

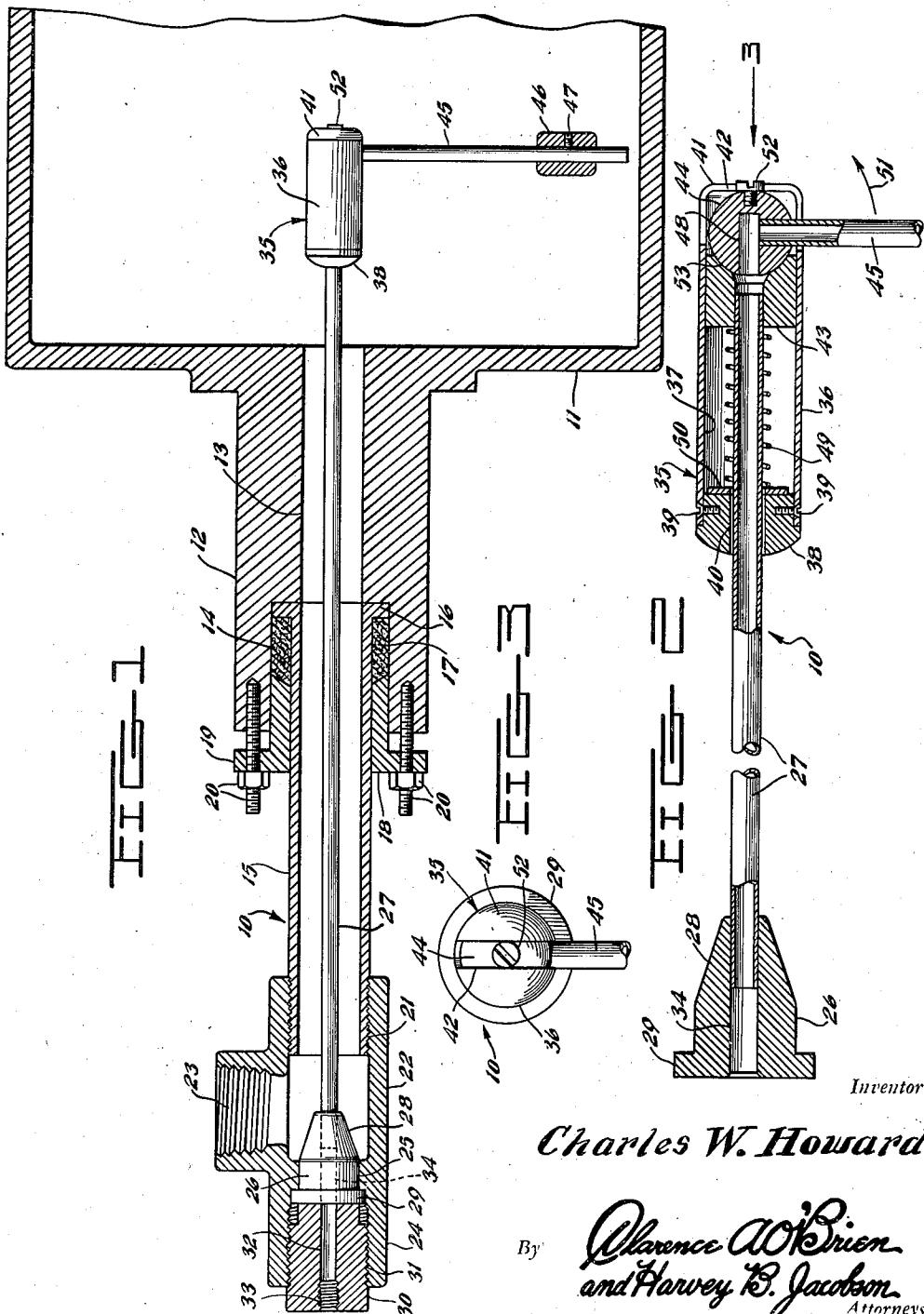
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PIPE JOINT

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## UNITED STATES PATENT OFFICE

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## PIPE JOINT

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This invention relates to new and useful improvements and structural refinements in siphons, more specifically, in siphons such as are employed in association with drying cylinders or rolls of paper making machines, or the like, and the principal object of the invention is to provide a device of the character herein described, which may be easily and conveniently inserted into the drying roll and which may be removed therefrom with equal expediency.

