

No. 743,935.

PATENTED NOV. 10, 1903.

H. B. SCHRADER.  
LINE PIPE COUPLING.

APPLICATION FILED JUNE 20, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

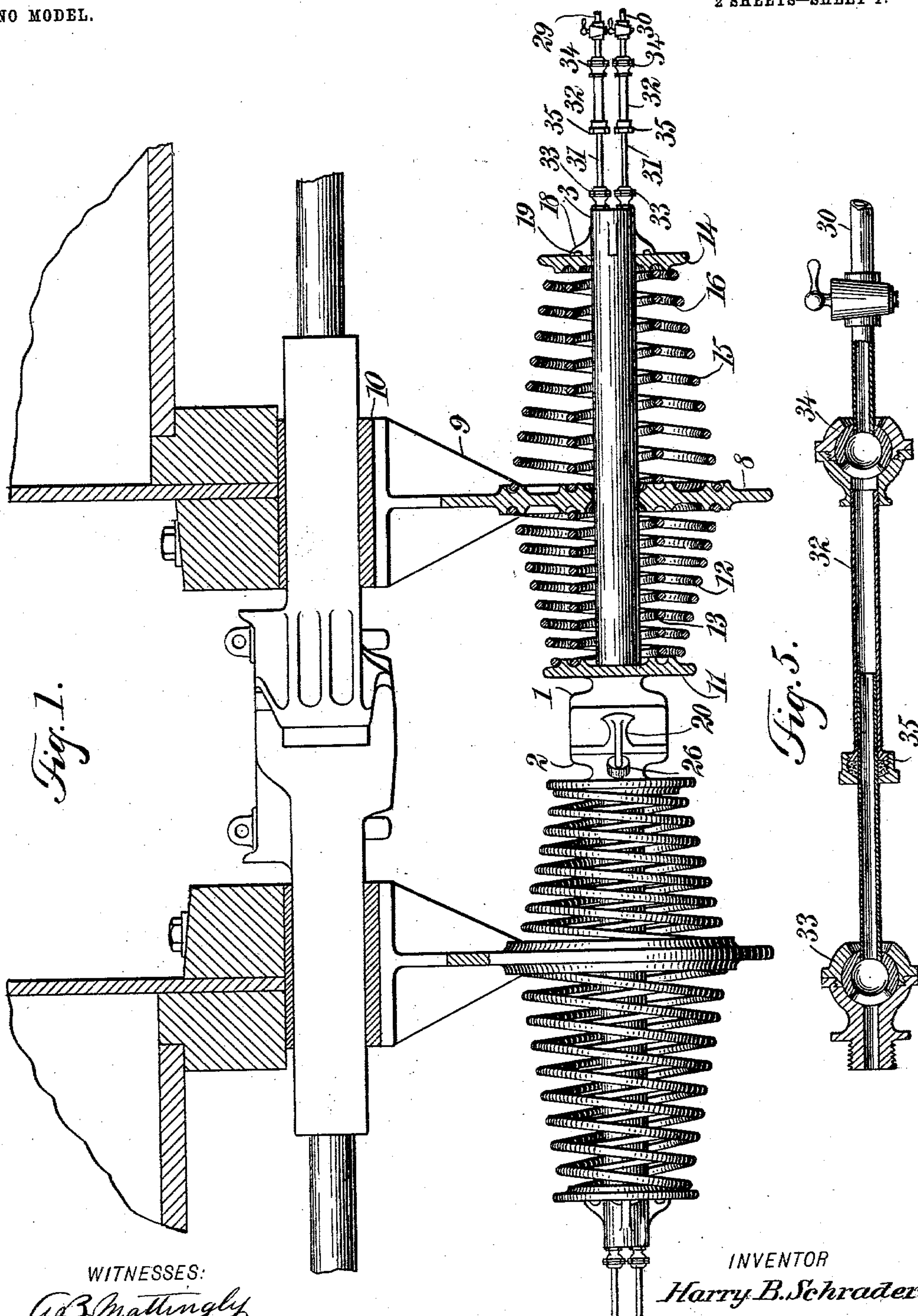


Fig. 1.

Fig. 5.

WITNESSES:

*A. B. Mattingly*  
*C. R. Ferguson*

INVENTOR

*Harry B. Schrader*

BY

*Munn*

ATTORNEYS.

