No. 631,093. Patented Aug. 15, 1899.

H. RICHARDS & V. DREWSEN.

CHIP SEPARATOR.

(Application filed Jan. 13, 1899.)

(No Model.)

Fig: 1.

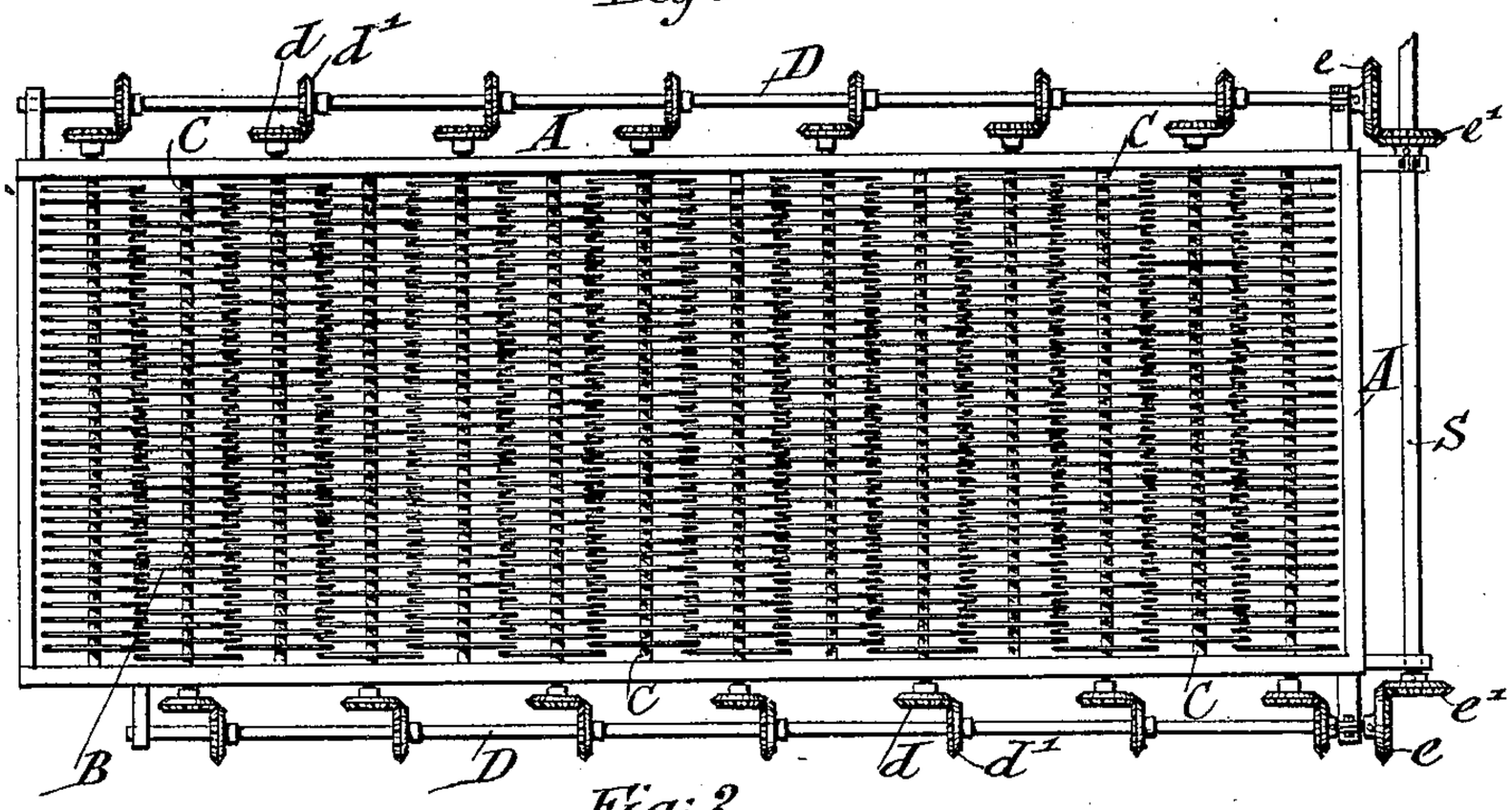


Fig: 2.

