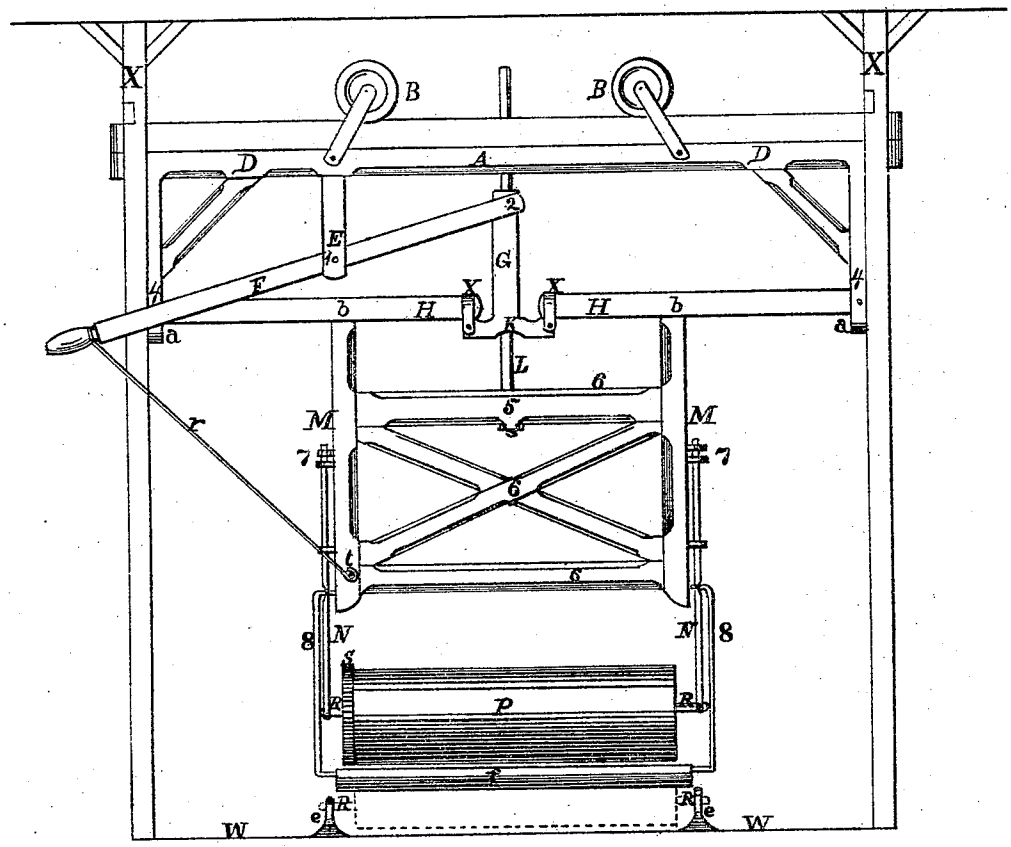
2 Sheets--Sheet 1.

JAMES F. MARSHALL.

Improvement in Apparatus for removing and replacing the Dandy Rolls of Paper Machines.

No. 123,573. Patented Feb. 13, 1872.

Fig. 1.



1ft.
Scale.

Attest.
C. G. Hale
S. J. Fisher

Inventor.
James F. Marshall,
per Fisher & Fisher,
his attys in fact.

JAMES F. MARSHALL. 2 Sheets--Sheet 2.

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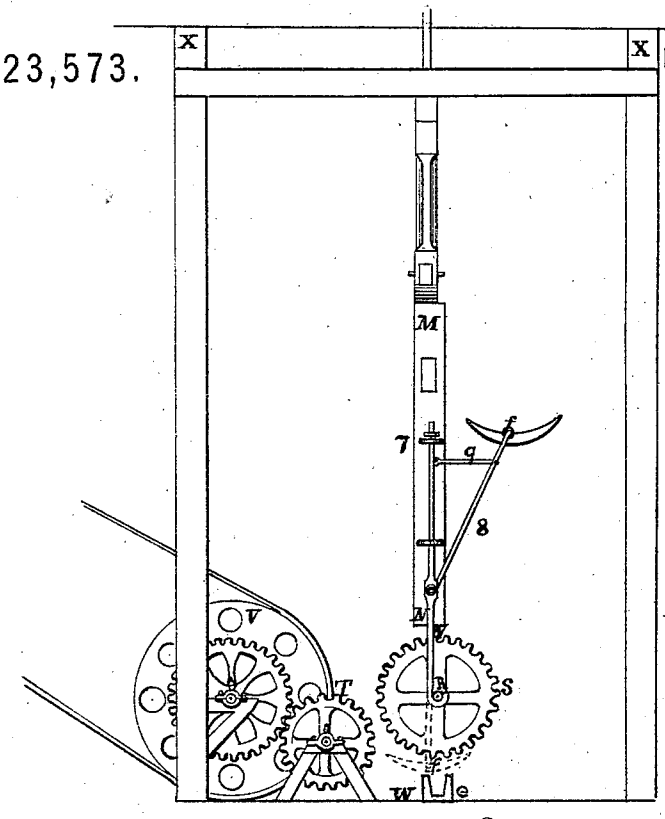


Fig. 3.

