

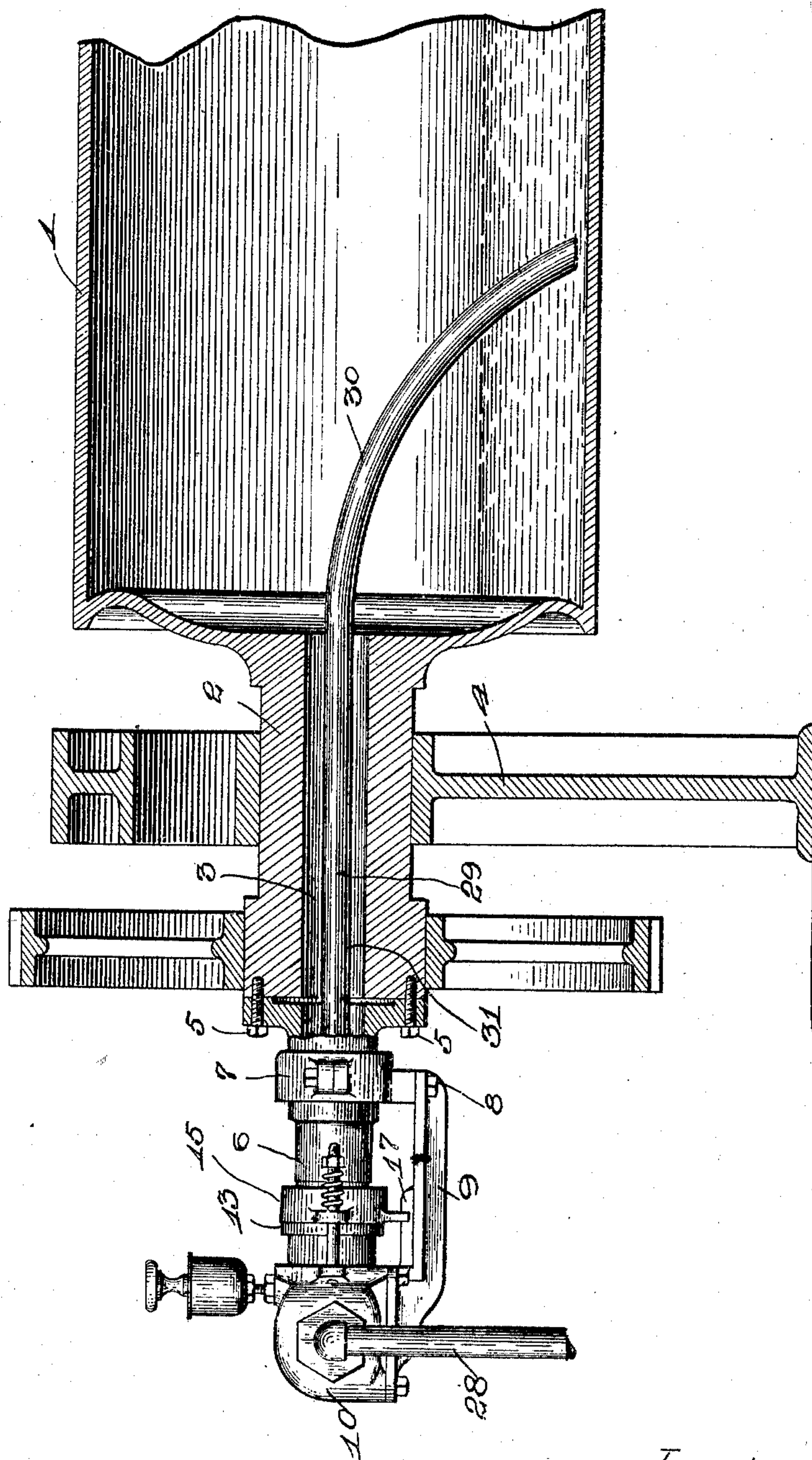
967,298.

F. L. ALLEN.
STEAM JOINT FOR ROTARY CYLINDERS.
APPLICATION FILED MAY 2, 1910.

Patented Aug. 16, 1910.

