

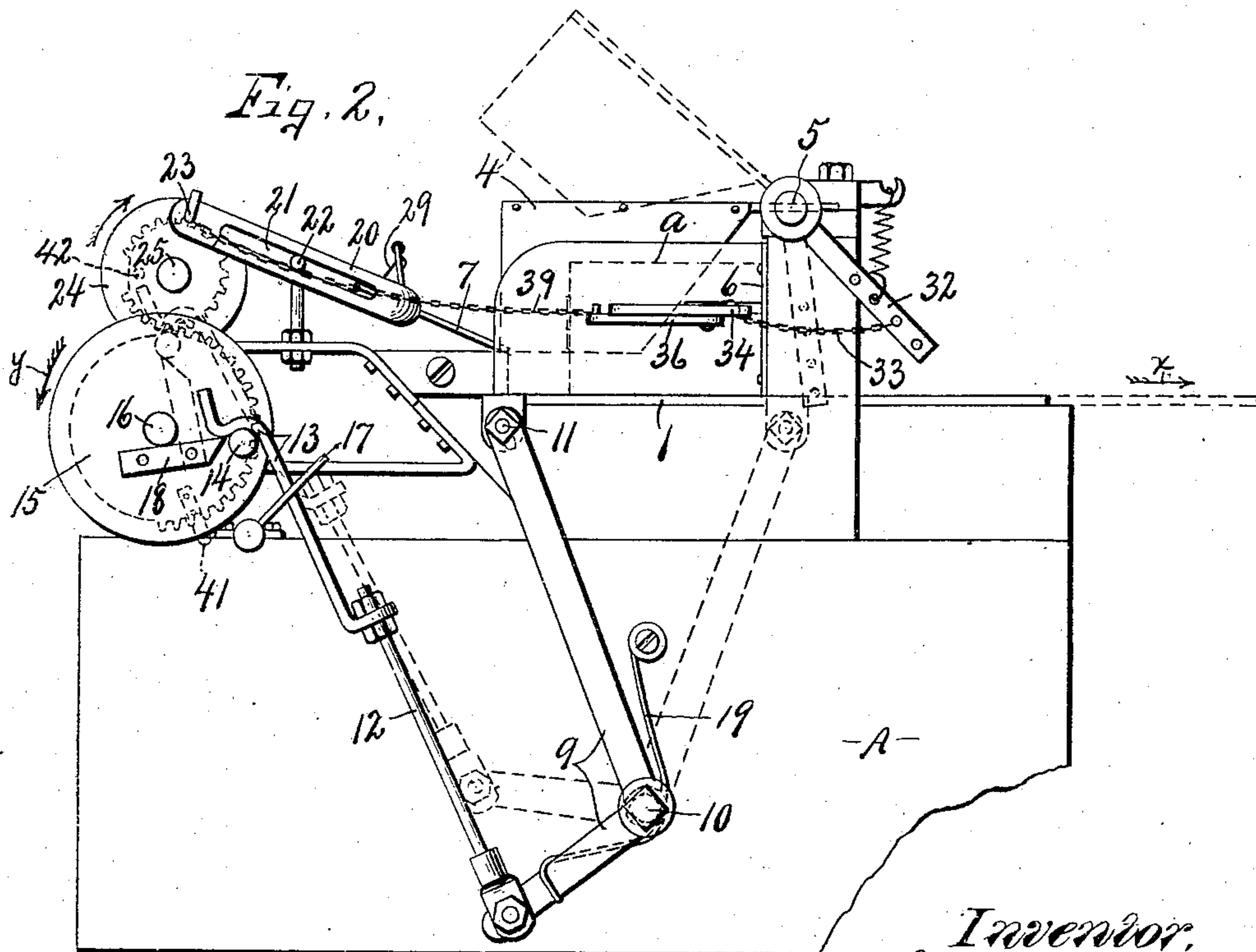
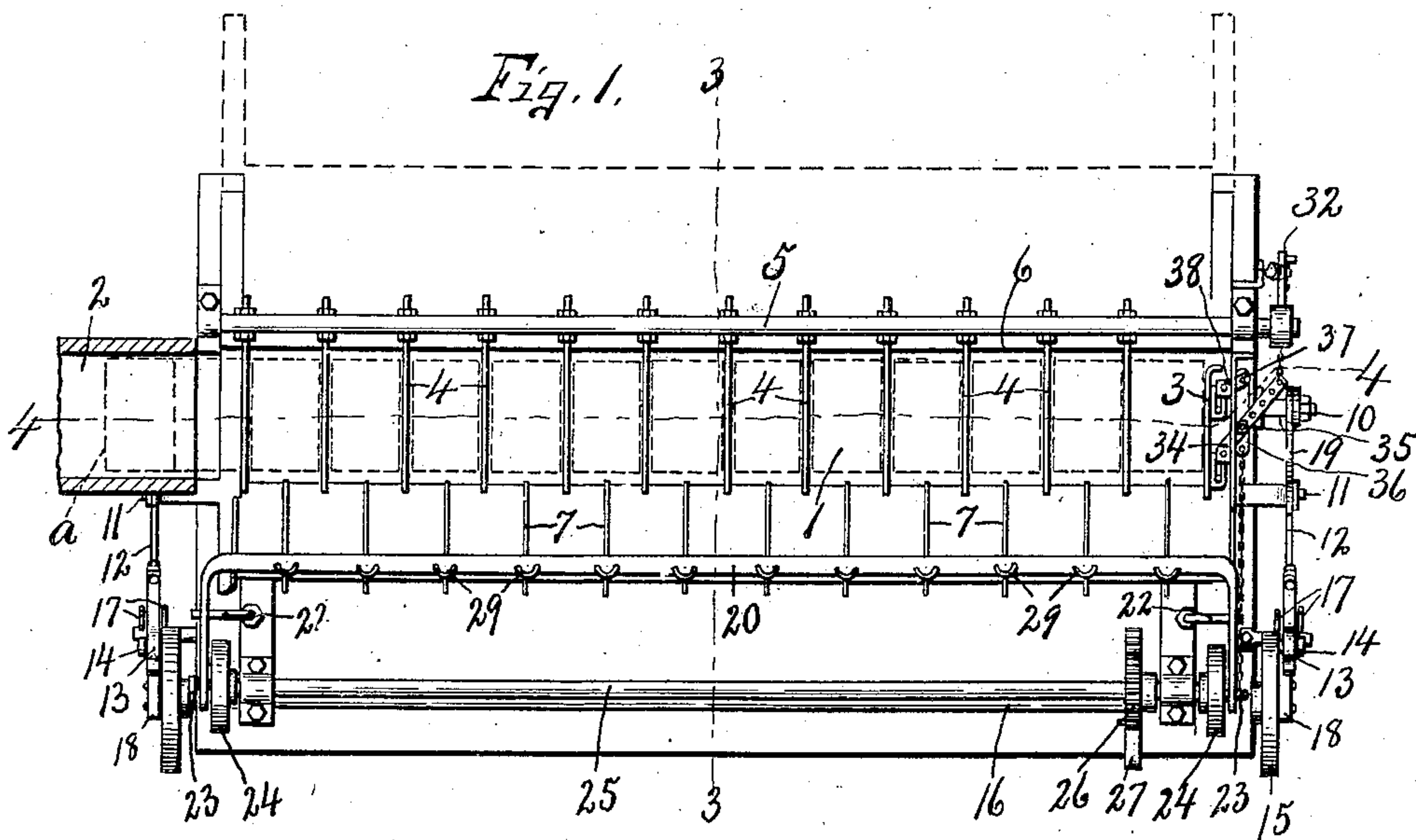
No. 880,186.

