

G. D. RYHER.
PAPER STOCK REFINING APPARATUS.
APPLICATION FILED MAY 20, 1911.

1,000,628.

Patented Aug. 15, 1911.

2 SHEETS—SHEET 1.

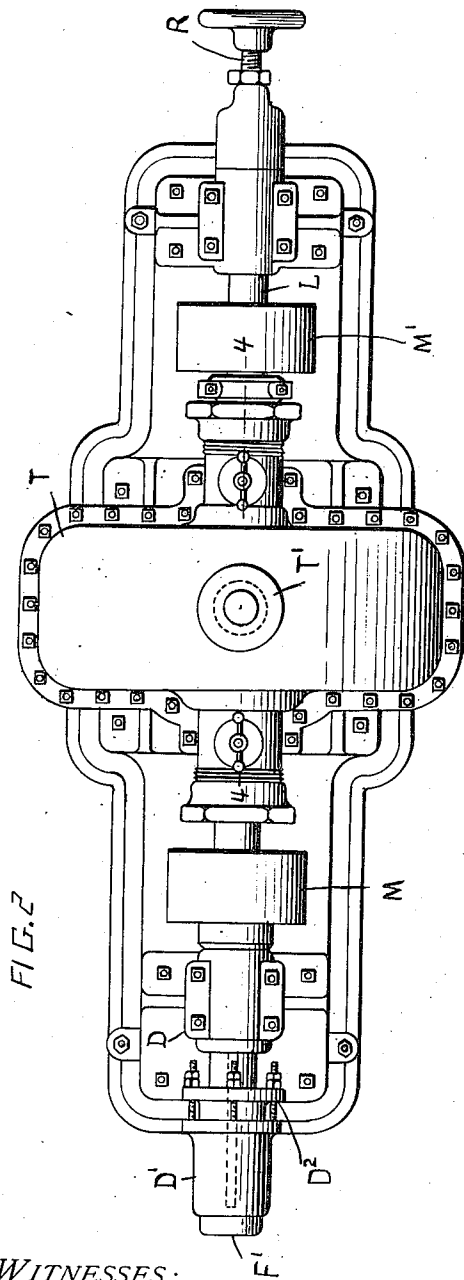


FIG. 2

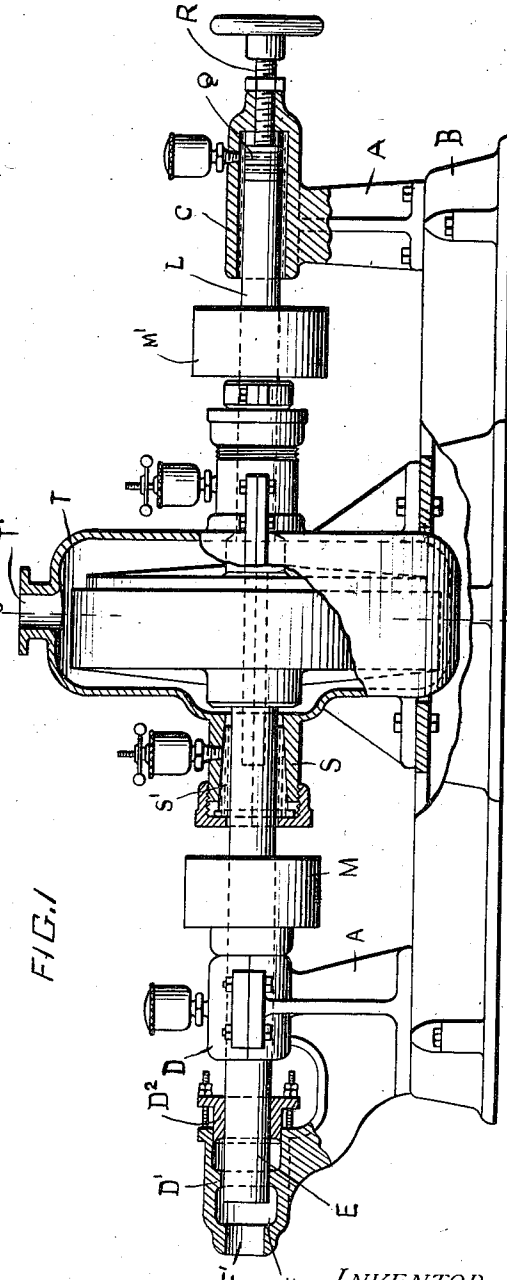


FIG. 1

WITNESSES:

H. F. Hoyle
J. H. Sherwood

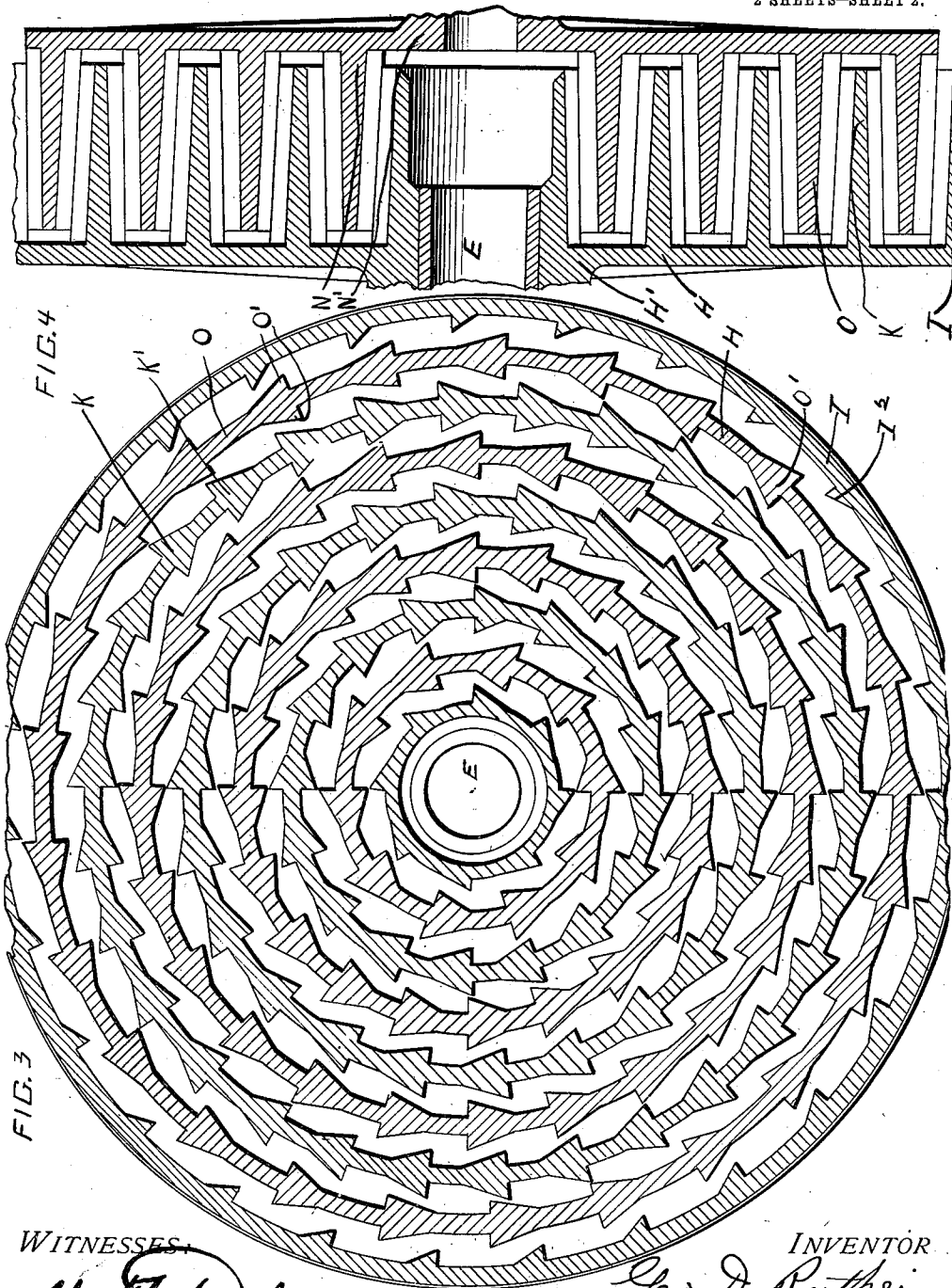
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WITNESSES
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UNITED STATES PATENT OFFICE.

GEORGE D. RYTHER, OF CARTHAGE, NEW YORK.

PAPER-STOCK-REFINING APPARATUS.

1,000,628.

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Application filed May 20, 1911. Serial No. 628,453.

To all whom it may concern:

Be it known that I, GEORGE D. RYTHER, a citizen of the United States, residing at Carthage, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Paper-Stock-Refining Apparatus; 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 the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in apparatus for disintegrating and refining paper stock and comprises essentially disks having concentric series of serrated flanges, the two series alternately arranged and designed to rotate in opposite directions.

The invention comprises various other details of construction and combinations and arrangements of parts which will be hereinafter fully described and then specifically defined in the appended claims.

I illustrate my invention in the accompanying drawings, in which:—

Figure 1 is an elevation of my apparatus for disintegrating and refining paper stocks, portions being cut away to better illustrate features of the invention. Fig. 2 is a top plan view. Fig. 3 is a cross sectional view on line 3—3 of Fig. 1, and Fig. 4 is a sectional view on line 4—4 of Fig. 2.