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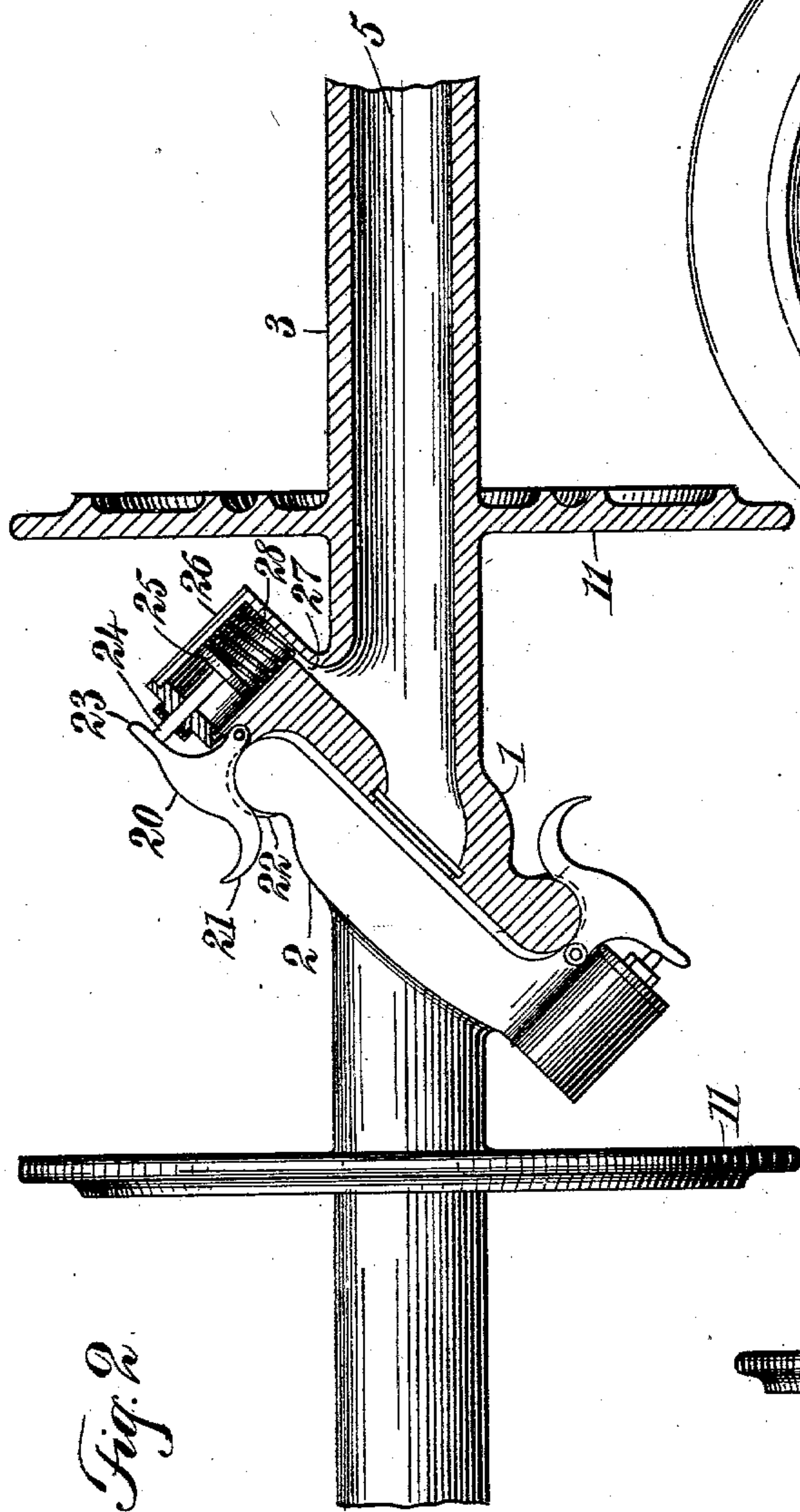


Fig. 2.

