F. E. STRASBURG.

WEB REELING MECHANISM.

APPLICATION FILED APR. 4, 1908.

903,518. Patented Nov. 10, 1908.

2 SHEETS—SHEET 1.

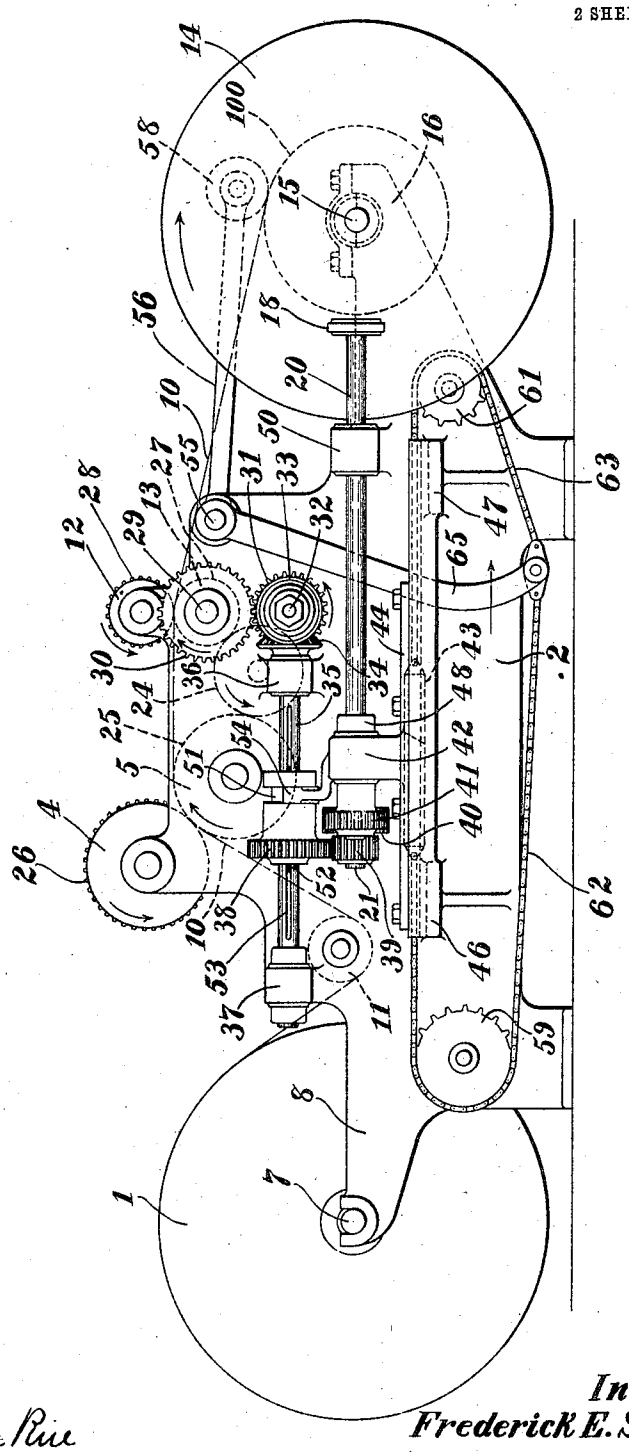


Fig. 1.

Witnesses:

Chas. W. LaRue

Daisy V. Riggs

Inventor:

Frederick E. Strasburg

by Wilbur M. Stone

Attorney.

F. E. STRASBURG.

WEB REELING MECHANISM.

APPLICATION FILED APR. 4, 1908.

903,518. Patented Nov. 10, 1908.

