H. PLANT.

DOCTOR FOR COUCH AND LIKE ROLLS OF PAPER MAKING MACHINES.

APPLICATION FILED OCT. 16, 1917.

1,317,100.

Patented Sept. 23, 1919.

2 SHEETS—SHEET 1.

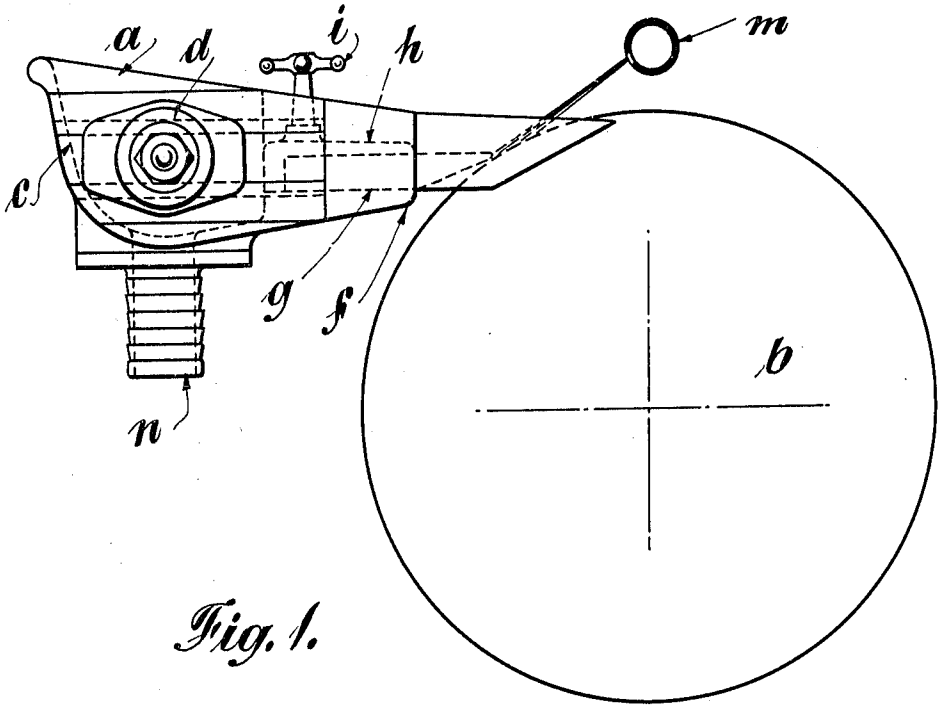



Fig. 1.

