Dec. 29, 1925. 1,567,387

F. J. RODE

EXPANDER FOR METAL BARREL HEADS

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Fig. 1

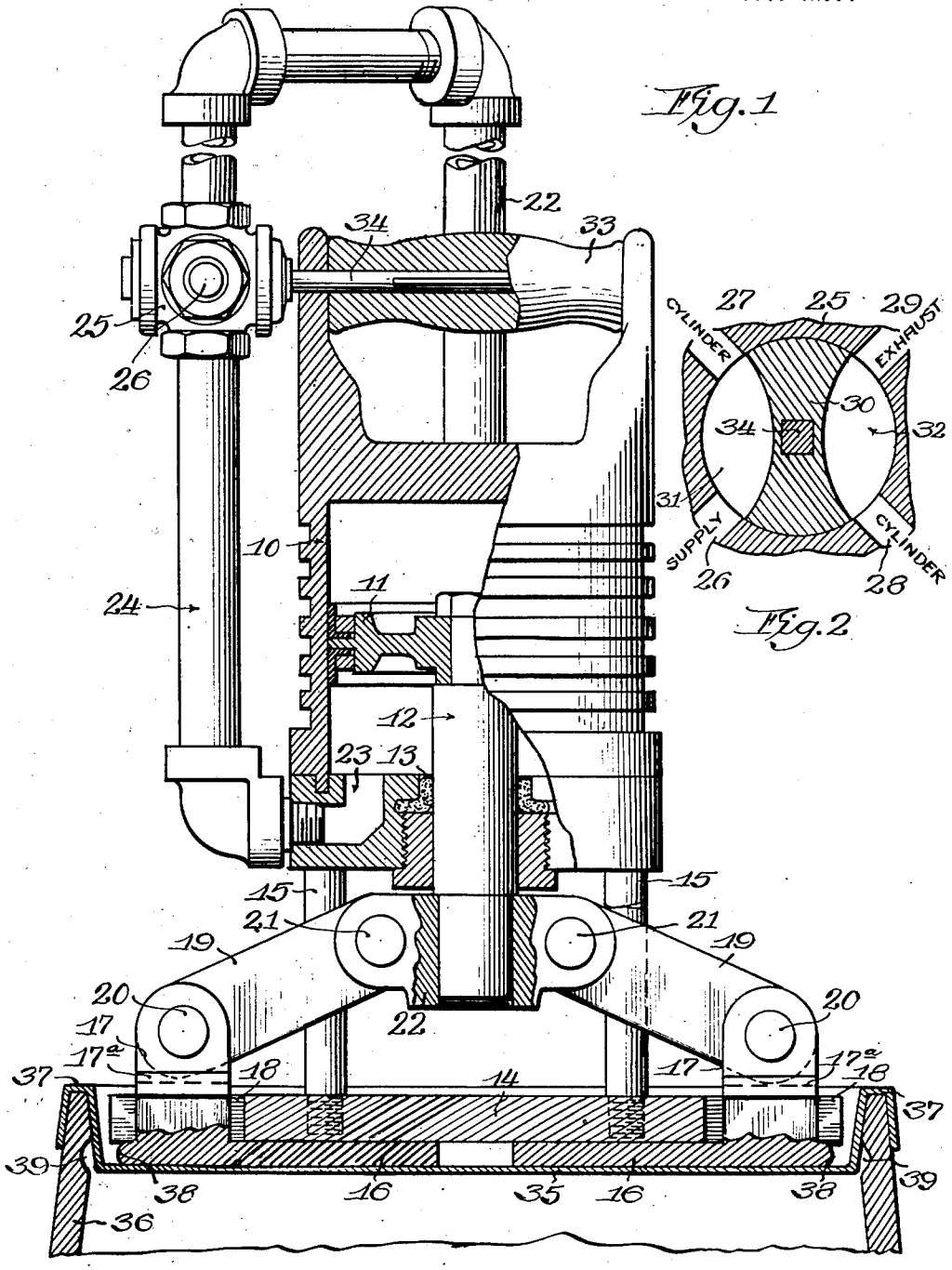






Fig. 2

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Fig. 3

