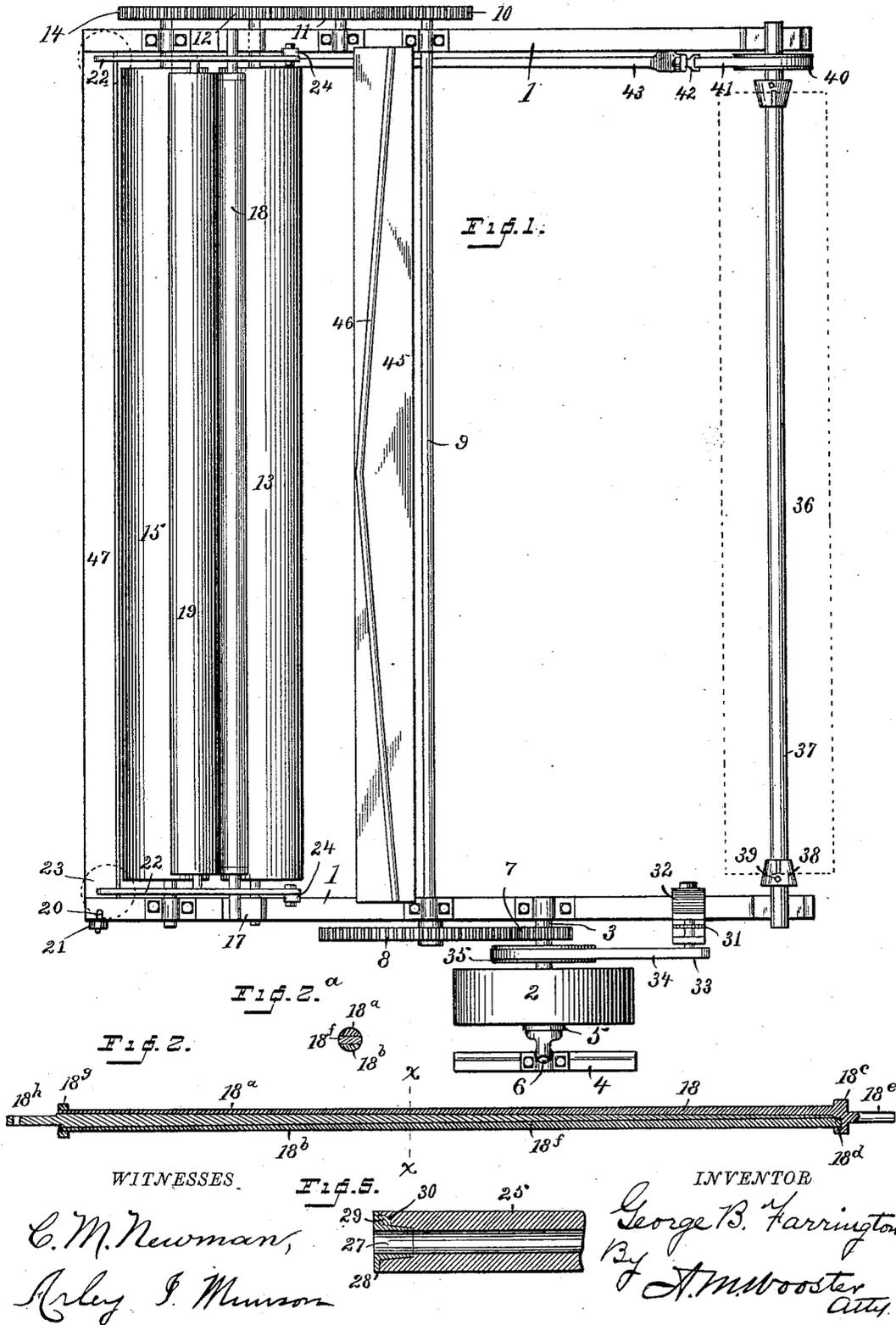


G. B. FARRINGTON.
MACHINE FOR MAKING PAPER SHELLS.

No. 454,113.

Patented June 16, 1891.



