(No Model.) 2 Sheets—Sheet 1.

F. BLUM.

APPARATUS FOR DYEING.

No. 539,409. Patented May 21, 1895.

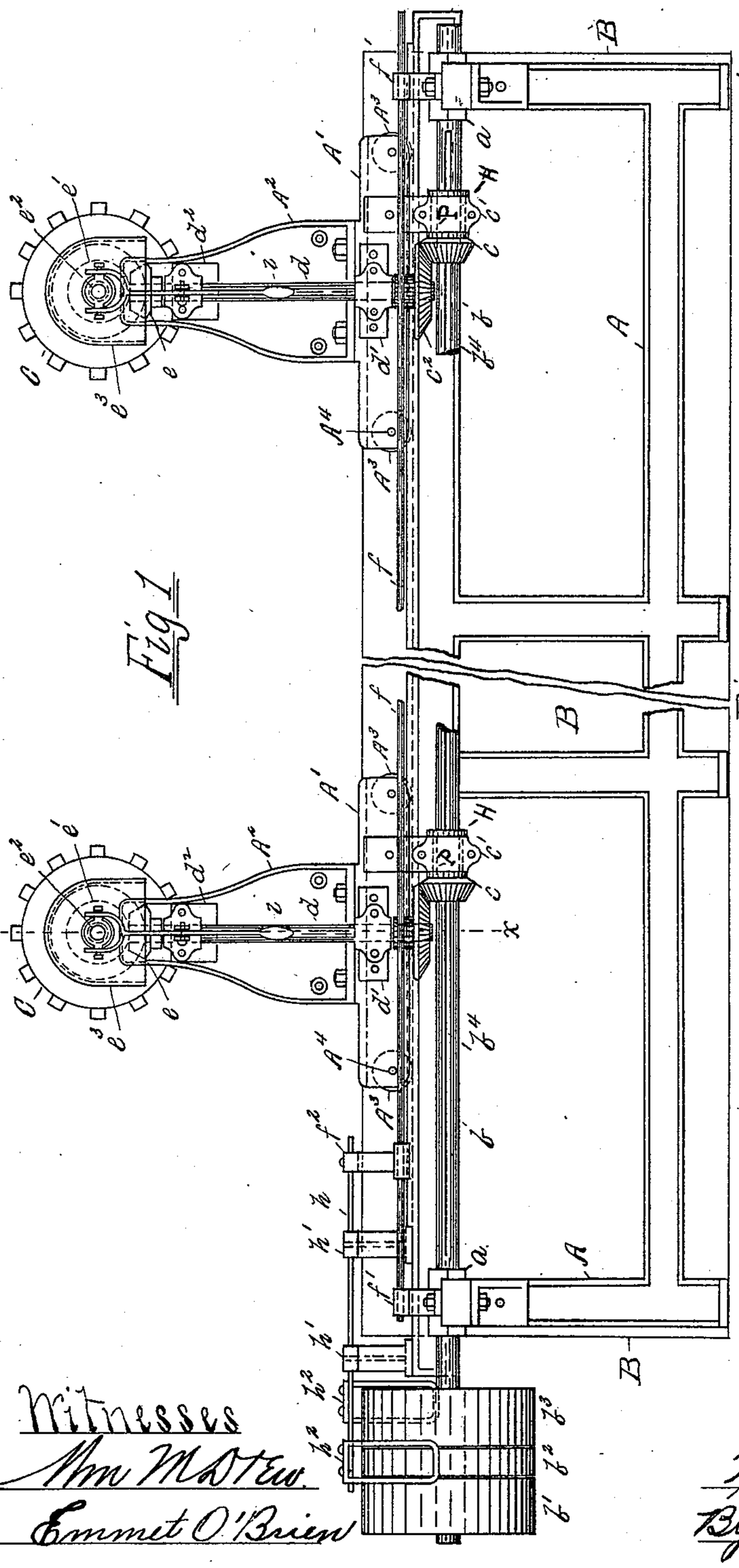

Fig. 1