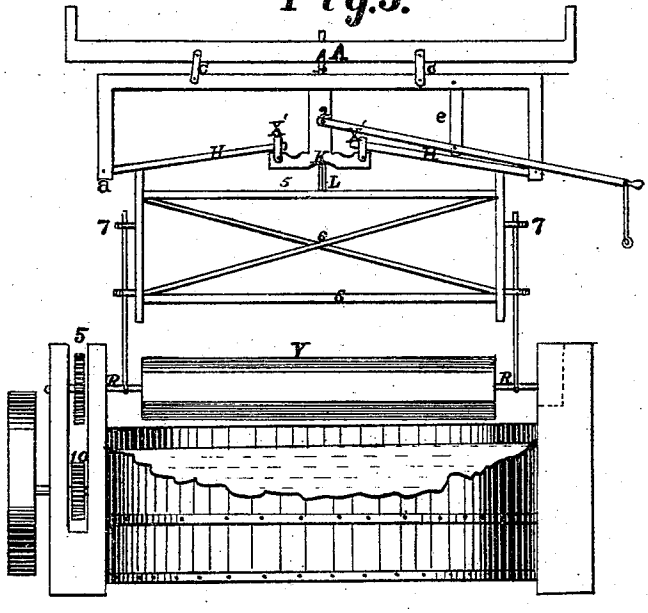
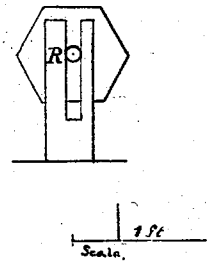


Fig. 4



Attest.
C. G. Hale
L. J. Fisher

Inventor
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UNITED STATES PATENT OFFICE.

JAMES F. MARSHALL, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN APPARATUS FOR REMOVING AND REPLACING THE DANDY-ROLLS OF PAPER-MACHINES.

Specification forming part of Letters Patent No. 123,573, dated February 13, 1872.

I, JAMES F. MARSHALL, of the city of Louisville, in the county of Jefferson and State of Kentucky, have invented a certain new and useful Apparatus for Placing the Dandy and other Rolls of Paper-Making Machines, of which the following is a specification:

My invention, in general, relates to an apparatus whereby the dandy-roll of a paper-making machine may be easily and quickly removed therefrom and replaced therein, without stopping the machine or injuring the paper-pulp—premising here that my apparatus, with an omission of some of its features, is applicable to raising and lowering the cylinder-washer in a rag-engine and other rolls in a paper-machine. My invention, in detail, relates, first, to a device whereby the dandy-roll may be quickly raised or lowered vertically; secondly, to a tramway whereby the lifting device, with its appurtenances and the dandy-roll, may be rolled away a desirable distance from the paper-machine or returned thereto; thirdly, to a save-all to catch the drippings of the dandy-roll while such roll is being removed from the paper-machine; fourthly, to an arrangement of gear whereby the dandy-roll, while being replaced in the machine, is made to revolve at the same speed as the paper-pulp passing through the machine, thereby saving the pulp from injury on coming into contact with the dandy.

In the accompanying drawing forming part of this specification, (scale two-thirds of inch to the foot,) Figure 1 is a front elevation of my improved apparatus as applied for placing the dandy. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation of the same as applied to remove or replace the washing-cylinder in a rag-engine. Fig. 4 is an end elevation of the slotted journal-guides for the washing-cylinder of Fig. 3.

General Description.