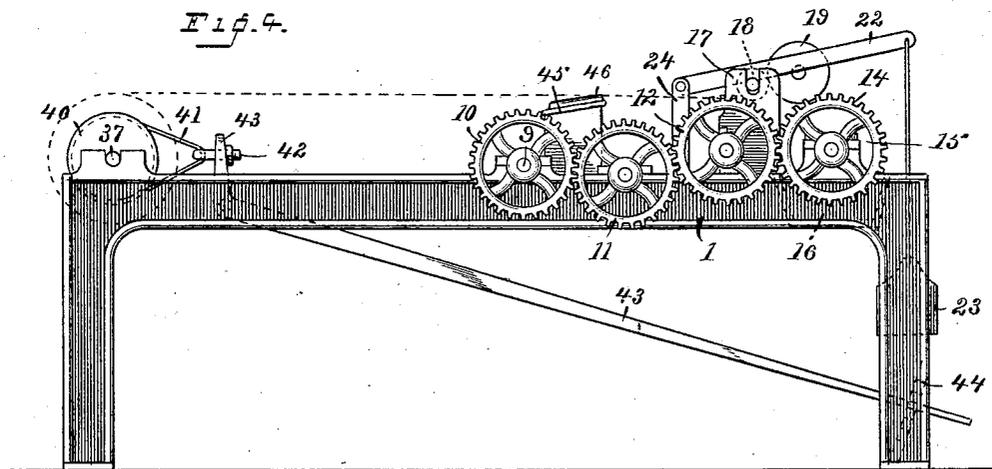
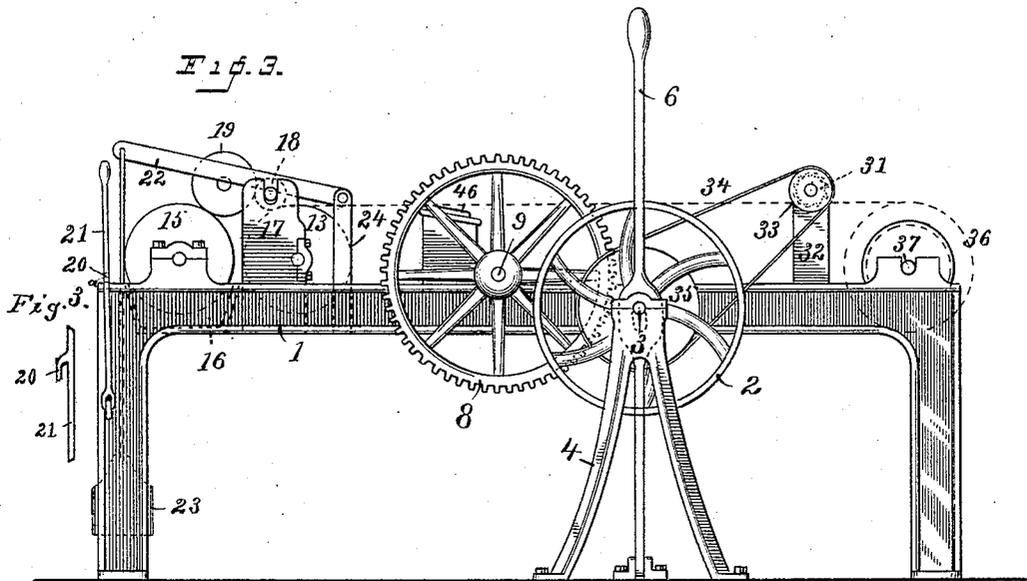
(No Model.)

2 Sheets—Sheet 2.

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WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE B. FARRINGTON, OF UNIONVILLE, CONNECTICUT.

MACHINE FOR MAKING PAPER SHELLS.

SPECIFICATION forming part of Letters Patent No. 454,113, dated June 16, 1891.

Application filed September 19, 1890. Serial No. 365,453. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. FARRINGTON, a citizen of the United States, residing at Unionville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Making Paper Shells; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to produce a machine for making winding shells for paper—that is to say, shells or spools of the class described in Letters Patent to Farrington and Curtis, No. 411,140, dated September 17, 1889. In order to enable me to produce these shells at a maximum speed and at the minimum of cost of production, each shell being perfectly made and all being of uniform quality, I have devised the novel machine which I will now describe, referring by numerals to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of the machine complete; Fig. 2, a longitudinal section of the winding-roller; Fig. 2^a, a cross-section of the winding-roller, as at *xx* in Fig. 2; Fig. 3, a left side elevation as seen in Fig. 1; Fig. 3^a, a detail view illustrating the construction and operation of the prong upon the swinging lever; Fig. 4, a right-side elevation as seen in Fig. 1; and Fig. 5 (see Sheet 1) is a detail sectional view of a completed paper shell, showing the metallic hub or bushing in place.

