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G. MORNS

FOURDRINIER WIRE AND FELT CLEANER

Filed August 13, 1924

Fig-1-

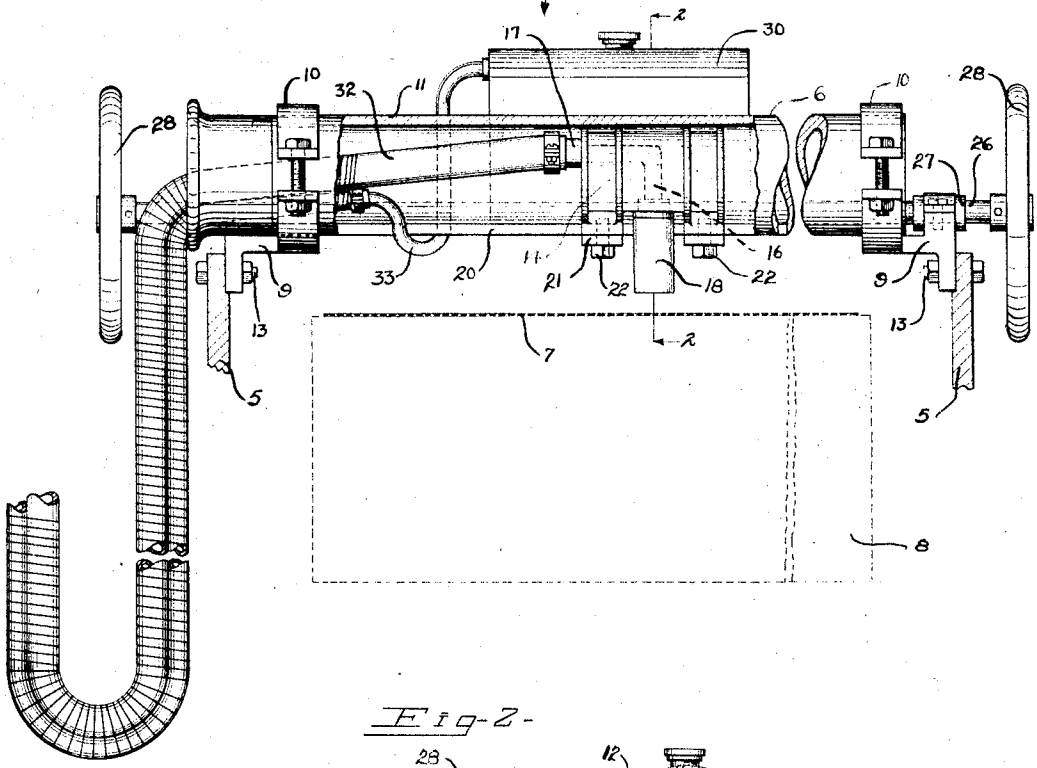
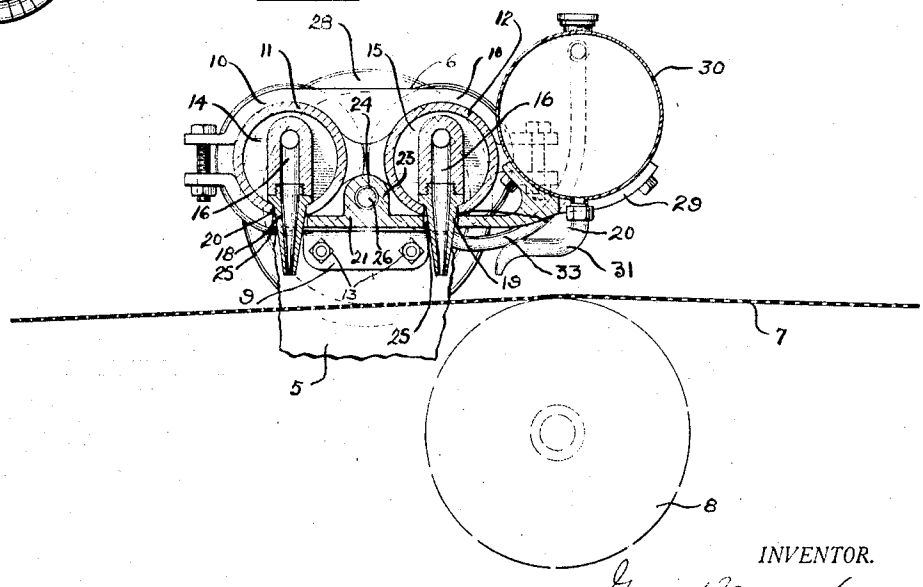


Fig-2-



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UNITED STATES PATENT OFFICE.