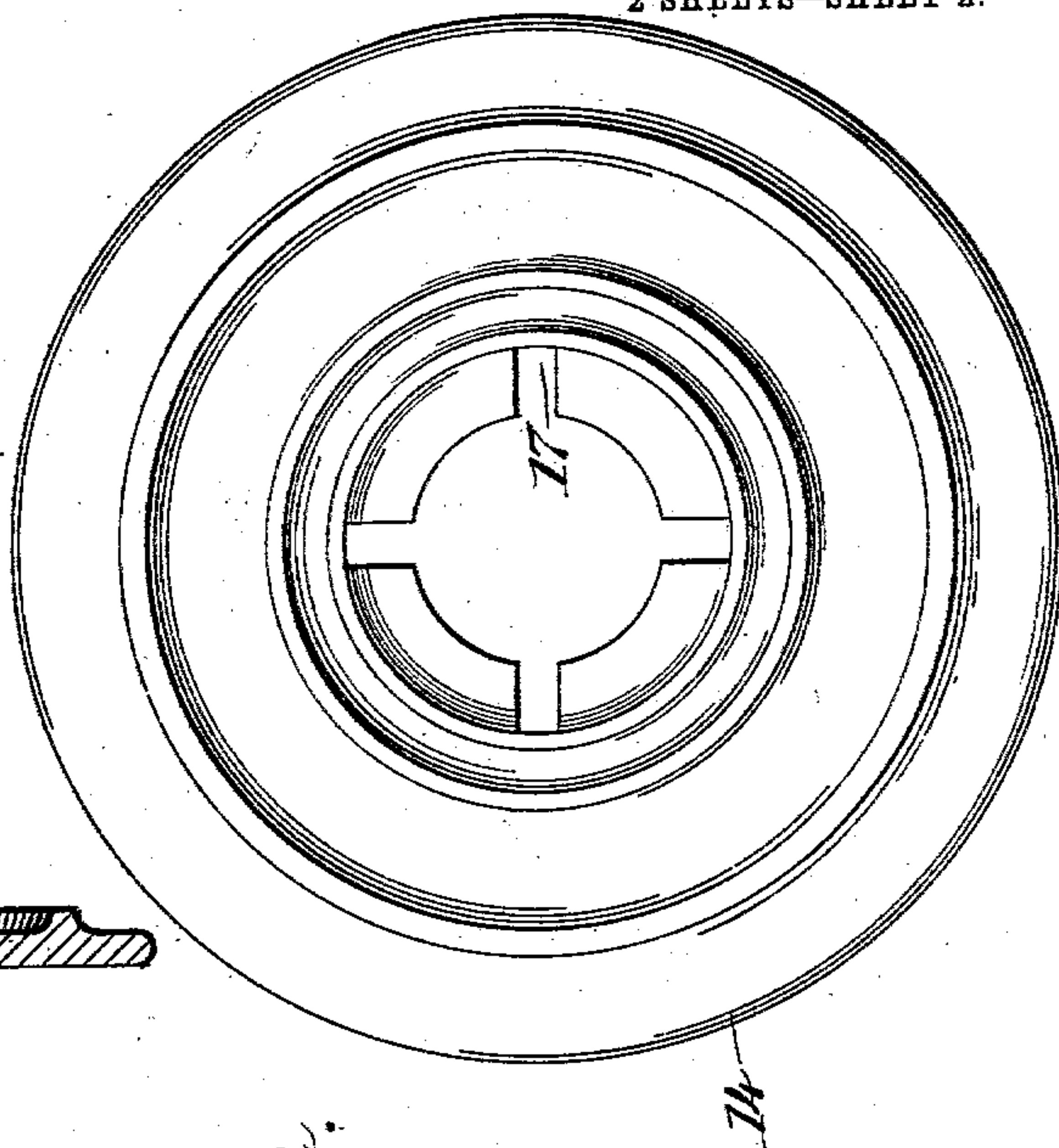


Fig. 4.

