

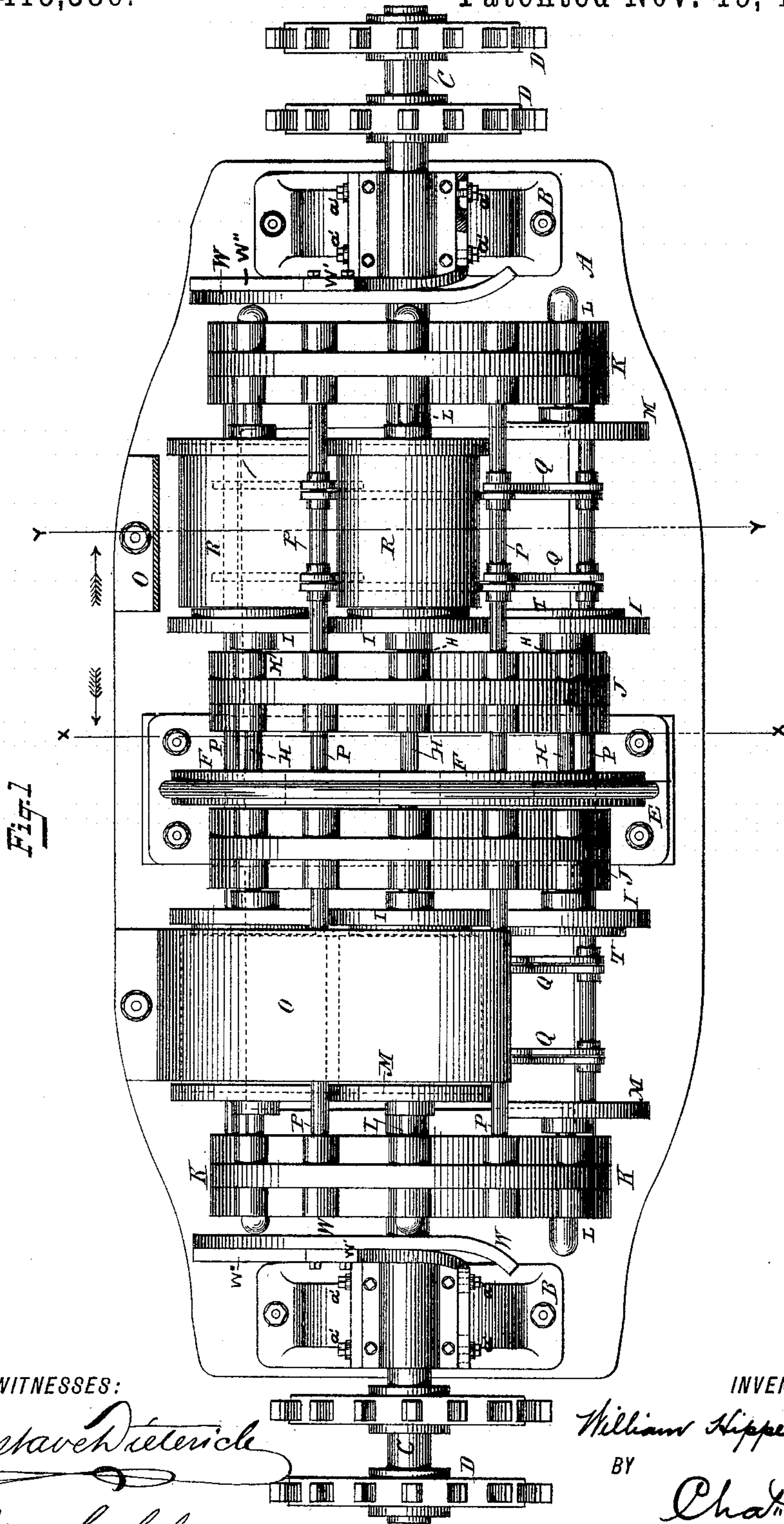
(No Model.)

4 Sheets—Sheet 1.

W. HIPPERLING.
APPARATUS FOR DRYING TIN CANS.

No. 415,386.

Patented Nov. 19, 1889.



