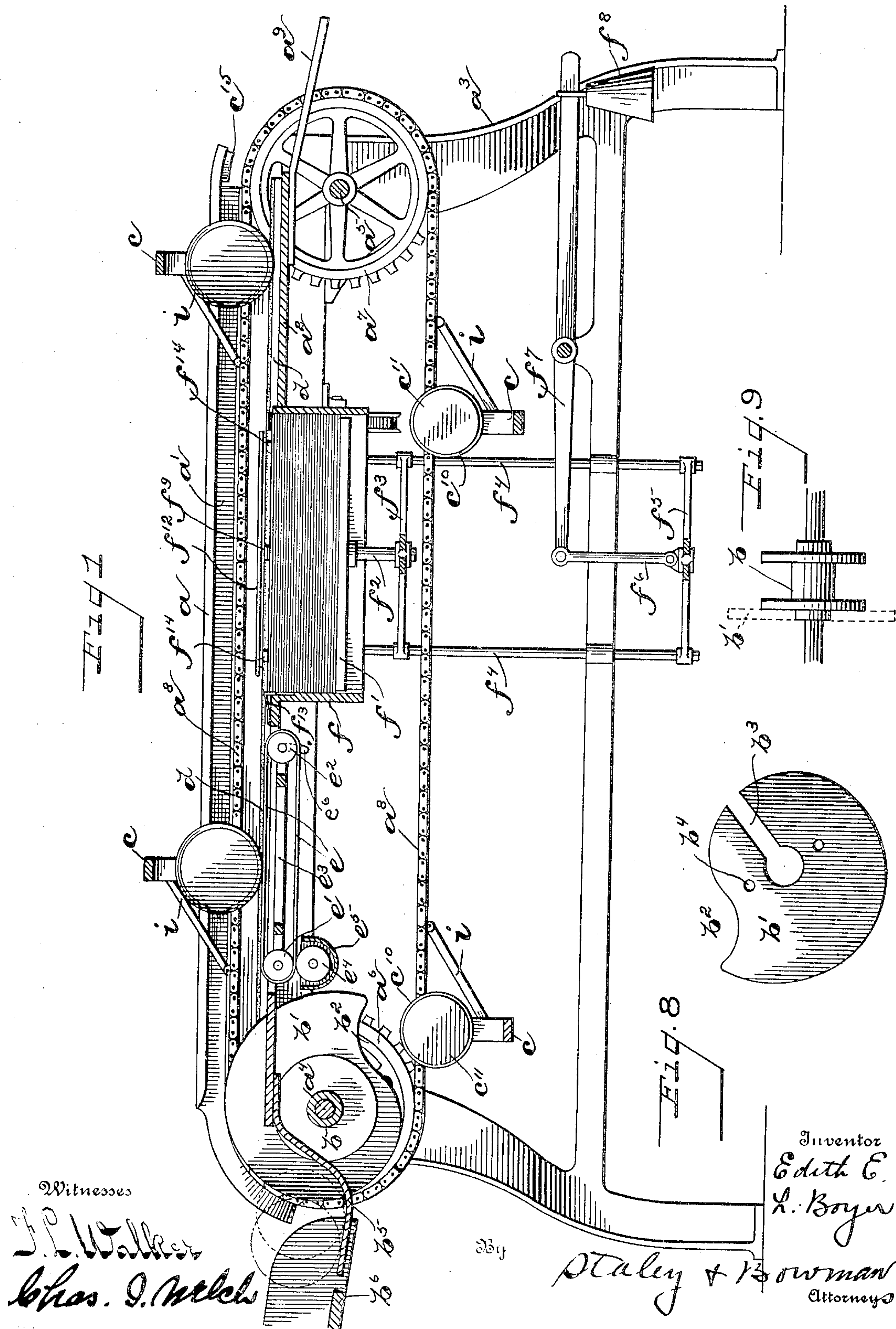


No. 871,776.

PATENTED NOV. 26, 1907.

E. E. L. BOYER.
LABELING MACHINE.
APPLICATION FILED OCT. 16, 1905.

3 SHEETS—SHEET 1.



No. 871,776.

