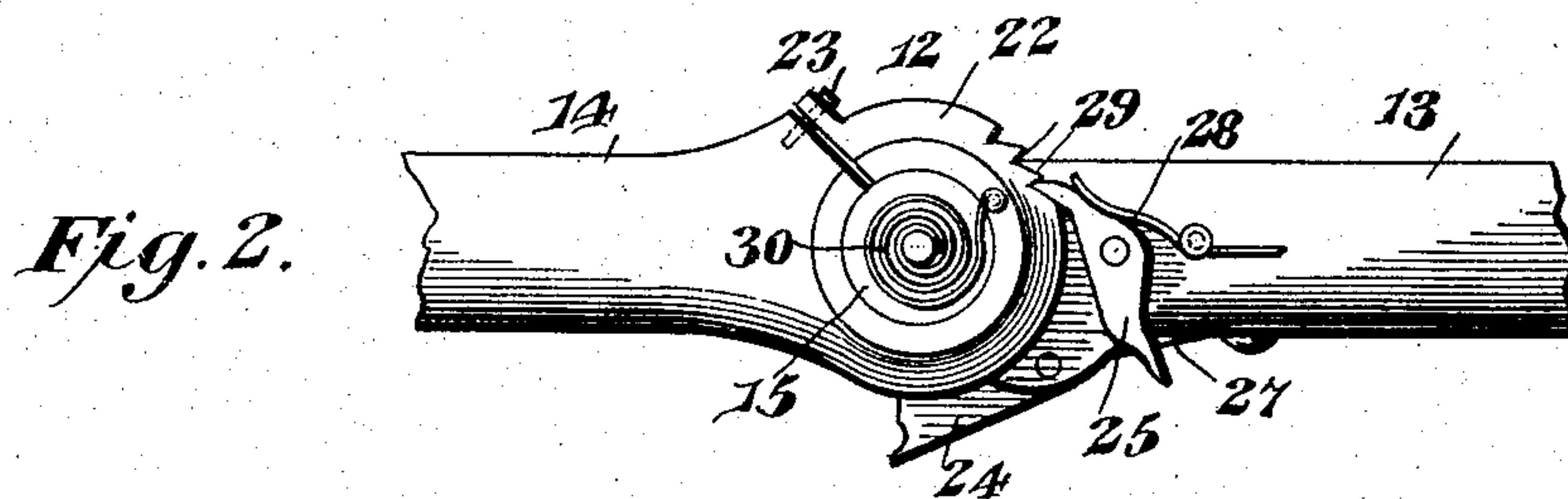
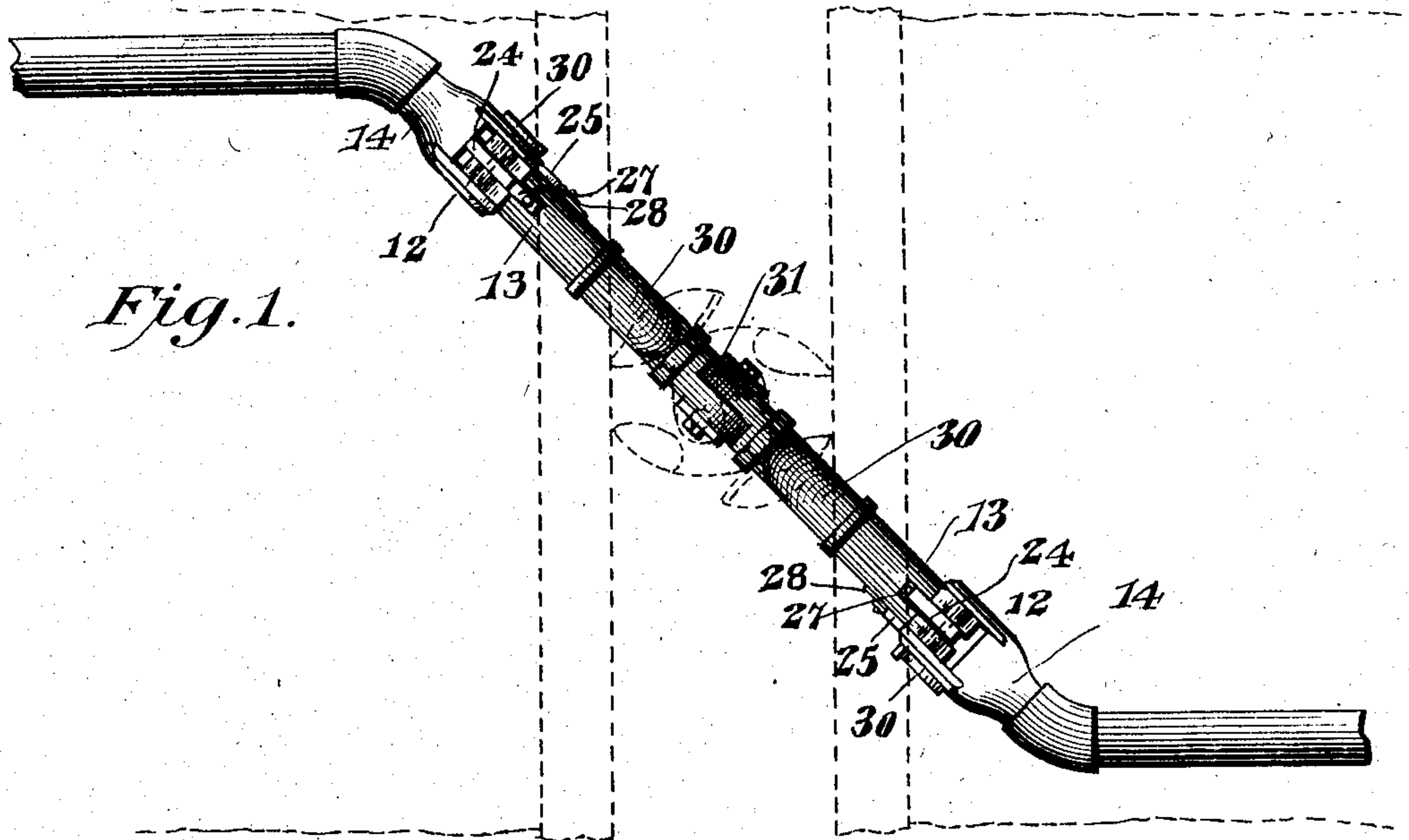


No. 791,324.

