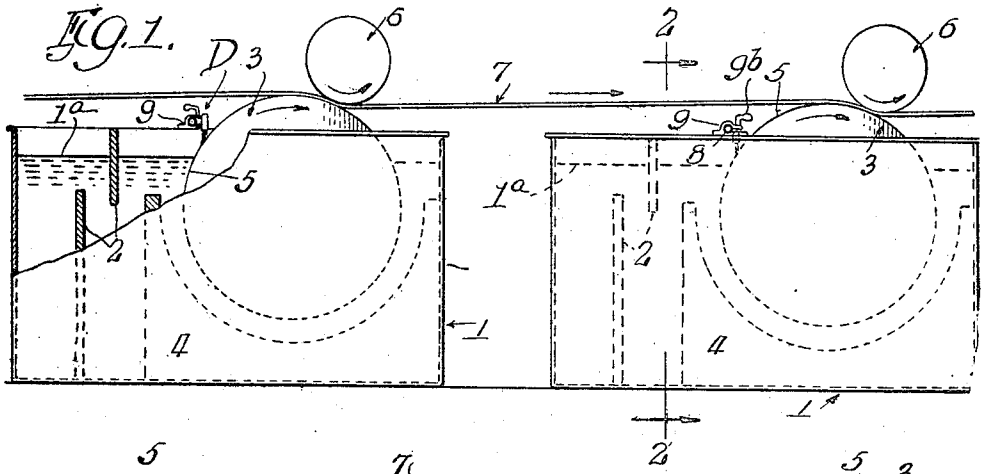
April 5, 1927. 1,623,278

F. W. SEARS ET AL

WATER DECKLE FOR PAPER MAKING MACHINES

Filed Dec. 21, 1925 2 Sheets-Sheet 1

FIG. 1.



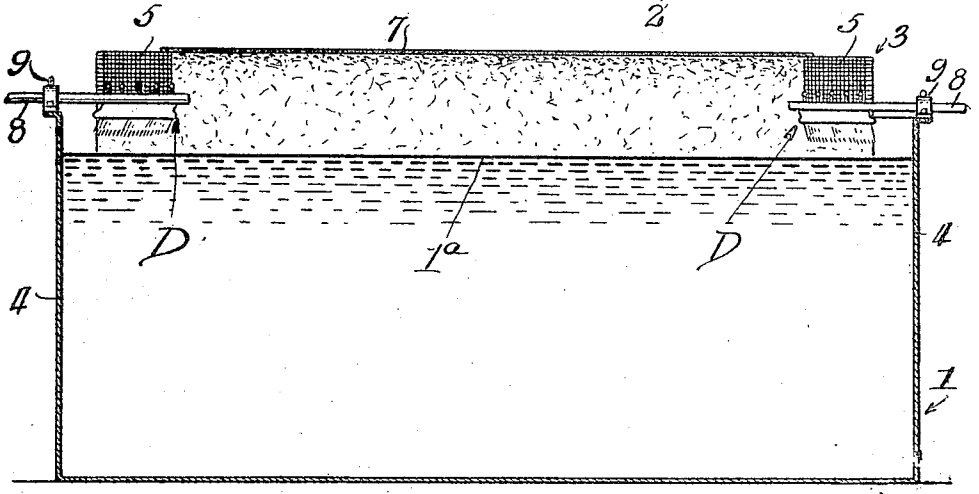
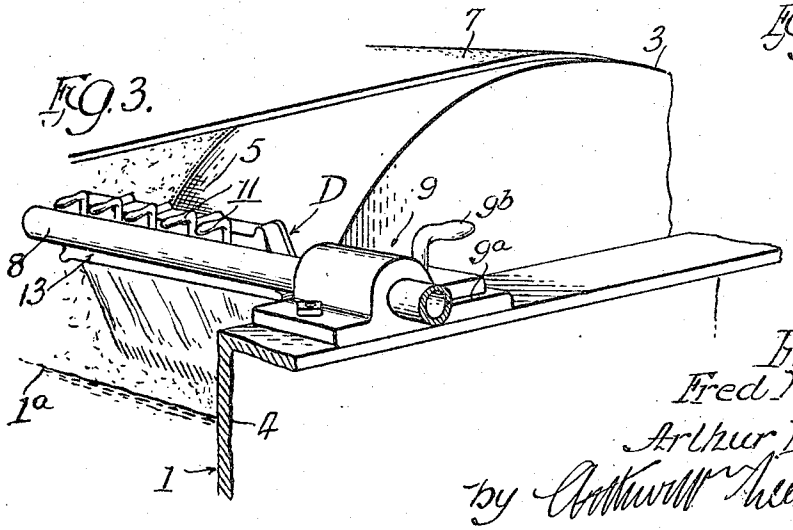