WITNESSES:

Gustave Dieterich

William Goebel

INVENTOR

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BY

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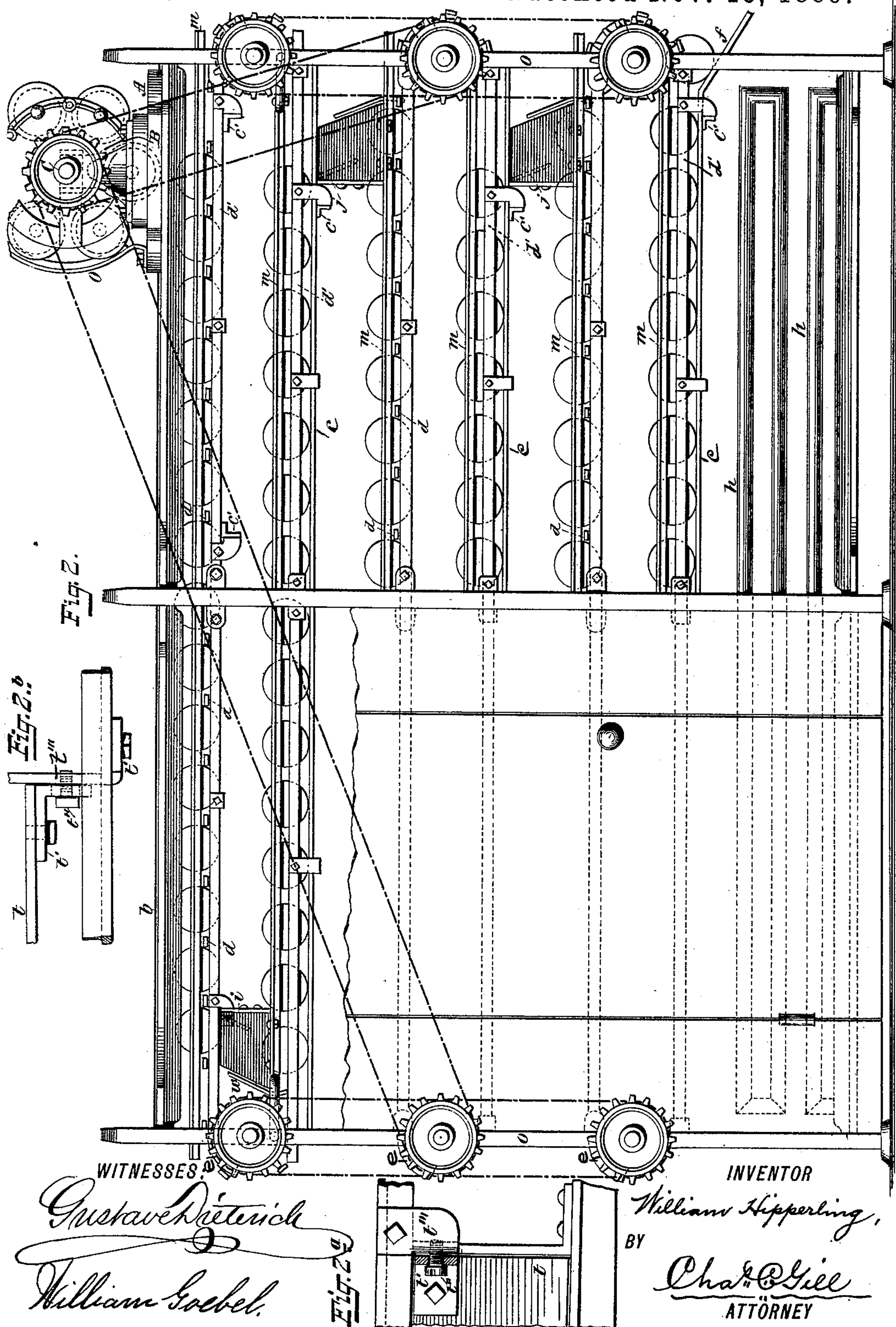
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Fig. 2a

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(No Model.)

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Fig. 3.