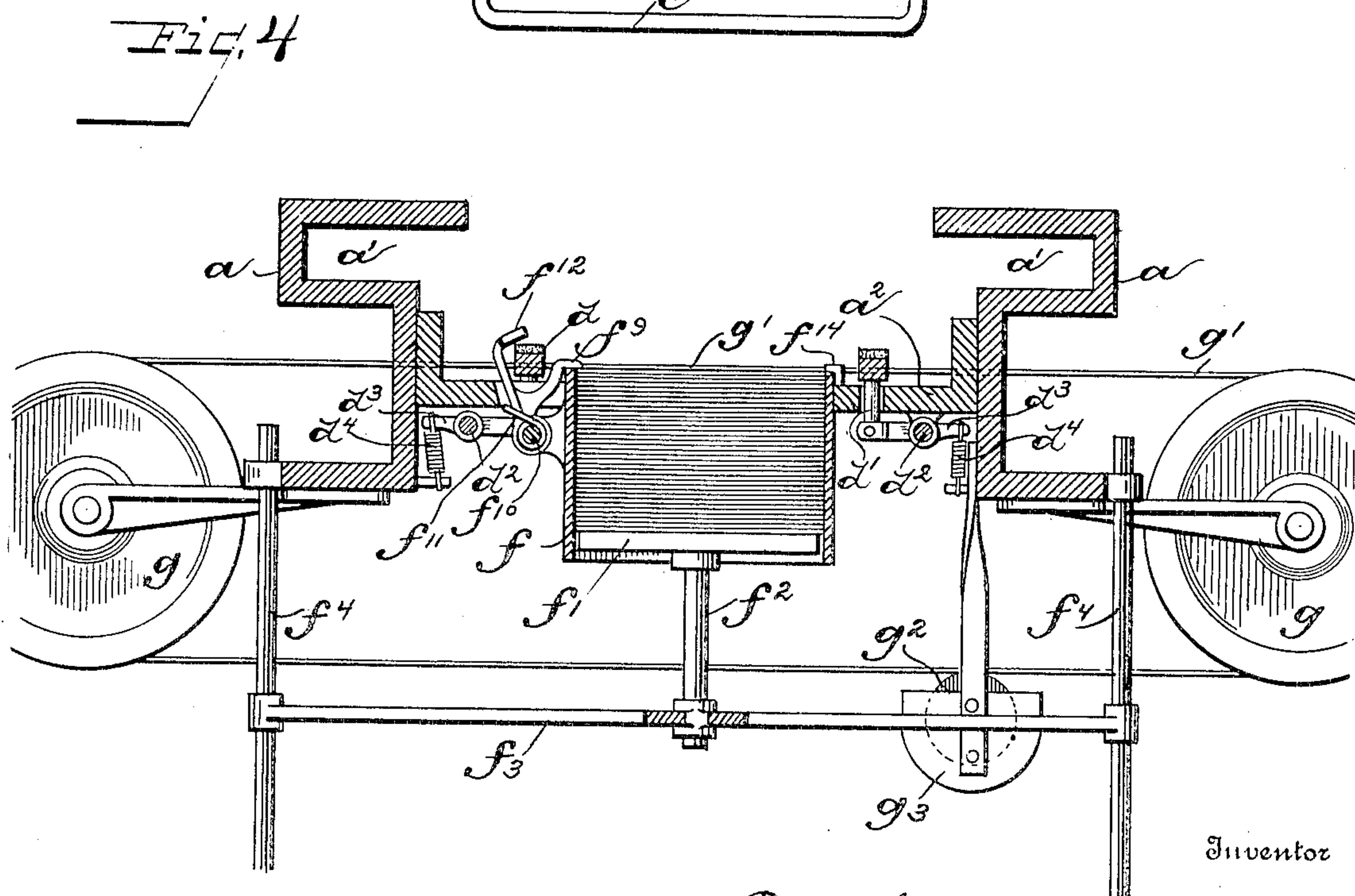
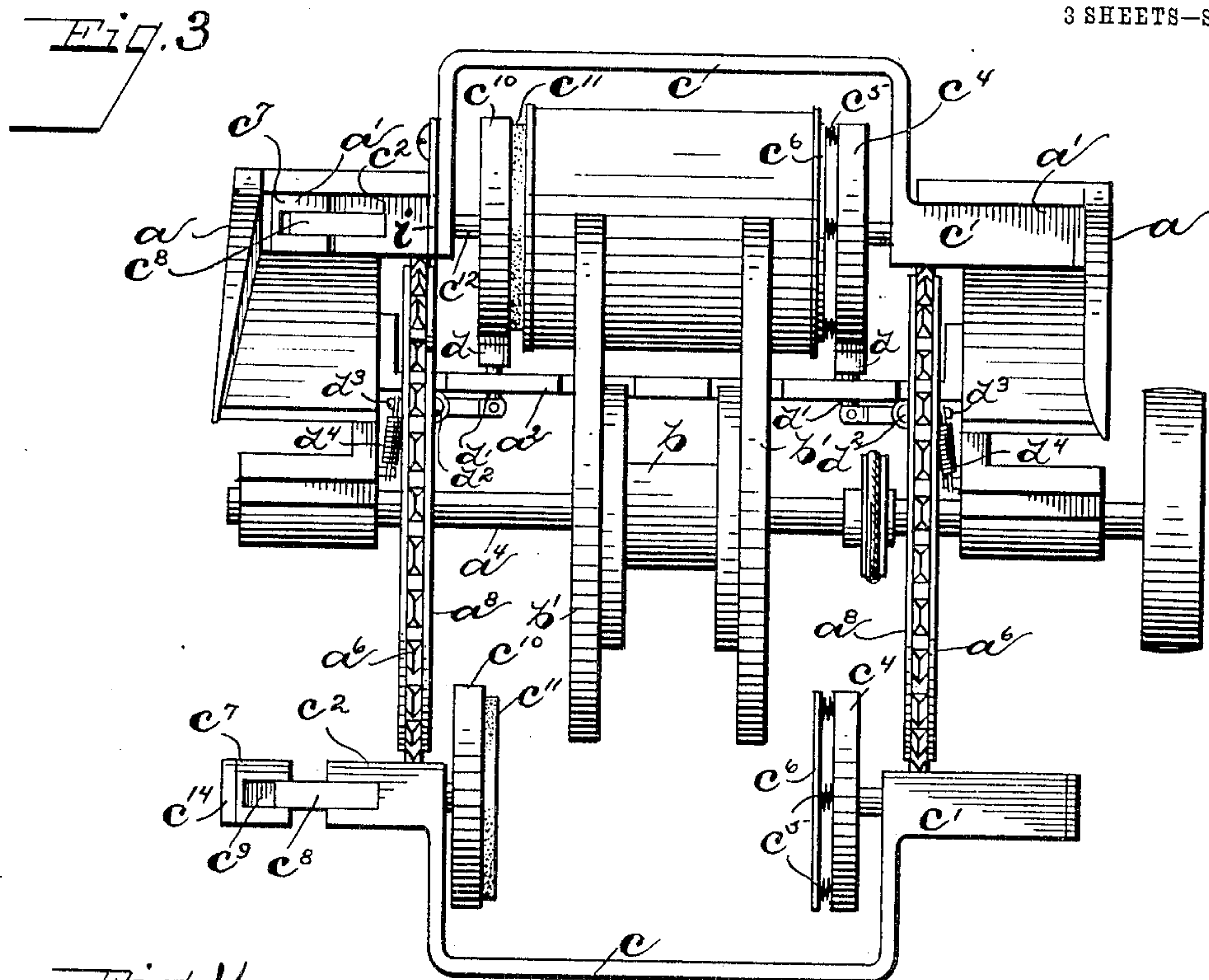
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3 SHEETS—SHEET 3.



