(No Model.) 3 Sheets—Sheet 1.

A. SHELDON.

MACHINE FOR MAKING PAPER PULP.

No. 517,149. Patented Mar. 27, 1894.

Fig. 2.

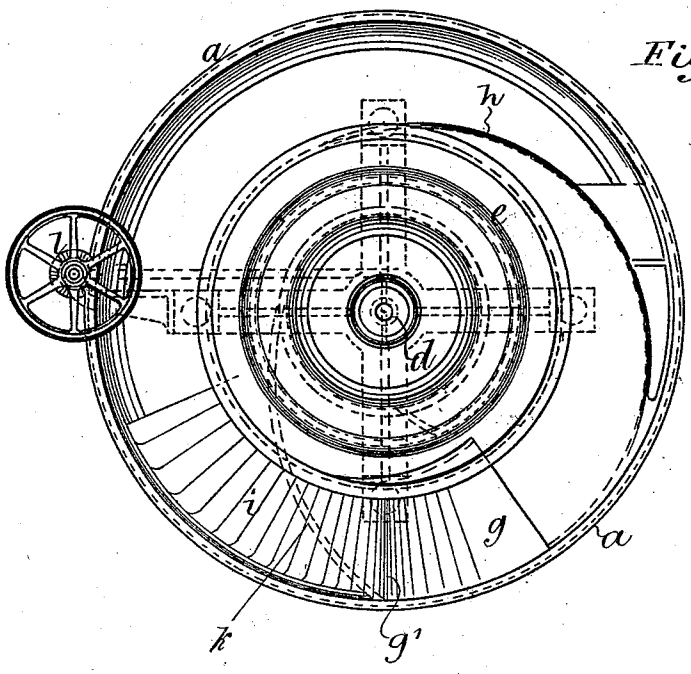
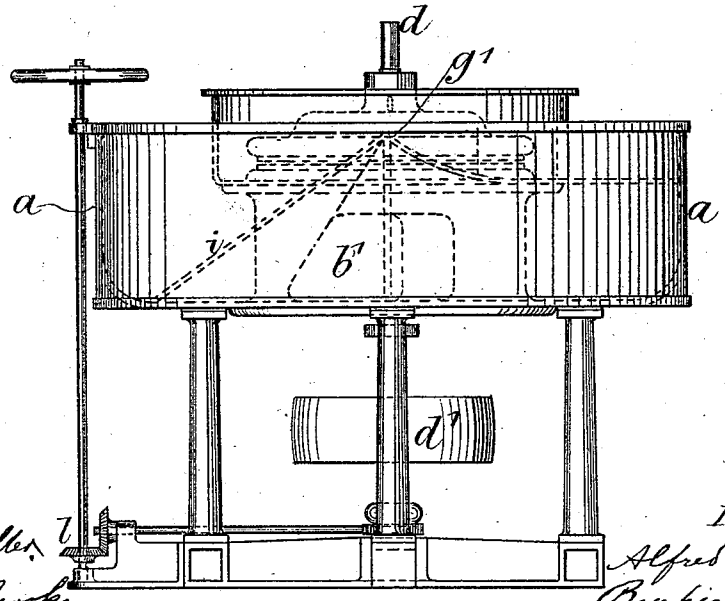


Fig. 1.



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A. SHELDON.

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Fig. 4.

