

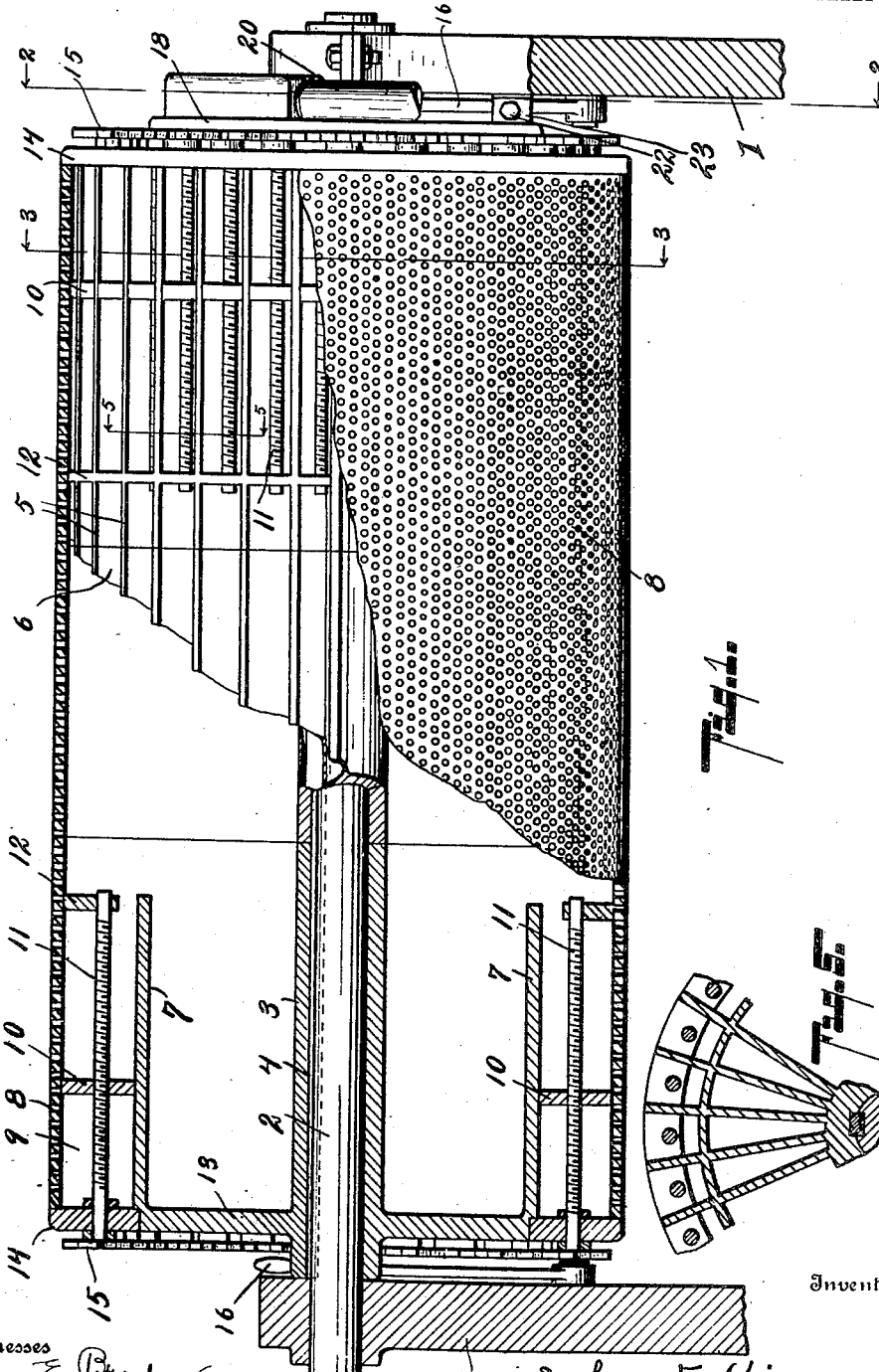
J. F. KING & J. NEARY.
SUCTION BOX.