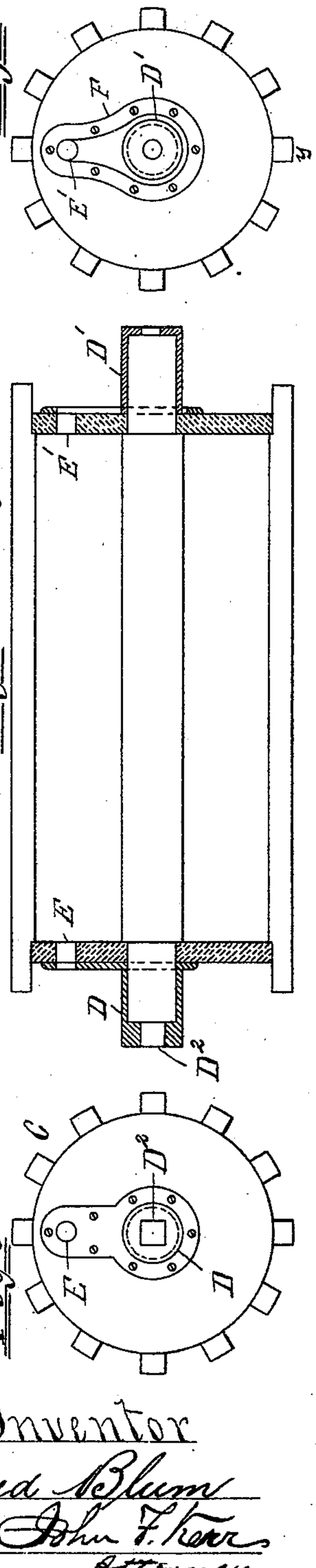

Fig. 2

Fig. 4

Fig. 3

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(No Model.) 2 Sheets—Sheet 2.