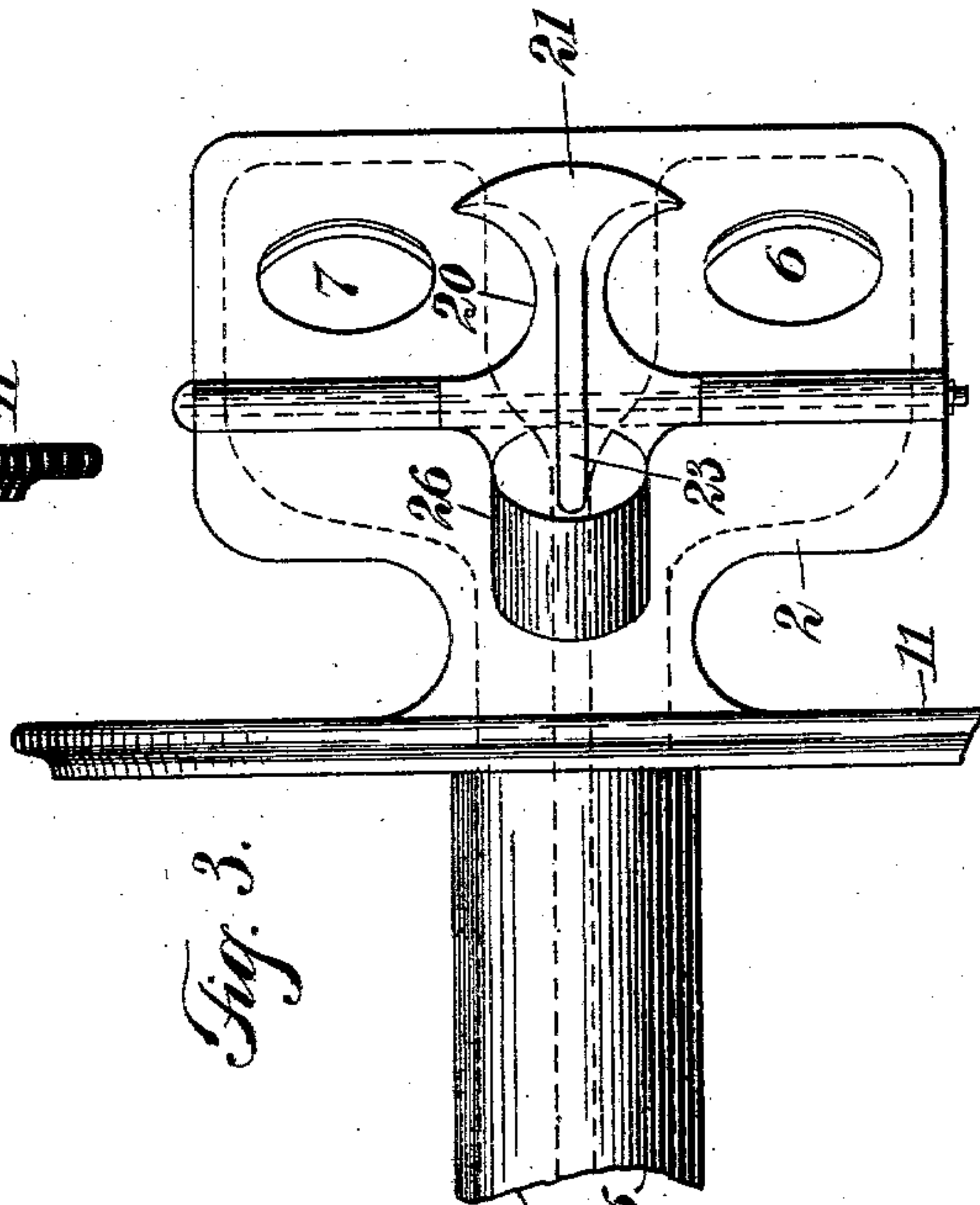


Fig. 3.

WITNESSES:

*A. B. Mattingly*  
*C. R. Ferguson*

INVENTOR

*Harry B. Schrader*

BY

*Wm. M. M.*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

HARRY BARNEY SCHRADER, OF ALLIANCE, NEBRASKA.

## LINE-PIPE COUPLING.

SPECIFICATION forming part of Letters Patent No. 743,935, dated November 10, 1903.

Application filed June 20, 1903. Serial No. 162,361. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY BARNEY SCHRADER, a citizen of the United States, and a resident of Alliance, in the county of Boxbutte and State of Nebraska, have invented a new and Improved Line-Pipe Coupling, of which the following is a full, clear, and exact description.

This invention relates to improvements in couplings for train line-pipes for air-brake systems, steam-conveyers, and the like, an object being to provide an automatic coupling of simple and inexpensive construction having no sharp curves or loops in its ports to obstruct the passage of air or steam and in which air or steam pressure is utilized to cause a strict connection between the coupling members.

I will describe a line-pipe coupling embodying my invention, and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation, partly in section, of a line-pipe coupling embodying my invention. Fig. 2 is a plan view, partly in section, of the coupling. Fig. 3 is a side view of one of the coupling members. Fig. 4 shows an abutment-ring employed, and Fig. 5 is a sectional view of one of the train-pipe connections.

The coupling comprises two heads 12, which are arranged on a transverse incline at their engaging surfaces. As the coupling-heads and their connections are of like construction, a description of one will answer for both. The coupling-head is attached to a stem or draw-bar 3, having two ports 4 5, (see Figs. 2 and 3,) one for the passage of air for the brake mechanism and the other for signaling or the like. These ports of course open through the head, as indicated at 6 7. Suitable gaskets will be placed around the port-openings 6 7, so as to prevent any possible leakage. The stem or draw-bar 3 is movable through a ring portion 8 of a hanger 9, attached to the under side of the car. As here shown, this hanger 9 depends from a sleeve 10, through which the car-coupling draw-bar passes.