PATENTED MAY 30, 1905.

A. B. CURRIER.
AIR BRAKE APPARATUS.
APPLICATION FILED JULY 9, 1904.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 5.

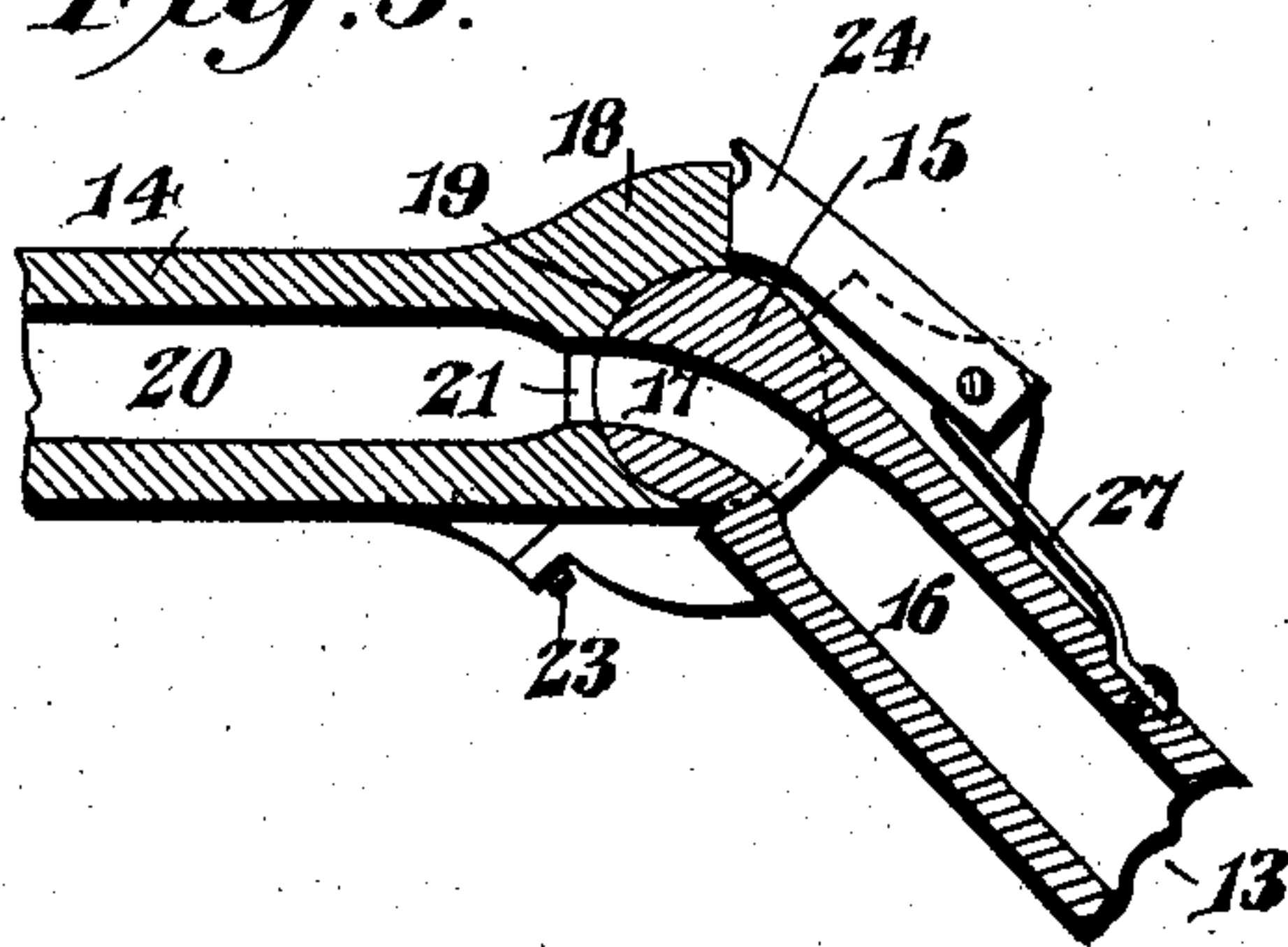


Fig. 6.

