June 19, 1923. **1,459,537**

L. M. KING

COUPLING MECHANISM FOR TRAIN PIPES

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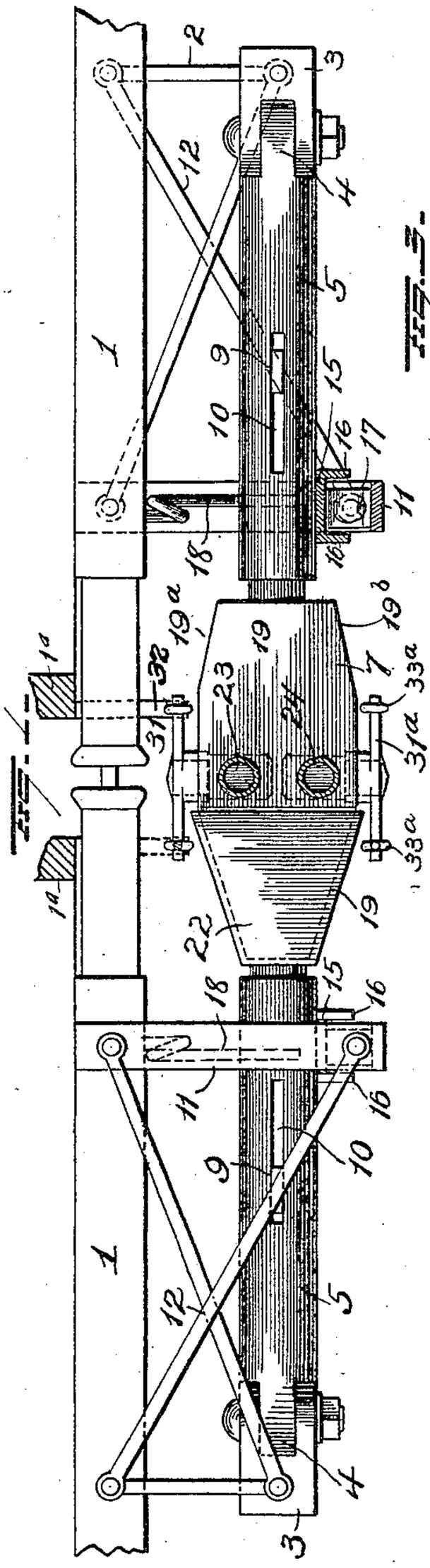

