

Jan. 27, 1925.

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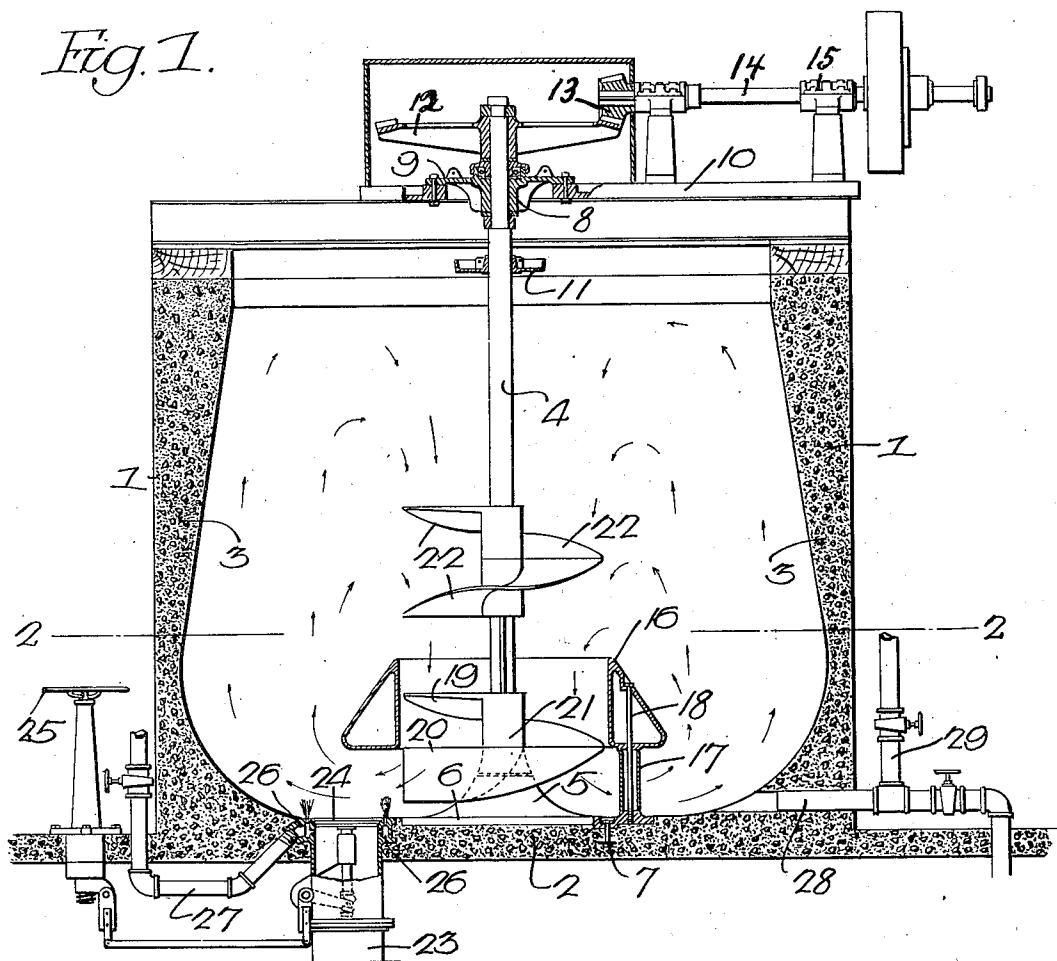
J. A. WHITE

APPARATUS FOR TREATING PAPER STOCK

Filed Nov. 15, 1923

2 Sheets-Sheet 1

Fig. 1.



