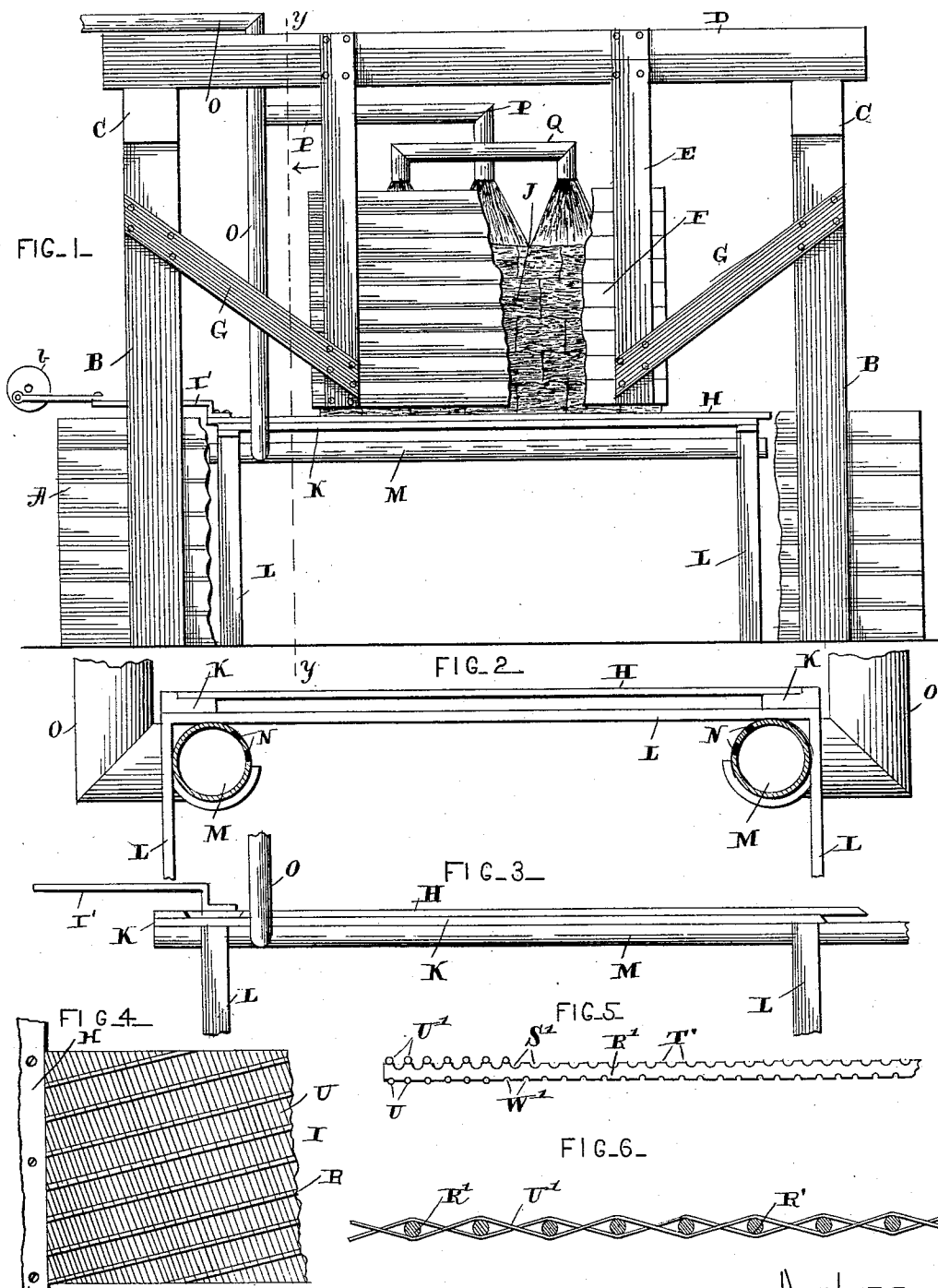


2 Sheets—Sheet 1.

APPARATUS FOR MANUFACTURING PAPER PULP.