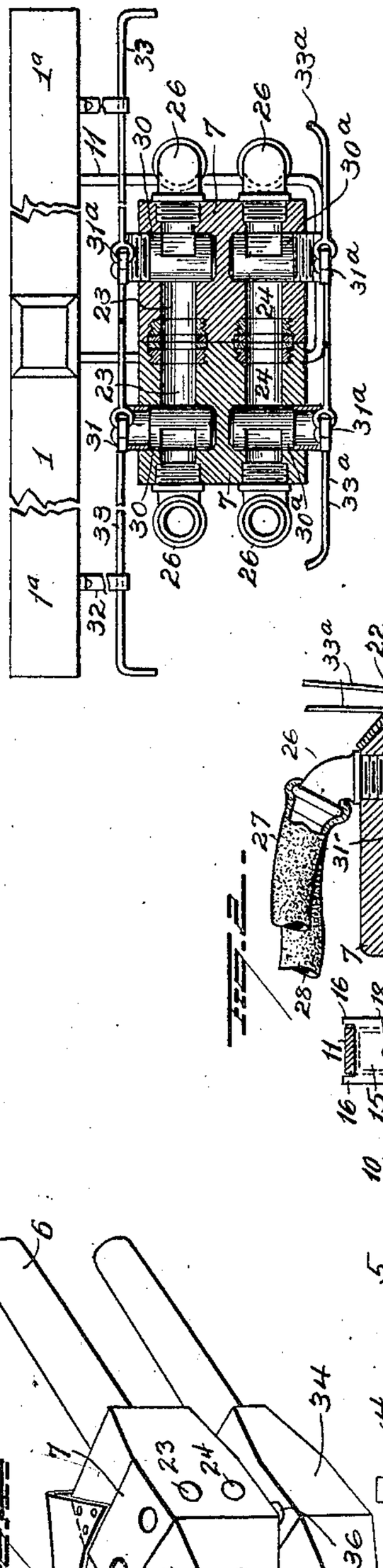

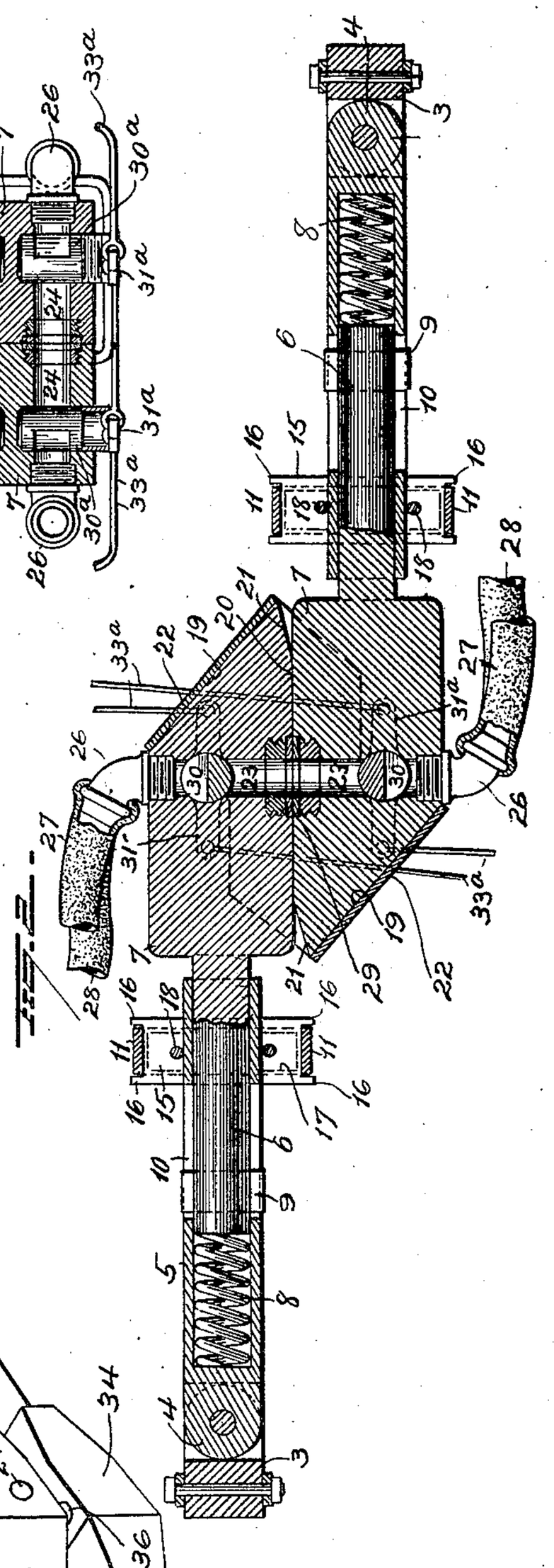

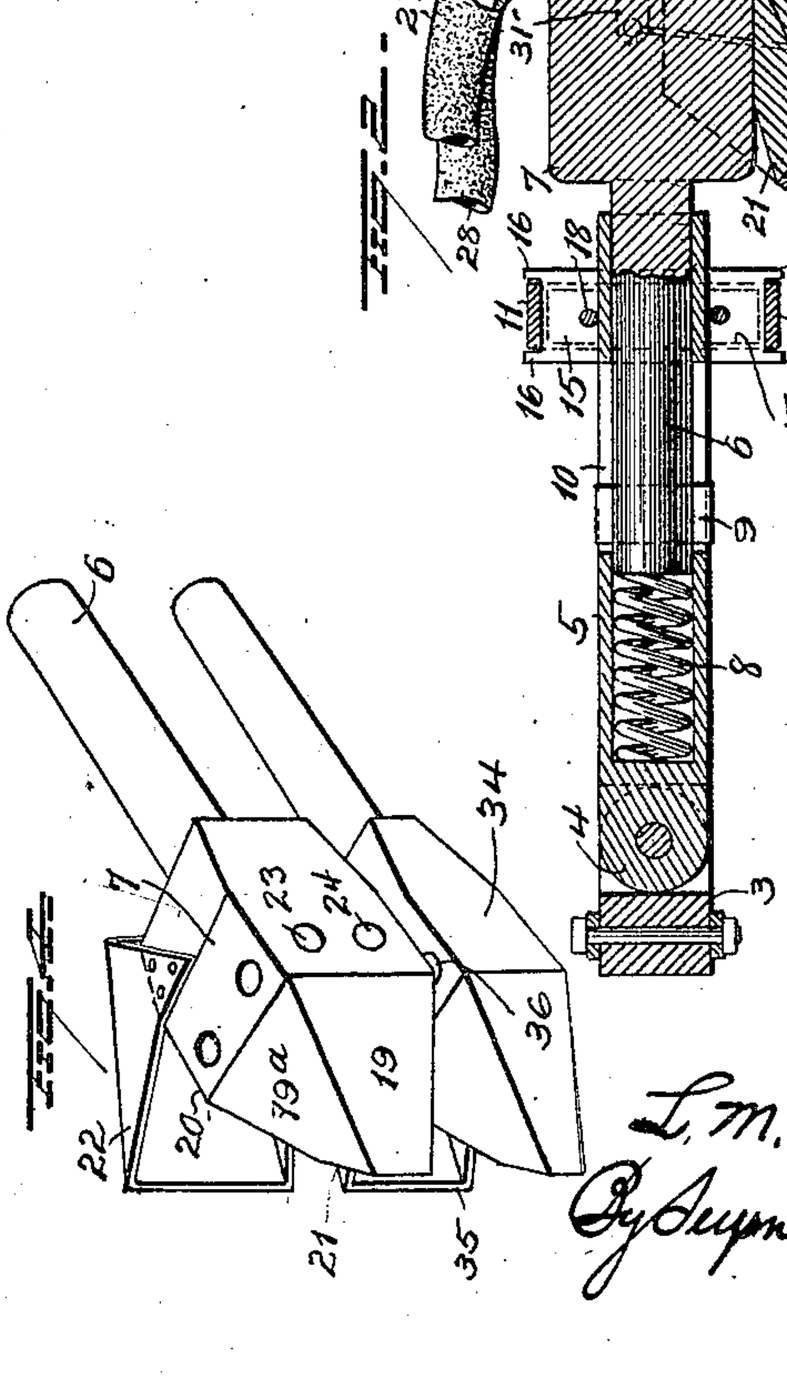

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UNITED STATES PATENT OFFICE.

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COUPLING MECHANISM FOR TRAIN PIPES.

Application filed October 8, 1919. Serial No. 329,258.

To all whom it may concern:

Be it known that I, LEA M. KING, a citizen of the United States, and a resident of Morristown, in the county of Hamblen and State of Tennessee, have invented certain new and useful Improvements in Coupling Mechanism for Train Pipes; 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 improvements in train pipe coupling mechanism,—one object of the invention being to provide a structure whereby the automatic coupling of the train pipes, such as the air-brake, signal, and steam pipes, will be accurately effected in such manner when the cars are being coupled or uncoupled, that necessity for trainmen entering between the cars to couple or uncouple the air or steam connections will be obviated and so that, in the event of parting of the train, the air brakes will be automatically applied on the cars of all the parted portions of the train.

A further object is to provide simple and efficient means for manipulating the valves in the coupling heads, from the sides of a car.

A further object is to provide efficient yielding means for supporting the coupling devices in approximately horizontal position and at the proper elevation to insure accurate coupling of the mechanism on two cars.

A further object is to so mount the coupling mechanism that the same can yield longitudinally, vertically and laterally to accommodate the same to various movements to which cars are subjected during travel.

With these and other objects in view, the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation illustrating my improvements; Figures 2 and 3 are sectional views, and Figure 4 is a perspective showing two heads.

1 represents the draft beam with which the car coupling devices of any approved construction are connected.