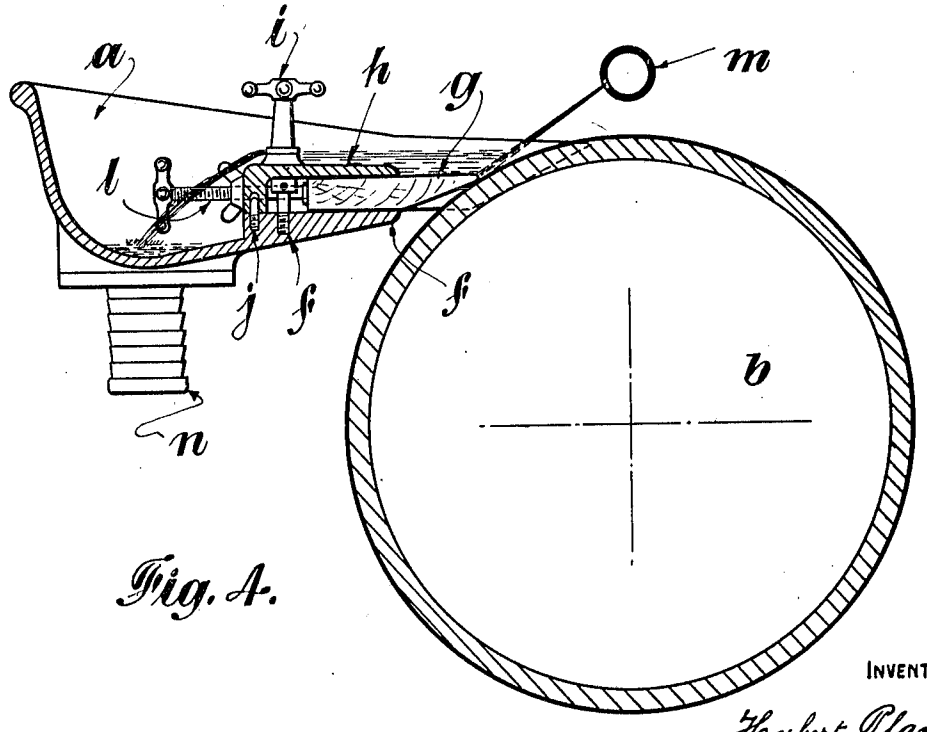



Fig. 4.

INVENTOR:-

Herbert Plant.

BY HIS ATTORNEY. Walter Gunn.

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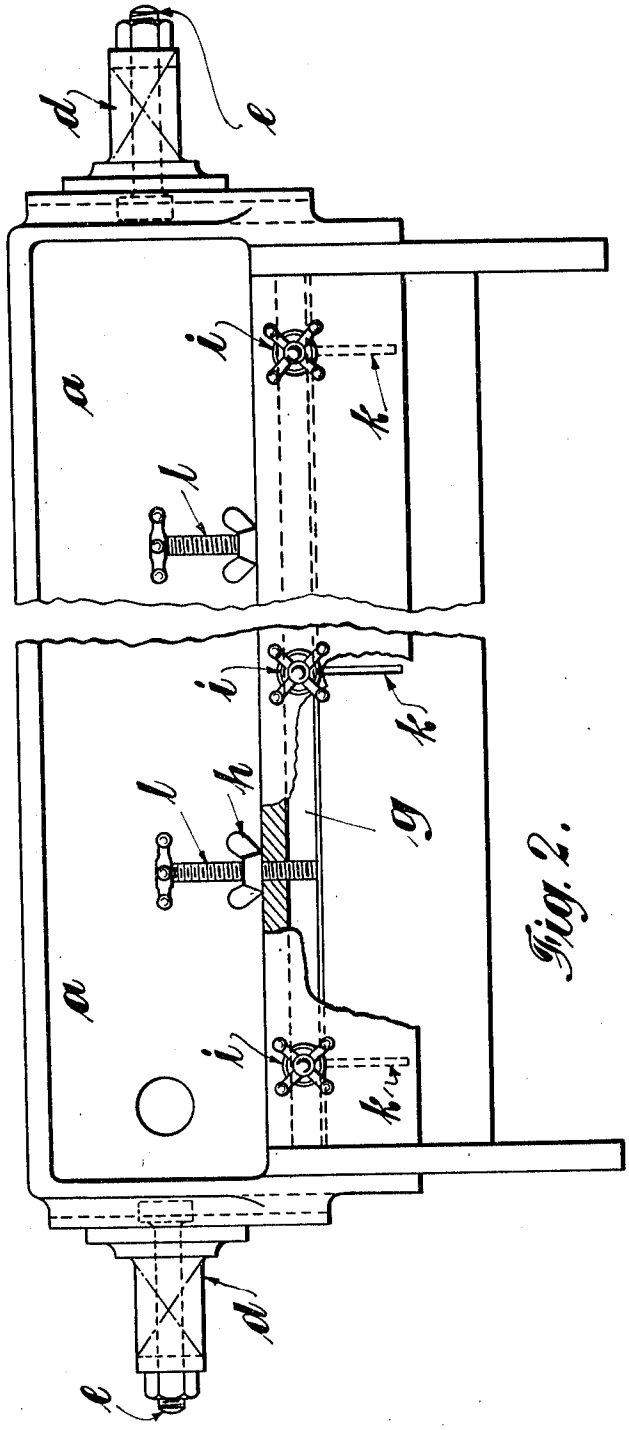



Fig. 2.