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EDITH E. L. BOYER, OF DAYTON, OHIO.

LABELING-MACHINE.

NO. 871,776.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed October 16, 1905. Serial No. 283,038.

To all whom it may concern:

Be it known that I, EDITH E. L. BOYER, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Labeling-Machines, of which the following is a specification.

My invention relates to label affixers, and particularly to machines for applying labels to round cans but which may be adapted to label cans, bottles or other articles of irregular shape.

The object of the invention is to simplify the means and mode of operation of such machines, whereby they are not only cheapened in construction, but are rendered unlikely to get out of repair, and are made automatic in operation.

The invention consists of the means, mechanism, construction and mode of operation hereinafter described and set forth in the claims.

Referring to the drawings, Figure 1 is a longitudinal sectional view of the assembled machine. Fig. 2 is a plan view of the machine. Fig. 3 is an elevation of the forward or can intake end of the machine. Fig. 4 is a transverse sectional view through the label compartment. Fig. 5 is a perspective detail view of the can carrying mechanism. Fig. 6 is a sectional detail of same. Fig. 7 is a detail view of label alining devices. Figs. 8 and 9 are details of the can feeding device.

Like parts are represented by similar characters of reference throughout the several views.

The frame of the machine comprises the parallel recessed side portions, a , each having therein a recess or slot, a^1 ; the bottom portion, a^2 , which constitute frame supports for the can carrying frame connecting said side portions a and having various openings therein, as hereinafter described; the whole being supported on suitable legs a^3 . At the forward or intake end of the machine mounted in suitable bearings is a transverse shaft, a^4 , which is the main driving shaft of the machine. Adjacent to the rear or discharge end of the machine is a similar transverse shaft, a^5 . Mounted on each of the shafts, a^4 and a^5 , is a pair of sprocket wheels, a^6 a^6 , and a^7 a^7 , respectively. The corresponding sprocket wheels of the respective wheels engage sprocket chains a^8 a^8 .

Mounted on the main shaft, a^4 , intermediate the sprockets, a^6 a^6 , is the can feeding device. This consists of a hub or spool, b , on said shaft (as shown in Fig. 9) to the opposite ends of which are removably secured cam shaped feeding plates, b^1 b^1 (shown in detail in Fig. 8). Each of the plates, b^1 b^1 , has a depression or indent, b^2 , the radius of which is substantially that of the can to be labeled, the contour of the balance of the plate being substantially an evolute curve. To provide for readily replacing the feed plates, b^1 , with plates of different dimensions when it is desired to label cans of different size, a slot, b^3 , the width of which is equal to the diameter of the shaft, a^4 , is provided. The plates, b^1 , which are secured to the hub, b , by screws or bolts through the holes, b^4 , may be loosened and moved laterally from the shaft, a^4 , without necessitating the removal of said shaft from its bearings. Extending forwardly and downwardly from the forward end of the frame portion, a^2 , is a curved plate, b^5 , upon which rests the first can of the can supply contained in the trough, b^6 , as shown in dot and dash lines in Fig. 1.

The curved plate, b^5 , and the frame portion, a^2 , are recessed as fully shown in Fig. 2 to accommodate the feed plates, b^1 b^1 , which extend above the curved plates, b^5 , and the bottom a^2 . As the feed plates, b^1 , revolve with the main shaft, the first or lowermost can of the supply assumes the position as indicated by dotted lines of Fig. 1, and as the plates, b , continue to revolve, the can is engaged within the depression, b^2 , and is carried upward to be grasped by can carrying devices attached to the parallel sprocket chains a^8 .

The can carrying mechanism is best shown in Fig. 5. It consists of an inverted U-shaped member, c , having the lateral rectangular projections, c^1 c^2 . On the underside of the projections, c^1 c^2 , are ears or lugs, c^3 , which form links in the respective sprocket chains, a^8 , thus making the member, c , a part of said chains.

Mounted in rectangular projections, c^1 , is the shaft of a wheel or roller, c^4 , the diameter of which is slightly less than that of the can to be labeled.

To the roller, c^4 , there is secured by interposed springs, c^5 , a plate c^6 preferably cov-

ered with a disk of tenacious material. The roller, c^4 , while free to rotate is permitted no longitudinal movement, but is constant in its relation with the member c . The projection
 5 c^2 is divided transversely, forming a separate block, c^7 , which is retained in proper relation with the main portion by feathers, c^8 , engaging grooves, c^9 . By this construction, the
 10 block, c^7 , is permitted a longitudinal movement while a revoluble movement is prevented.

A roller, c^{10} , equal in size to the roller, c^4 , and having attached thereto a disk, c^{11} , of tenacious material, such as leather or rubber,
 15 is provided. The shaft, c^{12} , of the roller, c^{10} , extends through a longitudinal bore in the portion, c^2 , and is provided with a bearing in the block c^7 . The shaft, c^{12} , is secured within
 20 the block, c^7 , in such manner as to permit the shaft to revolve but to prevent its withdrawal from the block. This is accomplished by a very common method of using a
 25 transverse pin, c^{13} , which engages a groove in said shaft c^{12} . By the construction just described, the movement of the block, c^7 , while
 30 not interfering with the revolution of the roller, c^{10} , will cause said roller to approach or recede from the roller, c^4 . The outer ends of the portion, c^1 , and the block, a^7 , are preferably
 35 provided with steel plates, c^{14} , to prevent excessive wear of said ends, and to provide suitable thrust bearings for the shafts of the rollers, c^4 c^{10} .