APPLICATION FILED AUG. 7, 1909.

Patented May 10, 1910.

3 SHEETS—SHEET 1.

957,217.



Inventors

Witnesses
Clara E. Braden
Margaret Glasgow

334

John F. King
and James Neary
Chapman & Earl
Attorneys

J. F. KING & J. NEARY.

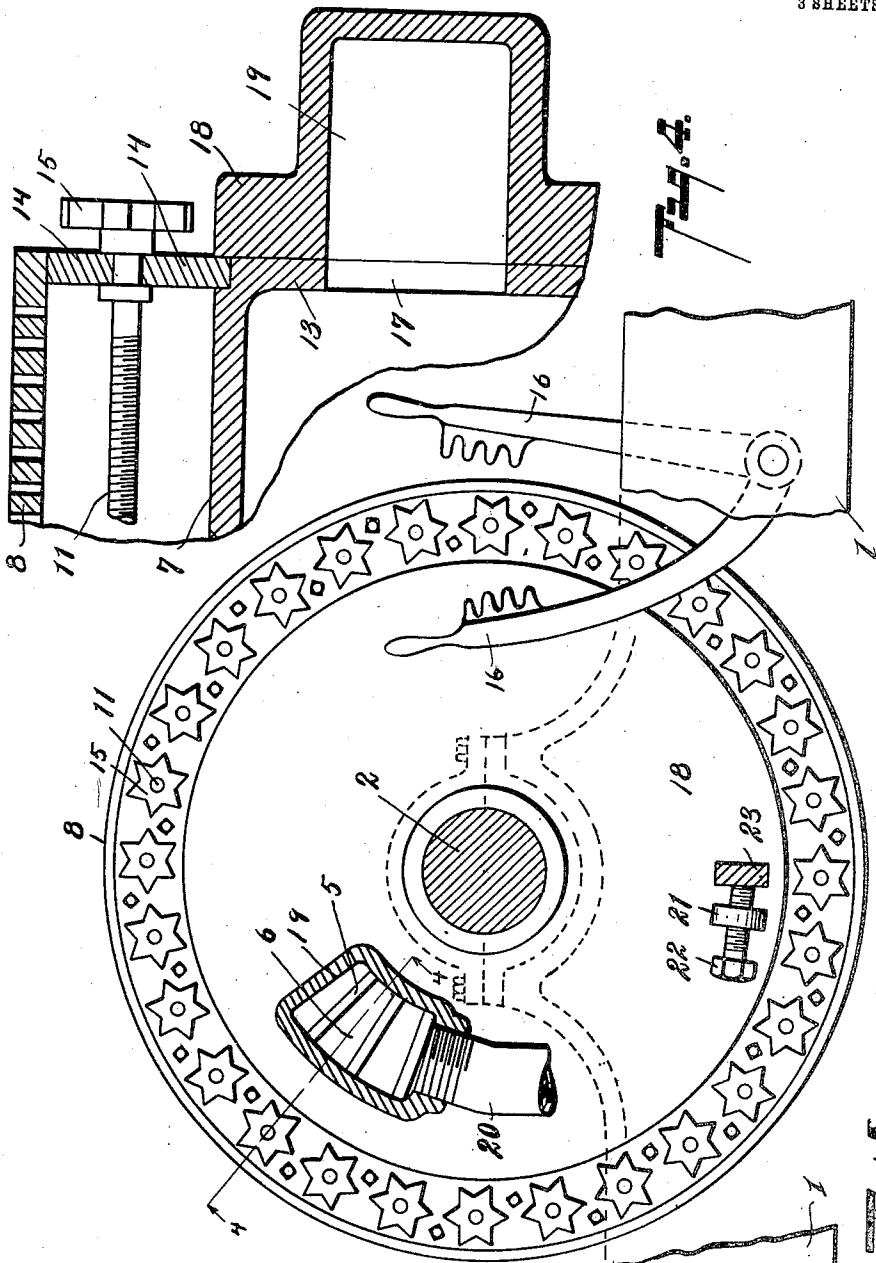
SUCTION BOX.