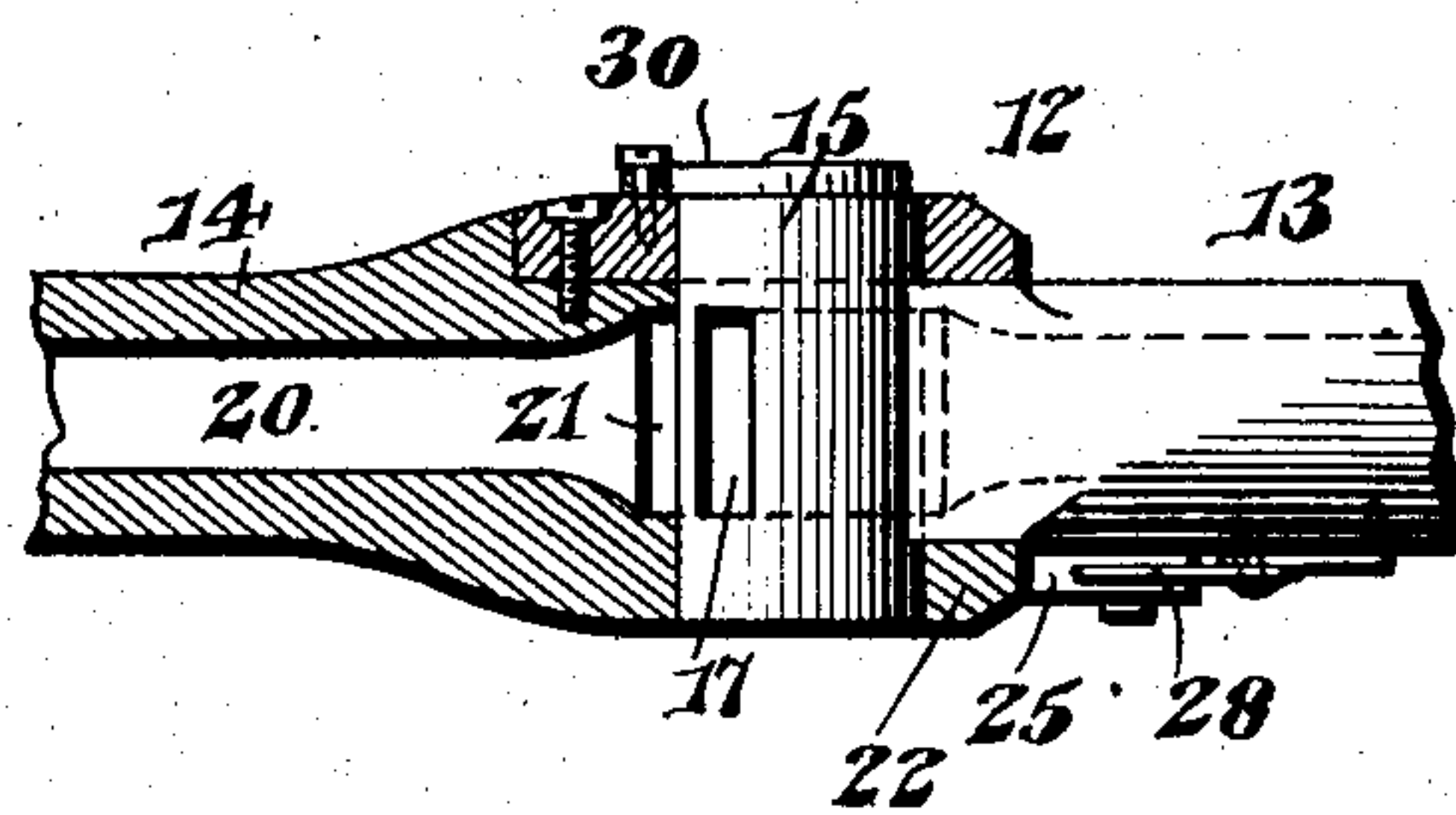


Fig. 7.

