

(No Model.)

2 Sheets—Sheet 1.

E. D. SPEER.  
PAPER PULPING ENGINE.

No. 573,627.

Patented Dec. 22, 1896.

Fig. 1.

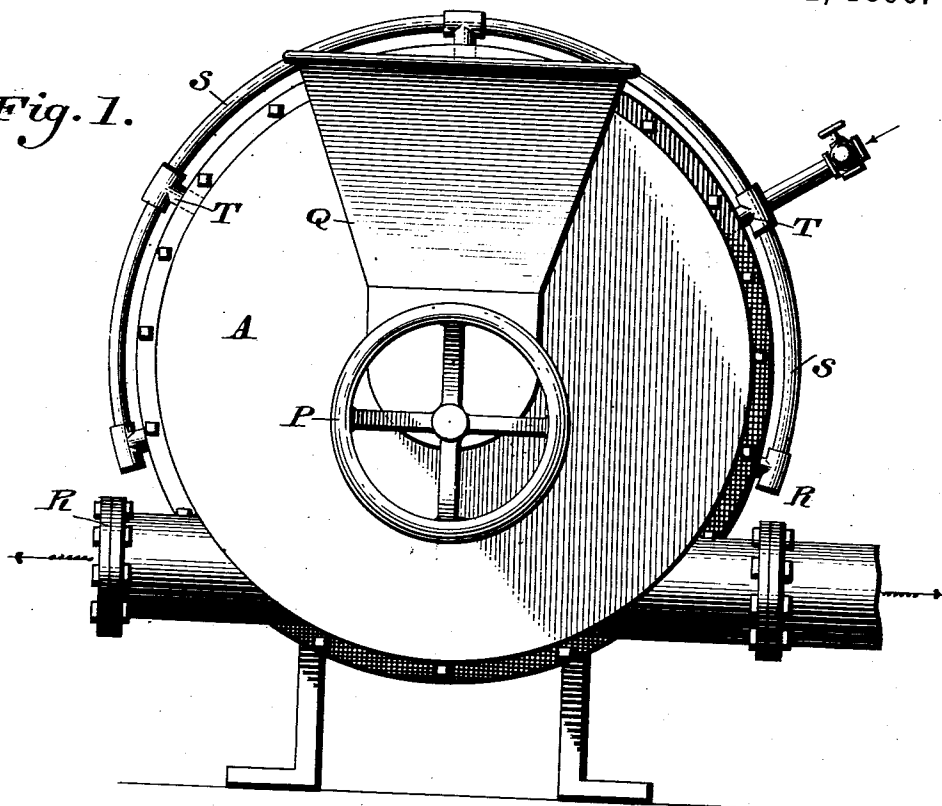
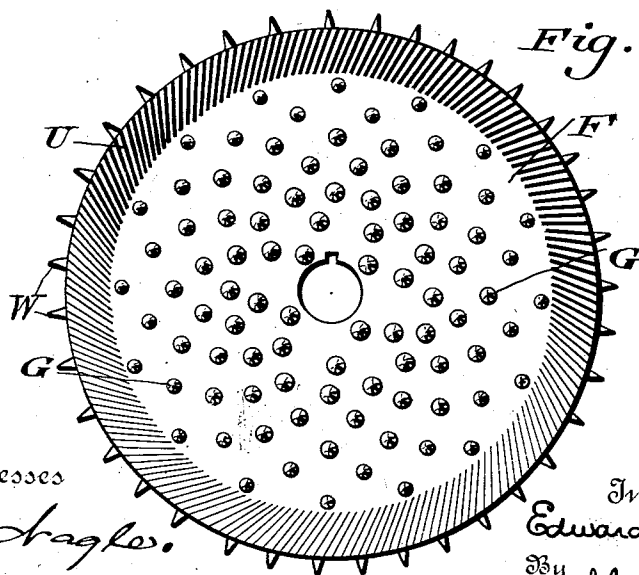


Fig. 4.