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FOURDRINIER WIRE AND FELT CLEANER.

Application filed August 13, 1924. Serial No. 731,842.

To all whom it may concern:

Be it known that I, GEORGE MORNS, a citizen of the United States, and resident of Joliet, in the county of Will and State of Illinois, have invented new and useful Improvements in Fourdrinier Wire and Felt Cleaners, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to improvements in Fourdrinier wire and felt cleaners, especially adapted for use in connection with paper making machinery.

It is one of the objects of the present invention to provide a cleaner of the class described which will improve the formation of sheets of paper by keeping the Fourdrinier wire clean at all times and preventing the formation of large spots on the surface of the wire.

A further object of the invention is to provide a device of the class described which can clean the Fourdrinier wire while the paper machine is in operation, thus preventing the curtailment of production incident to the shutting down of the machines in order to clean the same.

A further object of the invention is to provide a device of the class described which saves damage to the paper machine and break downs caused by spots or closed meshes on the Fourdrinier wire.

A further object of the invention is to provide a device of the class described which is very simple and economical to operate and also helps to prolong the life of the Fourdrinier wire.

A further object of the invention is to provide a device of the class described adapted to be mounted on a paper machine and arranged so that it can be manually adjusted with respect to the Fourdrinier wire.

A further object of the invention is to provide a Fourdrinier wire and felt cleaner which is of very simple construction, is inexpensive to manufacture, is strong and durable, and is well adapted for the purpose described.

With the above and other objects in view, the invention consists of the improved Fourdrinier wire and felt cleaner, and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawing in which the same reference characters indicate the same parts in both of the views:

Fig. 1 is a cross sectional view of the frame of a paper machine having the improved cleaning device mounted thereon, parts being broken away and parts in section; and

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Referring now more particularly to the drawing, it will be seen that the numeral 5 indicates the frame of a paper machine having the improved Fourdrinier wire cleaner 6 mounted over the Fourdrinier wire screen 7 which moves on rollers 8.

The cleaning device 6 comprises a pair of elongated tubular housing members 11 and 12 positioned adjacent each other and transversely to and over the Fourdrinier wire screen 7. The housing members 11 and 12 are held together by means of metallic clamping straps 10 which have downwardly flanged parts 9 affording means whereby the cleaning device is secured to the paper machine frame 5 by bolts 13.

Longitudinally, movably positioned within each housing member are coupling members 14 and 15, each coupling member having an angular bore 16 and a coupling extension 17. The lower portions of the coupling members are internally threaded to receive nozzles 18 and 19 which communicate with the respective bores 16. The nozzles 18 and 19 project downwardly through longitudinal slots 20 provided therefor in the housing members.

A carriage 21 is positioned below the housing members and the coupling members are bolted thereto, as at 22, the nozzles 18 and 19 passing through apertures 25 therein. The carriage has an enlarged mid-portion 23 formed with an internally threaded bore 24 through which an elongated screw threaded rod 26 passes. The outer end portions of said rod are journaled in hub portions 27 connected to the portions 9, and the outer ends of the rod are fitted with hand wheels 28 by which means the rod may be manually turned to cause the carriage cou-

pling members and nozzles to move, the nozzles moving through the housing slots 20.

It should be observed that one end portion of the carriage is provided with an arc-shaped extension 29, forming a seat for a fluid tank 30, said fluid tank having a curved discharge nozzle 31.

One of the coupling members, as 14, has a steam hose or tubing 32 attached thereto and said tubing extends through one end of the housing 11 and connects with a source of steam supply (not shown) and is controlled by a suitable valve. The other coupling 15 and housing 12 also carry a tubing similar to the tubing 32 and said tubing is preferably arranged to carry water whereby the same may be discharged from the nozzle 19. A third hose or tubing 33 is bound to the tubing 32 and enters the housing 11 therewith. Said tubing passes through the slot 20 and is attached to the upper portion of the fluid tank 30. Said tubing extends to a source of compressed air (not shown) and permits the introduction of air into said tank 30 whereby a liquid, preferably kerosene or an acid, stored in said tank, is forcibly discharged through the nozzle 31.