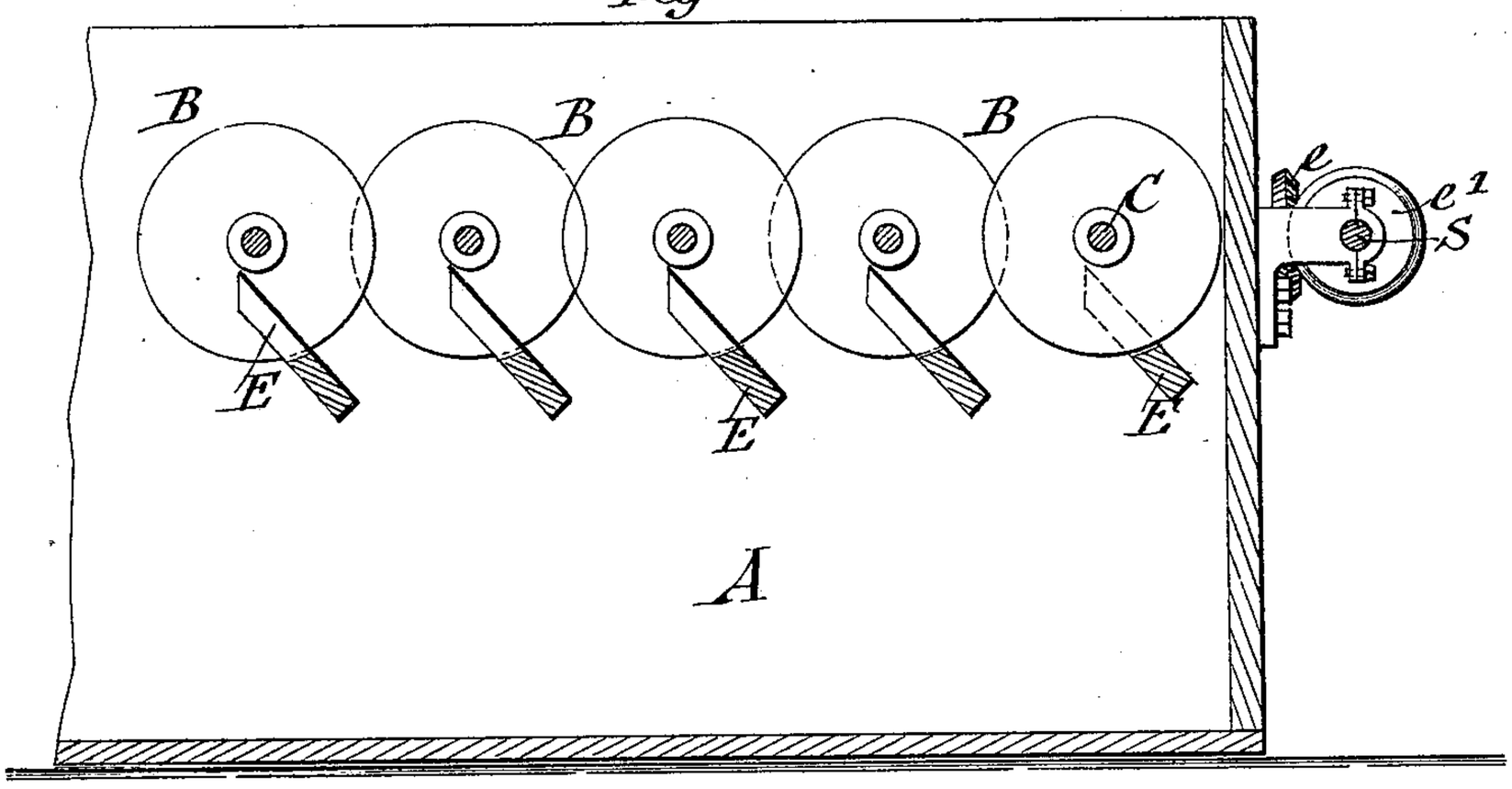