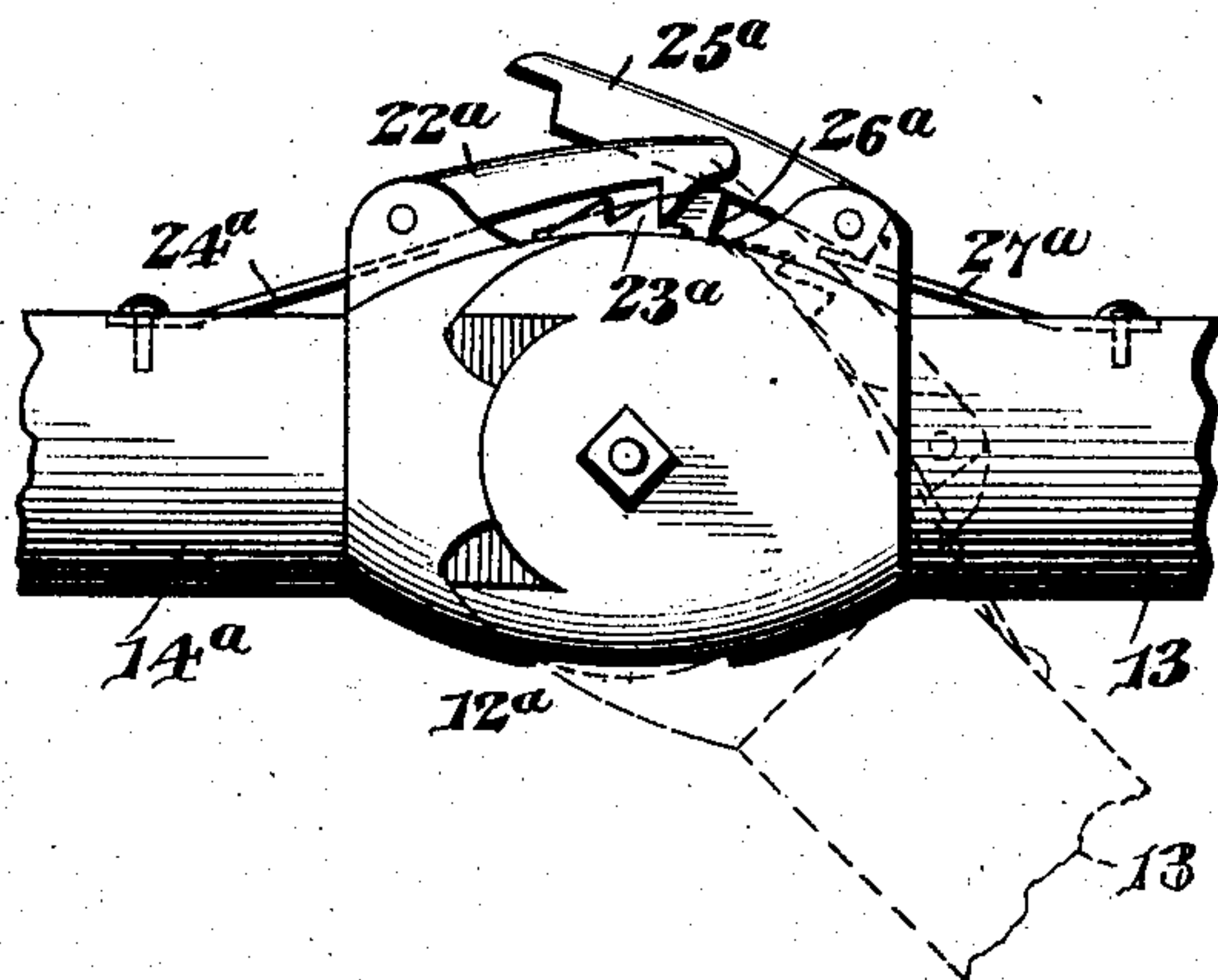


Fig. 8.

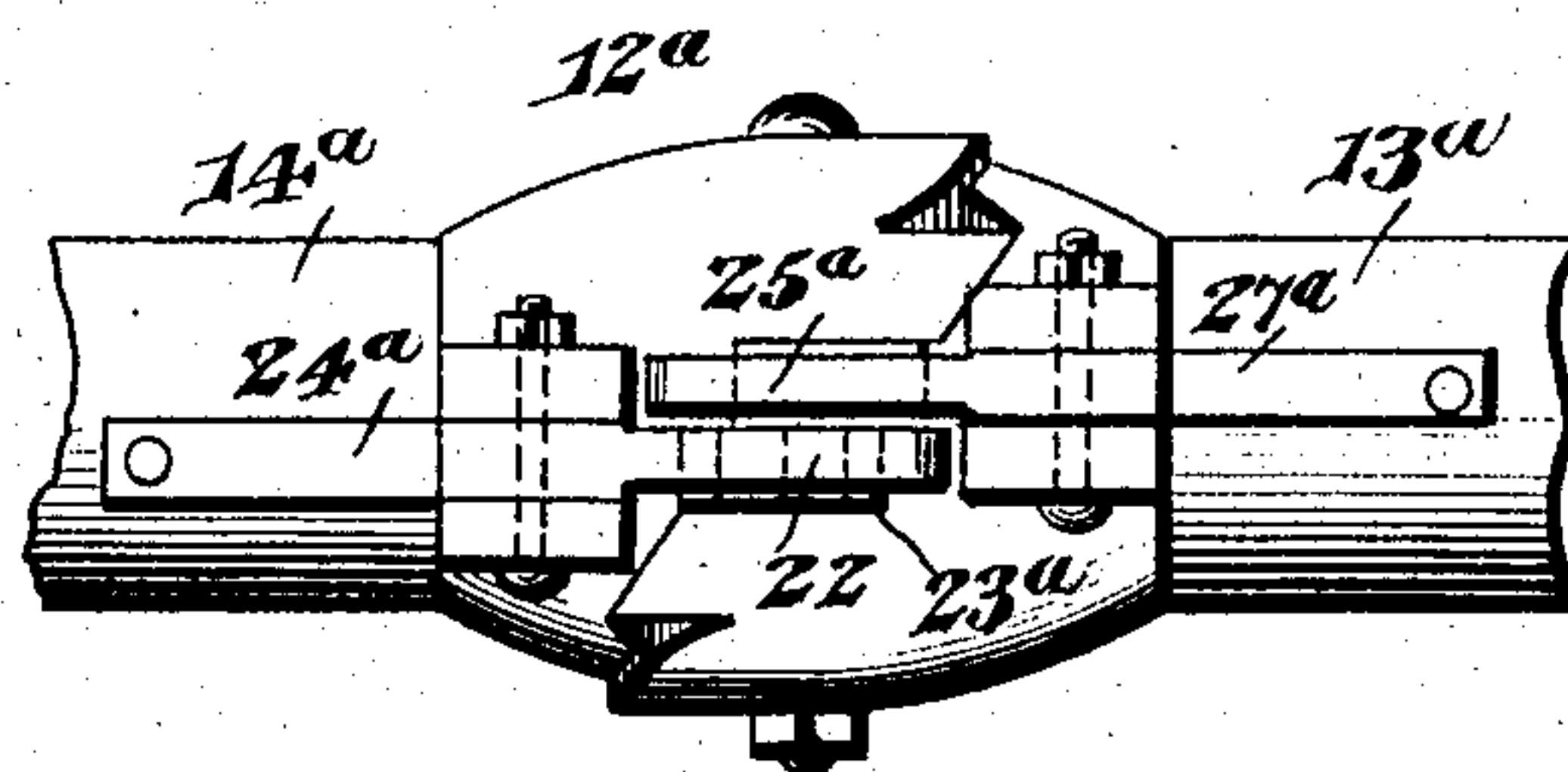


Fig. 9.

