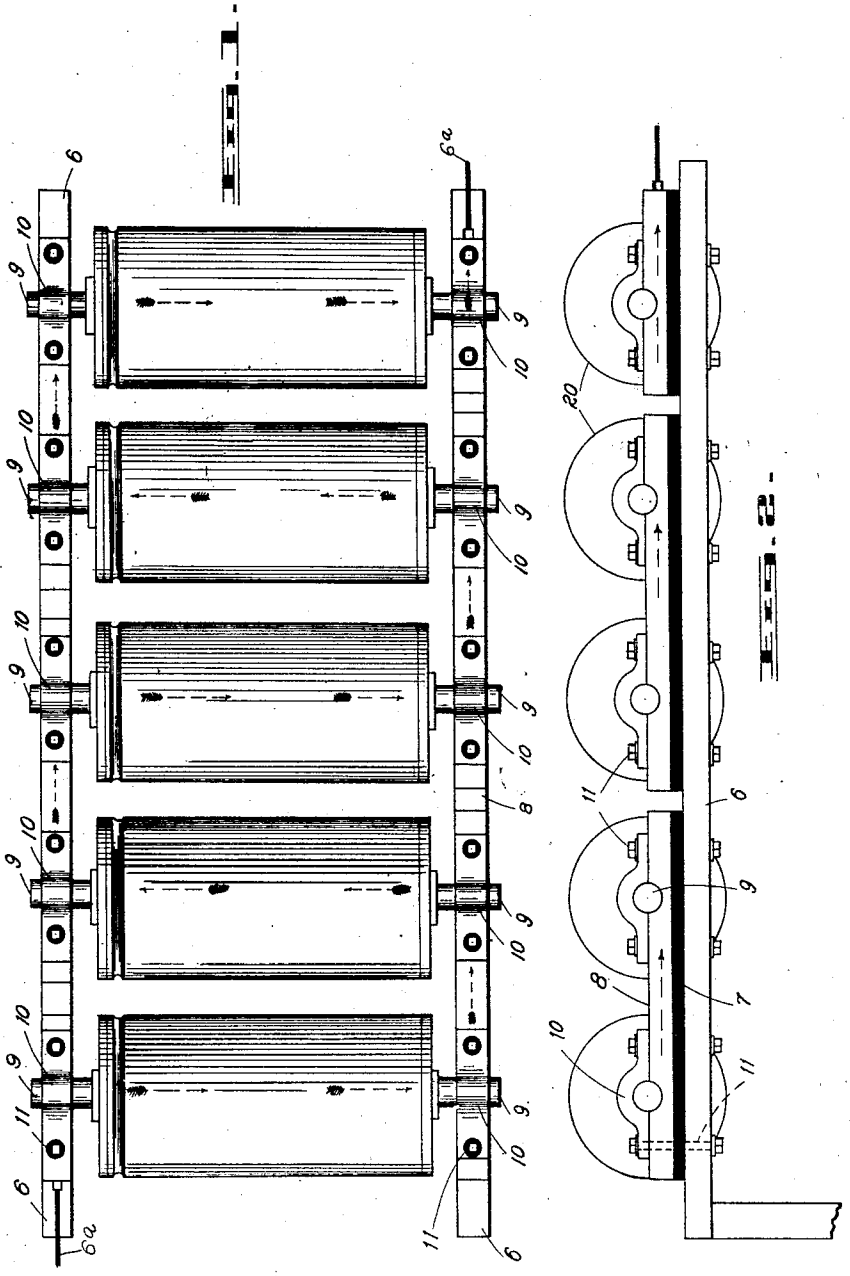
June 10, 1924. 1,497,223

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DRYING ROLLS FOR PAPER MILLS

