

No. 610,493.

Patented Sept. 6, 1898.

D. B. McMURRAY.
PAPER MAKING MACHINE.

(Application filed Feb. 26, 1898.)

(No Model.)

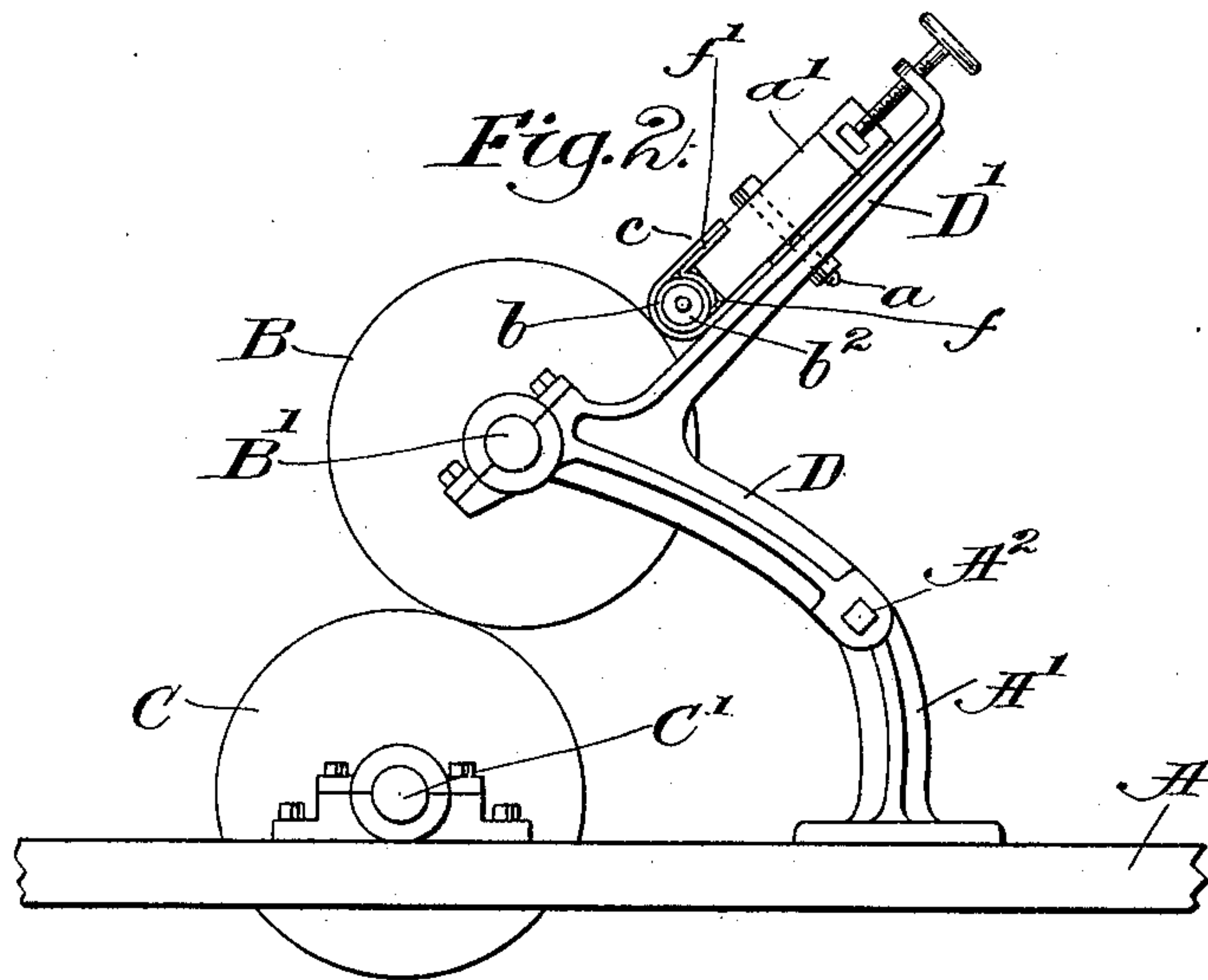
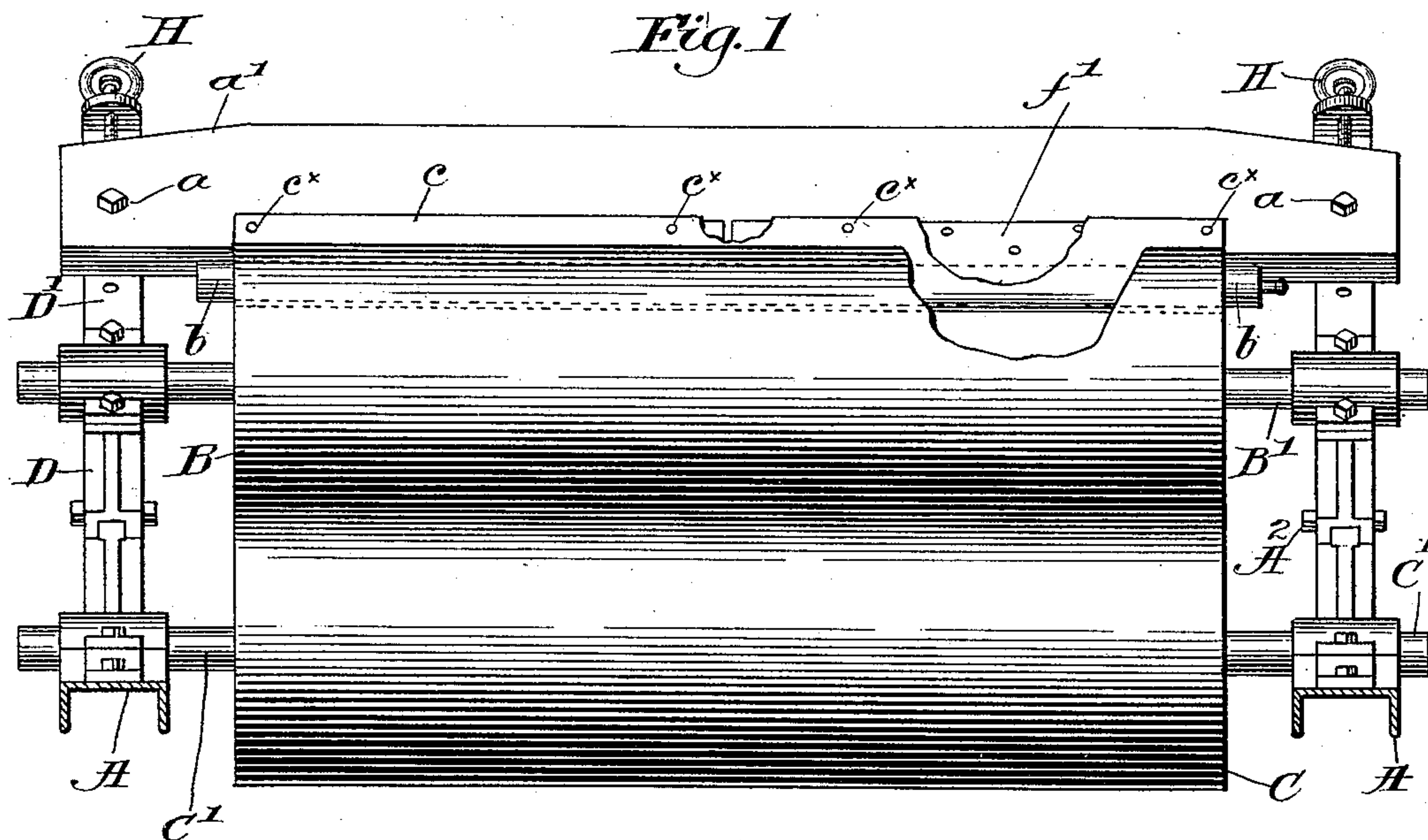