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2 Sheets-Sheet 2

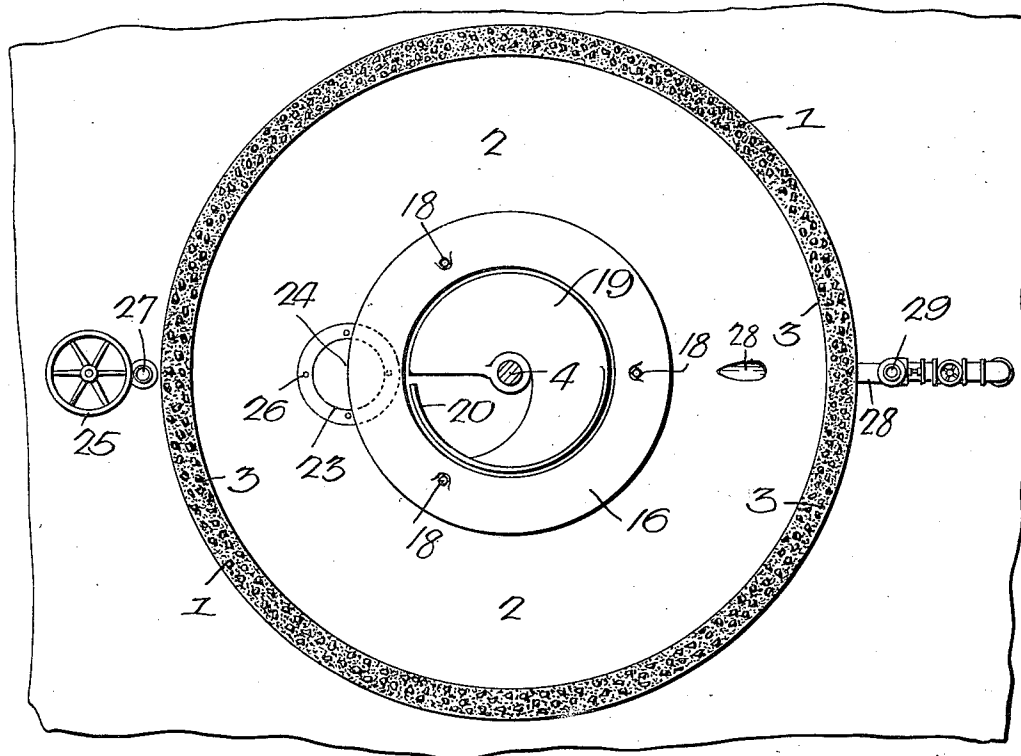


Fig. 2.

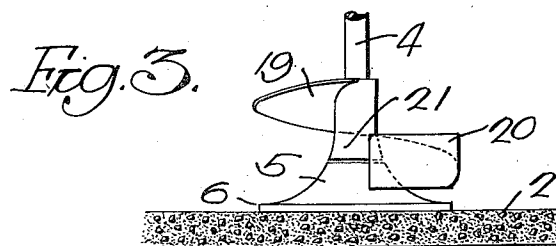


Fig. 3.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR TREATING PAPER STOCK.

Application filed November 15, 1923. Serial No. 674,916.

To all whom it may concern:

Be it known that I, JOSEPH A. WHITE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Apparatus for Treating Paper Stock, of which the following is a specification:

My invention relates to certain improvements in apparatus for treating paper stock.

The invention is an improvement upon the apparatus set forth and claimed in an application for patent filed by me on the eighth day of May, 1923, Serial No. 637,505.

One object of the invention is to improve the construction of the apparatus by making the ring in the form of a midfeather, the diameter of which is regulated by the diameter of the tub.

A further object of the invention is to provide means for forcibly ejecting the material from under the midfeather to cause the material to circulate positively in the tub.

In the accompanying drawings:

Fig. 1 is a vertical sectional view of my improved apparatus for treating paper stock;

Fig. 2 is a sectional plan view on the line 2-2, Fig. 1; and

Fig. 3 is a side view of the lower worm and the ejecting blade.

Referring to the drawings, 1 is a tub made of concrete in the present instance. This tub has a bottom portion 2 and a cylindrical body portion 3. The inner wall of the body portion tapers inwards towards the upper end so that the tub is greater in diameter near the bottom than at the top. The lower portion of the tub is rounded so as not to interfere with the free flow of the paper stock.

4 designates a vertical shaft that extends through the center of the hub. This shaft has its lower bearing in a step 5, which is formed in a deflecting plate 6 inset in the tank and secured thereto by bolts 7. The upper end of the shaft 4 is mounted in a bearing 8 that is secured to a plate 9, which is carried by cross beams 10 that are secured to the upper portion of the tub. On the shaft 4, under the bearing 8, is a drip

catcher 11 for any grease that may drop from the bearing.

