

(No Model.)

2 Sheets—Sheet 1.

R. S. PETTET.  
COUPLING AND CONDUIT FOR RAILWAY TRAIN HEATING APPARATUS.

No. 488,717.

Patented Dec. 27, 1892.

Fig. 1.

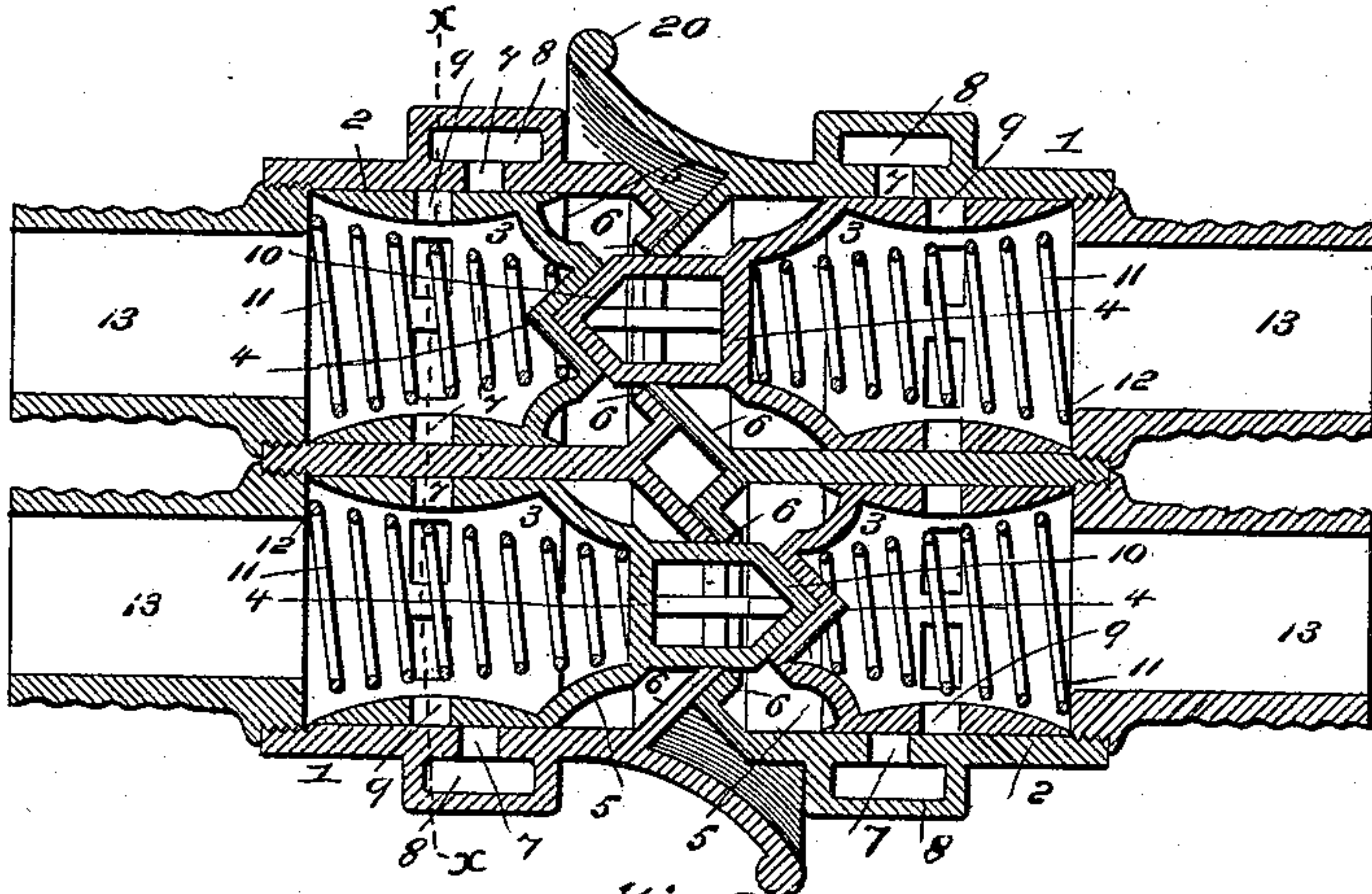


Fig. 2.

