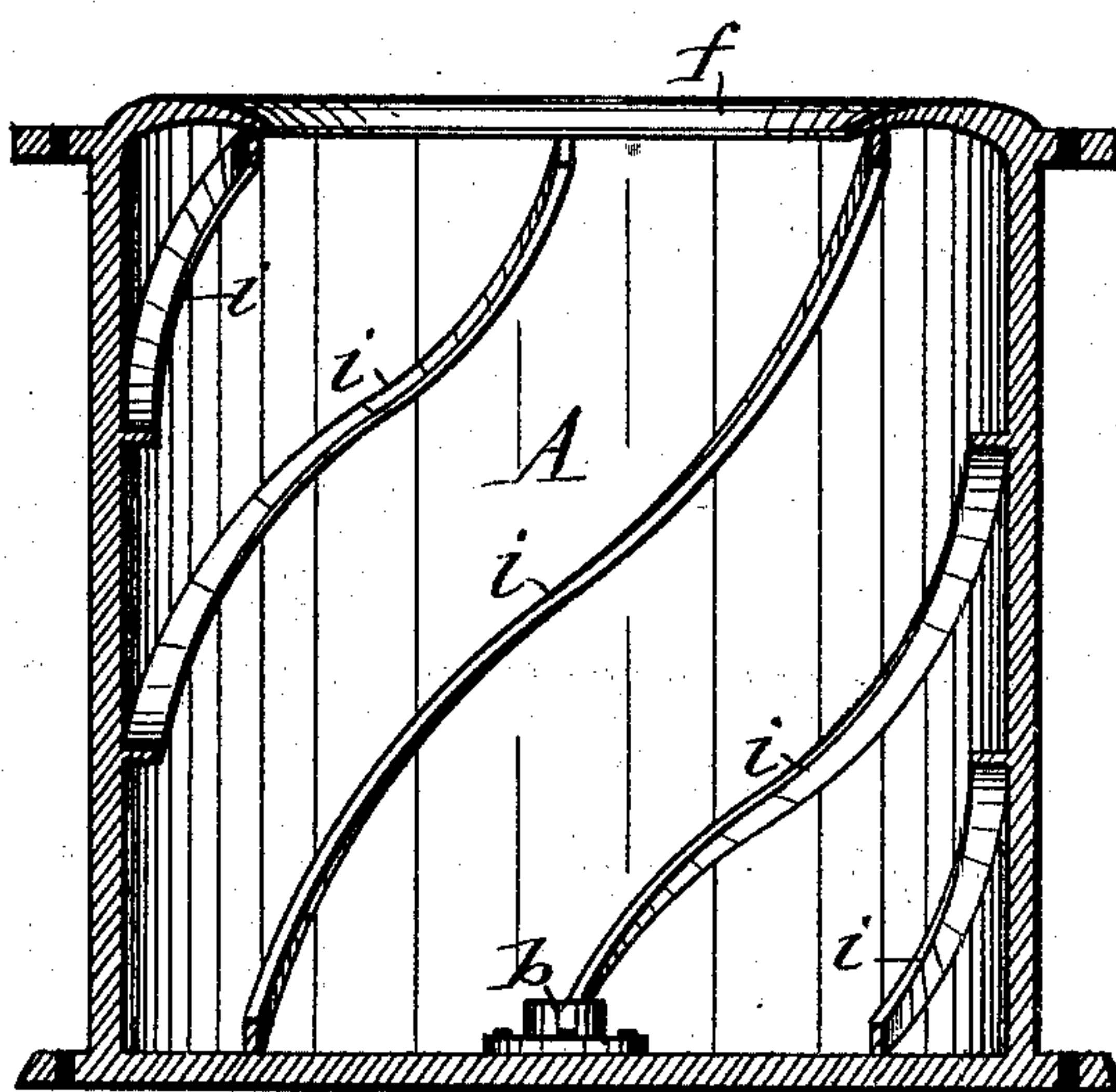
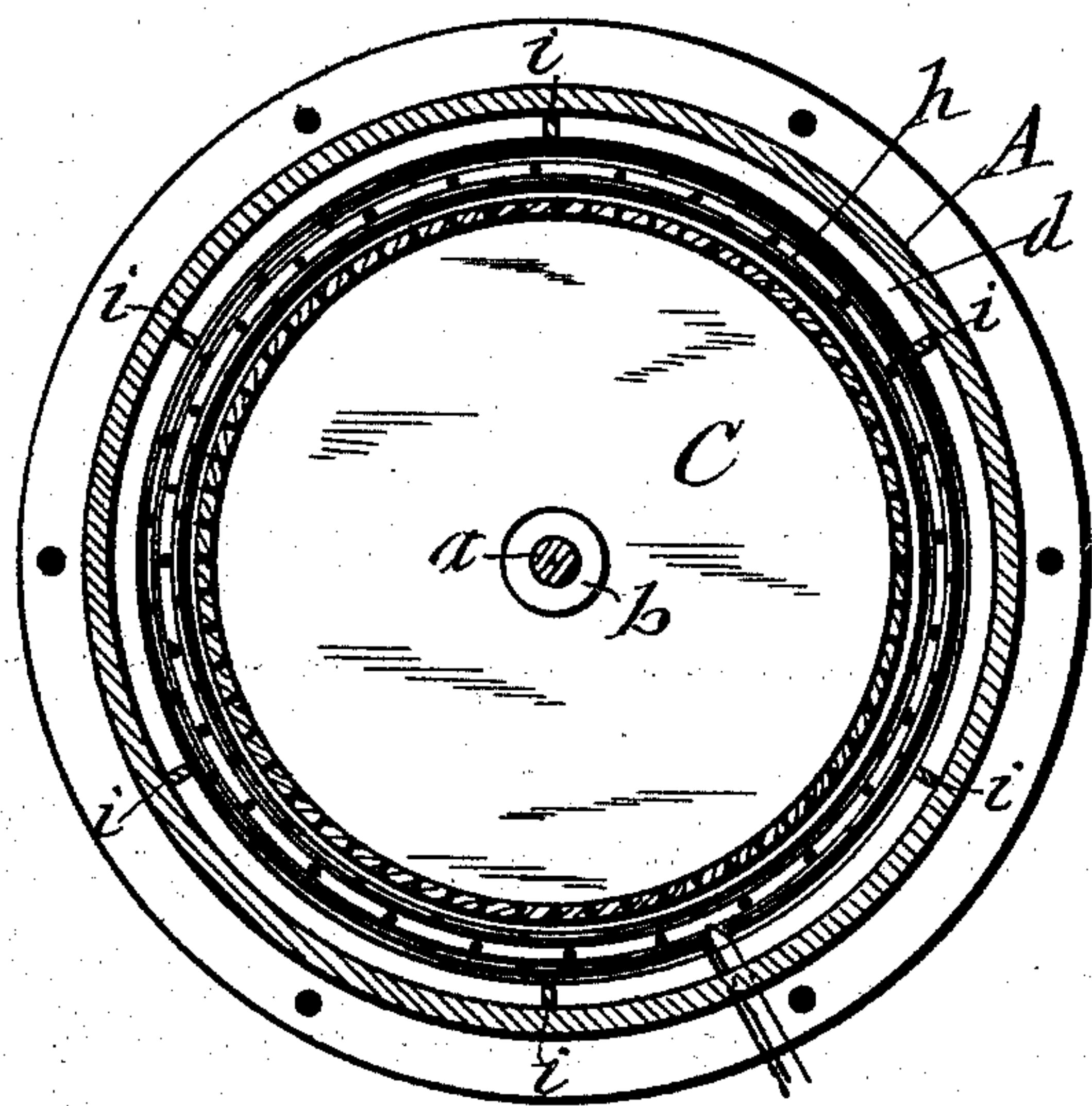
