(No Model.)

M. J. ROACH.

STEAM PIPE JOINT FOR ROTARY PAPER DRYING CYLINDERS, &c.

No. 325,972. Patented Sept. 8, 1885.

Fig. 1.

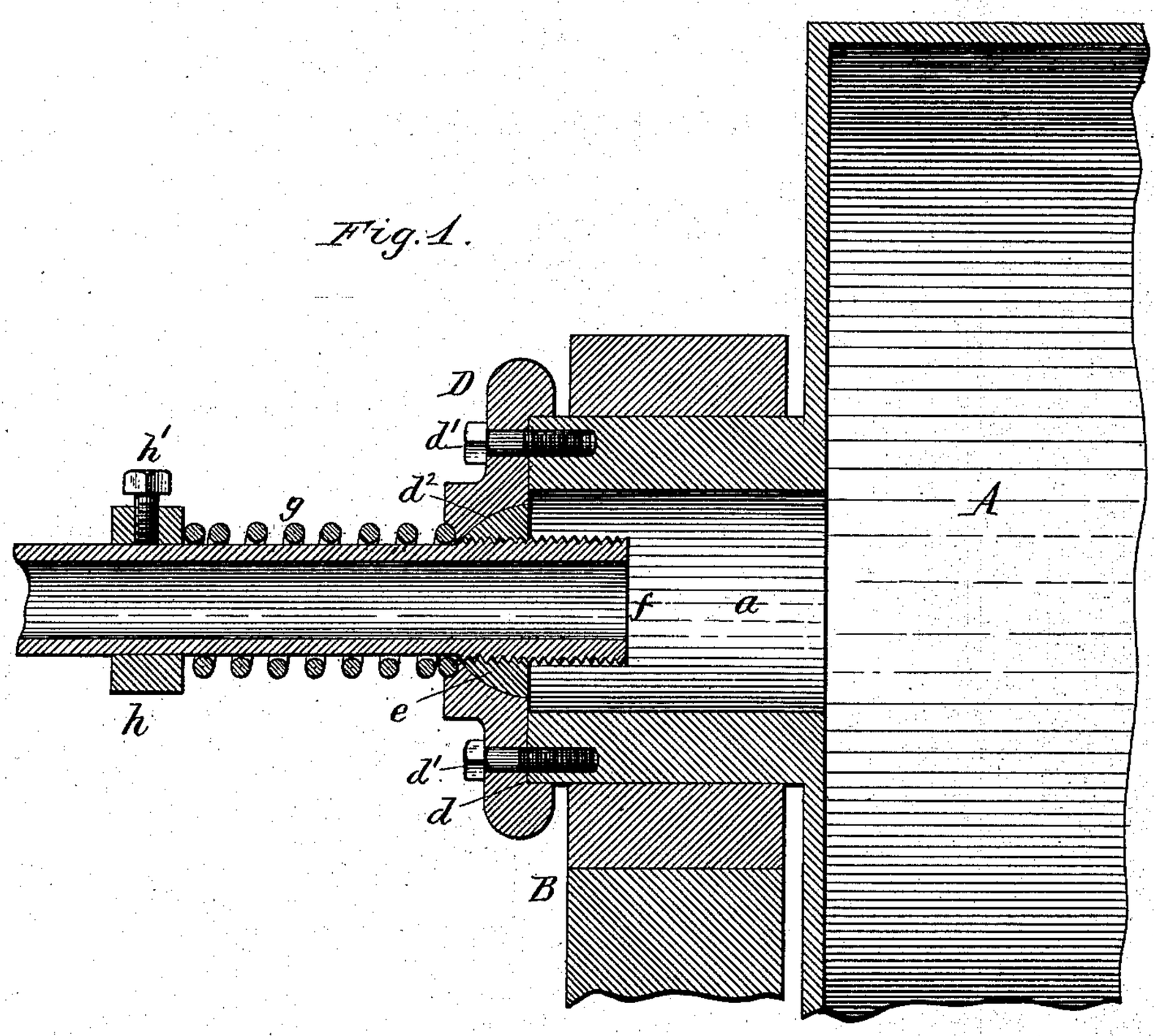


Fig. 2.

