J. E. MARBLE.

TRAIN PIPE COUPLING.

APPLICATION FILED JAN. 13, 1908.

974,088.

Patented Oct. 25, 1910.

4 SHEETS—SHEET 1.

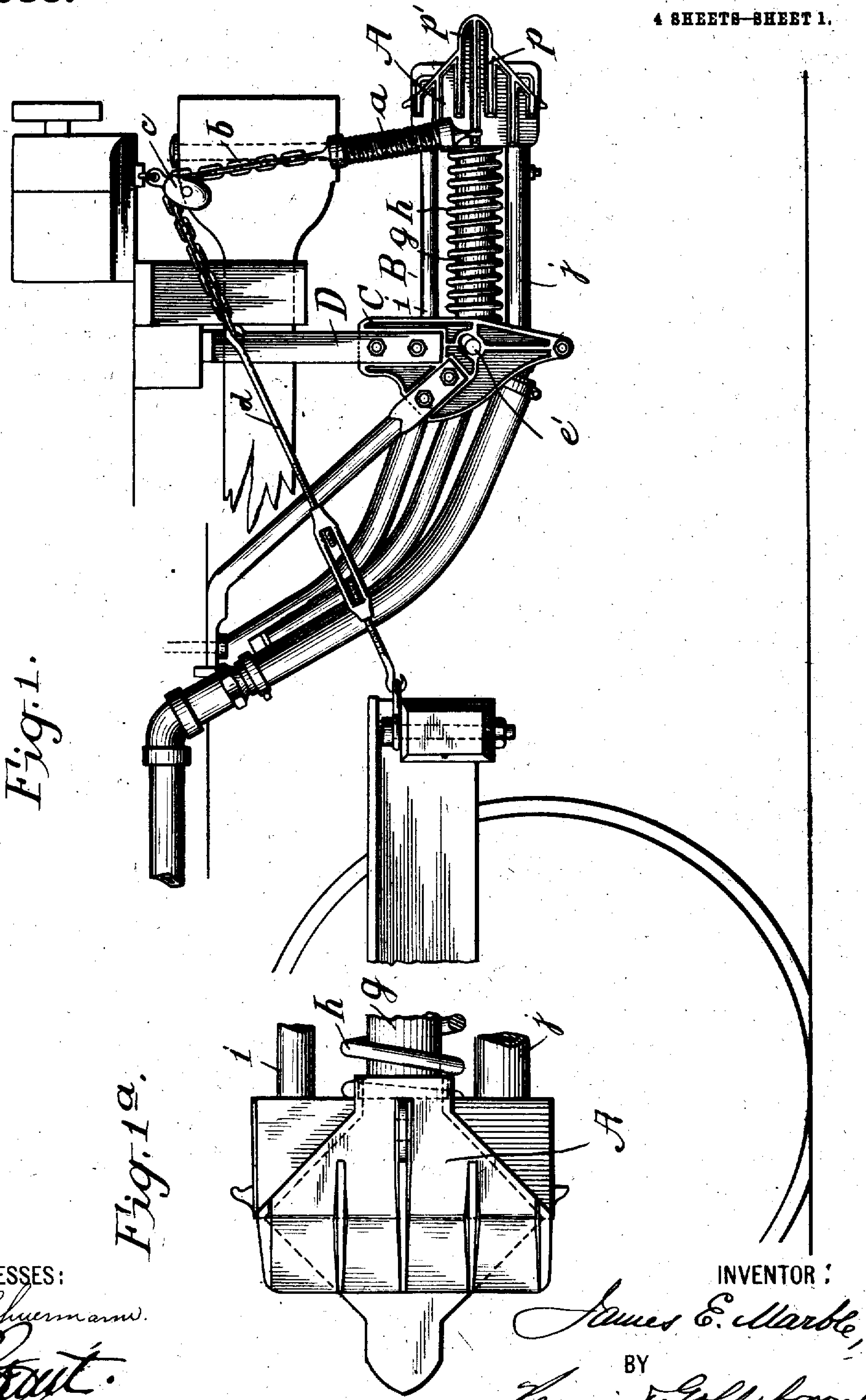

Fig. 1.

Fig. 1a.