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Fig 5

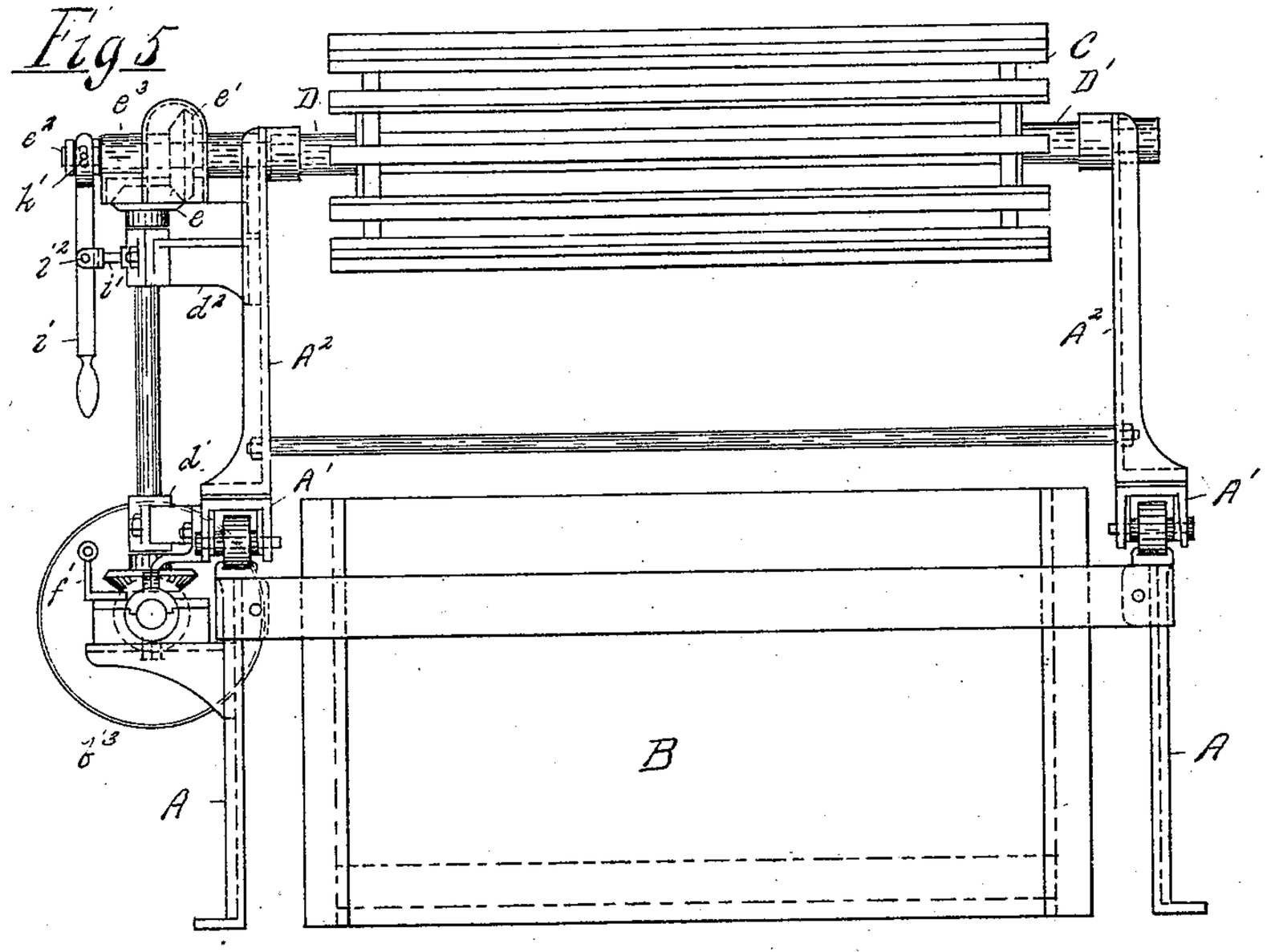


Fig 6

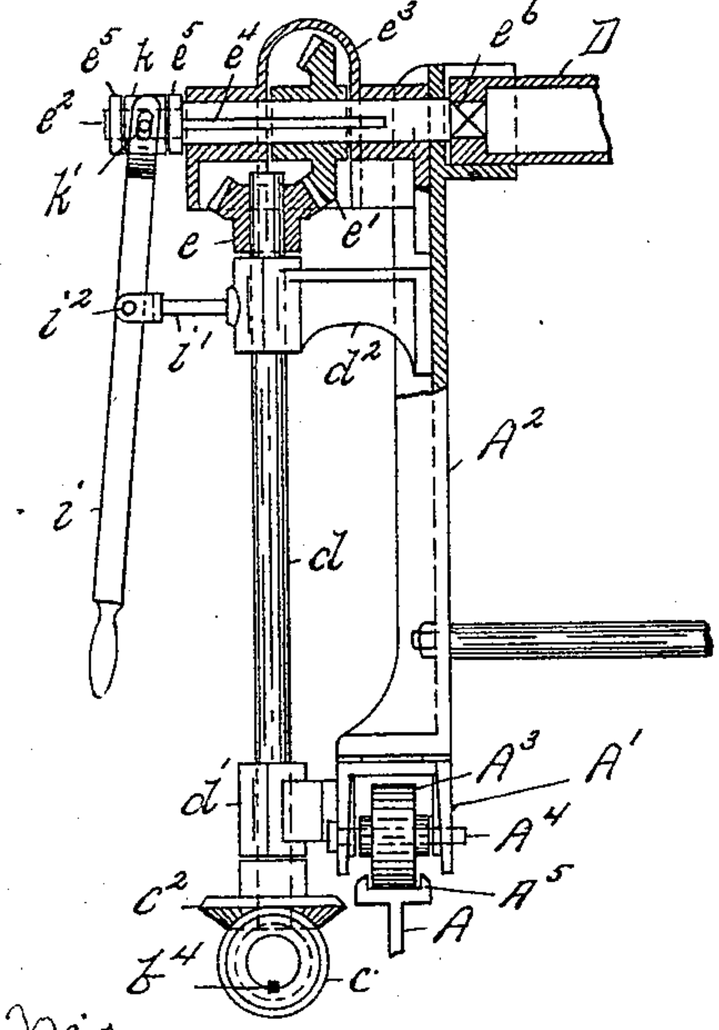
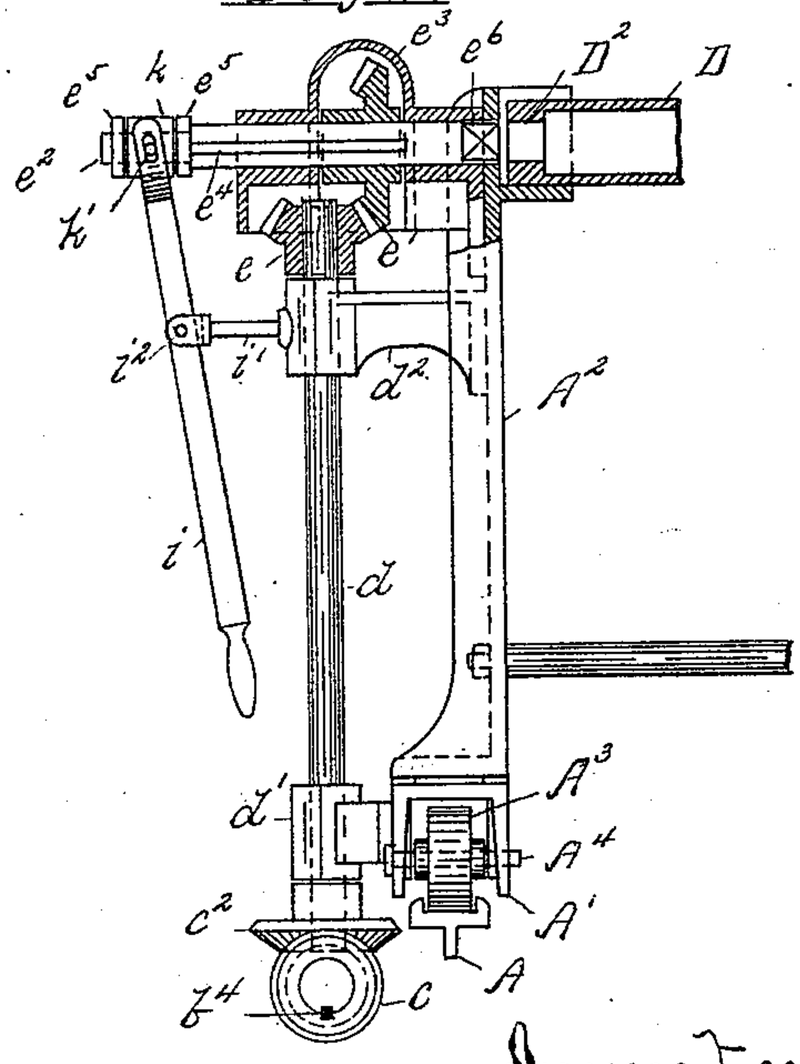


Fig 7



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UNITED STATES PATENT OFFICE.

FRED BLUM, OF NEW YORK, N. Y.

APPARATUS FOR DYEING.

SPECIFICATION forming part of Letters Patent No. 539,409, dated May 21, 1895.

Application filed November 27, 1894. Serial No. 530,078. (No model.)

To all whom it may concern:

Be it known that I, FRED BLUM, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Dyeing-Machines, of which the following is a specification.

