D. JENKINS AND L. G. WILLSON.

JOURNAL BOX.

APPLICATION FILED APR. 21, 1919.

1,359,898. **Patented Nov. 23, 1920.**

Fig. 1.

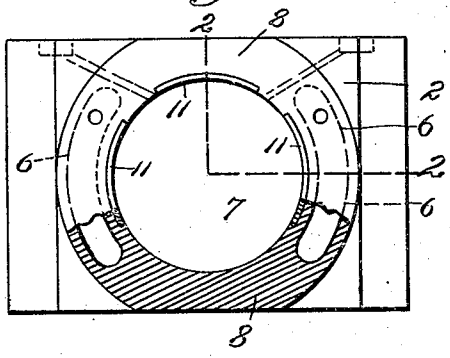


Fig. 3

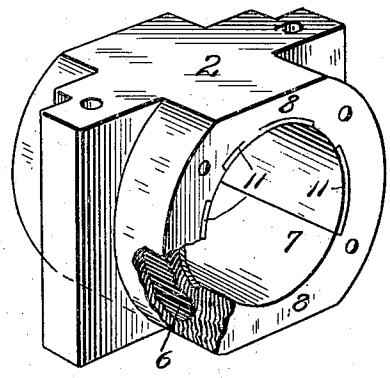


Fig. 2.

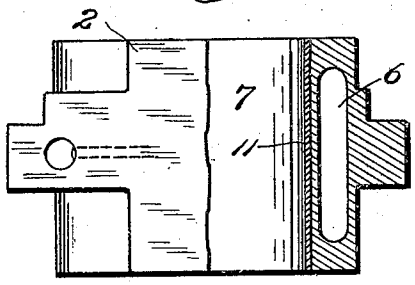
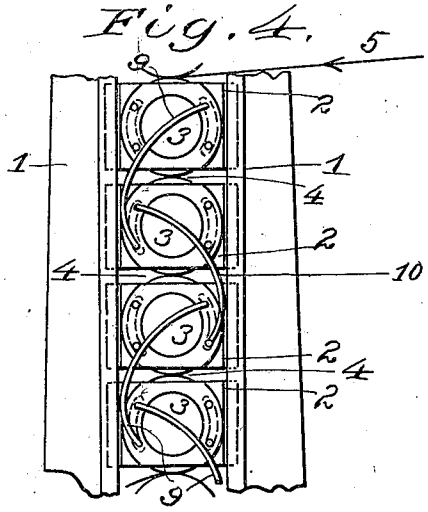


Fig. 4.



INVENTORS.

David Jenkins

L. G. Willson

BY

Rogers, Kennedy & Campbell

ATTORNEYS.

UNITED STATES PATENT OFFICE.

DAVID JENKINS AND LYMAN G. WILLSON, OF GLENS FALLS, NEW YORK.

JOURNAL-BOX.

1,359,898. Specification of Letters Patent. Patented Nov. 23, 1920.

Application filed April 21, 1919. Serial No. 291,712.

To all whom it may concern:

Be it known that we DAVID JENKINS and LYMAN G. WILLSON, citizens of the United States, residing at Glens Falls, in the county of Warren and State of New York, have invented certain new and useful Improvements in Journal-Boxes, of which the following is a specification, reference being hand therein to the accompanying drawing.

This invention relates to bearings or journal boxes, and has reference more particularly to journal boxes for supporting the journals of the calender rolls of paper calendering machines. In these machines the calender rolls are arranged one above the other so that the peripheral surfaces of adjacent rolls will engage and press upon the paper sheet passing between them, the journals of the rolls being mounted in journal boxes arranged one above the other in guideways in a suitable sustaining frame, and the boxes being formed with annular cores or chambers which as heretofore constructed surrounded the journal bearings, for the circulation of a cooling medium to prevent the bearing surfaces from becoming overheated.

In the use of the apparatus, it is the practice to grind or dress down the peripheral surfaces of the rolls from time to time to keep them in proper condition to perform their calendering action, and as the diameters of the rolls decrease from such treatment, the ends of the contiguous journal boxes are brought closer together, and this requires that the ends of these boxes be machined down to keep them properly spaced so that the rolls will properly engage with and press upon the paper sheet. Due to the fact that the cores or cooling chambers in the boxes completely surround the openings therein, this machining down of the boxes has been restricted so that the boxes soon became unfit for further use and it was necessary to discard them as well as the old rolls and provide new ones. This of course is objectionable for many reasons, mainly on account of the expense involved.

It is the chief aim of the present invention to overcome this objection and to permit the use of the boxes and rolls to be prolonged, and the invention consists in a journal box in which the cooling chamber or chambers are confined to the side or sides of the same, thereby leaving the ends of the boxes intact and solid and free from cores or chambers. Due to this construction, a far greater amount of material is left at the ends of the boxes than where the cooling chambers are extended around the ends as heretofore, and consequently a greater amount of machining is permitted without impairing the usefulness of the boxes, with the result that the rolls may be kept in finishing condition indefinitely by repeated grinding.

In the accompanying drawings:

Figure 1 is a side elevation of a journal box having our invention embodied therein.

Fig. 2 is a sectional elevation of the same on the line 2—2.

Fig. 3 is a perspective view of one of the boxes removed from its supporting frame.