PATENTED FEB. 25, 1908.

M. D. BLAKESLEE.
CAN RIGHTING MACHINE.

APPLICATION FILED FEB. 26, 1906.

2 SHEETS—SHEET 1.



Witnesses:

J. E. Arthur,
A. C. Thomas

Inventor,
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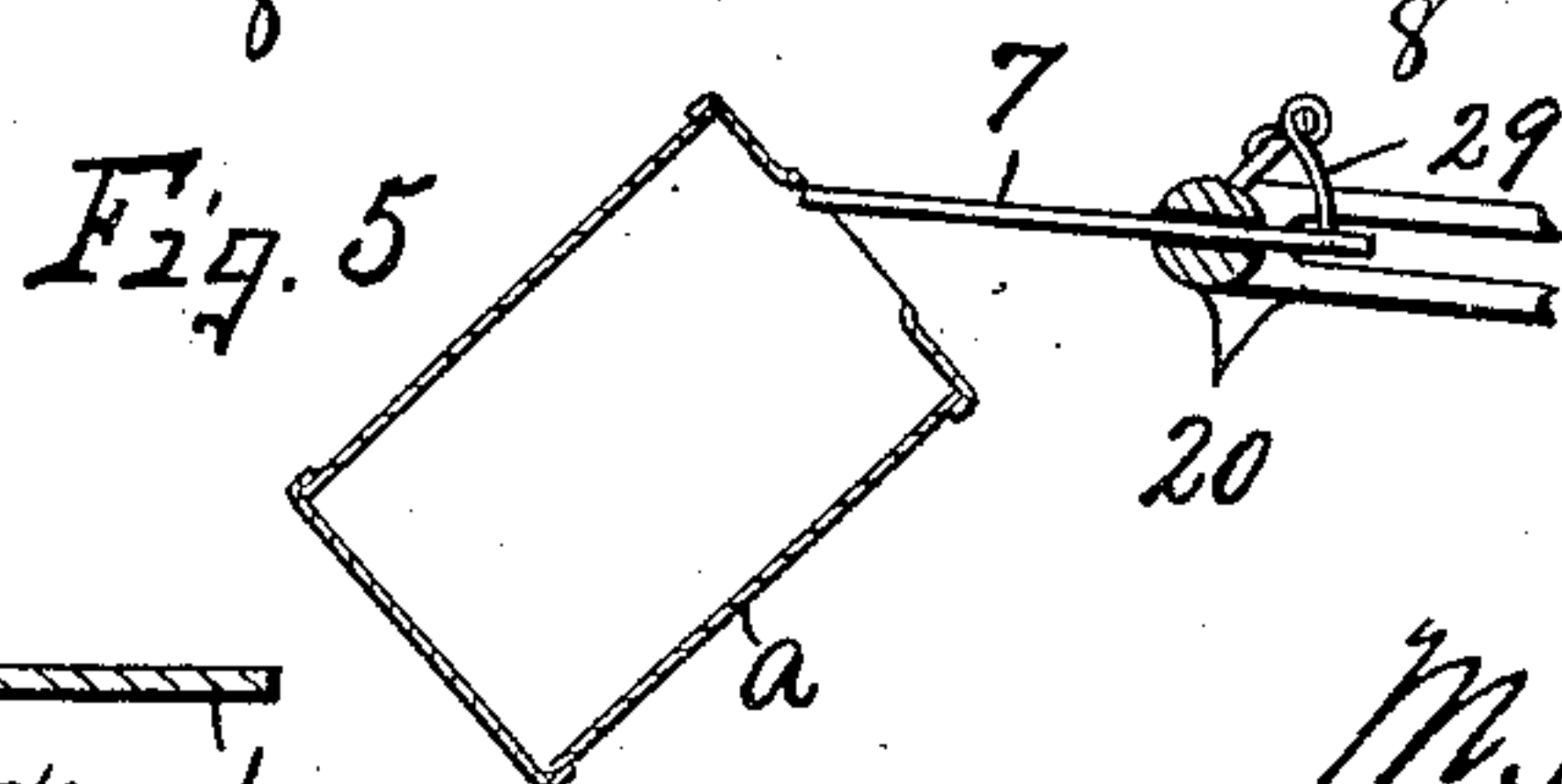
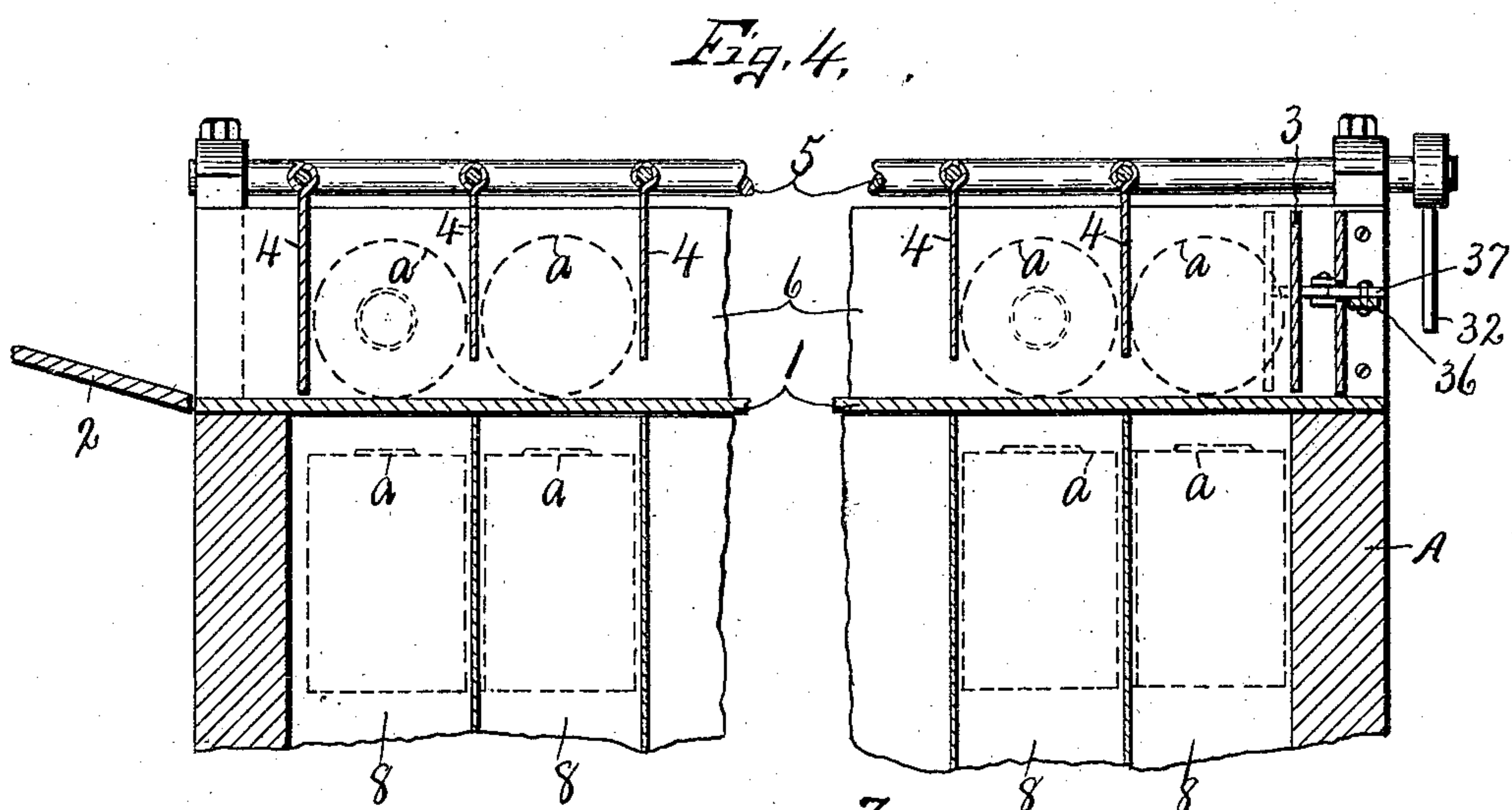