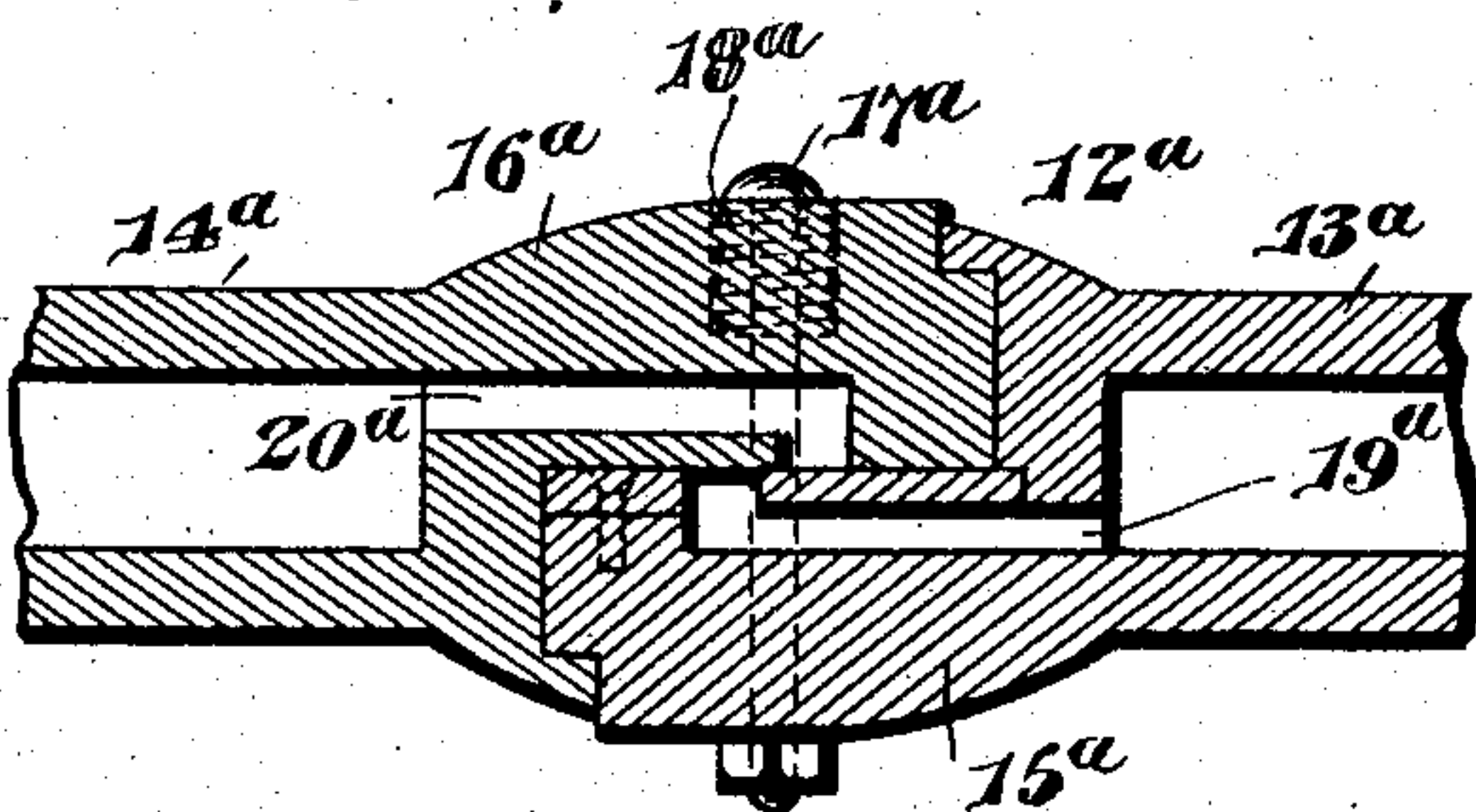


Fig. 10.