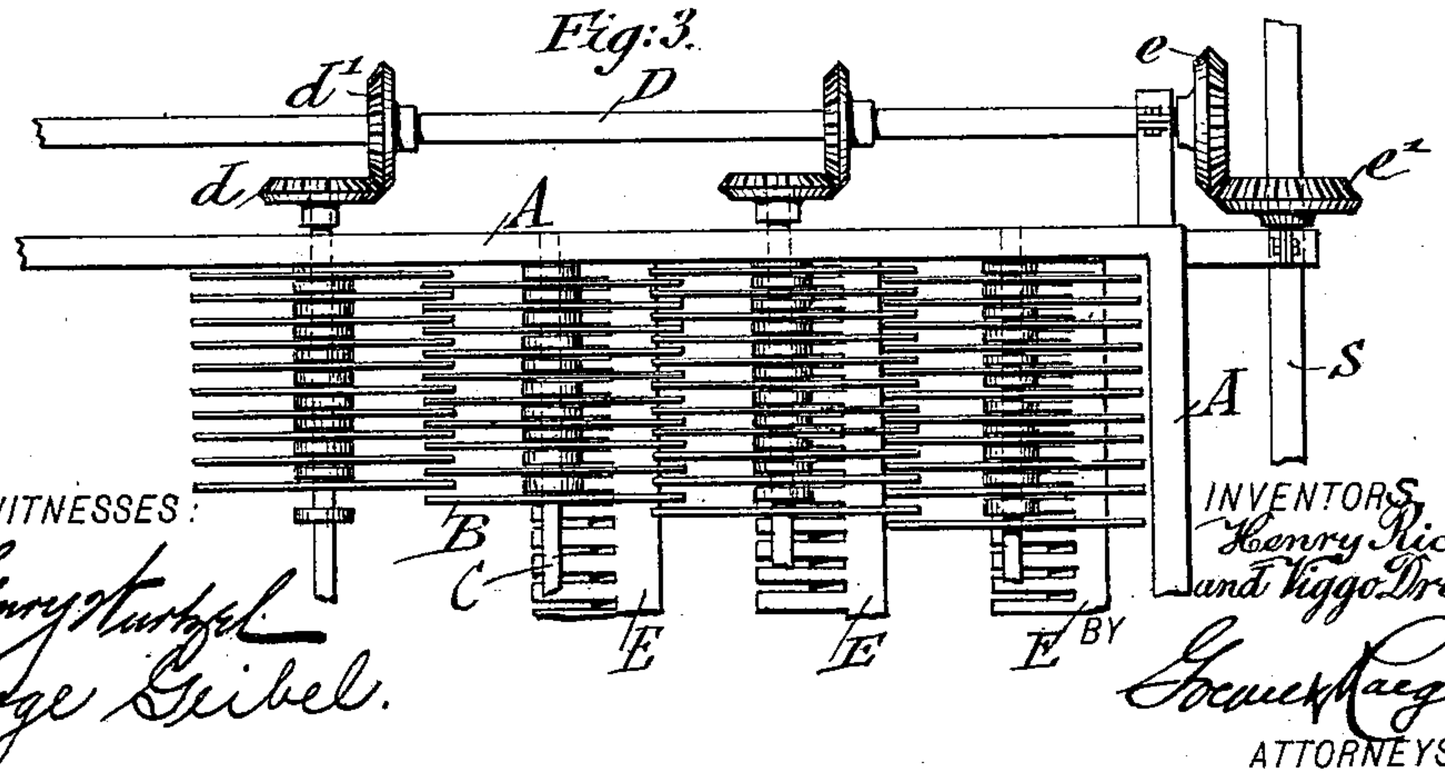