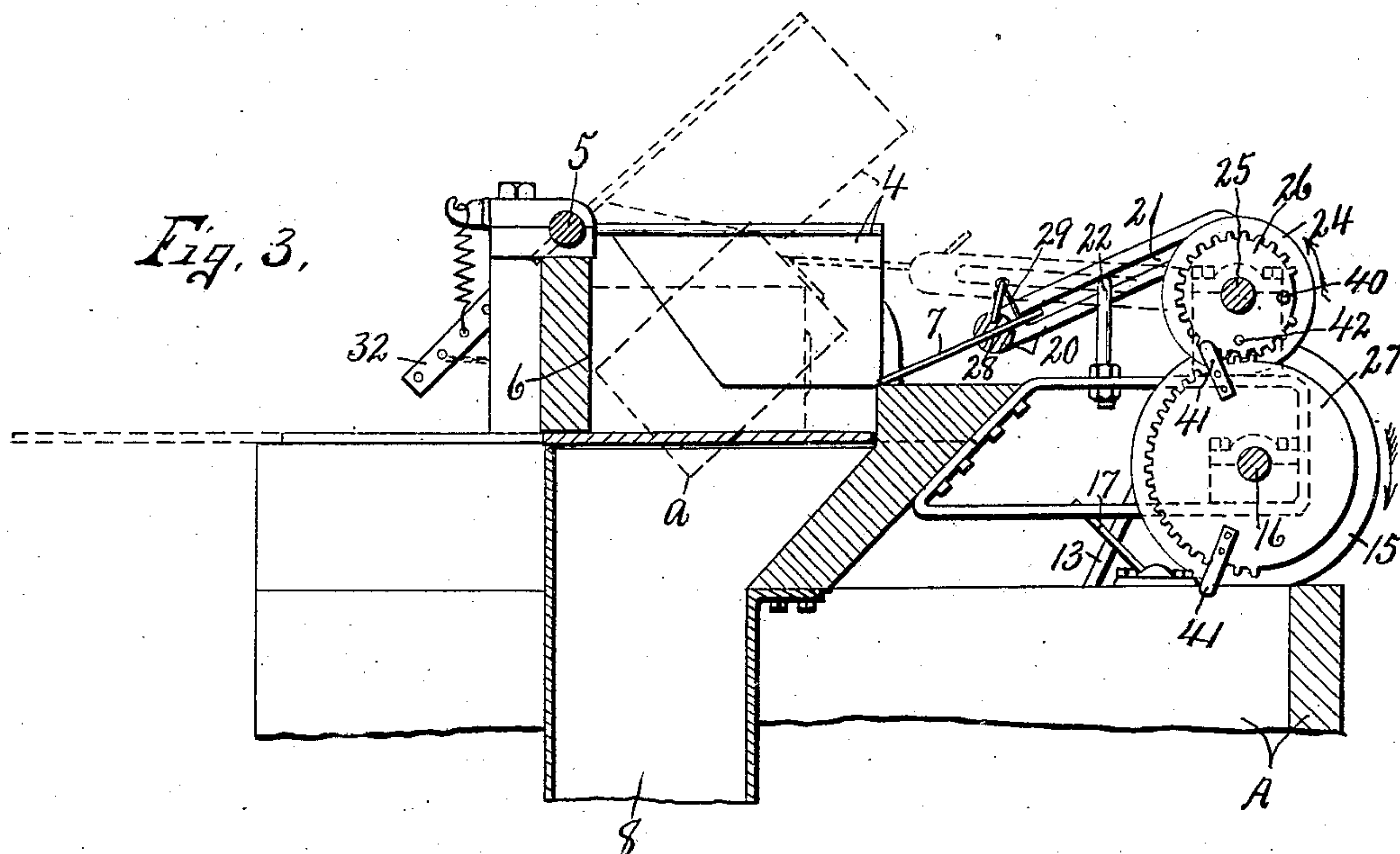
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UNITED STATES PATENT OFFICE.