WITNESSES:

E. C. Schuermann.

[signature]

INVENTOR:

James E. Marble,

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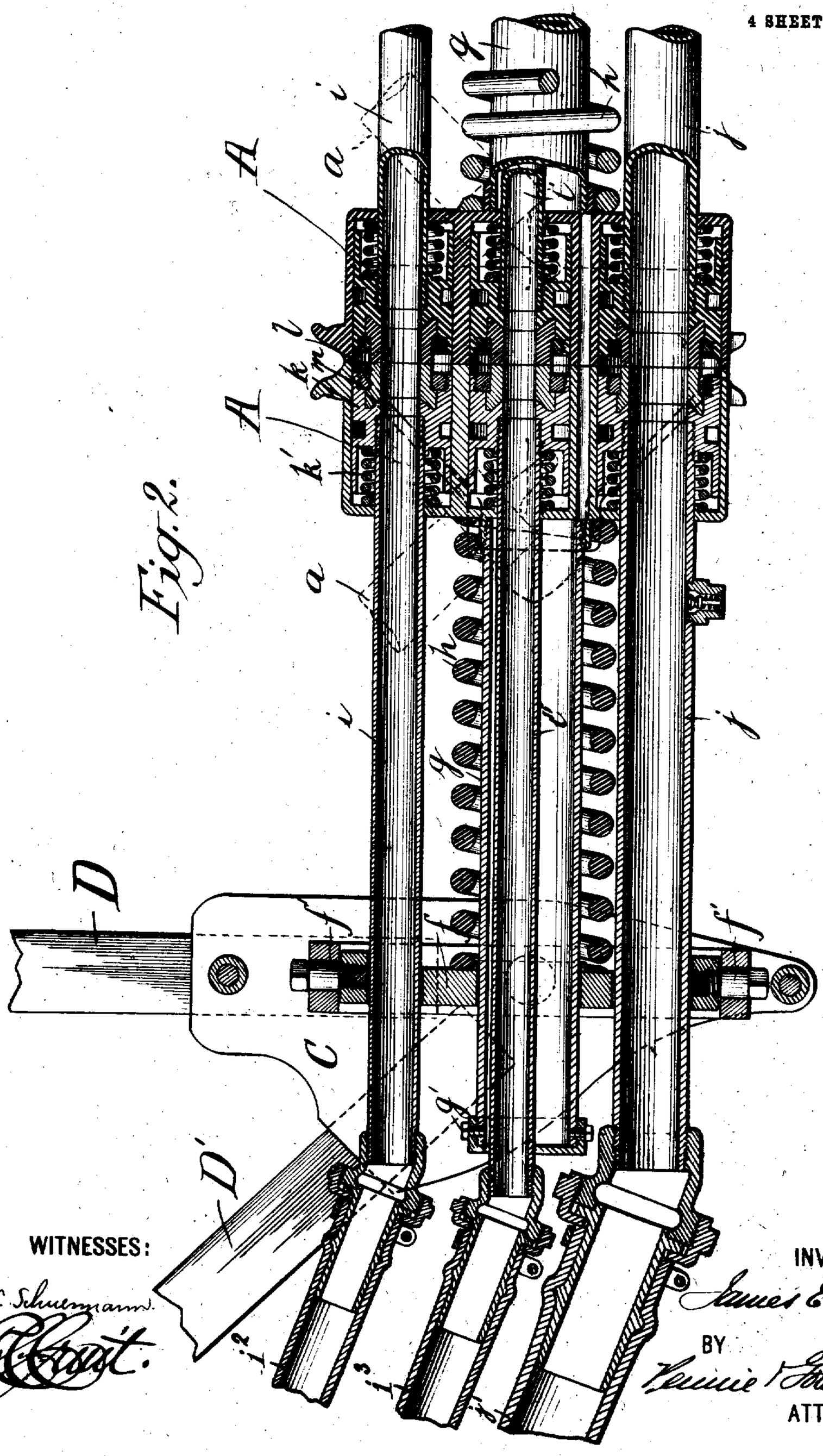
4 SHEETS—SHEET 2.

Fig. 2.



