Dec. 30, 1924. 1,520,935

W. S. CRANDELL

DRIVING MECHANISM FOR PAPER MAKING MACHINES

Filed May 10, 1924 2 Sheets-Sheet 1

Fig. 2.

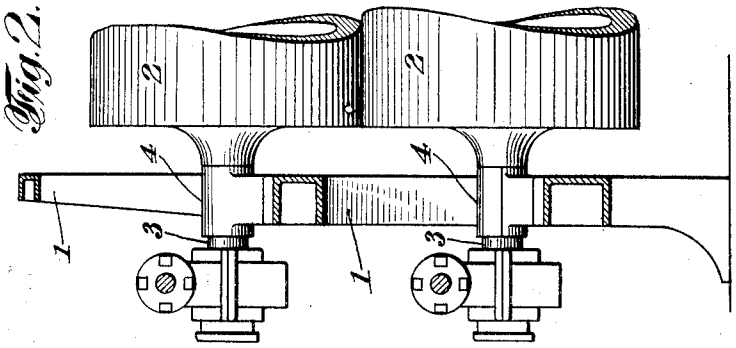
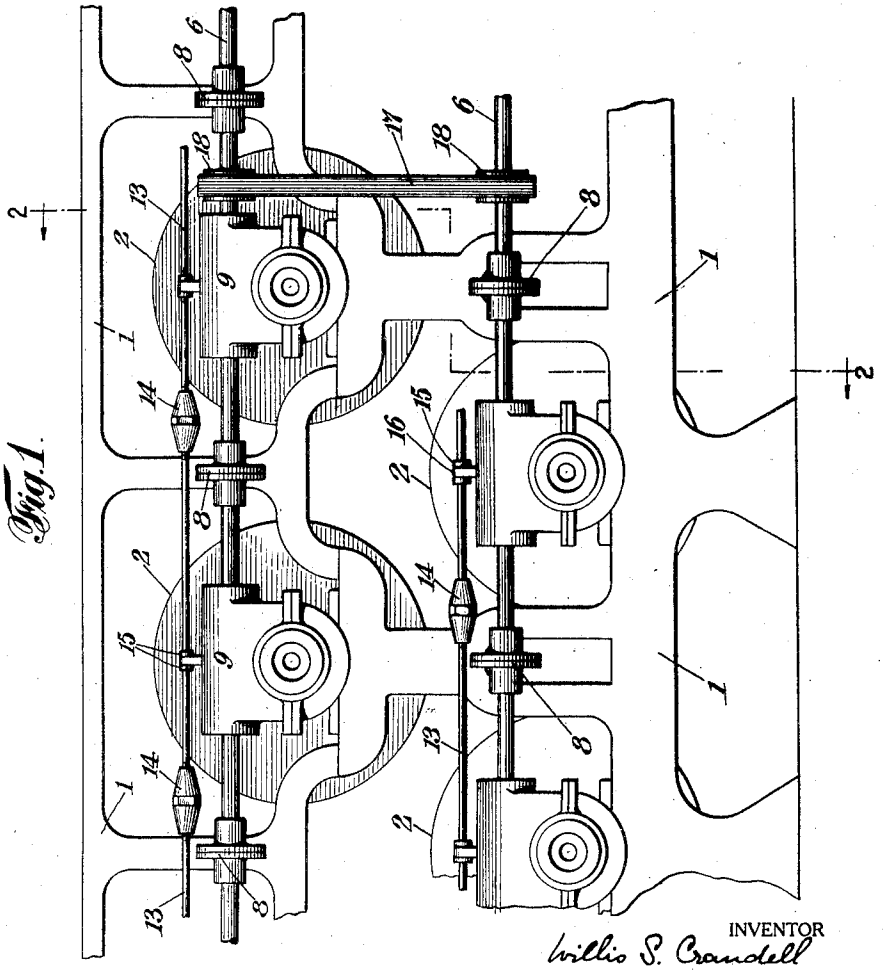


Fig. 1.



INVENTOR

Willis S. Crandell

BY

Prindle, Wright & Mart-Bean ATTORNEYS

Dec. 30, 1924. 1,520,935

W. S. CRANDELL

DRIVING MECHANISM FOR PAPER MAKING MACHINES

Filed May 10, 1924 2 Sheets-Sheet 2

Fig. 4.

