

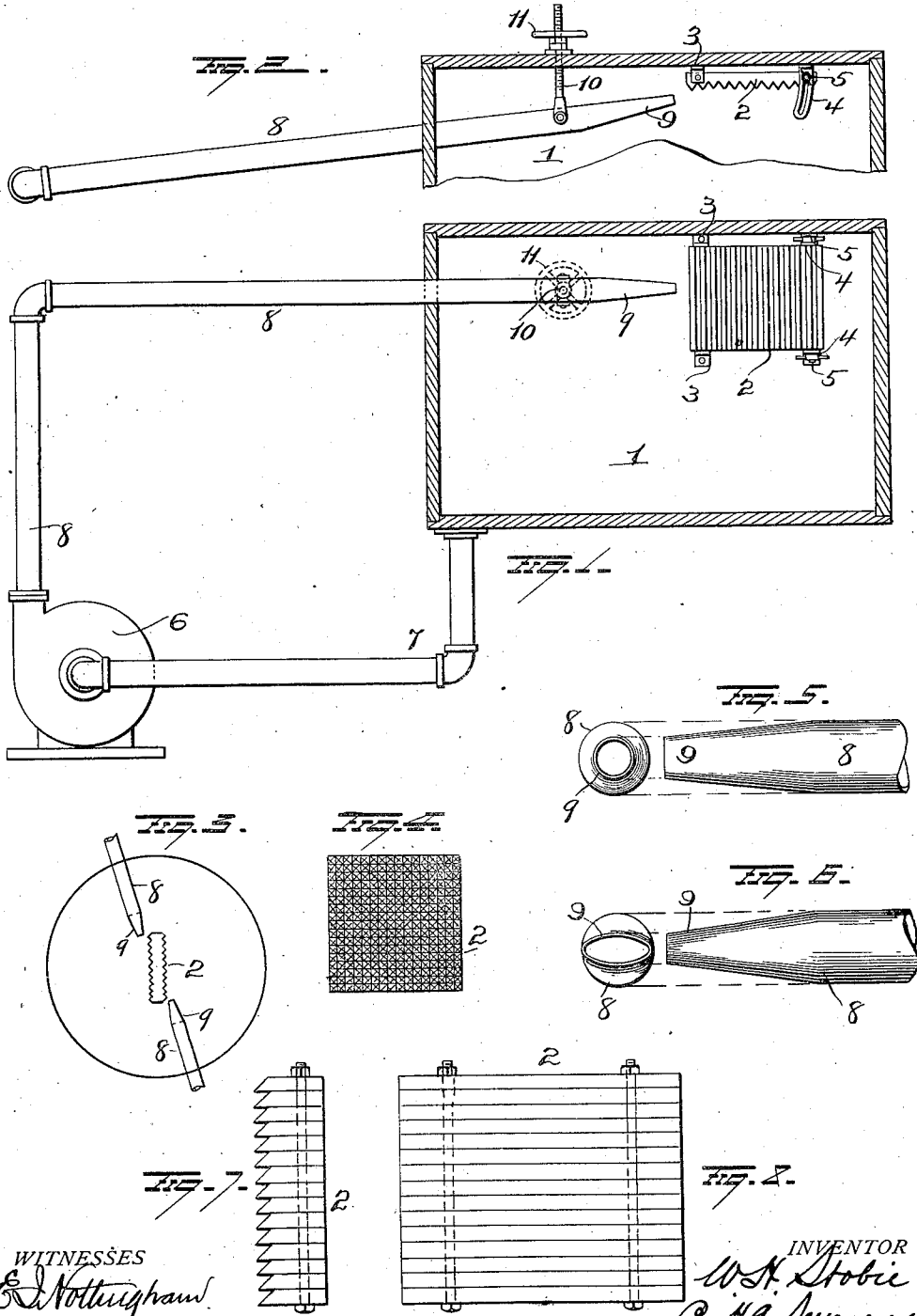
W. H. STOBIE.

APPARATUS FOR DISINTEGRATING FIBROUS MATERIAL USED IN THE MANUFACTURE OF
PAPER PULP.

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Patented May 20, 1913.

1,062,306.



WITNESSES

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Specification of Letters Patent.