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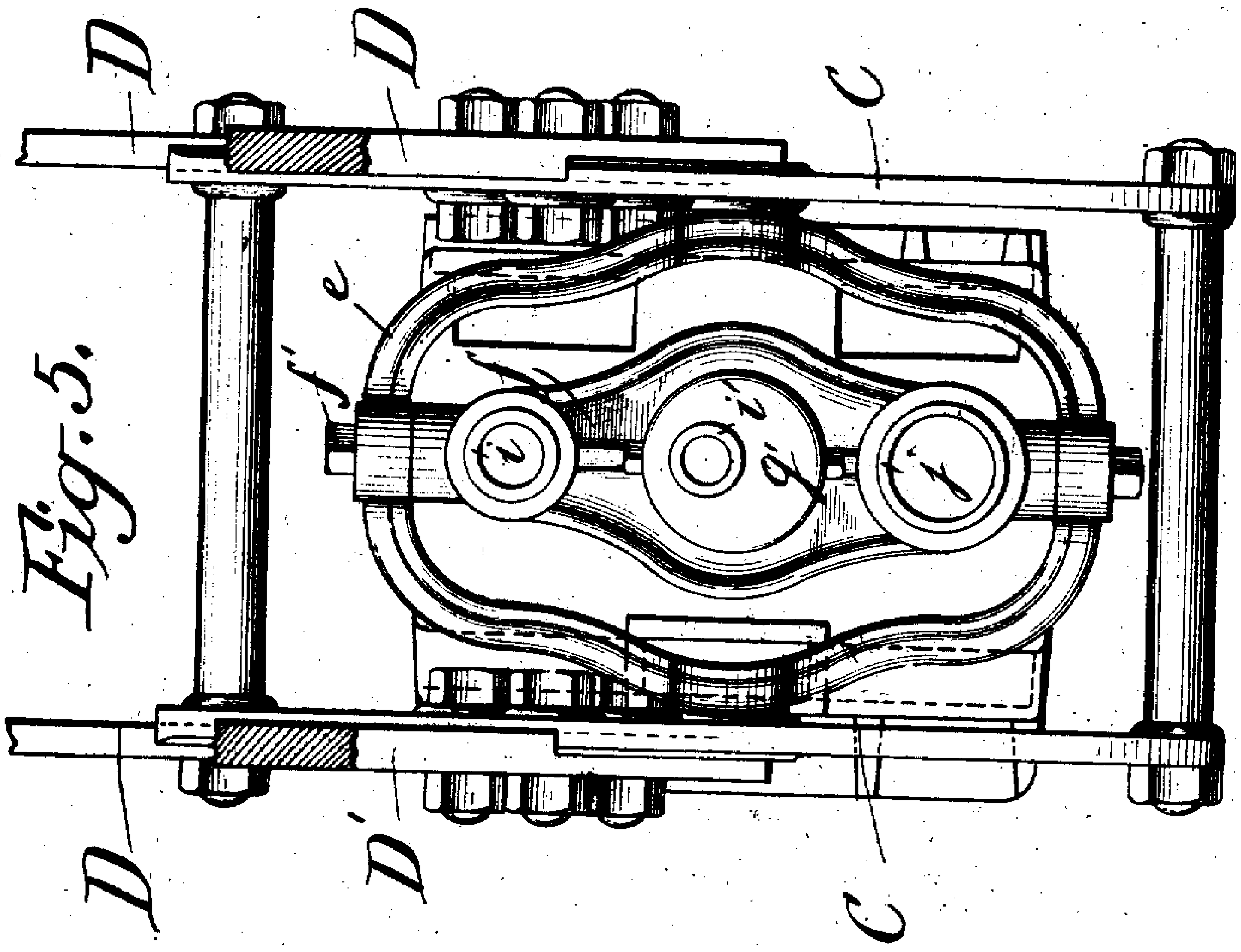

Fig. 5.

