

(No Model.)

A. G. E. FÜLLNER.
PULP CATCHER FOR PAPER MANUFACTORIES.

No. 518,238.

Patented Apr. 17, 1894.

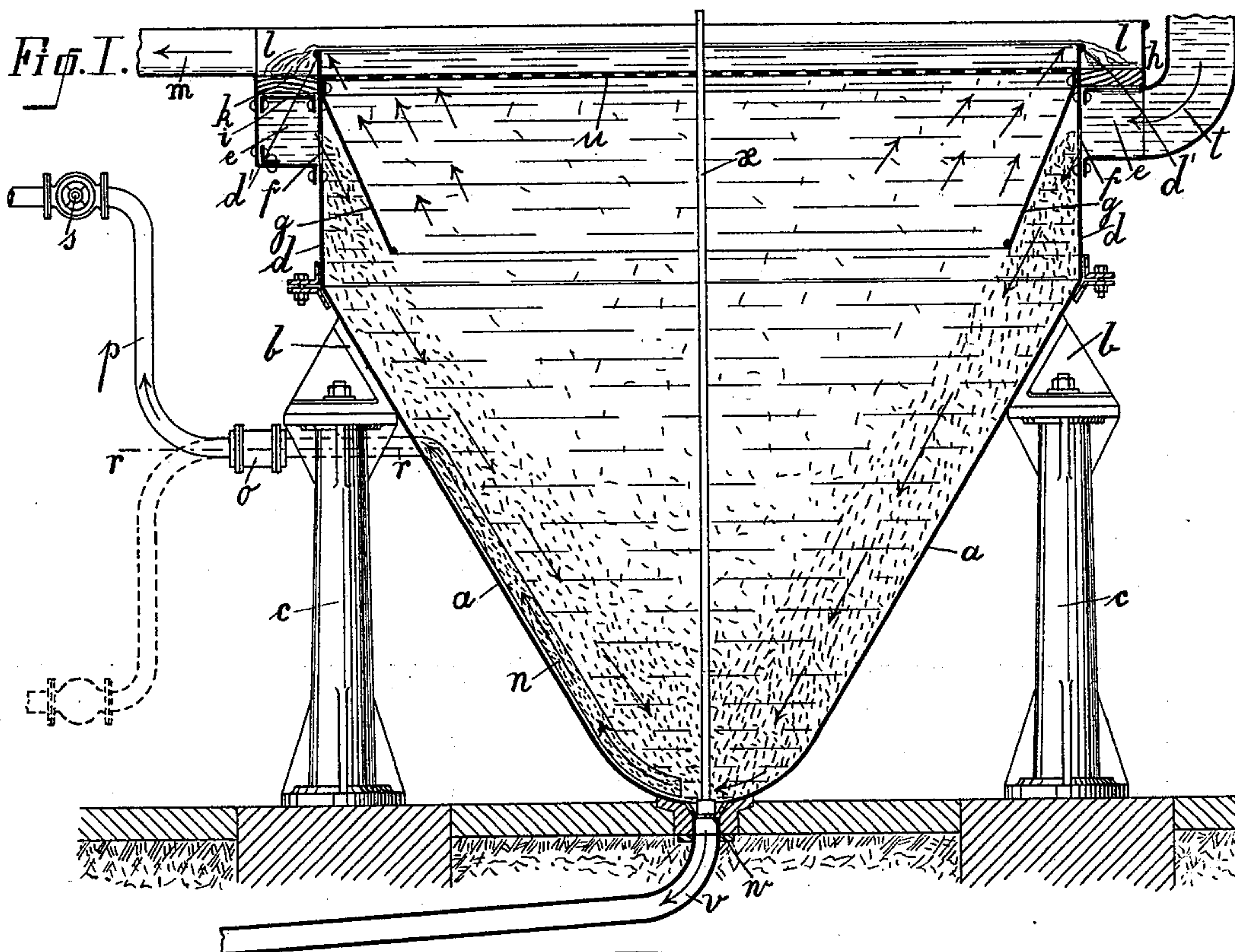
