

O. N. TERRY.
LOCOMOTIVE.

APPLICATION FILED MAR. 8, 1909.

936,582.

Patented Oct. 12, 1909.

3 SHEETS—SHEET 1.

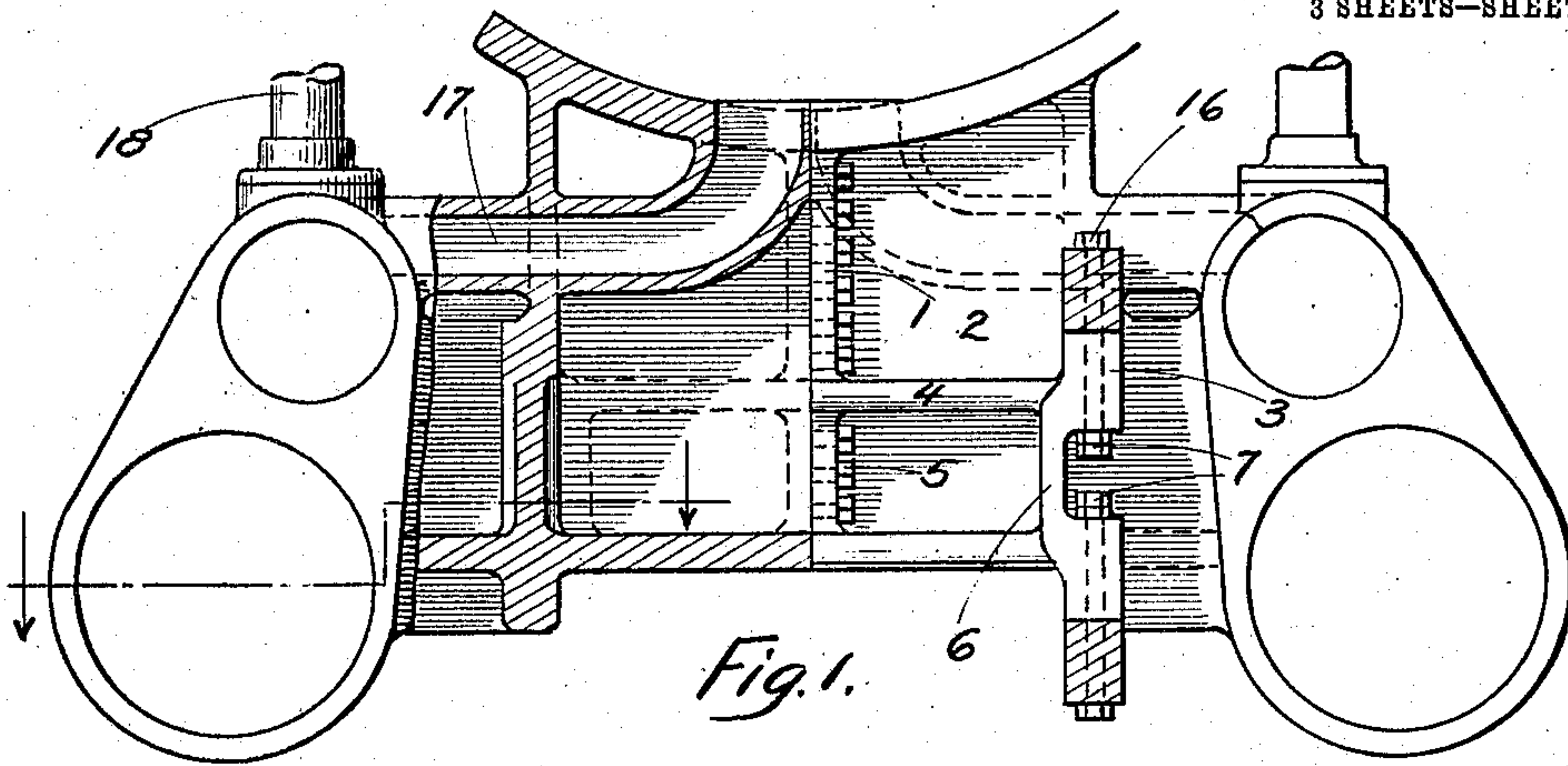


Fig. 1.