APPLICATION FILED AUG. 7, 1909.

Patented May 10, 1910.

3 SHEETS—SHEET 2.

957,217.



Witnesses
Eloise E. Braden
Margaret Glasgow.

By

John F. King
and James Neary
Chapman & Co.
Attorneys

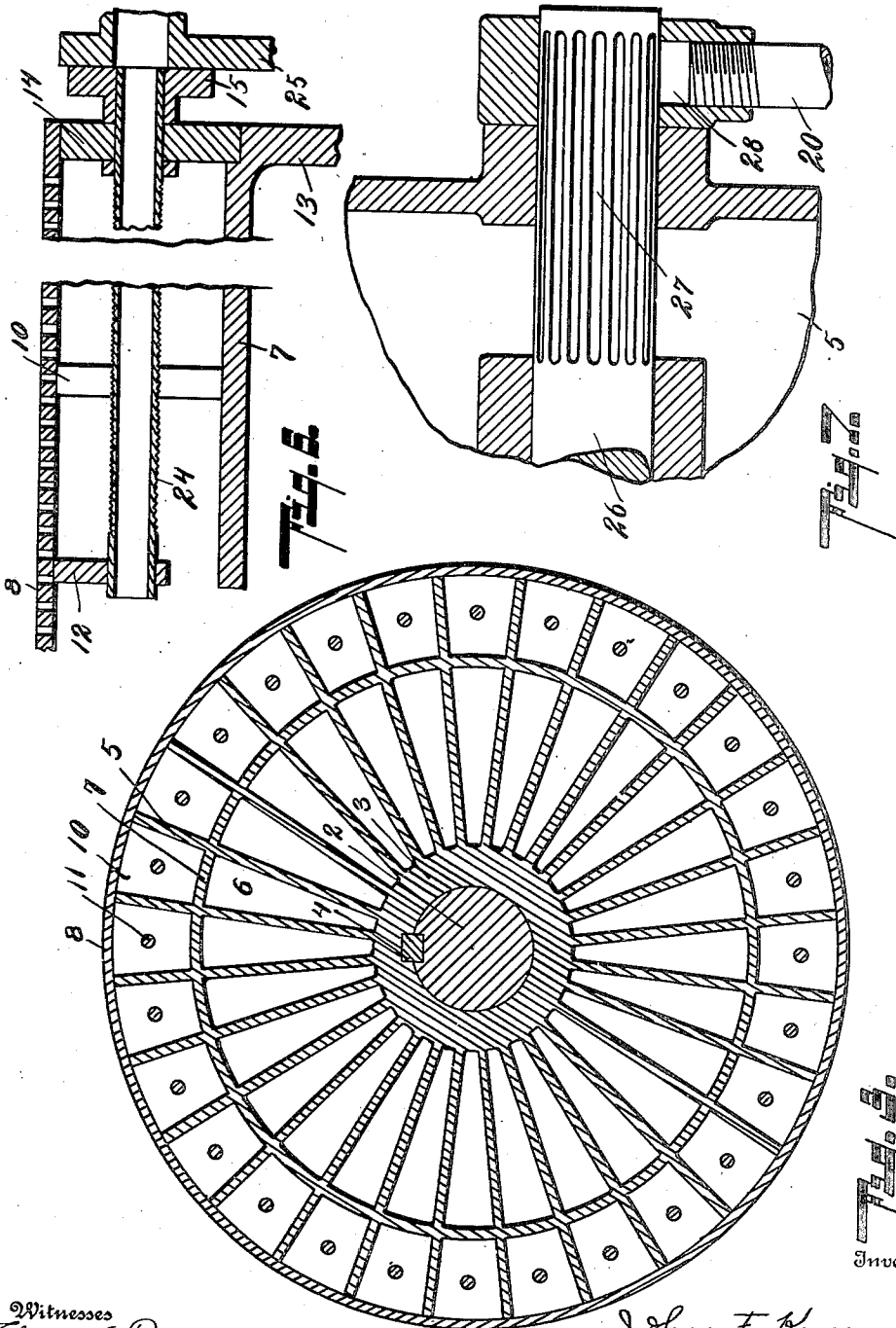
Inventors

J. F. KING & J. NEARY.
 SUCTION BOX.
 APPLICATION FILED AUG. 7, 1909.

957,217.