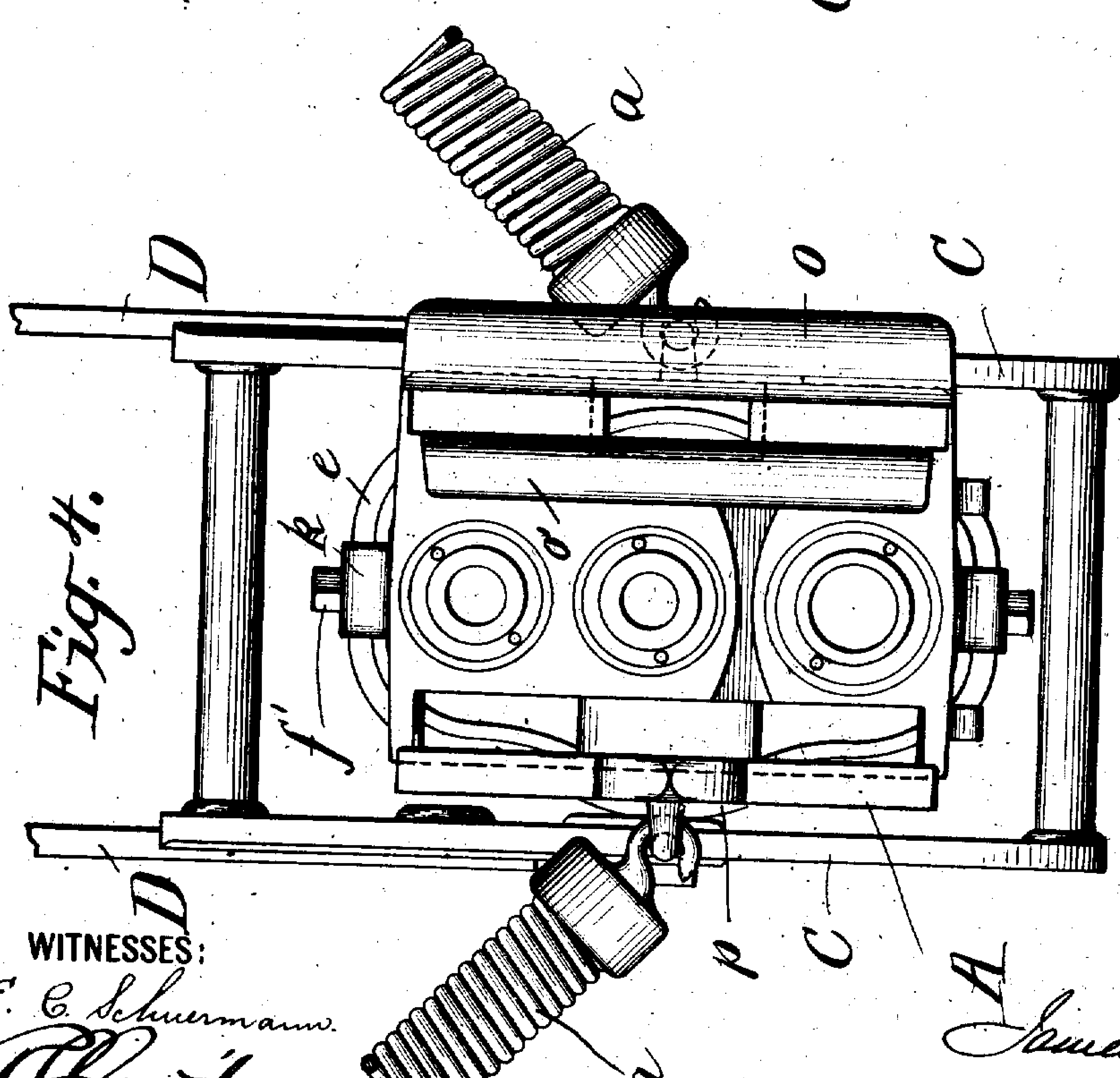

Fig. 4.