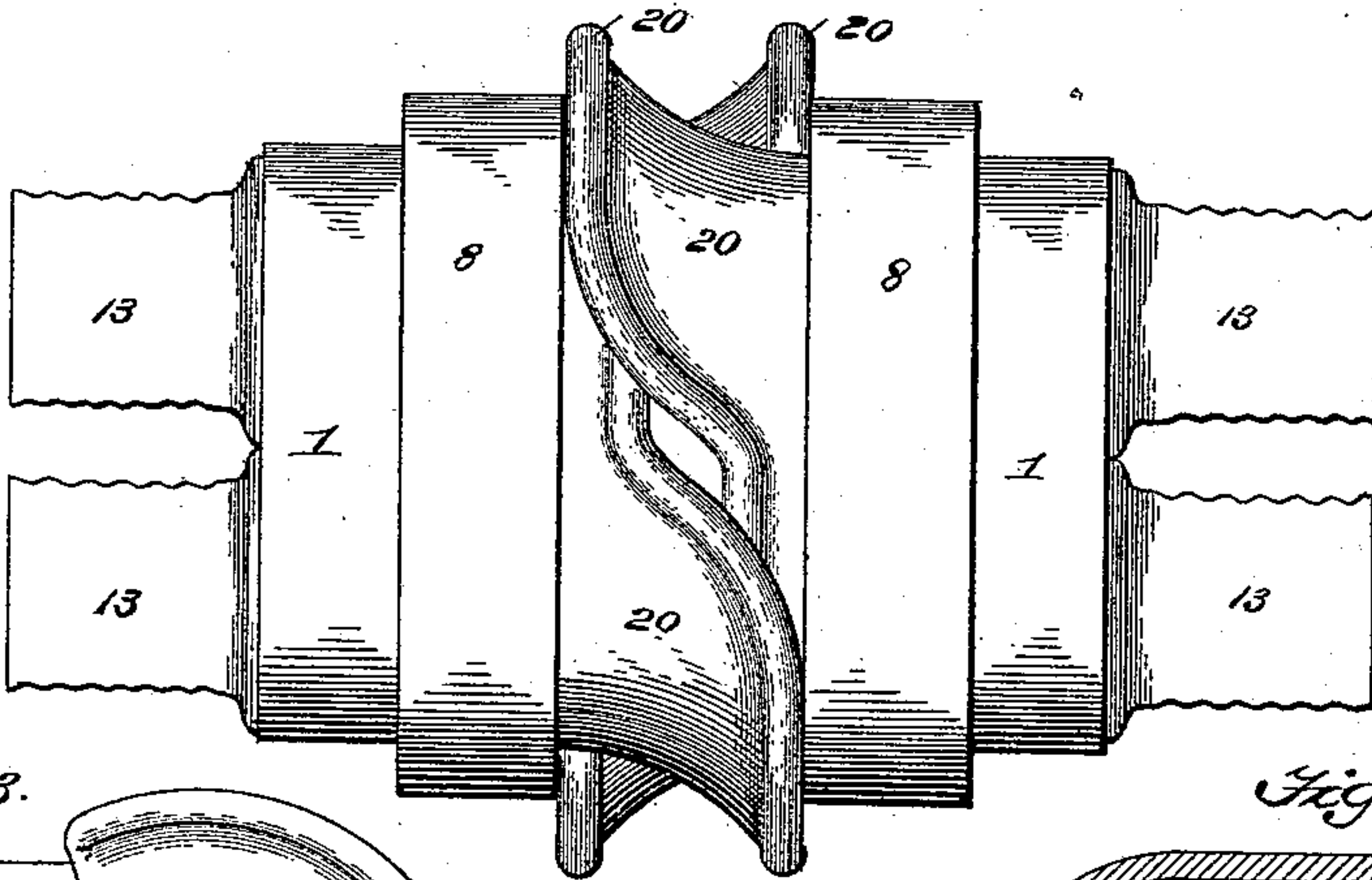


Fig. 3.

