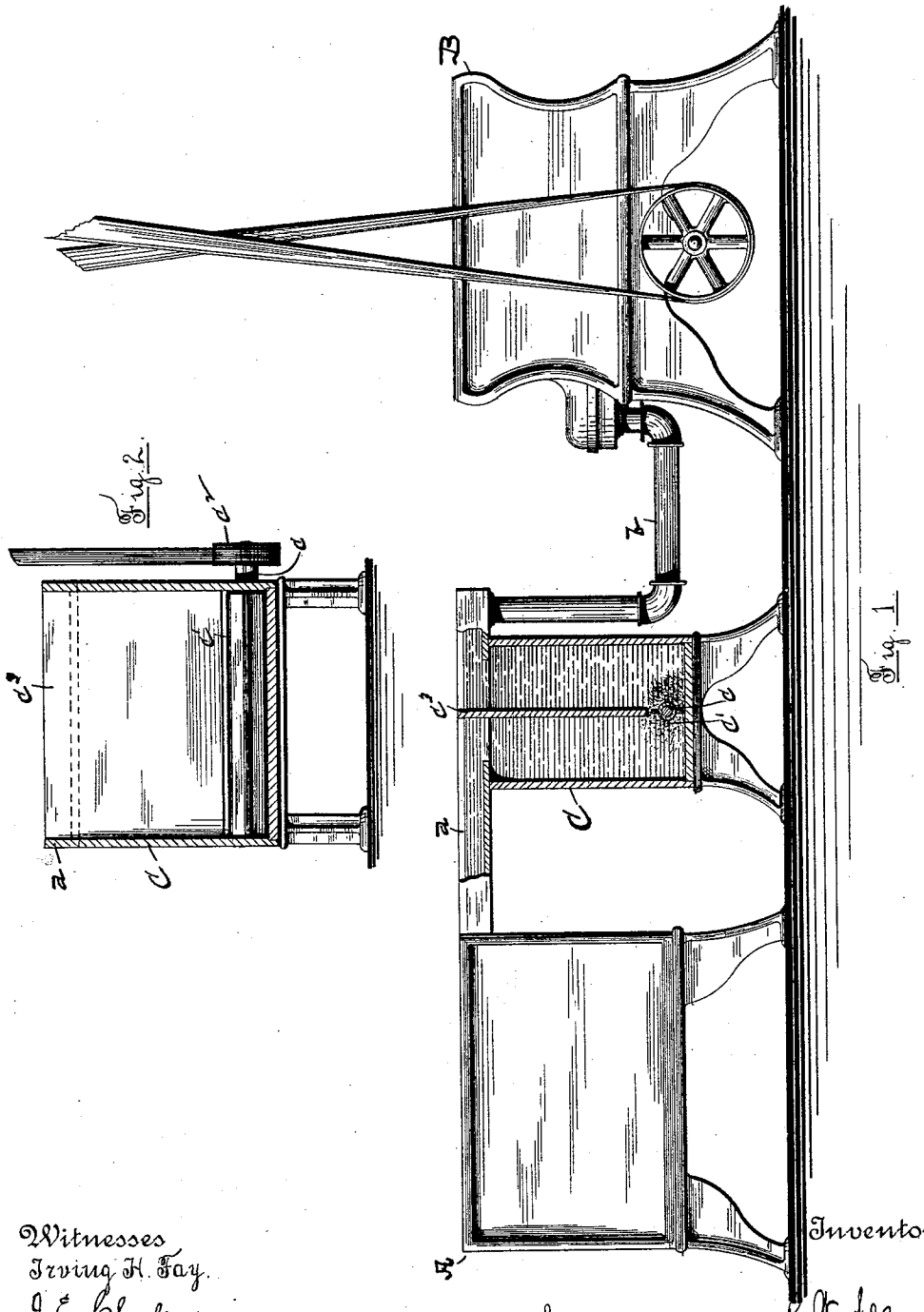
(No Model.)

R. W. ALLAN.

MEANS FOR PREVENTING SPOTS IN PAPER.

No. 480,446. Patented Aug. 9, 1892.



Witnesses
Irving H. Fay.
J. E. Chapman

Inventor
R. W. Allan.
By his Attorneys
James T. Chapman

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT W. ALLAN, OF FAIRFIELD, ASSIGNOR OF ONE-HALF TO ROSWELL M. FAIRFIELD, HOLYOKE, MASSACHUSETTS.

MEANS FOR PREVENTING SPOTS IN PAPER.

SPECIFICATION forming part of Letters Patent No. 480,446, dated August 9, 1892.

Application filed November 12, 1889. Renewed December 31, 1891. Serial No. 416,730. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. ALLAN, of Fairfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Means for Preventing Spots in Paper, of which the following is a specification, reference being had to the accompanying drawings forming part thereof.

My invention relates to apparatus to be used in the manufacture of paper, and particularly of fine writing and other papers; and it has for its object to provide means to be used in connection with the usual Fourdrinier or other machine for making paper for preventing the passage of what are known as "blue spots" and collections of fiber or stringy matter to the machine, where they would, if not intercepted, cause a blemish in the paper.

