

J. D. TOMPKINS.
ROUGH PULPER.
APPLICATION FILED JUNE 2, 1909.

969,998.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 1.

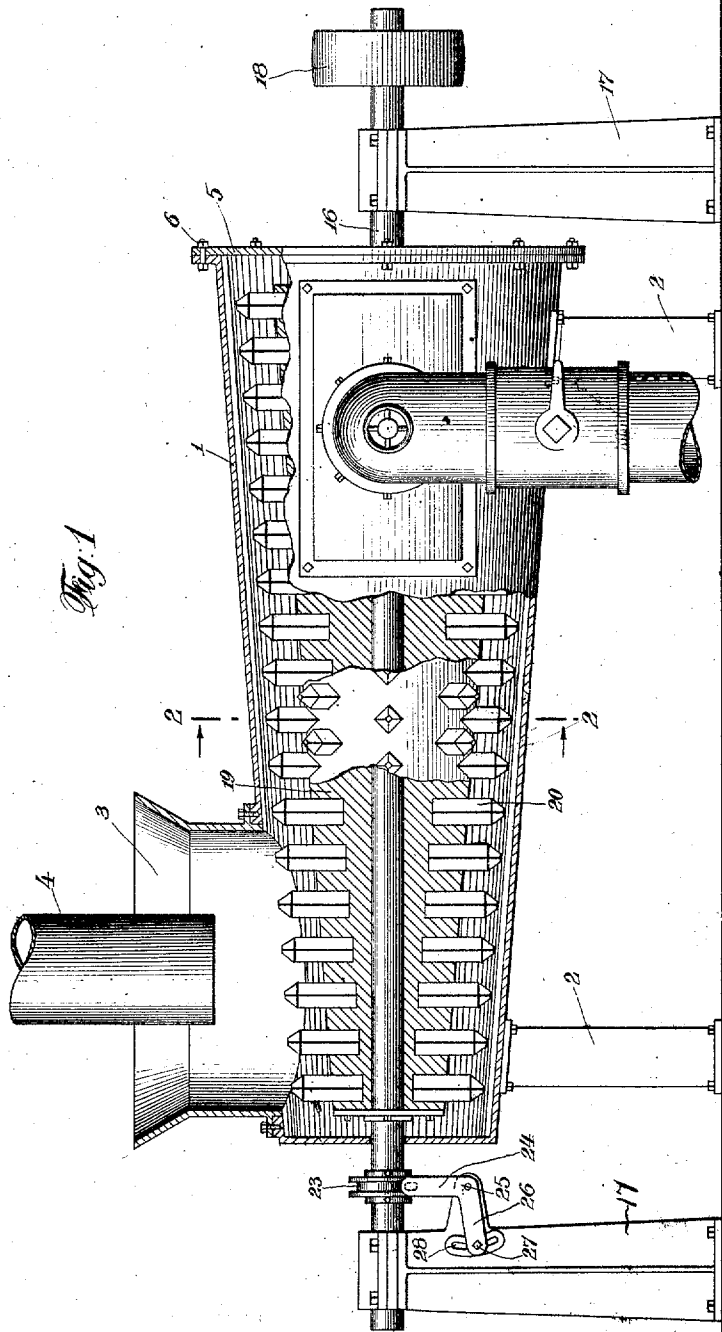


Fig. 1

Witnesses:
A. Newcomb
M. Meikle.