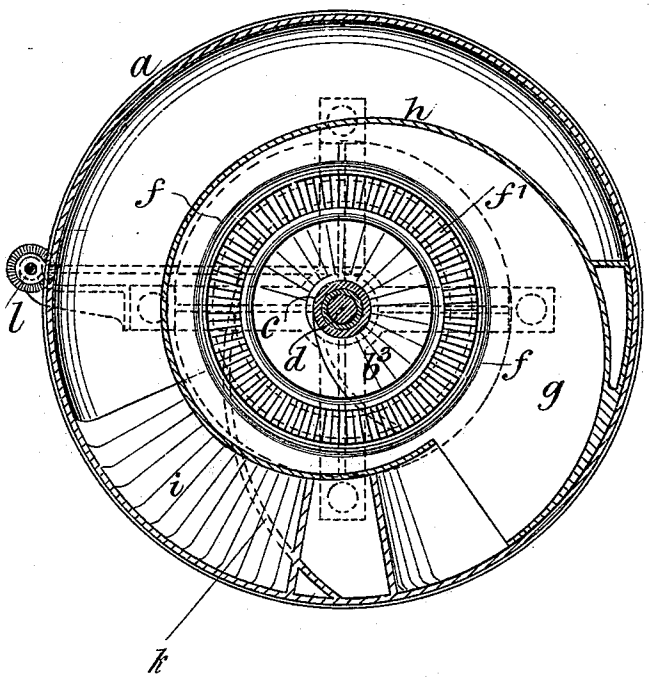
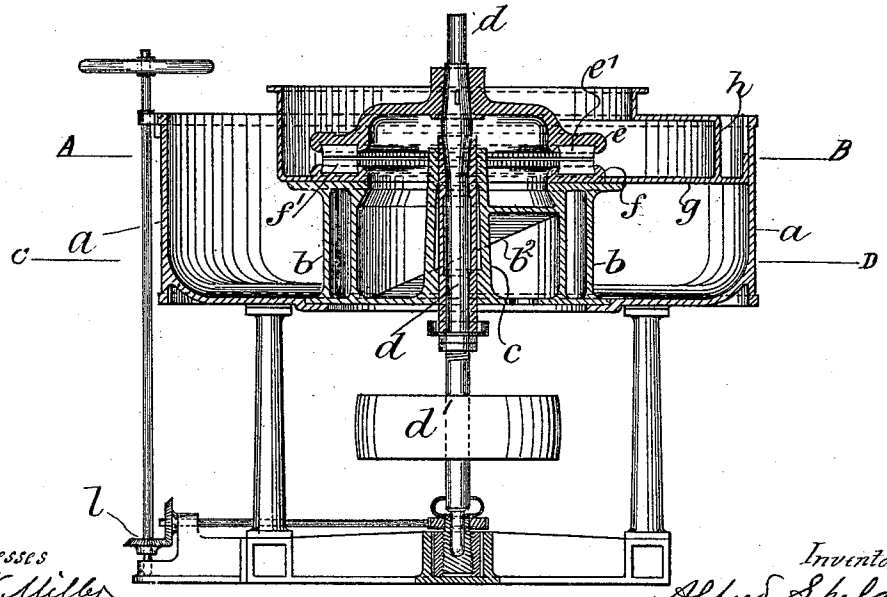


Fig. 3.



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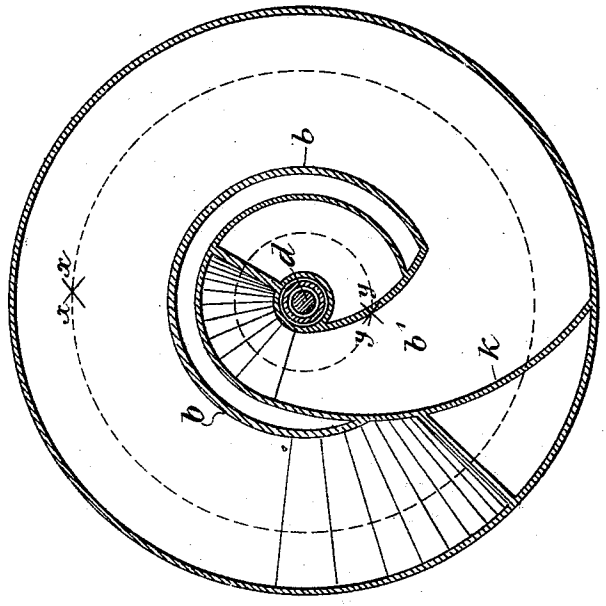

Fig. 5.

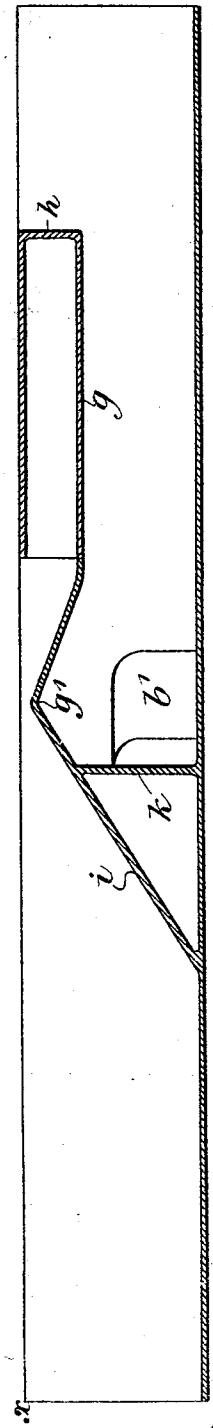

Fig. 6.

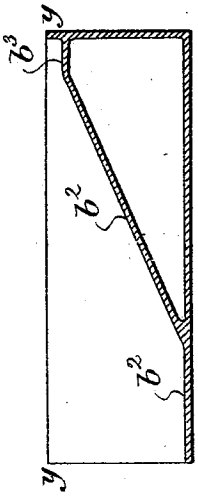

Fig. 7.

