July 12, 1927. 1,635,765

P. PRIEM

DRIVE OF DRYING CYLINDERS OF PAPER MACHINES

Filed July 17, 1924 2 Sheets-Sheet 1

Fig:1.

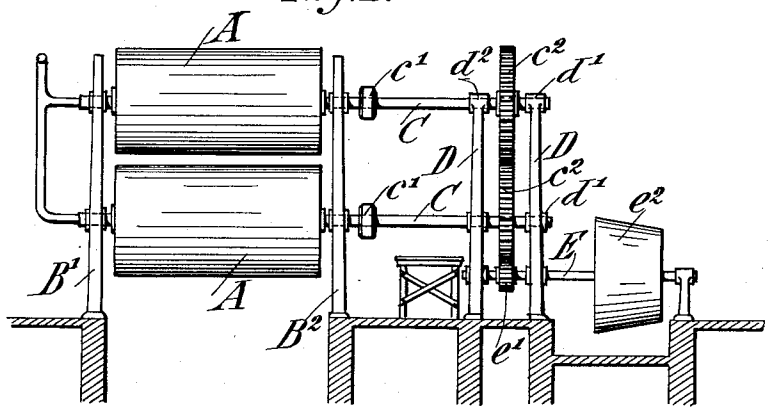
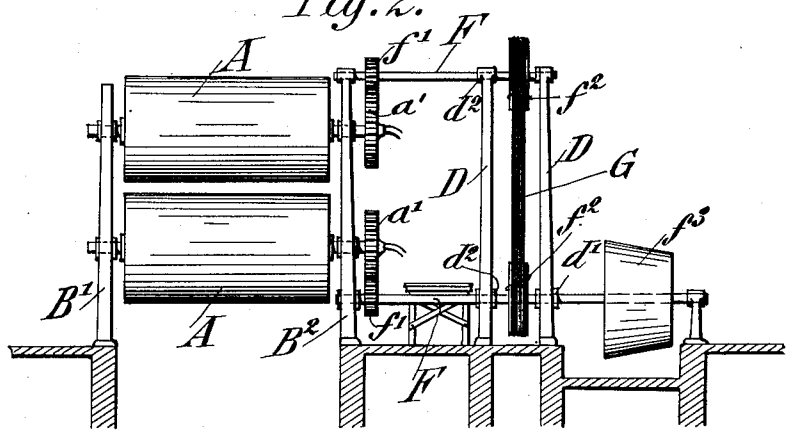


Fig:2.



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Fig: 3

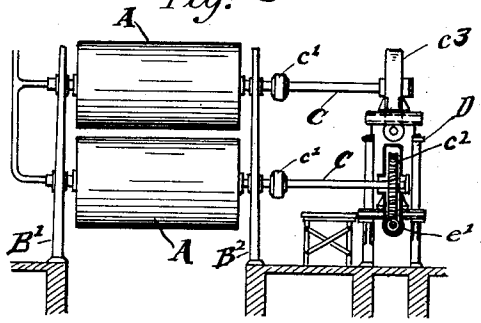


Fig: 4

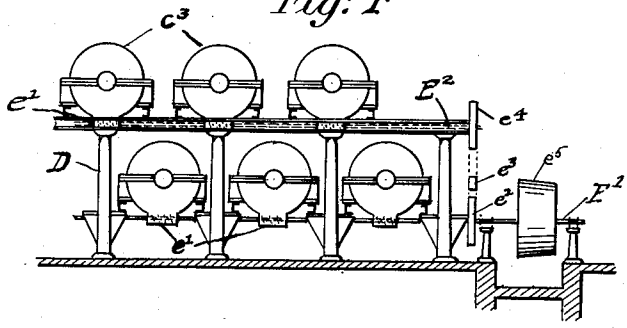
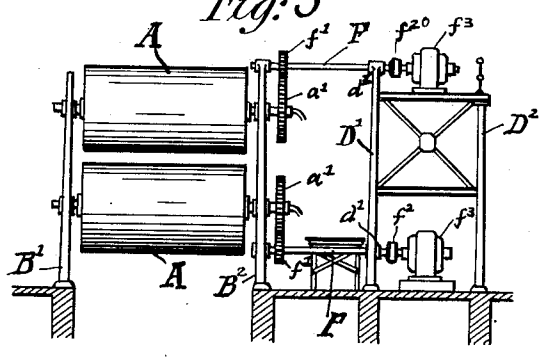


Fig: 5



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UNITED STATES PATENT OFFICE.

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DRIVE OF DRYING CYLINDERS OF PAPER MACHINES.

Application filed July 17, 1924, Serial No. 726,474, and in Germany September 10, 1923.

This invention relates to a drive of drying cylinders of paper machines, and has for its object to arrange those parts necessary for the drive outside of the paper machine itself on supports, standing isolated from the frame of the machine.