Arranged between a collar 11 on the stem

or draw-bar adjacent to the coupling-head and the ring portion 8 is a coiled spring 12, substantially of conical form and of gradually-increasing diameter, the larger diameter engaging with the ring portion 8 and the smaller diameter engaging against the collar 11. The collar and ring are provided with annular seats or channels for receiving the end coils of the spring. Also arranged between the collar 11 and the ring 8 within the spring 12 is a coiled spring 13, and between an abutment-ring 14 on the inner end of the draw-bar 3 and the said ring 8 is a coiled spring 15, similar to the spring 12, and a coiled spring 16, similar to the spring 13. The abutment-ring 14 is made removable, so that the parts may be readily assembled.

The ring 14 (see Fig. 4) is provided with offset openings 17, designed to pass over wings 18, formed on the draw-bar, and to prevent a rotary movement of the ring when in position said ring is provided with lugs 19 (see Fig. 1) for engaging on opposite sides of the wings.

In assembling the parts the springs 12 and 13 are first placed on the draw-bar, then the draw-bar is passed through the hanger and the ring 8, after which the springs 15 and 16 are placed thereon and the abutment-ring 14 is passed over the wings 18 and then slightly rotated and allowed to move back until said wings engage between the lugs 19. By employing the conically-shaped spiral springs 12 and 15 the coupling, while permitted to move laterally and upwardly while in connection with one coupling-head, yet is held in alignment, so that when cars come together the two coupling-heads will automatically engage and interlock with each other.

Pivotaly connected to each coupling-head is a locking-latch 20, designed to engage with the other coupling-head, as clearly shown in Fig. 2. The latch is provided with a curved or cam-shaped end 21, designed to be engaged by an approaching coupling-head, thus swinging the said latch to open position and permitting the heads to come together. The latch is provided on its inner side with a channel to receive a rib 22 on the other coupling-head and prevent lateral sliding motion of one head on the other.

Extended outwardly from the latch is a finger 23, which engages with a stem 24 of a



piston 25, operating in a cylinder 26, having port connection 27 with one of the ports through the draw-bar 3. A spring 28 holds the latch yieldingly in engagement with the  
 5 opposing coupling-head when there is no air-pressure through the same. When air or other pressure is passed through the coupling, a portion thereof will pass through the ports 27, forcing the piston 25 outward, and  
 10 consequently causing the latch to force the coupling-heads tightly together.

The ports 4 and 5 communicate with the train-pipes 29 and 30 through adjustable or telescopic metal pipe-sections 31 and 32, the  
 15 sections 31 having ball-and-socket connections 33 with the draw-bar 3, and ball-and-socket joints 34 connect the sections 32 with the train-pipes. Stuffing-rings 35 prevent leakage between the sections. These metal  
 20 connections are not liable to be burst by air or steam pressure, as often happens with flexible hose.

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

1. A train line-pipe coupling comprising two coupling-heads having communicating ports, a latch mounted on each head for engaging with the other head, and air-pressure-  
 30 actuated means for operating the latches to press the heads together.

2. A train line-pipe coupling, comprising two coupling-heads having communicating ports, a latch mounted on each head for engaging with the other head, the said latch being provided with a channel on its inner side, a rib on the other head for engaging in said channel, and air-pressure-actuated means for operating the latches to press the heads to-  
 40 gether.

3. A train line-pipe coupling, comprising two coupling-heads, draw-bars supporting the heads and provided with longitudinal ports,

a cylinder on each head having port communication with a port or ports of the draw-  
 45 bar, locking-latches on the heads having cam-shaped inner ends, cylinders on the heads, pressure-actuated pistons in said cylinders, and stems extended from the pistons and engaging with upwardly-extended fingers on the  
 50 latches.

4. In a train line-pipe coupling, a coupling-head, a ported draw-bar to which the head is attached, a hanger comprising a ring through which the draw-bar has movement, a collar  
 55 on the draw-bar adjacent to the head, a conical coiled spring extended between said collar and the hanger, a spiral spring arranged within the first-named spring and between said collar and hanger, an abutment-ring re-  
 60 movably placed on the draw-bar at the opposite side of the hanger, and springs arranged between said ring and the hanger.

5. In a train line-pipe coupling, a coupling-head, a ported draw-bar to which the head is  
 65 attached, a hanger comprising a ring through which the draw-bar has movement, a collar on the draw-bar adjacent to the head, a conical coiled spring extended between said collar and the hanger, a spiral spring arranged  
 70 within the first-named spring and between said collar and hanger, an abutment-ring removably placed on the draw-bar at the opposite side of the hanger, and springs arranged between said ring and the hanger, the said  
 75 collar, hanger and abutment-ring being provided with annular channels to receive the coils of the springs.

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

HARRY BARNEY SCHRADER.

Witnesses:

R. M. HAMPTON,  
 LOUIS BUECHSENSTEIN.