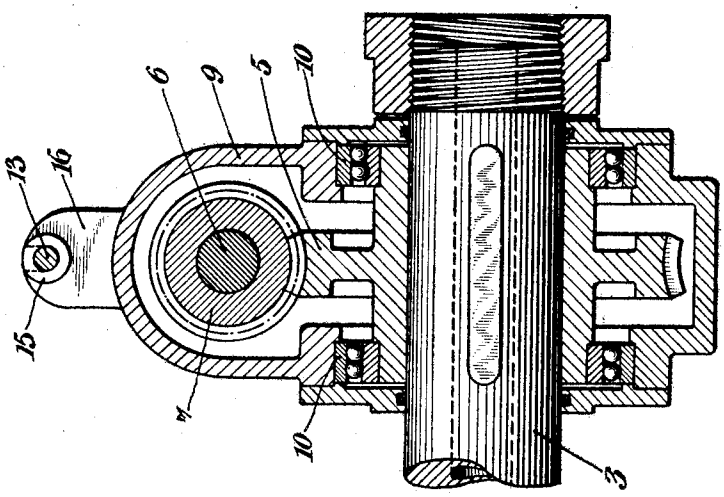
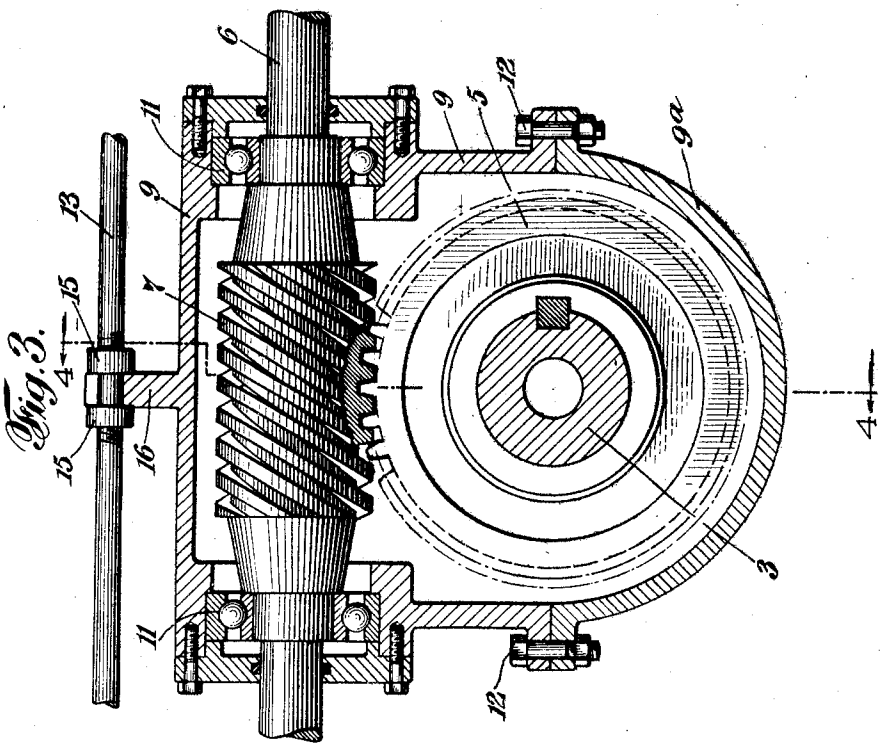


Fig. 3.



INVENTOR
Willis S. Crandell
BY
Prindle, Wright & Neal & Beam ATTORNEYS

Patented Dec. 30, 1924. 1,520,935

UNITED STATES PATENT OFFICE.

WILLIS S. CRANDELL, OF ELSMERE, NEW YORK, ASSIGNOR TO ALBANY PAPER MILL MACHINERY COMPANY, INC., OF ALBANY, NEW YORK, A CORPORATION OF NEW YORK.

DRIVING MECHANISM FOR PAPER-MAKING MACHINES.

Application filed May 10, 1924. Serial No. 712,238.

To all whom it may concern:

Be it known that I, WILLIS S. CRANDELL, a citizen of the United States, a resident of Elsmere, in the county of Albany and State of New York, have invented a certain new and useful Driving Mechanism for Paper-Making Machines, of which the following is a specification.

The invention relates to paper-making machines of the type in general use, having a series of drying rolls over which the paper web is passed to drive off moisture therefrom. It has been the usual practice to rotate rolls of the above nature by means of intermeshing spur gears carried by the spindles of the several rolls, one of such gears being directly driven from a power shaft, and therefore serving to turn the remaining driers through the medium of the spur gears above mentioned.

As is set forth more at length in United States Patent #1,479,128, granted to me on January 1st, 1924, I have found it to be more advantageous to drive rolls of the above nature by means of a driving shaft running longitudinally along the machine and provided with gears located near the several drying rolls which engage mating gears carried respectively by the drier spindles. Such a driving mechanism is much less cumbersome in size than spur gears, and possesses other advantages as referred to more at length in the patent above-mentioned.

One object of the invention is to provide a driving mechanism of the improved type above described having features of construction enabling it to be readily incorporated into machines originally built with a spur gear drive for the driers, without requiring any substantial alterations of the machine in changing from one type of drive to the other. The present invention, however, can be just as well used in the construction of new machines, if desired.

Further objects and advantages of the invention will be in part obvious and in part specifically pointed out in the description hereinafter contained, which, taken in conjunction with the accompanying drawings, discloses a preferred embodiment thereof; such embodiment, however, is to be considered as merely illustrative of its principles. In the drawings:

Fig. 1 is a side view of a part of the drier section of a paper-making machine, equipped with a driving mechanism constructed in accordance with the invention.

Fig. 2 is a section on line 2—2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is a vertical section of a housing and set of gears forming a part of the driving mechanism shown in Figs. 1 and 2.

Fig. 4 is a section on line 4—4 of Fig. 3, looking in the direction of the arrows.