2 SHEETS—SHEET 1.

Fig. 1

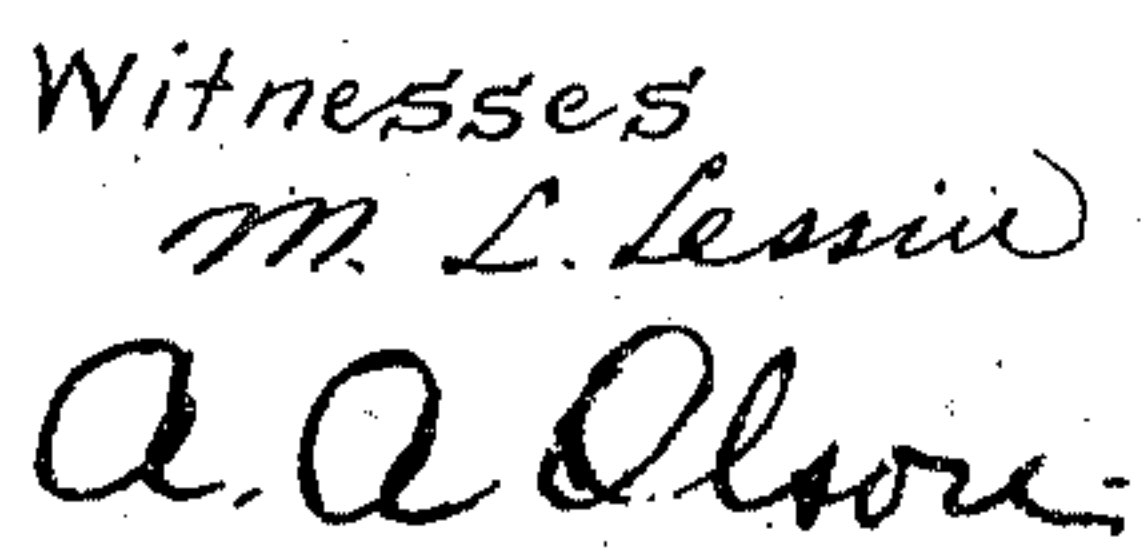


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2 SHEETS—SHEET 2.



THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANK L. ALLEN, OF UPPER ALTON, ILLINOIS.

STEAM-JOINT FOR ROTARY CYLINDERS.

967,298.

Specification of Letters Patent.

Patented Aug. 16, 1910.

Application filed May 2, 1910. Serial No. 558,894.

To all whom it may concern:

Be it known that I, FRANK L. ALLEN, a citizen of the United States, residing at Upper Alton, county of Madison, and State of Illinois, have invented certain new and useful Improvements in Steam-Joints for Rotary Cylinders, of which the following is a specification.

My invention relates to improvements in steam-joints and more particularly to that class thereof designed for employment in conjunction with the rotary cylinders of paper-web drying machines.

The object of my invention is the provision of a steam-joint of the character mentioned which will be of durable construction and efficient in operation.

Other objects will appear hereinafter.

With these objects in view my invention consists in a steam-joint characterized as above mentioned and in certain details of construction and arrangement of parts all as will be hereinafter fully described and more particularly pointed out in the appended claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a central section of an end portion of a rotary cylinder having a steam connection shown in elevation embodying the preferred form of my invention, Fig. 2 is a diametrical longitudinal section of the connection, Fig. 3 is a bottom plan view thereof, and Figs. 4 and 5 are transverse sections on lines $x-x$ and $y-y$ of Fig. 2.

Referring now to the drawings, 1 indicates the end of a rotary cylinder, such as is used in a paper-web drying machine and 2 the co-axial journal thereof through which is formed the co-axial passage 3, said journal being mounted in a bearing bracket 4. Having its flanged end secured as by bolts 5 to the outer end of the journal 2 is a co-axially arranged tubular extension 6 which forms a part of said journal. The extension 6 is mounted at its rearward end in a two-part bearing ring 7 which is longitudinally slidable thereon, the same being rigidly secured, by means of bolts 8 to a

base 9. The outer end of said extension 6 is incased by and journaled in a pipe coupling 10 which is rigidly secured by bolts 10' to the opposite end of the base member 9; the extremity 11 of said extension being conically ground for tight seating in a ground annular seat 12 formed for the reception thereof in said coupling. Encircling the extension 6 is a snugly fitting two-part thrust collar 13 one extremity of which is adapted to engage against a circumferential shoulder 14 formed upon said extension. Said collar 13 is encircled by a snugly fitting annular retainer 15, one extremity of which engages a circumferential shoulder 16 formed upon said ring, the member 15 being held against rotary movement by means of a projecting flange 17 formed upon the upper side of the base 9, said flange being engaged by a slot 18 formed in the under side of said retainer. Formed at the opposite sides of the member 15 are perforated lugs 19 through which project pins 20, said pins being secured at their outer extremities to the member 10, the same projecting therefrom parallelly with the axis of the bore of said extension. Threaded upon the free ends of said pins are nuts 21, between which and the lugs 19 are interposed coiled compression springs 22. By screwing or unscrewing said nuts the tension of said springs may evidently be adjusted as desired. With this arrangement it will be seen that a constant pressure will be exerted upon the members 6 and 10 tending to force said members together; the extremity 11 of the member 10 being thereby held in forced contact with the seat 12 and whereby a steam-tight connection will be constantly maintained. Threaded in the upper side of the member 10 is a lubricator 23, the oil passage 24 leading therefrom terminating at the seat 12 and whereby the lubrication of said seat and the surface 11 is effected. An oil hole 25 is also provided in the upper side of the ring 7 which communicates with a circumferential groove 26 provided in the bearing surface thereof, and whereby the lubrication of said surface may be readily effected.