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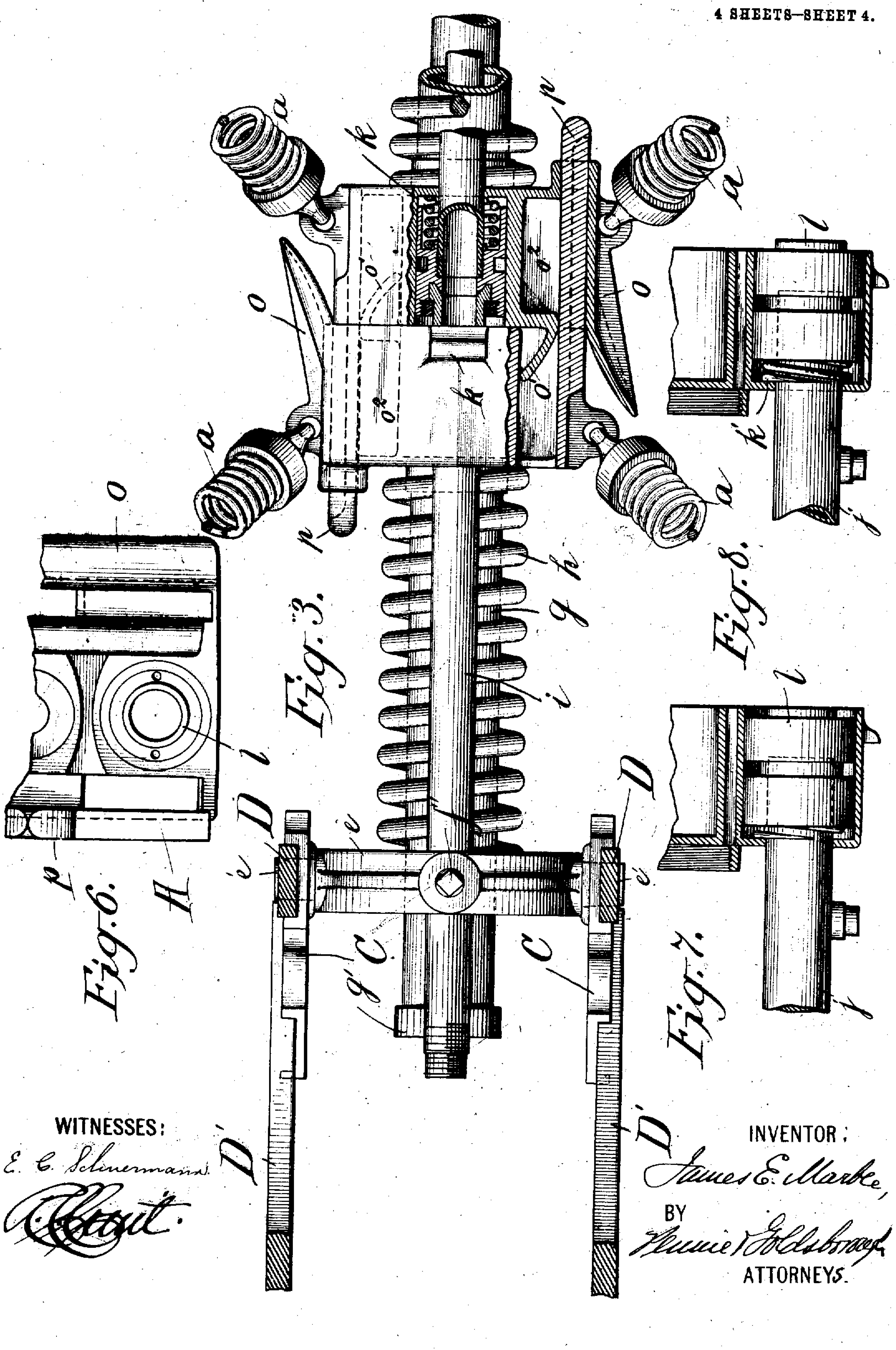

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INVENTOR:

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UNITED STATES PATENT OFFICE.

JAMES E. MARBLE, OF ALBANY, NEW YORK, ASSIGNOR OF ONE-THIRD TO JOHN J. LAYDEN, OF ALBANY, NEW YORK.

TRAIN-PIPE COUPLING.

974,088. Specification of Letters Patent. Patented Oct. 25, 1910.

Application filed January 13, 1908. Serial No. 410,637.

To all whom it may concern:

Be it known that I, JAMES E. MARBLE, a citizen of the United States, residing in Albany, county of Albany, and State of New York, have invented certain new and useful Improvements in Train-Pipe Couplers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in the construction and suspension of automatic couplers for connecting the fluid conducting pipes of railway trains, as, for instance, the pipes employed for conducting steam and compressed air to the several cars.

The construction herein illustrated is particularly applicable to a train pipe system having a steam conduit adapted to supply the usual heating coils of the train and having separate air conduits for the brakes and signals respectively; but it will be understood that the features of novelty claimed are not restricted to any particular train pipe system, but are intended for employment wherever they may be separately or collectively used to advantage.

In the accompanying drawings, Figure 1 represents in side elevation the end parts of a passenger car with one of my improved couplers mounted in appropriate position; Fig. 1ª is a view, on a larger scale, of the other side of the coupler head; Fig. 2 represents a central longitudinal section of one of my improved couplers and the end portion of an abutting coupler; Fig. 3 is a plan view partly in section of the parts shown in Fig. 2; Fig. 4 is an elevation of the front end of a coupler, and portions of its supporting parts; and Fig. 5 is an elevation of the rear end of the same; Fig. 6 is a detail showing the forward end of the coupling means for the steam pipe; Fig. 7 is a sectional view of the same parts showing the parts in the retracted position which they assume when the cars are coupled; Fig. 8 is a similar view showing the parts in their advanced position which they assume when the cars are uncoupled.

