W. KELLY.

APPARATUS FOR REELING PAPER AND THE LIKE.

APPLICATION FILED OCT. 8, 1909.

995,352.

Patented June 13, 1911.

3 SHEETS—SHEET 1.

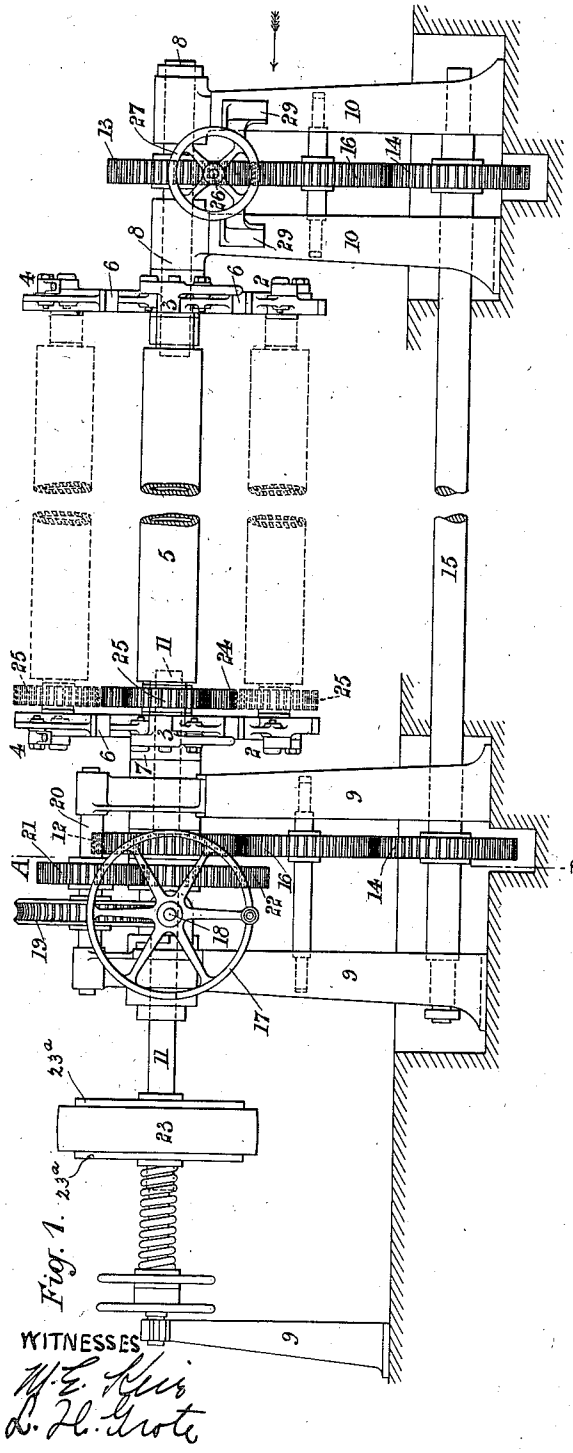

Fig. 1.

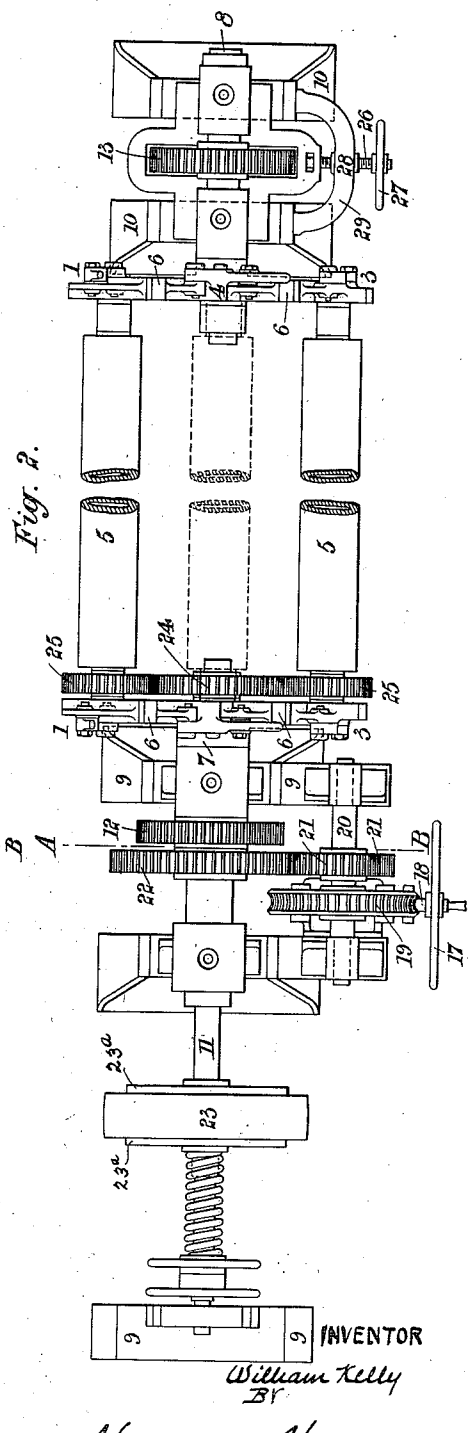

Fig. 2.