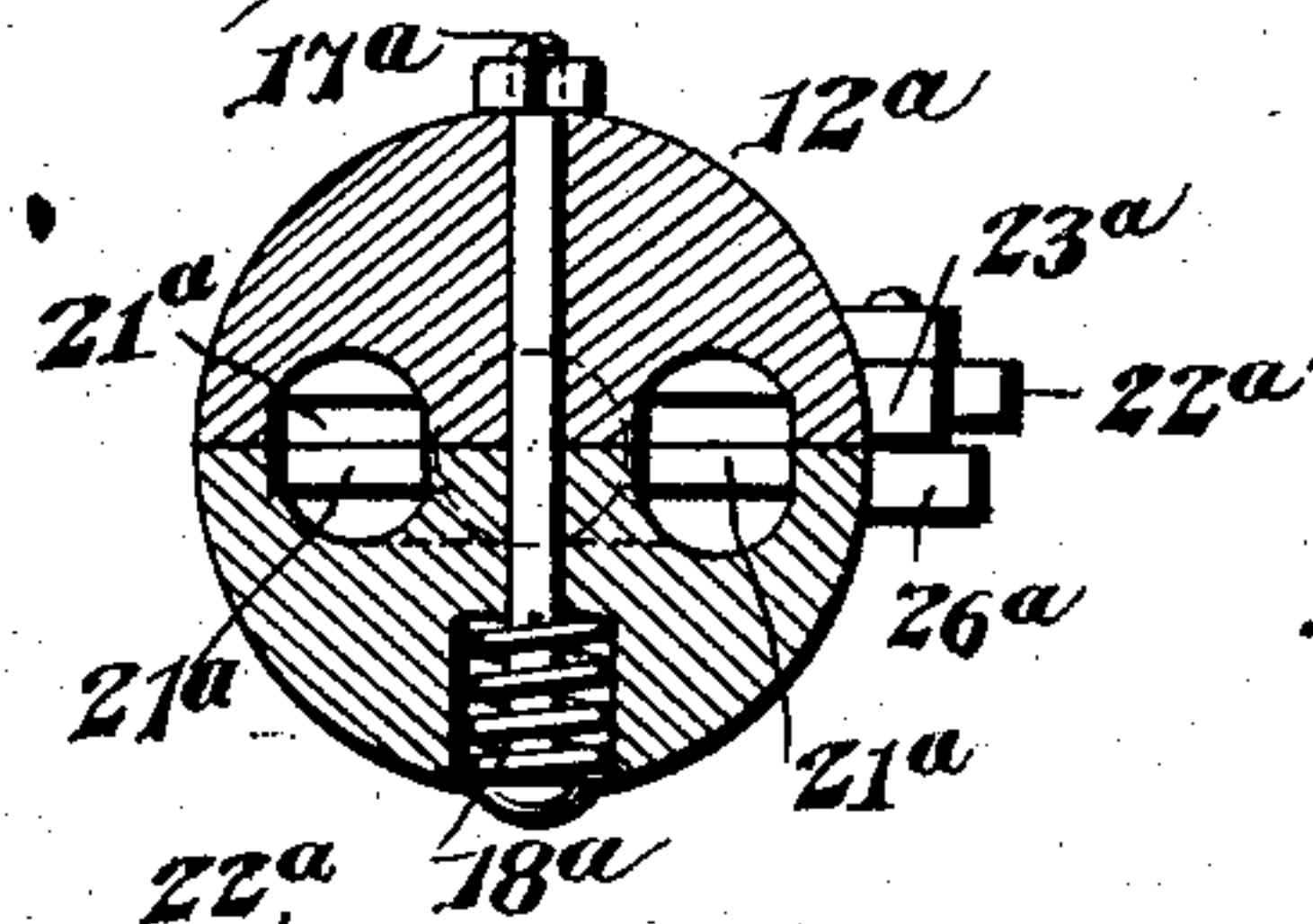
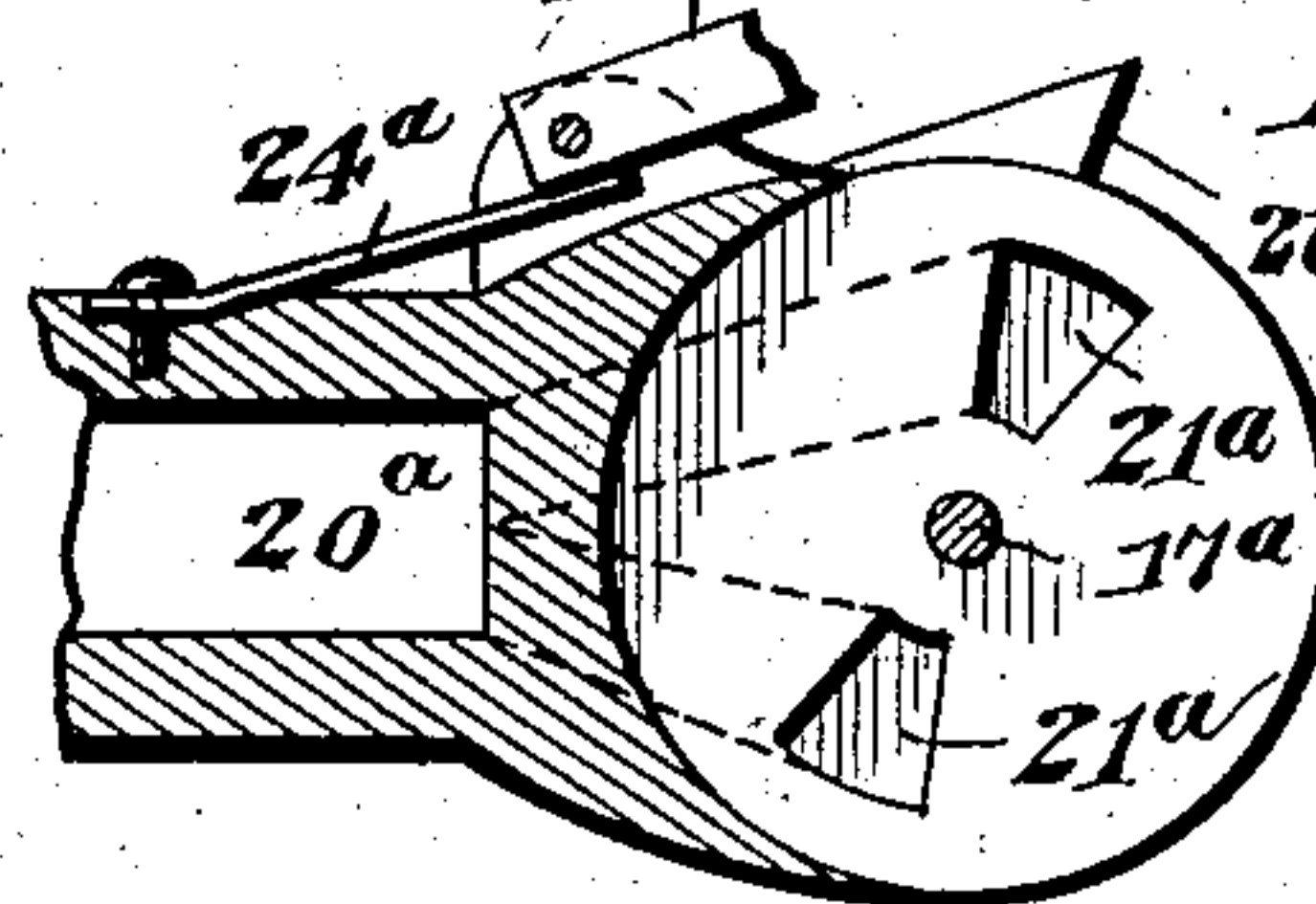


Fig. 11.