FIG. 2

FIG. 3.



Inventors
Fred W. Sears
Arthur Buck
by Goldsborough Nelson Atty

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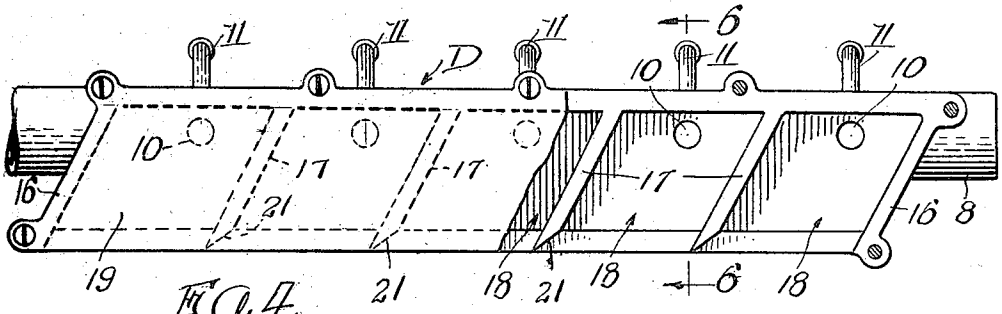


Fig. 4.

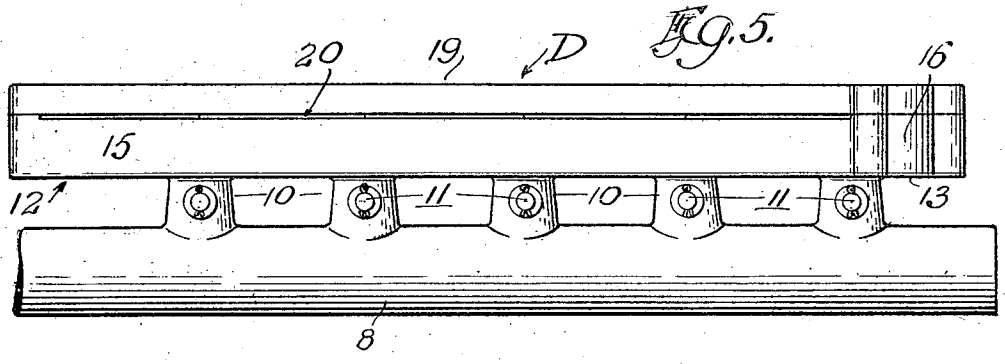


Fig. 5.

Fig. 6.