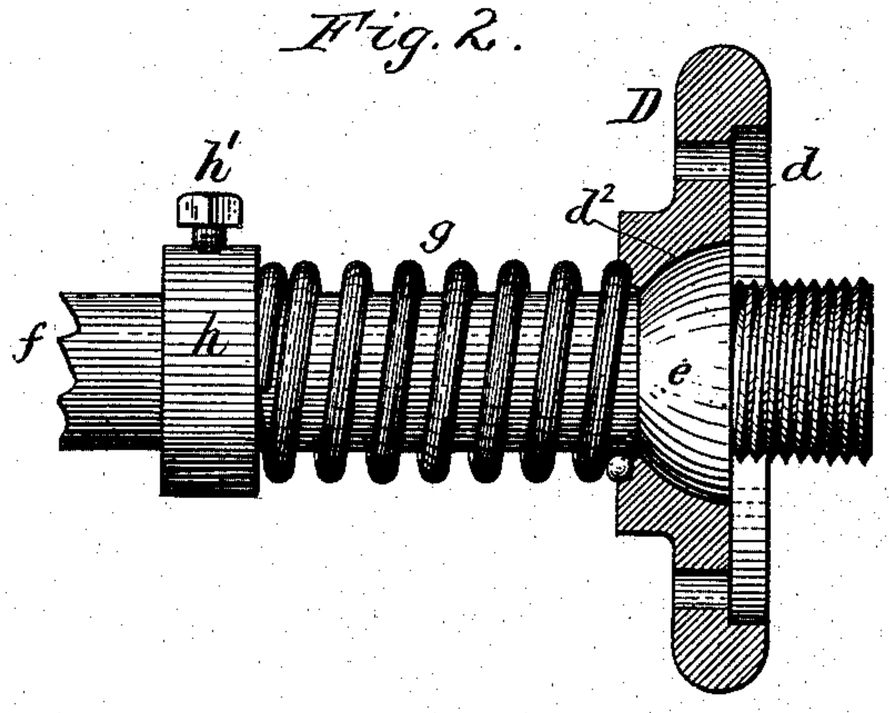
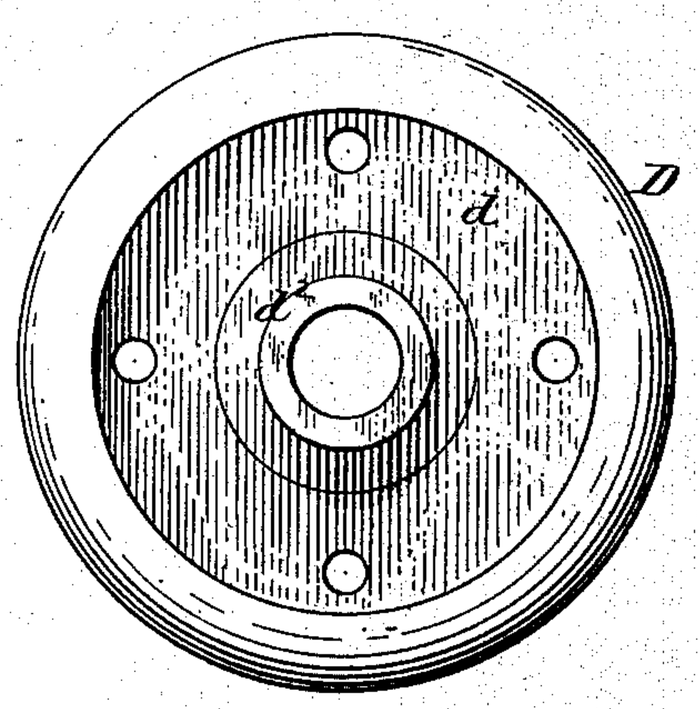


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

MICHAEL J. ROACH, OF LOCKPORT, NEW YORK, ASSIGNOR OF ONE HALF TO JOSEPH CLARK AND DANIEL McKIM, OF SAME PLACE.

STEAM-PIPE JOINT FOR ROTARY PAPER-DRYING CYLINDERS, &c.