Fig: 3.



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UNITED STATES PATENT OFFICE.

HENRY RICHARDS, OF GARDINER, MAINE, AND VIGGO DREWSEN, OF NEW YORK, N. Y.

CHIP-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 631,093, dated August 15, 1899.

Application filed January 13, 1899. Serial No. 702,039. (No model.)

To all whom it may concern:

Be it known that we, HENRY RICHARDS, a citizen of the United States, residing at Gardiner, in the county of Kennebec and State of Maine, and VIGGO DREWSEN, a citizen of the Kingdom of Norway, residing at New York, in the borough of Richmond and State of New York, have invented certain new and useful Improvements in Chip-Separators, of which the following is a specification.

Our invention relates to an improved separator for use in pulp-mills for separating the coarse and imperfect chips, knotty parts, and blocks from the smaller chips of the proper size before they are charged into the cooker, said separator acting gradually on the chips and permitting the dropping of chips of uniform size into a suitable tank or receptacle, while the larger parts or knots are discharged at the outgoing end of the machine.

The invention consists of a separator for chips or other material, which comprises a receptacle, a number of series or gangs of vertical disks in said receptacle, one gang entering partly into the adjacent gang, and means for rotating said disks in one direction, and, further, in stationary inclined combs extending between the lower part of the disks, as will be fully described hereinafter and finally pointed out in the claim.

In the accompanying drawings, Figure 1 represents a plan view of a portion of our improved chip-separator. Fig. 2 is a detail side elevation of some of the disks, and Fig. 3 is a plan view of Fig. 2.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a receptacle for receiving the chips, and B a number of rotary disks which are arranged in series or gangs and secured by their hubs to rotary shafts C, which extend alternately at the opposite ends through the side walls of the receptacle and are provided with bevel-gears *d*, which mesh with bevel-gears *d'* on longitudinal shafts D, that are arranged in suitable bearings alongside of the receptacle. To the ends of the longitudinal shafts D are applied bevel-gears *e*, which mesh with bevel-gears *e'* on a transverse driving-shaft S, as shown clearly in Fig. 1. The motion-transmitting bevel-gears are so arranged that all the shafts C and disks B turn in the same direction. One series of disks B extends for a few inches into the adjacent series of disks, as shown in Figs. 2 and 3. The disks are preferably cut of metal plates about one-eighth of an inch thick and are spaced on the shaft about three-eighths of an inch from each other. They may be slightly eccentric on the shaft and are run at a speed of about one hundred revolutions per minute. The diameter and thickness of the disks, the space between the same, and the degree of eccentricity may be varied, and the disks may be notched, grooved, or toothed, according to the quality of the material to be separated.

Below the shafts C extend in upward direction between the disks inclined combs E, which are made of steel or other suitable material, and which are made of sufficient width to conduct the chips dropped on the same to the receptacle A and to prevent the disks from clogging. Collars are arranged between the disks, so as to keep them properly spaced from each other. Any suitable transmitting mechanism for rotating the disks in the same direction may be used in place of the bevel-gears shown. The shafts may also be driven from one side; but it is more convenient, owing to the closeness of the shafts, to arrange the driving-gear on alternate shafts at opposite sides of the tank or receptacle, as shown in Fig. 1.

The chips to be separated are delivered into the ingoing end of the separator and the smaller chips are gradually dropped through between the disks as the mass moves forward from one gang to the other. They are conducted along the combs into the tank or receptacle below the disks. The larger parts of the chips, such as knotty portions, are carried successively over the gangs of disks and are conducted to the outgoing end of the machine, where they are discharged.

Our improved chip-separator has been practically tested and has given excellent results, as it separates the chips of uniform size from the larger knotty portions or lumps and drops them through the disks along the combs into the receptacle, while the knotty portions are conducted over the different gangs of disks

without passing through between the same until they are discharged at the outgoing end of the machine. The machine can also be used for separating any other material—such as coal, ores, gravel, crushed stone, &c.—according to the size and shape of the pieces.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

A separator for chips or other material, consisting of a receptacle, a number of series or gangs of vertical disks in said receptacle, one gang entering partly into the adjacent gang, means for rotating said disks in one direction, and stationary inclined combs extending between the lower part of the disks, substantially as set forth.

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

HENRY RICHARDS.
VIGGO DREWSEN.

Witnesses as to Henry Richards:
KATIE E. FARRINGTON,
W. E. MAXCY.

Witnesses as to Viggo Drewsen:
PAUL GOEPEL,
J. H. NILES.