Fig. 3

Witnesses: *A. C. Hammond*
Edward H. Allen.

Fig. 4

Inventor: *Dennis B. McMurray*
by *Lawson Gregory* attys.

UNITED STATES PATENT OFFICE.

DENNIS B. McMURRAY, OF FITCHBURG, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO GEORGE R. WALLACE, OF SAME PLACE.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 610,493, dated September 6, 1898.

Application filed February 26, 1898. Serial No. 671,818. (No model.)

To all whom it may concern:

Be it known that I, DENNIS B. McMURRAY, of Fitchburg, county of Worcester, State of Massachusetts, have invented an Improvement in Paper-Making Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object to improve that class of paper-making machines known as "Fourdrinier," my improvements relating especially to the pressure bar or device, commonly called the "guard-board," cooperating
15 with the felt-covered couch-roll located above the endless belt or wire on which the paper is laid and formed for the production of the web. The surface of every part of the covering of this roll has to be washed between
20 the time that it leaves and again contacts with the web, so that the covering of said roll shall not put back on the web any foreign specks or material taken up by it. The couch-roll is washed by a constantly-running
25 stream of water put on the top of the roll at a point behind a perpendicular line drawn through the axis or center of rotation of said roll, and consequently to prevent any specks or motes taken from the roll by the stream of
30 water getting back onto the web of paper or the water used to wash the roll and getting onto the paper a pressure bar or device, commonly called the "guard-board," is located back of the upper center line of said roll, said
35 pressure bar or device fitting closely the cloth or other covered surface of the couch-roll. The pressure-bar bears heavily on the surface of the couch-roll, and by reason of the pressure exerted by it the covering of the roll
40 or of the bar is rapidly worn away.

45 In accordance with my invention the pressure bar or device is composed of a bar having at its edge next said couch-roll an inflated or distended india-rubber tube suitably covered and opposed to and so as to bear against the surface of the covering of the couch-roll, said inflated tube presenting a surface which may yield to the imperfections of the covering-jacket of the couch-roll, yet removing any
50 adhering lump, speck, or foreign substance

brought up by the couch-roll and yet keep a firm substantially water-tight contact with the covering of said roll. This tube may be inflated either with air, gas, water, or other liquid and under more or less pressure, the
55 greater the pressure the more solid or unyielding the tube; yet the bar will always be free to yield more or less to the requirements of the work.

