

No. 715,665.

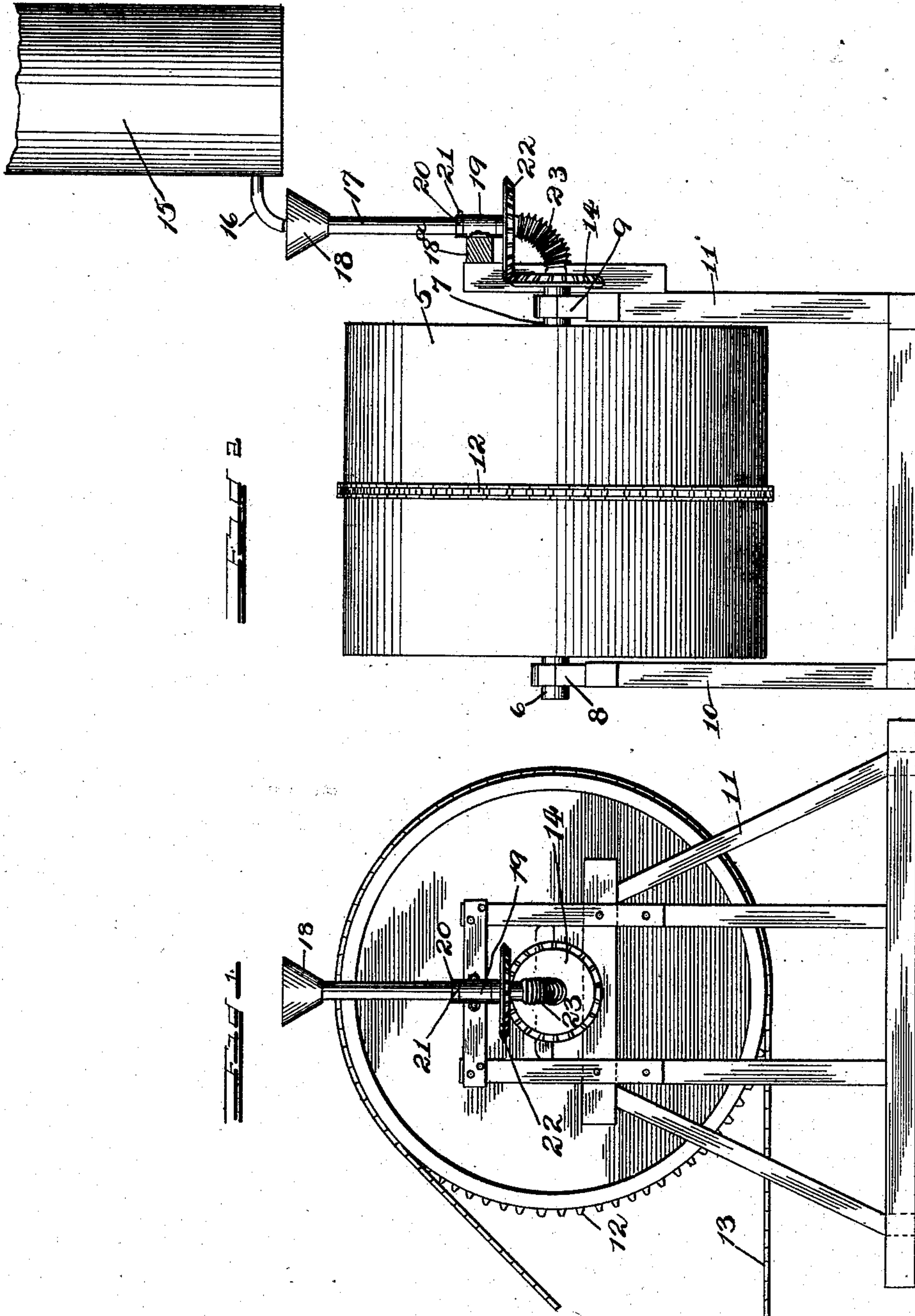
Patented Dec. 9, 1902.