2 SHEETS—SHEET 2.

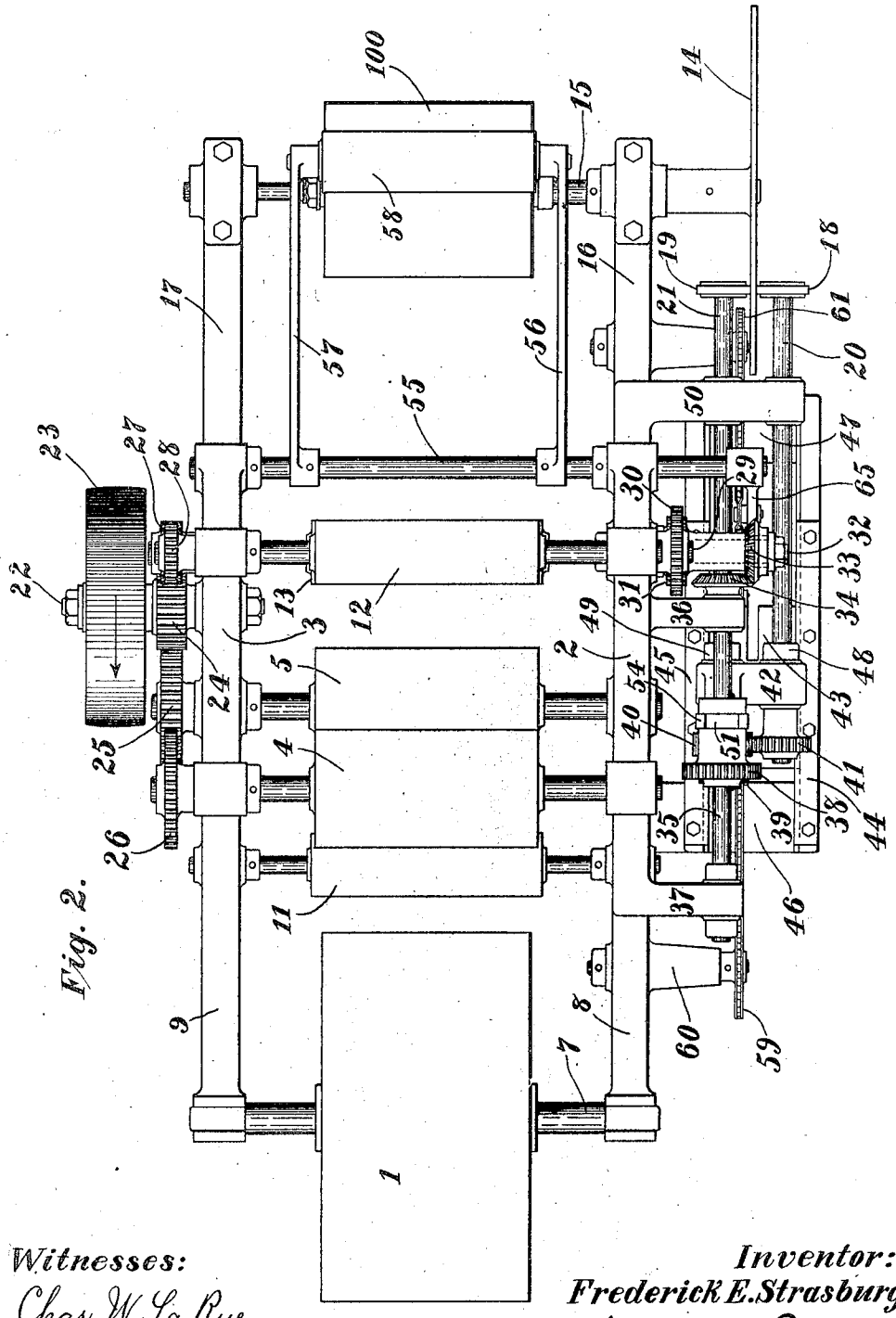


Fig. 2.

Witnesses:

Chas. W. La Rue

Daisy V. Riggs

Inventor:

Frederick E. Strasburg

by Wilbur McAtee.

Attorney.

UNITED STATES PATENT OFFICE.

FREDERICK E. STRASBURG, OF RUMFORD FALLS, MAINE, ASSIGNOR TO CONTINENTAL PAPER BAG COMPANY, A CORPORATION OF MAINE.

WEB-REELING MECHANISM.