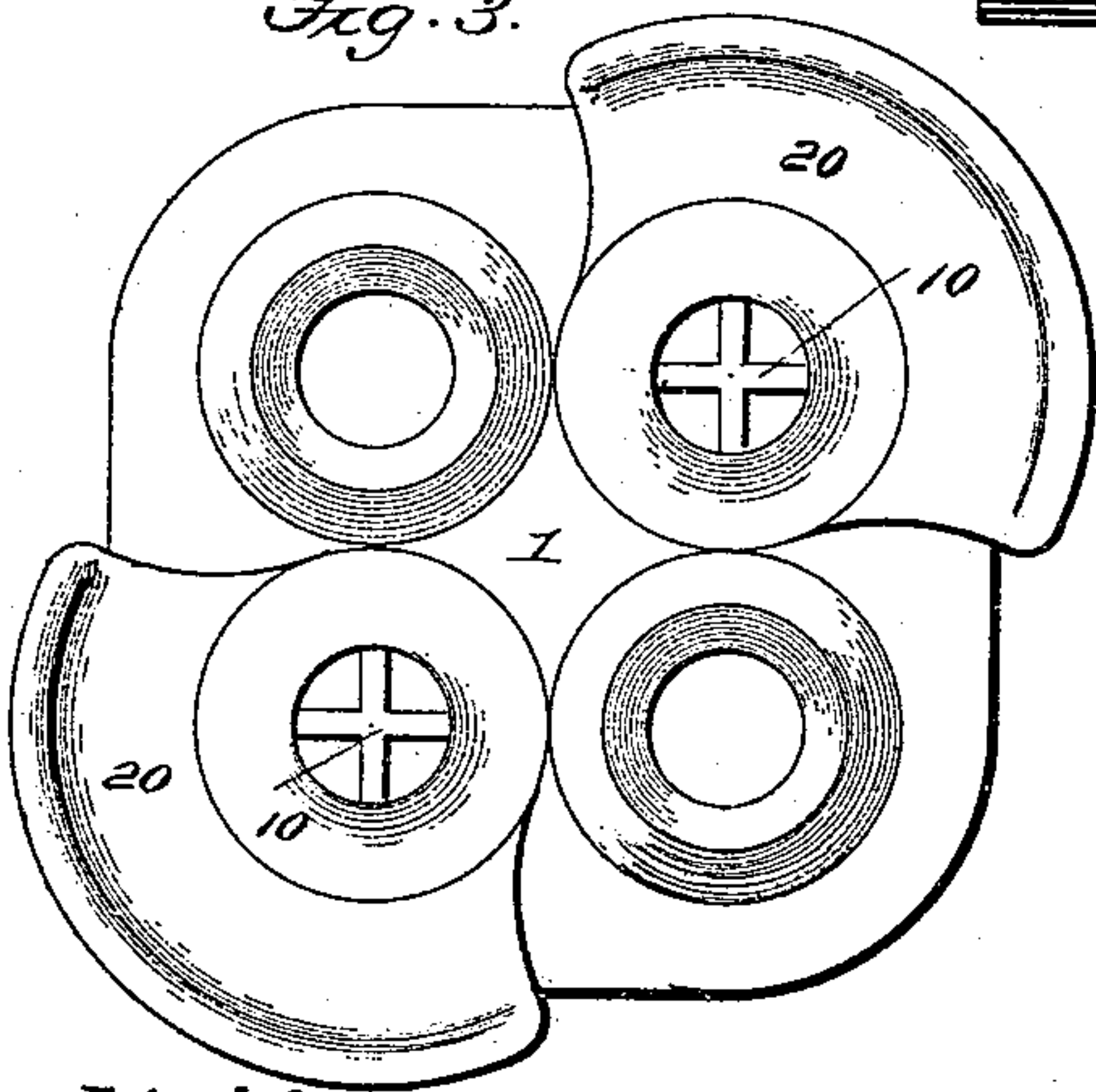