MERTON D. BLAKESLEE, OF CAZENOVIA, NEW YORK, ASSIGNOR OF ONE-FOURTH TO HENRY BURDEN, SECOND, OF CAZENOVIA, NEW YORK.

CAN-RIGHTING MACHINE.

No. 880,186.

Specification of Letters Patent.

Patented Feb. 25, 1908.

Application filed February 26, 1906. Serial No. 303,004.

To all whom it may concern:

Be it known that I, MERTON D. BLAKESLEE, of Cazenovia, in the county of Madison, in the State of New York, have invented new and useful Improvements in Can-Righting Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in can-righting machines to which the cans may be fed promiscuously and in which they are automatically brought to an upright position with the open ends at the top, and allowed to gravitate through a suitable chute ready to be taken up by a conveyer, not shown, and carried to a can filler, or to any other machine or place where it may be necessary to supply cans with the open ends at the top.

My object, therefore, is to provide a machine wherein a plurality of empty unsealed cans may be automatically brought to an upright position with their open ends at the top, irrespective of the position of the can when fed into the machine, and to simultaneously deposit the cans right side up, and preferably side by side, in a straight row upon a suitable bed or conveyer belt whereby they may be fed in filling position to a filling machine. In other words, the broad object is to automatically bring the cans to an upright position with their open sides at the top ready for the filler without the aid of manual labor.

Other more specific objects will be brought out in the following description.

In the drawings—Figure 1 is a top plan of my improved can-righting machine. Fig. 2 is an enlarged end elevation of the machine seen in Fig. 1. Figs. 3 and 4 are enlarged sectional views taken respectively on lines 3—3, and 4—4, Fig. 1, the central portion of the machine seen in Fig. 4, being broken away. Fig. 5 is a detail view showing the action of one of the entrant fingers and a can with its open end presented thereto.

In carrying out the objects stated, I provide an elongated transversely movable bed-plate —1—, which in this instance is disposed in a substantially horizontal plane, and forms a continuation of an inclined raceway —2— along which the cans, as —a—, roll by gravity, one after another, upon the bed-plate —1— until the first

advancing can encounters a limiting stop —3— at the end of the bed-plate —1— opposite to that at which the inclined raceway —2— is located. This bed-plate is sufficiently long to accommodate a number of, in this instance twelve, cans, side by side in juxtaposition with their open ends facing in one direction, or the opposite direction, accordingly as they may be promiscuously fed upon and along the inclined raceway —2—.