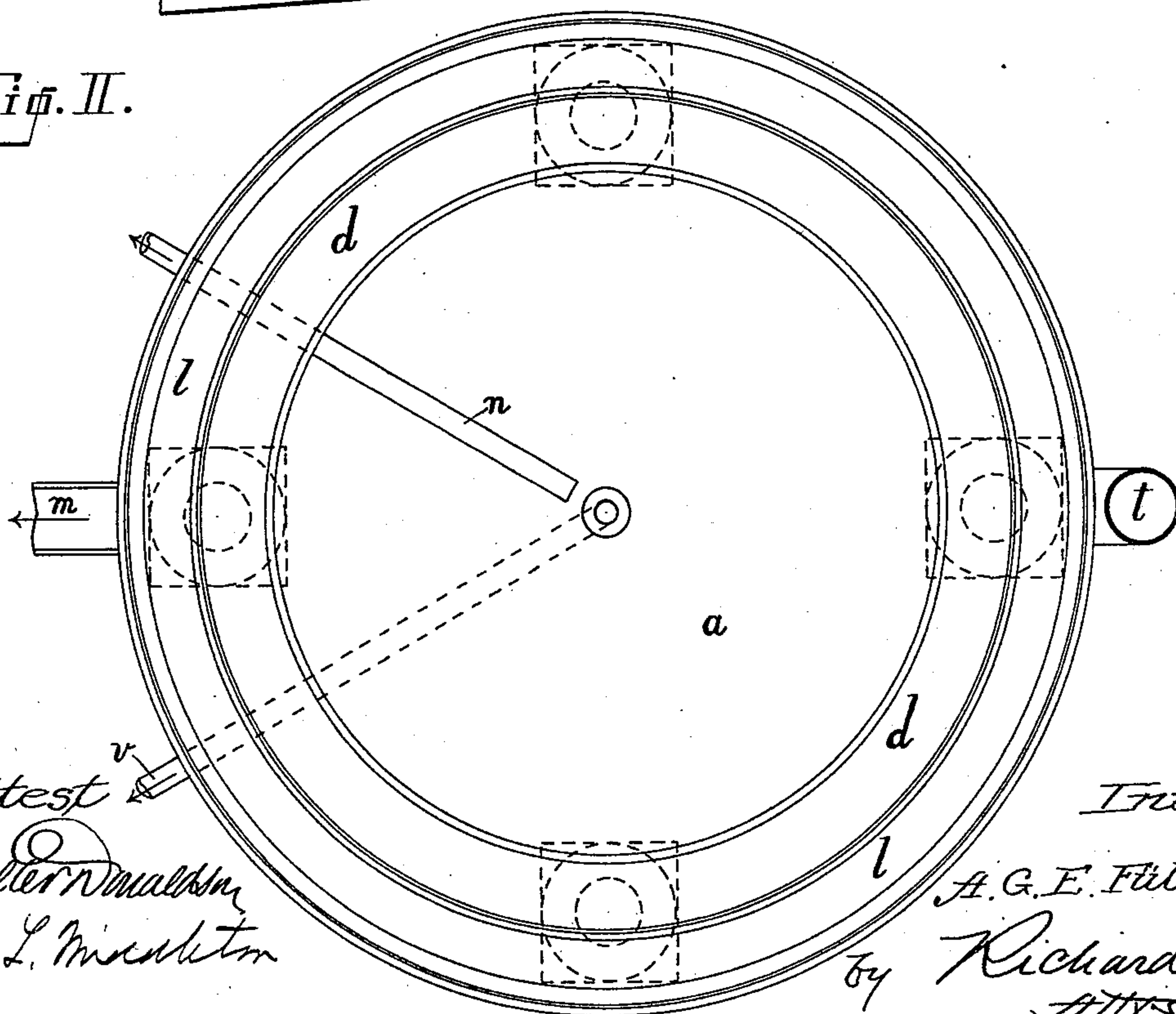


Fig. II.



Attest
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UNITED STATES PATENT OFFICE.