Filed June 23, 1921 2 Sheets-Sheet 1



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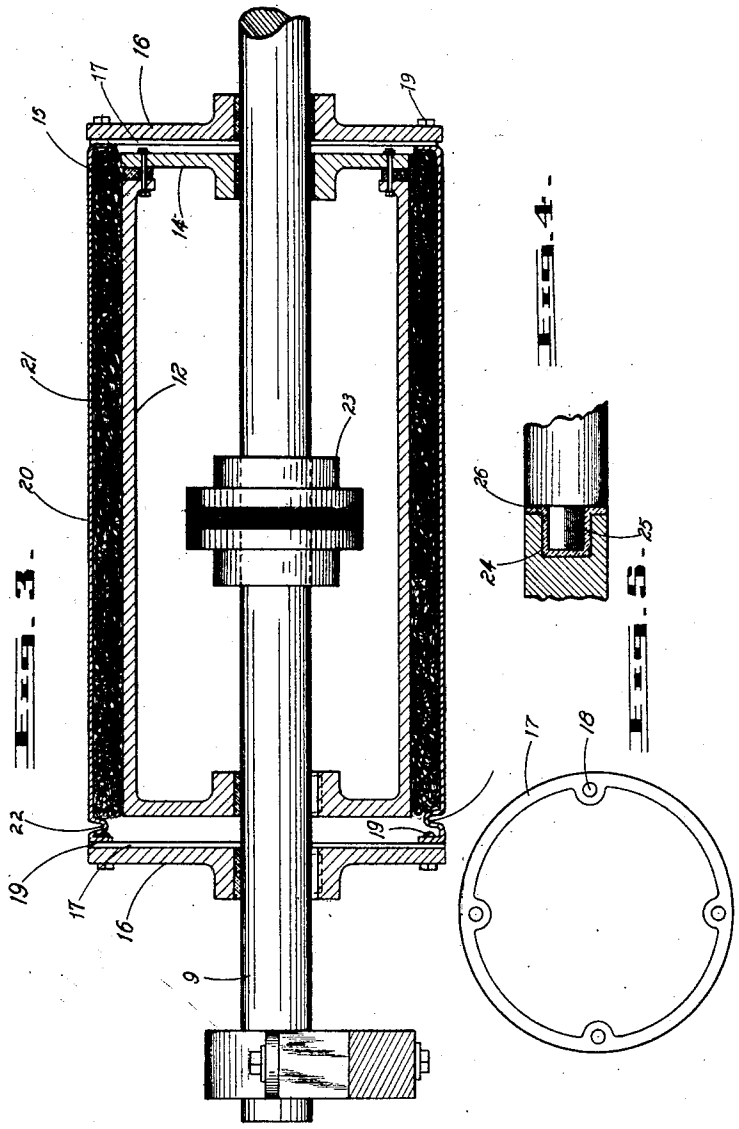


Fig. 3.

Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

ROBERT P. MOODIE, OF OTTAWA, ONTARIO, CANADA.

DRYING ROLLS FOR PAPER MILLS.

Application filed June 23, 1921. Serial No. 479,885.

To all whom it may concern:

Be it known that I, ROBERT P. MOODIE, a citizen of the Dominion of Canada, residing at Ottawa, in the county of Carleton and Province of Ontario, Canada, have invented certain new and useful Improvements in Drying Rolls for Paper Mills (for which I have filed an application in Canada, May 21, 1920, Patent No. 207,031), of which the following is a specification.

This invention relates to drying rolls for paper mills whereby the outer circumference will be heated by electricity to a desired heat.

The object of my invention is to provide electrically heated drying rolls for paper mills.

A further object is to provide a series of rolls in which the thickness of the material of the roll surface will vary from the starting point on the paper mill to the discharge end, so that some of the rolls will be at a greater heat than others.

A further object is to provide a means for coupling up said rolls in units without electrifying or short circuiting the rest of the machine.

A further object is to provide a shafting for carrying said roll, in which the electric current will be broken.

A further object is to provide a resisting element and a means for expansion thereof.

With these and other objects in view, the invention consists in the construction, combination and arrangement of parts as will be hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereunto appended.

Figure 1 is a top plan view of my improved construction.

Fig. 2 is a side elevation of the same.

Fig. 3 is a detail sectional view of one of the rolls.

Fig. 4 is a detail view of the connection between the respective parts of the shaft; and

Fig. 5 is a plan view of the brass transmission ring.

Referring to the drawings like numerals designate like parts in the various drawings.

In connection with paper mills there are a series of rolls over which the paper mash is fed and when this mash is dried out and pressed, it becomes paper.