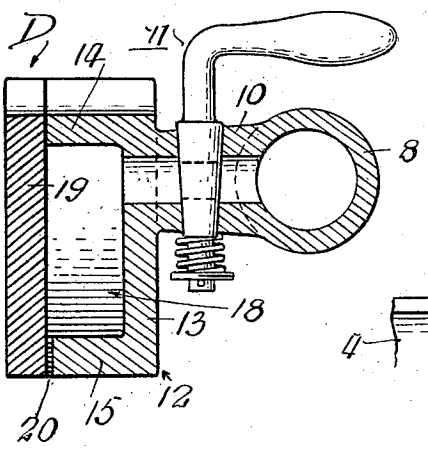
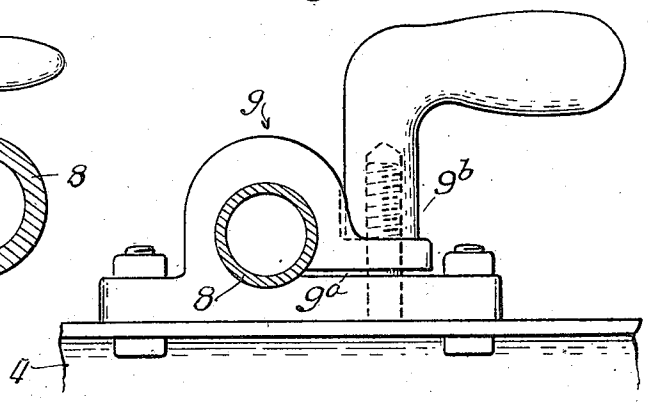


Fig. 7.



Inventors
Fred W. Sears
Arthur Buck
by Arthur W. Wilson Atty

Patented Apr. 5, 1927. 1,623,278

UNITED STATES PATENT OFFICE.

FRED W. SEARS AND ARTHUR BUCK, OF THREE RIVERS, MICHIGAN; SAID BUCK ASSIGNOR TO RUDOLF HUECKLER, OF THREE RIVERS, MICHIGAN.

WATER DECKLE FOR PAPER-MAKING MACHINES.

Application filed December 21, 1925. Serial No. 76,596.

This invention relates to improvements in water deckles for paper making machines and it consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The primary object of the present invention is to provide an improved water deckle for controlling the width of the paper web or strip being made on the mould of a cylinder type of paper making machine, which deckle is more efficient in operation and more simple in construction than those now in use.

A further object of the invention is to provide a water deckle which may be operated with low pressure water, forms straight even edges on the web or strip and eliminates the action of deckles as now made and used which tend to plug up the openings in the pick up cylinder.

Still further objects of the invention are to provide a water deckle which may be easily adjusted to control the width of the web or strip being formed and which eliminates all necessity of the cloth or rubber deckle strip as now applied to the pick up cylinders for determining the width and edge formation of the web or strip and which necessitates the shut down of the machine when adjustments or changes are made.

These objects of the invention as well as others together with the many advantages thereof will more fully appear as we proceed with our specification:

In the drawings:—

Fig. 1 is a view in side elevation of a portion of a battery of pulp tanks and pick up cylinders of a paper making machine to which our improved water deckle has been applied.

Fig. 2 is a transverse vertical section on an enlarged scale, through one of said pulp tanks as taken on the line 2—2 of Fig. 1.

Fig. 3 is a detail perspective view showing our improved deckle in the position it normally occupies with reference to a pulp tank or vat and associated pick up cylinder.

Fig. 4 is a view in front elevation of the deckle on an enlarged scale, with a portion of the cover plate removed therefrom to more clearly show the interior construction thereof.

Fig. 5 is a bottom plan view of the same.

Fig. 6 is a vertical section through the deckle as taken on the line 6—6 of Fig. 4.

Fig. 7 is a detail view in end elevation of one of the clamps by means of which the deckle is adjustably secured in position upon the pulp tank.

Referring now in detail to that embodiment of the invention illustrated in the accompanying drawings, 1—1 indicate several of the usual open top tanks or vats comprising the battery of pulp stock tanks or vats of a cylinder type of paper machine. In each tank is provided the usual baffle plates 2 and a pick up cylinder 3 journalled in any suitable manner in the side walls 4—4 of each tank or vat. The cylinders each have a peripheral wall 5 of the desired size of wire mesh and each cylinder is so disposed in its associated tank that the top part thereof projects a suitable distance above the top edge of the said tank or vat. Associated with each cylinder is a couching roll 6 arranged with its axis slightly forward of and above the axis of the cylinder and a felt or belt 7 is trained over the top of each cylinder and under the associated couching roll. 1^a indicates the approximate pulp stock level in the tanks or vats. In the rotation of the cylinder, pulp stock adheres thereto and is transferred or offset onto the felt as the same passes under the associated couching roll. The number of such vats and cylinders in a battery depends of course on varying circumstances and as there are only two of such vats and cylinders shown herein, the same is to be taken for purpose of illustration and is not intended by way of limitation.