WITNESSES

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3 SHEETS—SHEET 2.

Fig. 3.

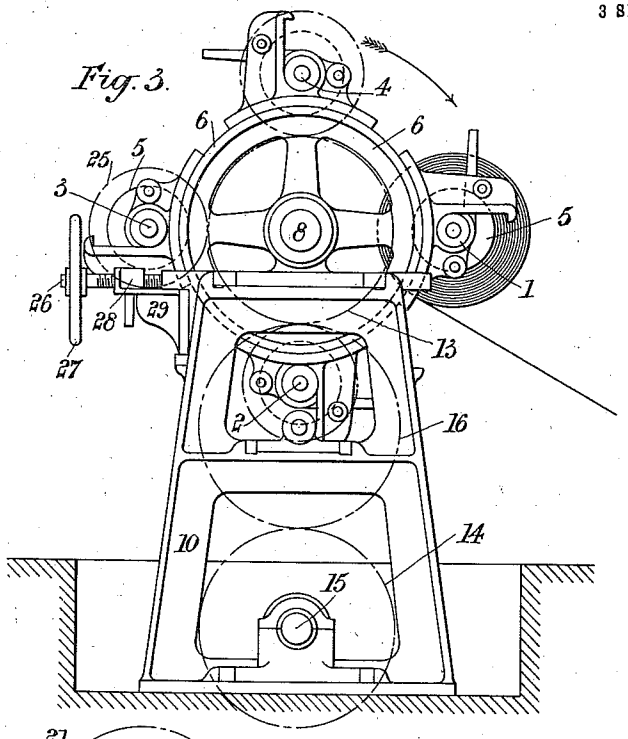
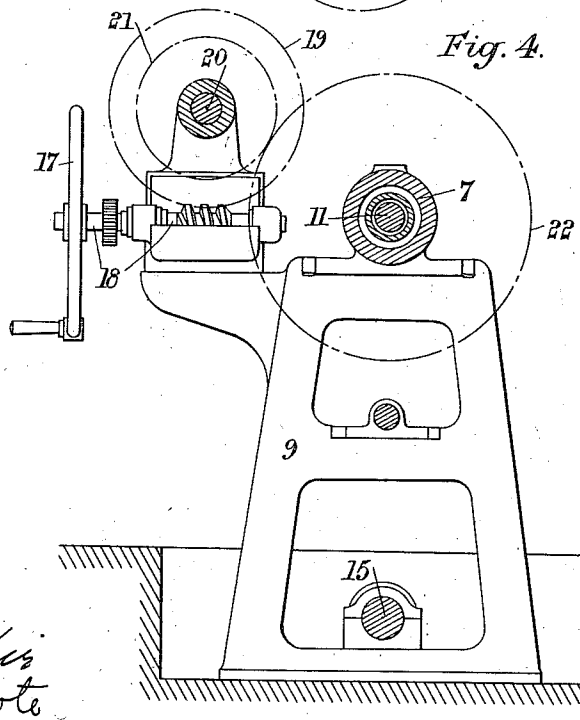


Fig. 4.



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3 SHEETS—SHEET 3.

Fig. 5.