As the sprocket wheels revolve, the members, c c , travel with the sprocket chains, and the parts, c^1 c^2 , with the block, c^7 , of the
 35 respective members, c , extend into and slide within the recessed ways a^1 of the frame parts a .

40 At the forward end the gibs of the recessed ways, a^1 , are cut away, the bottom of said ways curve downward, concentric with the sprocket wheels, and the vertical walls of
 45 said ways, a^1 , are beveled or curved outward as shown in Fig. 2, to insure the proper introduction of the portions c^1 c^2 of the frame. The vertical wall of the way corresponding
 50 to the side, c^2 , of the frame, c , is curved outward to a greater extent than that of the opposite way.

At the rear of the machine, the gib of the way corresponding to the side, c^2 , of the
 55 member, c , is provided on its under side with a wedge shaped projection, c^{15} , adapted to enter between the portion, c^2 , and the blocks, c^7 , and force the latter laterally away from the portion c^2 . The forward corner of the
 60 block, c^7 , being slightly beveled, as at c^{16} , insures the proper introduction of the wedge.

The respective U frames, c , are so spaced upon the chains, a^8 , that as they round the sprocket wheels, the axis of the roller, c^4 c^{10} ,

will coincide with that of the can being carried upward by the feeding plates, b^1 .

As the ends of the frame, c , in traveling
 65 around the sprocket enter upon the curved ends of the ways, a^1 , the block, c^7 , engages the beveled vertical wall of the way, and is forced inward causing the roller, c^{10} , to move
 70 inward until the can, still resting in the depression, b^2 , of the feeding plates, b^1 , is impinged between the tenacious disk, c^{11} , and the spring pressed plate c^6 . The rollers c^4
 75 c^{10} , with the can securely held between them now engage a track, d d , on the bottom portion a^2 , of the frame. The track, d d , is preferably covered by strips of tenacious material, and may be formed integral with the
 80 frame bottom a^2 . However, to insure at all times proper contact between the rollers, c^4 c^{10} , and the track, d d , and to automatically compensate for the wear of these parts, the track is shown in the drawings to be formed
 85 separate from the frame bottom, a^2 . The respective rails, d , of the track have downwardly extending projections, d^1 , to each of which is connected a rock arm mounted on
 90 a rock shaft, d^2 ; one or more oppositely extending rock arms, d^3 , on said shaft to which are attached springs, d^4 , tend to hold the tracks, d , in close contact with the rollers. After leaving the feeding plates, b^1 , the can comes into contact with the pasting devices
 95 which consist of an endless belt, e , mounted on rollers, e^1 e^2 , which in turn are mounted in a frame, e^3 , secured to the main frame in any suitable manner; the roller e^2 being mounted
 100 in slotted ways, e^6 , in said frame, e^3 , and adapted to rest on blocks (not shown) inserted in said ways to hold the roller in its uppermost position therein, the blocks being
 105 withdrawn to permit the roller to drop to the lowermost position in the slotted ways for the purpose hereinafter explained. Paste is supplied to the belt, e , by a paster roller, e^4 ,
 110 located in a paste receptacle, e^5 , supported on the main frame. As the sprocket chains travel toward the rear of the machine, the rollers, c^4 c^{10} , traveling on the track, d , cause the can to revolve in contact with the paste
 115 belt, e , giving to the can a thin coat of paste over its entire cylindrical surface. However, by removing the blocks in the slotted ways and permitting the roller to drop to the lowermost position in said ways, the paste may be
 120 applied to only a limited portion of the can surface, being that part only which contacts with the roller e^1 . After receiving a coating of paste, the can rolls over the label supply, the uppermost label of which adheres to the
 125 pasted can. The supply of labels is contained in a compartment, f , extending slightly above the frame bottom, a^2 , and having a movable bottom f^1 . In order that the oper-

ating devices of the movable bottom may not interfere with the return of the sprocket chains and frames, *c*, the stem, *f*², of the movable bottom is connected to the spider, *f*³, which in turn is connected to a plurality of vertically movable rods, *f*⁴ *f*⁵ mounted in bearings in the main frame. To the lower ends of said rods is connected a similar spider, *f*⁶, connected by a link, *f*⁶, to a balance beam, *f*⁷, carrying a counterpoise *f*⁸. By this means the label while being applied to the can is subjected to a uniform pressure which may be regulated by the adjustment of the counterpoise, *f*⁸.