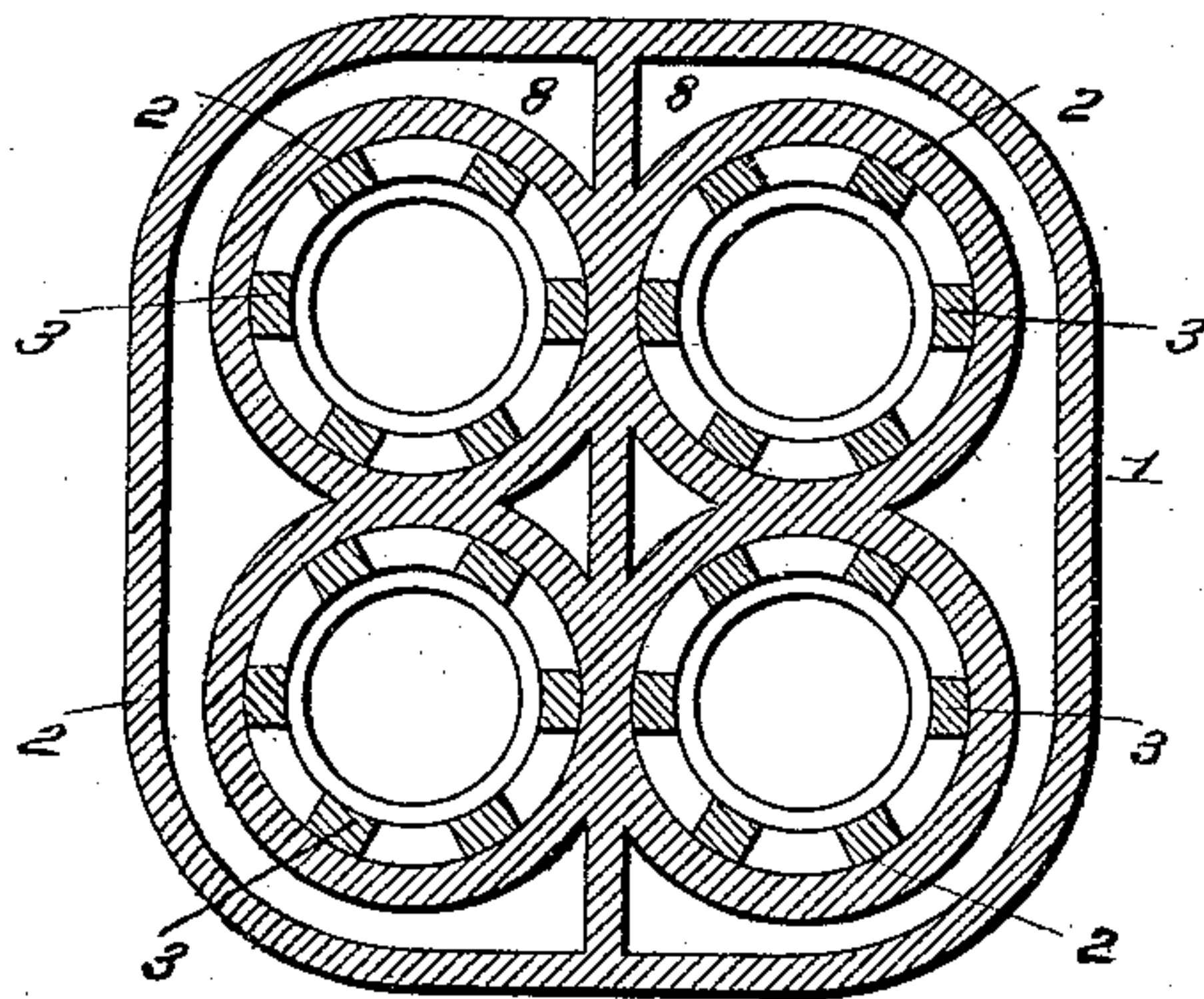