Similar letters of reference indicate similar parts throughout the several views.

The coupler described herein is of the same general nature as the couplers disclosed in my prior patents Numbers 491,291; 592,521; 592,522; 592,523 and 847,288.

The coupling members on adjacent cars are designed to be homologous counterparts of each other and are suspended in like manner. The couplers comprise a collapsible supporting frame made up of a movable coupler head A and a fixed part which is suspended in a bracket C hung from the under portion of the car body by the hangers D and the braces D′. The forward portion of the coupler is suspended by the springs *a* which are attached to chains *b* running over the sheaves *c* hanging from the under portion of the car body. The chains *b* are connected to their other ends through the rods *d* to the forward end pieces of the truck frame. The manner of supporting the fixed part of the coupler in the brackets C will be understood from Figs. 1 and 5, from which it will be observed that the frame *e* is supported by trunnions *e′* which rest in elongated inclined bearings in the bracket C. The plate *f* is supported in this frame *e* by trunnions *f′* arranged in a vertical plane. It will be observed that this manner of supporting the coupler affords a support including a universal joint, and that by the connection from the forward end of the coupler to the truck frame the coupler head follows the direction of the truck rather than the direction of the car body. This manner of support is substantially identical with that disclosed in my earlier patents.

Extending from the coupler head A is a central tube *g*, which extends through and slides within a central opening in the plate *f* and is limited in its forward movement by a cap *g′*. The spring *h* surrounds this tube *g* and normally forces the tube to its extreme forward position and at the same time forces the trunnions on the frame *e* to the bottom of their inclined bearings in the brackets C. The upper air pipe *i* and the steam pipe *j* likewise extend through and slide within appropriate openings in the plate *f*. The second air pipe *i′* is within the tube *g* and extends through and slides within an opening in the cap *g′*. The flexible connector pipes i^2, i^3 and *j′* are attached to the ends of the pipes *i*, *i′* and *j* and connect them to the train pipes in the manner

which will be readily understood. The forward ends of these several pipes *i*, *i'* and *j* pass through the rear face of the coupler head in sliding engagement with appropriate openings therein and screw into cylindrical heads *k*, which fit closely within three chambers in the coupler head arranged one above the other. These heads are cupped at their rear end and between the heads and the inner face of the coupler head are arranged spiral springs *k'* surrounding the pipes but separated therefrom by ring flanges, as shown in Fig. 2. The head on each pipe is provided with a beveled seat for a gasket *l* held in place by the locking ring *m* screwed into the face of the head. When the cars are uncoupled the spring *h* advances the pipe *g* until the cap *g'* engages the plate *f* and the springs *k'* further advance their individual pipes until the collars at the rear ends of the pipes *i* and *j* engage the plate *f* and the collar at the rear end of the pipe *i'* engages the cap *g'*. In this position the heads on the ends of the pipe have their faces substantially flush with the face of the coupler head as shown in Fig. 8. When the cars are coupled the pipes are forced back into the position shown in Figs. 2 and 7 until the faces of the two coupler heads abut, whereupon the spring *h* is compressed and the pipes *i* and *j* and the tube *g* slide through the openings in the plate *f* into the position shown in Fig. 2. This puts the main spring *h* and the individual springs *k'* under compression and securely presses the coupler heads and the ends of the train pipes together.

It will be observed that the coupler head has an opening between the steam pipe and the adjacent air pipe to afford heat insulations as described in my earlier patents, but in the present instance, owing to the skeleton structure of the coupler body, there is a free passage of air through the head, the opening being open at its front and back to the atmosphere.

For the purpose of more accurately directing the interlocking members of two abutting coupler heads into locking position and securing them therein I have improved the construction of the coupler heads in the following manner: Each coupler head is provided on one side with a pocket, having a flaring mouth, for receiving a guide tongue projecting from the corresponding side of the abutting head as shown in Fig. 3. The casting forming the head has projecting beyond its face on one side the flaring lips *o* and *o'* which together form the mouth of the pocket, which mouth is contracted at the base of the lips to substantially the width of the tongue *p* projecting from the abutting head. Inside this mouth the pocket is enlarged by the cored out portion o^2 of the casting, and, at the extreme rear of the casting, is again contracted to form an open passage through the rear wall. The tongue *p* has a substantially uniform thickness and tapers from its base to a straight-edged extreme end portion *p'* having a beveled point. This tongue is guided by the lips *o* and *o'* through the contracted mouth into the pocket until finally the extreme end portion *p'* passes into the open passage through the rear wall, in which position the tongue *p* fits snugly within the mouth and the extreme end portion *p'* within the open passage. The result of enlarging the pocket at o^2 is that as the two heads come together the tongue *p* will not bind in the pocket until its extreme end has passed into the open passage through the rear wall of the head, whereupon the coupling action is completed.