Patented July 19, 1892.



WITNESSES.

Geo. E. Frick.

Roland A Fitzgerald.

INVENTOR_

INVENTOR—
John T. Carter

per
Lehmann & Pattison
attys

(No Model.)

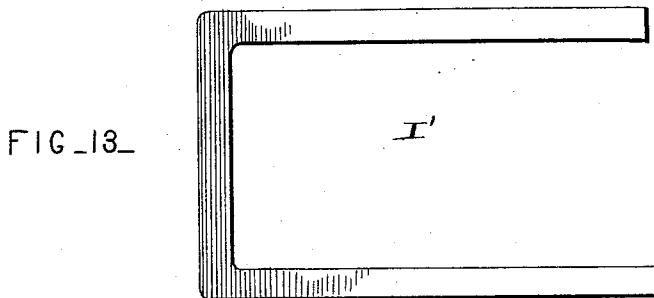
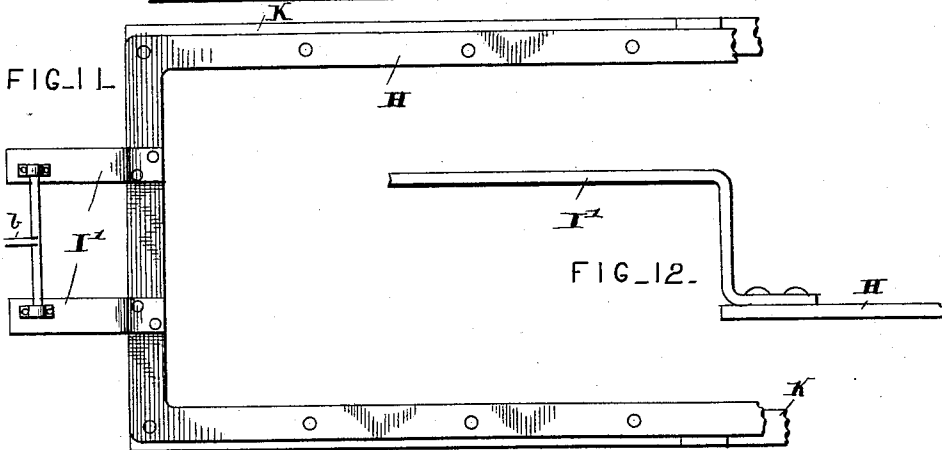
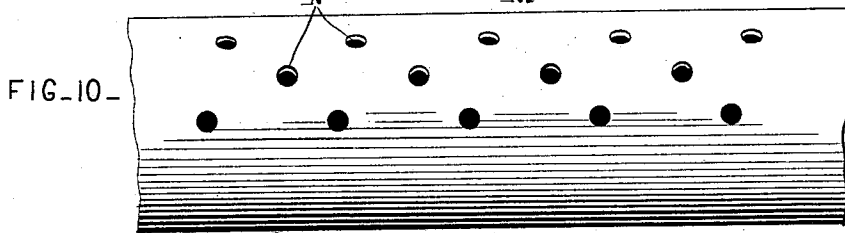
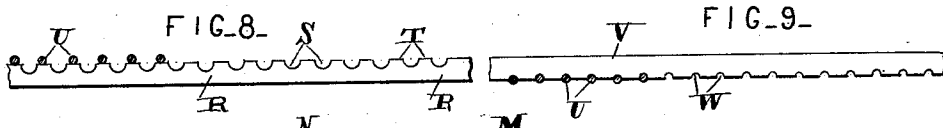
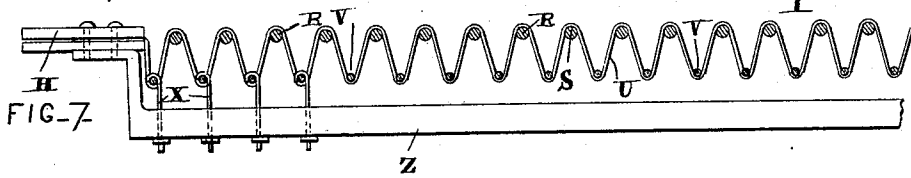
2 Sheets—Sheet 2.