O. H. & W. M. JEWELL.
CONNECTING APPARATUS FOR ROTARY RECEPTACLES.

(Application filed Jan. 13, 1902.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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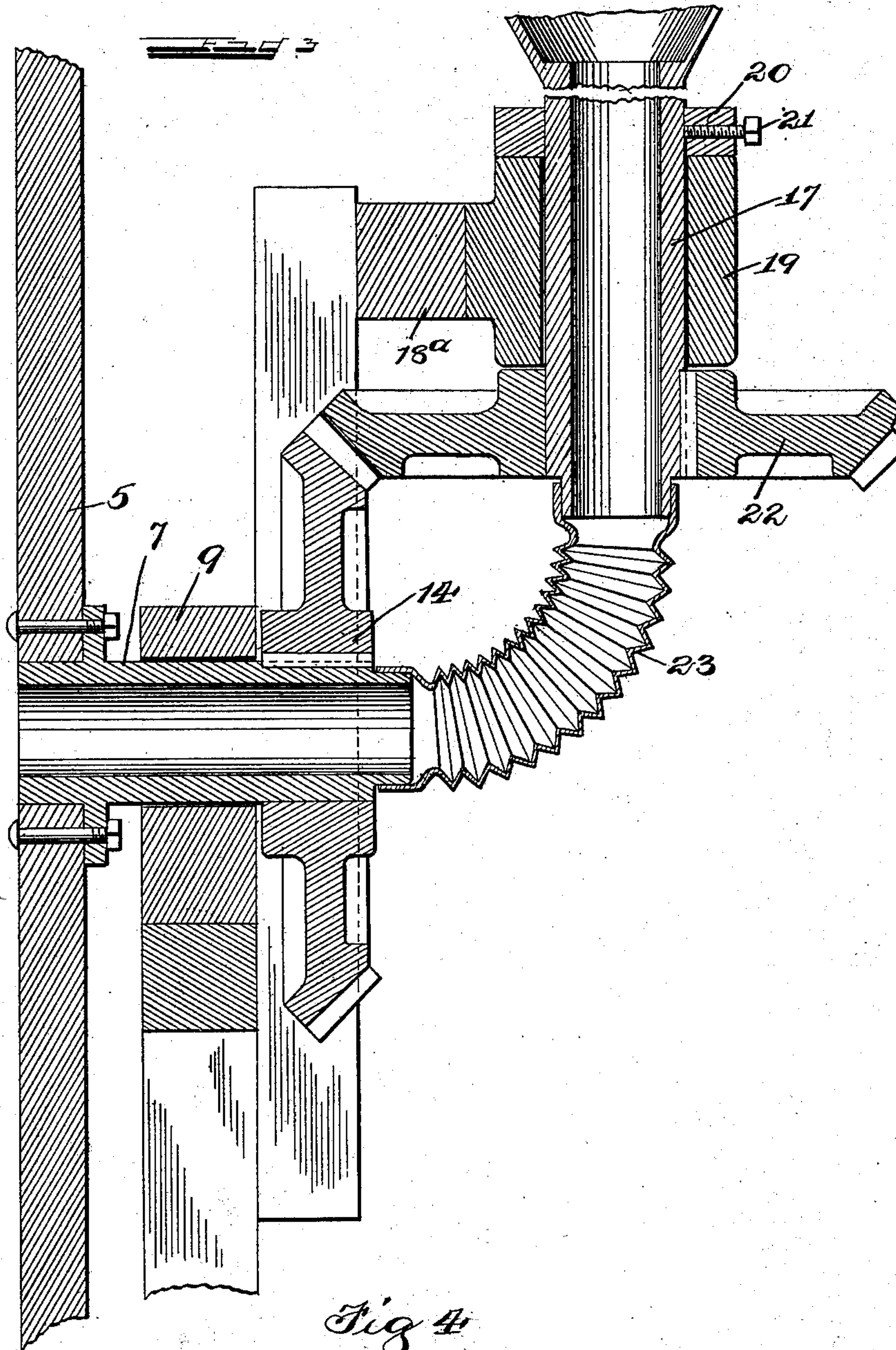
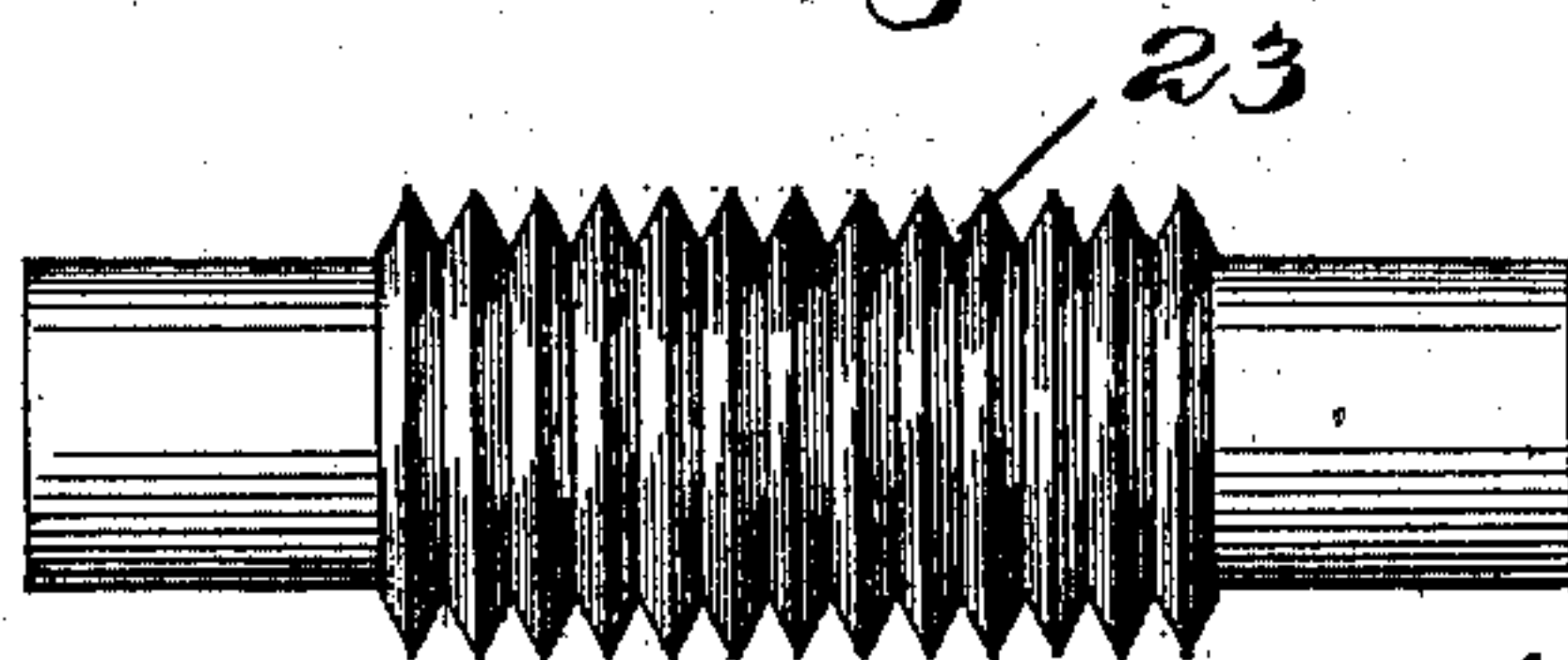


