C. G. McCLELLAN.

PAPER MAKING MACHINERY.

APPLICATION FILED JAN. 12, 1912.

1,052,495. Patented Feb. 11, 1913.

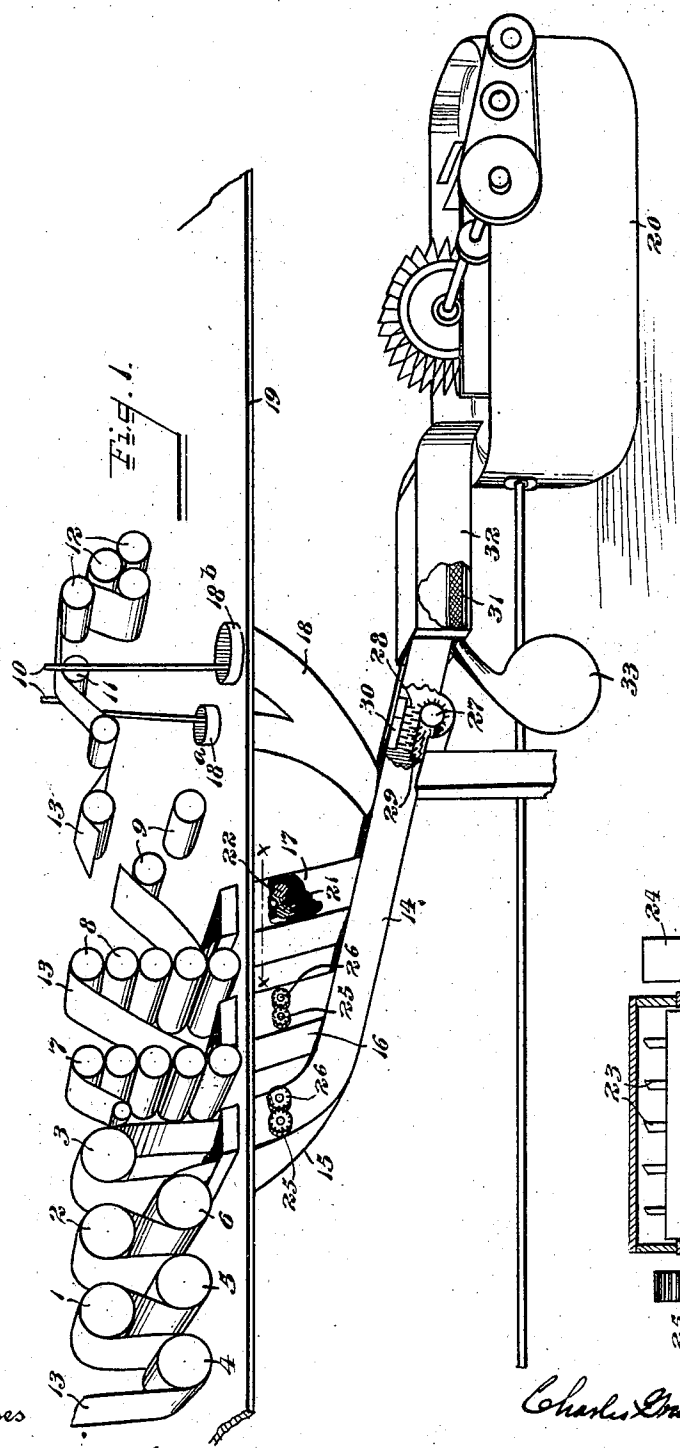

Fig. 1.

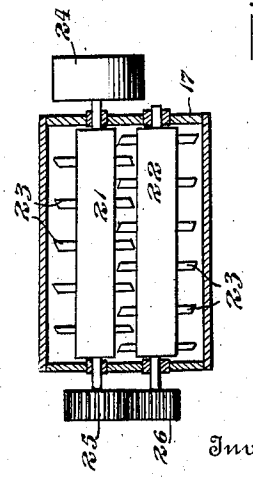

Fig. 2.

Witnesses

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PAPER-MAKING MACHINERY.

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To all whom it may concern:

Be it known that I, CHARLES GRANT MCCLELLAN, a citizen of the United States, residing at Johnsonburg, in the county of Elk and State of Pennsylvania, have invented certain new and useful Improvements in Paper-Making Machinery, of which the following is a specification.

My invention relates to improvements in paper making machinery, and it has for its object the provision of means for preserving the waste particles of paper pulp as they are being run through the drying and finishing rolls. In explanation of this object it may be stated that it sometimes happens that the paper pulp, while being run through the rolls, breaks, the free end of the pulp dropping down upon the floor beneath the rolls, necessitating the cutting off of a considerable quantity of the pulp before it can be again properly started through the rolls.

A further object of my invention is to provide means for preserving the waste particles of pulp from the stripping knives.

My improvement consists in providing a construction which will catch these otherwise wasted particles of the paper pulp and convey them back to the disintegrating machinery where they will be worked in with the new paper pulp and thus saved.

In the accompanying drawings, Figure 1 is a perspective view of so much of the paper making machine as is necessary to illustrate the invention, with my improvement applied thereto, some of the parts being broken away to better illustrate the interior construction. Fig. 2 is a section on the line *x*—*x* of Fig. 1.