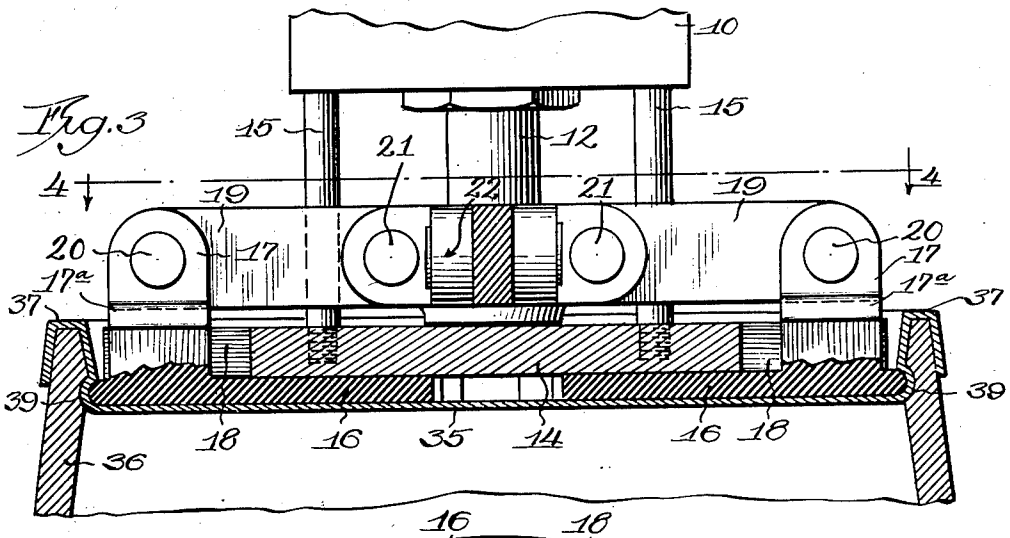
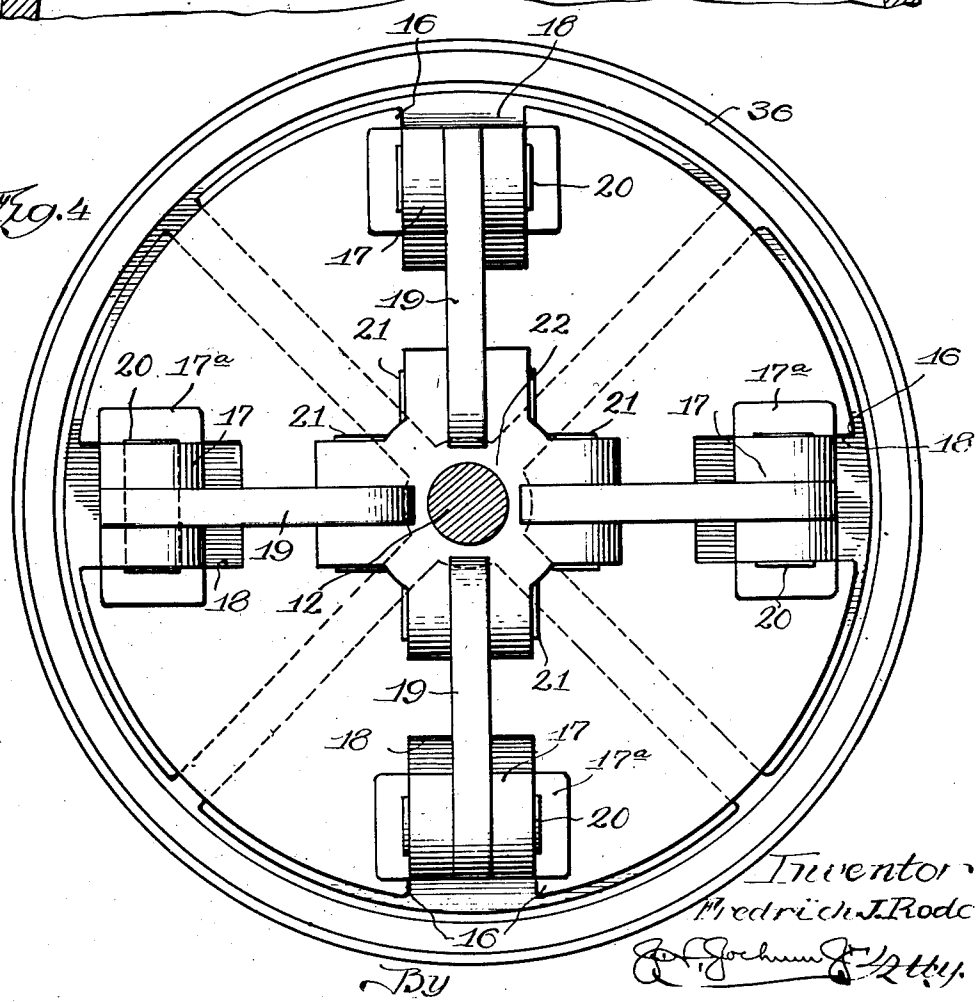



Fig. 4




Inventor
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# UNITED STATES PATENT OFFICE.