Patented May 10, 1910.

3 SHEETS—SHEET 3.



Witnesses
 Charles E. Braden
 Margaret Glasgow

By

John F. King
 and James Neary
 Raphael Deane
 Attorneys

UNITED STATES PATENT OFFICE.

JOHN F. KING AND JAMES NEARY, OF KALAMAZOO, MICHIGAN.

SUCTION-BOX.

957,217.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed August 7, 1909. Serial No. 511,777.

To all whom it may concern:

Be it known that we, JOHN F. KING and JAMES NEARY, citizens of the United States, residing at the city of Kalamazoo, county of Kalamazoo, State of Michigan, have invented certain new and useful Improvements in Suction-Boxes, of which the following is a specification.

This invention relates to improvements in suction rolls for paper making machines.

Our improved suction roll is particularly designed by us and we have illustrated it adapted for use as a suction box although it may be readily adapted and is desirable for use as a suction web forming roll for paper making machines.

The main objects of our invention are to provide an improved suction roll for paper making machines which can be readily adjusted to webs the desired width.

Further objects, and objects relating to structural details will definitely appear from the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in the following specification.

The structure described constitutes one effective embodiment of our invention.

Other embodiments would be readily devised by those skilled in the art.

The invention is clearly defined and pointed out in the claims.

A structure constituting an effective and preferred embodiment of the features of our invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure 1 is a detail view partially in longitudinal central section of a structure embodying the features of our invention. Fig. 2 is a detail vertical transverse section taken on a line corresponding to line 2—2 of Fig. 1, the frame being indicated partially by dotted lines. Fig. 3 is a transverse section taken on a line corresponding to line 3—3 of Fig. 1. Fig. 4 is an enlarged detail section taken on a line corresponding to line 4—4 of Fig. 2, showing the suction connection. Fig. 5 is a detail transverse section taken on a line corresponding to line 5—5 of Fig. 1, showing the arrangement of the head chambers and the adjusting screws

therefor. Fig. 6 is a detail longitudinal section of a modified construction in which the adjusting screws for the adjustable heads serve as the suction connection. Fig. 7 is a detail section of a further modification, the modification residing particularly in the suction connection, the shaft being provided with suction passages.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, 1 represents the standards upon which our improved suction roll is mounted. We have not illustrated our improved suction roll in connection with the other parts of a paper making machine as its adjustment in relation to the web carrying felt or belt when used as a suction box or in a suitable tank when used as a web forming roll will be readily understood by those skilled in the paper making art. The shaft 2 is provided with suitable driving connections not here illustrated.

Our improved suction roll comprises a body portion having a plurality of radially disposed compartments therein, each compartment being provided with a head chamber at each end. The body portion of our improved roll preferably comprises a central core 3 adapted to receive the shaft 2, the core being secured to the shaft by means of keys 4. The roll is preferably made up of sections for convenience in construction. On the cores 3 are radially disposed partitions 5 which divide the roll into a plurality of compartments 6, the compartments being radially disposed as stated. At each end of each compartment is a longitudinally disposed partition 7, forming in connection with the radial partitions 5 and the shell or outer wall 8, head chambers 9. In these head chambers are heads 10; these heads are adjustably arranged in the chambers, preferably by mounting the same upon the adjusting screws 11. The inner ends of the adjusting screws are in the structure illustrated, supported by the cross pieces 12 which connect and brace the longitudinal partitions 5. These cross pieces 12 being arranged in alinement form a substantially