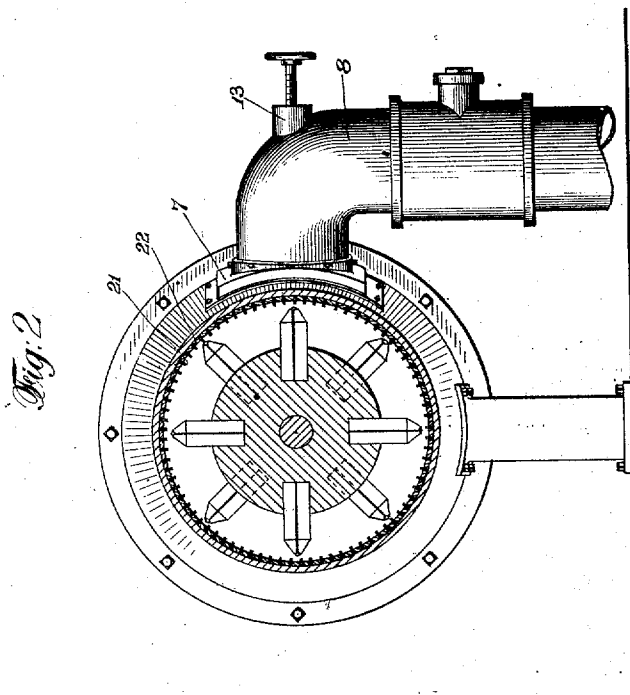
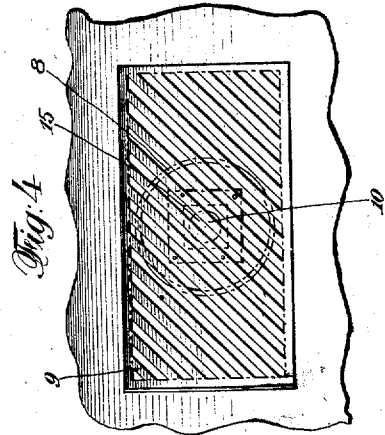
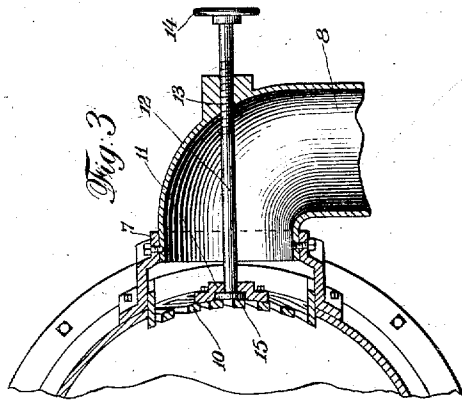
Inventor
John L. Tompkins
By his Attorney,
Prindle Wright

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A. Newcomb
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UNITED STATES PATENT OFFICE.

JOHN D. TOMPKINS, OF VALATIE, NEW YORK.

ROUGH PULPER.

969,998.

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To all whom it may concern:

Be it known that I, JOHN D. TOMPKINS, of Valatie, in the county of Columbia and in the State of New York, have invented a certain new and useful Improvement in Rough Pulpers, and do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates especially to an improvement in an apparatus for reducing old paper stock, such as stock made from old newspapers and other kinds of paper in such a manner as to produce, first, a stronger paper, and second, a paper of high quality at lower cost than has hitherto been possible.

My apparatus is of such a character that it is adapted to loosen the fibers effectively without destroying the same or breaking the individual fibers. By the use of my apparatus, therefore, the resulting renovated paper stock is of practically the same strength as the original paper stock, and the same is true of the paper made therefrom.

My apparatus is designed, furthermore, in such a manner as to avoid any liability of the same becoming clogged or damaged by the accumulation of strings. Furthermore, I arrange the parts in such a manner that they are adjustable so as to produce a stock of any desired fineness, and also to take up for any wear that might occur to the parts.

Another feature of my invention is the arrangement of the outlet from the apparatus in such a manner as to prevent the same from becoming clogged.

I have shown one embodiment of my invention in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical cross-section of the same partly in elevation; Fig. 2 is a transverse vertical section taken on the line 2—2 of Fig. 1; Fig. 3 is an enlargement of the outlet in section; and Fig. 4 is an elevational view of the same.

In the drawings, 1 is a stationary drum supported upon uprights 2, the drum being frusto-conical in shape. The smaller end of the drum 1 is provided with a detachable inlet hopper 3, above which there is located a feed pipe 4 for the paper stock. The larger end of the drum 1 is provided with a removable cover 5, bolted by means of bolts 6 to the drum. At the larger end the drum 1 is also provided with an outlet 7, to which an outlet pipe 8 is connected. The outlet 7 is adapted to be closed by a grating 9 hav-

ing a plurality of diagonally arranged bars 10 therein. The grating 9 is supported upon a block 11. A shaft 12 passes through and is screw-threaded to the outlet pipe 8 by means of a screw-thread 13. Upon the end of the shaft there is situated an operating handle 14 for operating the same. The inner end of the shaft projects into the interior of the block 11, and is provided at this point with a head 15. By rotating the shaft 12 from the outside of the outlet pipe 8, it will be seen that the grating 9 can be adjusted toward and away from the interior of the drum. A rotary shaft 16 passes into the interior of the drum 1, and is supported at the exterior thereof by two uprights 17. The shaft 16 at one end carries a driving pulley 18. The shaft 16 upon the interior of the drum has attached thereto a conical core 19, in the outer face of which there are secured a number of arms 20. Each of the arms 20 is pointed and approaches closely to the inner periphery of the drum 1. The interior of the drum 1 carries a number of longitudinally disposed knives 21, supported between wooden strips 22. The knives 21 are adapted to cooperate with the arms 20 in disintegrating the paper stock. The arms 20 are arranged spirally upon the core 19, so as to more effectively engage the body of stock present in the drum. In order to permit the shaft 16 to be moved longitudinally, to move the ends of the arms 20 toward and away from the knives 21, the shaft 16 has a grooved collar 23 attached thereto outside of the drum, with which a bifurcated arm 24, situated upon a bell crank lever 25 is adapted to engage. The bell crank lever 25 is pivoted upon one of the standards 17, and the other arm thereof 26 carries a bolt 27, which is adapted to move within a slot 28 in the standard 17.