Witnesses

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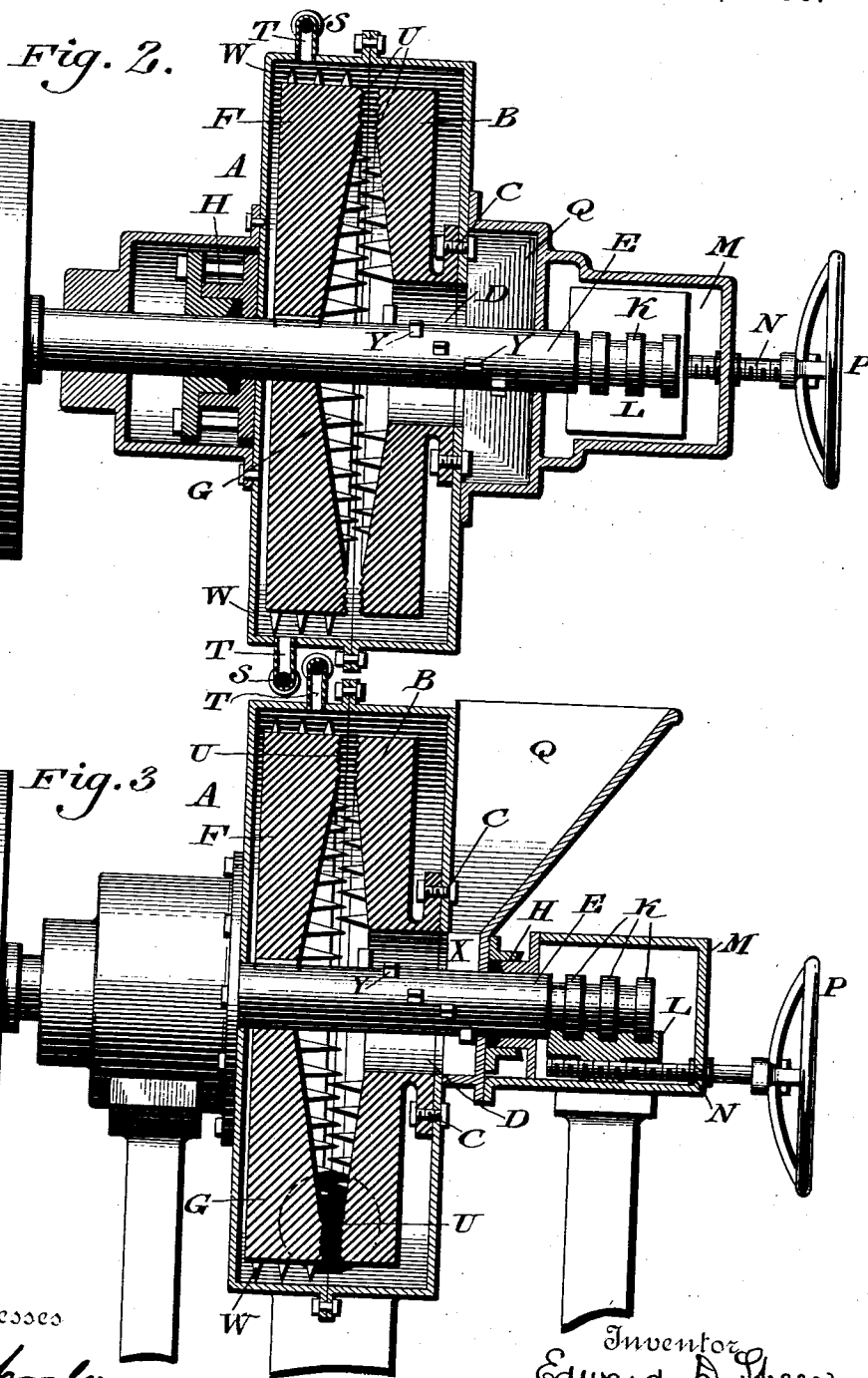
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2 Sheets—Sheet 2.

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PAPER PULPING ENGINE.

No. 573,627.

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Witnesses  
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Inventor  
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# UNITED STATES PATENT OFFICE.

EDWARD D. SPEER, OF PROVIDENCE, MARYLAND, ASSIGNOR TO HIMSELF,  
AND WILLIAM M. SINGERLY, OF PHILADELPHIA, PENNSYLVANIA.

## PAPER-PULPING ENGINE.

SPECIFICATION forming part of Letters Patent No. 573,627, dated December 22, 1896.

