Tube Machines,
Convolute Wind.

No. 883,169. PATENTED MAR. 31, 1908.

J. CHESNEY.

MACHINE FOR MAKING PAPER SHELLS.

APPLICATION FILED DEC. 11, 1906.

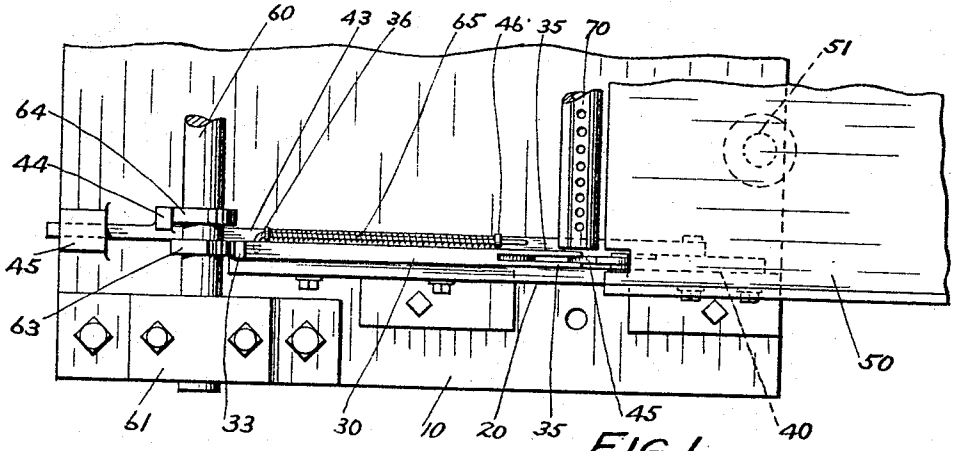


FIG. 1.

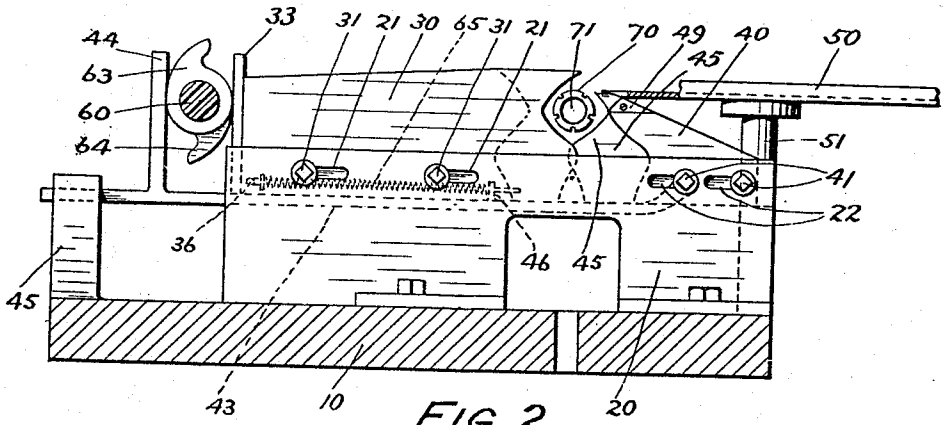


FIG. 2.

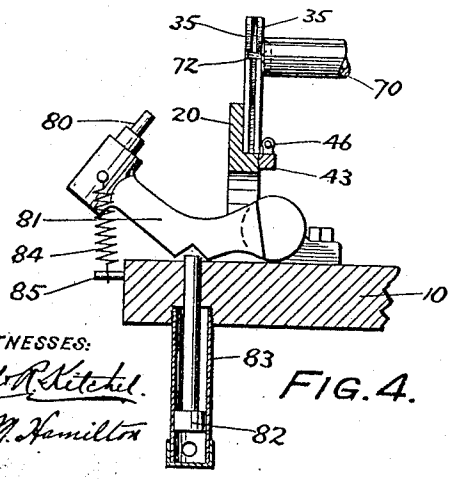


FIG. 4.

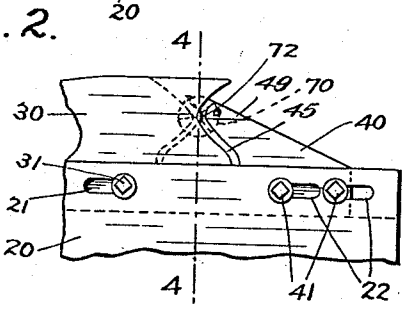


FIG. 3.

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MACHINE FOR MAKING PAPER SHELLS.

No. 883,169. Specification of Letters Patent. Patented March 31, 1908.

Application filed December 11, 1906. Serial No. 347,381.

To all whom it may concern:

Be it known that I, JOHN CHESNEY, a citizen of the United States, residing at Paulsboro, county of Gloucester, and State of New Jersey, have invented a new and useful Improvement in Machines for Making Paper Shells, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that type of machine in which sheets of paper are conveyed to a mandrel, wound thereon in tube form, and the projecting end of the tube crimped and folded in to close the end and complete the shell.