The upward movement of the label supply, when not limited by the position of the can to which the label is being applied, is limited by a spring actuated detent, *f*⁹, (best shown in Fig. 4) which overhangs the uppermost label. The detent, *f*⁹, is attached to a rock shaft, *f*¹⁰, to which is secured the actuating spring, *f*¹¹. Also connected to the rock shaft, *f*¹⁰ by suitable arms is a cam plate, *f*¹², which overhangs one rail of the track, *d*, in such position as to be contacted and moved by the roller, *c*¹⁰, to oscillate the shaft, *f*¹⁰, and remove the detent, *f*⁹, from the label supply.

To retain the supply of labels in position, there is provided at the forward end of the supply a depressible spring stop plate, *f*¹³, which constitutes the top of the end partition of the compartment, *f*, and is depressed by the can as it rolls on to the label supply. Immediately upon the passage of the can, the plate, *f*¹³, returns to normal position to prevent any longitudinal shifting of the label supply.

To prevent lateral displacement of the labels, depressible stops, *f*¹⁴, (shown in detail in Fig. 7) are located in the side walls of the compartment, *f*. The side wall of the compartment is cut away as at *f*¹⁵ and the stop, *f*¹⁴ is shouldered in order that it may stand flush with the inside of the compartment. A spring, *f*¹⁶, is provided for holding the stop in its elevated position. In the drawing, a very simple method of mounting the stop is shown in which *f*¹⁷ *f*¹⁷ are keepers secured to the compartment wall; the spring *f*¹⁶ being secured at one end to one of said keepers and at the other to the stop. It is obvious that several methods might be used to accomplish the same result. After the can has passed over the pasting devices and received a light even coating of paste, it passes over the plate, *f*¹³, momentarily depressing said plate and onto the supply of labels which have been placed face downward in the compartment *f*. The uppermost label of the supply will adhere to the pasted surface of the can, and as the can continues to roll will wrap itself about the can. Since the rollers *c*⁴ *c*¹⁰ are of smaller diameter

than the can, the can will be given a peripheral speed, slightly greater than the lineal speed, giving to the can a wiping movement which tends to draw the label tight as it is applied. This wiping or pulling feature resulting from the variation in diameter of the rolling parts has been found very efficient in applying the label smoothly.

It is usual to have the labels of sufficient length to pass entirely around the can with overlapping ends. In order to paste the said overlapping ends, a second pasting device is provided. This consists of pulleys, *g* *g*, mounted in suitable brackets extending laterally from the main frame. The pulleys, *g* *g*, are encircled by a paste belt, *g*¹, which receives a coating of paste on its outer surface from a paste roller, *g*², located in a receptacle *g*³, secured to the main frame. The second pasting device is so located in relation with the labels that as the can rolls along its course the first end of the label applied, which is the portion overlapped, will come in contact with the paste belt, *g*¹, and receive a coat of paste.

It will usually be found that as the can leaves the label compartment, *f*, the label will be drawn tightly and smoothly into place: However, to insure perfect contact between label and can and further to remove from the label any paste which may have accidentally adhered, a section of resilient material, as felt or rubber, may be placed on the surface, *h*, over which the can will travel with the wiping or slipping movement before described, which has been found very advantageous.

As the arms reach the rear of the machine, the wedge, *c*¹⁵, entering between the portion, *c*², and block, *c*⁷, of the frame, *c*, will release the can which will be discharged over the chute, *a*⁹, while the frames travel back to the forward end of the machine to receive another can.

It has been found in practical use that the weight of the frame, *c*, as it rounds the sprocket wheels, *a*⁶ *a*⁷, will have a tendency to cause the frame to incline backward or forward as it passes the respective wheels, thus causing the parts, *c*¹ *c*², to skew and so prevent their proper entrance to the ways *a*¹. To obviate this difficulty, a link, *i*, is connected to a link of the chain, *c*⁸, at a point distant from the frame, *c*. The opposite end of the link, *i*, is connected by a slotted connection, as at *i*¹, Fig. 5, to the frame, *c*. The link *i*, will support the frame, *c*, as it passes the respective sprocket wheels.