In my improved construction I provide a means for doing this same work by electrically heated rolls 6^a being the electric wires for this purpose. The frame 6 is similar to that found on the ordinary paper making machine. Over this I provide an insulation strip 7 on which is mounted the lower half 8 of the journal box, in which are embedded the shafts 9. 10 is the upper capping for the journal box, which is held on the lower half 8 by bolts 11 which extend through the capping 10, the lower half 8, the insulation 7, and the frame 6. This bolt 11 is thoroughly insulated in passing through these respective parts so that no current can be carried from the lower half 8 to the frame 6.

Each of the shafts 9 is provided with an iron drum 12 which is keyed to the shaft. One end member 14 of this drum is insulated from the outer cylindrical casing as at 15, so that no current will be carried through the drum. 16 indicates annular end members made of iron to each of which is fitted a brass ring 17. This brass ring is provided with suitable openings 18 which will register opposite correspondingly positioned openings in the end 16 so that bolts 19 may extend therethrough.

20 is a high resistance metal holder fitted over the drum 12 and insulated therefrom by asbestos packing 21. This holder 20 is attached to the end members by the bolts 19 and brazed to the ring 17. Near one end this cylindrical member is provided with an inwardly extended groove 22 which is adaptable to take up all longitudinal expansion of the cylindrical member when the same is heated.

The shaft 9 is broken inside the drum 12 and is connected together by an insulated coupling 23. One end of the broken portion of the shaft is provided with a square opening as at 24 to receive the square extended portion 25 of the other end of the shaft at this broken position. These ends are insulated apart as at 26. By having this squared connection between the shaft, driving power can be suitably connected at the ends of the shaft and will be transmitted between the two sections of the shaft direct as well as through the drum 12 which is keyed to the shaft 9.

In paper making less heat is required at the starting point where the mash is first lapped onto the rolls but as the mash gradually dries out, a greater heat is added until coming to the discharge end. For this pur-

pose the rolls used in carrying out my improved construction may be connected up in units if so desired. The holders 20 will be thicker near the receiving end than at the discharge end and if so formed the rolls at the receiving end will not become as heated as those at the discharge end.

From the foregoing, it is thought that the construction of my invention will be clearly understood, and, therefore, a more extended explanation has been omitted.

What I claim as new is:

1. In a paper making machine, a series of rolls over which the paper mash is fed for drying into paper, the rolls having shafts whose electric conductivity is broken and having their cylindrical surfaces heated by electricity, the rolls being insulated against electrifying the rest of the machine and being so made that certain of said rolls will be successively heated to a greater temperature than other of said rolls.

2. In a paper making machine, a series of rolls over which the paper mash is fed for drying into paper, the rolls having shafts whose electric conductivity is broken and having their cylindrical surface heated by electricity, the rolls in succession being gradually heated to a successively greater degree and insulated against electrifying the rest of said machine and being connected together at their alternative ends.

3. In a paper making machine, a series of rolls over which the paper mash is fed for drying into paper, the rolls having their cylindrical surface heated by electricity, insulated against electrifying the rest of the machine and the shafts on which the rolls are mounted having their electric conductivity broken so that the electric current must travel through the cylindrical surface of the rolls.

4. In a paper making machine, a series of rolls over which the paper mash is fed for drying into paper, the rolls having their cylindrical surfaces heated by electricity, and insulated against electrifying the rest of the machine, the shafts on which the rolls are mounted having their electric conductivity broken so that the electric current must travel through the cylindrical surfaces of the rolls, drums carried by the broken shafts and insulated against carrying electric current therethrough.

5. In a paper making machine, a series of rolls over which the paper mash is fed for drying into paper, the rolls having their cylindrical surface heated by electricity, and insulated against electrifying the rest of the machine, the shaft on which the rolls are mounted having their electric conductivity broken so that the electric current must travel through the cylindrical surfaces of the rolls.

6. In a paper making machine, a series of rolls over which the paper mash is fed for drying into paper, the rolls having their cylindrical surfaces heated by electricity, and insulated against electrifying the rest of the machine, the shafts on which the rolls are mounted having their electric conductivity broken so that the electric current must travel through the cylindrical surfaces of the rolls and the cylindrical surfaces being provided with a means whereby heat expansion will be relieved.

7. In a paper making machine, a roll having its cylindrical surface of a high-resistance material, the shaft of said roll having its electric conductivity broken so that the current must pass through said cylindrical surface to heat the roll.

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

ROBERT P. MOODIE.

Witnesses:

M. McMillan,

M. L. Pendleton.