

No. 763,818.

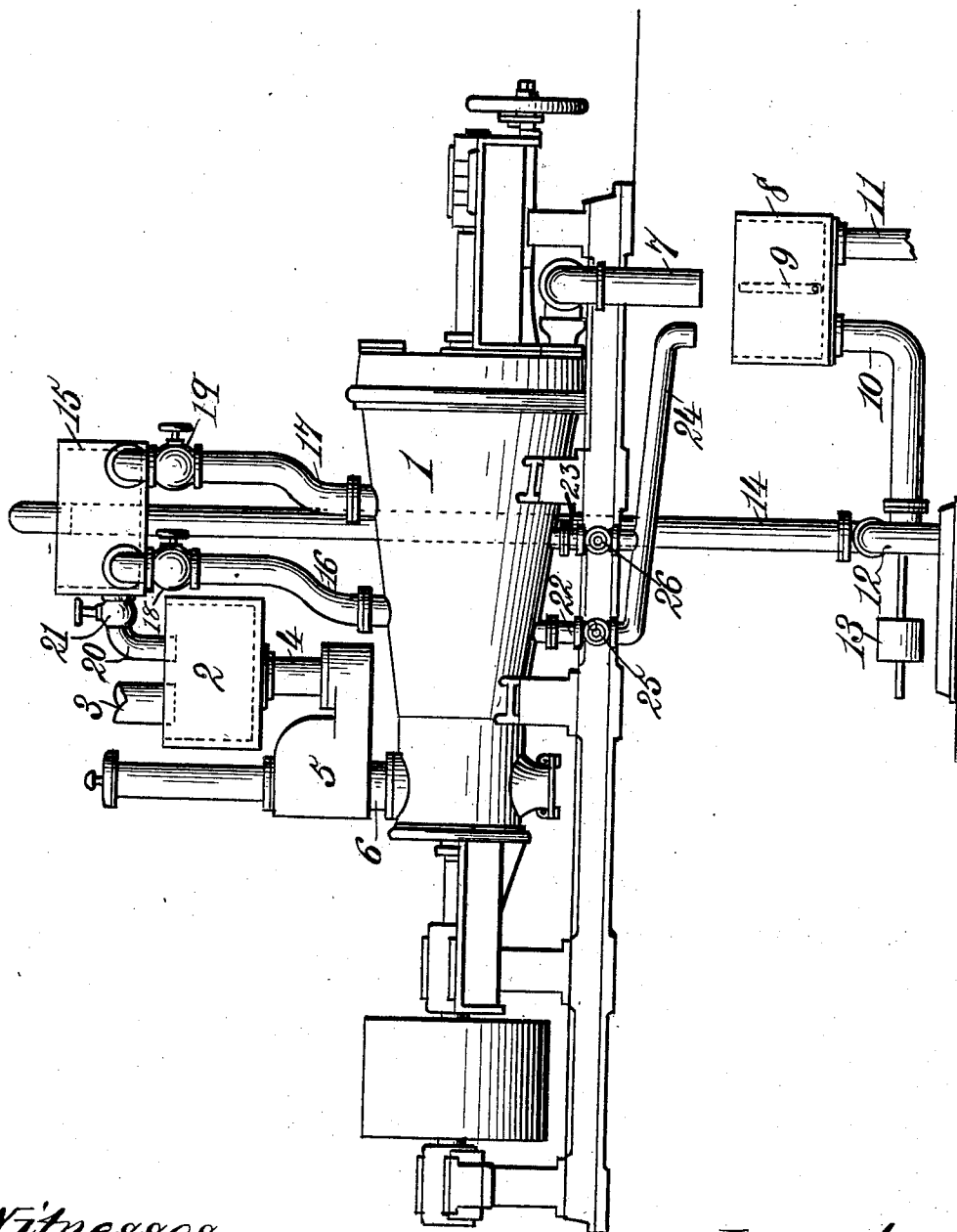
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S. R. WAGG.

APPARATUS FOR RETURNING STOCK TO REFINING ENGINES.

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NO MODEL.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR RETURNING STOCK TO REFINING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 763,818, dated June 28, 1904.

Application filed August 6, 1903. Serial No. 168,534. (No model.)

To all whom it may concern:

Be it known that I, SOLOMON R. WAGG, a citizen of the United States, residing at Appleton, in the county of Outagamie and State of Wisconsin, have invented new and useful Improvements in Apparatus for Returning Stock to Refining-Engines, of which the following is a specification.