The object of my invention is to provide a reliable dyeing and bleaching apparatus which, from its simplicity of construction and ease of operation, will greatly facilitate the dyeing and bleaching of silk or other goods, and whereby large quantities of material can be worked at one time with a great saving of labor; and whereby one or more separate and distinct lots of goods or materials may be worked at the same time by means of revolving reels mounted on a dye tub or vat and whereby one or more reels mounted on a dye tub or vat may be stopped from revolving without interfering with the operation or revolving of the remaining reels mounted on said dye tub or vat.

A further object of my invention is to provide reels mounted on suitable carriages so that one or more of the reels may be caused to move or slide longitudinally along the dye tub or vat without interfering with the operation or revolving of said reels and without in any way impeding the operation of the remaining reels mounted on a dye tub or vat. The labor saving results consist in this, that one man with my invention is enabled to attend to one reel.

The invention consists of the improved dyeing apparatus comprising a dye tub or vat, a frame secured to the same, revolving reels mounted suitably upon movable carriages, said reels being operated by a suitable mechanism and the arrangement and combination of the various parts, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claims.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a side elevation of my improved dyeing apparatus, part of the vat being broken away. Fig. 2 represents a side sectional elevation of a reel on line Y, Fig. 4. Fig. 3 is an end view of reel. Fig. 4 is likewise an end view of reel. Fig. 5 is an end elevation showing the vat with frame secured to the same and the reel mounted in a movable carriage on rails of said frame. Fig. 6 is a part sectional elevation through line X X of Fig. 1, showing the shaft in position to drive the reel; and Fig. 7 is a part sectional elevation through line X X of Fig. 1, showing the shaft withdrawn from reel to stop the revolution of the same.

In the drawings —A— is the frame which is suitably secured to the dye tub or vat —B—. The top rail of the frame —A— is provided with a groove or rabbet —A^5—.

—A′— is a movable carriage which is provided with rollers —A^3— and is adapted to be moved along the frame —A—, the rollers —A^3— moving in the recess —A^5—.

—A^2— is a stand which is secured to the carriage —A′— for the purpose of supporting an upright shaft and bearings for the reel.

—A^4— are pins on which the rollers —A^3— revolve.

—C— represents a reel.

—D— and —D′— are sleeves to fit reels for bearings.

—D^2— is a square hole adapted to receive square end of shaft to turn reel.

—E— and —E′— are holes in ends of reel in which to insert bar for purpose of lifting reel from or into position on dye tub or vat.

—F— is a flange which serves to strengthen the head of the reel.

A shaft —*b*— is suitably mounted in bearings —*a*— which are secured to the frame —A— and is adapted to be revolved in either direction in said bearings by means of reversible pulleys —*b*′— —b^2— —b^3—. The horizontal shaft —*b*— is provided with the feather seat —b^4— which extends the whole length thereof or as far as is necessary for the purposes required. On the horizontal shaft —*b*— are loosely mounted the bevel wheels —*c*—. The beveled wheels —*c*— are provided with a neck or shank, a portion of which is turned out as indicated by the dotted lines —P— so as to form the collar —H—. Each of the beveled wheels —*c*— is also provided with a feather adapted to move in the feather seat —b^4— of the horizontal shaft —*b*—. Bearings or guides —*c*′— are secured suitably around the turned portion indicated by

the dotted lines —P— of the neck of the beveled wheels —*c*— and said guides are secured suitably to the movable carriages —A'—.

An upright shaft —*d*— is suitably secured in bearings —*d'*— and —d^2—, in which bearings it is adapted to be revolved by means of a beveled wheel —c^2— which is secured to its lower end, and which is engaged, and caused to revolve in either direction required, by the beveled wheel —*c*— on the horizontal shaft —*b*—. On the upper end of the vertical shaft —*d*— is secured the bevel wheel —*e*—.