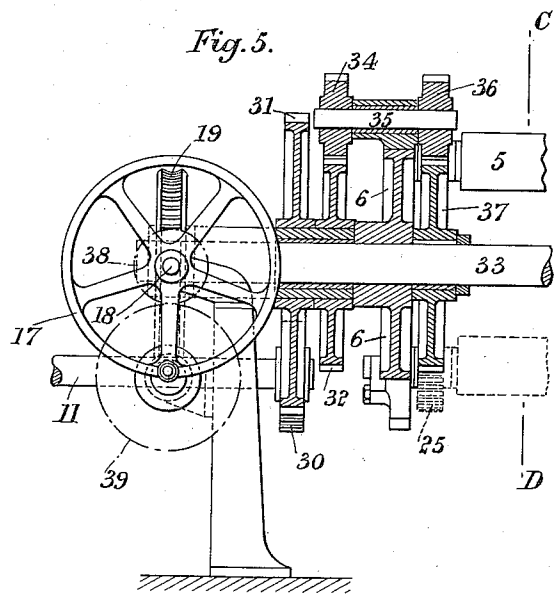
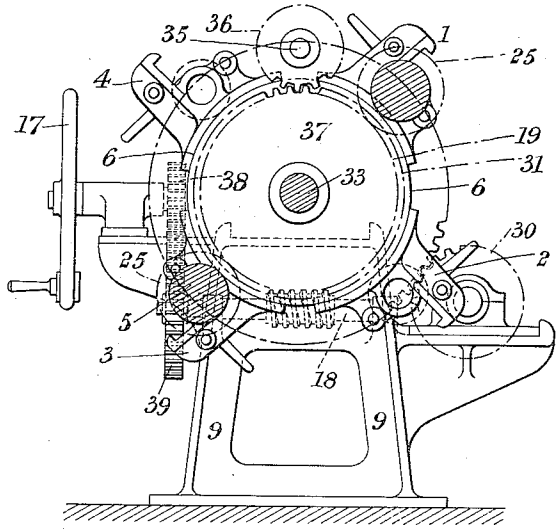


Fig. 6.



WITNESSES

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR REELING PAPER AND THE LIKE.

995,352. Specification of Letters Patent. Patented June 13, 1911.

Application filed October 8, 1909. Serial No. 521,783.

To all whom it may concern:

Be it known that I, WILLIAM KELLY, a subject of the King of Great Britain and Ireland, of Caldercruix Paper Mills, Caldercruix, in the county of Lanark, Scotland, have invented new and useful Improvements in Apparatus for Reeling Paper and the Like, of which the following is a specification.

This invention relates to apparatus for reeling paper, and the like, and especially for reeling paper proceeding from paper-making machines, in which reeling apparatus several reels are carried by one carrier so that the reels can be rapidly and easily brought successively into position for reeling and for being removed when full and replaced by empty reels, and the object of this invention is to improve the construction of such reeling apparatus so that it is rendered more easy of operation and more efficient in use than is the case with reeling apparatus as hitherto constructed, and so that there is a minimum of waste of paper in effecting the transference of the paper from a full reel to an empty reel.

According to this invention the apparatus is so constructed that as many of the reels as are carried by the apparatus are kept in constant rotation whether engaged in reeling, or not, so that the broken paper-end can be easily transferred from a full reel to an empty reel, the paper being capable of being wound on the reels whatever position they may be in and a minimum of time being occupied in effecting the transference and there being a minimum waste of paper.

The accompanying drawings illustrate apparatus constructed in accordance with this invention.

Figure 1 is a side elevation, Fig. 2 a plan, Fig. 3 an end elevation (looking in the direction of the arrow in Fig. 1) and Fig. 4 a vertical section on the lines A, B, Figs. 1 and 2. Figs. 5 and 6 show a modification in side elevation partially in section and a section on the line C—D, Fig. 5 respectively.

I have shown an apparatus provided with pairs of bearings for four reels, two reels as shown in full lines, being presumed to be in normal use, the other two pairs of bearings being provided for emergency rollers, which are indicated by dotted lines, but any desired number of reels may be provided for. The axes of the reels 5 are mounted at each end so that they can rotate in pairs of bearings 1, 2, 3 and 4, carried by disks 6, or wheels, (we will refer to them as disks), one disk being mounted on, or secured to, a sleeve 7 at one end of the apparatus and the other disk being secured to a shaft 8 at the other end of the apparatus, so that both disks are capable of rotary movement to bring the reels into and out of winding position. Through the sleeve 7 passes the driving shaft 11. The shafts 8 and 11 are capable of being rotated in bearings carried by standards marked respectively 10 and 9. The said sleeve 7 and shaft 8 have keyed to them toothed wheels marked 12 and 13 respectively, motion being conveyed from one end of the apparatus to the other through toothed wheels 14 on a shaft 15 running beneath the apparatus, such toothed wheels being geared with those on the sleeve 7 and shaft 8 either directly or (as shown) through intermediate wheels 16, so as to lessen the diameter of the wheels and make them more convenient for operation.