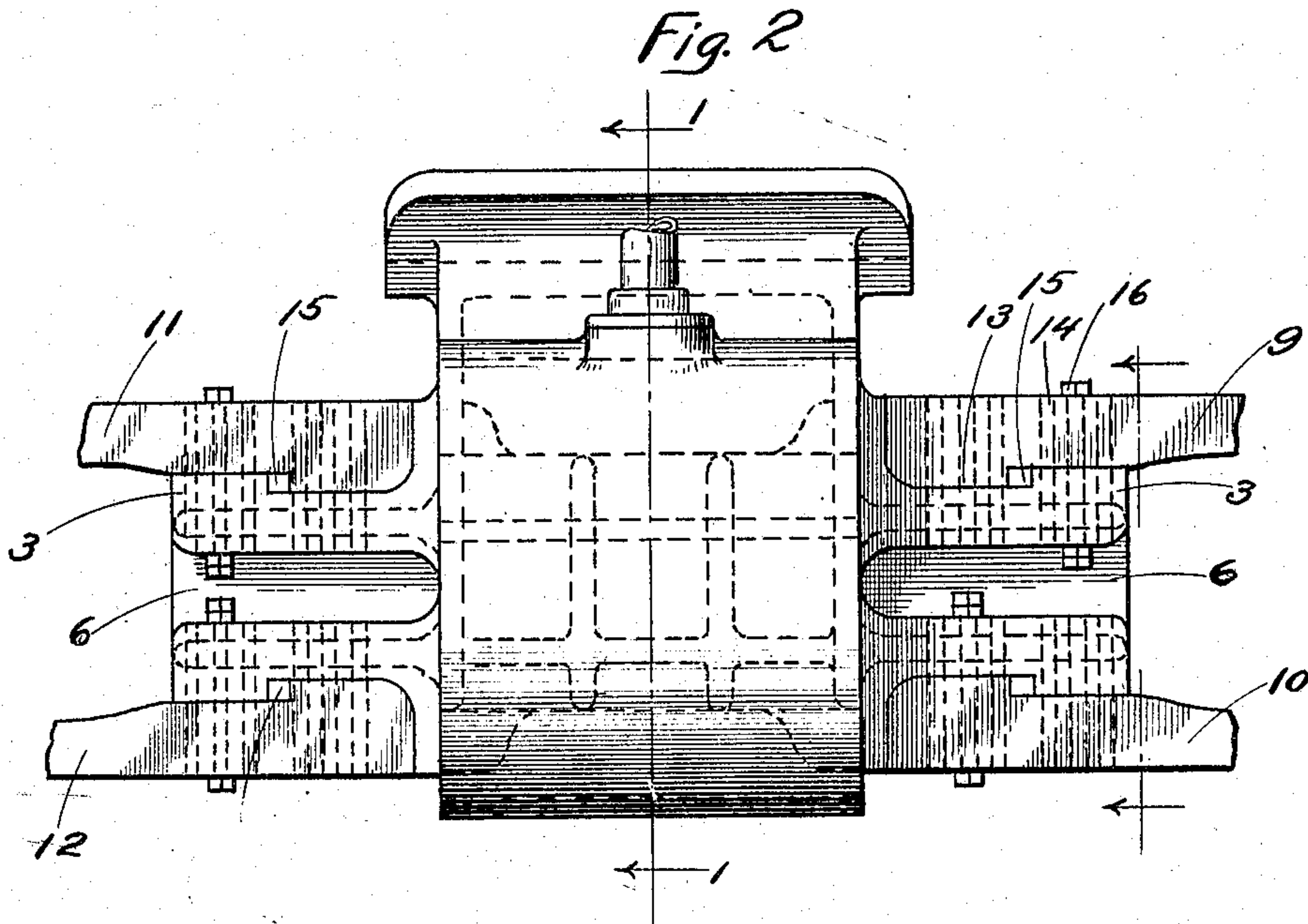


Fig. 2

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