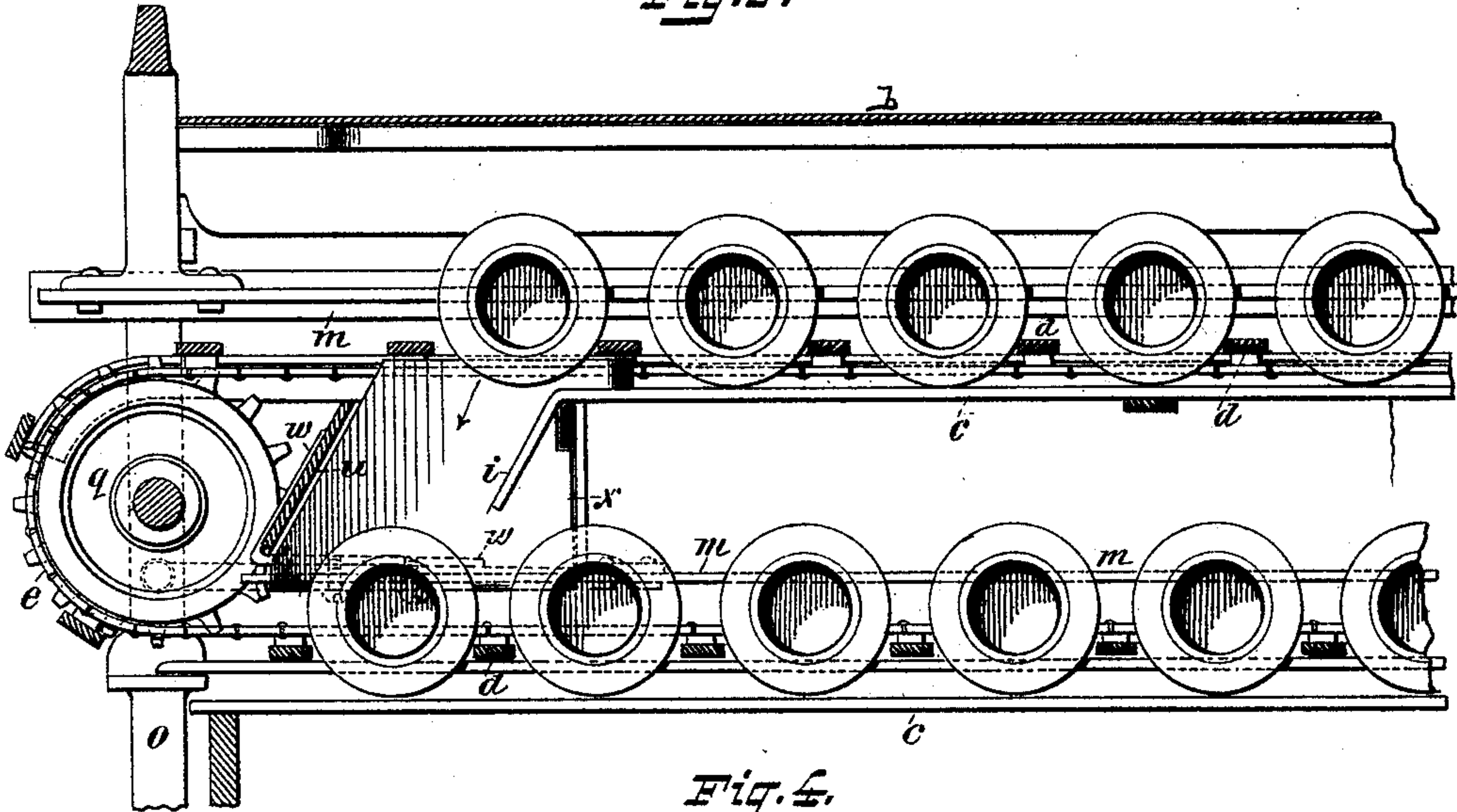