In the operation of the device, the paper stock, having been submitted to a thorough preliminary dusting, cleaning and soaking treatment, is fed into the drum 1 from the pipe 4 through the hopper 3 with a quantity of water. Upon the shaft 16 being rotated, the arms 20 disintegrate the stock and loosen the fibers thereof from one another. The parts are arranged, however, in such a manner as to avoid the breaking of the individual fibers, as the comminution is accomplished without resorting to any grinding of the stock. The arms 20 being located in a spiral direction upon the

core 19, the stock is gradually worked from the smaller end to the larger end of the drum 1. When the stock reaches the larger end of the drum 1 and has been sufficiently comminuted, the same passes through the grating 9 and out through the outlet pipe 8, to be further refined and treated, if desired.

Because of the location of the bars 10 of the grating 9 in a diagonal direction, no lumps of stock can lodge upon the grating for any appreciable period of time, as the rotary arms 20 cooperating with the bars 10, would tend either to force the lumps through the grating 9, or further comminute them. In order to effectively accomplish this result, the grating 9 is made adjustable to and from the ends of the arms 20, so that the grating can be adjusted to the most effective position. The distance between the ends of the arms 20 and the knives 21 can be adjusted by moving the shaft 16 longitudinally. This is accomplished by loosening the bolt 27 and moving the bifurcated lever 24 backward or forward, as desired, and then again tightening the bolt 27 to maintain the parts in their adjusted position.

In case it is desired to clean the apparatus, the hopper 3, the grating 9, or the removable head 5 can be detached. Any strings that are accumulated may be removed by cutting or in any other suitable manner.

Because of the fact that the interior of the drum is provided with a number of longitudinal knives for cooperation with the ends of the arms 20, an accumulation of strings cannot possibly stop the rotation of the shaft 16, nor can it in any way succeed in bending or breaking the arms 20, as would be the case were the interior of the drum also provided with arms.

While I have described my invention above in detail, I wish it to be understood that many changes may be made therein without departing from the spirit of my invention.

I claim:

1. In a device of the character described, the combination of a drum, a plurality of longitudinal knives therein, and a plurality of arms in the drum, said knives and arms being relatively movable.

2. In a device of the character described, the combination of a drum, a plurality of

longitudinal knives therein, a rotary shaft therein and a plurality of arms upon the shaft.

3. In a device of the character described, the combination of a conical drum, a plurality of longitudinal knives therein, and a plurality of arms in the drum, said knives and arms being relatively movable.

4. In a device of the character described, the combination of a conical drum, a plurality of longitudinal knives therein, a rotary shaft therein and a plurality of arms upon the shaft.

5. In a device of the character described, the combination of a conical drum, a plurality of longitudinal knives therein, and a plurality of arms in the drum, said knives and arms being relatively movable and adjustable toward and from each other.

6. In a device of the character described, the combination of a conical drum, a plurality of longitudinal knives therein, a rotary shaft therein and a plurality of arms upon the shaft longitudinally adjustable in said drum.

7. In a device of the character described, a conical drum, a plurality of arms in the same, means for causing the drum and arms to move relative to one another, and means for adjusting the arms longitudinally in said drum to move them toward or away from the wall of the drum.

8. In a device of the character described, the combination of a drum, one or more rotary arms therein, and an outlet on the side and below the top of the drum.

9. In a device of the character described, the combination of a drum, one or more rotary arms therein, an outlet on the side of the drum, and a grating having diagonal bars over said opening.

10. In a device of the character described, the combination of a drum, one or more rotary arms therein, an outlet on the side of the drum, and a grating having diagonal bars over said opening, said grating being adjustable toward and away from the arms.

In testimony that I claim the foregoing I have hereunto set my hand.

JOHN D. TOMPKINS.

Witnesses:

A. NEWCOMB,

M. MEIKLE.