It is essential to provide some means to limit the width and define the edges of the layer of pulp fibres picked up by the cylinder with reference to the felt and in some cases cloth or rubber deckle straps are applied to the ends of the cylinder to which the pulp stock will not adhere. While such straps operate fairly well for their intended purpose, they do not sharply define the edges of the layer of pulp stock to be transferred or offset to the underside of the felt and when it is desired to change the width of said layer, the operation of the machine must be stopped and wider or narrower deckle straps applied. Such a stopping entails a loss in production time so that deckle straps have several disadvantages. We are aware of the use of water deckles wherein jets of water under high pressure are discharged radially against the cylinder to remove or

wash off the surplus stock at the side margins of the layer in the pick up cylinder. However such a water deckle is not practical because it tends to not only pack the fibres in the mesh openings of the cylinder so as to clog them, but it also splashes the pulp stock about and upon other parts of the layer and belt so that the layer is not of a uniform thickness throughout. Again such a water deckle is impractical because it does not lend itself for ready adjustment for determining the width of the layer of fibre on the cylinder.

Our improved deckles are arranged, one on each side of the tank and to the rear of the associated cylinder and as the deckles are the same with the exception of being a "right" and a "left" hand deckle, a description of one will suffice for both. Each deckle which is indicated as a whole at D in Figs. 1 and 2 includes a header pipe or conduit 8 of cylindrical cross section and which is closed at its inner end and is so formed at its outer end as to be readily connected to a source of water supply, said conduit being disposed to the rear of and parallel with the associated cylinder in each vat. Each header conduit 8 is supported in an adjustable clamping bearing block 9 fixed to the top edge of each side wall 4 of the tank, so that said pipe is not only capable of a longitudinal in and out adjustment with respect to said side wall, but also of a rotative or angular turning adjustment. As shown herein each bearing block is spit as at 9^a and a handled clamp screw 9^b is so arranged on the block as to be capable of causing the bearing block to tightly clamp the header pipe in the desired position.

Extending forwardly from an integral with each header is a plurality of longitudinally spaced tubular nipples or conduits 10 and in each nipple is provided a shut off cock 11 for controlling the passage of water there through, each cock having a handle by which it may be easily manipulated. 12 indicates a rectangular open front, hollow casing made integral with said nipples and header. Said casing includes a rear wall 13, top and bottom walls 14 and 15, respectively, end walls 16 and longitudinally spaced intermediate walls 17 which are arranged midway between the various nipples and parallel with the end walls. As shown herein, said end walls and intermediate walls are inclined from top to bottom and toward that end of the cylinder with which the deckle as a whole is associated. Thus the end and intermediate walls divide the casing into a plurality of compartments 18, one for each nipple which opens into the top end thereof as best shown in Fig. 6. A cover 19 is removably secured in water tight engagement upon the open front of the casing so as to definitely separate the various compartments. The front edge of the bottom wall is machined down below the front surfaces of the top, end and intermediate walls of the casing so that when the cover is in place a discharge slot or mouth 20 is provided at the bottom of the casing common to all the said compartments. From Fig. 4 it will be noted that the bottom edge of each intermediate wall is beveled or tapered to a sharp point 21 so that when all the cocks 11 are open a thin wide and uninterrupted sheet of water of a width equal the length of the discharge mouth 20 results. By tapering or bevelling the ends of the intermediate walls of the casing there is no line of division presented in the sheet, which would be the case if said bottom ends of the intermediate walls were left blunt or square. In the normal position of the deckle, the casing 12 stands in a vertical plane with the discharge mouth at the bottom whereby the thin sheet of water is discharged upon the cylinder in a tangential plane instead of a radial plane so that the margins of the layer of pulp stock is deckled or washed off the cylinder toward the ends thereof instead of being forced radially inward through the mesh of the cylinder as is now the practice which plugs up interstices thereof and renders the device useless for its intended purpose. Again with the stream discharging upon the cylinder in a tangential plane (shown in Fig. 1) upon and in an angular direction toward the end of the cylinder (as shown in Fig. 2) a clean sharp and uniform line of separation is attained to provide the edge of the fibre layer on the cylinder and this without splashing the removed fibres either back upon the layer or upon the felt.