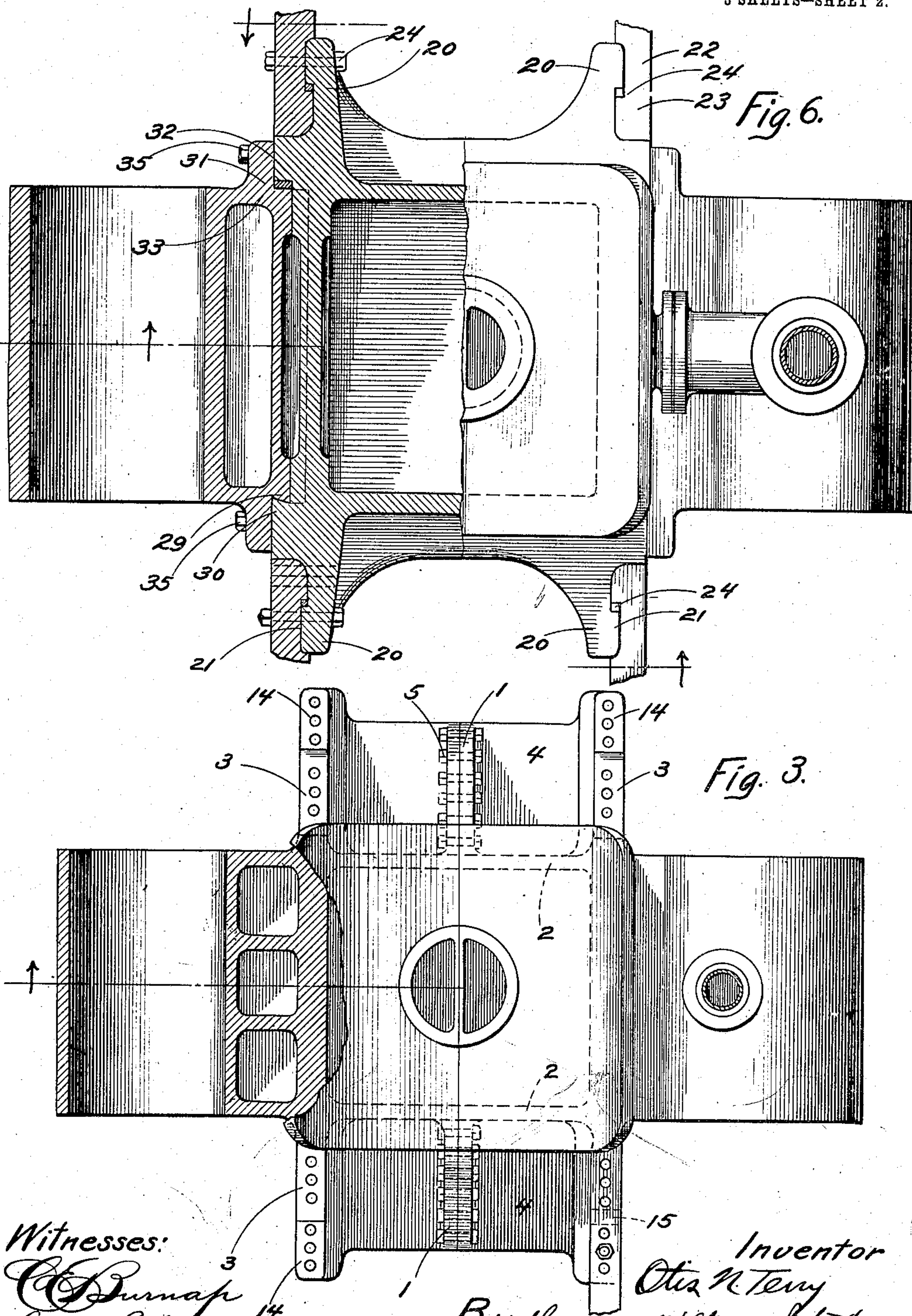