Fig. 4.



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2 Sheets—Sheet 2.

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# COUPLING AND CONDUIT FOR RAILWAY TRAIN HEATING APPARATUS.

No. 488,717.

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Fig. 5.

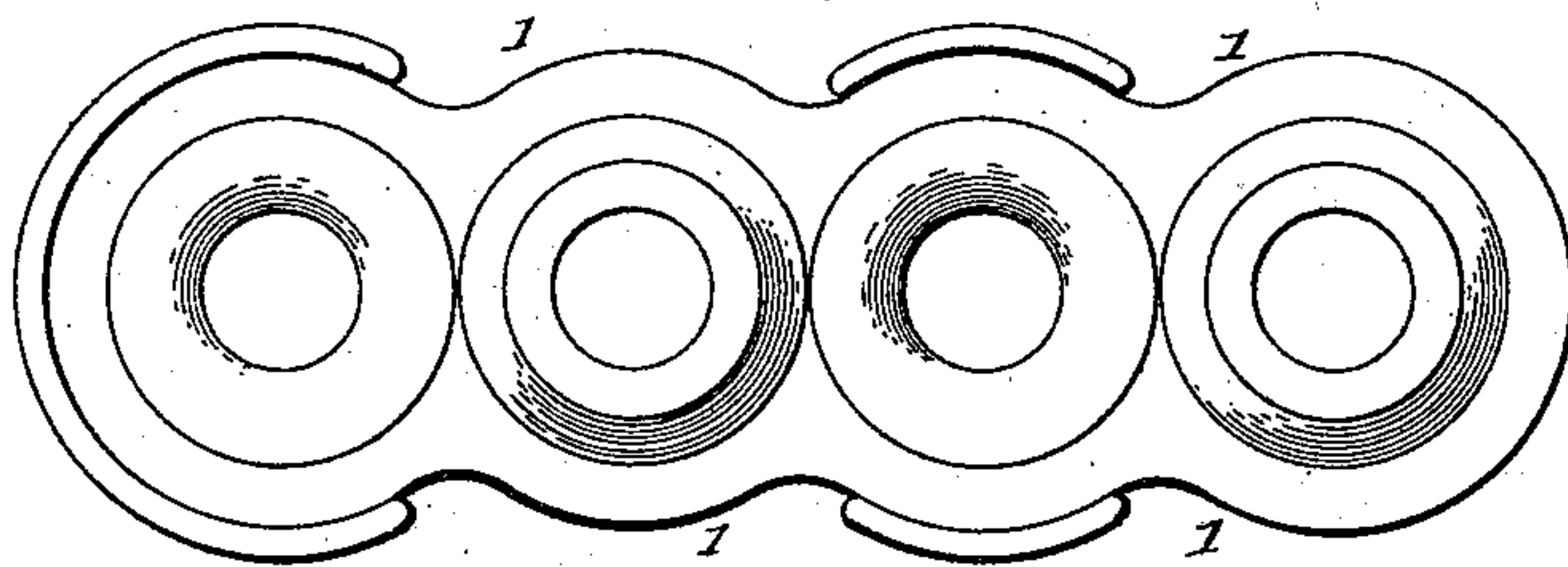


Fig. 6.

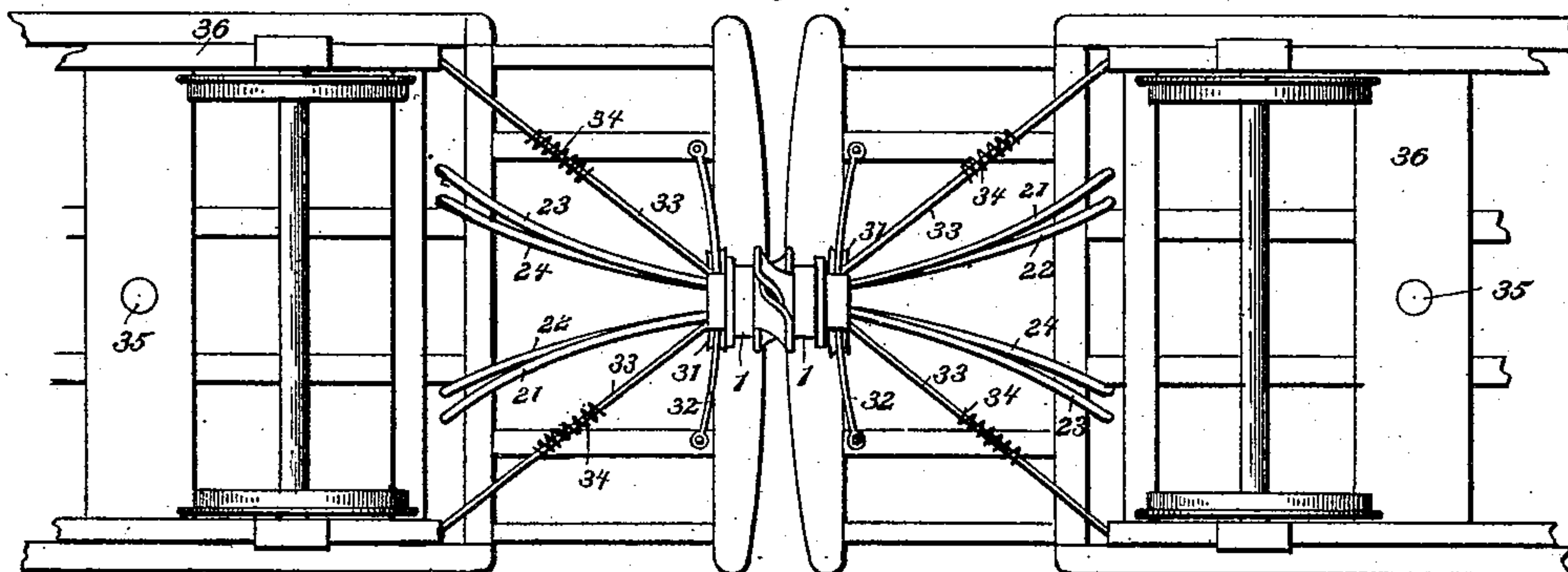


Fig. 7.