Heretofore the means for driving the drying cylinders of paper machines have been located on the frame of the machine itself, in consequence whereof the vibrations of the gear are communicated immediately to the cylinders themselves and the bearings thereof. These vibrations are on the one hand very injurious for the sheet being produced, specially on machines of highest speed; on the other hand, thereby the wear of the gear and of the cylinder bearings is highly increased. These difficulties are met with by the invention which besides this has the further advantage that the drive and its parts, specially in the case of directly coupled electric motors, are out of the influence of the radiation of the heated cylinders.

The invention will be hereinafter described, will be shown in the accompanying drawings and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical cross view in partial section of one form of the invention, Figure 2 is a similar view of another form of the invention, Figure 3 is a similar view of still another form of the invention; Fig. 4 is a side elevation of the form shown in Fig. 3; and, Fig. 5 is a vertical cross view of a form of the invention similar to that shown in Fig. 2 wherein each cylinder is provided with driving motors.

Similar characters of references indicate corresponding parts throughout the various views.

Referring to Figure 1, the drying cylinders A are supported by bearings of the frame B^1 B^2 and are each driven by a shaft C, with which they are connected by a preferably flexible coupling c^1. The shafts C are supported in bearings d^1 and d^2 of a pedestal D standing isolated from the machine frame B^2. Between the bearings d^1 and d^2, the shafts C bear each a spur wheel c^2, the diameter of the wheels c^2 being such as to mesh with each other in a well known manner. One of the wheels c^2, on the other side, meshes with a spur wheel e^1, which is fixed on a shaft E, also supported by bearings of the pedestal D and carrying a pulley e^2.

Referring to Figure 2, the principal arrangement is similar to that shown in Figure 1. On the outer side of the frame B^2, the drying cylinders A bear each a spur wheel a^1, each of which meshes with another spur wheel f^1, fixed on a shaft F. The shafts F are supported by the bearings d^1 and d^2 of the pedestal D and bear each between these bearings a rope pulley or the like f^2. The pulleys f^2 are of the same diameter and are connected with each other by ropes in such a way, as to give each of the drying cylinders A a rotary motion of the same speed and alternately reverse direction. The whole group of drying cylinders gets its drive by a pulley f^3, connected with one of the rope pulleys f^2.

The principle of the invention is not altered by the arrangement of another connection between the shafts C or F of the single cylinders, e. g. by providing helical gear instead of spur wheels. In Fig. 3 the drive is by means of a worm gear c^2 and worm e^1; these are provided with casings c^3 as shown in Fig. 4. Each dryer is driven by such a worm gear drive. The worm shafts are coupled together and the upper shaft is driven from the lower one by means of belt pulleys e^2 and e^4, e^3 being a belt tightener. The power to the dryer part is applied by the conical pulley e^5 of Fig. 4. It is also possible to provide a special motor f^3 with intermediate spur gears f^1, a^1 for each drying cylinder, as shown in Fig. 5, which arrangement may be made an idea of by substituting in Figure 2 each rope wheel f^2 by the armature of an electric motor, in combination with a coupling f^{20}, which parts are likewise supported by bearings of the pedestal D. Even with this arrangement, the shafts of the single motors may be connected together for the purpose of synchronization by a rope, belt, chain or the like drive. Finally, the described arrangement is also applicable to other groups of the paper machine, as wet presses, calenders or the like.

I have thus described several embodiments of my invention but I do not wish to be limited to the details thereof since changes may

be made therein without departing from the spirit of the invention as defined in the appended claims.

I claim as new:

1. A drive of drying cylinders of paper machines, the essential parts of which are supported by bearings located on a pedestal which stands isolated from the frame of the paper machine itself, each of the drying cylinders being connected with the adjacent part of the drive by means of a flexible coupling.

2. In combination with the drying mechanism of a paper machine, said mechanism including supports, bearings thereon and a plurality of drying cylinders revolubly mounted in said bearings, said mechanism being further characterized by absence of driving connections between the cylinders whereby harmful speed variations and vibrations due to driving connections in the mechanism proper are avoided, supports isolated from the supports of said drying mechanism and driving mechanism carried by the last named supports, and means connecting said driving mechanism to the cylinders, whereby the latter are driven by means external to the drying mechanism proper.

3. In combination with the drying mechanism of a paper machine, said mechanism including supports, a plurality of cylinders journalled in said supports, said mechanism being further characterized by absence of driving connections between the shafts whereby harmful speed variations and vibrations due to driving connections in the mechanism proper are avoided, driving mechanism supports isolated from the supports of said drying mechanism, a primary driving member carried by said driving supports, a plurality of driven members also carried by said driving supports, connections from said primary driving member to said driven members, and a connection from each of said driven members to one of said drying cylinders, whereby the latter are independently driven by means distinct and isolated from the drying mechanism proper.

In testimony that I claim the foregoing as my invention, I have signed my name.

PAUL PRIEM.