As shown in Figs. 3 and 4 the body of the casting is cored out between the tongue *p* and the portion which contains the heads of the train pipes thereby affording a socket for the lip *o'* and reducing the weight of the coupler. For the purpose of further reducing the weight the lips *o* and *o'* and the tongue *p* instead of being cast solid are cast with strengthening ribs and intermediate depressions as shown.

What I claim is:

1. In a coupler for train pipes, a collapsible supporting frame extending longitudinally of the car body and comprising a fixed part hung from the vehicle, a movable part having an extension guided by the fixed part, and a spring interposed between said parts to advance the movable part; a plurality of rigid connecting pipes for the train pipes sliding in and guided by the fixed and movable parts of the frame, and an individual spring for advancing each connecting pipe interposed between the movable part of the frame and such pipe; substantially as described.

2. In a coupler for train-pipes, a collapsible supporting frame comprising a fixed part hung from the vehicle on a universal joint, a coupler-head having an extension sliding in a guide in the fixed part, a spring interposed between the head and the fixed part to advance the head, and rigid connecting-pipes extending from the head through guides in the fixed part and outside of the guiding extension; substantially as described.

3. In a coupler for train-pipes, a collapsible supporting frame comprising a fixed part hung from the vehicle on a universal joint, a coupler head having an extension sliding in a guide in the fixed part, and a spring interposed between the head and the fixed part to advance the head, and rigid connecting pipes extending from the head through guides in the fixed part, said pipes sliding in the head and being provided with an individual spring for advancing each

pipe interposed between the head and an abutment on such pipe; substantially as described.

4. In a coupler for train pipes, a supporting frame comprising a fixed part hung from the vehicle on a universal joint, a chambered coupler-head having a central tubular extension sliding in a guide in the stationary part, and a compression-spring surrounding said extension and interposed between the fixed part and the head; rigid connecting pipes for the train-pipes supported in said frame, a head on each connecting pipe sliding within the appropriate chamber in the coupler-head, and a spring interposed between the head on each pipe and the rear wall of its chamber for advancing the individual pipes with respect to the coupler-head; substantially as described.

5. In a coupler for train-pipes, a supporting frame comprising a fixed part *f* hung from the frame on a universal joint, a chambered coupler-head A having a central tubular extension *g* sliding in a guide in the fixed part *f*, and a compression spring *h* surrounding the extension *g* and interposed between the fixed part and the head; connecting pipes *i*, *i'* and *j* supported in the frame, a cupped head *k* having a gasket *l* on each pipe sliding within an appropriate chamber in the coupler-head A, and a spring *k'* between the cupped head on each pipe and the rear wall of its chamber for advancing the individual pipes with respect to the coupler-head; substantially as described.

6. A coupler head having a central portion containing fluid passages, a projecting tongue on one side separated from the central portion by an intervening recess, and flaring lips on the other side forming a guiding mouth for the tongue of the abutting coupler, the head being cored out inside of said mouth to form an enlarged pocket, and having a contracted passage through its rear wall to form a closely fitting socket for the extreme end of the tongue of the abutting coupler, substantially as described.

7. A coupler head having a central portion containing fluid passages, a projecting tongue *p* tapering from its base to a straight-edged extreme end portion *p'* having a beveled point, said tongue being located at one side of the central portion and separated therefrom by an intervening recess, and flaring lips *o* and *o'* on the other side of the central portion forming a guiding mouth for the tongue of the abutting coupler, the head being cored out inside of said mouth to form an enlarged pocket, and having a contracted passage through its rear wall, the mouth and passage forming a closely fitting socket for the tongue of the abutting coupler, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses.

JAMES E. MARBLE.

Witnesses:
JOHN C. PENNIE,
WILLIAM H. DAVIS.