Fig 3



23

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UNITED STATES PATENT OFFICE.

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CONNECTING APPARATUS FOR ROTARY RECEPTACLES.

SPECIFICATION forming part of Letters Patent No. 715,665, dated December 9, 1902.

Application filed January 13, 1902. Serial No. 89,598. (No model.)

To all whom it may concern:

Be it known that we, OMAR H. JEWELL and WILLIAM M. JEWELL, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Connecting Apparatus for Rotating Receptacles, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to apparatus for conducting liquids or other substances to or from rotating tubes, pipes, cylinders, or other receptacles. It has special reference to the feeding or discharging of rotating receptacles with which it is impracticable to make connection by means of connecting devices lying altogether in the axis of the tube, cylinder, &c. In the drawings our improved apparatus is illustrated in connection with a rotating cylinder employed in the treatment of scrap-iron with sulfurous acid. The cylinder being filled to a greater or less extent with the scrap-iron, the sulfurous-acid solution is introduced into it while rotating through an axial inlet at one side, and the iron solution formed by the action of the sulfurous acid on the iron is discharged continuously through an axial outlet at the other side of the cylinder. The sulfurous acid to be used passes from a suitable reservoir or other source of supply into a funnel, whence it is conducted to the axial inlet of the cylinder, and it is in the connecting devices by which the funnel is connected with the cylinder so as to form a continuous conduit for the acid solution that the novel features of our apparatus are found.

It should be understood, of course, that we have illustrated and described our improvements in connection with the apparatus above referred to simply because such apparatus exemplifies one form in which the invention may be applied and that our invention is by no means restricted to use with apparatus of the character illustrated in the drawings, as it may be applied to a great many different uses.

We will now describe the apparatus illustrated.

What constitutes our invention is set forth in connection therewith, and is particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is an end elevation of the cylinder which contains the scrap-iron, illustrating also the feeding devices therefor. Fig. 2 is a side elevation thereof. Fig. 3 is an enlarged sectional detail, and Fig. 4 is a plan view of the flexible connection.

Referring to the drawings, 5 indicates the cylinder, which is mounted on trunnions 6 7, supported in suitable bearings 8 9, respectively, carried by supports 10 11. The cylinder 5 is provided with an annular rack 12 on its periphery, adapted to be driven by a link belt 13, as shown in Fig. 1. The trunnions 6 7 are hollow, as best shown in Fig. 3, and form the inlet and outlet of the cylinder. The trunnion 7 extends through the bearing 9, as shown in Fig. 3, and carries a beveled pinion 14, which is keyed thereupon and rotates therewith.

15 indicates a reservoir or tank adapted to receive a greater or less supply of the substance to be supplied to the cylinder 5. It is provided with a nozzle 16, which is adapted to discharge into a supply-pipe 17, carrying a funnel 18 at its upper end. In the construction shown in the drawings the pipe 17 is vertically disposed, being supported by a bracket 18^a, carrying a sleeve 19, which fits upon the pipe 17. A collar 20 is secured upon the pipe 17 above the sleeve 19, a set-screw 21 serving to adjustably secure said collar in place. By adjusting the collar 20 vertically on the pipe 17 the height of the pipe may be varied.

22 indicates a beveled pinion secured upon the lower portion of the pipe 17 and keyed thereto, said pinion being adapted to mesh with the pinion 14, carried by the trunnion 7, as shown in Fig. 3.

From the foregoing it will be seen that when the cylinder 5 rotates the pipe 17 will also be rotated by means of the pinions 14 and 22,

the respective axes of rotation of said cylinder and pipe being at right angles to each other. If it be desired to vary the angle of the pipe 17 to the trunnion 7, it may be accomplished by using properly-shaped pinions and providing a correspondingly - arranged bracket 18^a.

23 indicates a flexible tube, one end of which is fitted upon the projecting end of the trunnion 7, the other end being fitted upon the lower projecting end of the pipe 17, as best shown in Fig. 3. Said flexible tube 23 is plaited after the manner of an accordion, so that it is extensible and compressible longitudinally and is also flexible. By this means it adapts itself to the curve necessary to its being connected with the trunnion 7 and pipe 17, and it also accommodates itself to the rotation of said trunnion and pipe. Obviously different portions of the tube 23 are alternately expanded and compressed as the tube rotates, and by plaiting or folding said tube as illustrated such expansions or contractions are permitted without straining the tube. In practice, where the apparatus is to be used in connection with corrosive liquids, such as a sulfurous-acid solution, the tube 23 is made of rubber or some other material not attacked by the solution, and said tube may well be made of rubber in most instances, regardless of whether corrosive liquid is used or not.