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PULP-CATCHER FOR PAPER MANUFACTORIES.

SPECIFICATION forming part of Letters Patent No. 518,238, dated April 17, 1894.

Application filed September 23, 1892. Serial No. 446,646. (No model.) Patented in France July 9, 1892, No. 222,886; in Belgium July 26, 1892, No. 100,712; in England July 30, 1892, No. 13,893; in Norway July 30, 1892, No. 2,833; in Sweden August 6, 1892, No. 4,090; in Switzerland September 19, 1892, No. 5,876; in Italy September 30, 1892, XXVI, 32,438, LXIII, 437, and in Austria-Hungary November 19, 1892, No. 34,409 and No. 65,618.

To all whom it may concern:

Be it known that I, ALWIN GEORG EUGEN FÜLLNER, a subject of the King of Prussia, residing at Warmbrunn, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Pulp-Catchers for Paper Manufactories; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention has been patented in France July 9, 1892, No. 222,886; in Belgium July 26, 1892, No. 100,712; in Great Britain July 30, 1892, No. 13,893; in Norway July 30, 1892, No. 2,833; in Sweden August 6, 1892, No. 4,090; in Switzerland September 19, 1892, No. 5,876; in Austria-Hungary November 19, 1892, No. 34,409 and No. 65,618, and in Italy September 30, 1892, XXVI, 32,438, LXIII, 437.

This invention has reference to improvements in pulp catchers or savers (hereinafter termed pulp catchers) for use in paper manufactories the object being to provide a pulp catcher which shall be compact and efficient and which provides for regulating the density of the outflowing pulp.

The pulp catcher comprises a settling or depositing vessel or tank of inverted truncated conical shape into which the water containing the pulp fibers flows from a circumferential channel in a uniform manner so as to flow down the inclined inner surface of the tank to the lowest point thereof where the force of the uniformly flowing water is balanced and the pulp fibers deposited while the water rises in the center portion of the tank and discharges uniformly over the circumferential upper edge of the same. From the lowest point of the tank, the deposited pulp, which is supplied uniformly from all parts thereof, is conducted through a curved pipe into a suitable vessel, the discharge being effected by the pressure of water which presses the pulp through the pipe, and at the same time, the density of the discharging pulp may be easily regulated by raising or

lowering the discharge opening of the curved pipe.

In the accompanying drawings, Figure 1 is a vertical section of a pulp catcher according to this invention. Fig. 2 is a plan of the same, the upper sieve being removed.

The pulp catcher comprises an inverted truncated cone shaped tank or receptacle (hereinafter termed a tank) *a* of sheet iron supported by means of brackets *b* fixed upon standards *c*. The tank *a* may however be supported by suitable brickwork. The upper edge of the tank *a* is surmounted by an annular extension *d* having about half way up an external circumferential channel *e* communicating by means of openings *f* in the wall of the extension *d* with the interior of the tank *a*. Within the extension *d* and above the openings *f* is fixed a ring *g* of inverted truncated conical form and which extends to a suitable depth below the openings *f*. The external wall *h* of the channel *e* projects over the upper edge *d'* of the extension *d* and is connected somewhat below that upper edge to the cylinder *d* by suitable shaped stays *i* upon which rests a plate *k* of sheet iron or wood, another circumferential channel *l* being thus formed, which receives the cleaned water and conducts the same to the waste channel or gutter *m*. A pipe *n* the mouth of which is situated at the bottom of the tank *a* extends to about the middle of the receptacle formed by the parts *a* and *d* where it passes through the side of the tank *a* and is coupled by a socket *o* to an elbow-pipe *p* in such a manner that the latter may be turned about its horizontal axis *r-r*. The discharge extremity of the elbow-pipe is closed by a cock or valve *s*.