Like parts are represented by similar characters of reference in the several views.

In most types of paper making machinery it is usual to run the paper pulp through a series of press rolls, the pulp being supported on an endless blanket. The pulp is then conveyed to a series of drying rolls and calender or finishing rolls, the supporting blanket, however, being discontinued through these rolls. In the event that the paper pulp, in its passage through these latter rolls, breaks, it will, as before stated, be necessary to tear off a considerable portion of the pulp, which in the ordinary mode of operation of the machinery, goes to waste.

In the said drawing, 1, 2, 3, 4, 5 and 6 represent series of drying rolls; 7 and 8 represent series of calender or finishing rolls; 9 represents a series of winding reels; 10 represents a pair of stripping knives arranged adjacent winding reels; 11 and 12 may represent a still additional series of winding reels; all of these rolls being of any suitable and ordinary construction mounted in bearings upon the main frame of the machine (not shown). The strip of paper pulp is shown between the rolls and is represented by the reference numeral 13.

Located beneath the respective series of rolls is a main conduit 14 having connected therewith a series of auxiliary conduits 15, 16, 17 and 18, the open end of each of which terminates preferably just beneath and between the respective series of rolls with the exception of the conduit 18, which is branched, as shown at 18^a and 18^b, said branches being located directly beneath the stripping knives 10. The upper end of each of the conduits, 15, 16 and 17, is elongated in the direction of the longitudinal axis of the rolls, and the conduit is of a width preferably slightly greater than the width of the material passing through the rolls, so that when the material breaks, it will be permitted to drop directly into the conduit.

In practice the conduit 14 will preferably be located beneath the floor 19 which supports the machinery, with the open ends of the auxiliary conduits extending through said floor. The discharge end of the conduit 14 leads to the preliminary disintegrating devices, represented by 20 in the drawing, which may be of any suitable and well-known construction. The particles of pulp, as they fall into the auxiliary conduits, will drop into the main conduit, and thence down the main conduit to the disintegrating devices, the inclination of the conduit being such that ordinarily gravity will be sufficient to carry the particles through the same, although, if desired, any well known form of suction fan may be employed to assist the particles of pulp in their passage through the conduits.

In order to obviate any clogging of the waste particles of pulp in the conduits, I arrange in each of the auxiliary conduits preferably just beneath the floor, a pair of disintegrating rolls 21 and 22, each provided with a series of teeth 23, coöperating with each other to disintegrate the waste particles. The rolls are driven from any suitable source of power applied to the pul-

ley 24 connected to the roll 21; the roll 22 being driven from the roll 21 through the medium of the gears 25 and 26. The gear 26 is smaller than the one 25, so that the roll 22 will be driven at greater speed than the roll 21, for the purpose of not only performing the disintegrating operation, but also to prevent the paper particles from winding around the rolls.

Before the waste particles of pulp reach the disintegrating devices 20, they pass through a second shredder located in the lower part of the conduit 14, this shredder consisting of a revolving roll 27, having teeth 28 which coöperate with teeth 29 projecting from a block 30, secured to the wall of the conduit. The shredded particles then pass onto a screen 31, located in a trough 32 at the lower end of the conduit, where particles of dirt and other foreign matter adhering to the pulp may be removed, a fan 33 of any suitable construction being employed to dislodge particles of the pulp from the bottom of the screen.

And having thus described my invention, I claim:

1. In a paper making machine, the combination, with the rolls for operating upon the paper pulp, of an open-ended receiver for the pulp located beneath said rolls, the open end of said receiver being extended in the direction of the longitudinal axis of said rolls.

2. In a paper making machine, the combination, of the calender and finishing rolls for the pulp, of a series of open-ended receiving conduits located beneath said rolls, the open ends of said conduits being extended in the direction of the longitudinal axis of said rolls.

3. In a paper making machine, the combination, with the rolls for operating upon the paper pulp, of a main conduit, a plurality of open-ended auxiliary conduits communicating with said main conduit and having their open ends located beneath said rolls, the open ends of said auxiliary conduits being extended in the direction of the longitudinal axis of said rolls.

4. In a paper making machine, the combination, with the rolls for operating upon the paper pulp, and stripping knives for said pulp, a main conduit, a plurality of auxiliary conduits communicating with said main conduit and extended to a point beneath said rolls, and auxiliary conduits also communicating with said main conduit and extended to points beneath said stripping knives.

5. In a paper making machine, the combination, with the rolls for operating upon the paper pulp, of a main conduit, a plurality of open-ended auxiliary conduits communicating with said main conduit and extended to a point beneath said rolls, each of said auxiliary conduits having a disintegrating device located therein.

6. In a paper making machine, the combination of the rolls and the stripping knives, and a conduit having branches extending to a point beneath said rolls and knives, said conduit leading to disintegrating machinery, substantially as and for the purpose specified.

7. In a paper making machine, the combination, with the rolls for operating upon the paper pulp, of a receiver for the pulp located beneath said rolls, and disintegrating devices for the pulp located in said receiver.

In testimony whereof, I have hereunto set my hand this 27th day of November, 1911.

CHARLES GRANT McCLELLAN.

Witnesses:

GEO. C. SMITH,

M. HOLLAND.