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REISSUED

To all whom it may concern:

Be it known that I, WILLIAM H. STOBIE, a citizen of the United States, residing at Waterville, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Apparatus for Disintegrating Fibrous Material Used in the Manufacture of Paper-Pulp; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in apparatus for disintegrating fibrous material used in the manufacture of paper pulp, the object being to divide or separate the fibers without breaking or cutting them, thereby producing a stock that will felt better than the stock produced in an ordinary beating engine, and my invention consists in the parts and combination of parts as will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a diagrammatic representation of an apparatus embodying my invention. Fig. 2 is a view in plan of same, and Figs. 3, 4, 5, 6, 7 and 8 are views of modified forms.

1 represents a vat or tank, to contain the paper stock which has been previously mixed with the proper proportion of water to reduce it to a consistency where it can be readily pumped and conveyed through pipes, and 2 is a plate or target mounted within the tank and provided with a serrated surface. This plate is preferably made of metal, but it may be made of sand stone or other material, and while I prefer to make it in the form of an integral plate with a serrated face, as shown in Figs. 1 and 2, it may be made up of a series of blades placed face to face with their edges beveled, so that when assembled and secured by bolts or other fastening devices, as shown in Figs. 7 and 8, it constitutes in effect, a plate having a serrated face.

The plate 2 is preferably adjustably mounted so that the angle of its serrated face with relation to the nozzle may be changed, and in the present instance I have shown it hinged to brackets 3, and mounted at its other end between slotted brackets 4, the plate being provided with set screws 5,

by which it may be locked so as to withstand the impact of the jet, in any position within its range of movement.

Leading from the bottom of tank 1 to the pump 6, is a pipe 7, and leading from the pump to the tank is the discharge pipe 8, terminating within the tank in a nozzle 9, the discharge end of which is preferably made circular as shown in Fig. 5, but which may be flattened or elongated as in Fig. 6. This nozzle is so located with relation to the serrated plate 2, that the stock will strike the serrated face at an angle as shown, which angle may be changed to make it more acute or obtuse, by adjusting the plate 2 as previously explained, or by adjusting the nozzle 9 by means of the screw 10 and nut 11.

With the arrangement as shown, the stock is kept passing in a circuit through the pump and pipes, and is forced in solid and forceful stream or jet against the serrations on plate 2, and then drops back into the tank and so on through the pipes and pump and against the serrated plate, until the stock has been reduced to the proper consistency. This contact of the stock with the serrations or teeth on the plate, reduces the material to fibrous form without impairing the strength or reducing the length of the fibers of the original pulp. Instead of serrating the plate in one direction, it may be serrated in planes at right or other angles, thus producing a surface of points or projections, and consequently increasing the edges or angles in a given surface of the plate, as shown in Fig. 4, and instead of employing a single nozzle, the plate may be serrated on both faces with a discharge nozzle for each, as shown in Fig. 3. Again instead of circulating or repassing the stock through the vat and pump and against the plate until it has been reduced to the desired condition, I may as a step in the process project the stock against the serrated plate and then pass it on to a reducing engine or other apparatus employed in the paper making process. The apparatus may also be used for improving the quality of certain grade of pulp before it enters the paper mill, so that a pulp mill selling pulp, and not paper, could, by the use of this apparatus improve the grade and the strength of its product.

The action of the serrated face, on the stock, is to divide or separate the fibers without breaking or cutting them, and experiments have demonstrated that stock can be prepared in this apparatus, for the paper machines, without any treatment whatsoever in the old style of beaters. It will also be seen that the circulating system provides for a thorough mixing of colors that may be introduced to tint or color the pulp.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without departing from the spirit and scope of my invention. Hence I would have it understood that I do not wish to confine myself to the exact construction and arrangement of parts shown and described, but

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. In apparatus for disintegrating or dividing fibrous paper stock, the combination of a serrated surface, a pump and a nozzle connected with the pump for discharging the stock against said serrated surface, the said nozzle being so located

with relation to the serrated surface that the stock will strike the latter a glancing blow.

2. In apparatus for disintegrating or dividing fibrous paper stock, the combination of a tank, a pump, a pipe leading from the tank to the pump, a pipe leading from the pump to the tank, a nozzle on said last mentioned pipe, and a serrated plate located in the path of discharge from said nozzle.

3. In apparatus for disintegrating or dividing fibrous paper stock, the combination of a serrated surface, means for adjusting same, a pump, a nozzle connected with the pump for discharging the stock against said serrated surface, and means for changing the position of the nozzle with relation to said serrated surface whereby the angle of incidence may be changed.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

WILLIAM H. STOBIE.

Witnesses:

PERCY M. CRAM,
JOSEPH R. GOODWIN.