SPECIFICATION forming part of Letters Patent No. 325,972, dated September 8, 1885.

Application filed September 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL J. ROACH, of the city of Lockport, in the county of Niagara and State of New York, have invented a new and useful Improvement in Steam-Pipe Joints for Rotary Paper-Drying Cylinders, &c., of which the following is a specification.

This invention relates more particularly to an improvement in metallic steam-pipe joints or couplings for revolving hollow cylinders or drums which are used in drying and bleaching paper-stock, and in similar apparatus having hollow journals through which steam is passed. Heretofore these journals have been provided with a valve-seat in which is arranged a valve, which is held to its seat by the pressure of the steam within the drum or cylinder, as described and claimed in Letters Patent of the United States No. 298,624, granted to me May 13, 1884. When a very low pressure of steam is employed in the cylinder, the valve is not held tightly to its seat, and permits foreign substances and sediment to work between the valve and its seat, whereby the parts are caused to wear unevenly and become leaky.

The object of my invention is to provide the joint with means whereby the valve is retained in its seat at all times; and it consists to that end of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of my improved pipe-joint applied to a hollow journal. Fig. 2 is a sectional elevation of the same detached from the journal. Fig. 3 is an inside view of the head or cap which is applied to the hollow journal.

Like letters of reference indicate corresponding parts in the several figures.

A represents the drum or cylinder, and *a* the hollow journal upon which the drum rotates, and which is supported in a suitable bearing, B.

D represents a head or cap, which is applied to the end of the hollow journal and provided with a depression or cavity, *d*, into which the end of the journal is fitted. The head D is secured to the journal by screw-bolts *d'*, so as to turn therewith; or, if preferred, the head and journal may be provided, respectively, with screw-threads and the head screwed on the journal. The head D is provided with a valve-seat, d^2, of conical, oval, or other suitable form, in which is seated a valve, *e*, of similar form. The valve *e* is secured to a steam-pipe, *f*, by means of an internal screw-thread, which engages with an external screw-thread formed on the inner end of the pipe *f*.

If preferred, the valve may be formed in one piece with the steam-pipe *f*. The pipe *f* opens into the hollow journal, and may extend through the same into the cylinder A, if desired.

g represents a spiral or other suitable spring, which surrounds the steam-pipe *f*, and bears with its inner end against the head D, and with its opposite end against a collar, *h*, which is secured to the pipe *f* by a set-screw, *h'*. The spring *g* tends to draw the pipe *f* and valve *e* outwardly, whereby the valve is forced tightly against its seat. The tension of the spring can be regulated by means of the collar *h* and set-screw *h'*.

By this construction the valve is held on its seat at all times, thereby preventing the accumulation of sediment between the valve and its seat, which results in an unequal wear of the parts, causing leakage, and it also prevents corrosion of the parts when the machine is not in operation.

I am aware that a steam-pipe provided with a valve and arranged in a journal having a seat on its inner side, in which the valve is seated by the steam-pressure, is not new; also, that a steam-pipe provided with a valve held by a spring in a seat formed in the outer side of the journal is not new, and I do not claim either of these constructions.

I claim as my invention—

1. In a steam-pipe joint for hollow revolving journals, the combination, with the journal having a valve-seat formed on its inner side and exposed to the steam-pressure, of a pipe entering said journal and provided with a valve which is held in the seat of the journal by the steam-pressure, and a spring, which also holds the valve in its seat, whereby the

valve is held in its seat by the cumulative pressure of the steam and spring when steam is applied, and by the spring alone when the steam is shut off, substantially as set forth.

2. In a steam-pipe joint for hollow revolving journals, the combination, with the head D, having a valve-seat, *d*, of a pipe, *f*, provided with a valve, *e*, arranged in said valve-seat, a spiral spring, *g*, surrounding said pipe, and a collar, *h*, secured to said pipe, whereby said valve is held in its seat, substantially as set forth.

Witness my hand this 11th day of September, 1884.

MICHAEL J. ROACH.

Witnesses:
JOHN H. BUCK,
JOHN P. SMITH.