

(No Model.)

E. H. NACKE.

PAPER PULP OR RAG ENGINE.

No. 357,686.

Patented Feb. 15, 1887.

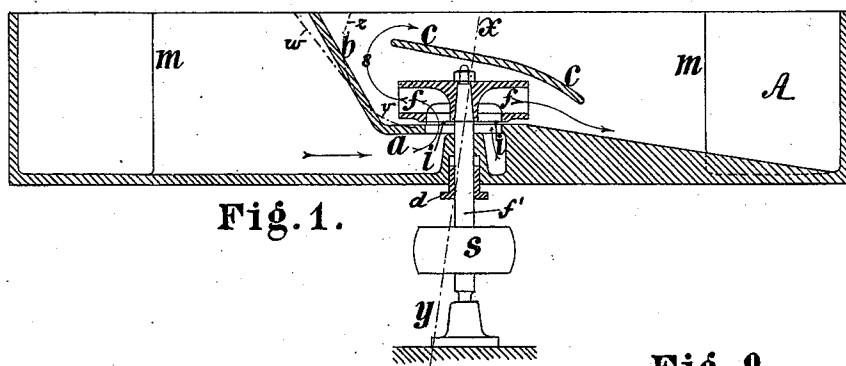


Fig. 1.

Fig. 2.

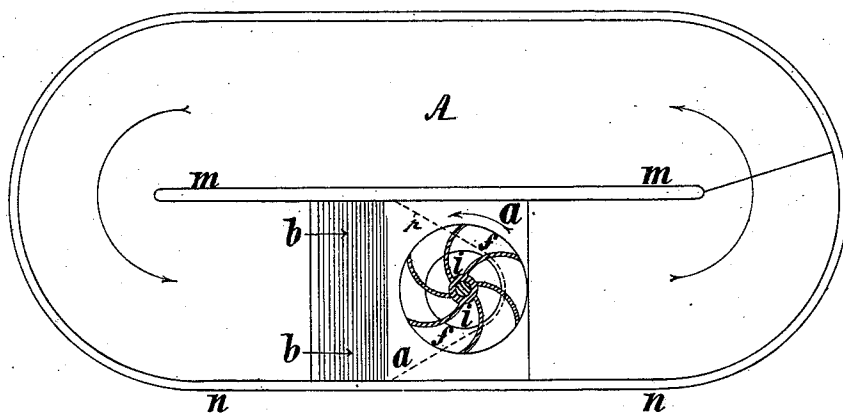
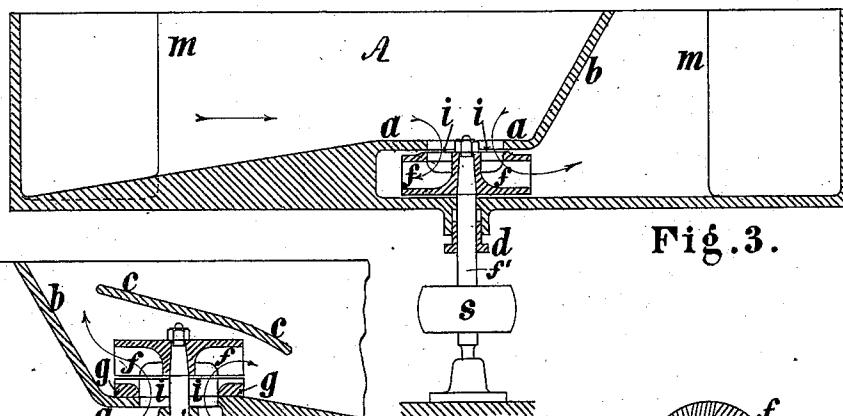


Fig. 3.

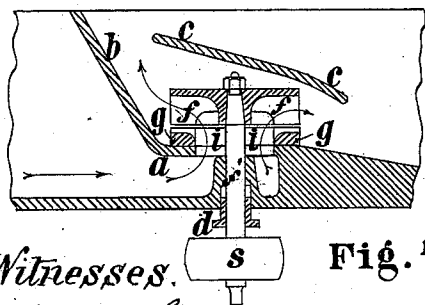


Fig. 4.

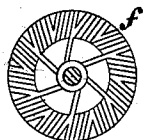


Fig. 5.

Witnesses.

Wm. A. Lowe

Alfred Jonghman

Inventor.

Emil H. Nacke
per Roden & Winkler
Attorneys.

UNITED STATES PATENT OFFICE.

EMIL HERMANN NACKE, OF DRESDEN, SAXONY, GERMANY.

PAPER-PULP OR RAG ENGINE.

SPECIFICATION forming part of Letters Patent No. 357,686, dated February 15, 1887.

Application filed November 26, 1886. Serial No. 219,899. (No model.)