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UNITED STATES PATENT OFFICE.

AUGUSTUS BENJAMINE CURRIER, OF BATTLECREEK, MICHIGAN.

AIR-BRAKE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 791,324, dated May 30, 1905.

Application filed July 9, 1904. Serial No. 215,919.

To all whom it may concern:

Be it known that I, AUGUSTUS BENJAMINE CURRIER, a citizen of the United States, residing at Battlecreek, in the county of Calhoun and State of Michigan, have invented a new and useful Air-Brake Apparatus, of which the following is a specification.

The invention relates more particularly to the coupling mechanism employed in connecting the train-pipe sections between the cars.

In many couplings the arrangement is such that when the train breaks in two the train-pipe on both sections is opened, and consequently the brakes of both sections are applied. In making up freight-trains the cars equipped with air-brakes are always placed first, so that the brake apparatus may be connected to and operated from the locomotive. Now in long freight-trains it often happens that a break occurs in rear of or close to the rear end of the air-brake-equipped cars. Consequently the brakes on the front section are automatically applied, the said section is stopped, and the brakes are not under control of the engineer until the last coupling has been closed and the reservoirs pumped up to the required pressure. This occupies considerable time. In the meantime the rear section of the train cannot be stopped, as there are no air-brakes supplied or the number of cars equipped therewith is so small that they cannot overcome the momentum of said section. The result is often a collision between the uncontrolled rear section and the stopped, but also uncontrolled, front section.

It is the object of the present invention to obviate this very serious objection by providing a novel construction wherein the coupling is such that when a break in the train takes place the train-pipe in the rear section is opened to apply the brakes, while the rear end of the train-pipe on the front section is closed, and the brakes are consequently left under control of the engineer, who can apply them, if he so desires, but may leave them released in order to escape from the following rear section.

In the accompanying drawings two embodiments of the invention are illustrated. It is to be understood, however, that the invention

is not limited to these two embodiments, but that various changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as set forth in the appended claims.

In the drawings, Figure 1 is a plan view of a pair of the members coupled, indicating their positions and arrangement and showing the preferred embodiment of the invention. Fig. 2 is a view of a portion of one of the members with the sections thereof in alinement. Fig. 3 is a plan view. Fig. 4 is a longitudinal sectional view with the sections in alinement. Fig. 5 is a similar view with the sections disposed in angular relation and locked. Fig. 6 is a longitudinal sectional view at right angles to that shown in Fig. 4. Fig. 7 is a view in elevation of a modification. Fig. 8 is a plan view thereof. Fig. 9 is a longitudinal sectional view through the modified form of construction. Fig. 10 is a transverse sectional view. Fig. 11 is a sectional view through one section of the member.

Similar reference-numerals indicate corresponding parts in all the figures of the drawings.

Referring first to the preferred form of construction, illustrated in the first six figures, coupling members 12 are employed, one of said members being located on each end of each car, as indicated in Fig. 1. As these members are duplicates, but one need be described. The member consists of pipe-sections 13 and 14, the section 13 having at one end a transversely-disposed hub 15, the ends of which project on opposite sides of the section. A passage-way 16 extends through the section 13 and has an opening 17, offset slightly and passing through the annular face of the hub. The other section, 14, has an enlarged head 18, provided with a transversely-disposed socket 19, that receives the hub. A passage-way 20, formed longitudinally in the section 14, opens into the socket, as shown at 21, and is arranged to aline with the opening 17 when the sections are in angular relation, the passage-ways, however, being closed from each other when the sections are alined as shown in Fig. 4. The sections are pivotally secured together by means of split journal-

ring elements 22, carried by the section 14 and surrounding the projecting ends of the hub 15, one of these rings being detachable for the purpose of dismembering the coupling. The ends of the split rings are connected by tension-screws 23, which permit the contraction of said rings for the purpose of securing tight joints and preventing leakage. The sections of the members can be positively locked in angular relation or in alinement, and for this purpose holding-dogs 24 and 25 are employed, separately pivoted upon the section 13, the holding-dog 24 being arranged to abut against a shoulder 26, formed upon the section 14, when said sections are in angular relation. The dog is held in operative position by means of a spring 27, bearing against its angular pivoted end. The other dog, 25, is pivoted between its ends and is borne against by a spring 28. This dog 25 coacts with teeth 29, formed upon one of the journal-rings 22, and is adapted to engage one of said teeth when the sections are alined. While the sections may be ordinarily held in angular relation, even when the dog 24 is inoperative, by the friction in the joint, if desired, a convolute spring, as 30, may be employed for this same purpose, said spring being secured to one end of the hub 15 and the adjacent journal-ring 22. This spring will yieldingly hold the sections in angular relation when not locked in alinement. One of the sections, as 14, is connected with the train-pipe on the car, while the other section, 13, carries the rubber tubing 30, having at its free end the usual coupling element 31. When two of the cars are coupled, the train-pipe sections are connected in the usual manner by the coupling elements 31, and the sections 13 and 14 of each member are disposed in angular relation or, in other words, in the position shown in Fig. 5. Thus the air will have a free passage through the coupling. The sections of the member on the front end of the rear car are locked in open position by means of the dog 24; but the sections at the rear end of the front car, while located in angular position, are left unlocked, the dog 24 being thrown out of operative position, as indicated in dotted lines in Fig. 4, being locked in this position by the spring 27. These various parts will maintain the positions described until the car breaks apart. In this contingency the rubber hose 30 will be pulled taut, and thereupon the sections of the member at the rear end of the front car will be thrown into alinement, though the sections of the member on the front end of the rear car will maintain their angular relation, being locked, as already described. As soon as the hose and the coupling elements 31 break apart the air can escape through the rear member, while the front member will be closed. The brakes are thus applied to the rear section of the train, while those on the front section will still be under the control of the en-