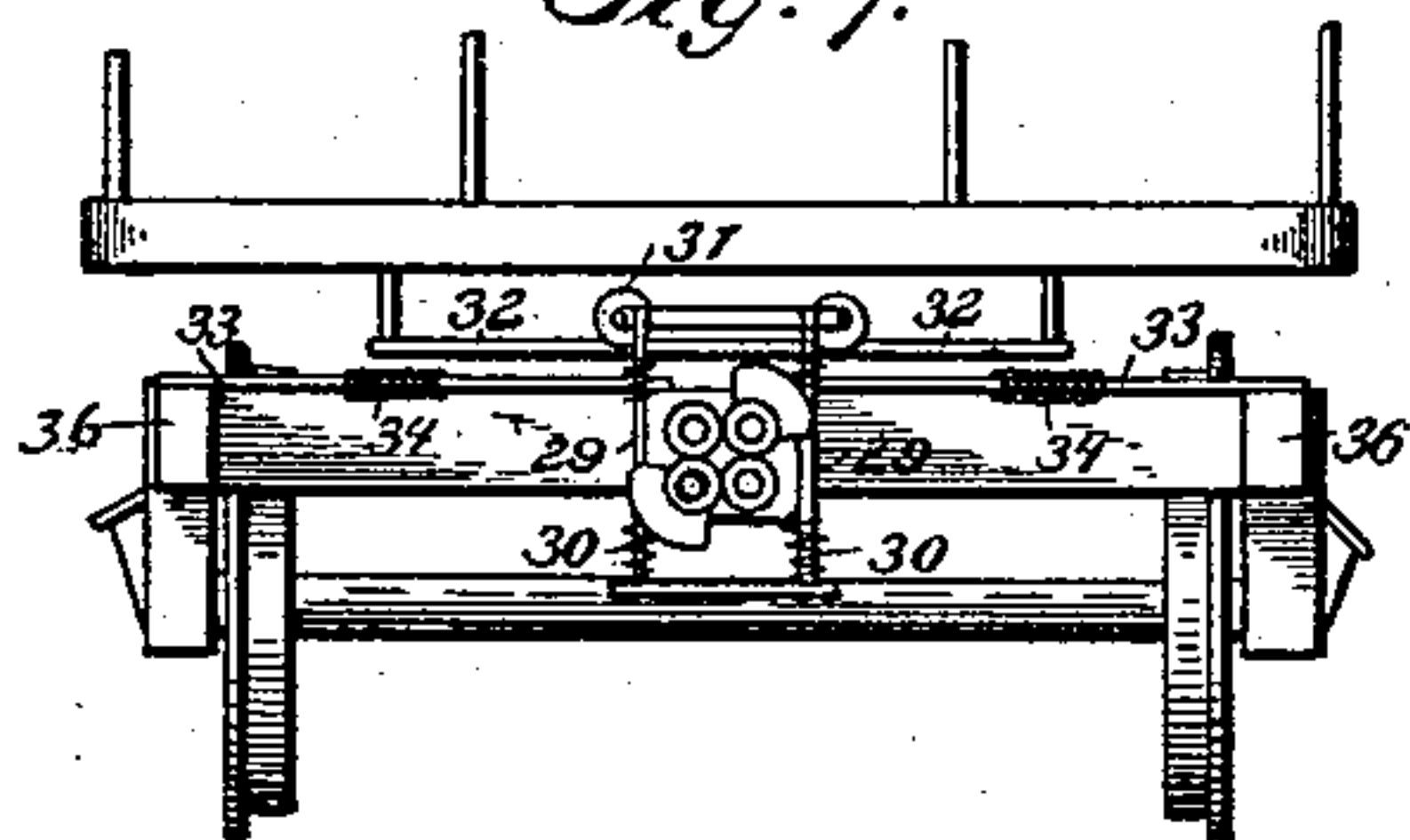
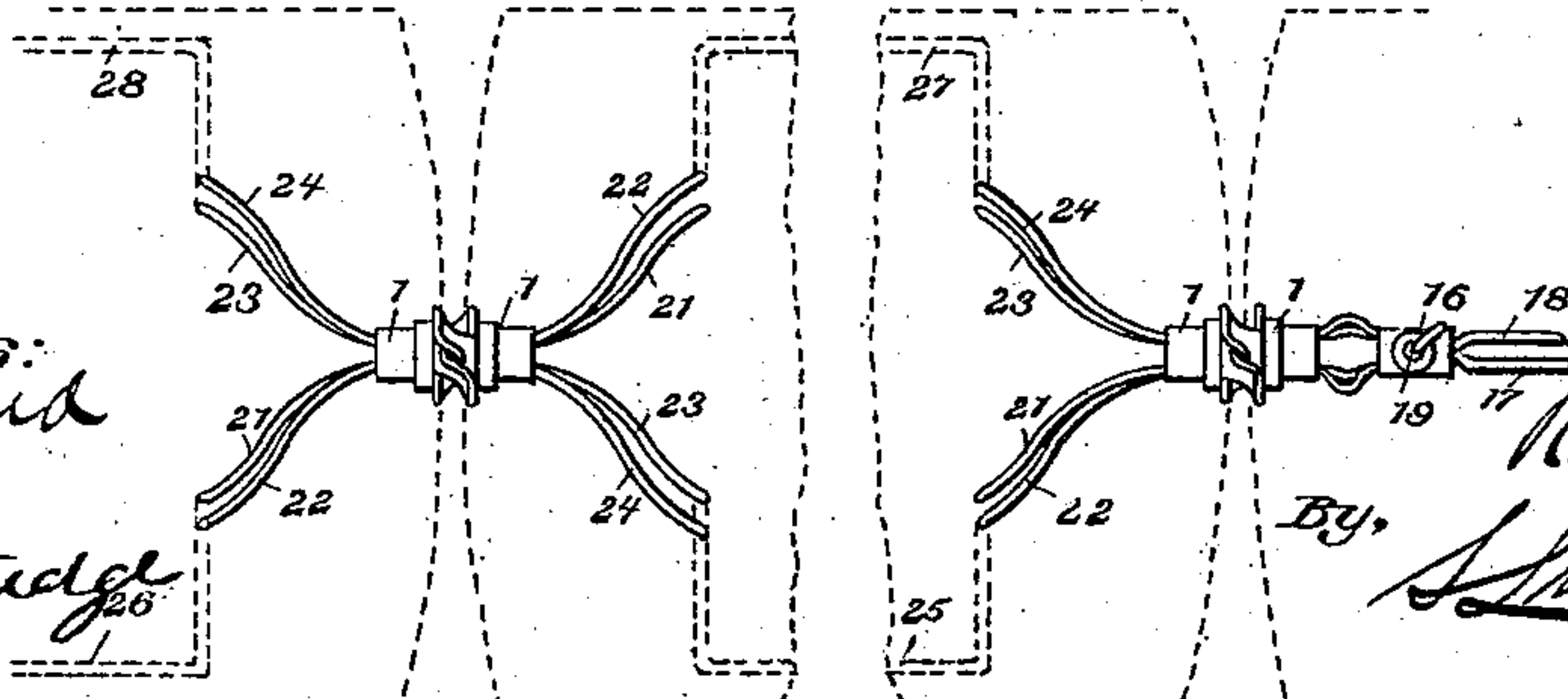