A horizontal shaft —e^2— is mounted so as to be revolved in a combined bearing and cover —e^3— which is suitably secured to a stand —a^2—. The horizontal shaft —e^2— is provided with the feather seat —e^4— and has the square end —e^6— which square end is adapted to fit the square hole —D^2— in the end of reel for the purpose of causing the reel to revolve in its bearings when the horizontal shaft —e^2— revolves. The horizontal shaft —e^2— is caused to revolve by means of the beveled wheel —*e*— which engages the beveled wheel —*e'*— which is secured to the horizontal shaft —e^2—.

The bevel wheel —*e'*— is provided with a feather, which is not shown, it not being deemed necessary so to do, which is adapted to slide in the feather seat —e^4— in the horizontal shaft —e^2—. As it sometimes becomes necessary to stop the revolutions of some particular reel I accomplish this with my invention by providing a lever —I— bifurcated at one end which lever is fulcrumed on a bracket —I'— which is secured to the bearing —d^2—.

A yoke —*k*— is fitted loosely around the end of the horizontal shaft —e^2— between two collars —e^5— that are formed by turning a portion of the horizontal shaft between the same to make it of less diameter than the collars and the forked arms of the lever —I— are suitably secured on pins or lugs —*k'* of the yoke —*k*—.

—I^2— is a pin by means of which the lever —I— is fulcrumed on the bracket —I'—

In the drawings —*f*— is a belt shipping rod. —*f'*— is a bearing or guide for the same.

—*h*— is a belt shipper.

—*h'*—*h'*— are guides for the belt shipper —*h*—; and h^2 h^2 are forks secured to the belt shipper —*h*— and —f^2— is a bracket or arm connecting the belt shipper rod —*h*—.

The guides —*h'*— are suitably secured to the frame —A— as is also the bearings or guides —*f'*—.

Part of the dye tub or vat —B— is broken away and as many reels may be used as are desired as also may the vat —B— be constructed of any size required.

To transmit power to the horizontal shaft —*b*— a straight belt and a crossed belt are used on the reversible pulleys —*b'*—b^2—b^3— and by changing the belts the horizontal shaft —*b*— may be revolved in either direction as desired, or both belts may be shipped on the loose pulleys —*b'*—b^3— thus causing the horizontal shaft —*b*— to cease revolving. With my invention however it is not necessary to stop the revolution of the horizontal shaft —*b*—, the vertical shaft —*d*—, the horizontal shaft —e^2—, and all of the reels —C—, when it becomes necessary to stop one reel for the purpose of removing the same or for any other reason, as the particular reel which is to be stopped or removed may be stopped by means of the lever —I— as shown in Figs. 6 and 7. In Fig. 6 the handle of the lever —I— is pulled out and the square end of the shaft —e^2— is forced into the square hole —d^2— of the reel sleeve —D— and as is obvious power being transmitted to the horizontal shaft —*b*— it is caused to revolve. The bevel wheel —*c*— on the shaft —*b*— engages the bevel wheel —c^2— on the bottom of the upright shaft —*d*— causing it to revolve. The bevel wheel —*e*— secured to the upper end of the vertical shaft —*d*— engaging the bevel wheel —*e'*— on the horizontal shaft —e^2— causes the horizontal shaft —e^2— to revolve and the square end of the horizontal shaft —e^2— being forced into the square hole —D^2— of the reel sleeve —D— the reel is also caused to revolve.

To stop any particular reel from revolving the operator simply takes the handle of the lever —I— and presses it in toward the upright shaft —*d*— which operation withdraws the square end —e^6— of the horizontal shaft —e^2— from the square hole or recess —D^2— in the reel sleeve —D—, whereupon the reel —C— will cease to revolve, and the goods thereon may be examined or the reel may be removed by inserting a bar into the round openings —E— —E'— in the ends of the reel which bar will serve as a handle to lift the reel from the tub or vat.

As each stand —A^2— is provided with a lever —*i*— it is obvious that the revolution of any reel may be stopped without interfering with the operation of the other.