FREDRICH J. RODE, OF CHICAGO, ILLINOIS.

## EXPANDER FOR METAL BARREL HEADS.

Application filed August 9, 1924. Serial No. 731,042.

*To all whom it may concern:*

Be it known that I, FREDRICH J. RODE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Expanders for Metal Barrel Heads, of which the following is a specification.

This invention relates to expanders for metal barrel heads, and one of the objects of the invention is to provide an improved device of this character by means of the use of which metal barrel heads may be efficiently and expeditiously expanded for securing them in position on barrels, and in a single operation.

A further object is to provide an improved portable hand device adapted to be actuated by fluid pressure.

A further object is to provide an improved device of this character which will be of a simple and comparatively light construction and effective and efficient in operation.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination, and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings illustrating this invention and in which;

Figure 1 is a view partly in elevation, partly in section and partly broken away of a device of this character constructed in accordance with the principles of this invention.

Figure 2 is an enlarged detail sectional view of the controlling valve and ports.

Figure 3 is a view partly in elevation and partly in section of a portion of the expander showing the parts in a different position than the position they occupy in Figure 1.

Figure 4 is a sectional view taken on line 4—4 Figure 1 and Figure 3.

Referring more particularly to the drawings the numeral 10 designates a cylinder of any desired size and configuration and within which cylinder a piston 11 is reciprocable.

Connected with the piston 11 is a piston rod 12 which extends through one end of the cylinder to project therebeyond and a suitable packing 13 is provided to form a fluid tight joint between the piston rod and the end of the cylinder.

Connected with the cylinder and disposed therebelow is a suitable support 14, and the cylinder is supported thereby in any desired or suitable manner, preferably by means of upright bars or rods 15, suitably connected with the respective parts.

Arranged below the support 14 so as to slide thereagainst, are a plurality of expander members 16, any number of which may be provided, preferably four and they are preferably of a segmental configuration.

Individual to and connected with the members 16 are ears or uprights 17 which extend through suitable slots 18 in the support 14, the slots being of such a length that the reciprocation or movement of the members 16 with respect to the support 14 will not be interfered with. These ears project beyond the support 14 and are provided with flanges $17^a$ which engage and are movable upon the face of the support 14 and serve to assist in maintaining the members 16 against displacement with respect to the said support.

Link members 19 are pivotally connected by one end as at 20 respectively with the ears or projection 17. These links may be of any desired length and are also respectively pivotally connected as at 21, with a collar 22, which collar is connected with the piston rod 12 for reciprocation therewith. With this construction it will be manifest that when the piston rod 12 is reciprocated, carrying with it the collar 22, the expander members 16 will be moved with respect to the support 14 and toward and away from each other in directions transverse to the direction of reciprocation of the piston rod 12.

The piston 11 is adapted to be reciprocated in the cylinder 10 by fluid pressure, and to that end there is provided a suitable source of fluid supply (not shown). Communicating with the interior of the cylinder 10 preferably through one end thereof and on one side of the piston 11, is a fluid conductor pipe 22. Communicating with the cylinder 10 on the opposite side of the piston 11, such as by means of a passage 23 in the end of the cylinder, is a fluid conductor pipe 24. These pipes 22 and 24 have communication with a valve casing 25, the cas-

ing itself having an opening 26 which has communication with the source of fluid supply.

The valve casing is also provided with a port or passage 27 with which the pipe 22 has communication, and the valve casing is also provided with a port 28 with which the pipe 24 has communication, there being also provided an exhaust port 29 in the valve casing 25.

A valve 30 is rotatable in the valve casing and is provided with passages 31, 32 which are adapted, when the valve is properly rotated, to establish communication from the supply opening 26 with the openings 27, 28 to the cylinder on opposite sides of the piston. The valve 30 is also adapted through the ports 31 and 32, to connect the passages 27, 28 respectively with the supply opening 26 or the exhaust opening 29. The passages in the valve casing 25 and in the valve 30 are so arranged that proper connection may be established between the openings 27 and 28 and the exhaust opening 29.

Any suitable means may be provided for actuating the valve 30. To that end a handle 33 which is connected with the cylinder 10 for transporting the latter, may be used for that purpose. The handle 33 is rotatably mounted with respect to the cylinder 10. A stem 34 is connected with the valve 30 and is also connected with the handle 33 for rotation therewith, with the result that when the handle 33 is rotated about its axis with respect to the cylinder 10, the valve 30 will be correspondingly rotated.