By positively rotating the flexible connection through power applied to both its ends the connection is relieved of all strain, so that it may be much lighter and more flexible than would be the case if the power for rotating it were applied at one end only, since then considerable torsional strain would necessarily be sustained by the connection.

We have now described our invention as applied to feeding a liquid to a rotating cylinder. It must be understood, however, that it may also be employed for discharging liquid or other substances from a cylinder. The terms "cylinder" and "receptacle" as used by us are employed generically to indicate a tube, cylinder, or other receptacle or conduit with which it may be desired to make connection, our invention residing broadly in providing a connecting-conduit for making connection between a rotary pipe, cylinder, or other equivalent device and another pipe or other equivalent device, one or both of said pipes being arranged to rotate with said connection and being arranged at an angle to each other or with their axes out of alinement with each other.

Our invention is not restricted to the specific devices described except in so far as they are specifically claimed.

That which we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of a pipe, a rotary receptacle, a flexible connection connected to said pipe and to said rotary receptacle, for providing communication between said pipe

and said rotary receptacle through an axial passage, and means for applying power to both ends of said connection, for rotating it, substantially as described.

2. The combination of a pipe, a rotary receptacle, a flexible plaited connection connected to said pipe and to said rotary receptacle, for providing communication between said pipe and said receptacle through an axial passage, and means for applying power to both ends of said connection, for rotating it, substantially as described.

3. The combination of a pipe, a rotary receptacle having an axial passage arranged out of alinement with the axis of said pipe, and a rotary connection affording communication between and connecting said pipe and receptacle, substantially as described.

4. The combination of a pipe, a rotary receptacle having an axial passage arranged at an angle to the axis of said pipe, and a rotary connection connecting said pipe and receptacle, for providing communication between said pipe and said receptacle through said axial passage, substantially as described.

5. The combination of a pipe, a rotary receptacle having an axial passage arranged at an angle to the axis of said pipe, a connection connecting said pipe and receptacle, for providing communication with said receptacle through said axial passage, and means for applying power at both ends of said connection, for rotating it, substantially as described.

6. The combination of a pipe, a rotary receptacle having an axial passage arranged at an angle to the axis of said pipe, and a flexible plaited connection connecting said pipe and receptacle through said axial passage, substantially as described.

7. The combination of a pipe, a rotary receptacle having its axis arranged at an angle to the axis of said pipe, a plaited connection connecting said pipe and receptacle, and means for applying power at both ends of said connection, for rotating it, substantially as described.

8. The combination of a pipe, a rotary receptacle having its axis arranged at an angle to the axis of said pipe, means for rotating said receptacle and pipe in unison, and means connecting said pipe and receptacle, substantially as described.

9. The combination of a pipe, a rotary receptacle having its axis arranged out of alinement with the axis of said pipe, means for rotating said receptacle and pipe in unison, and a connection connecting said pipe and receptacle, substantially as described.

10. The combination of a pipe, a rotary receptacle having its axis arranged at an angle to the axis of said pipe, means operated by the rotation of said receptacle for rotating said pipe, and a connection connecting said pipe and receptacle, substantially as described.

11. The combination of a pipe, a rotary receptacle having its axis arranged at an angle

to the axis of said pipe, a hollow trunnion at one end of said receptacle, a pinion carried by said trunnion, a pinion carried by said pipe and meshing with said pinion carried by said trunnion, and a flexible connection connecting said pipe and trunnion, substantially as described.

12. The combination of a pipe, a rotary receptacle having its axis arranged at an angle to the axis of said pipe, a hollow trunnion at one end of said receptacle, a pinion carried by said trunnion, a pinion carried by said pipe and meshing with said pinion carried by said

trunnion, and a plaited connection connecting said pipe and trunnion, substantially as described. 15

13. A connecting device of the character described, consisting of a plaited conducting-tube open at its ends in combination with means for rotating said tube, substantially as described. 20

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