Brackets 2 depend from the rear portion of the draft beam or from any suitable support beneath the floor of a car, and serve to support a block 3 by means of a horizontal pivot so that said block shall be capable of vertical pivotal movement. The block 3 is recessed for the reception of a shank 4 on the rear end of a hollow bar 5, said shank being pivotally attached to the block by means of a vertical pivot whereby the bar 5 may swing horizontally or laterally. The tubular bar 5 receives the shank 6 of a pipe coupling head 7 and between the rear end of said shank and a seat within the tubular bar 5, a spring 8 is located, said spring tending to press the coupling head forwardly. Movement of the coupling head relatively to the tubular bar is limited by means of a key 9 secured to the shank 6 and movable through a slot or slots 10 in said tubular bar,—said key and slot also preventing turning of the coupling head and its shank.

A frame or yoke 11 depends from the forward portion of the draft beam 1, and braces 12 may, if needed, extend from the lower end of this yoke or frame to the rear portion of the draft beam or other substantial support. A cross bar 15, the upper surface of which may be concave in form, is movably disposed between the parallel vertical members of the frame or yoke 11 and provided at its ends with projecting portions 16 which cooperate with the parallel vertical members to form guides for said cross bar 15. Springs 17 are located between bottom of yoke 11 and the movable cross bar 15 and may be of the type shown in the drawing or, if desired, coiled springs may be employed. The cross bar 15 constitutes a support for the tubular bar 5 and the coupling devices carried thereby and the springs 17 (whereby this bar is rendered yielding) will permit vertical play of the coupling devices.

In order to retain the tubular bar 5 and the coupling devices carried thereby in a central position when the cars are not coupled, springs 18 are employed and located at respective sides of said tubular bar,—one end of each of said springs being secured to the depending yoke or frame 11 and the other end bearing against the tubular bar. These springs also serve to permit yielding lateral motion of the tubular bar and coupling devices, to compensate for irregular lateral motion of the cars.

The coupling head 7 has a general wedge shape, being provided with outer inclined

or beveled faces on three sides, 19, 19ª, 19ᵇ and an inner flat face 20 parallel with the axes of the shank 6 and tubular bar 5,—said bead being slightly beveled, as at 21, at the forward end of the inner flat face 20, in order to prevent the coupling head on one car from engaging the outer beveled face 19 of a coupling head on another car. A beveled hood 22 having inner surfaces to correspond with the outer surfaces of the front half of head 7, is secured to the rear half of the coupling head 7 in such manner that the beveled wall thereof shall engage the beveled head of the opposing coupling when the coupling devices on two cars are brought together, the beveled hood of one coupling head engaging the forward beveled end of the other coupling head and the two coupling heads being brought together in such manner that the flat inner faces will be pressed tightly together. Each coupling head is provided with ducts 23—24 having ports at one end coincident with the inner flat face 20 of said head, and provided at their other ends with nipples 26 for the reception of flexible pipes 27—28,—one of the latter being connected with the air brake system and the other with the signaling system. A bushing is inserted (preferably threaded) into the inner end of each duct 23—24 and provided at its free end with a yielding ring 29 which projects slightly beyond the plane of the inner face 20 of the coupling head, in order to make an air tight connection between the ducts 23—24 from one coupling head to the other.

It will be understood that the coupling head 7 is normally disposed somewhat beyond the normal vertical plane of the forward end of the car coupling, so that when two cars are being coupled, the pipe coupling devices of the two cars will come together prior to the cooperation of the car couplings, and thus the coupling heads 7 will be forced rearwardly against the resistance of the springs 8,—the latter tending, therefore, in cooperation with the beveled heads 19, 19ª and 19ᵇ and the beveled hoods 22 to insure the inner faces of the two coupling heads 7 to be pressed laterally toward each other and the yielding rings 29 of respective heads, to be firmly pressed against each other to insure tight connections between the ducts of the respective coupling heads.

Valves 30 and 30ª are located in each coupling head for controlling the ducts therein. The shank of each valve 30 projects slightly above the upper face of the coupling head and valve 30ª slightly below, and are provided with cross heads 31 and 31ª. Arms such as shown at 32 are secured to any suitable rigid part (such as an end sill 1ª) of the forward end of the car at respective sides thereof and constitute guides for manually operable rods 33 and 33ª connected with the cross heads 31 and 31ª of the valves 30 and 30ª, the rod attached to one end of a cross head extending through the guide arm at one side of the car, and the rod attached to the other end of said cross head extending to the other side of the car. By means of these devices, the valves 30 and 30ª may be manually operated from either side of the car and as the coupling heads are automatically coupled as previously explained, there will be no necessity for the trainmen entering between cars, either to effect the coupling or uncoupling of the train pipes or to manipulate the valves. Or the device may be made with a single valve extending through and controlling both ducts.