The drying roll herein referred to usually assumes the form of a horizontally disposed, hollow cylinder which is rotatably mounted and into which steam is admitted for the purpose of drying the paper, or the like, passing therearound. When the roll is in operation, a considerable amount of steam condenses into water which gathers in the lower portion of the roll, thereby impairing the efficiency of the drying process.

It is thus apparent that means must be provided for removing the accumulated water from the drying rolls, and for this purpose, several siphoning devices are in existence which communicate with the interior of the roll through the medium of a steam passage formed in the roll journal. However, since the journal is, of course, axially disposed with respect to the roll, considerable difficulty has been experienced in inserting the siphon through the axially disposed journal passage and establishing communication with the body of water accumulated in the lower portion of the roll. Additional difficulties were also encountered in reducing the size of the siphon so as to prevent interference with free passage of steam.

It is, therefore, a further object of the invention to eliminate the disadvantages above set forth and to provide a siphon which is simple in construction, dependable in operation, and which may be easily manipulated.

Another object of the invention is to provide a siphon which will not easily become damaged and which is otherwise well adapted for the purpose for which it is intended.

With the above more important objects in view, and such other objects as may become apparent as this specification proceeds, the invention consists essentially of the arrangement and construction of parts as illustrated in the accompanying drawings, in which:

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Figure 1 is a cross sectional view of the drying roll, showing the invention in situ therein.

Figure 2 is a cross sectional view of the invention per se, and

5 Figure 3 is an end view, taken in the direction of the arrow 3 in Figure 2.

Like characters of reference are used to designate like parts in the specification and throughout the several views.

10 Referring now to the accompanying drawings in detail, the invention consists of a siphon designated generally by the reference character 10, the same being associated with a cylindrical drying roll 11. Only one end portion of this roll is shown in the drawings, and it will be noted that the roll is provided with a journal 12, the latter in turn, being formed with an axial steam passage 13, counter-bored at the outer end thereof as at 14.

A steam duct, assuming the form of a length 20 of pipe 15, is provided at one end thereof with an out-turned flange 16, the latter being receivable in the counter-bore 14. It will be observed that the duct 15 constitutes a continuation of the passage 13 and a suitable packing gland 17 and a packing sleeve 18 are also positioned in the counter-bore, to prevent leakage of steam. The gland 17 is, of course, located between the flange 16 and the sleeve 18, and the latter is formed with a flange 19, whereby the packing gland may be properly compressed by means of a plurality of screws and nuts 20.

The free end of the duct or pipe 15 is screw threaded as at 21 into one arm of a T-coupling 22, the laterally projecting arm 23 of the coupling communicating with a source of steam.

35 The remaining arm 24 of the T 22, that is, the arm which is longitudinally aligned with the duct 15, is formed with an annular seat 25, this being adapted to removably receive a cylindrical collar 26 secured to one end of a substantially straight

40 tube 27. The collar 26 is formed at one end thereof with a frusto-conical nose-piece 28, while its remaining end is provided with an enlarged head 29. The latter also engages the aforementioned seat 25 and the nose-piece 28 facilitates insertion of the collar 26 into the seat, as will be clearly understood.

A retaining nut 30, screw threaded as at 31, is positioned in the arm 24 of the T 22 and effectively maintains the collar 26 in the seat 25 by bearing 50 against the head 29. It will be noted that the nut

30 is provided with an outlet passage or bore 32 which communicates with the tube 27 and is screw threaded at the outer end thereof as at 33. A suitable hose, or the like (not shown) may be secured in the threaded portion 33 for exhausting or siphoning the water through the tube 27, as will be hereinafter more clearly apparent. The nut 26, as a whole, is, of course, also provided with a central bore or passage 34, whereby the communication of the bore 32 with the tube 27 is 10 facilitated.

