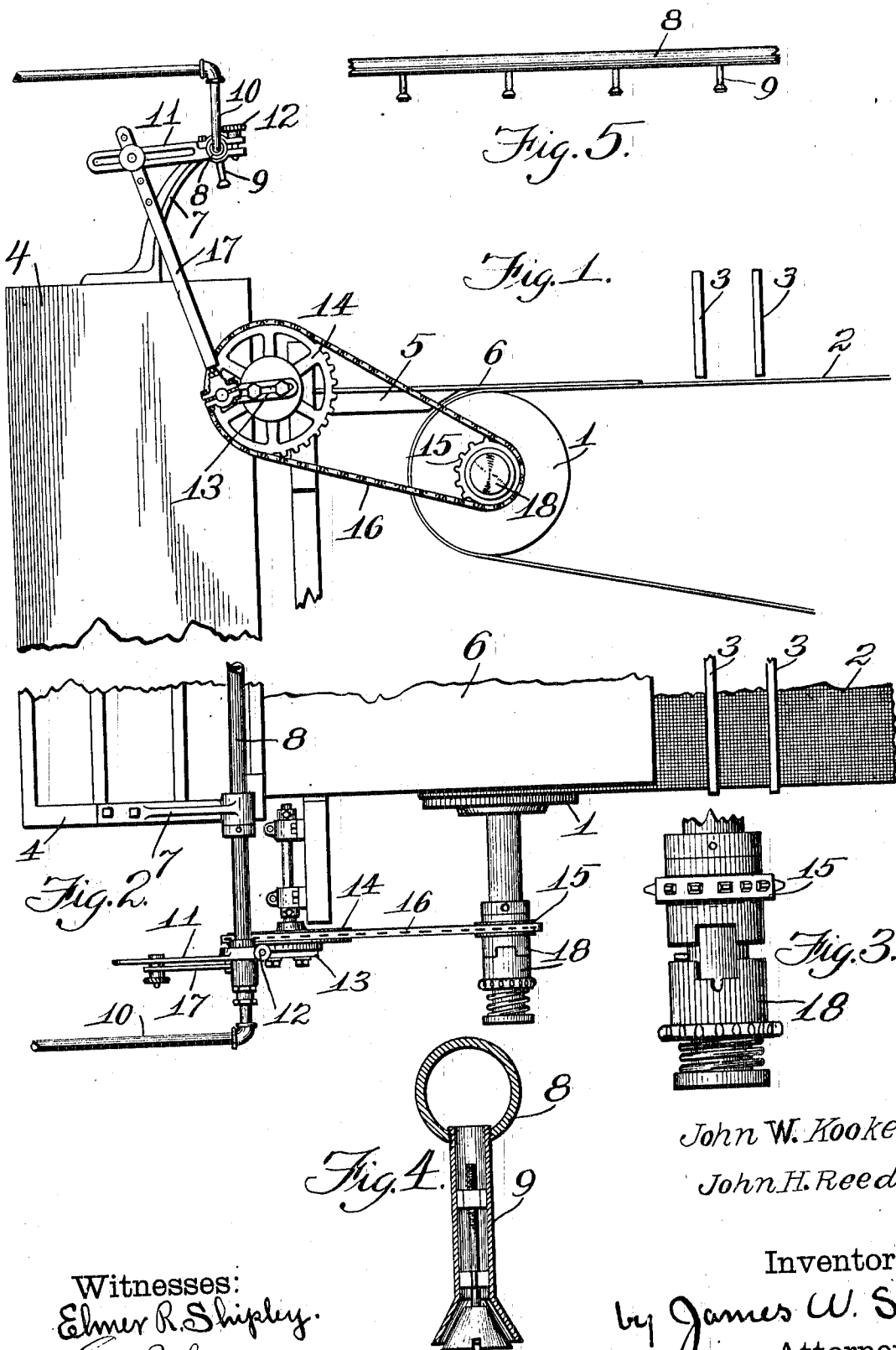


J. W. KOOKEN & J. H. REEDY.
PAPER MAKING MACHINE.
APPLICATION FILED MAR. 27, 1912.

Patented Apr. 22, 1913.

1,059,472.



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UNITED STATES PATENT OFFICE.

JOHN W. KOOKEN AND JOHN H. REEDY, OF HAMILTON, OHIO.

PAPER-MAKING MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN W. KOOKEN and JOHN H. REEDY, citizens of the United States, residing at Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Paper-Making Machines, of which the following is a specification.