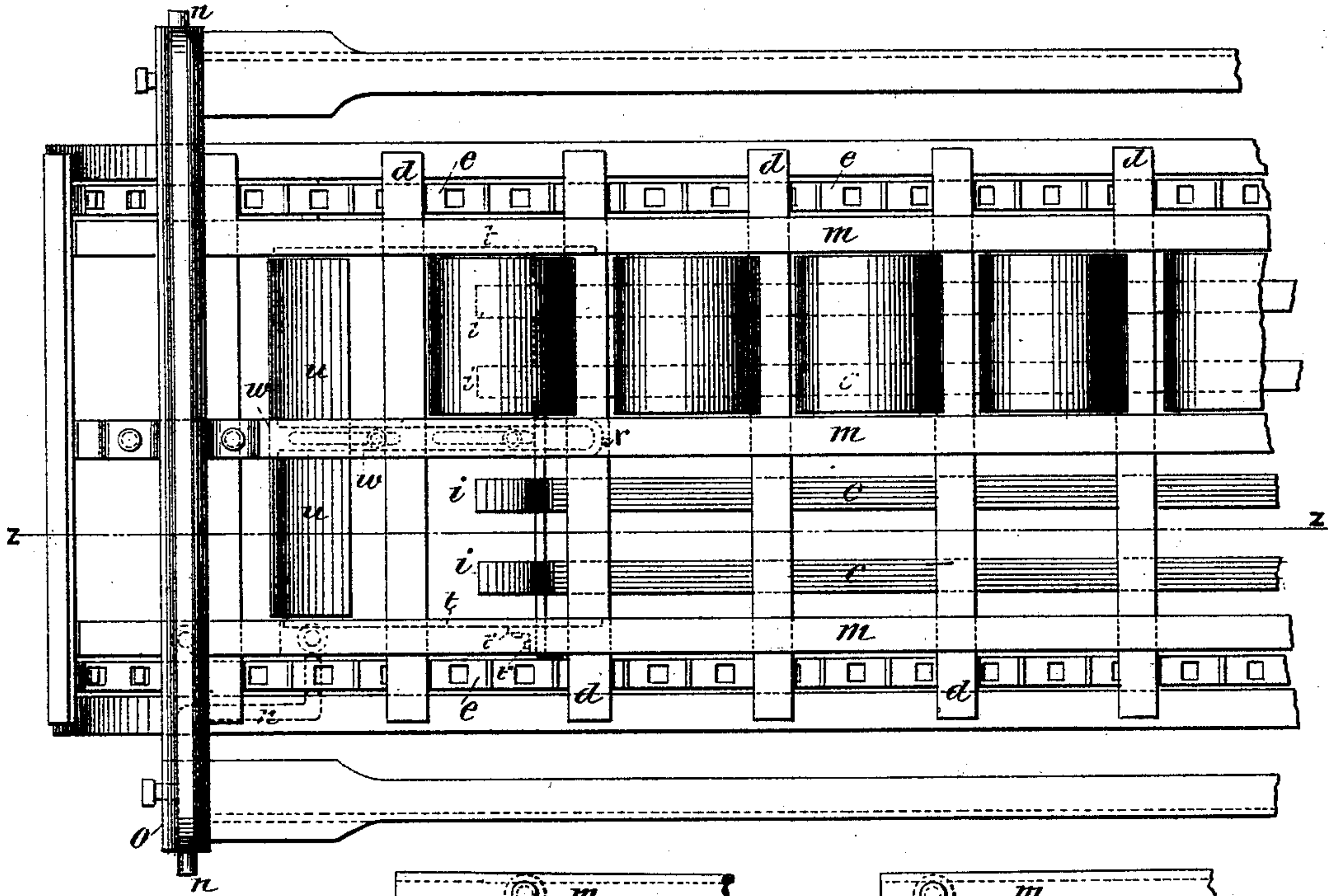