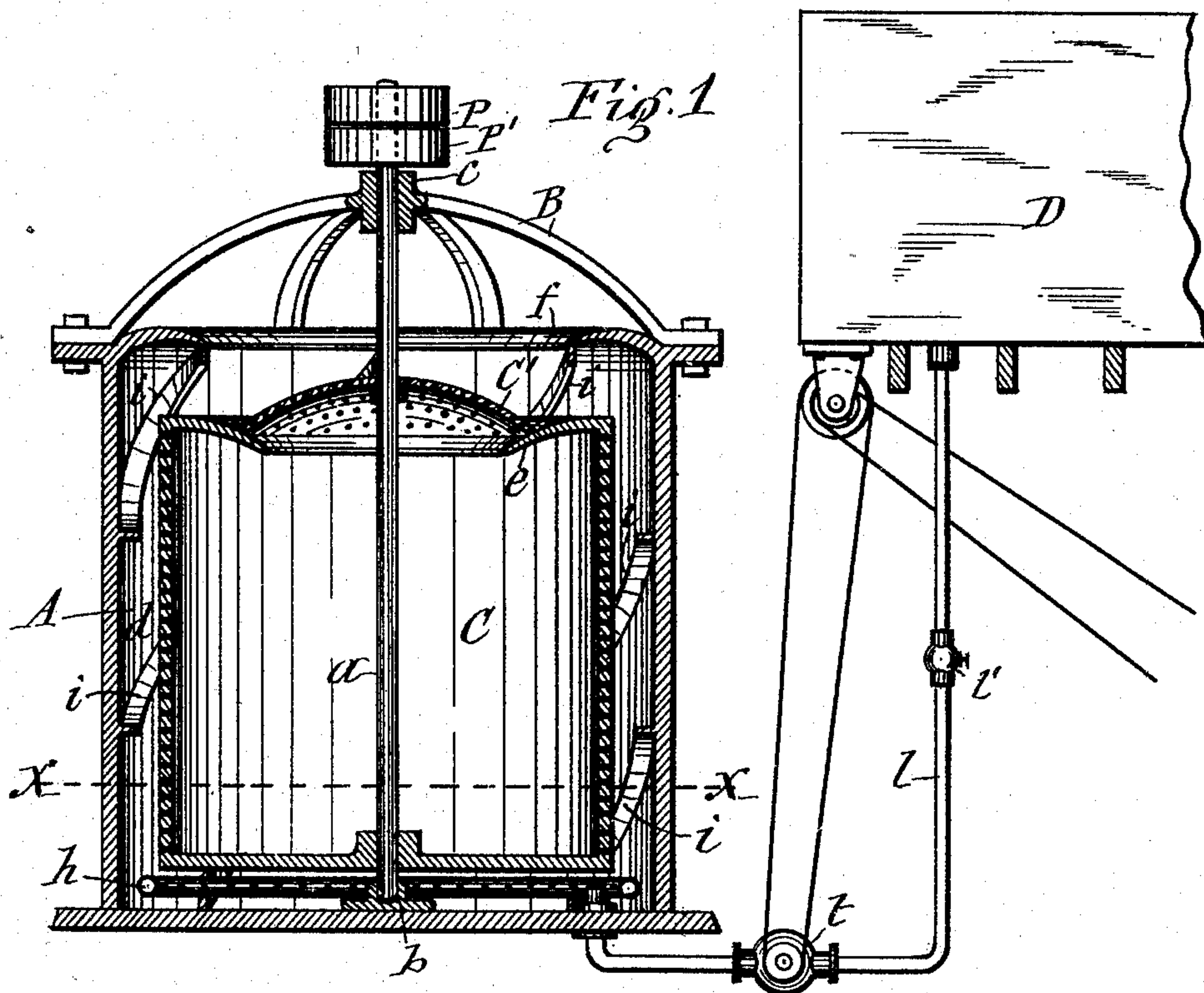