J. B. CARTER.

APPARATUS FOR MANUFACTURING PAPER PULP.

No. 479,243.

Patented July 19, 1892.



WITNESSES.

Geo. E. Frech.

Roland A. Fitzgerald.

INVENTOR.

John B. Carter
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Att'y.

UNITED STATES PATENT OFFICE.

JOHN B. CARTER, OF KOKOMO, INDIANA.

APPARATUS FOR MANUFACTURING PAPER-PULP.

SPECIFICATION forming part of Letters Patent No. 479,243, dated July 19, 1892.

Application filed June 12, 1891. Serial No. 396,756. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. CARTER, of Kokomo, in the county of Howard and State of Indiana, have invented certain new and useful
5 Improvements in Apparatus for Manufacturing 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 pertains to
10 make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in an apparatus for reducing wood or other
15 fibrous substances to pulp; and it consists in the construction and combination of parts, which will be fully described hereinafter, and pointed out in the claims.

The object of my invention is to provide for
20 pulp-reducing machines a rubbing-surface of wire, which is constructed in the manner hereinafter shown and described, and to subject the wood to a flow of water above and below simultaneously with the rubbing operation,
25 whereby the reduction of the stock is facilitated.

Figure 1 is a side elevation of a machine which embodies my invention, being shown partly in section. Fig. 2 is a section taken
30 on the dotted line Y Y of Fig. 1 and looking in the direction indicated by the arrow. Fig. 3 is a side elevation of the wire-cloth frame and the water-pipes under it, looking in a direction at right angles to that indicated by
35 the arrow. Fig. 4 is a plan view of the wire-cloth. Figs. 5 and 6 are enlarged detail views of the wire-cloth, showing the specific construction of the large wires. Fig. 7 is a vertical section of the wire-cloth, showing a preferred method of constructing it. Fig. 8 is an
40 enlarged detail view of the upper large wire used in Fig. 7. Fig. 9 is an enlarged detail view of the lower large wire shown in Fig. 7. Fig. 10 is a plan view of a portion of one of
45 the perforated pipes. Fig. 11 is a plan view of the wire-cloth frame and the supporting-guideway therefrom. Fig. 12 is a side elevation of the yoke connected to the wire-cloth frame. Fig. 13 is a plan view of the same.

50 A indicates a water-vat of any desired shape, size, or construction, and B vertical

supporting-posts connected at their upper ends by the transverse beams C. Extending across from these beams C are the horizontal beams D, to which the upper ends of the sus- 55 pending bars or beams E are connected, and to the lower end of these bars E is secured the feed-box F, which is held suspended by the said beams D and E. Extending diagonally from the suspension-beams E and con- 60 nected to the post B at their upper ends are the braces G, which hold the feed-box firmly against any lateral movement. This feed-box F is supported above the wire-cloth frame H about a quarter of an inch, so that as the said 65 frame is reciprocated it will not rub against the lower end of the feed-box. Placed within and secured to the wire-cloth frame H is a wire-cloth I, the specific construction of which will be fully described hereinafter. 70 Connected to one end of the frame H is a yoke I', to the opposite end of which yoke a reciprocating driving mechanism b of any suitable construction will be connected for the pur- 75 pose of moving the wire-cloth frame back and forth under the feed-box, and thus reducing the wood J, placed within the feed-box and resting upon the wire-cloth.

