

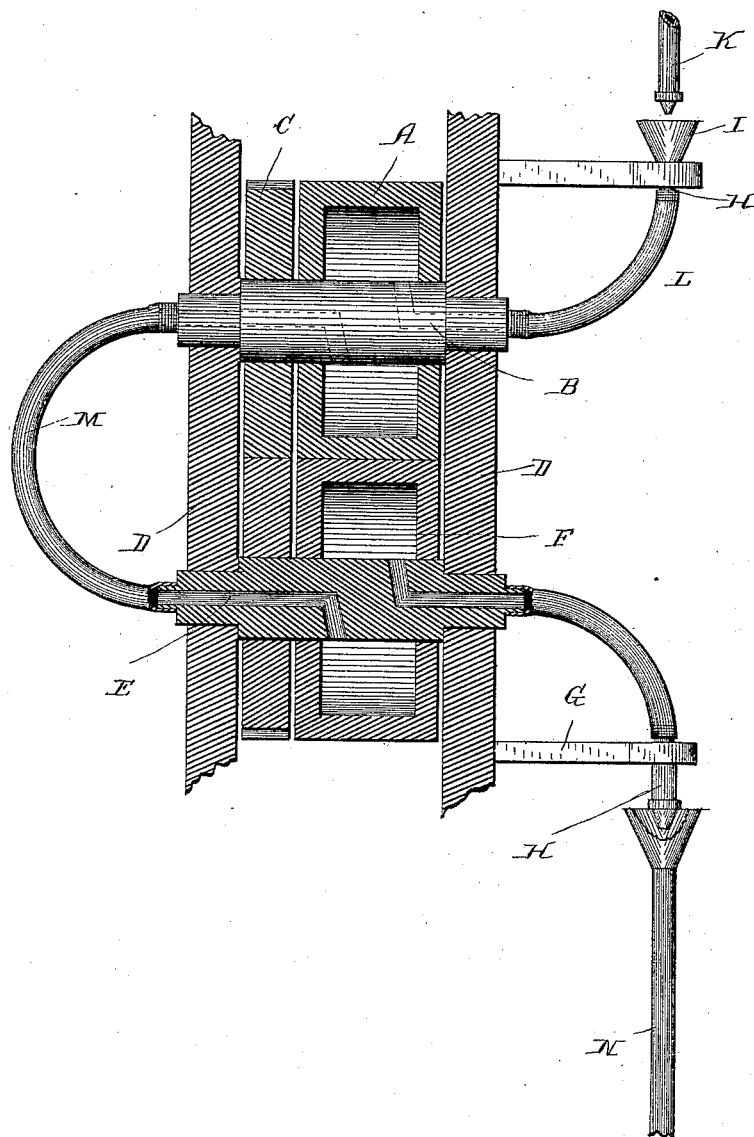
(No Model.)

H. BORCHARDT.

DEVICE FOR COOLING JOURNAL BEARINGS.

No. 307,625.

Patented Nov. 4, 1884.



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UNITED STATES PATENT OFFICE.

HUGO BORCHARDT, OF BRIDGEPORT, CONNECTICUT.

DEVICE FOR COOLING JOURNAL-BEARINGS.

SPECIFICATION forming part of Letters Patent No. 307,625, dated November 4, 1884.

Application filed August 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, HUGO BORCHARDT, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Cooling Journal-Bearings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is applicable to all classes of machinery in which heavy rolls are used or in which it is necessary to keep the rolls and journals cool by passing water through them—as, for example, in rolls for flattening wire.

The object of my invention is to devise a construction which shall entirely do away with the use of stuffing-boxes, shall be simple and inexpensive to manufacture and apply, and shall be durable and practically impossible to get out of repair.

Heretofore water-journals have been made with stuffing-boxes at each end of the rolls and one in the connecting-pipe between the rolls, to permit of their adjustment, necessitating, therefore, five stuffing-boxes for each pair of rolls. This system is seriously objectionable on account of the great wear upon the stuffing-boxes, which invariably begin to leak after running for a short time, and are continually leaking unless frequently repacked. For the purpose of overcoming this serious objection I have perfected the novel and simple arrangement which I will now proceed to describe.