A is a tramway, supported in any suitable manner—as, for example, by hangers *x x* attached to the ceiling. D is the supporter or girder of the lifting device, suspended by links C from wheels B B, which latter roll upon the tramway. From each end of girder D vertical beams 4 4 descend a suitable distance, the lower end of each beam being slotted. The fulcrum end of a lever, H, is pivoted within such slot. Levers H H project from point *a a* inwardly and approach near together. K is a yoke or bar connecting the neighboring ends of levers H H, which latter are inserted into and play within loops X′ X′, attached, respectively, to each end of the yoke. A vertical bar, G, attached to the middle of yoke K, slides vertically upon a bar, L, which latter is secured below, at 5, to the frame of the lifting device, and slides vertically through a staple or guide-way in girder D as the lifting apparatus is raised. The frame of the lifting device consists of a truss and cross-pieces, secured at the ends by uprights M M. The upper end of one of the latter is pivoted to one lever, H, near its middle, at *b*, and the upper end of the other upright to the other lever, H, in a similar manner. To the lower part of the uprights M M are attached rods N N, which have a vertical adjustment by a screw and nut, 7, or other suitable device. The lower end of each rod is made into a hook of proper size to receive either a shoulder or prolongation of the journal of the dandy-roll and permit its rotation therein. F is the operating-lever pivoted on the swinging fulcrum at 1 in the hanger E, and having one end pivoted at 2 to the sliding upright G. Fastened to the outer end of this lever is a cord, *r*, which, when hooked over a stub, *c*, retains the dandy at the proper elevation for removing it. *f* is the save-all, which is a gutter of such size that when swung under the dandy-roll it shall catch all the drip from said roll. Each end of the save-all is supported by a rod, S, one end of which is attached to the save-all and the other pivoted to a rod, N. 9 is a catch for supporting the save-all when turned up. *e e* are slotted boxes, open at the top to receive the journals R R of the dandy P. Upon one end of the dandy is a gear-wheel, S. T is a pinion, placed so that when the dandy rests within the slotted boxes *e e* gear S will engage it. T also engages in the rear a gear-wheel, V, which latter is attached to the deckel-shaft and is operated by it. V may, however, take power from some source other than the deckel-shaft. W is the frame of the Fourdrinier machine.

In lifting the washing-cylinder (see Figs. 3

and 4) the tramway may be dispensed with, and the slot in each journal-box is to be made deeper.

The mode in which my apparatus operates is as follows: To place the dandy-roll on the paper-machine one of the journals R of the dandy-roll is in each hook of rods N N. The lifting apparatus is then rolled on the tramway A until it is over the machine. The line *r* is then loosened from stub *t*, and the lever F gradually allowed to rise. The fulcrum end of F at 2 falls, and upright G falls with it. Yoke K falls with G, and carries down with it the near ends of levers H H. As these latter are lowered they let down the uprights M M, and the entire truss and frame-work 6 6 6 6, and the rods N N, and the dandy-roll P. As the dandy-roll is lowered its journals enter the slotted guides *e*, the gear S engages the revolving pinion T, and the dandy-roll is thereby made to revolve at the same rate of speed as the sheet of pulp below, so that as the dandy-roll comes into contact with the moving pulp it does not injure it. The dandy-roll now being in place, the apparatus is raised by drawing down the lever F and securing it by passing the string *r* over stub *t*. To remove the dandy the apparatus is rolled over the machine and lowered, its hooks are placed under the respective journals of the dandy, and by a rapid downward movement of the lever F the dandy is suddenly lifted from its bed; at the same time the save-all *f* is loosened from catch 9 and allowed to drop under the dandy, as shown by the dotted lines of Fig. 2. The suddenness with which the dandy is lifted prevents it from injuring the moving pulp with which it has been in contact, while the save-all, coming under the dandy, catches all the drip and prevents it from reaching and injuring the pulp.

To raise and lower the cylinder in the washing-engine the apparatus is operated in a manner similar to that described for placing the dandy.

The tramway A and wheels B B may be dispensed with and the girder D be stationary. The save-all may also be dispensed with.

It is a great desideratum for paper-makers to be able to remove and replace the dandy while the machine continues in full operation without injuring the paper-pulp.

Hitherto the state of the art has been such that when the dandy was required to be taken from the machine or replaced therein the services of two men were necessary, and even then it could not be accomplished without injury to the pulp.

My apparatus enables one man to remove and replace the roll without injury to the paper.

I claim, broadly, to be the first to apply the device or apparatus for lifting the dandy-roll from a paper-machine, and also to be the first to apply a device or apparatus for replacing the dandy-roll therein.

What I claim as new is—

1. The described or equivalent mechanism for removing the dandy-roll from a paper-machine and for replacing said dandy-roll therein.

2. The combination of swinging fulcrum E, lever F, upright G, yoke K, levers H H, fulcrums *a a*, and the frame of the lifting device, substantially as and for the purposes set forth.

3. The combination of the swinging fulcrum E, the lever F, upright G, and the frame of the lifting device, substantially as and for the purposes set forth.

4. The combination of the tramway and the lifting apparatus, substantially as afore described, substantially as and for the purposes mentioned.

5. A dandy-roll provided with gear or friction-roller or its equivalent, in combination with suitable power-gear for giving the requisite speed of revolution to the dandy-roll while being placed in the paper-machine, substantially as and for the purposes specified.

6. A lifting device provided with hooks N N, substantially as and for the purposes specified.

7. A lifting device provided with adjustable hooks N N, substantially as and for the purposes set forth.

8. A save-all, *f*, in combination with the device for lifting the dandy, substantially as and for the purposes set forth.

JAMES F. MARSHALL.

Witnesses:
W. S. HAMILTON,
JAS. L. RUBEL.