In the manufacture of paper the stuff is pumped from the stuff-chest to the stuff-box and from the latter passes to and through a screen, the office of which is to remove therefrom all knots and undigested lumps of fibrous matter, and from said screen the stuff passes to the machine. The screening-surface of said screen is given a rapid vibration, particularly in the well-known and generally-used Gould screen, and such vibration frequently causes the formation of drops of the stuff, which fall upon the surface of the stream of stuff issuing from the screen, and there being no intervening agitator to disintegrate said drops they are carried to and upon the machine, and the bluing-matter introduced into the stuff to secure perfect whiteness of the paper contained in said drops causes a blue spot in the paper. Such blue spots render the paper containing them unsalable, and the waste caused thereby is a source of much loss to the manufacturer. Again, it often happens that lumps or collections of stringy or fibrous matter remain in the stuff after the latter has passed through the screen, and these also cause a blemish in the paper, which necessitates condemning the latter. I have found that all such causes of blemish in the paper can be removed by introducing into the path of the stuff, between the screen and the machine, an agitator and by compelling the stuff to pass through said agitator; and my invention therefore consists in the combination with said paper-machine and said screen, of an agitator located between them, as hereinafter fully described, and particularly pointed out in the claims.

Referring to the drawings, in which like letters designate like parts in the several figures, Figure 1 is an end elevation of a paper-machine and of a Gould screen, illustrating the position relative thereto of the agitator devised by me and showing the latter in vertical section. Fig. 2 is a longitudinal vertical section of the agitator.

The letters A and B designate so much of a paper-machine and a Gould screen, respectfully, as is necessary to be shown in order to illustrate the application of my invention thereto.

The letter *a* designates the usual trough or conduit leading to the machine, and *b* the pipe by which the stuff is conducted from the screen into said trough.

As hereinbefore stated, the vibration of the screening-surface of the Gould and other screens frequently causes the formation of globules or drops of the stuff, which pass to the machine unbroken and cause a blue spot in the paper, and in carrying out my invention for preventing the formation of said blue spots, as well as for preventing the passage to the machine of stringy and fibrous collections of the stuff which may pass through the screen, I locate at some point between the screen and the machine an agitator constructed to thoroughly agitate the stuff and cause the stuff to pass through said agitator in its passage from the screen to the machine.

I prefer to make the agitator of the form shown at C in the drawings, consisting of a rectangular box supported upon suitable legs or standards and having centrally located near the bottom thereof a shaft *c*, provided with the short paddles *c'*, projecting radially therefrom, said shaft having its bearings in the ends of the box and carrying at one end band-pulley c^2, whereby motion can be transmitted thereto from a suitably-disposed counter-shaft. A central partition c^3 is secured to the ends of the box, said partition extending downwardly to within a short distance of said shaft. In practice I prefer to leave only substantially one-half inch of space between the

outer ends of the paddles on said shaft and the bottom of the box and between the ends of said paddles and the bottom of said partition c^3. As before stated, the agitator thus constructed can be located at any point between the screen and the paper-machine; but I prefer to locate it at some point in the trough or conduit *a*, as shown in Fig. 1. When thus located, the top of the box makes a tight joint with the bottom of the trough, and a portion or all of said bottom between the sides of the box is removed to afford open communication between the trough and the box. The central partition c^3 of the box is extended upwardly to a point where its upper end is flush with the sides of trough *a*, as shown, and thus compels the stuff to pass downwardly upon one side thereof beneath its lower end and upwardly upon the opposite side thereof in its passage from the screen to the machine. As the stuff passes beneath said partition the rapidly-revolving shaft *c* thoroughly agitates every portion thereof, diffusing the globules or drops and disintegrating the lumps or collections of stringy and fibrous matter, which would otherwise cause blue spots and other blemishes in the paper, in such manner that the paper issues from the machine free from blemish. A very material saving to the manufacturer is thus secured by the use of the simple and inexpensive apparatus herein described.

I do not wish to limit myself to the particular form or relative dimensions of the agitator nor to the exact location thereof herein shown and described, it being obvious that modifications therein can be made within the spirit of my invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a paper-machine and a screen for screening the stuff prior to its delivery to said machine, of an agitator located between said screen and said machine and means, substantially as described, for compelling the stuff to pass through said agitator in its passage from the former to the latter, substantially as and for the purpose set forth.

2. The combination, with a stuff-screen and a paper-machine, of a conduit leading from the former to the latter and an agitator located in said conduit, substantially as and for the purpose described.

3. The combination, with a stuff-screen and a paper-machine, of a conduit leading from the former to the latter and an agitator located in said conduit, said agitator being composed of a box having a passage-way leading therethrough, which passage-way is in open communication at each end with said conduit, and having located within said passage-way a revoluble shaft provided with radially-disposed arms or paddles, substantially as and for the purpose described.

4. The combination, with a stuff-screen and a paper-machine, of a conduit leading from the former to the latter, a box located beneath said conduit and having its top in open communication with the latter, said box having a centrally-disposed partition extending from a point above the bottom thereof to and within said conduit, and a revoluble shaft located within said box between the bottom of the latter and the bottom of said partition, said shaft having radially-disposed arms or paddles, arranged and operating substantially as described.

5. The combination, with a paper-machine and a stuff-screen, of a conduit, as *a*, leading to said machine, a pipe, as *b*, leading from said screen into said conduit, box C, located beneath said conduit and having open communication at its upper end with the interior of the latter, said box having partition c^3 centrally located therein and extending upwardly from a point near the bottom thereof to the top of said conduit, and shaft *c*, provided with paddles *c'* and carrying band-pulley c^2, located within said box between the lower end of said partition and the bottom of the box and having its bearings in the ends of said box, arranged and operating substantially as and for the purpose described.

ROBERT W. ALLAN.

Witnesses:
W. H. CHAPMAN,
J. E. CHAPMAN.