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UNITED STATES PATENT OFFICE.

ALFRED SHELDON, OF WELLS, ENGLAND.

MACHINE FOR MAKING PAPER-PULP.

SPECIFICATION forming part of Letters Patent No. 517,149, dated March 27, 1894.

Application filed April 21, 1892. Serial No. 430,037. (No model.) Patented in England May 16, 1891, No. 8,487; in France April 14, 1892, No. 220,906, and in Germany April 17, 1892, No. 71,032.

To all whom it may concern:

Be it known that I, ALFRED SHELDON, millwright and engineer, a subject of the Queen of Great Britain, residing at Wells, in the county of Somerset, England, have invented certain new and useful Improvements in Machines for Making Paper-Pulp, (for which I have received Letters Patent in Great Britain, No. 8,487, dated May 16, 1891; in France, No. 220,906, dated April 14, 1892, and in Germany, No. 71,032, dated April 17, 1892,) of which the following is a specification.

The apparatus consists of a vat near the top of which is fixed a horizontal ring armed on its upper side with blades or cutters. Above the ring there is a revolving disk whose under side is also armed with cutters. As the axis revolves the pulp is raised through the fixed ring to the under side of the disk and is forced out between the ring and the disk past the cutters and descends again into the vat to be again lifted. Thus a constant circulation is kept up. I aid the circulation by a helical partition in the vat.

In order that the nature of my said invention may be fully understood and readily carried into effect I will proceed to describe the drawings hereunto annexed.

Figure 1 is an elevation of a pulping machine in accordance with my invention. Fig. 2 is a plan of the same. Fig. 3 is a vertical section on the center line and Fig. 4 is a horizontal section on the line A. B. in Fig. 3. Fig. 5 is a horizontal section on the line C—D of Fig. 3. Figs. 6 and 7 are sections on the circular lines *x*—*x* and *y*—*y*, of Fig. 5, such sections being divided at the points indicated by the arrow heads, and unrolled into the plane of the paper.

a is a vat of cylindrical form; when at work this vat is filled nearly to the top with water and the fibrous material to be reduced to pulp floating in the water.

b is an upright trunk in the center of the vat and within the trunk is a hollow standard *c*.

d is a vertical axis passing up through the standard; it is driven by a belt passing around the belt pulley *d'*.

e is a disk fixed upon the axis and in it there is a dovetail groove into which a series of steel cutters *e' e'* is set so that their cutting edges are radial. *f' f'* are similar cutters set in a stationary ring *f* supported by the trunk *b*. At the lower part of the trunk *b* there is an inlet aperture *b'* by which the water and material from the vat enters the trunk. The floor b^2 (Fig. 3) of the trunk is inclined rising helically from the opening *b'* to the line b^3. The object of this incline is to prevent the eddying of the liquid in the trunk. The rotation of the disk *e* causes the liquid and material to ascend the trunk and to pass outward between the cutters all around and the fiber is pulped by the action of the cutters. On escaping outward from between the two rings of cutters the liquid and material is received upon the deck *g* around which there is the snail like barrier plate *h*.

The plate *h* leads the liquid and material to the periphery of the vat and to the top *g'* of the deck *g* which inclines slightly upward from the cutters. From the top *g'* of the deck *g* there is a second incline down which the liquid returns into the outer part of the vat. This incline is formed by the helical partition *i* which partly surrounds the trunk *b* and which commencing at the level of the top *g'* of the deck *g* descends to the bottom of the vat. The circulation of the liquid and material may thus be traced down this incline *i*, around the vat until it passes beneath the deck *g* and the partition *i*, then it encounters the curved barrier plate *k* which conducts the liquid and material to the inlet *b'* it enters the trunk and passes between the cutters as already described. The foot step for the axis *d* has a screw upon it and it can be turned by gear *l* to raise or lower the disk *e* to adjust the distance between the teeth *e'* and *f'*.

It is not essential that the vat should be circular; it may be elongated the circulation around the vat being directed by a partition.

The edges of the cutters *e'* and *f'* need not be horizontal; they may be disposed upon coned disks or surfaces.

What I claim is—

In pulping apparatus, the combination of a

vat, a trunk therein, an opening into the vat from the bottom of the trunk, a partition preventing the liquid in the vat from circulating around and around it and leading it to the said opening, a floor in the trunk rising helically from the opening, a ring of cutters fixed around the top of the trunk, a rotating vertical axis, a second ring of cutters carried by the axis and working against the first mentioned cutters, and a conduit leading the liquid after it has passed from the trunk through the cutters back into the vat at the other side of the partition to the opening.

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