In my specification I shall refer by letters to the accompanying drawing, which is a vertical section forming part hereof, in which—

A indicates the rolls carried by journals B. C indicates the gears on said journals, through which motion is imparted to the rolls.

D represents the cheek-pieces in which the journals are supported. The journals are provided with water-passages E, which run from the outside inward through the centers thereof, but which, after entering the rolls, lead into the open spaces or cavities F within the rolls, so that the course of the water is from the supply-pipe inward through the first journal and out into the cavity within the roll, then into

the other passage, E, and out through the other journal, there being a continuous current through the cavity within the roll, which is thus kept constantly filled with cold water. These parts which I have described, however, may be of any ordinary construction, as they do not form essential features of my present invention, which may be applied with equal facility to all classes of rolls and journals through which it is desired that water should pass.

G indicates brackets which project from one of the cheek-pieces, both of which support short sections H of metal pipe. These sections of pipe are preferably provided with bushings, so as to permit them to turn freely in the brackets. The upper metallic section is preferably provided with a funnel, I, which of course turns with it. This funnel receives the water from the supply-pipe K.

L indicates sections of rubber pipe, the opposite ends of which are attached, respectively, to the metallic sections H and to the ends of the journals, the attachment being made by a clamp, wire, or in any suitable manner.

M indicates a section of rubber pipe attached in a similar manner to the respective ends of the journals on the opposite side of the machine. The rubber sections are all made of sufficient length to form natural curves between their points of attachment. It will of course be understood that the rolls in this class of machines are required to rotate in opposite directions, whether actuated by gears or belts, and that the manner in which motion is imparted has nothing to do with my present invention.

The operation is as follows: The water enters from supply-pipe K and passes through the upper rubber section, L, and into and through the upper journals and roll, then through rubber sections M into and through the lower journals and roll, and out through the lower rubber section, from which it escapes into a waste-pipe, N.

By the construction shown it will be observed that I am enabled to entirely do away with the use of stuffing-boxes. As the rubber sections are both rigidly attached at one end to the journals, it follows that they must rotate with them. For this reason I arrange the short

metallic sections H in such a manner that they will turn freely in the brackets with the rubber sections, thus preventing any twisting of the rubber sections as the rolls revolve. The rubber section M cannot twist, owing to the fact that the rolls revolve in opposite directions. Suppose that the bottom of the upper roll is moving away from the point of view, it follows that the top of the lower roll must move with it. Thus the section of rubber pipe which connects the two journals will simply rotate with the rolls without the possibility of twisting, the effect upon the section M of rubber pipe being the same as if the two rolls were placed with their connected ends toward each other and were rotated in a horizontal plane instead of one above the other in a vertical plane.

Having thus described my invention, I claim—

1. The combination, with a pair of rolls having water-passages from end to end through said rolls and their journals, and adapted to rotate in opposite directions, of a section of rubber pipe connected to the corresponding journals of both rolls, whereby a current of water may be passed from one roll to the other without the use of stuffing-boxes.

2. The rolls and journals having water-passages and adapted to rotate in opposite directions, in combination with a section of rubber pipe connecting the journals on one side, and independent sections of rubber pipe connected to the opposite journals, the other ends of said sections being free to rotate, as shown, whereby a current of water may be conducted from the supply-pipe into and through both rolls, and to the waste-pipe without stuffing-boxes.

3. The rolls and journals having water-passages, in combination with independent sections of rubber pipe connected to said journals, and at their opposite ends to short metallic sections, which are free to rotate in brackets, and a connection between the opposite journals, as and for the purpose set forth.

4. Rolls A, having cavities F, and journals B, having water-passages E, in combination with the cheek-pieces, the gears, and rubber pipes L and M.

In testimony whereof I affix my signature in presence of two witnesses.

HUGO BORCHARDT.

Witnesses:

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A. B. FAIRCHILD.