This device is, of course, to be used for righting empty cans of uniform size, and therefore, the distances between centers as they rest upon the bed-plate —1— are substantially equal, but in order that they may be positively and accurately centered a uniform distance from center to center to facilitate the proper centering of the righting fingers hereinafter described, I provide a series of, in this instance twelve, separating blades —4— which are mounted upon and rigidly secured to a horizontal rock-shaft —5— and extend laterally in parallel vertical planes directly over the bed-plate —1—. These separating blades —4— are spaced a uniform distance apart substantially equal to the outside diameter of the cans and in vertical alinement with the meeting faces of said cans when the latter are resting upon the bed-plate with the first advancing can against the abutment —3—. While the cans for feeding forwardly from the raceway —2— upon the bed-plate —1— until the first can is forced against the abutment —3— the blades —4— are rocked and held upwardly to the position shown by dotted lines in Figs. 2 and 3 out of the path of the advancing cans, and as soon as the bed-plate is filled these blades are positively forced downward between adjacent cans to the position shown by full lines in Figs. 2, 3, and 4, thereby positively spacing and holding said cans a uniform distance apart, the abutment —3— being adjustable automatically at the proper time to bring the meeting faces of the cans into approximate registration with the overhanging supporting blades preparatory to the descent of the latter so as to avoid undue friction or strain upon the said blades and their operating mechanism. As soon as the blades —4— are brought down between the cans, the bed-plate —1— which normally supports the cans is withdrawn transversely

from under the cans in the direction indicated by arrow —X—, and during such withdrawal of the bed-plate, the ends of the cans facing the direction of withdrawal are held from similar movement by an abutment —6—. Simultaneously with the withdrawal of the can-supporting-bed —1— from under the cans, a series of can-righting fingers —7—, one for each can, are advanced against the centers of the adjacent ends of the cans.

It is obvious that if the cans are fed promiscuously in the raceway —2— the open ends of some of them will face in one direction, or toward the righting-fingers —7—, while the open ends of others will face in the opposite direction, or toward the abutment —6—, so that those having their openings facing the righting-fingers —7— will be entered by said fingers, thereby temporarily supporting the open ends of the cans until the bed-plate —1— is entirely withdrawn from under the opposite ends of such cans, whereupon the bottom ends of these cans will be caused to tilt downwardly by gravity and finally slide off from the ends of the righting-fingers right side up. On the other hand, if the bottom or closed end of the can is toward the fingers —7—, the latter, which are movable endwise, under a light spring-pressure, will simply abut against the closed ends of the cans, but not with sufficient pressure to support these ends of the cans so that as the bed-plate —1— is withdrawn rearwardly, the closed ends of the cans which face the righting-fingers, and from which the underlying support —1— is first withdrawn, are allowed to tilt downwardly upon the receding edge of the plate, thereby allowing such cans to fall right side up. It is now evident that as the bed-plate —1— is withdrawn rearwardly, all of the cans which were previously supported thereon are simultaneously precipitated right side up through suitable openings in the frame of the machine, and thence into suitable hoppers or individual chutes, as —8—, which are located directly under the bed-plate —1— and beneath the spaces between the separating blades —4—.

The movement of the bed-plate —1—; separating blades —4— and righting fingers —7— are synchronized so that the blades —4— and fingers —7— are simultaneously forced into operative position, and immediately afterward the bed-plate —1— is moved from under the cans, the blades serving to register the center of the cans with the fingers —7— while the latter serve to enter the openings in the tops of the cans which may face that way to temporarily support the tops of the cans and allow their bottom ends to gravitate downwardly as soon as the bed-plate is entirely withdrawn from under said cans. It is clearly evident that the bottoms of the cans facing the fingers —7— afford no support, and consequently, the bot-

tom ends which may face the fingers will tilt downwardly and, therefore bring the cans into an upright position with the open end of the top, as the bed-plate —1— is moved rearwardly.