Formed within the member 10 is an in-

tegral elbow 27, the outer end of the passageway through the latter terminating at one side of said member 10. Communicating with said end of said passageway is a discharge or drain pipe 28. Having its outer end in threaded connection with the inner end of the elbow 27 is the siphon pipe 29 which extends co-axially through the extension 6 and the journal 2 terminating at its inner downwardly bent portion 30 in close proximity with the bottom of the cylinder. An annular steam passage 31 is thus formed through the journal 2, extension 6, and the member 10, said passage communicating at its inner end with the interior of the cylinder and at its outer end with the steam inlet 32 in the member 10.

33 indicates a steam supply pipe.

The operation of the device is as follows: Steam is admitted through the pipe 33 into the member 10 whence it passes through the passage 31 to the interior of the cylinder which is constantly rotated. The water of condensation will accumulate at the lowest point of the cylinder around the mouth of the pipe 29 and through the medium of which it will be siphoned therefrom and delivered to the discharge pipe 28.

With the arrangement set forth rotation of the extension 6 in the member 10 and bearing 7 will evidently be permitted, the latter being held stationary by the base 9. The arrangement is such, however, that although rotation of said extension is permitted a steam-tight connection between the same and the coupling 10 will be maintained, since, through the medium of the base 9, said parts will always be held in axial alinement, and through the medium of the springs 22, constant seating of the extension in said coupling is effected. The siphon pipe 29 being in threaded connection with the integral elbow 27 in the member 10 is thus rigidly supported by the latter, and said member 10 and the extension 6 and consequently journal 2 being always held in axial alinement by means of the base 9, as above mentioned, it will be seen that said pipe 29 will always remain in the same relative position in the passage 31, that is, centrally therein; thus preventing rubbing and wearing thereof because of contact with the walls of said passage 31 and especially the inner end of the latter. A serious fault found in devices of this character in use at the present time is thus obviated.

While I have shown what I deem to be the preferable form of my invention I do not wish to be limited thereto as there might be various changes made in the details of construction and arrangement of parts described without departing from the spirit of the invention comprehended within the scope of the appended claims.

Having described my invention what I

claim as new and desire to secure by Letters Patent is:

1. In a device of the class described, the combination of a cylinder having a tubular journal; a pipe coupling swiveled to the outer end of said journal, said coupling comprising an outer casing having a steam supply opening leading to the interior thereof and an integral pipe elbow having one leg opening at one side of said casing and the other leg opening opposite the axis of said journal; a drain pipe connected with said first mentioned leg; and a siphon pipe threaded in the other leg and extending axially through said journal into said cylinder, substantially as described.

2. In a device of the class described, the combination of a cylinder having a tubular journal; a pipe coupling swiveled to the other end of said journal; a supplemental bearing on the inner portion of said journal; a rigid connection between said supplemental bearing and said coupling; a siphon pipe connected with said coupling and extending into said cylinder through said journal; a steam supply connection for said coupling; and a drain connection for said siphon pipe, substantially as described.

3. In a device of the class described, the combination of a cylinder having a tubular journal; a pipe coupling swiveled to the other end of said journal, said coupling comprising an outer casing having a steam supply opening leading to the interior thereof and an integral pipe elbow having one leg opening at one side of said casing and the other leg opening opposite the axis of said journal; a supplemental bearing on the inner portion of said journal; a rigid connection between said supplemental bearing and said coupling; a siphon pipe connected with said last mentioned leg of said elbow and extending into said cylinder through said journal; a steam supply connection for said coupling; and a drain connection for the other leg of said elbow, substantially as described.

4. In a device of the class described, the combination of a cylinder having a tubular journal extension provided with a conically ground end; a pipe coupling having a ground seat for said extension end, the said coupling comprising an outer casing having a steam supply opening leading to the interior thereof and an integral pipe elbow having one leg opening at one side of said casing and the other leg opening opposite the axis of said journal; a drain pipe connected with said first mentioned leg; a siphon pipe threaded in the other leg and extending axially through said journal into said cylinder; a collar swiveled to said extension; perforated ears on said collar; threaded pins carried by said coupling and passing through said ears; springs on said

pins beyond said ears; nuts on said pins beyond said springs; a supplemental bearing on the inner portion of said extension; a rigid connecting member secured to said coupling and said supplemental bearing; and a sliding connection between said collar and said connecting member, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of 10 two subscribing witnesses.

FRANK L. ALLEN.

Witnesses:

W. L. PERRY,
CHAS. E. MEGOWEN.