In use, a metal end 35 is placed upon the barrel end 36, the end 35 being preferably provided with a flange 37 engaging over the edge of the barrel for supporting the end.

After the end has been placed in position on the barrel, the expander is placed in position so that the members 16 will contact with the face of the end 35. The valve 30 is then positioned so as to admit fluid into the cylinder 10 above the piston 11, and to connect the opening 23 in the end of the cylinder on the opposite side of the piston with the exhaust opening 29. Fluid then entering the cylinder on the upper side of the piston will force the piston downwardly or toward the opposite end of the cylinder. This will lower the collar 22 and through the medum of the links 19, the expander members 16 will be moved so that the peripheral edges 38 of the members 16 will force a portion of the metal 35 into the chine 39 of the barrel, thereby expanding a portion of the end and securing the end to the barrel, as shown in Figure 3.

The handle 33 is then rotated to position the valve 30 so that connection will be established between the lower end of the cylinder 10 through the port or passage 28 and the supply port thereby admitting fluid to the bottom of the cylinder. At the same time the valve 30 will establish communication between the port or passage 27 and the exhaust port 29 to exhaust the fluid from the top of the cylinder.

The pressure on the lower face of the piston will cause the piston to rise in the cylinder 10, and this will retract the expander members 16 from the position shown in Figure 3 to the position shown in Figure 1.

When the barrel is arranged uprightly it will be manifest that the expanding tool may be placed in position upon the end 35 to be supported thereby.

With this improved construction it will be manifest that there is provded a simple and efficient device for quickly and efficiently expanding a metal end and securing the same in position.

It will also be manifest that there is provided a compact device which will be easy to manipulate and which will be easy to handle.

While the preferred form of the invention has been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claims without departing from the spirit of this invention.

What is claimed as new is;

1. A barrel head expander including a cylinder and piston, a support for the cylinder, expander members adjacent and beneath the said support, said members having sliding contact with the said support, connections between the said piston and the respective said members above the said support for causing the members to move with respect to the support when the piston is moved in the cylinder, and means for causing the piston to be moved by fluid pressure.

2. A barrel head expander including a cylinder and piston, a supporting base for the cylinder, expander members adjacent and beneath the said support, said members having sliding contact with the said base, connections between the said piston and the respective said members for causing the members to slide with respect to the base when the piston is moved in the cylinder and in directions transverse to the directions of movement of the piston in the cylinder, means for causing the piston to be moved by fluid pressure, and valve mechanism for controlling the direction of flow of the fluid.

3. A barrel head expander including a cylinder and piston, a support for the cylinder, expander members adjacent and movable with respect to the said support, connections between the said piston and the respective said members for causing the members to move with respect to the support, when the piston is moved in the cylinder

and in directions transverse to the directions of movement of the piston in the cylinder, means for causing the piston to be moved by fluid pressure, a handle connected with the device, and valve mechanism operatively connected with the said handle for controlling the direction of flow of the fluid.

4. A barrel head expander including a cylinder, a supporting base for the cylinder, a piston movable in the cylinder, expander members adjacent and beneath the base and having sliding contact with the base, links pivotally connecting the said members with the said piston, said members being movable in directions transverse to the direction of movement of the piston in the cylinder, means for conducting fluid to opposite sides of the piston, and a valve device for controlling at will the direction of flow of the said fluid.

5. A barrel head expander including a cylinder, a support for the cylinder, a piston movable in the cylinder, expander members adjacent the support and movable with respect thereto, links pivotally connecting the said members with the said piston, said members being movable in directions transverse to the direction of movement of the piston in the cylinder, means for conducting fluid to opposite sides of the piston, a valve device for controlling at will the direction of flow of the said fluid, a handle for transporting the said device, said handle being rotatively connected therewith, and means operatively connecting the handle with the said valve.

6. A barrel expander head including a cylinder, a piston movable therein, a support for the cylinder, expander members disposed below the support and having sliding movement with respect thereto, formations on the said members and extending into the said base, links pivotally connected with the said formations on the members and with the piston, said members operating in directions transverse to the directions of movement of the piston in the cylinder, a fluid supply pipe leading into the cylinder on opposite sides of the piston, and a valve device for alternately supplying fluid to and exhausting it from the cylinder on opposite sides of the piston.

In testimony whereof I have signed my name to this specification, on this 7th day of August, A. D. 1924.

FREDRICH J. RODE.