On the shaft 4 is a bevel gear 12, which meshes with a bevel pinion 13 on a driving shaft 14 that is mounted in bearings, 15, secured to cross beams 10. On the shaft 14 is a clutch pulley.

In the tub, near the bottom, is a cylindrical midfeather 16, which is shaped as shown in Fig. 1, and supported on standards 17. Extending through the midfeather and through the standards are bolts 18, which are screwed into the deflecting plate 6. These standards are three in number in the present instance and they rigidly support the midfeather. The interior of the midfeather is of an even diameter throughout.

Mounted on the shaft 4 is a worm 19, which is less in height than the midfeather, and is located in the lower portion thereof, as shown in Fig. 1. The midfeather is some distance from the bottom of the tub so as to provide a channel of sufficient size for the free flow of the material. The under side of the midfeather is flat, as shown, while the outer wall is tapered. The midfeather is greater in diameter at the lower edge than at the upper edge. This construction is important, as it frees the material in circulation as soon as it passes from under the midfeather. The diameter of the midfeather may be increased, as the diameter of the tub is increased. While the tub is shown cylindrical in cross section, it may be made oblong, in some instances, to increase its capacity.

In order that the material may flow freely from the interior of the midfeather, a blade 20 forms a continuation of the worm. This blade is shaped as shown in Fig. 3 to provide a vertical portion, which tends to eject the material forcibly from under the midfeather as soon as it leaves the worm.

The deflecting plate 6 is raised some distance from the bottom of the tub. Its surface is curved, as shown. On the shaft is a collar 21, which has its outer surface curved as a continuation of the deflecting plate. The worm 19, in the present instance, has only a half turn.

On the shaft 4, some distance above the midfeather, is a full turn worm 22, which is made in two sections, bolted to the shaft.

23 designates an outlet pipe having a valve 24, actuated by a hand wheel 25, through mechanism of the ordinary construction. Surrounding the outlet pipe 23 is an annular spray nozzle 26 that is supplied with water from a pipe 27.

28 designates a valved wash-out pipe that communicates with the bottom of the tub. 29 designates a valved water supply pipe that is between the tub and its valve.

When the tub is used for mixing paper stock, the stock is placed therein and sufficient water is added. The shaft is rotated in a direction to cause the worms to feed the stock down through the midfeather, as indicated by the arrows, Fig. 1. When the stock passes through the midfeather, the blade 20 forces the stock outwards, causing it to flow from under the midfeather from whence it takes an upward course. The tapered body of the tub causes the stock to flow towards the center where the upper worm acts upon it to feed it towards the lower worm and through the midfeather.

It will be noted that the midfeather 16 has an extended base, which forms a contracted throat through which the material is forced by the worm and blade. The width of the base is dependent upon the diameter of the tub.

I claim:

1. The combination in apparatus for treating paper stock; of a tub; a cylindrical midfeather located near the bottom of the

tub, said midfeather having an extended base; a vertical shaft extending through the midfeather; a worm on the shaft; and means for driving the shaft to cause the stock to flow downwards through the midfeather.

2. The combination in apparatus for treating paper stock, of a tub; a cylindrical midfeather located at the center of the tub near the bottom thereof, the inner wall of said midfeather being of an even diameter throughout, the outer wall being beveled; a vertical shaft extending through the midfeather; and means for driving the shaft to cause the stock to flow downwards through the midfeather.

3. The combination in apparatus for treating paper stock, of a tub; a cylindrical midfeather near the bottom of the tub; a vertical shaft extending through the midfeather; a worm on the shaft located in the midfeather; and a blade, forming a continuation of the worm, shaped to force the stock from under the midfeather.

4. The combination in apparatus for treating paper stock, of a tub greater in diameter at the bottom than at the top; a midfeather located in the tub near the bottom thereof; a deflecting plate in the bottom of the tub under the midfeather; a vertical shaft extending through the midfeather and having its bearings in the deflecting plate; a worm on the shaft located in the midfeather; and a blade, forming a continuation of the worm, shaped to force the stock from under the midfeather.

JOSEPH A. WHITE.