Fig. 4.



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Fig. 4^a

Fig. 4^b INVENTOR
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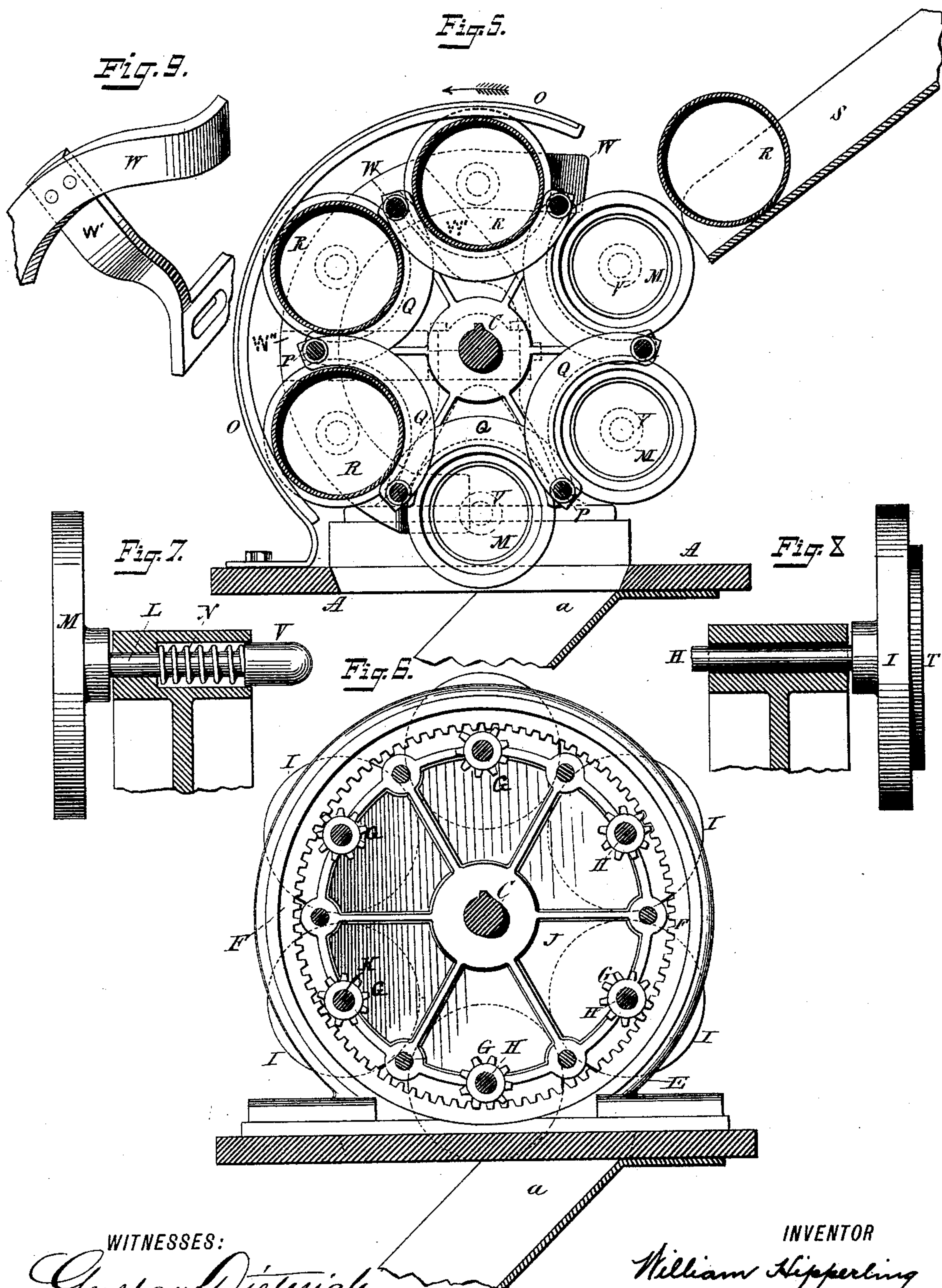
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR DRYING TIN CANS.

SPECIFICATION forming part of Letters Patent No. 415,386, dated November 19, 1889.

Application filed August 2, 1888. Serial No. 281,726. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HIPPERLING, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for Use in Connection with the Manufacture of Tin Cans, of which the following is a specification.

10 The invention relates to improvements in apparatus for use in connection with the manufacture of tin cans, and pertains particularly to novel mechanism for wiping and drying the cans after they have left the water bath in which their seams are tested.