Figure 1 is a front elevation, partially
60 broken out, of the couch-roll, its under cooperating roll, and my improved pressure bar or device. Fig. 2 is an end elevation of the parts shown in Fig. 1, and Figs. 3 and 4 are details showing the opposite ends of the tube
65 b, with its plugs.

A represents, let it be supposed, part of the framing of a Fourdrinier machine for making paper; B, the ordinary cloth or other surfaced couch-roll; C, the roll with which said couch-
70 roll cooperates, said roll C in practice preferably supporting the usual belt or wire employed in the machine.

The roll B is carried by a shaft B', and the roll C is carried by a shaft C'.
75

The frame A has erected upon it at each side suitable stands A', to which is jointed at A² a movable frame D, said frame having
80 suitable bearings for the shaft B', while the frame A has suitable bearings for the shaft C'.
80

The frame D has an upright portion D', having suitable slots or holes, in which may be located suitable bolts a, said bolts being passed through a pressure bar or device a', commonly called the "guard-board." The
85 lower edge of this pressure bar or device has applied to it a flexible pipe b, a little longer, preferably, than the couch-roll, and the opposite ends of said pipe may be plugged or filled in with metallic plugs b², said plugs being shown in the detailed views, Figs. 3 and
90 4, they being firmly secured in said pipe, the inner ends of the plugs preferably falling just at or outside the ends of the roll B. One of the plugs or one end of the tube, as b², may
95 have fitted to it a valve-stem b³, which may be connected with any usual or suitable air-pump, such as commonly used for inflating bicycle or other tires, or said valve-stem may be connected with any pump to force a gas
100

or liquid or fluid into said pipe in order to inflate it, the degree of pressure determining the hardness or yielding quality of the tube. This tube is inclosed within a covering, as *c*, of felt, cloth, or other usual material, said covering contacting directly with the covering of the couch-roll; but the felt cloth by being backed up by the inflated tube will, it is obvious, be free to yield as required.

10 I make and maintain a substantially watertight connection between the covering constituting the acting face of the pressure bar or device and the surface of the covering of the couch-roll.

15 In practice I find the pressure bar or device having an inflated tube at its acting edge, which maintains an even pressure throughout the length of the couch-roll *B*, results in reduction of power required to operate the couch-roll, increases the life of the belt or wire, prevents the vibration of the bar or guard-board, and results in very much less wear on the cover of the couch-roll, and, besides, it is more efficient in operation than
25 a pressure-bar having its edge bare or surrounded only by a felt or other fibrous cover.

While a round plane-surfaced tube operates to excellent advantage, yet this invention is not limited to the particular shape of said
30 tube in cross-section or to the fact of the tube being more or less smooth externally.

It is preferable to seat that side of the tube *b* nearest the guard-board in a concaved seat. This concaved seat I prefer to form of sheet
35 metal, as at *f*, the concave running parallel with the edge of the guard-board, the shank *f'* of the concave running, preferably, against the top of the guard-board underneath the felt covering *c*, said shank being attached to
40 the guard-board by suitable screws.

The covering *c* is held on the guard-board by any usual or suitable tacks, as *c^x*.

45 In Fig. 1 I have broken away part of the covering to show the shank of the concave under it.

The guard-board may be backed up at its upper edge by suitable hand-screws *H*.

Having fully described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. In a paper-making machine, a couch-roll, combined with a pressure-bar, guard-board or device, having at its acting edge an inflated tube, substantially as described. 50

2. In a paper-making machine, a couch-roll, combined with a pressure-bar, guard-board, or device having at its acting edge an inflated tube, said tube being inclosed by a covering, substantially as described. 55

3. In a paper-making machine, a couch-roll, combined with a pressure-bar, guard-board or device, having at its acting edge an inflated tube, said tube having a connected valve-stem, substantially as described. 60

4. In a paper-making machine, a couch-roll, combined with a pressure-bar, guard-board or device, having at its acting edge an inflated tube, said tube being provided at its ends with rigid blocks, substantially as described. 65

5. In a paper-making machine, a couch-roll, combined with a pressure-bar, guard-board, or device having at its acting edge an inflated tube, said tube being provided at its opposite ends with blocks, one of said blocks having a valve-stem, substantially as described. 70

6. In a paper-making machine, a couch-roll, and means to sustain its shaft; combined with a pressure-bar, guard-board or device having at its acting edge parallel to said roll, a tube; and a fibrous covering inclosing said tube, said covering being connected with and carried by said pressure bar or device, substantially as described. 75

7. In a paper-making machine, a pressure-bar, guard-board, or device, provided at one edge with a concave; combined with an inflated tube seated in said concave, and a covering for said tube, substantially as described. 85

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 90

DENNIS B. McMURRAY.

Witnesses:

GEORGE R. WALLACE,
WYLLON G. HAYES.