No. 903,518 Specification of Letters Patent. Patented Nov. 10, 1908.

Application filed April 4, 1908. Serial No. 425,271.

To all whom it may concern:

Be it known that I, FREDERICK E. STRASBURG, a citizen of the United States, and a resident of Rumford Falls, in the county of Oxford and State of Maine, have invented certain new and useful Improvements in Web-Reeling Mechanism, of which the following is a specification.

This invention relates to web reeling mechanism and has for its object to furnish means for reeling a continuous web of sheet material such as paper, at a uniform tension and at a rotary speed decreasing in direct proportion to the increase in the size of the roll.

In the drawings accompanying this specification, Figure 1 is a side elevation of the preferred embodiment of my improvements and Fig. 2 is a plan view of the same.

For the purpose of illustration, I have shown my improvements applied to a machine having rolls 4, 5 for printing, embossing, perforating or the like, the web of paper 10. Said rolls and the other parts of my mechanism are mounted in side frames 2, 3. Roll 1 from which the paper is supplied to the mechanism, is supported on shaft 7 mounted in rearwardly extending brackets 8, 9 of side frames 2, 3 respectively. From roll 1 the web 10 passes under idle roll 11 and thence upwardly between work rolls 4, 5 and thence forwardly between feed rolls 12, 13, to reel shaft 15. Said shaft 15 is supported for revolution in forwardly extending brackets 16, 17 of side frames 2, 3 respectively and said shaft has fixed to that outboard end thereof adjacent to frame 2, disk 14. Said disk is rotated by means of a friction wheel or preferably by two friction wheels 18, 19 on opposite sides respectively thereof. By employing two friction wheels set opposite each other, the disk being gripped therebetween, undue strain on disk 14 is avoided. Said friction wheels 18, 19 are mounted on parallel shafts 20, 21 respectively arranged parallel with the face of disk 14. Said shafts 20, 21 are slidably supported adjacent to disk 14 in bracket 50 outstanding from frame 2.

Power is communicated to wheels 18, 19 and to the other rotating parts of my mechanism as follows: On stud 22 outstanding from frame 3 is rotatably mounted pulley 23 and to which power may be applied by the usual means. Fixed to the hub of said pulley 23 is gear 24. Said gear meshes with gear 25 of lower work roll 5 and said gear 25 meshes with gear 26 of upper work roll 4. Gear 24 also meshes with gear 27 of lower feed roll 13 and said gear 27 meshes with gear 28 of upper feed roll 12. Shaft 29 of lower feed roll 13 reaches through frame 2 and has fixed to its outboard end adjacent to said frame 2, gear 30. Gear 30 in its turn meshes with gear 31 on stud 32 outstanding from frame 2. Fixed to the hub of gear 31 is bevel gear 33. Said bevel gear 33 meshes with bevel gear 34 of intermediate shaft 35. Said shaft 35 lies parallel with friction wheel shafts 20, 21 and is supported in bearings 36, 37 outstanding from frame 2.

Power is communicated from shaft 35 to shafts 20, 21 by the following means: On shaft 35 and driven thereby is gear 38, meshing with gear 39 fixed to the rearward end of shaft 21. Adjacent to gear 39 on shaft 21 is fixed gear 40 meshing with gear 41 fixed on shaft 20. Shafts 20, 21 are actuated to retract wheels 18, 19 toward the periphery of disk 14 and thereby diminish the speed of rotation of said disk as the size of roll 100 increases in diameter, by the following means: The rearward ends respectively of shafts 20, 21, are supported for rotation in bracket 42 upstanding from carriage 43 slidably mounted in suitable guides 44, 45 supported on brackets 46, 47 outstanding from frame 2. Endwise movement of shafts 20, 21 in bracket 42 is prevented by collars 48, 49 thereon respectively, on the one side of said bracket and by their respective gears 41, 40 on the other side of said bracket. Thus when carriage 43 is moved endwise in its guides, shafts 20, 21 are carried therewith and correspondingly move endwise through their bearings in bracket 50 and friction wheels 18, 19 have a corresponding radial movement relative to disk 14. Gear 38 is slidable endwise on shaft 35 and is caused to rotate with that shaft by means of key 52 fixed in said gear and engaging groove 53 in said shaft. Gear 38 has an elongated hub having a circumferential groove 51 therein for the engagement of dog 54 of bracket 42. By this means said gear 38 is caused to slide endwise on shaft 35 in constant relation to bracket 42 and in mesh with gear 39 on shaft 21.