The means for reciprocating the bed-plate back and forth to and from a position under the cans, preferably consists of a bell-crank lever —9— fulcrumed at —10— to a suitable frame —A— and having one arm pivotally attached at —11— to the front end of the bed-plate —1— while the other arm is adjustably connected by a link —12— to a suitable catch or abutment —13—, best seen in Fig. 2. This catch or abutment —13— normally lies in the path of, and is engaged by a pin or stud —14— which is secured to a revolving disk —15— on a shaft —16—. As the disk —15— is rotated in the direction indicated by arrow —y—, the pin or stud —14— engages and elevates the catch or abutment —13—, thereby rocking the bell-crank —9— a sufficient distance to move the bed-plate —1— rearwardly from under the cans, said catch being guided against lateral displacement between suitable arms —17—, and as soon as the bed-plate —1— is moved to its extreme rearward position from under the cans previously resting thereon, said catch is tripped from engagement with the pin or stud —14— by a shoulder —18— on the disk —15—, thereby allowing the catch —13—; link —12— and bell-crank lever —9—, and also the bed-plate —1— to be returned to their normal positions by a retracting spring —19— Fig. 2, ready for a repetition of the operation just described.

The righting-fingers —7— are rigidly secured to a rocking frame —20— having a lengthwise slot —21— which receives the fulcrum pin —22—. This rocking-frame —20— is eccentrically pivoted at —23— to a rotary disk —24— which is mounted upon a shaft —25— having a pinion —26— meshing with a mutilated gear —27— on the shaft —16—.

The fulcrum-pin —22— for the frame —20— is rigidly mounted upon the frame —A— and enters the slot —21— to form a bearing upon which the frame —20— is oscillated and simultaneously reciprocated by the eccentric —24— to move the fingers —7— into and out of engagement with the adjacent ends of the cans —a—.

The fingers —7— are slidable endwise in suitable apertures —28— in the frame —20—, each against the action of a comparatively light spring —29— so that when the fingers —7— are advanced forwardly into engagement with the closed ends of the cans, such fingers may be allowed to yield endwise against the action of their springs —29—, but when the cans are arranged with their open ends toward the finger —7— the latter enter said openings, thereby holding the open ends of the cans up until the sup-

port —1— has been withdrawn to allow the closed ends of the cans to tilt downwardly first, whereupon they slide off from the fingers —7— and fall into the chute —8— right side up.

The shaft —16— may be driven from any source of power, not shown, and transmits intermittent motion to the shaft —25— through the medium of the gears —26— and —27—, the gear —27— being of substantially twice the diameter of the gear —26— and having practically half of its teeth omitted, while the gear —26— has practically the same number of teeth as the gear —27—, and is, therefore rotated one complete revolution during half of one revolution of the shaft —16— and remains at rest during the other half revolution of said shaft —16—.

The pin —14— and gear teeth of the gear —27—, both of which are driven by the shaft —16—, are so arranged with reference to each other and to the catch —13—, as to begin to rotate the pinion —26— at about the same time that the pin 14— is brought into engagement with the catch —13— so that the fingers —7— are advanced from their normal position seen in Fig. 2, against the cans at about the same time that the can-supporting bed —1— begins to move rearwardly, although the fingers are caused to advance to a greater speed than the speed of withdrawal of the can-supporting bed, owing to the relative sizes of the driving and driven gears —27— and —26—.

The normal position of the frame —20— and its fingers —7— is substantially midway between its extremes, that is, the disk —24— is at rest while the pin —23— is on its upward quarter-turn for advancing the fingers toward the cans and immediately upon the engagement of the catch 13— by the pin —14— the disk —24— begins to rotate, causing the frame —20— and its fingers —7— to assume the position shown by dotted lines in Fig. 3 upon the first quarter turn of the disk —24—, during which operation the open ends of the cans which may be engaged by the fingers —7— are elevated by the latter, as best seen in Fig. 3, thereby drawing the bottoms of the cans forwardly so that by the time the bed-plate is withdrawn from under the cans the latter are in a position to fall into the chutes —8— right side up. The catch —13— remains in engagement with the finger —13— during practically a quarter of a revolution of the disk 15— or a half revolution of the disk —24—, whereupon it is released and the can-supporting bed —1— is allowed to return to its normal position so that during the next one-quarter revolution of the disk —24— when the frame —20— and fingers —7— are drawn to their extreme forward positions away from the cans the separating blades —4— are elevated to the position shown by dotted lines