Application filed April 3, 1895. Serial No. 544,233. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD D. SPEER, a citizen of the United States, residing at Providence, in the county of Cecil, State of Maryland, have invented a new and useful Improvement in Paper-Pulping Engines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of an improvement  
10 in a paper-pulping engine or apparatus for treating stock for conversion into pulp, the same embodying a casing, a toothed bed and follower therein, a shaft adapted to feed the stock between said bed and follower, the teeth  
15 of said bed and follower being intercurrent or intermeshing, serrations on said bed and follower for grinding the stock after being torn or disintegrated, teeth on the follower for whipping the pulp around the casing outside of the follower, and means for adjusting  
20 the runner relatively to the bed.

Figure 1 represents a side elevation of a paper-pulping engine embodying my invention. Fig. 2 represents a horizontal section  
25 thereof. Fig. 3 represents a partial side elevation and partial vertical section thereof. Fig. 4 represents a face view of the runner of the apparatus.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a casing, of cylindrical or other form, within which the bed B is bolted or otherwise firmly secured to said casing, as at C, and has an  
35 eye D in the center thereof, through which passes the rotatable shaft E, which has keyed or otherwise secured to it the runner F, the opposite faces of the bed and runner being clad with cutters, spurs, or teeth G.

The shaft is suitably mounted in stuffing-boxes H H on the casing A and has one end provided with the driving-pulley J and the other end formed with thrust-bearings K, which freely enter grooves in the block L, which is supported on the floor of the chamber M aside of the casing A, said block having working in it the screw N, which is swiv-  
45 cled in the vertical wall of said chamber and provided with the hand-wheel P, so that by  
50 rotating said screw and wheel the block may be moved and with it the shaft A, so that the

runner F may be adjusted to and from the bed B.

The casing A is provided with a supply-hopper Q, which leads to the eye D, and with  
55 discharge-pipes R, either of which is used relatively to the direction of rotation of the runner.

S designates a pipe which is connected with the casing A by means of the branches T and  
60 employed for supplying steam to the interior of the casing A.

The adjacent faces of the bed and runner are recessed, forming a chamber which is widest at or near the shaft E, tapering to-  
65 ward the outer edges of said bed and runner, where the said faces are serrated, as at U, and projected from the periphery of the runner are spurs or teeth W.

On the shaft E, within the eye D and the  
70 throat X of the hopper, at the base of the hopper Q, are spirally-arranged lugs Y.

The operation is as follows: The stock to be treated is supplied to the casing through the hopper Q and directed to the throat X,  
75 where it is engaged by the lugs Y, and so carried through the eye D to the space between the runner and bed, when it is caught by the teeth G and carried around said space, it being noticed that the rows of teeth of the  
80 runner rotate between the rows of teeth of the bed, and so tear and disintegrate the stock, the latter then being driven toward the peripheries of the runner and then subjected to the serrations U, so as to be ground by the  
85 attrition therewith. The stock as pulped then escapes into the casing at the periphery, when it is carried around and whipped by the teeth W, and then forced into either of the pipes R, by which it is conveyed to a  
90 place of deposit or service.

When it is desired to adjust the runner F relative to the bed B, the screw N is rotated by means of the hand-wheel P, whereby the block L is moved on the floor of the chamber  
95 M either to or from the eye D, according to the direction in which said wheel is turned, and with the block L, owing to the thrust-bearings K, the shaft E is longitudinally moved and consequently the runner F thereon  
100 adjusted relative to said bed B.

While the stock is within the casing it is

subjected to the action of steam, by means of the pipe S and branches T, so as to be assisted in its disintegration and pulping.

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

1. A paper-pulping engine having a cylindrical casing a stationary bed, a shaft with a runner thereon within said casing having teeth on its periphery, a steam-supply pipe partially encircling said casing, and radial branch pipes leading from said supply-pipe into said casing opposite the periphery of said runner, said parts being combined substantially as described.

2. A paper-pulping engine, consisting of a casing, a hopper, a stationary bed in said casing, a shaft passing through an eye in said bed, a runner secured to said shaft, teeth on the periphery of said runner, a block and

screw connected with said shaft for longitudinally adjusting the same and thereby said runner, outlets from said casing, and a steam-supply leading to the periphery of said runner, said parts being combined substantially as described.

3. In a paper-pulp engine, a casing, a bed secured thereto having an eye, a rotatable shaft freely passing through said casing and eye, and a runner on said shaft, said runner and bed having the inner portions of their adjacent faces concave with serrated edges, and provided with intermeshing teeth, and the periphery of said runner having teeth thereon, said parts being combined substantially as described.

EDWARD D. SPEER.

Witnesses:

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