This tangential plane or angle may be carefully determined for the best operation, by turning the header in its clamping bearing and then locking the header in its new position. Again by turning off the desired cock 11 the width of the deckle stream may be approximated to remove the layer margin and then by loosening up on the clamping bearing, the header may be shifted longitudinally in either direction as a whole to permit a finer adjustment thereof so that the width of the layer on the pick up cylinder may be determined to a nicety.

It is apparent from the foregoing description that our improved water deckle insures a clean cut trimmed edge on the web or strip of paper being formed on the rotating cylinders. It operates efficiently with a minimum pressure as low as 20 lbs. on the water supply line and by the adjustments before described the width of the web or strip being formed can be changed from any fraction of an inch up to the maximum of the deckle in a short period of time and this without stopping the operation of the paper machine.

While in describing our invention, we have referred to many details of mechanical construction as well as form and arrangement of the parts thereof, the same is to be taken as by way of illustration and not by way of limitation except as may be pointed out in the appended claims.

We claim as our invention:—

1. A water deckle embodying therein a header, a casing operatively connected to said header and means dividing the casing into a plurality of compartments, said casing having a slit like discharge mouth common to all of said compartments.

2. A water deckle embodying therein a header, a casing formed to provide a plurality of side by side compartments each of which is connected to the header, means forming a slit like discharge mouth common to all of said compartments and means for controlling the admission of water from the header to each compartment.

3. A water deckle embodying therein a header, a casing spaced therefrom, means dividing the casing into a plurality of compartments, nipples connecting said header and casing and affording communication between said header and each compartment and a valve in each nipple.

4. A water deckle embodying therein, a header, a casing having a slit like discharge mouth and including end and intermediate walls dividing the casing into a plurality of compartments, some of said walls being bevelled at said discharge opening, nipples connecting each compartment with said header and a valve in each nipple.

5. A water deckle embodying therein an integral casting including a header pipe, an open front casing parallel therewith and including top, bottom, rear, end and intermediate walls, which end and intermediate walls divide the casing into a plurality of compartments with said end and intermediate walls arranged at an angle to said top and bottom walls, less than a right angle, nipples connecting each compartment with said header, the bottom wall being of depth less than the other walls and said intermediate walls being tapered to a point in the vicinity of said bottom wall.

6. A water deckle embodying therein a casing having a slit like discharge mouth, parts of said casing defining the ends of said compartments imparting a direction to the discharged water which direction is less than a right angle to the plane of the casing.

7. A water deckle embodying therein a casing having a plurality of spaced walls therein, each of a length greater than the vertical depth of the casing and dividing the casing into a plurality of compartments each having a slit like discharge mouth, said walls imparting a direction to the discharged water which is less than a right angle to the plane of the casing.

8. A water deckle embodying therein a casing formed to provide a plurality of compartments separated by walls, each of a length greater than the vertical depth of the casing which has a slit like discharge mouth common to all of said compartments, a water supply member and means including controlling devices connecting each compartment with said water supply member.

9. A water deckle embodying therein a casing having a slit like discharge mouth at its bottom, a water supply member operatively connected to said casing, means within the casing for imparting a direction to the water discharged through said mouth in a direction less than a right angle to the casing and means for controlling the water supply to said casing.

In testimony whereof, we have hereunto set our hands, this 17th day of December, 1925.

FRED W. SEARS.
ARTHUR BUCK.