In the operation of the improved cleaning device in connection with a paper machine, the weak spot in a sheet of paper is first detected. The weak spot is caused by closed meshes in the Fourdrinier wire and the nozzles are adjusted over that particular place in the wire by means of the hand wheels which turn the screw threaded rod to move the carriage in a transverse direction over the wire. The valves controlling the steam and air hoses are then turned on and steam is discharged from the nozzle 18 onto the spot in the wire. Also the air forces a cleaning liquid from the tank 30 and said liquid is also discharged from the nozzle 31 onto the wire, the cleaning liquid being preferably kerosene or an acid. If necessary, the valve controlling the hose connected to the coupling 15 is next turned on and water is discharged from the nozzle 19 to wash the kerosene or acid out of the wire meshes.

On paper machines, the felts occasionally fill in with spots, causing what is known as "crush" on the paper, which ordinarily demands a shut down of the machine and the washing or turning over of the felts. However, the cleaning device is readily applicable to the felts in the same manner as to the wire, and the meshes may be opened up to allow air and water to pass through. In this way, the felts are conditioned in a manner so that it is unnecessary to shut down the machines and wash the felts, it being understood that the cleaning device is attached to the paper machine close to the wire roll on the lower part of the Fourdrinier wire.

Obviously, the air, water and steam hoses can be attached to supply tanks conveniently located in any part of a building and the valves for controlling the same can be positioned where desired. The device is of very simple and novel construction, and is well adapted for the purposes set forth.

What I claim as my invention is:

1. A cleaning device for paper machine Fourdrinier screens, comprising a frame portion attachable to a paper machine over the Fourdrinier wire, an elongated tubular housing carried by the frame portion, a carriage adjacent said housing, a discharge nozzle connected thereto, a fluid conducting tubing connected to the nozzle, and means for manually moving the carriage along said housing and transversely with respect to the Fourdrinier wire.

2. The combination with a paper machine, of a Fourdrinier wire screen cleaning device, comprising a frame portion secured to the paper machine adjacent the Fourdrinier wire, a plurality of elongated tubular housings carried by the frame portion, a coupling movable within each housing, a movable carriage for said coupling and extending through said housings, a fluid conducting tubing connected to each coupling, and means for moving said carriage.

3. The combination with a paper machine, of a Fourdrinier wire screen cleaning device, comprising a frame portion secured to the paper machine adjacent the Fourdrinier wire, a plurality of elongated tubular housings provided with longitudinal slots and carried by the frame portion, a coupling movable within each housing, a movable carriage for said couplings, a discharge nozzle for each coupling and extending through the housing slots, a fluid conducting tubing connected to each coupling, and means for moving said carriage.

4. The combination with a paper machine, of a Fourdrinier wire screen cleaning device, comprising a frame portion secured to the paper machine adjacent the Fourdrinier wire, a plurality of elongated tubular housings carried by the frame portion, a coupling movable within each housing, a movable carriage for said couplings, said carriage having a side extension, a fluid tank carried by said extension and provided with a discharge opening, a discharge nozzle for each coupling extending through said housings, a fluid conducting tubing connected to each coupling and to said tank, and means for moving said carriage.

5. The combination with a paper machine, of a Fourdrinier wire screen cleaning device, comprising a frame portion secured to the paper machine, a plurality of elongated tubular housings positioned adjacent each other and supported by the frame portion above the Fourdrinier wire and transversely thereto, the lower portions of said

housings being provided with longitudinal slots, an angularly bored coupling movable within each housing, a carriage movable along said housings and connected to said coupling, said carriage being provided with openings, a discharge nozzle detachably carried by each coupling and projecting therefrom through said housing slots and the carriage openings, an extension portion extending outwardly from the side of said carriage, a liquid containing tank carried thereby, said tank having a discharge nozzle, a fluid conducting tubing connected to one of the couplings, a liquid conducting tubing connected to the other of said couplings, a fluid conducting tubing connected to said tank, a screw-threaded rod threaded through said carriage, and means on said rod to manually turn the same to move the carriage.

6. A device of the class described, comprising a frame portion, a plurality of housings carried by said frame portion, a coupling movable within each housing, a movable carriage for said couplings and extending through said housings, a fluid conducting tubing connected to each coupling, and means for moving said carriage.

7. In combination with a porous conveying surface, a device for cleaning said surface comprising a frame member spaced from said surface, a plurality of housings carried by said frame member, means movable in said housings, a plurality of nozzles carried by said means and extending through said housings and a plurality of tubes connected to said nozzles for conducting fluides against said surface.

8. The combination with a porous conveying surface of a cleaning device comprising a supporting member adjacent said surface, a carriage movable in said supporting member, a cleansing liquid container attached to said carriage, and means for discharging said liquid under pressure against said surface to clean it.

In testimony whereof, I affix my signature.

GEORGE MORNS.