1 denotes frame-work, of any suitable or preferred construction. Power is applied to the machine by means of a belt (not shown) running over a pulley 2, loosely mounted on a shaft 3, one end of which has its bearing in the frame-work and the other in a bracket 4.

5 denotes a clutch member, which slides longitudinally on the shaft and is controlled by a lever 6, which in the present instance I have shown as pivoted to the floor. I have not deemed it necessary to illustrate the details of construction of the clutch, as any ordinary clutch can be used. It is sufficient for the purposes of this specification to say that member 5 is provided with clutch projections (not shown) which engage correspond-

ing projections on the hub (not shown) of the belt-pulley. The object of this construction is to enable the operator to stop and start the operative parts of the machine without removing the main belt from the belt-pulley. Shaft 3 is provided with a pinion 7, which engages a gear 8 on a shaft 9, which has its bearings in the opposite sides of the frame-work. At the other end of shaft 9 is a pinion 10, which engages an intermediate pinion 11. This pinion in turn engages a pinion 12 on the shaft of a carrying-roller 13. Pinion 12 in turn engages a pinion 14 on the shaft of a roller 15, which rotates in a glue-tank 16, this glue-tank being indicated by dotted lines in Figs. 3 and 4. The bearings for the carrying-roller are shown as in the sides of brackets 17. 18 denotes the winding-roller, which is shown as loosely mounted in the top of brackets 17. The glue-roller 15 is shown as having its bearings in the top of the framework. It will of course be understood that these details of construction are wholly immaterial so far as the gist of my invention is concerned, and may be greatly varied without departing from the principle thereof.

19 denotes a transferring-roller, which rests upon the top of the winding-roller and the glue-roller, said transferring roller having no journals and receiving its motion from winding and glue rollers. Glue from the tank is picked up by the glue-roller and is by roller 19 transmitted to the surface of the paper that is being wound on the winding-roller. This construction prevents any more glue than the required amount to saturate the paper being conveyed thereto, and also permits the winding of shells of any required size. The construction of the winding-roller is clearly illustrated in Figs. 2 and 2^a. The body of this roller is made in three parts, two of which (denoted, respectively, by 18^a and 18^b) are semi-cylindrical in cross-section and taper on their inner sides from end to end.

18^c denotes a wedge-shaped piece, which is placed between parts 18^a and 18^b in assembling the roller and acts to force said parts outward. The outer end of the wedge is turned down, as clearly shown in Fig. 2, and serves as one of the journals of the roller.

18^d denotes a head, which is cast integral

with part 18^a and is provided with a socket 18^d on its inner side and a journal 18^e, extending from its outer side. One end of part 18^b is adapted to engage the socket, as is clearly shown in Fig. 2. The parts are held in operative position by a ring 18^c, which is slid over the three parts of the body, as shown, the ring clamping the parts together and holding them in the assembled position. At the outer end of the turned-down portion of the wedge is an opening 18^b, which is adapted to be engaged by a prong 20 on a lever 21, pivoted to the frame-work and adapted to be swung outward therefrom when it is desired to withdraw the wedge from between the other parts of the roller.

In order to provide a suitable tension during the operation of winding without strain upon the saturated paper, I provide tension-levers 22, having weights 23 suspended from their outer ends, the inner ends of said levers being pivoted to brackets 24. These levers rest upon the journals of the winding-rollers and act to press the latter down upon the carrying-roller, it being understood, of course, that the winding-roller receives its motion from the carrying-roller and that the transferring-roller is in contact both with the winding-roller and the glue-roller.

In Fig. 5 I have illustrated one end of a winding-shell ready for use. The body of the shell is indicated by 25.

27 denotes metallic hubs or bushings having flanges 28 and enlargements 29, substantially the same as in the patent to Farrington and Curtis, referred to. There is, however, this difference in the enlargement: Instead of being made angular, as shown in the patent referred to, the forward end thereof is an arc of a circle, and the enlargement is made of less diameter than the flange, so as not to extend through the shell proper, as in said former patent. In practice the shell is wound to the precise diameter of the flange, and the hubs or bushings are driven into place and riveted or otherwise secured, as in the said Farrington and Curtis patent.

30 denotes a recess in the end of the completed shell, which receives enlargement 29. This recess I form by means of a saw 31, mounted in suitable bearings on a bracket 32, which extends upward from the frame-work. The shaft which carries the saw is provided with a belt-pulley 33. Motion is imparted to the saw by a belt 34, passing over pulley 33 and over a pulley 35 on shaft 3.