Fig. 3.

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# UNITED STATES PATENT OFFICE.

HERBERT PLANT, OF BURY, NEAR MANCHESTER, ENGLAND.

## DOCTOR FOR COUCH AND LIKE ROLLS OF PAPER-MAKING MACHINES.

1,317,100. Specification of Letters Patent. Patented Sept. 23, 1919.

Application filed October 16, 1917. Serial No. 196,848.

*To all whom it may concern:*

Be it known that I, HERBERT PLANT, a subject of the King of Great Britain and Ireland, and resident of Bury, near Manchester, England, have invented certain new and useful Improvements in Doctors for Couch and like Rolls of Paper-Making Machines, of which the following is a specification.

This invention relates to couch rolls and refers more particularly to doctors for the same.

The main object of the present invention is to provide a couch roll doctor, or like apparatus wherein particles of pulp or other matter, or impurities, are flushed straight off the roll at right angles to the same into a receiver without any rubbing or scouring effect between the roll and the doctor or in which such rubbing effect is reduced to a minimum in order to obviate damage to the couch roll jacket.

Another object of the invention is to construct the device so that the area of contact between the doctor and the roll jacket is reduced to the minimum while the pressure on the jacket is readily adjustable and maintained uniform along the length of the roll, also so that the joint between said roll and the doctor is maintained constant in use, adjustment being readily effected for this purpose. A still further object of the invention is to construct and arrange the wearing parts of the doctor so that they may be readily adjusted or renewed.

According to the invention a spray pipe is arranged above the couch roll, such pipe usually being arranged to lie substantially within the vertical plane passing through the roll axis and adapted to project a spray of water along the length of the roll in a straight line on the leading side of the same. Along or slightly in advance of this line rests the somewhat knife shaped edge of the doctor board the top of which is substantially horizontal or slopes away from the horizontal. The doctor board is preferably made of wood or the like material and clamped to the edge of a trough, so that, in use, the spray of water flows in the direction the roll is rotating on to said roll just in front of the edge of the doctor board and straight forward into the trough of the doctor, carrying with it any particles of matter adhering to the couch roll jacket, the doctor board acting as a squeegee.

Means are provided to vary the degree of pressure of the doctor board upon the roll and also to adjust the lateral position of the contacting edge of said board to insure uniform contact of the same with the roll.

The invention will be more particularly described by the aid of the accompanying drawings, in which:

Figure 1 is an end view of a couch roll doctor constructed according to the invention, and applied to a couch roll.

Fig. 2 is a front view and

Fig. 3 is a plan view of Fig. 1, while

Fig. 4 is a cross-sectional view corresponding to Fig. 1.

Referring to the drawings, a trough *a* is provided extending the whole length of the couch roll *b* and having transverse grooves or slots *c* formed in the ends thereof the bottom of which are undercut or dovetailed in shape. Within the grooves *c* and adjustable along the length of the same are trunnions *d*, which are secured in the adjusted position by bolts *e*, having heads shaped to fit the before mentioned dovetail slots.

At the forward edge *f* of the trough *a* is the doctor board *g*, secured in position by the clamping rail *h*, having clamping screws *i* rotatably mounted therein and screw-wise engaging the trough edge *f*, the rail *h* being positioned relatively to said edge by the dowel pins *j*.

Cross slots *k* are formed in the board *g* extending from the rear edge toward the front edge and between the before-mentioned cross-slots horizontal screw pins *l* are provided in the back of the clamping rail *h*, by means of which the front edge of the board *g* can be laterally adjusted locally, to insure perfect contact with the couch roll throughout the entire length, the before-mentioned cross slots *k* permitting the necessary local deflection of the board.