This invention pertains to improvements in Fourdrinier paper making machines, the improvements being designed to avoid the formation, in damaging quantities, of foam at the head of the wire. It often happens in the working of the Fourdrinier machine, that large quantities of foam form on the apron and wire between the flow-box and the slice, this foam being detrimental to nice flow of properly conditioned pulp as the pulp reaches the first slice. We prevent this undesired formation of foam by delivering traveling sprays of water upon the pulp as it is moving between the flow-box and the first slice.

The improvements will be readily understood from the following description taken in connection with the accompanying drawing in which:—

Figure 1 is a side elevation at the head of a Fourdrinier machine provided with an exemplification of our improvements, all deckle work being omitted; Fig. 2 a plan of the same; Fig. 3 a plan of the clutch; Fig. 4 a vertical transverse section of the spray-pipe and one of the spraying nozzles; and Fig. 5 a front elevation of the portion of this spray-pipe.

In the drawing:—1, indicates the breast-roll of a Fourdrinier machine; 2, the wire thereon; 3, the slices; 4, the flow-box; 5, the apron-board; 6, the apron, all of the parts thus far referred to being of usual construction and subject to usual modifications; 7, brackets supporting bearings for a spray-pipe extending across the machine, these brackets being illustrated as secured to the top of the side walls of the flow-box; 8, a pipe mounted in these brackets; 9, downwardly projecting spray-nozzles disposed at intervals along the spray-pipe and adapted to deliver downwardly sprays of umbrella character, the particular construction of these nozzles being immaterial; 10, a fixed water-supply pipe having swiveled connection with one end of the spray-pipe; 11, a slotted arm clamped to the spray-pipe near one of its ends; 12, a clamp-screw to serve in clamping the arm upon the spray-pipe in selective

angular position relative to the radial projection of the nozzles from the spray-pipe; 13, a crank of adjustable stroke supported by fixed bearings at the side of the machine below the spray-pipe; 14, a sprocket-wheel connected with the crank; 15, a sprocket-wheel loose on the projecting end of one of the journals of the breast-roll; 16, a chain connecting the two sprocket-wheels; 17, a link connecting arm 11 and crank 13; and 18, a clutch, of obvious character, adapted to lock sprocket-wheel 15 to the journal of the breast-roll.

In the ordinary operation of the Fourdrinier machine the foam tends to form on the apron and wire between the flow-box and the first slice and, with some characters of pulp, this foam tends to build up to an enormous depth. Attempts have been made to get rid of this foam by throwing jets of water down upon it and by blowing air upon it at some selected point, but with some characters of pulp it has been found impossible to keep down the foam formation satisfactorily.

In our construction, assume clutch 18 to be disconnected, as in Fig. 3, and assume the machine to be in operation and assume that water is being delivered to the spray-pipe by supply-pipe 10. A number of umbrella shaped sprays will manifestly be delivered upon the pulp as it leaves the flow-box and goes to the apron. This will not keep down the foam and with certain kinds of pulp large quantities of foam may bank up on the apron behind the first slice. The clutch is now to be connected, as indicated in Fig. 2, whereupon, through the medium of the sprocket-wheels and chain and crank and link and slotted arm, the spray-pipe is given an oscillating motion whereby the conical sprays, while delivered in a general downward direction, sweep back and forth between the slice and the flow-box, the result being, under proper conditions of adjustment for the sweeping motions of the sprays, the prevention of the formation of foam to any damaging extent. By adjustment of the throw of crank 13 the amplitude of the sweeping motion of the sprays may be adjusted, and a similar adjustment for amplitude of spray-sweep may be effected by adjusting the link-wrist in the slotted arm 11. Clamp-screw 12 may be loosened and the nozzles given a selected angular relationship to the slotted arm and, when the clamp-

screw is again tightened the field of action of the sweeping sprays will have been altered. By such means the sprays may be given short or long sweeping motions and the field of their sweeping action may extend from the first slice to well within the flow-box or it may be restricted to such point as best serves in keeping down the foam.

It is desirable that the spraying nozzles be of such adjustable character that the thickness of the wall of the spray may be adjustable, Fig. 4 illustrating a typical form of adjustable nozzle, the thickness of the annular sheet of water forming the spray being adjusted by setting a cone farther into and out of a conical delivering nozzle.

We claim:—

1. A Fourdrinier paper-making machine comprising, a movable pipe disposed across the head of the machine at some distance above the level of the wire, a series of spray nozzles arranged along the lower portion of said pipe, and means for moving said pipe to cause the sprays from the nozzles to sweep back and forth at the head of the machine, combined substantially as set forth.