The tube 27 extends in a spaced relation through the duct 15 and through the passage 13 into the roll 11 and carries at its inner end a swivel head designated generally by the reference character 35. This head consists of a substantially cylindrical body 36 formed with a longitudinal bore 37 and provided at one end thereof with a cap 38.

The cap 38 is removably secured to the body 36 by a plurality of screws 39 and is also formed with an axial passage 40 through which the tube 27 may freely pass into the bore 37.

The remaining end of the body 36 constitutes what may be referred to as a socket member 41 and is formed with a diametrically extending slot or recess 42. A further socket member 43, assuming the form of a simple plunger, is slidably and rotatably positioned in the bore 37 and is rigidly mounted at the inner end of the tube 27, as will be clearly apparent from the accompanying drawings.

A ball or sphere 44 is positioned between the socket members 41 and 43 and is rigidly mounted at one end of a suction pipe 45. This pipe projects outwardly from the body 36 through the aforementioned slot or recess 42 and a suitable weight 46 is adjustably secured to the pipe 45 by means of a set screw 47.

The pipe 45 normally depends downwardly from the head 35 by virtue of the weight 46, and when in this position, the pipe communicates with the aforementioned tube 27 through the medium of a passage or bore 48 provided in the ball 44.

Means are provided for urging the socket member 43 and the ball 44 against the socket member 41, said means consisting of a coil spring 49 positioned on the tube 27 between the member 43 and a flat washer 50, the latter bearing against the inner end of the cap 38.

It will be readily understood that the pipe 45 is movable in the socket members 41, 43 in the direction of the arrow 51, whereby the pipe 45 may be longitudinally aligned with the tube 27. To maintain the bore 48 in alignment with the tube 27 when the device is in the position shown in Figure 2, and to guide the pipe 45 in its movement as shown by the arrow 51, a set screw 52 is provided on the ball 44, the head of this screw engaging the slot 42.

When the invention is placed in use, the device is assembled as illustrated in Figure 1 and it will be observed that during the assembly step, the insertion of the siphon into the roll 11 is facilitated by simply placing the pipe 45 in longitudinal alignment with the tube 27 and passing the same through the T 22, the duct 15, and the passage 13 into the drying roll.

As soon as the head 35 emerges from the inner end of the passage 13, the weight 46 will automatically lower the pipe 45 to the vertical position as shown, thereby establishing communication between the tube 27 and the pipe 45, as will be clearly understood. It will be also noted that the free extremity of the pipe 45 is disposed adjacent the lateral wall of the roll 11, so that the siphoning of water from the lower portion of the roll is facilitated.

The aforementioned socket member 43 is formed with a seat 53 which is complementary to the ball 44 and this feature, together with the provision of the spring 49, will prevent leakage 15 of steam or water through the flexible joint thus formed.

After the siphon has been installed in position, the collar 26 will engage the seat 25 as has already been explained, and the entire device is 20 securely retained together by the aforementioned nut 30.

It is believed that the advantages and use of the invention will be clearly understood from the foregoing disclosure and accordingly, further 25 description thereof at this point is considered unnecessary.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor 30 changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What I claim as my invention is:

1. In a drying roll siphon including a suction pipe and a delivery tube, a joint comprising a tubular body forming a socket in one end thereof, said socket being provided with a slot extending diametrically of said body, said pipe extending through said slot, a ball movable in said socket and secured to said pipe, said tube extending through the remaining end of said body and communicating with said pipe through the medium of said ball, and a spring-pressed follower in said body in engagement with said ball.

2. The device as defined in claim 1 wherein said ball is formed with a pair of connecting radial passages disposed substantially at right angles to each other, one of said passages communicating with said pipe and the remaining passage communicating with said tube, and a detent provided on said ball and engaging said slot.

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