36 (see dotted lines, Figs. 1 and 3) denotes a roll of paper from which the shells are wound. The roll of paper is carried by a shaft 37, detachably mounted in bearings on the frame-work, the shaft being provided with the usual sliding cones 38, which engage the bushings of the shell upon which the paper is wound, or the ends of the shell itself, if a metallic shell is used. The cones are locked in position upon the shaft by bolts 39 or in any suitable manner. In order to provide a ten-

sion on the roll of paper, so that the unwinding thereof may be controlled, I place a pulley 40 on shaft 37.

41 denotes a strap which partially encircles this pulley and engages a staple or hook 42 on the short arm of a bell-crank lever 43. This lever is pivoted to the frame-work, as clearly indicated in Fig. 4, the long arm thereof extending downward to the opposite end of the machine and being adapted to engage the teeth of a rack 44. (Shown only in dotted lines in Fig. 4.) The operator obtains the desired amount of tension on the roll of paper by pressing down on the long arm of the lever and catching it upon one of the teeth of the rack.

45 is a rest which supports the paper as it passes to the winding-roller. This rest is preferably provided with a rib 46, which extends from the opposite ends of the rest inward and forward, the apex of the rib being at the forward end of the rest, so as to support the paper at the center and prevent the possibility of sagging. This insures even winding of the paper on the winding-roller to form the shell.

The operation of the machine is as follows: The end of the roll of paper is passed over the rest and over the top of the carrying-roller and is wound about the winding-roller, the paper being thoroughly saturated with glue before passing over the winding-roller by contact with the transferring-roller. As already stated, the winding-roller is prevented from turning freely by the pressure of tension-levers 22 on the journals thereof. It will be apparent that this retarding of the rotation of the winding-roller, in connection with the pressure of the transferring-roller, insures the greatest possible degree of hardness in the completed shells. When the shell upon the winding-roller is wound to the required thickness, the operator stops the rotation thereof by movement of lever 6, throwing the clutch members out of engagement. He then removes the winding-roller, with the shell thereon, from its bearings and proceeds to remove the shell from the roller. For convenience a table 47 is provided upon which the wound shell may be laid. The operator then knocks ring 18^c off from the end of the body of the winding-roller, engages prong 21 in the opening 18^b in the end of the wedge, and by means of lever 21, or in any suitable manner, withdraws the wedge from between the parts of the body of the winding-roller, holding the shell meanwhile with one hand. The withdrawal of the wedge permits part 18^b of the winding-roller to fall inward, so that it may be readily removed, after which the shell may be removed from the other part of the body. The operator then, by means of the saw, makes the recesses 30 at the ends of the shell to receive the enlargements on the hubs or bushings. The bushings are then driven into the ends of the shell and secured by riveting, as in the former patent referred to, or in any suitable or preferred manner.

Having thus described my invention, I claim—

1. The combination, with the winding-roller, brackets in which it is loosely mounted, and a carrying-roller upon which the winding-roller rests, of a glue-roller and an unmounted transferring-roller which lies in contact with the glue-roller and the winding-roller and transfers glue from the glue-roller to the paper that is being wound upon the winding-roller.

2. The combination, with the winding-roller having journals, brackets in which said journals are loosely mounted, a carrying-roller, and a glue-roller, of an unmounted transferring-roller which rests against the glue-roller and the winding-roller, and tension-levers 22, which engage the journals of the winding-roller, as and for the purpose set forth.

3. The combination, with a winding-roller, a carrying-roller, a glue-roller, and a transferring-roller, substantially as described and shown, of a rest which supports the paper as it passes to the winding-roller, said rest being provided with a rib inclining inward and forward from the opposite ends of the rest, the center of the paper being supported by the apex of the rib, so as to prevent sagging.

4. The combination, with a winding-roller, a carrying-roller, a glue-roller, and a transferring-roller, substantially as described and shown, of a shaft 37, having suitable cones to engage the shell of a roll of paper, a pulley 40, a strap partially encircling said pulley, and a bell-crank lever having a staple engaged by said strap, whereby any required amount of friction may be placed on the roll of paper.

5. A winding-roller consisting of two semi-cylindrical parts, a wedge adapted to lie between said parts, one end thereof serving as one of the journals of the roller, and a ring adapted to clamp the parts together, one of said parts having a head with a journal projecting outward therefrom and on its inner side a socket to receive the end of the other part, substantially as described and shown.

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

GEORGE B. FARRINGTON.

Witnesses:

A. M. WOOSTER,
ARLEY I. MUNSON.