To all whom it may concern:

Be it known that I, EMIL HERMANN NACKE, a citizen of the Kingdom of Saxony, residing in Dresden, in the said Kingdom of Saxony, in the Empire of Germany, have invented certain new and useful Improvements in Paper-Pulp or Rag Engines, of which the following is a specification.

By grinding, cutting, mixing, bleaching, and washing all kinds of paper in mixing and bleaching engines of the usual form there exists the inconvenience that the treated stock is not properly mixed by the roll, and dead places are often formed at the edges and the bottom of the vat, whereby a not uniformly worked pulp is produced.

By means of the hereinafter-described improvements in such engines, represented in the accompanying drawings, such inconvenience will be avoided.

Figure 1 is a longitudinal section of my improved engine. Fig. 2 is a plan of the same. Fig. 3 is a modification of Fig. 1, with the flying turbine wheel *f* arranged below the partition-board *a* and without guide-board *c c*. Fig. 4 is a second modification of Fig. 1, in which, in lieu of a turbine wheel, *f*, a grinding disk or wheel is provided, on the under side of which are knives radiating from the center. Fig. 5 is a plan of the grinding-surface, shown in Fig. 4 with knives.

The vat is provided, as usual, with the central partition, *m*. Between one side of this partition and the wall *n* of the vat *A* (where in the common beating-engine the roller turns) a partition, *a b*, is placed transversely from *m* to *n*.

The partition *a b* is arranged partly horizontal, or nearly so, and partly in a sloped way, and a circular opening, *i*, is made in the horizontal part *a*, above which, Fig. 1, or below which, Fig. 3, moves the turbine wheel *f*, attached to the vertical axle *f'*, so that the pulp passing through the opening *i* enters the wheel.

If the vat is filled with paper-stock and the wheel *f* begins to turn, it draws the pulp through *i* from one side of the partition and delivers the same at the other side. It follows by this arrangement that there will be a continuous movement of the pulp in the direction of the large arrows. (See Fig. 2.) The wheel *f*, which by this arrangement does the work

of the roll in the common mixing or beating machine, secures a much better mixing of the stock than the roll would do. Another advantage secured by the described arrangement is the establishment of a strong bottom current by the pulps discharged from the wheel in the direction, or nearly so, of the bottom of the vat, whereby dead places at the bottom and in the edges of the vat are avoided.

For avoiding dead places in the stuff streaming against the turbine wheel, the part *b b* of the partition has an inclined position, thus turning downward the pulp flowing against it. To avoid dead places and whirlpools above the flying wheel, a guide-board, *c c*, Figs. 1 and 4, is arranged, by means of which the pulp discharged by the wheel is divided into two currents, the one flowing at the bottom and the other toward the surface of the mass.

In lieu of giving the partition-plate *b* an inclined position, the same effect as to avoiding dead places in the stock flowing toward the wheel may be attained by making this part of the partition curved, as shown by the dotted curved line *v w*, Fig. 1. By arranging this partition curved like *v z*, (same figure,) the stock issuing from the wheel against the partition will be guided to flow off in the proper direction, as indicated by the arrows *s*.

To prevent dead corners in the lower part of the vat directly under the wheel, the sides of this part are made inclined or curved toward the opening *i i*, as the dotted lines *p p* beneath the plate *a a* in Fig. 2 indicate.

The vertical axle *f'*, upon which the fly-wheel *f* is fitted, may be turned by means of a pulley placed above the vat, in which case the axle *f'* is to be prolonged upward; or if the pulley is placed below the vat, as represented in the drawings, the entrance of the axle in the vat is tightened by a stuffing-box, *d*.

The axle *f'* may be placed in an inclined position, as represented by the dotted line *x y*, Fig. 1.

In this case the partition, as well as the wheel *f*, follows a position normal to the direction of the axle *x y*, so that the current of the pulp issuing from the wheel remains parallel, or nearly so, to the sloped bottom of the vat, thus securing a strong bottom current.

If a grinding or cutting disk is arranged as shown in Fig. 4, the partition *a* must be pro-

vided with a circular bed-plate, *g*, with knives, (see Figs. 4 and 5,) and convenient attachment may be provided to the spur of the axle *f'* for raising and lowering the same, as well as the
5 disk, against its bed-plate.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with a flying or turbine wheel, *f*, placed in the vat, the transverse partition *a b*, placed between the mid-partition *m*
10 and the wall *n* of the vat, said partition *a b* being partly horizontal, or nearly so, and partly inclined or curved, as described, and provided

with a circular hole or opening, *i*, communicating with the turbine wheel *f*, substantially 15 as and for the purpose described.

2. In combination with the vat *A*, provided with turbine wheel *f*, the guiding-plate *c c*, in the manner and for the purpose set forth.

In testimony whereof I hereunto sign my 20 name, in the presence of two subscribing witnesses, this 6th day of November, 1886.

EMIL HERMANN NACKE.

Witnesses:

WILHELM KÖCK,
ROBERT REPPCHEN.