The invention is illustrated as applied to a paper-making machine of the usual construction, having side frame members 1, and a series of drying rolls 2, provided with spindles 3. The framework 1 of the machine is shown as provided with bearings 4 (Fig. 2) for the spindles 3, which bearings thus support the driers, and the spindles 3 are shown as projecting outwardly beyond the bearings 4, as is usually the case in machines where the driers are driven by means of intermeshing spur gears carried by the spindles.

In accordance with the present invention, each spindle 3 is provided with a gear 5, and a driving shaft 6, which extends longitudinally of the machine adjacent the spindles 3, is provided with a plurality of gears 7 which mesh respectively with the gears 5 above-mentioned. Preferably the gears 5 and 7 are of the spiral type, to avoid vibrations, and as shown the gear 5 is a worm wheel, and the gear 7 a worm. For convenience in assembling, the shaft 6 furthermore is preferably made in sections connected together by suitable couplings 8.

The driving shaft 6 is supported by the several spindles 3, this being accomplished in the present embodiment of the invention by means of a housing 9 on each spindle which encloses the gears 5 and 7, and is provided with suitable bearings 10 (Fig. 4) to enable the spindle 3 and gear 5 to rotate freely within it. The housing 9 is also provided with further bearings 11 (Fig. 3) for the driving shaft 6, whereby the latter and its corresponding gear 7 are held in proper relation to the gear 5. The gears 5 and 7 usually will run in lubricant contained

within the housing 9. As is shown more in detail in Fig. 3, the housing may be made in two sections, including a lower semi-cylindrical pan 9ª secured to the upper section by bolts 12.

A driving mechanism of the above nature may be installed upon machines which previously have been operated with the ordinary spur gear drive for the driers, merely by taking off the large spur gears and substituting the gears 5 and 7, shaft 6 and housing 9. Since all of the above parts are supported entirely from spindles 3, the change in drive thus involves no modifications or alterations in the framework or other parts of the machine.

Preferably the housings 9 are provided with bracing members to absorb the torque on the housings which is caused by the rotation of the gears, and maintain the housings in proper angular position on spindles 3. In the present instance, these bracing members consist of rods 13, adjustable by means of turnbuckles 14 (Fig. 1), and having collars 15 bearing against lugs 16 on the tops of the housings 9. The end rods 13 may be anchored to the framework 1 of the machine in any suitable manner (not illustrated) to lend stability to the structure.

The illustrated machine has two tiers of driers, with a shaft 6 and associated parts for each tier. One of the shafts may be connected to a source of power and the other shaft suitably driven from it, as by means of a chain 17 engaging sprockets 18 on two shafts 6.

While a specific embodiment of the invention has been described, it will be obvious that many changes may be made therein without departing from its principles, as defined in the following claims.

I claim:

1. A paper-making machine, comprising a frame, a series of drying rolls having spindles and carrying gears adjacent ends of their spindles, said frame supporting bearings for said spindles, a driving shaft extending longitudinally of said series of drying rolls adjacent their gears, said driving shaft having gears meshing respectively with the gears which are carried by the drier spindles, and being supported by the drier spindles.

2. A paper-making machine, comprising a frame, a series of drying rolls having spindles and carrying gears adjacent ends of their spindles, said frame supporting bearings for said spindles, a driving shaft extending longitudinally of said series of drying rolls adjacent their gears, said driving shaft having gears meshing respectively with the gears which are carried by the drier spindles, and housings respectively supported by said spindles and enclosing the corresponding sets of gears.

3. A paper-making machine, comprising a frame, a series of drying rolls having spindles and carrying gears adjacent ends of their spindles, said frame supporting bearings for said spindles, a driving shaft extending longitudinally of said series of drying rolls adjacent their gears, said driving shaft having gears meshing respectively with the gears which are carried by the drier spindles, and housings respectively supported by said spindles and enclosing the corresponding sets of gears, said housings carrying bearings for said driving shaft.

4. A paper-making machine, comprising a frame, a series of drying rolls having spindles and carrying gears adjacent ends of their spindles, said frame supporting bearings for said spindles, a driving shaft extending longitudinally of said series of drying rolls adjacent their gears, said driving shaft having gears meshing respectively with the gears which are carried by the drier spindles, housings respectively supported by said spindles and enclosing the corresponding sets of gears, and bracing members for holding said housings in proper angular position.

5. A paper-making machine comprising a frame, a series of drying rolls having spindles supported in bearings carried by said frame, such spindles projecting outwardly of the frame beyond said bearings and carrying gears on such outwardly projecting portions, a driving shaft extending along said frame and having gears meshing respectively with the gears above-mentioned, said driving shaft and its gears being supported from the projecting portions of the spindles.

6. A paper-making machine comprising a frame, a drying roll having a spindle supported in bearings carried by said frame, a shaft adjacent said spindle, meshing gears carried by said shaft and spindle adapted to drive said roll, and a housing for said gears supported by said spindle.

In testimony that I claim the foregoing, I have hereunto set my hand this 5th day of May, 1924.

WILLIS S. CRANDELL.