15 The system in connection with which I have applied the invention consists of a machine in which the blanks are folded and seamed for the purpose of forming the body of the can and the body then carried by a traveling chain through a solder bath and then to suitable heading-machines, after leaving which they are carried on the traveling chain through a water bath for the purpose of testing the seams. After leaving the water bath the cans carry upon their surfaces drops of water, and it is the purpose of the present invention to remove the water from the exterior of the cans after they have left this bath.

20 My invention consists in novel mechanism, hereinafter described, whereby cans as they leave the chain, passing from the water bath, are first, while rapidly revolving, brought into contact with a wiper and then deposited within a drying-room, where they are caused to travel back and forth on endless chains until they have become thoroughly dried, when they are permitted to escape upon an additional traveling chain, which conveys them to the store-room or other desired place.

25 In the accompanying drawings, Figure 1 is a top view, partly broken away, of that portion of the apparatus by which the cans are caused to rapidly revolve against the wiper and then deposited in the drying-room. Fig. 2 is a side elevation of the drying-room with the apparatus illustrated in Fig. 1 shown in position, the walls of the drying-room being partly broken away for the purpose of exposing the interior structure. Fig. 2^a is a detached side elevation, partly broken away, of

one side of one of the box-chutes employed in the drying-room. Fig. 2^b is a top view of same. Fig. 3 is an enlarged sectional view of the upper portion of the left-hand end of the drying-room illustrated in Fig. 2, the section being taken on the dotted line Z Z of Fig. 4, which is a top view of the upper portion of the drying-room, the inclosing cover or roof of the same being omitted. Figs. 4^a and 4^b are detached top views of the devices by which the guide-bars for the ends of the cans are secured within the drying-room. Fig. 5 is a vertical section on the dotted line Y Y of Fig. 1, looking to the right in the direction of the arrow. Fig. 6 is a like section on the dotted line X X of Fig. 1, looking to the left in the direction of the arrow. Fig. 7 is a detached side elevation of the movable head for clamping the can against the fixed head, which is illustrated in a side view in Fig. 8, the bearings in both these views being in section; and Fig. 9 is a perspective view, partly broken away, of a cam-plate, hereinafter referred to.

Referring to the accompanying drawings, A designates the base of the apparatus for wiping the cans; B, the standards, secured upon said base and in which the driving-shaft C is suitably journaled, the ends of the shaft being provided with sprocket-wheels D, by which power may be applied. Upon the base A is also secured the circular frame E, toothed upon its inner edge, forming an internal gear-wheel F, (illustrated more clearly in Fig. 6,) which engages the series of pinions G, mounted upon the axles H, carrying at each end a fixed head I. The axles H are arranged in the outline of a circle and have bearings in the revolving wheels or heads J, mounted upon the driving-shaft C, the said heads J being on opposite sides of the internal gear-wheel F, as shown more clearly in Fig. 1. At a proper distance from the heads J are provided upon the shaft C the similar heads K, which constitute, substantially, end pieces for this part of the apparatus. In the heads K are journaled the series of axles L, which carry on their inner ends the heads M, which have a spring-tension toward the ends of the machine by reason of the springs N, secured upon the axles L within the recesses formed in the heads K, as illustrated in Fig. 7. The heads M on the axles L are on parallel planes

with the heads I, secured on the axles H, and between the heads I M the cans are clamped and held while revolving against the wiper O, the latter being more clearly illustrated in Fig. 5. The heads or wheels J K are connected by rods P, which are secured in bearings formed in said heads between the bearings for the axles H L, respectively, as illustrated in Fig. 1, and upon these rods P are secured inwardly-curved bars Q, (see Figs. 1 and 5,) which form rings containing pockets adapted to receive the cans R as they leave the chute S, as shown in Fig. 5. The parts Q are arranged between the heads I M, as shown in Fig. 1, two rings formed by the bars Q being arranged between each pair of the heads I M in order that the cans may be evenly sustained or held in position to be clamped between the heads I M.

Upon the series of heads I are provided cushions T, of rubber or other suitable material, which, when the cans are clamped, will hold them sufficiently firm to insure their revolving with the heads without liability of bruising them.