Fig. 4 is an end elevation of a series or "stack" of calender rolls mounted in journal boxes constructed in accordance with our invention.

1 designates an upright frame formed at the front and rear with vertical guideways in which are mounted, one above the other, two sets of journal boxes 2 in which are rotatably mounted the end journals 3 on a series of calender rolls 4, the boxes being separated from each other to permit the peripheral surfaces of adjacent rolls to contact with and pass upon the paper sheet passing between them. In the operation of the apparatus, the dried paper sheet 5 from the drying rolls of the paper making machine, passes between the contiguous calender rolls, alternately around the opposite sides of the same, and by the action of the rolls, the paper is given its calendered finish.

Our invention has to do with the specific form of the journal boxes, and one part of the invention relates to the form and arrangement of the core or cooling chamber with which such boxes are usually provided, which heretofore have extended wholly or nearly around the journal bearing. In accordance with our invention we restrict this chamber to the side or sides of the box, as shown more particularly in Figs. 2, 3 and 4. Here it will be seen that the body of the box is cored out at opposite sides to form two opposing arcuate internal chambers 6 which extend for a comparatively short distance at the opposite sides of the bearing opening 7, thereby leaving the upper and lower ends of the box intact and solid as at 8. In other words, the ends of the two cooling chambers terminate inward of the upper and lower ends of the box. As a result of this form and disposition of the cooling

chambers, the ends of the box may be ground down to a considerable extent without impairing their usefulness, to maintain the peripheral surfaces of the calender rolls in proper operative relations to each other to act on the paper passing between them, as the rolls are reduced in diameter in the dressing down of the surfaces from time to time. Consequently, the life of the rolls will be greatly prolonged and it will not be necessary to discard them and furnish new rolls at such frequent intervals, as would be the case if the grinding of the boxes was limited by the presence of the cooling chambers at the ends of the same as heretofore.

With the bearing boxes arranged one above the other in the supporting frame, as shown in Fig. 4, the cooling chambers on the "draw" sides of the respective boxes are connected together by means of flexible pipes or hose, a pipe 9 being connected at one end with the upper end of the chamber on the draw side of the journal box of one roll, and being extended thence to the next box beneath, and connected at its opposite end to the lower end of the cooling chamber on the "draw" side of that box, and a second pipe 10 being connected at its upper end to the upper end of the last mentioned chamber and being extended thence to the opposite side of the next box beneath and connected at its lower end to the lower end of the chamber of the latter box, and so on throughout the series, so that the water or other cooling medium will be circulated through the cooling chambers on the "draw" sides only of the several boxes.

In the foregoing description and accompanying drawings, we have set forth our construction in the particular detailed form and construction which we prefer to adopt and which in practice has been found to answer to a satisfactory degree the ends to be attained. It will be manifest, however, that these details may be variously changed and modified by the skilled mechanic without departing from the limits of our invention; and further it will be understood that the invention is not limited to any particular form or construction of the parts except in so far as such limitations are specified in the claims.

Having thus described our invention, its construction and mode of operation, what we claim and desire to secure by U. S. Letters Patent, is as follows:

1. A journal box comprising a body portion having a bearing opening therein and provided with solid end portions extending radially respectively from opposite sides of the bearing opening to the end faces of the box, the said body portion being provided between said end portions and at the side of the bearing opening with a cooling chamber terminating at its two ends a substantial distance inward of the end faces of the box; whereby the ends of the body portion of the box are left intact and may be ground down without injury to the cooling chamber.

2. A journal box comprising a body portion having a bearing opening therein, and provided at opposite sides of said bearing opening with separate cooling chambers disconnected from each other and terminating at their ends inward of the ends of said body portion, thereby leaving said ends solid and intact.

3. In combination with a supporting frame, a series of journal boxes mounted therein one above the other, and provided bearing openings, calender rolls provided with journals mounted in said bearing openings, said journal boxes being provided with solid end portions extending radially respectively from opposite sides of the bearing opening to the end faces of the box, said body portions being provided between said end faces and at opposite sides of the bearing opening, with cooling chambers terminating at their ends inward of the ends of the box; whereby the end portions of the box are left intact and may be ground down without injury to the cooling chambers.

4. In combination with a supporting frame, a series of journal boxes mounted therein one above the other and provided with bearing openings, calendar rolls provided with journals mounted in the respective bearing openings, said journal boxes being formed with solid end portions extending from the bearing openings radially outward to the end faces of the boxes, and said boxes being provided further each with cooling chambers at opposite sides of the bearing openings and disconnected from each other, and a communicating connection between each cooling chamber on one side of one box and the cooling chamber on the opposite side of the box beneath.

5. In combination with a supporting frame, a series of journal boxes mounted therein one above the other and provided with bearing openings, calender rolls provided with journals mounted in the respective bearing openings, said journal boxes being formed with solid end portions extending from the bearing openings radially outward to the end faces of the boxes, and said boxes being provided further each with cooling chambers at opposite sides of the bearing openings, and a communicating pipe connected to the cooling chamber of each box at one side and to the cooling chamber at the opposite side of the box beneath.

In testimony whereof we have affixed our signatures hereto.

DAVID JENKINS.
LYMAN G. WILLSON.