2. A Fourdrinier paper-making machine comprising, a movable pipe disposed across the head of the machine at some distance above the level of the wire, a series of conical spray nozzles arranged along the lower portion of said pipe, and means for moving said pipe to cause the sprays from the nozzles to sweep back and forth at the head of the machine, combined substantially as set forth.

3. A Fourdrinier paper-making machine comprising, bearings fixed at the sides of the machine at its head end, a pipe mounted for rotatory motion in said bearings, a series of spray nozzles arranged along the lower portion of said pipe, and means for oscillating said pipe to cause the sprays delivered by said nozzles to sweep back and forth at the head of the machine, combined substantially as set forth.

4. A Fourdrinier paper-making machine comprising, bearings fixed at the sides of the machine at its head end, a pipe mounted for rotatory motion in said bearings, a series of conical spray nozzles arranged along the lower portion of said pipe, and means for oscillating said pipe to cause the sprays delivered by said nozzles to sweep back and forth at the head of the machine, combined substantially as set forth.

5. A Fourdrinier paper-making machine comprising, a movable pipe disposed across the head of the machine at some distance above the level of the wire, a series of spray nozzles arranged along the lower portion of said pipe, and transmitting devices connecting said movable pipe and the journal of the breast-roll and serving to move the pipe to cause the sprays from the nozzles to

sweep back and forth at the head of the machine, combined substantially as set forth.

6. A Fourdrinier paper-making machine comprising, bearings fixed at the sides of the machine at its head end, a pipe mounted for rotatory motion in said bearings and extending across at the head of the machine, a series of spray-nozzles arranged along the lower portion of said pipe, an arm secured upon one end of said pipe, a crank, means for driving said crank from the journal of the breast-roll of the machine, and a link connecting said crank and arm, combined substantially as set forth.

7. A Fourdrinier paper-making machine comprising, bearings fixed at the sides of the machine at its head end, a pipe mounted for rotatory motion in said bearings and extending across at the head of the machine, a series of conical spray-nozzles arranged along the lower portion of said pipe, an arm secured upon one end of said pipe, a crank, means for driving said crank from the journal of the breast-roll of the machine, and a link connecting said crank and arm, combined substantially as set forth.

8. A Fourdrinier paper-making machine comprising, bearings fixed at the sides of the machine at its head end, a pipe mounted for rotatory motion in said bearings and extending across at the head of the machine, a series of spray-nozzles arranged along the lower portion of said pipe, a slotted arm secured upon one end of said pipe, a wrist mounted in the slot of the arm, a crank, means for driving said crank from the journal of the breast-roll of the machine, and a link connecting said crank and wrist, combined substantially as set forth.

9. A Fourdrinier paper-making machine comprising, bearings fixed at the sides of the machine at its head end, a pipe mounted for rotatory motion in said bearings and extending across at the head of the machine, a series of spray-nozzles arranged along the lower portion of said pipe, an arm secured upon one end of said pipe, means for adjusting said arm angularly upon the pipe, a crank, means for driving said crank from the journal of the breast-roll of the machine, and a link connecting said crank and arm, combined substantially as set forth.

10. A Fourdrinier paper-making machine comprising, bearings fixed at the sides of the machine at its head end, a pipe mounted for rotatory motion in said bearings and extending across at the head of the machine, a series of spray-nozzles arranged along the lower portion of said pipe, an arm secured upon one end of said pipe, an adjustable-throw crank, means for driving said crank from the journal of the breast-roll of the machine, and a link connecting said crank and arm, combined substantially as set forth.

11. A Fourdrinier paper-making machine

- comprising, bearings fixed at the sides of the machine at its head end, a pipe mounted for rotatory motion in said bearings and extending across at the head of the machine,
- 5 a series of spray-nozzles arranged along the lower portion of said pipe, an arm secured upon one end of said pipe, a crank, means for driving said crank from the journal to the breast-roll of the machine, a link connecting said crank and arm, means for adjusting the angle of the nozzles to said arm, and means for adjusting the degree of oscillation of the pipe, combined substantially as set forth.
- 10 12. A Fourdrinier paper-making machine comprising, bearings fixed at the sides of the machine at its head end, a pipe mounted for rotatory motion in said bearings and extending across at the head of the machine, a series of spray-nozzles arranged along the lower portion of said pipe, a slotted arm secured upon one end of said pipe, a wrist in the slot of the arm, an adjustable-throw crank, a link connecting said crank and wrist, a sprocket-wheel on the crank, a sprocket-wheel loose on the journal of the breast-roll, a chain connecting the two sprocket-wheels, and a clutch to serve in locking together the journal of the breast-roll and the sprocket-wheel upon it, combined substantially as set forth.
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