By providing valves which may be manipulated only by hand, it will be readily seen that if any car of a train should part from the others, the air brakes would be at once applied, as will be readily understood.

When it is desired to provide automatic coupling means between cars, for the steam heating pipes, a coupling head 34 similar in shape and design to air coupling head 7 is secured under the coupling head 7. The coupling head 34 will be disposed in position identical with, but below that of the coupling head 7 and the lower flange of its hood 35 may be omitted to permit the escape of condensed steam or water. The valve 36 in the steam pipe coupling head is also manually operable from the sides of the car in the same manner as hereinbefore described relative to the valves in the heads 7.

Various slight changes might be made in the details of construction without departing from the spirit thereof, and the flexible pipes may be detached from the coupling head when a car equipped with my improvements is to be coupled to a car which is not, and attached to the nipples of the latter, and I do not wish to restrict myself to the precise details herein set forth.

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

1. In coupling mechanism for train pipes, the combination with a block and a horizontal pivotal support therefor, of a tubular bar having a pivotal connection with said block at right angles to the pivotal support of the latter, springs bearing against diametrically opposite sides of said bar, a support for the forward portion of said tubular bar, springs under such forward support, a pipe coupling head, and a yielding connection between said head and tubular bar.

2. In coupling mechanism for train pipes, the combination of a tubular bar having a longitudinal slot in its forward portion, means for pivotally supporting the rear end of said bar, a yoke through which the front end of the bar extends, a yieldable support in the yoke for the front end of the bar, a

coupling head, a shank extending from the head and fitting slidably in the tubular bar, a key carried by the shank and fitting in the slot in the bar, and a spring housed in the bar between the rear end of the same and the rear end of the shank.

3. In coupling mechanism for train pipes, the combination of a tubular bar, means pivotally supporting the rear end of the bar, a fixed yoke through which the front end of said bar extends, a cross bar mounted in the yoke and having its ends slidingly engaging the sides of the yoke and held thereby against horizontal movement, a yielding support for said bar on the bottom of the yoke, a pipe coupling head, a shank projecting from said head and entering the tubular bar, and a coiled spring housed in the tubular bar and bearing against the rear end of said shank.

4. In coupling mechanism for train pipes, the combination of a tubular bar, means for pivotally supporting the rear portion thereof, a yoke, a yieldable cross bar in the yoke supporting the front end of the bar, a pipe coupling head yieldably connected with said bar, and substantially vertically disposed springs secured at their upper ends within the yoke and having their lower ends free and bearing against the sides of the bar.

5. In coupling mechanism for train pipes, the combination of tubular bars, yieldable supports therefor, pipe coupling heads yielding connections between the heads and the bars, the coupling heads having transverse horizontal ducts therein, valves extending vertically across said ducts within the coupling heads, and means extending laterally from the coupling heads and connected to the valves for operating said valves from the sides of a car.

6. In coupling means for train pipes, the combination of automatically operable pipe coupling means including coupling heads having transverse horizontal ducts therein, valves extending vertically across said ducts and projecting at one end through the coupling head, crossheads on the projecting ends of the valves, and setting rods connected to opposite ends of the cross heads and extending in opposite directions therefrom to permit setting of the valves from either side of the car.

7. The combination of train pipe coupling heads each having a flat inner side and having the forward portions of its top, bottom and outer side converging forwardly, the forward extremity of the inner side being beveled forwardly and outwardly, a hood secured to the top and bottom of the head at the rear thereof and having its top, bottom and outer side converging rearwardly to snugly receive the forwardly converging sides of the mating head, said heads having transverse horizontal ducts therethrough opening at one end through the flat inner sides of the heads, means at the outer ends of said ducts to attach train lines, and packing members around the inner ends of said ducts.

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

LEA M. KING.

Witnesses:
E. M. PARRIS,
OLIVER K. HISEY.