For actuating carriage 43 to change the position of wheels 18, 19 radially relative to disk 14, the following means is provided:

From shaft 55, having bearings in frames 2, 3, arms 56, 57 reach forwardly and carry at their free ends governing roll 58 for engagement with roll 100 which is being formed by the winding of web 10 onto shaft 15. On that portion of shaft 55 outboard frame 2 is fixed arm 65 reaching downwardly to a position below the level of carriage 43. Revolubly supported on post 60 outstanding from the rearward end of frame 2 is sprocket wheel 59. Similarly supported at the forward end of said frame 2 is sprocket wheel 61. One end of a section of chain 62 is fastened to the rear end of carriage 43, passes over sprocket wheel 59 and the other end thereof is fastened to the lower end of arm 65. One end of another section of chain 63 is also fastened to the lower end of arm 65, passes up over sprocket 61 and the other end thereof is fastened to the front end of carriage 43. Thus as roll 100 increases in diameter by the winding thereon of web 10, governing roll 58 is lifted whereby shaft 55 is turned on its axis and arm 65 is moved in the direction of its arrow and by means of chain 62 carriage 43 is caused to move backwardly and the points of contact of wheels 18, 19 on disk 14 are moved outwardly relative to the axis of said disk. Said disk is thereby caused to rotate slower and slower in direct proportion with the increase in size of paper roll 100.

The gearing of my improved mechanism is usually proportioned so as to drive wheels 18, 19 slightly in excess of the required speed of disk 14 so that web 10 is constantly reeled onto roll 100 under tension and by my improvements that tension is always maintained uniform. Furthermore by shifting arm 65 about the axis of shaft 55 relative to arms 56, 57 carrying roll 58, said tension may be changed as desired. Furthermore neither the speed of the web feed nor the thickness of the paper affect the operation of my improved mechanism. When said roll is of the desired size it is removed from the machine and governing roll 58 is allowed to drop toward shaft 15 ready to repeat its operation on a new roll 100. By the return movement of roll 58, arm 65 has its direction of movement reversed and by means of chain 63 carriage 43 is returned to its forward position, whereby wheels 18, 19 are returned to their inner positions relative to disk 14.

I claim:

1. The combination of a reel, a disk thereon, a friction wheel for driving said disk, a movable carriage for shifting the friction wheel radially of the disk, means governed by the increase in diameter of the material wound on the reel for shifting the movable carriage and means for driving the friction wheel.

2. The combination of a reel, a disk thereon, a friction wheel for driving said disk, a movable carriage for shifting the friction wheel radially of the disk, a governing roll mounted for engagement with the material wound on the reel, means for moving the carriage from the governing roll, and means for driving the friction wheel.

3. The combination of a reel, a disk thereon, a reciprocating carriage, a friction wheel mounted for rotation on said carriage for engagement with the disk, means operable during the reciprocation of the carriage for rotating the friction wheel, and means controlled by the increase in the diameter of the material wound on the reel for moving the reciprocating carriage.

4. The combination of a reel, a disk thereon, a reciprocating carriage, two friction wheels rotatably mounted thereon and between which the disk is gripped, means for rotating the friction wheels, means governed by the change in diameter of the material wound on the reel for moving the carriage to shift the friction wheels radially of the disk.

Signed this thirtieth day of March, 1908, at Rumford Falls, Maine, before two subscribing witnesses.

FREDERICK E. STRASBURG.

Witnesses:
HAROLD SMITHWICH,
CHARLES E. NEFF.