gineer. Thus the objection noted in the preliminary portion of the specification is overcome by very simple and convenient means. There is no danger of the rearmost member of the front section of the train becoming opened, for the dog 25 will lock the sections in alinement as soon as they reach this position. Moreover, said sections can be alined on the last car of any train, and no closure for excluding dust or dirt is necessary.

A somewhat different form of structure is illustrated in Figs. 7 to 11. The member 12^a consists of sections 13^a and 14^a, having overlapping portions 15^a and 16^a connected by a pivot-bolt 17^a. A coiled spring 18^a, surrounding the bolt, serves to yieldingly hold the parts 15^a and 16^a together in order to prevent leakage. Passage-ways 19^a, formed in the sections, have extensions 20^a located in the overlapping portions and provided with openings 21^a, that are alined when the sections are in angular relation and are closed from each other when said sections are in alinement. In this structure one of the sections carries a pivoted dog 22^a, that engages teeth 23^a, formed upon the other section, when the sections are in alinement. The dog is urged to such engagement by a spring 24^a. Said other section is provided with a pivoted dog 25^a, adapted to engage behind a shoulder 26^a of the first-mentioned section when said sections are in angular relation. The dog 25^a is held to its work by a spring 27^a. It will of course be understood that this form of member is merely substituted for that shown in Fig. 1 of the drawings, and the operation and advantages are exactly the same, so that a description thereof would be practically a repetition of that for the embodiment just described. Such description is therefore thought to be unnecessary.

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

1. In air-brake apparatus, a pipe-coupling member comprising pivotally-connected sections having passage-ways that communicate when located in one position and are closed when the sections are in a different position, and means for positively locking the members against pivotal movement in the position wherein the passage-ways are in communication.

2. In air-brake apparatus, a pipe-coupling member comprising pivotally-connected sections having passage-ways that communicate when the sections are in angular relation and are closed when said sections are alined, and means for positively locking the members against pivotal movement in said angular relation.

3. In air-brake apparatus, a pipe-coupling member comprising pivotally-connected pipe-sections having passage-ways that communicate when the sections are located in one po-

sition and are closed when the sections are located in a different position, means for positively locking the members against movement in the position wherein the passage-ways are in communication, and means for positively locking the members against movement in the position wherein the passage-ways are closed.

4. In air-brake apparatus, a pipe-coupling member comprising pivotally-connected pipe-sections having passage-ways that communicate when located in one position and are closed when the sections are located in a different position, and separate devices for respectively holding the members against movement in said different positions.

5. In air-brake apparatus, a pipe-coupling member comprising pivotally-connected pipe-sections having passage-ways that communicate when located in one position and are closed when the sections are located in a different position, and pivoted dogs for respectively holding the members against movement when in said different positions.

6. In air-brake apparatus, a pipe-coupling member comprising pivotally-connected pipe-sections having passage-ways that communicate when the sections are in angular relation and are closed when said sections are alined, and separate pivoted dogs carried by one section and engaging the other for respectively holding said sections in their angular and alined positions.

7. In air-brake apparatus, a pipe-coupling member comprising pivotally-connected sections having passage-ways that communicate when the sections are located in one position and are closed when the sections are located in a different position, one of the sections having shoulders contiguous to its pivotal connection, and dogs mounted on the other section and engaging the shoulders for holding the sections in their different positions.

8. In air-brake apparatus, a pipe-coupling member comprising pipe-sections, one of said sections having a hub provided with an opening therethrough, the other section having a passage-way movable into and out of alinement with the opening through the hub, said other section being furthermore provided with journal-ring elements surrounding the

hub, and means for contracting the ring elements.

9. In air-brake apparatus, a pipe-coupling member comprising pipe-sections, one of said sections being provided at one end with a transversely-disposed hub portion provided in its annular wall with an opening, the other section having a socket that receives the hub and is provided with a passage-way movable into and out of alinement with the opening, split journal-ring elements carried by said other element and surrounding the ends of the hub, and means for contracting said ring.

10. In air-brake apparatus, a pipe-coupling member comprising pipe-sections, one of said sections having at one end a transversely-disposed hub provided with an opening, the other section having a socket that receives the hub, journal-rings carried by said other section and surrounding the ends of the hub, one of said ring elements having a plurality of teeth, a dog pivoted upon the first-mentioned section and arranged to engage the teeth for holding the sections with the passage-way and opening out of alinement, and another dog carried by said first-mentioned section and engaging the other section for holding said sections with the passage-way in alinement.

11. In air-brake apparatus, a pipe-coupling member comprising sections, a pivotal connection between the sections, and a convolute spring located at the pivotal connection and connected to the sections directly adjacent to said pivotal connection.

12. In air-brake apparatus, a pipe-coupling member comprising sections, one of which has a hub portion, the other having a ring portion journaled on the hub portion, and a spring for yieldingly maintaining the sections in a predetermined position, said spring having its ends connected respectively with the hub and ring portions.

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

AUGUSTUS BENJAMINE CURRIER.

Witnesses:

EDWARD J. ROACH,
E. EAVES.