As each reel is mounted upon a moving carriage —A'— separate and independent from the others and as the beveled wheels —*c*— are adapted to slide independently of each other along the horizontal shaft —*b*—, it is likewise apparent that the person in charge of a reel can move it and its carriage along the track on the top rail of the frame —A— without interfering in any way with the operation of the reel so moved and without moving any of the other reels or carriages upon which they are mounted.

With this description of my invention, what I claim is—

1. A dyeing apparatus consisting of a vat and a surrounding frame, carriages adapted to slide on said frame, revolving wheels arranged on said carriages, a horizontal shaft mounted on each carriage, each reel being provided at one end with a square opening and each of said shafts having a square end

adapted to enter said opening in reel and to operate the same, a bevel gear wheel arranged on said shaft and adapted to slide thereon and revolve therewith, said shaft being provided with a feather seat and said bevel wheel being provided with a feather adapted to slide in said feather seat, an upright shaft mounted in bearings secured to carriage stand, a bevel gear wheel secured to upper end of said vertical shaft adapted to revolve therewith and to mesh with the bevel gear wheel on the horizontal shaft first mentioned, a bevel gear wheel secured to the lower end of said upright shaft and adapted to revolve therewith, a main horizontal shaft provided with a feather seat, beveled gear wheels arranged on said shaft, each provided with a feather, and adapted to slide thereon and revolve therewith, each of said beveled gear wheels on said main shaft being provided with a neck or shank, bearings or guides being suitably secured around said shanks and to the respective movable carriages, each beveled gear wheel on said main shaft being adapted to mesh with its respective gear wheel secured to the bottom of the above mentioned vertical shaft and to rotate said shaft, fast and loose pulleys secured to the end of said main shaft and means for transmitting power to said main shaft to cause one or more reels to revolve in either direction, all of said parts being combined and adapted to operate substantially as shown and described and for the purposes set forth.

2. In a silk dyeing apparatus a vat having a surrounding frame, movable carriages adapted to slide on said frame and revolving reels arranged on said carriages, the combination therewith of a main horizontal shaft provided with a feather seat, means for driving said main shaft, a series of beveled gear wheels provided with a feather adapted to slide along and revolve with said main shaft and to mesh with a series of beveled gear wheels secured to the bottom ends of a series of upright shafts and cause the same to rotate, a series of upright shafts mounted in suitable bearings on said carriages, each of said shafts having a beveled gear wheel secured to the bottom thereof and a beveled gear wheel secured to the top thereof, a series of horizontal shafts suitably mounted in bearings secured to said carriage stand, each of said horizontal shafts being provided with a feather seat and a square end adapted to enter into a square hole in the end of a reel, each of said shafts having arranged thereon a beveled gear wheel provided with a feather said gear wheel being adapted to slide along and revolve with said horizontal shaft and to mesh with the bevel gear wheel secured to the upper end of said vertical shaft and to be revolved thereby, a series of reels provided with a square opening in one head thereof adapted to receive the square end of the said last mentioned horizontal shaft, each of said last mentioned horizontal shafts having a lever secured to the end thereof for the purpose of withdrawing the square end of said horizontal shaft from the square hole or recess in the end of the reel or to insert it therein, all constructed substantially as shown and described and for the purposes specified.

3. In a silk dyeing apparatus a vat in combination with one or more moving carriages, one or more reels provided with a square hole or recess in the end thereof mounted in suitable bearings on said carriages, a horizontal shaft provided with one square end adapted to enter square hole in head of reel and a feather seat suitably mounted in a combined cover and bearing which is secured to carriage stand a beveled gear wheel provided with a feather arranged on said shaft and adapted to slide on the same and revolve therewith, a lever having a forked end secured to the outer end of said shaft, an upright shaft secured in suitable bearings to carriage stand, beveled gear wheel secured to upper end of said vertical shaft and adapted to mesh with and rotate the gear wheel on said horizontal shaft, a beveled gear wheel secured to the lower end of said vertical shaft and means for driving the same, substantially as shown and described and for the purposes specified.

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Witnesses:
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