This invention relates to certain new and useful improvements in refining-engines, and has for its object to provide means in connection with the ordinary Jordan or other type of refining-engine for returning the stock or a portion thereof which is passed through the engine back to the same for regrinding, to provide means for returning said stock for regrinding at different points in the engine whereby it may be reground to a greater or less extent, to provide means for regulating the amount of stock to be returned to the engine, and to provide means for withdrawing the stock at different points in the engine for the purpose of returning it to the same.

To these ends the invention resides in the novel construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims.

In order that my invention may be clearly understood, I have illustrated the same in the accompanying drawing, in which the figure represents in side elevation a refining-engine of the Jordan type provided with my improvement.

Referring to this drawing, 1 indicates a refining-engine; 2, the box containing the stock for supplying the engine; 3, the pipe for feeding stock into the box 2 from a chest containing the stock; 4, a pipe leading from the box 2 into the sand-catcher 5, and 6 a pipe leading from the sand-catcher into the inlet end of the engine. These parts are of the usual well-known construction and need not be described more in detail. Also the engine as a whole is mounted and operates in the ordinary manner, and a description in this regard is unnecessary. 7 indicates the outlet-pipe from the engine. This pipe has its discharge end located a slight distance above the separating-box 8, which is provided with a swinging par-

tion 9, mounted on the bottom of the box 8, centrally thereof. The box 8 is provided in its bottom on either side of the partition 9 with two outlet-pipes 10 11. The pipe 11 leads to the machine-chest, and the pipe 10 leads to a pump 12, driven by any suitable means, as by a pulley 13. From the pump 12 a pipe 14 extends to a point a considerable distance above the engine 1 and communicates with a distributing-box 15 through the upper side thereof. From the box 15 pipes 16 and 17 lead to and communicate with the engine 1, the pipe 17 communicating with the engine near the outlet end thereof and the pipe 16 near the inlet end thereof. The pipe 16 is provided with a cut-off valve 18 and the pipe 17 with a similar valve 19. From the box 15 a third pipe 20 leads to and communicates with the supply-box 2. The pipe 20 is provided with a cut-off valve 21.

At suitable points intermediate the ends of the engine 1 I provide in the bottom of the engine outlet-pipes 22 23, communicating with a common pipe 24, which in turn discharges into the box 8 directly over the pipe 10. The outlet-pipes 22 and 23 are provided, respectively, with valves 25 and 26.

In operation stock enters the engine through the pipe 6 and, passing through the same, is discharged through the outlet-pipe 7. It will be noted that the swinging partition 9 has its free end located immediately under the discharge end of the pipe 7. By swinging this partition to one side or the other a greater or less amount of the stock passing from the pipe 7 may be caused to fall on one side of the partition and pass through the pipe 11 to the paper-machine, while the remaining portion of the stock will be caused to fall on the other side of the partition 9 and pass through the pipe 10 to the pump 12, whence it is forced up through the pipe 14 and discharged into the distributing-box 15. From the distributing-box 15 the stock thus returned may be caused to enter the supply-box 2 by opening the valve 21 in the pipe 20, the valves 18 and 19 of course being closed, and thus to pass again entirely through the engine, or, the valves 21 and 19 being closed, the valve 18

may be opened and the returned stock caused to enter the engine through the pipe 16, and thus only pass again through about two-thirds of the engine, or, the valves 21 and 18 being closed, the valve 19 may be opened and the stock returned to the engine through the pipe 17, and thus passed again only through about one-fourth of the engine.

The operation, it will be seen, is continuous, a portion of the stock leaving the engine constantly passing to the paper-machine chest, while the remaining portion is returned to the engine for further grinding.

By moving the partition 9 to one side or the other the amount of stock returned to the engine may be adjusted according to the character of paper desired to be produced or according to the character of stock being refined. A still further variety in the treatment of the stock is offered by the outlet-pipes 22 and 23, for by opening one or the other of the valves 25 and 26 stock may be withdrawn from the engine in a partially ground or refined condition and be discharged through the pipe 7 into the separating-box 8, where it will be mixed with the stock which has passed entirely through the engine and a portion of said stock be returned to the engine for regrinding, if desired, as usual.

It will also be seen that by turning the partition 9 to one side—that is, to the right in the drawing—all of the stock passing from the discharge-pipe 7 may be returned for regrinding, while by turning the partition 9 to the left all of the stock may be passed from the engine directly to the paper-machine chest without regrinding.