in Figs. 2 and 3, to permit the entire series of cans to roll down the raceway —2— and onto the bed-plate —1—. In order to effect this elevation of the blades —4— I provide the shaft —5— with a crank-arm —32—, which is connected by a chain —33— to a bell-crank lever —34—, which in turn, is pivoted at —35— to a sliding link —36—. This link —36— has one end pivotally connected at —37— to a second bell-crank lever —38— and its other end is connected by a chain —39— to the pin —23— on the disk —24—. These bell-crank levers —34— and —38— are connected to the can-limiting stop —3— so that when the pin —23— is drawn to its extreme forward position, the link —36— is drawn endwise by the chain —39—, thereby rocking both bell-cranks —34— and —38— to force the can limiting stop —3— to the position shown by dotted lines in Fig. 4, at the same time that the chain —33— acts upon the arm —34— to rock the shaft —5— to simultaneously force all of the blades —4— upwardly.

In order that the blades may be held in their up-position a sufficient length of time to permit the cans to feed upon and fill the bed-plate —1—, the gear —26— has a portion of its teeth removed at —40— so as to allow said pinion to temporarily rest when the frame —20— and fingers —7— are in their extreme forward position, but after sufficient time has elapsed to permit the cans to ride upon the bed plate —1— a finger —41— on the gear —27— is brought into engagement with a pin 42— on the gear —26— to again bring the teeth of the gear —26— into mesh with those on the gear —27—, thereby returning the disk —24— and finger supporting frame —20— to its normal position, as shown in Fig. 2, in which position the disk —24— and frame —20— are at rest owing to the absence of the gear teeth of the gear —27—. As the frame —20— is restored to its normal position the tension on the chain —39— is relaxed, thereby allowing the descent, by gravity, of the blades —4— between the cans, and at the same time rocking the crank-arm —32— upwardly, thus tensioning the chain —33— and rocking the bell-cranks —34— and —38— to return the can-limiting stop —3— to its normal position ready for a repetition of the operation previously described.

What I claim:

1. In a machine of the character described, a reciprocatory bed-plate and means for feeding the cans thereon, in combination with means for forcing the bed-plate out from under the cans, additional means synchronized with the first named means for entering the open ends of the cans facing in one direction, and temporarily supporting said open ends while the bed-plate is being withdrawn from under the cans, whereby the cans which

have their open ends temporarily supported are caused to fall bottom downward, and further means for restoring the bed-plate to its normal position for receiving the cans.

5 2. In a device of the character described, a series of upright can chutes, a can-supporting plate movable back and forth across the tops of said chutes, means to feed the cans thereon, a series of fingers movable into and
10 out of engagement with one end of the cans, whereby the fingers will be caused to enter the openings in said cans, and means for actuating said fingers forwardly and upwardly.

15 3. In a machine of the character described, a can-supporting bed, means to feed the cans upon the bed, means to move the bed out from under the cans, additional means to return the bed to its normal position and an
20 oscillatory sliding frame having a series of yielding fingers engaging the adjacent open ends of the cans for tilting the latter right-side up as said bed is returned to its normal position.

25 4. In a can-righting machine, a can-supporting bed, means to feed the cans upon the bed, separating blades movable into and out of position between the cans while on the bed-plate, means for forcing the bed-plate
30 out from under the cans, and additional means for entering the open ends of the cans having their open ends facing in one direction to temporarily support said open ends while the bed-plate is being withdrawn from
35 under the cans, whereby such cans are caused

to fall bottom downward through the space previously occupied by the bed-plate.

5. In a machine of the character described, a can-supporting bed and means to feed the cans thereon, in combination with a reciproca- 40 tory frame, fingers slidable thereon and movable into the can openings which may face the fingers, and means for actuating said frame, whereby the fingers are caused to elevate the open ends of the cans immediately after 45 entering their openings.

6. In a machine of the character described, a slidable can-supporting bed and means to feed the cans thereon, a limiting stop at one end of the bed, separating blades movable 50 between the cans while on the bed-plate, fingers movable into the can openings which may face the fingers for temporarily supporting the open ends of the cans, additional means for moving the bed-plate out from 55 under the cans while the fingers are in said openings, whereby the cans are caused to fall through the space previously occupied by the bed-plate with their bottoms downward, said fingers being withdrawn from the 60 cans by the same means which move them into engagement therewith, and additional means for elevating the separating blades.

In witness whereof I have hereunto set my hand this 20th day of February, 1906.

MERTON D. BLAKESLEE.

Witnesses:

H. E. CHASE,
MILDRED W. NOTT.