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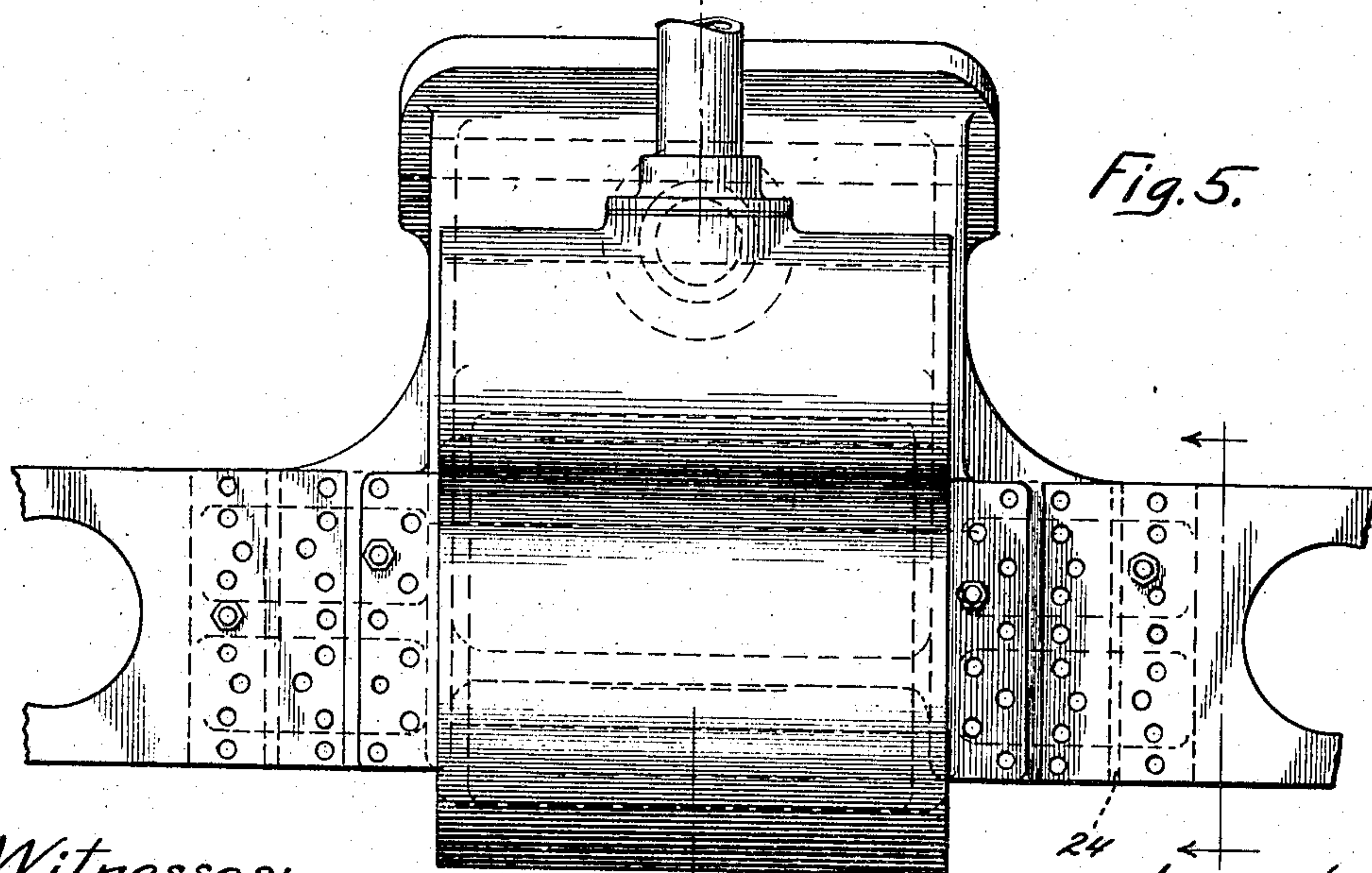