continuous ring about the body. The ends of the roll are preferably formed of the portions 13 which are formed integrally with the partition portions and the outer ring portion 14, the ring portions being arranged to close the outer ends of the head chambers, the ends of the body being suitably formed to receive the ring portion as is illustrated in the drawing. The screws 11 are arranged through these rings and are provided on their outer ends with toothed wheels 15 for the adjustment of the screws. To uniformly and quickly adjust the screws we preferably provide the adjusting racks 16 which are pivoted to be shifted into and out of engaging position, the same when in engaging position being adapted to successively engage the wheels on the screws so that as the cylinder is revolved the screws are uniformly adjusted. A pair of these adjusting members are preferably provided at each end of the roll so that the heads may be adjusted in or out as occasion may require while the roll is revolved in the same direction. At one end the fixed portion 13 of the end wall is provided with openings 17, these openings are covered with a header plate 18. This header plate is provided with a header 19 to which the suction pipe 20 is connected. As the roll revolves the compartments 5 are successively connected with the header plate so that the suction is successively applied thereto. This header plate is preferably adjustably supported by mounting upon the shaft and providing the same with a lug 21 through which an adjusting screw 22 is arranged, the screw being adapted to engage a fixed lug 23 on the frame. The object of this is to adjust the header so that the compartment will be connected thereto at the proper point in the revolution of the wheel. By providing the adjustable heads and the head chambers the roll can be quickly adjusted to the desired width of the web.

In the modified construction shown in Fig. 6 the adjusting screws 24 for the heads are made tubular to serve as suction tubes, the header plate 25 of the structure there illustrated being adapted to close the outer ends of these suction tubes, the structure otherwise is substantially that of the preferred structure illustrated.

In the structure shown in Fig. 7, the shaft 26 is provided with suction passages 27 through which the connection is made to the suction 20, the header 28 being arranged to embrace the outer end of the shaft as clearly appears in the drawing.

Our improved suction roll is simple in structure and it is very easy to maintain the proper suction thereon. We have illus-

trated and described the same in detail in the form preferred by us on account of its structural simplicity and economy. We are, however, aware that it is capable of considerable variation in structural details without departing from our invention, and we desire to be understood as claiming the same in the specific form illustrated as well as broadly within the scope of the appended claims.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A suction roll, comprising a plurality of radially-disposed compartments, each compartment being provided with a head chamber; a foraminated outer wall; a suction connection arranged to successively connect with said compartments as the roll is revolved; heads arranged in said head chambers; and means for adjusting said heads comprising screws, toothed wheels on said screws, and a pair of oppositely facing racks supported so that either may be shifted into position to engage said toothed wheels as said roll is revolved.

2. A suction roll comprising a plurality of radially-disposed compartments, each compartment being provided with a head chamber; a foraminated outer wall; a suction connection arranged to successively connect with said compartments as the roll is revolved; heads arranged in said head chambers; and means for adjusting said heads comprising screws, toothed wheels on said screws, and a rack supported so that it may be shifted into position to engage said toothed wheels successively as said roll is revolved.

3. A suction roll comprising a plurality of radially-disposed compartments, each compartment being provided with a head chamber; a foraminated outer wall; a suction connection arranged to successively connect with said compartments as the roll is revolved; heads arranged in said head chambers; and means for adjusting said heads comprising screws, toothed wheels on said screws, and a member supported so that it may be shifted into position to engage said toothed wheel successively as said roll is revolved.

4. A suction roll comprising a foraminated outer wall, a body portion having radially-disposed partitions whereby said roll is provided with a plurality of radially-disposed compartments; cross-pieces connecting said partitions, said cross-pieces being disposed in alinement, thereby forming a ring about said body, their outer edges being curved in arcs of the same circle, and being flush with the outer edges of said radially-disposed partitions to coact therewith in supporting said outer wall; longitudinally-dis-

posed partition walls between said radial walls whereby said compartments are provided with head chambers; end walls extending from said longitudinally-disposed partitions inwardly; ring-like members arranged to close the outer ends of said head chambers; heads adjustably arranged in said head chambers; and adjusting screws for said heads journaled in said head rings and cross-pieces.