The apparatus operates as follows:—Water still containing a considerable quantity of pulp fibers is supplied through the pipe *t* receiving its supply from a source higher than the level of the tank to the channel *e* whence it uniformly flows into the tank *a*. It will be understood that the outer wall *h* of the channel *e* incloses said channel all around the same, so that the water which fills the said channel can escape only through the inner openings *f*. The opening of the supply pipe

t into the channel e is shown at t^x Fig. 1. By the inclined walls of the ring g the water is immediately conducted downwardly so that it flows along the inclined surface of the tank a to the lowest point of the same which may have preferably a rounded form. The ring g prevents the inflowing water mixing with the waste or cleaned water, which latter rises in the center portion.

It has been observed that the pulp fibers are conducted longitudinally in the direction of the current, so that the descent of all the fibers is facilitated to the lowest point of the tank a where the force of the uniformly flowing and concentrating water is balanced and where it is comparatively at rest. The fibers still maintain a part of their motion due to the current of water and to their own weight and tend to set themselves lengthwise upon the walls of the tank and to move thus to the bottom thereof. In this manner all the pulp fibers are deposited on the bottom of the tank a whereas the cleaned water rises in the middle part thereof. In order to catch any pulp fibers still remaining in the rising water a sieve u may be arranged in the upper part of the tank on the under side of which the fibers will accumulate and form flakes which will fall by their own weight or are caused to drop by a sudden reduction in the velocity of the overflow water. Instead of a single sieve u any desirable form of filter may be employed. The flow of the water takes place in a perfectly calm manner which is accounted for by the fact that the entrance of the water is situated below the upper water level, and that the flowing off takes place uniformly over a large circumferential area. The cleaned water which rises through the sieves or filter, flows over the upper edge d' of the extension d into the channel l whence it passes away through the discharge gutter m . The discharging of the deposited pulp is effected automatically by means of the pipe n into which the pulp is pressed by the head of water above the pipe n . As soon as the valve s is opened the deposited pulp which is nearest the mouth of the pipe n flows off.

As mentioned above the pipe p being coupled to the pipe n it can be raised or lowered as desired whereby the density of the outflowing pulp may be regulated. When the pipe p is turned in such a position that its discharge opening is in its lowest position (indicated in dotted lines in Fig. 1) the maximum pressure will be obtained and the discharge will be greater than would be the case if the pipe p be more or less raised so that more water will pass through the pipe with the fibers and the pulp will not be so concentrated. On the other hand if the discharge opening be raised the pressure will be

thus diminished, and a thicker or more concentrated pulp will be forced through the pipe.

The discharge of the deposited pulp may be continuous or intermittent. In the latter case the intervals may be determined after a short observation. The supply of water however may be in both cases continuous. The discharged pulp may be led to a reservoir or tank (not shown in the drawings) and may thence be conducted to a drainer and treated as ordinary wood pulp.

For the purpose of enabling the pulp catcher to be cleaned, the bottom of the tank a is provided with an opening for running off the water, said opening being closed when the apparatus is in use by a valve w attached to a rod x . When the valve is opened, the water flows off through the pipe v fitted to the opening.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a pulp catcher the combination of an inverted truncated conical vessel a , an annular channel in connection with the water and pulp supply, discharging into said vessel, an outlet for the cleaned water above the level of the inlet, and a discharge pipe for the deposited pulp, leading from the bottom of the vessel, substantially as described.

2. In combination, with the vessel a , an inlet for the water and pulp, an outlet for the water above the level of the inlet, a channel n , for the outlet of the pulp and a discharge pipe in connection therewith adapted to be adjusted to raise or lower the discharge end, substantially as described.

3. In a pulp catcher the combination of a truncated conical vessel having above its upper edge a circumferential channel for the supply of pulp-water an internal ring of inverted truncated conical form, an upper annular channel for the outflowing cleaned water, and an outlet for the pulp, substantially as described for the purpose specified.

4. In a pulp catcher, the combination of an inverted truncated conical vessel having an annular supply channel above its upper edge and surmounted by an upper channel for the discharging water, a filter or sieve near the upper edge of the vessel, and an outlet for the pulp, substantially as described and for the purpose specified.

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

ALWIN GEORG EUGEN FÜLLNER.

Witnesses:

EMIL HOFFMANN,
W. HAUPT.