Fig. 8.



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# UNITED STATES PATENT OFFICE.

ROBERT S. PETTET, OF ATLANTIC CITY, NEW JERSEY.

COUPLING AND CONDUIT FOR RAILWAY-TRAIN-HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 488,717, dated December 27, 1892.

Application filed September 8, 1891. Serial No. 405,153. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT S. PETTET, a citizen of the United States, residing at Atlantic City, in the county of Atlantic and State of New Jersey, have invented certain new and useful Improvements in Couplings and Conduits for Heating Railway-Trains; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof as to enable others skilled in the art to make and use the said invention.

This invention relates to couplings, and conduits for connecting railway train heating apparatus, and has for its object the automatic alignment and expeditious coupling of the tubes for conveying the hot air, or other fluids, through a train, with facilities for establishing a return current from the last vehicle of the train, and of directing, and regulating such current through a duplex or multiplex system of pipes, permitting the outgoing heated current, and the incoming current to be changed from one side of the train to the other so as to direct the current of highest temperature upon the side most exposed to cooling influences.

This invention consists in a series of conduits, and couplings, provided with valves, which close automatically, and open automatically, when connected to a corresponding member of the coupling upon the next vehicle; means for guiding the contiguous members of coupling into proper alignment, and the valvular construction for providing intercommunication between adjacent tubes when the valves for communicating with the next vehicle are closed, as is the case at the rear of the train. In conjunction with this, is a manifold branched valve at the forward end of the train, by which the current is directed into different pipes of this system: which is the subject of another invention and application for Letters Patent filed September 8 1891 Serial No. 405,151.

The accompanying drawings show in Figure 1 the construction of the coupling in section, Fig. 2 a side elevation, Fig. 3 a front view of one member of the coupling when the other is detached. Fig. 4 is a section of the coupling in the plane of the ports intercommunicating between different pipes, indicated

in Fig. 1 by the dotted line  $xx$ . Each coupling as shown in the above stated figures involves valves and valve seats, having their axes in parallel position. These are placed with their centers at the corners of a rectangle, and in Fig. 5 they are shown as placed with their axes parallel in the same horizontal plane. Each valve, and the coupling of the four in each member is similar in construction with the exception only that the valve at one side in one member is formed with a projection, and the opposing one in the other member with a concavity for the engaging of members. Couplings having a greater number of valves may be similarly constructed. Fig. 6 shows an inverted plan of the platforms of two railway cars with the devices for guiding the couplings into alignment for engaging with each other. Fig. 7 shows a vertical section of the same. Fig. 8 shows the relative position of the couplings and multiple branched valve and pipes connected upon a dotted outline plan of a train of cars.