(No Model.)

L. WELDON.
CENTRIFUGAL DYEING MACHINE.

No. 505,497.

Patented Sept. 26, 1893.



WITNESSES: *Fig. 2*

C. L. Bendixon
J. J. Laass

Fig. 3

INVENTOR:
Leonard Weldon
By *Wm. L. Laass & Co.*
his ATTORNEYS.

UNITED STATES PATENT OFFICE

LEONARD WELDON, OF AMSTERDAM, NEW YORK, ASSIGNOR TO THE
KLAUDER-WELDON DYEING MACHINE COMPANY, OF SAME PLACE.

CENTRIFUGAL DYEING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 505,497, dated September 26, 1893.

Application filed February 10, 1893. Serial No. 461,739. (No model.)

To all whom it may concern:

Be it known that I, LEONARD WELDON, of Amsterdam, in the county of Montgomery, in the State of New York, have invented new and
5 useful Improvements in Centrifugal Dyeing-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to a dyeing machine
10 designed chiefly for dyeing raw-stock or textile fabric; and it consists essentially in the combination of an annular dye-vat placed axially vertical, a rapidly revolving perforated cage also arranged axially vertical, and
15 ribs on the inner side of the vat extending from the bottom to the top thereof. Said ribs prevent the dye-liquor from racing and following the rapidly revolving periphery of the cage and cause the dye-liquor to be
20 thrown through the perforated cover of the cage and into the center of the latter, where, by the centrifugal force exerted on the contents of the cage, the dye-liquor is continuously forced through the stock or fabric with-
25 out any movement thereof that might injure the stock or fibers.

The invention also consists in certain auxiliary devices connected with the machine as hereinafter more fully described and set forth
30 in the claims.

In the annexed drawings Figure 1 is a vertical transverse section of a dyeing machine embodying my invention. Fig. 2 is a horizontal transverse section on line *x, x*, in Fig. 1, and Fig. 3 is a vertical transverse section
35 of the dye-liquor vat.

Similar letters of reference indicate corresponding parts.