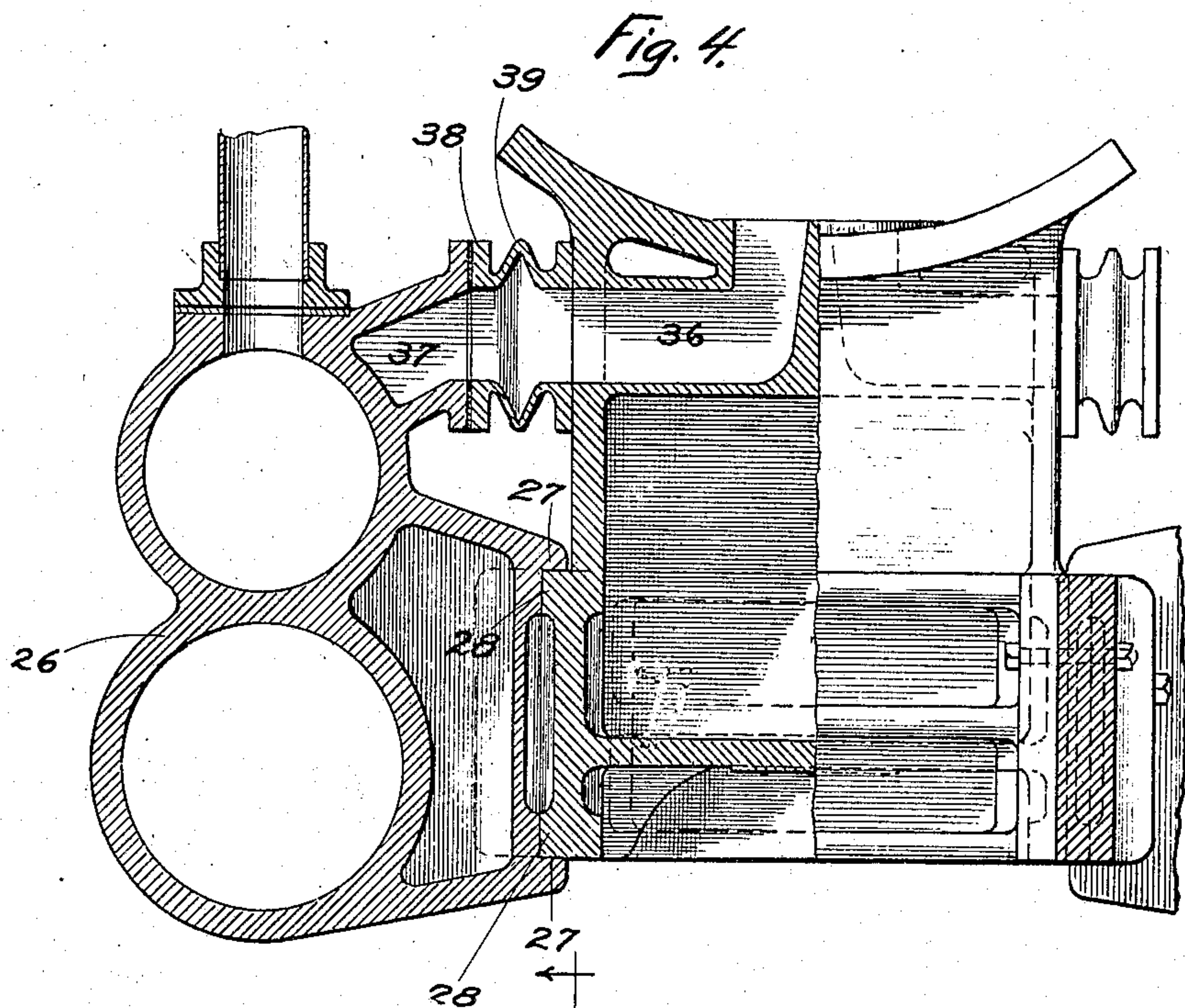
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