1 refers to the body of one member of a coupling, and contains four of the valves; 2 are cylindric chambers, in which sliding tubes 3 are fitted; each bearing a valve plug 4; attached braces or arms 5, and each plug 4 fitting in a conical seat 6, in the contracted end of each one of the cylinders 2; a series of ports 7 are made in the side of each of the cylinders 2 leading into a channel 8, surrounding the contiguous valve cylinders 2; in the tubes 3 are apertures 9 which register with the apertures 7 in the cylinders 2; when the valve 4 is closed in the seat 6, under which position of parts there is a free fluid communication between the cylinders 2; the ends of the valves 4 upon one member of the coupling are made with a conical or pyramidal projection 10 which engages in a correspondingly shaped concavity in the opposite valve 4, in the other member of the coupling, so that when the two parts of the coupling are brought together the projection 10 upon one valve centers itself in the other and opens above the valve it is connected with, and also the opposing valve, and causes the tubes 3 to close the ports 9 from communicating with the ports 7. To insure the closure of the valve and to guide the opposing couplings correctly



to position, wings of converging form marked 20, are placed upon opposite corners of each member of the coupling, which interlock; so that the guiding wings 20 of one member pass between the guiding wings of the other member, and are located on each member at diagonally opposite corners, thus leaving the wings and couplings ready for engagement irrespective of which end of the car is presented to the other. Helical springs 11 are placed inside of each of the cylinders 3 bearing against a shoulder 12 in the tubing 13 to which the flexible hose, 21, 22, 23 and 24, or other flexible tubes are attached by which means communication with the heating pipes in the cars is established.

At the forward part of the train, say upon the tender, or first car, or engine, is placed a valve, or stop 16, in which there are two pipes 17 and 18 leading respectively to and from the heated air supply, which may be connected alternatively to either of the four line pipes passing through the train, so that in one adjustment the outgoing current may be entirely through one pair of pipes and the incoming through another pair of pipes. Thus making optional the direction of the current, as either a heated current through one pipe of each pair, with a returning current through the other pipe, or the heated current from one pair returning through the return pipe of the other pair, and a corresponding connection of the other pair through the first pair, or the entire heating supply of air passing through both pipes of one pair, and returning through both of the pipes of the other pair. The location of the pipes couplings and valves are in relation to each other on the cars as indicated in the plan shown (in Fig. 13) of a train (the cars being shortened and drawn in dotted lines.) The hose 21 and 22 connect the upper and lower tubes 13 on one side of the coupling with the conduits 25 and 26 extending through each car and the hose 23 and 24 connect the other tubes 13 with the conduits 27 and 28. The coupling body 1 is suspended and guided elastically by guides 29 and spring 30 which permit vertical motion from a trolley 31 riding upon and guided by a curved rail 32, concentric with the pivotal attachment 35 of the track 36 with the car body. The trolley 31 is connected by guiding rods 33 and springs 34 with the car truck 36 so as to always present the coupling member 1 in position to engage a similar coupling member

in the next car irrespectively of whether the cars be upon a straight or curved track. The object of the springs 30 and 34 is to accommodate the coupling to the oscillations and vibrations of the car bodies.

The source of heat supply, and the form of heat radiating devices employed do not enter into this invention, and descriptions and showings of them are therefore omitted, the scope of this invention being the means of coupling and distributing and guiding the currents through the train and returning it to be reheated and of securing alignment of the parts of the coupling upon either straight or curved tracks.

Having described my invention what I claim is,

1. In a railway train heating system, the multiple couplings, the multiple conduits extending through the cars of a train, and the cylinders 2 inclosed in the said couplings and provided with ports 7, and channels 8, in combination with the tubes 3 having ports 9, the valves 4, and the spiral spring located in the said tubes, whereby the tubes are operated to open and close communication between the ports 7 and 9 as the cars are coupled and uncoupled respectively, substantially as set forth.

2. In a railway train heating system having parallel conduits for a returning circulation. A coupling of two members, each member having several valve chambers partitioned from each other, a valve in each chamber closing the end of each chamber when disconnected and open when connected to the other member, in combination with a channel of communication between the several chambers in each member, said channel having ports uncovered by the several valves when closed and covered by said valves when opened substantially as set forth.

3. In a coupling for conduits in trains of railway cars, having trucks pivotally attached to the bodies thereof, a coupling member adapted to engage in a corresponding member in an adjoining car, in combination with a guiding mechanism connecting said coupling, with the truck so as to participate in the angular motion of the truck substantially as set forth.

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Witnesses

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