In accommodating the machine to label square or hexagonal packages, or those of other polygonal shapes, the depression, *b*², of the feed plates, *b*¹, would be shaped to correspond with the packages. While applying

the label, the label supply would be free to move up and down as the package revolved. The movement of the label supply will be downward as the label is applied to the corner, and upward to meet the flat face of the package. If the diagonal of the package is slightly greater than the diameter of the rollers, c^4 c^{10} , the pulling action before described by which the label is applied tightly and smoothly will result at the respective corners of the package. The application of labels to bottles, either round or square, will be similar to that of other packages of similar shape. While the drawings show and the device is described with relation to the labeling of round cans, it is to be understood that the invention is not to be limited to such use, but may be applied to other articles and shapes for which it is adapted.

20 Having thus described my invention, I claim:—

1. In a machine as described, article feeding and label applying devices, an oscillating frame, an endless paste belt mounted in said frame, a paste receptacle, a paste roller located therein and transmitting a coating of paste to said endless belt, substantially as specified.

2. In a machine as described, article feeding and label applying devices, an endless paste belt, a paste reservoir, means for transmitting to said belt a coating of paste, means to permit the raising and lowering of a portion of said endless belt whereby a greater or less portion of the belt will be brought into contact with the article to be pasted, substantially as specified.

3. In a machine as described, a main frame, feeding, and pasting devices, label applying devices, a traveling carrier, article engaging devices on said carrier, comprising a frame member, lateral projections thereon, ways in the main frame, into which said lateral projections extend, rollers, the shaft of which are mounted in said projecting portions, cam surfaces in said ways to cause said rollers to approach or recede from each other, substantially as specified.

4. In a machine as described, a main frame, ways in said frame, paste and label applying devices, article engaging device comprising a main frame, portions thereon projecting into said ways in the main frame, rollers, the shafts of which are mounted in the respective projecting portions, a disk of tenacious material secured to one of said rollers and a laterally compressible disk secured to the other roller, and means for moving said rollers in their relation to each other, substantially as specified.

5. In a machine as described, a main frame, ways in said frame, paste and label applying devices, article engaging devices

comprising a main frame, projecting portions thereon, extending into said ways, a block severed from but forming an extension of one of said projecting portions, rollers, the shafts of which are mounted in said projecting portions, the shaft of one of said rollers being secured to and longitudinally movable with said block, cam surfaces on the main frame to engage and move said block, substantially as specified.

6. In a machine as described, a main frame, paste and label applying devices, article engaging devices, rollers forming a part of said devices, a movable track over which said rollers travel, and means for pressing said track into contact with said rollers, substantially as specified.

7. In a machine as described, a main frame, paste and label applying devices, article engaging devices, rollers forming a part of said devices, a movable track over which said rollers are adapted to travel, a rock shaft, rock arms on said shaft, projections on said track engaged by said rock shafts, and a spring operating said rock shaft to elevate the track, substantially as specified.

8. In a machine as described, a main frame, transverse shafts adjacent to the ends of said frame, sprocket wheels on said shaft, endless chains passing about said sprocket wheels, article feeding devices connected to one of said shafts, article engaging devices on said chains, means for rotating said devices, whereby the article will be given a peripheral speed greater than its lineal speed, pasting devices, a label supply and means to press the topmost label of the supply into contact with the article to be labeled, substantially as specified.

9. In a machine as described, article feeding devices, a movable frame, projections formed on the end of said frame, frame supports upon which the projections are adapted to slide, means for sliding the movable frame on said supports, rotatable devices supported on said movable frame, tracks for said rotating devices, and means for causing the articles to be engaged and disengaged by said rotating devices.

10. In a machine as described, article feeding devices, a movable frame, rotatable devices on said frame, and also projections opposed to said rotatable devices, frame supports for both the rotatable devices and for said projections, and means for sliding the frame over the frame support and simultaneously causing the rotatable device to move over its supports, said rotatable devices being of such relative dimensions to said article that said article will be given a peripheral speed greater than its lineal speed, substantially as specified.

11. In a machine as described, a movable

frame, a plurality of rotatable engaging devices on said frame, and bearing projections also supported on said frame, smooth tracks for the projections, and frame supports for the engaging devices, means for sliding the
5 projections over said supports and simultaneously rotating the engaging device over its corresponding tracks, contacting surfaces for the article engaged by the engaging devices, and means for sliding the article over
10

the contacting surfaces during its rotating movement, substantially as specified.

In testimony whereof, I have hereunto set my hand this 22nd day of September A. D. 1905.

EDITH E. L. BOYER.

Witnesses:

CLARA GALLAGHER,
CHAS. I. WELCH.