Upon the outer ends of the axles L are provided the heads V, having rounded ends, as illustrated in Figs. 1 and 7, which are arranged to move against the cam-plates W, which are in the form of a half-circle, as illustrated in Figs. 1 and 5, the upper and lower extremities of said plates being turned outward, as shown. As mentioned above, the axles L and heads M have a spring-tension outward toward the ends of the machine, and when they are in their inward position it is due to the fact of the heads V of said axles being brought into contact with and moved against the cam-plates W, this serving to compress the springs N and to retain them in their compressed condition until the wheels or heads K K have revolved sufficiently far to relieve the rounded heads V of the axles L from contact with the cam-plates W. The chute S, for supplying the cans R to the pockets formed by the rings or bars Q, will be of sufficient width to supply two cans at a time, or two separate chutes S may be employed for directing the cans to the pockets at each side of the center of the machine. During the rotation of the driving-shaft C the wheels or heads J J and K K revolve and carry with them the series of axles H L, with their heads I M, respectively, and also the rods P, supporting the rings of bars Q, and at the same time the pinions G are engaged by the internal toothed wheel F and caused to revolve in a direction opposite to that in which the driving-shaft is rotating, the effect of which is that the oppositely-revolving pinions G will impart a like movement to the axles H, and through them to the heads I.

In the operation of the apparatus the cans, leaving the chute or chutes S, fall into the pockets formed by the bar Q and are carried upward thereby, the cans being held loosely during this movement until the end of the

axles L ride down the incline of the cam-plates W, when the heads M will clamp the cans against the heads I, where they will be firmly held during the continued rotation of the driving-shaft, being only relieved therefrom by the ends of the axles being permitted to spring outward, owing to the outwardly-inclined lower end of the cam-plates W, at which time the cans will be relieved and fall down the chute *a* into the drying-room, hereinafter described. During the traveling of the cans R around the driving-shaft C they will rapidly revolve, owing to their firm contact with the heads I, in a direction opposite to that in which the driving-shaft is rotating, thus moving around the driving-shaft in the line of its motion, but each revolving independently in an opposite direction. The cans R while being carried between the heads I M are revolved against the wiper O, which will operate to remove the moisture from the surfaces of the cans or to break up the small globules of water carried upon the cans, thus leaving them in a condition in which they may be readily and thoroughly dried in the drying-room referred to. After the cans are relieved from the heads I M they fall down the chute *a* through the cover or roof of the drying-room *b* upon the longitudinal bars *c c* and between the rungs *d* of the traveling chain *e*, the chain being supported upon wheels or drums located at each end of the drying-room, as illustrated in Figs. 2 and 3. A series of chains *e* will be provided in the drying-room, in order that the cans may be carried back and forth several times prior to their being permitted to escape down the chute *f* at the lower portion of the room. The drying-room consists of a rectangular frame covered with sheet metal or other suitable material and provided with doors for the convenient inspection of the interior apparatus. In the lower part of the drying-room is provided the steam-coil *h* for heating the room to the proper temperature.

In the drying-room shown in Fig. 2 I illustrate three of the traveling chains *e* with chutes for discharging the cans from one chain to the other until they have reached the lowermost chain and been carried to the outlet-chute *f*, where they escape and may be conveyed away by a suitable traveling chain. The longitudinal bars *c c* support the cans while they are moved by the rungs *d* of the traveling chains, and these bars are sustained upon the transverse bars *c'*, which are suspended by lugs from the bars *d'* of the drying-room frame, as shown in Fig. 2. While the cans are upon the longitudinal bars *c* they are guided in their movement by the guide-bars *m*, the two side ones of which are sustained at opposite ends of the drying-room by the rods *n*, (see Figs. 4, 4^a, and 4^b), which pass through apertures in the standards *o* of the drying-frame and are there secured by screws which, when loosened, admit of the rods *n* and bars *m* being adjusted lat-

erally to suit the different lengths of cans. The rods *n*, which come opposite to the sprocket-wheels *q*, which carry the chains *e*, are bent at an angle, as shown in Figs. 4 and 5 4^b, so as not to come into contact with said wheels.