K indicates a guideway for the reciprocating frame H, and this guideway is supported 80 upon the vertical standards or feet L, which are secured to the vat in any suitable manner. Supported under the wire-cloth I and adjacent to its under face are the water-pipes M, which have perforations N made through 85 their inner sides, so that water within the said pipes under pressure will be thrown upward against the under side of the wire-cloth as it is being reciprocated. Connected to these horizontal pipes M is a vertical supply-pipe 90 O, and connected to this supply-pipe O is a horizontal pipe P, which extends inward over the top of the feed-box and is provided with any desired number of lateral pipes Q for supplying water on top of the wood to be re- 95 duced, so that the water will percolate through and be absorbed by the said wood and the fiber as it is being reduced by a reciprocating wire-cloth.

The wire-cloth is preferably constructed as 100 shown in Figs. 7, 8, and 9, and consists of the upper large wires R, which are provided with

transverse water-way grooves S on their upper surfaces, and between these water-way grooves S are the flat portions T, upon which are placed the small wires U. These small wires
 5 U are placed upon these portions T and are doubled over the wires R and extend downward under the large wires V. These wires V are preferably smaller than the wires R and are provided on their under faces with small
 10 transverse notches W for the reception of the small wires U, which after passing over the wires R pass under the wires V and in the said notches W. The wires U are tightened by means of the adjustable hooked bolts X,
 15 which have their screw-threaded ends to pass through a bar Z, which is secured to the wire-cloth frame H. By means of this construction the wire-cloth can be stretched or tightened to any desired degree and at the will of
 20 the operator.

In Figs. 5 and 6 I show a modification of the construction of the wire-cloth, which consists of large wires R', which are provided on their upper faces with the transverse water-
 25 way grooves S' and the flat portions T', which are similar to the construction shown in Fig. 8. These wires R' are also provided on their under sides with transverse grooves W' for the reception of these small wires U, as shown
 30 in the said figures. The small wires U' pass over the large wires R' upon the portions T' and under the same wires in the notches W', thus causing the wires to cross, as shown in Fig. 6. The object of the small notches W
 35 and W' is to prevent the small wires from slipping, and the object of the transverse water-way grooves S and S' is to allow the pulp to fall this much below the small wire when it is rubbed off of the wood, so that the reduced
 40 fiber is not near so liable to form into a web between the wires as it is where grooves are not formed, which allows the pulp to drop below the upper wire, where the water will more readily wash it out and the reciprocating
 45 movement of the wire-cloth shake it out. It is found in practice that the reduced fiber will form into a web in an ordinary wire

screen, which will stop, practically, the rubbing action of the machine, and it is the particular function of these grooves to avoid the
 50 forming of a web, which I find they do. As shown in Fig. 4, the large and small wires extend diagonally across the reciprocating movement, so that the wood is not rubbed in ridges, as would be the case if the wires extended in
 55 a line with and across the line of movement.

Heretofore it has been common to subject the reduced wood or pulp to the action of water at directly the point where it is being
 60 reduced, while my principal object is to furnish a flow of water to the top of the wood, so that it will percolate down through the wood and be absorbed by the pulp as it is rubbed off, making it heavy, so that it will fall out readily by the reciprocating movement of the
 65 wire-cloth.

Having thus described my invention, I claim—

1. A wire-cloth for wood-pulp-reducing machines, consisting of large wires having trans-
 70 verse water-ways on their upper sides and small wires which cross the large wires and are placed between the said grooves, substantially as described.

2. In a pulp-reducing machine, a reciprocating frame, a wire-cloth secured therein
 75 having large wires, and small wires passed over and under the said large wires, and tightening devices which are connected with one or more of the large wires for the purpose
 80 of stretching the said cloth, substantially as described.

3. In a pulp-reducing machine, a vat, a reciprocating wire-cloth over the vat, a feed-box supported over the wire-cloth, perforated
 85 water-pipes under the said cloth, and water-supply pipes extending over the feed-box, the parts combined substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN B. CARTER.

Witnesses:

H. M. COOPER,

C. E. MIDDLETON.