OTIS N. TERRY, OF LINCOLN, NEBRASKA, ASSIGNOR OF ONE-HALF TO JOHN G. CRAWFORD, OF CHICAGO, ILLINOIS.

LOCOMOTIVE.

936,582.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed March 8, 1909. Serial No. 481,878.

To all whom it may concern:

Be it known that I, OTIS N. TERRY, a citizen of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented certain new and useful Improvements in Locomotives, of which the following is a specification.

The object of my invention is to provide an improved locomotive frame and improvements in the manner of constructing and securing together the saddle, frame members and cylinder and steam chest castings.

One of the advantageous features of my invention is the utilization of the saddle as a part of the frame and so joining the other parts of the frame and the cylinder thereto as to facilitate the renewal of any of these parts without necessitating the complete dismemberment of the entire engine frame.

Another advantage resulting from my improved construction is that it renders the steam connections which are cored out of the saddle and steam chest shorter and more direct.

Other and further advantages of my invention will appear from the following description and claims taken in connection with the accompanying drawings in which—

Figure 1 is an end view of a locomotive saddle, frame members and cylinder and steam chest castings, the part of the figure at the left being a central section on the line F of Fig. 2, and the frame rails at the right being sectioned on the line G of Fig. 2. Fig. 2 is a side elevation of the structure shown in Fig. 1. Fig. 3 is a plan view of the structure shown in Fig. 1, the part at the left being in section on the line H of Fig. 1. Fig. 4 is a view corresponding to Fig. 1 showing the saddle constructed of a single casting and the cylinders and steam chests formed of separate castings secured thereto. The left-hand half of the structure shown in Fig. 4 is a central section on the line A, A of Fig. 5, and the frame member at the left, in this instance what is known as a slab end frame, being in section on the line B of Fig. 5. Fig. 5 is a side view of the structure shown in Fig. 4, and Fig. 6 is a plan view of the structure shown in Fig. 4, the left-hand half being shown in section through the cylinder.

The majority of locomotive engines as now built in this country are constructed with the cylinder and half of the saddle

made in one piece from cast iron. Some engines, however, are built with the cylinders separate from the saddle, the saddle being a single integral casting, all three parts being made of cast iron. In these forms of construction the frames of the locomotive are bolted to the saddle and are continuous from end to end of the locomotive. In some instances where the cylinders consist of separate castings the frames are bolted between the cylinder castings and the saddle. In all of these forms of construction the renewal of any one of the members mentioned is a matter of great inconvenience and necessitates the separation of the saddle, frame members and cylinders.

In my improved construction the saddle serves as an intermediate part of the engine frame, the forward extension frame members being secured to the front, and the rear frame members to the rear of the saddle, while the cylinders, if not made integral with the saddle, are secured to the sides thereof between the ends of the forward and rear frame members. By this means some economy of construction is secured, and in case of injury to any of the frame members it can be replaced without disturbing the other members, and when the cylinders consist of separate castings they also may be replaced without disturbing the frame. When the frame members are continuous from end to end of the locomotive, passing by and secured to the saddle, it is necessary to core the steam passages in the saddle and steam chest in such manner as to avoid the side frames, and this necessitates a circuitous passage which is disadvantageous in that it complicates the castings. In my improved construction in which the forward and rear frame members are secured to the front and back respectively of the saddle, leaving the sides of the saddle unobstructed, the steam passages may be formed along the most direct and convenient lines, thus to a considerable extent simplifying the form of the castings.

In Fig. 1 I illustrate a form of my invention in which the customary construction is followed to the extent of forming each of the cylinders integral with half of the saddle, the two halves of the saddle being bolted together. For the purpose of securing the separate halves of the saddle together I provide each half with flanges 1 projecting from

the front and back walls 2. At each side of the front and back end of the saddle I provide projecting lugs 3 reinforced by horizontal webs 4 also projecting from the end wall. The flanges 1 are continued along the meeting edges of the webs 4 and bolts 5 serve to hold the halves of the saddle securely together. The lugs 3 are offset about midway their height, as shown at 6 in Figs. 1 and 2, thus forming a channel upon the outer faces of the lugs, the top and bottom walls of which channel are in vertical alignment with the upper and lower surfaces of the lugs. Bolt holes extend from the upper and lower surfaces of the lugs to the channel referred to, and the channel is of sufficient width to accommodate the nuts 7 upon the bolts which pass through the upper and lower sections of the lugs and secure thereto the upper and lower rails 9, 10, 11 and 12 of the frame. For the purpose of securely holding the frame rails to the lugs I provide the ends of the rails and of the lugs with projections 13 and 14, the length of these projections being such as to leave keyways between them for the reception of keys 15 whereby the ends of the frame rails are forced into intimate contact with the saddle. The bolts 16 in connection with the keys 15 serve to hold the frame rails and lugs against relative movement in any direction.