It will be seen from the above that I provide for making paper containing long and short fibers, which may be perfectly blended, owing to the treatment to which the stock is subjected, as described herein, the regrinding of the stock operating to smooth and repolish the same, so that the fibers may the more perfectly unite and blend into an even-surfaced homogeneous sheet. Paper thus produced will take up printers' ink and will develop the fine lines of printing more perfectly than is possible with paper manufactured by the method now in vogue.

To illustrate further the object sought it may be stated that the standard length of fiber passed through the Jordan engine is fixed at, say, fifty points. By the present manner of manipulating stock, as herein described, I produce fiber of variable length, approximating sixty-five points long and forty-five, thirty-five, or thirty, &c., short, which in the process of regrinding will be caused to blend perfectly in the paper sheet, finer fibers when combined with the longer fibers giving to the paper superior strength, smoothness, and flexibility.

According to the character of paper desired or the character of stock being treated I can

by the means described vary the percentage of short fibers to long fibers, and such means provide for a very large margin between the size of the fibers blended.

I do not limit myself to the exact details of construction shown except as indicated in the claims appended hereto. Thus, for example, I may employ a worm or other well-known form of conveyer for returning the stock to the engine in place of the pump 12. Also I do not limit myself to any given number of extra inlets to and outlets from the engine.

The arrangement whereby the stock is withdrawn from the engine at determinate points between its inlet and discharge is valuable in and of itself and may be utilized because of the value thereof separate and independent of the arrangement by which the stock is returned to the engine to be reground. Therefore this arrangement of withdrawal is claimed by me as a novel invention.

Having thus fully described my invention, what I claim as new is—

1. In combination with a refining-engine of the Jordan type, means connected therewith for returning to the engine a portion of the stock discharged therefrom to be reground.

2. In combination with a refining-engine of the Jordan type, means connected therewith for continuously returning to the engine a portion of the stock discharged therefrom to be reground.

3. In combination with a refining-engine, means connected therewith for returning to the engine determinate quantities of the stock discharged therefrom to be reground.

4. In combination with a refining-engine, means connected therewith for returning to the engine at determinate points stock discharged therefrom to be reground.

5. In combination with a refining-engine, means connected therewith for withdrawing stock from the engine at determinate points between its inlet and discharge and returning the same to the engine to be reground.

6. In combination with a refining-engine, means connected therewith for withdrawing stock from the engine at determinate points between its inlet and discharge, and returning the same to the engine at determinate points to be reground.

7. In combination with a refining-engine, means connected therewith for returning thereto stock discharged therefrom to be reground, and adjustable means for varying the amount of stock returned to the engine.

8. In a refining-engine in combination with a supply-box, a distributing-box communicating therewith, a discharge-pipe leading from the engine, a separating-box located beneath said discharge-pipe, a pump, and a pipe connecting said pump and said distributing-box.

9. In a refining-engine, a distributing-box having valve-controlled communication with

the engine at one or more points, a discharge-pipe from the engine, a separating-box located beneath said discharge-pipe, a pump, a pipe connecting said pump and separating-box, and a pipe connecting said pump and distributing-box.

10. In a refining-engine, in combination with the supply-box, a pipe 24 having controllable branch communications with the engine at one or more points in the bottom thereof, and provided with a discharge-outlet, and means for conveying the stock discharged from said pipe to said supply-box.

11. In a refining-engine, in combination with the supply-box, a discharge-pipe leading from the engine, a pipe 24 having valve-controlled branch communication with the engine at one or more points in the bottom thereof, and having a discharge-outlet, a separating-box, located beneath the end of said discharge-pipe and of said pipe 24, a pump communicating with said separating-box, and a pipe leading from said pump and communicating with said supply-box.

12. In a refining-engine, in combination with a distributing-box having valve-controlled communications with the engine at one or more points, a discharge-pipe leading from the engine, a pipe having valve-controlled branch communication with said engine at one or more points in the bottom thereof, and having a discharge-outlet, a separating-box located beneath the end of said discharge-pipe and of said pipe 24, a pump communicating with said separating-box, and a pipe leading from said pump to said distributing-box.

13. The combination with a refining-engine, of means connected therewith for withdrawing stock from the engine at determinate points between its inlet and discharge.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SOLOMON R. WAGG.

Witnesses:

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P. L. SCHNELLER.