The object of my invention is to more certainly and securely fold the end of the tube than heretofore, and my invention consists in a new and simple attachment for this purpose.

In the drawings: Figure 1 is a plan view of my new folding mechanism; Fig. 2 is a side elevation of the same, the top plate of the machine and the cam shaft being shown in section; Fig. 3 is a detail view of the folder blades in their closed positions; Fig. 4 is a section on the line 4—4 of Fig. 3 with the header added.

10 is a part of the frame of the machine to which are secured the plate 20 that supports the folders 30 and 40, the post 51 that supports the table 50, and the bracket 61 that supports one end of the cam-shaft 60.

The folder 30 has the pins 31 engaging slots 21 in the plate 20, this connection permitting the folder to slide longitudinally of the plate. The folder 40 has the pins 41 engaging slots 22 in the plate 20. At the end of folder 30 is an abutment 33 adapted to be engaged by a cam 63 on the cam-shaft. Secured to one of the pins 41 of the folder 40 is a bar 43 whose rear end slides in a guide in the bracket 45. The bar 43 has an abutment 44 adapted to be engaged by a cam 64, on the cam shaft. The abutments 33 and 44 are on opposite sides of the cam-shaft 60 and are adapted to be simultaneously pushed away from the shaft by the cams 63 and 64, thereby causing the folders to simultaneously advance to perform the folding operation. When the cams 63 and 64 are retracted from the abutments, the spring 65, secured at its opposite ends to lugs 36 and 46 on the folders respectively, retract the folders, and bring both abutments 33 and 44 toward the cam-shaft in position to be again operated by the cams 63 and 64.

The folder 30 is bifurcated at its outer end to form the two blades 35, 35. The outer ends of the blades 35—35 are cut away to form a mouth whose base is substantially on a level with the axis of the mandrel 70.

The folder 40 is provided with a central blade 45 adapted, in the folding operation, to extend between the blades, 35, 35 of the folder 30. The outer end of the blade 45 is cut away, similarly to the outer ends of blades 35, 35, to form a mouth whose base also is substantially on a level with the axis of the mandrel 70.

The outer edge of that part of the folder 30 between the blades 35, 35, is cut away on a line substantially parallel with the outer edge of the blade 45. The outer edge of that part of the folder 40 on both sides of the blade 45 is cut away on a line substantially parallel with the outer edges of the blades 35, 35. Thus, when the folders are brought together, the blades 45 of folder 40 substantially fits within and fills the space between the blades 35 and 35 of folder 30, and the blades 35 and 35 of folder 30 substantially inclose the blade 45 of folder 40.

The mandrel 70 is continuously rotating, and as the folders advance, the edge of the tube overhanging the mandrel is caught between blades 35, 45, 35, and twisted and folded in toward the axis of the mandrel to form the closed end of the shell. The folders continue to move toward each other until the deepest part of the mouths nearly, but not quite overlap, the extreme twisted end 72 of the paper projecting into or through the space still left at this point (see Figs. 3 and 4.)

The final operation, which does not differ from that heretofore known, consists in forcing the central twisted part into the recess 71 in the end of the mandrel, thereby setting the folds permanently. This operation is performed by a header 80 mounted on a lever 81 pivoted on the machine frame, the lever being actuated, at the proper time, by a plunger 82 in a cylinder 83. A spring 84, secured to the header and to a projection 85 on the frame, returns the header to its inactive position.

The upper end of the blade 45 consists of a separate piece 49 detachably secured to the

body of the folder thereby enabling a longer or shorter piece to be substituted, so that, when different sized mandrels are employed to form different sized shells, the top of the plate 45 may always be brought on a level with, and will not project above, the top of the mandrel.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

1. In a machine for making paper shells, the combination with the rotatable mandrel, of two reciprocating folders adapted to move toward each other in front of the mandrel, one folder having two forwardly projecting blades spaced apart and cut away to form a mouth, the other folder having a forwardly projecting blade also cut away to form a mouth and adapted when advanced to enter between the blades of the other folder, the front edge of the first folder between its blades being cut away to substantially conform to the front edge of the blade of the second folder, and the front edges of the second folder on opposite sides of its blade being cut away to substantially conform to the front edges of the blades of the first folder, and means to advance and retract the folders.

2. In a machine for making paper shells, the combination with the rotatable mandrel, of a guide plate, folders slidable toward and from each other on said plate, an abutment on one folder, a second abutment, a bar connecting the second folder with the second abutment, a shaft extending between the abutments, and cams on the shaft adapted to engage the said abutments respectively.

In testimony of which invention, I have hereunto set my hand, at Paulsboro, N. J., on this 26th day of November, 1906.

JOHN CHESNEY.

Witnesses:
ERNEST REDFIELD,
THOS. W. BACCHUS.