5. A suction roll comprising a foraminated outer wall, a body portion having radially-disposed partitions whereby said roll is provided with a plurality of radially-disposed compartments; cross-pieces connecting said partitions, said cross-pieces being disposed in alinement, thereby forming a ring about said body, their outer edges being curved in arcs of the same circle, and being flush with the outer edges of said radially-disposed partitions to coact therewith in supporting said outer wall; longitudinally-disposed partition walls between said radial walls whereby said compartments are provided with head chambers; end walls extending from said longitudinally-disposed partitions inwardly; ring-like members arranged to close the outer ends of said head chambers; and heads adjustably arranged in said head chambers.

6. A suction roll comprising a foraminated outer wall, a body portion having radially-disposed partitions whereby said roll is provided with a plurality of radially-disposed compartments, cross-pieces connecting said partitions; longitudinally-disposed partition walls between said radial walls whereby said compartments are provided with head chambers; end walls extending from said longitudinally-disposed partitions inwardly; ring-like members seated in suitable rabbets formed in the said end walls to close said head chambers; heads adjustably arranged in said head chambers; adjusting screws journaled in said head rings and said cross pieces; toothed wheels on the outer ends of said screws; and a member supported so that it may be shifted to a position to engage said toothed wheel successively as said roll is revolved.

7. A suction roll comprising a foraminated outer wall, a body portion having radially-disposed partitions whereby said roll is provided with a plurality of radially-disposed compartments; longitudinally-disposed partition walls between said radial walls whereby said compartments are provided with head chambers; end walls extending from said longitudinally-disposed partitions inwardly; ring-like members seated in suitable rabbets formed in the said end walls to close said head chambers;

and heads adjustably arranged in said head chambers.

8. A suction roll comprising a foraminated outer wall, a body portion having radially-disposed partitions whereby said roll is provided with a plurality of radially-disposed compartments; cross-pieces connecting said partitions; longitudinally-disposed partition walls between said radial walls whereby said compartments are provided with head chambers; end walls extending from said longitudinally-disposed partitions inwardly; ring-like members arranged to close said head chambers; heads adjustably arranged in said head chambers; adjusting screws journaled in said head rings and said cross pieces; toothed wheels on the outer ends of said screws; and a member supported so that it may be shifted to a position to engage said toothed wheel successively as said roll is revolved.

9. A suction roll comprising a foraminated outer wall, a body portion having radially-disposed partitions whereby said roll is provided with a plurality of radially-disposed compartments; longitudinally-disposed partition walls between said radial walls whereby said compartments are provided with head chambers; end walls extending from said longitudinally-disposed partitions inwardly; ring-like members arranged to close said head chambers; and heads adjustably arranged in said head chambers.

10. A suction roll comprising a foraminated outer wall, a body portion having radially-disposed partitions thereon whereby said roll is provided with a plurality of radially-disposed compartments; longitudinally-disposed partition walls between said radial walls whereby said compartments are provided with head chambers; end walls, one of said end walls being provided with an opening for each of said compartments; heads adjustably arranged in said head chambers; a shaft for said roll; a header plate arranged on said shaft to cover openings in said end walls and having a suction header thereon whereby said compartments are successively connected therewith as the roll is revolved; and means for adjusting said header plate on said shaft to control the point at which said compartments are connected with said suction header.

11. A suction roll comprising a foraminated outer wall, a body portion consisting of a tubular core having radially-disposed partitions thereon whereby said roll is provided with a plurality of radially-disposed compartments; longitudinally-disposed partition walls between said radial walls whereby said compartments are provided with head chambers; end walls extending in-

wardly from said longitudinally-disposed partitions, one of said end walls being provided with an opening for each of said compartments; ring-like members arranged to
5 close said head chambers; heads adjustably arranged in said head chambers; a shaft arranged through said core; and a header plate arranged on said shaft to cover said openings in said end walls and having a
10 suction header thereon whereby said com-

partments are successively connected therewith as the roll is revolved.

In witness whereof, we have hereunto set our hands and seals in the presence of two witnesses.

JOHN F. KING. [L. S.]
JAMES NEARY. [L. S.]

Witnesses:

CLORA ELLYN BRADEN,
MARGARET L. GLASGOW.