Reference now being had to the details of the drawings by letter, A, A designate standards supported by the bars B, one of which standards supports the journal bearings C and the other the bearings D. A hollow shaft E is mounted in the bearings D and the supplemental bearings D', which latter are provided with a suitably packed gland D². Adjacent to the bearing D' is a chamber F with a threaded opening F² leading thereto and to which latter a pipe, not shown, is adapted to be connected and affording means whereby the stock may be fed from any suitable source of supply to the hollow shaft.

Upon reference to Fig. 4 of the drawings, it will be noted that the hollow shaft E has fixed thereto a disk H, the upper portion H' of which is secured fast to the shaft and said disk is provided with a circumferential

flange I and also a series of concentrically arranged flanges K, each of which is provided with oppositely disposed wings K' with inclined edges, said wings arranged in pairs and spaced apart, as shown clearly in Fig. 3 of the drawings.

A second shaft, designated by letter L, which is journaled in the bearings C, has a disk N with a hub portion N' which is fixed thereto, said disk N being substantially similar to the disk H before described and provided with concentric flanges O with wings O' arranged opposite each other and in pairs with their inclined edges parallel with the corresponding inclined edges upon the flanges K. The inner edge of the flange I, it will be noted upon reference to Fig. 3 of the drawings, is provided with a series of serrations I² which coöperate with the outer wings upon the outermost of the flanges O. Upon reference to Fig. 3, it will be noted that the outer pointed edges of the wings upon the two series of alternately rotating flanges have slight clearances, sufficient only to allow the wings to pass one another without interference.

In order to allow a longitudinal adjustment to the shaft L, a thrust bearing Q is provided and a set screw R mounted in suitable threaded bearings is provided to actuate the thrust bearing. The shaft E has a pulley M thereon, forming means whereby power may be applied to rotate the shaft and a similar pulley M' is fixed to the shaft L, the two shafts being adapted to be rotated in opposite directions. A suitable casing T is provided as a housing about the two disks and contains the stock as it is refined by the action of the serrations upon the disk rotating in opposite direction. The casing T has an exit opening T' through which the refined stock may be passed to any suitable location. Projecting from each opposite face of the casing is a hollow hub portion S, having suitable bearings S' therein through which the shafts turn.

In operation, the paper stock in liquid form is fed to the hollow pipe E and passes to and through the opening at the center of the disk H and is fed between the two concentric series of rapidly rotating flanges and, owing to the peculiar shape of the wings upon the flanges, it will be noted that the stock will be thrown by the inclined edges of the wings toward the inclined edges of

the wings upon the flanges which rotate in the opposite direction and, by the time the stock reaches the outermost of the flanges, it will be thoroughly disintegrated and refined.

5 What I claim to be new is:—

1. An apparatus for disintegrating and refining paper stock comprising two shafts adapted to rotate in opposite directions, one of said shafts being hollow, disks, one fastened to each shaft, each disk having a series of concentric flanges interlocking with one another, the opposite faces of said flanges having wings, and a casing about the disks.
2. An apparatus for disintegrating and refining paper stock comprising two shafts adapted to rotate in opposite directions, one of said shafts being hollow, disks, one fastened to each shaft, each disk having a series of concentric flanges interlocking with one another, the opposite faces of said flanges having wings, a casing about the disks, and means for adjusting one of said shafts longitudinally.
3. An apparatus for disintegrating and refining paper stock comprising two shafts adapted to rotate in opposite directions, one of said shafts being hollow, disks, one fastened to each shaft, each disk having a series of concentric flanges interlocking with one another, the opposite faces of said flanges having wings, a casing about the disks, an

adjusting screw, and thrust bearings actuated thereby and adapted to move one of said shafts longitudinally.

4. An apparatus for disintegrating and refining paper stock comprising two shafts adapted to rotate in opposite directions, one of said shafts being hollow, disks, one fastened to each shaft, each disk having a series of concentric flanges interlocking with one another, said flanges having wings, the opposite faces of said flanges having oppositely disposed wings with inclined edges, and a casing about said disks.

5. An apparatus for disintegrating and refining paper stock comprising two shafts adapted to rotate in opposite directions, one of said shafts being hollow, disks, one fastened to each shaft, each disk having a series of concentric flanges interlocking with one another, the opposite faces of said flanges having oppositely disposed wings, the edges of the wings upon one series of flanges being inclined and parallel with the inclined edges upon the other series of flanges, and a casing about said disks.

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

GEO. D. RYTHER.

Witnesses:

STANLEY S. LINNEY,
GEO. FRED. LECLERE.