By means of the construction above described the sides of the saddle are free and unobstructed by the side frames of the locomotive, thereby rendering it possible to provide a direct passage 17 from the steam chest through the saddle for the exhaust steam. In this construction the saddle forms an intermediate part of the engine frame instead of being, as is the usual practice, an extra member embraced between the continuous side frames. The live steam pipe 18 may be placed entirely outside of the smoke-box, or may be partly inside of the smoke-box and have the lower end project through a hole in the side thereof.

In Figs. 4, 5 and 6 I have illustrated a form of my invention in which the saddle is formed of a single integral casting with separate cylinders and steam chest castings secured thereto. The manner of attaching the side frames is generally similar to that above described, but in this instance I have illustrated a slab end frame. The saddle is provided with forwardly and rearwardly projecting lugs or flanges 20 provided at their ends with projections 21 forming a shoulder lying in a vertical plane and the frame members 22 are provided with projections 23 forming co-acting shoulders. The keys 24 are employed to drive the frame members into intimate contact with the ends of the saddle and bolts 25 secure the frames to the lugs 20.

The cylinder and steam chest castings 26 are formed with horizontal shoulders 27 which co-act with the upper and lower surfaces of projecting ribs 28 formed upon the sides of the saddle, and the saddle and cylinder are formed with vertical overhanging shoulders 29 and 30 which are forced into intimate contact by means of a key 31 received between vertical shoulders 32 and 33 upon the saddle and cylinder respectively. Bolts 35 serve to hold the cylinders to the saddle. An exhaust steam passage 36 is cored in the saddle and a communicating passage 37 in the steam chest. In order to avoid the difficulty of accurately fitting the end of the steam passage 37 to the end of the steam passage 36, I provide a flexible coupling member 38 adapted to be received between the steam chest and saddle at the point of junction of the passages 36 and 37. The flexible coupling 38 I preferably form of brass and provide it with an annular projecting rib 39 whereby the coupling may be readily compressed or expanded to accurately fit the space between the steam chest and saddle. The coupling is secured to the steam chest and saddle by means of bolts passing through suitable flanges. I construct the saddle of cast steel in order that it may effectually serve its function as a part of the engine frame. The cylinder and steam chest castings may be of cast iron as is the usual practice.

I would have it understood that I do not desire to limit myself to the precise construction and arrangement of parts shown in the drawings and herein described, as various modifications or alterations may be made without departing from my original invention.

I claim:

1. A locomotive frame comprising front and back members spaced apart longitudinally of the locomotive, and a saddle between said front and back members and secured thereto.
2. A locomotive frame comprising a saddle having forwardly and rearwardly projecting lugs, and front and rear frame members secured to said lugs.
3. A locomotive frame comprising a saddle having forwardly and rearwardly projecting lugs, front and rear frame members secured to said lugs, and cylinders secured to said saddle between the ends of said frame members.
4. A locomotive frame comprising a cast steel saddle having forwardly and rearwardly projecting lugs, front and rear frame members secured to said lugs, and cast iron cylinders secured to said saddle between the ends of said frame members.
5. A locomotive frame comprising front and back members spaced apart longitudinally of the locomotive, a saddle between

said front and back members and secured thereto, cylinders and steam chests at the sides of said saddle, said steam chests and saddle being provided with steam passages in the space between the ends of said front and back members.

6. In a locomotive a saddle having a cylinder and steam chest casting having a surface fitted and secured to said saddle, said steam chest and saddle being provided with

registering steam passages having their ends spaced apart, and a flexible pipe connecting the ends of said passages.

In testimony whereof, I have subscribed my name.

OTIS N. TERRY.

Witnesses:

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ORMAH R. MITCHELL.