A— represents the dye-liquor vat which is
40 of an annular or cylindrical shape and placed axially upright or vertical. In the center of said vat is a vertical shaft —*a*— stepped in a socket —*b*— on the bottom of the vat and passing with its upper end through a bearing
45 —*c*— on a bracket or spider —B— which is rigidly mounted on top of the vat and rises with its center above the same as shown in Fig. 1 of the drawings. On the upper end of the shaft are mounted a fixed pulley —P—
50 and a loose pulley —P'— which by a belt re-

ceive rotary motion from the driving pulley of the motor, not shown.

In the vat —A— and concentric therewith is an upright cylindrical cage —C— fastened to the shaft —*a*— so as to rotate therewith. 55 The sides of the cage are perforated and a space —*d*— is left between said sides and vertical wall of the vat. The top edge of the cage is provided with an annular shed —*e*— which projects inward and is inclined toward 60 the center of the vat where it leaves an opening for the introduction and removal of the stock or fabric to and from the cage, and over this opening is a perforated cover —C'— which is adapted to slide vertically on the 65 shaft —*a*— and rests upon the shed —*e*— when in its closed position.

To the inner side of the vertical wall of the vat are fastened ribs —*i*—*i*— which extend from the bottom to the top of said wall and 70 may be either inclined or spirally disposed.

The top of the vat is provided with an annular deflector —*f*— which extends from the vat over the top of the cage for the purpose hereinafter explained. 75

h— denotes the steam-pipe for heating the dye-liquor. This pipe is located on the bottom of the vat and bent into a circle of a diameter somewhat greater than that of the cage so as to bring it directly under the an- 80 nular space between the cage and vat and thus facilitate the upward circulation of the dye-liquor through said annular space as hereinafter described. The said pipe is per- 85 forated at equidistant points for the emission of steam into the dye vat, and is provided with a suitable pipe by means of which it may be connected with a steam generator.

D— denotes the dye-liquor reservoir from which the vat —A— is supplied by means of 90 a pipe —*l*— leading from the bottom of the reservoir to the bottom of the vat, as shown in Fig. 1 of the drawings, said pipe being provided with a stop-cock —*l'*— by which to control the flow of the dye-liquor. 95

t— represents a suitable pump which is connected to the pipe —*l*— for the purpose of returning the dye-liquor from the vat —A— to the reservoir —D— after the dyeing operation is completed. 100

The operation of the described dyeing machine is as follows: The cover —C— of the cage —C— is raised and the material to be dyed is introduced into the cage and the cover
 5 replaced. Then the dye-liquor which has been prepared in reservoir —D— is allowed to flow into the vat —A— by opening the stop-cock —l'. After the vat has been supplied with the desired quantity of dye-liquor
 10 the stop-cock is closed and power is applied to the driving pulley —P— which imparts a rapid revolution to the cage —C. In this motion the ribs —i—i— prevent the dye-liquor from racing around in the annular space
 15 surrounding the cage, and the centrifugal force exerted on the dye-liquor within the cage forces the liquor out through the perforated sides of the cage into the aforesaid annular space in which it is forced up to the
 20 top of the vat where the deflector —f— throws it over the shed —e—, which conducts it toward the perforated cover —C'—, through which it passes down into the central portion of the cage to be again forced out radially
 25 through the perforated sides of the cage as aforesaid. This circulation of the dye-liquor causes the same to thoroughly permeate the material to be dyed, which latter at the same time is not subjected to any movement that
 30 may tend to tangle it or in anywise injure it. When the stock or fabric has been treated with the dye-liquor for a sufficient length of time the stop-cock —l'— is opened and the pump —t— set in motion to lift the dye-liquor out of the vat and return it to the reservoir —D. After this has been effected the

stop-cock —l'— is closed and the motion of the pump stopped. Water may be then run into the vat —A— to wash the dyed stock or fabric, or the vat may be allowed to remain empty
 40 and the motion of the cage continued at such speed as to cause the surplus moisture to be expelled from the dyed stock by centrifugal force and leave the stock ready for placing it on the usual driers without the necessity of
 45 first placing it in an ordinary rotary hydro extractor.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a dyeing machine, of an upright cylindrical vat, a revoluble perforated cage arranged concentrically in said vat, spirally arranged ribs located on the inner
 50 side of the vat and extending from the top to the bottom thereof, and an annular deflector extending from the vat over the cage, substantially as specified.

2. The combination of an upright cylindrical dye-liquor vat, a revoluble perforated cylindrical cage arranged concentric in the vat, ribs on the inner side of the vat extending from the bottom to the top thereof, an annular deflector extending from the vat over the cage, and an annular shed on the top of the
 60 cage and inclined toward the center thereof as set forth and shown.

LEONARD WELDON.

Witnesses:

J. J. SAASZ,
 H. M. SEAMANS.