The end trunnions *d* are journaled in brackets (not shown) secured to the roll housings and by varying the position of the trunnions along the slot *c*, the doctor board *g* is caused to overhang said trunnions to a greater or less extent, thereby altering the degree of pressure with which said board rests upon the roll. The board *g* contacts with the roll *b* on the leading side near the top, say along a line approximately 30° from the vertical plane passing through the axis, and rearwardly of the line of contact a spray pipe *m* is provided, extending the

whole length of the roll. A spray of water is projected from said pipe forwardly in the direction the roll is rotating and adapted to strike the same along a line, parallel to and near to the edge of the board *g*, the water then passing straight forward over said board into the trough *a* carrying with it any particles of solid matter, an outlet nozzle *n* being provided in the trough connected by a flexible or other pipe to a suitable receptacle from which particles of pulp or the like can be recovered. The edge of the board *g* acts as a squeegee to scrape the roll jacket perfectly dry and clean, with a light even pressure which does not damage the same.

The edge of the board *g* can be planed true, from time to time, to maintain perfect contact and said board can be readily removed for such truing, or for renewal purposes, by unscrewing the pins *i* and removing or loosening the rail *h*.

If desired suitable gearing may be provided in order to oscillate the doctor but such oscillation is usually not necessary owing to the fine adjustments which can be maintained and the cleansing stream escaping over the doctor board at right angles to the length of the same.

It will be obvious that the doctor can be readily turned back out of the way when desired, for instance when a jacket is being put on the couch roll, and while the lateral position of the trunnions may be readily altered to vary the pressure of the doctor board upon the couch roll, such alteration is not one that could easily be effected by unauthorized persons without being observed.

While the preferred form of the invention has been described it will be understood that the detail construction may be varied, the essential feature being that the water flowing on to the couch roll is discharged straight forward and not at the ends of the rolls, thus quickly removing any material on the roll and reducing the liability to score or otherwise injure the roll jacket to a minimum.

What I claim is:—

1. A couch roll doctor comprising in combination a pivotally mounted sweeping board the operative edge of which is adapted to rest upon the leading side of the roll and the top side of which is arranged at an inclination to the horizontal plane such that a stream of water projected on to the roll can flow over the same and means to project a stream of cleansing fluid on to the roll adjacent to said board, substantially as described.

2. A couch roll doctor comprising in combination a pivotally mounted sweeping board the operative edge of which is adapted to rest upon the leading side of the roll and the top side of which is arranged at an inclination to the horizontal plane such that a stream of water projected on to the roll can flow over the same, means to adjust the position of the pivots relative to the operative edge of the board to vary the degree of pressure upon the couch roll, and means to project a stream of cleansing fluid on to the roll adjacent to said board, substantially as described.

3. Couch roll doctors comprising in combination a pivotally mounted trough, a sweeping board adjustably mounted on one side of said trough and one edge of which is adapted to rest upon the couch roll in a line approximately 30° in front of the vertical plane passing through the axis of the same the inclination of the top of the sweeping board permitting the cleansing fluid flowing over the same, substantially as described.

4. Couch roll doctors comprising in combination a pivotally mounted trough, grooves in the end of the trough, adjustable trunnions located in said grooves, a sweeping board adjustably mounted on one side of said trough and one edge of which is adapted to rest upon the couch roll in a line approximately 30° in front of the vertical plane passing through the axis of the same the inclination of the top of the sweeping board permitting the cleansing fluid flowing over the same, substantially as described.

5. Couch roll doctors comprising in combination a pivotally mounted trough, a sweeping board adjustably mounted on one side of said trough and one edge of which is adapted to rest upon the couch roll in a line approximately 30° in front of the vertical plane passing through the axis of the same the inclination of the top of the sweeping board permitting the cleansing fluid flowing over the same, and means to effect lateral local adjustment of the operative edge of the board, substantially as described.

6. Couch roll doctors comprising in combination a pivotally mounted trough, a clamping rail along one edge of said trough, a slotted board clamped to the trough by said rail, screwed means to adjust the board laterally relatively to the trough, and means to carry the cleansing fluid from the trough to a reservoir, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

HERBERT PLANT.

Witnesses:—

FRED J. MEREDITH,

HY. JUNCA.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**