A wheel 17, operated by hand, or power, (shown as a hand-wheel), rotates a worm-shaft 18, the worm on which engages a worm-wheel 19 secured to the shaft 20, mounted in bearings carried by two of the standards 9. Keyed to the shaft 20 is a pinion 21 driving a toothed wheel 22 connected with the sleeve 7, and consequently driving the toothed wheel 12, so that, when the wheel 17 is turned, the disks 6 have rotary movement imparted to them. This gear is operated when a full reel is to be brought out of winding position for removal and an empty reel is to be brought into position for winding and the transference of the broken paper-end from the full reel to the empty reel can be effected at once,

or while the disks 6 are being turned to bring the reels into position for changing, as the reels are kept constantly rotating while the web of paper is broken and transferred to the empty reel and the reels are brought into their fresh position, the full reel being then removed and replaced by an empty reel. The rotation of the reels continuously is effected by the pulley 23 mounted on the driving shaft 11 passing through the sleeve 7, the said shaft having keyed to it a toothed wheel 24 gearing with pinions 25 on the ends of the reels. The pulley 23 is shown as driving the shaft 11 through friction disks 23^a keyed to the shaft, the pressure between the pulley and disks being regulated by a spring whose power is capable of being altered as required by a nut screwing on the shaft and secured by a lock nut.

The bearings for the axes of the reels may be of any usual, or suitable, kind which will allow of the ready removal and replacement of the reels. The bearings for the shaft 8 are preferably mounted so that they can be moved to adjust the reels laterally to cause the web of paper to wind straight on the reels, and this can be done by means of a screw 26 provided with a hand-wheel 27 and working through a screw-nut 28 in a bracket 29 carried by the standards 10 which support slideways for the said bearings.

I do not limit myself to the precise details of the gear shown in Figs. 1 to 4; for example instead of the winding movement of the reels being effected from a central shaft and the turning movement of the disks being effected from a sleeve, the winding movement can be effected from a sleeve and the turning movement be effected from a central shaft. Figs. 5 and 6 show (in side elevation partially in section and in section on the line C D Fig. 5 respectively) such a modification of the gear.

The pinion 30 is keyed to the driving shaft 11 and drives a spur-wheel 31 keyed to a sleeve loose on the shaft 33, a second spur wheel 32, also keyed to the said sleeve driving a pinion 34 keyed to a shaft 35, to which is also keyed a pinion 36 driving a spur-wheel 37, (loosely mounted on the shaft 33) which spur-wheel 37 drives the reel pinions 25. The shaft 33 extends from end to end of the apparatus and has keyed to it, toward each end, the reel-supporting disks, one of which is seen in the figures and is marked 6, the shaft 33 having movement of rotation imparted to it by a hand-wheel 17 which, through pinions 38 and 39, drives a worm on the worm shaft 18, this worm driving a worm wheel 19 keyed to the shaft 33.

The apparatus according to this invention is applicable to reeling all kinds of paper, and whether damped on the paper machine for subsequent super-calendering, or not, and although I have mentioned paper as the material to be wound, the apparatus may be used for winding any appropriate material.

What I claim is:—

1. In paper reeling apparatus of the character described, a plurality of axially supported reel carrying disks, a plurality of reels carried by and between the same, a spindle axial to one of said disks, and a sleeve on said spindle, in combination with independently operative means in connection with said spindle and sleeve for rotating said disk and reels whereby said reels may be rotated on their individual axes and the reels and disks rotated simultaneously on their common axis, substantially as described.

2. In paper reeling apparatus of the character described, a plurality of axially supported reel carrying disks, a plurality of reels carried by and between the same, a spindle axial to one of said disks, and a sleeve on said spindle fast with the disk, in combination with gearing on said spindle operatively connecting the latter to the reels and means for rotating said sleeve and spindle independently whereby said reels may be rotated independently on their individual axes or simultaneously with said disk on their common axis, substantially as described.

3. In paper reeling apparatus of the character described, a pair of axially supported reel-carrying disks having bearings for a plurality of reels, a live spindle axial to one of said disks for driving simultaneously on their independent axes the reels carried by said disks, a sleeve on said spindle and gearing connecting said sleeve to both disks whereby they may be simultaneously rotated and the reels thereby revolved upon a common axis during their continued rotation upon their individual axes, substantially as described.

4. In paper reeling apparatus of the character described, end frames, a plurality of reel-carrying disks axially supported thereby, a plurality of reels carried between the disks, a spindle axial to at least one of said disks, a sleeve on said spindle and means in connection with said sleeve and spindle for rotating said reels simultaneously about their common axis and independently on their individual axes, substantially as described.

5. In paper reeling apparatus of the character described, end frames, a plurality of reel-carrying disks axially supported thereby, a plurality of reels carried between the disks, a spindle axial to at least one of said disks, a sleeve on said spindle and means in connection with said sleeve and

spindle for rotating said reels simultaneously on their common axis and independently on their individual axes, together with means for shifting one of said disks transversely of its frame to regulate the draft on the paper being reeled, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM KELLY.

Witnesses:

THOS. FORSYTH,

ROBT. MITCHELL.