Referring to Fig. 2, I illustrate the cans leaving the wiping apparatus and being deposited upon the upper half of the upper chain *e*, by which the cans are carried to the left until they reach the box-chute *i*, where they are left without support and fall through the same, as indicated more clearly in Fig. 3, upon the next lower series of bars *c c* between the rungs *d* of the lower half of the upper chain, which carries the cans to the right-hand end of the drying-room, as illustrated in Fig. 2, where they are brought over the additional box-chute *j*, and fall down through the same upon the upper half of the second chain *e* and are carried to the left in the manner described with reference to the upper half of the upper chain *e*. The cans are thus carried back and forth by chains *e* until they reach the delivery-chute *f*, by which time they will be thoroughly dry and may be permitted to escape.

The box-chutes *i j*, hereinbefore referred to, are made from sheet metal and have sides, 30 ends, and a central partition, and their special construction is unimportant, with the exception that the sides (lettered *t*) are secured by lugs *t'* and screws *t''* to the transverse bar *t'''*, the lugs being slotted to receive the screw and afford means of laterally adjusting the sides, so as to regulate the width of the chute. (See Figs. 2, 2^a, and 2^b.) The front end *u* of the chute is secured to a bar *w*, which is slotted, as shown by dotted lines in Fig. 4, 40 and provided with screws, whereby its position may be adjusted longitudinally, and the length of the box-chute thus regulated to meet the requirements of the different sizes of cans to be handled. The middle partition 45 *x* of the box-chutes is formed by bending a piece of sheet metal upon itself, as shown by dotted lines in Fig. 4.

It will be observed that the wiping apparatus and the apparatus in the drying-room 50 are adapted to handle two lines or series of the cans at the same time, the apparatus being double throughout. If, however, it is desired to handle only a single line or series of cans, a portion of the apparatus could be dispensed with, a single chain only being then employed in the drying-room and one series of the clamping-heads *I M* being omitted.

The wiping apparatus is adapted to handle cans of different length by reason of the 60 cam-plates *W* being adjustable toward or from the outer ends of the axles *L*, and thereby regulating the extent of movement the said axles shall have inward with the heads *M* toward the cans. The cam-plates *W* are 65 secured to bars *W'* and *W''*, and the inner ends of these bars are slotted and secured to the sides of the upper ends of the standards

B B by screws *a'*, as shown in Fig. 1. When the screws *a'* are loosened, the bars *W' W''* and cam-plate *W* may be moved longitudinally a definite distance toward or from the axles *L*, and then secured by tightening the screws *a'* again.

In the drawings I have shown the wiper *O* as encircling a space about equal to the diameter of three cans when held between the clamping-heads *I M*; but I do not desire to confine the invention to any special size or form of wiper. The wiper will not always perfectly dry the cans alone to my satisfaction, although some of the cans will leave it bright and dry. It will, however, so break up the globules of water on the cans that the moisture may be completely evaporated in the drying-room, leaving the tin without stain and in perfect condition. It is obvious, therefore, that any form of device which will dry or partly dry the cans or break up the globules of water carried by them may be used as a wiper with advantage and without altering the operation or utility of the structure which is made the subject of this application.

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

1. In apparatus for drying tin cans, the wiper for partially wiping the water from the cans and rotating traveling clamps for clamping the cans at opposite ends and moving them against said wiper, combined with a traveling chain inclosed within a heated drying-room to receive said cans after being wiped and complete the drying of the same, substantially as set forth.

2. In apparatus for drying cans by wiping them, the horizontal driving-shaft carrying wheels *J K*, combined with the axles *H L*, journaled in said wheels, one series of the axles being fixed as to longitudinal movement and the other movable longitudinally, the clamping-heads on the facing ends of said axles, gearing for imparting a rotary movement to said heads, the cam *W*, adjustable longitudinally and being in the arc of the circle described by the axles *L*, and the springs for freeing the clamping-heads from the cans, substantially as set forth.

3. In apparatus for drying cans, a wiper for partially wiping the water from the cans and rotating clamps carried by revolving wheels for moving the cans against said wiper, combined with a series of traveling chains inclosed within a drying-room to receive said cans after being wiped and complete the drying of same, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 1st day of August, A. D. 1888.

WILLIAM HIPPERLING.

Witnesses:

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J. D. LONG.