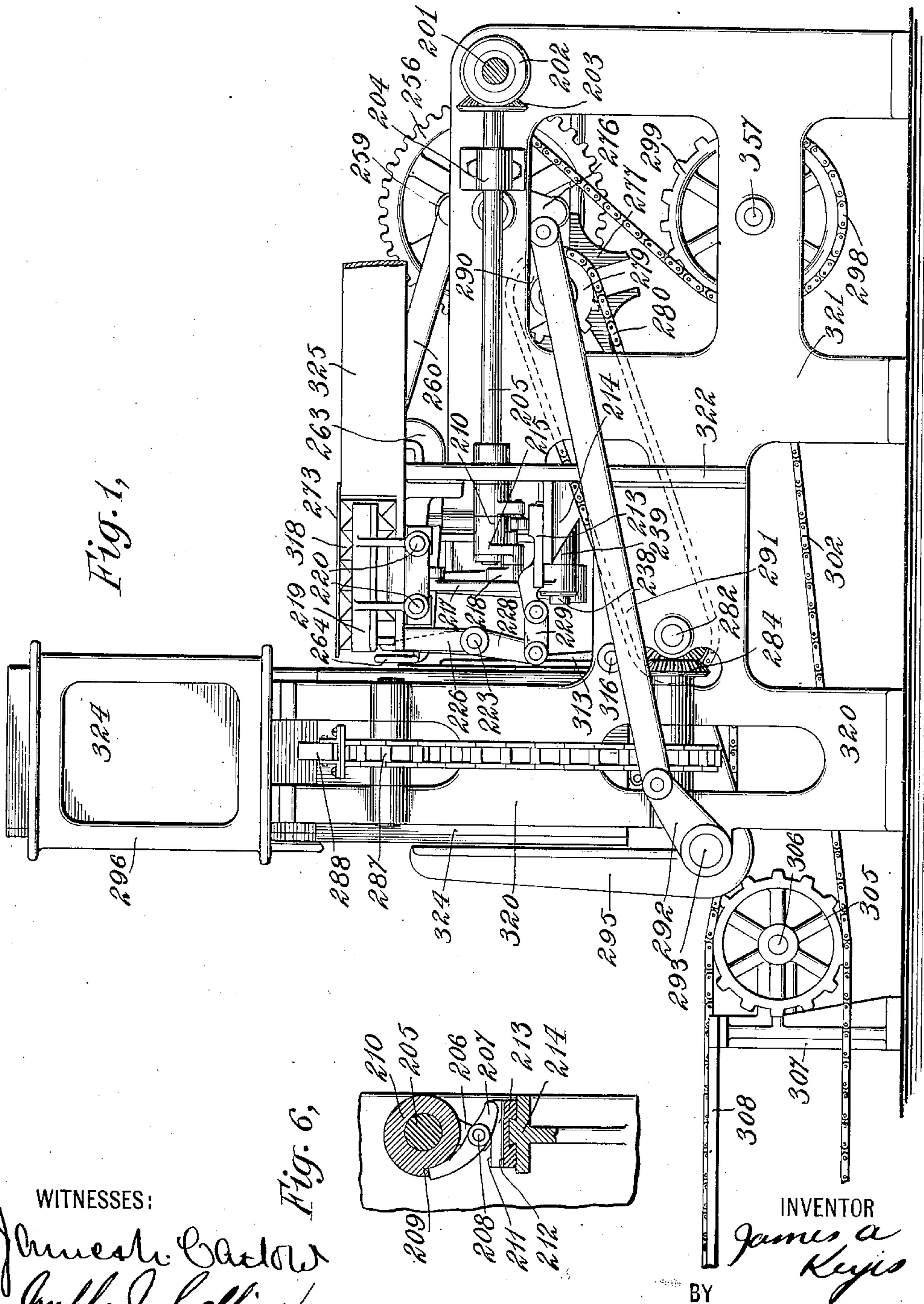


No. 814,454.

PATENTED MAR. 6, 1906.

J. A. KEYES.  
PACKING MACHINE.  
APPLICATION FILED FEB. 1, 1904.

6 SHEETS—SHEET 1.



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Fig. 6,

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No. 814,454.

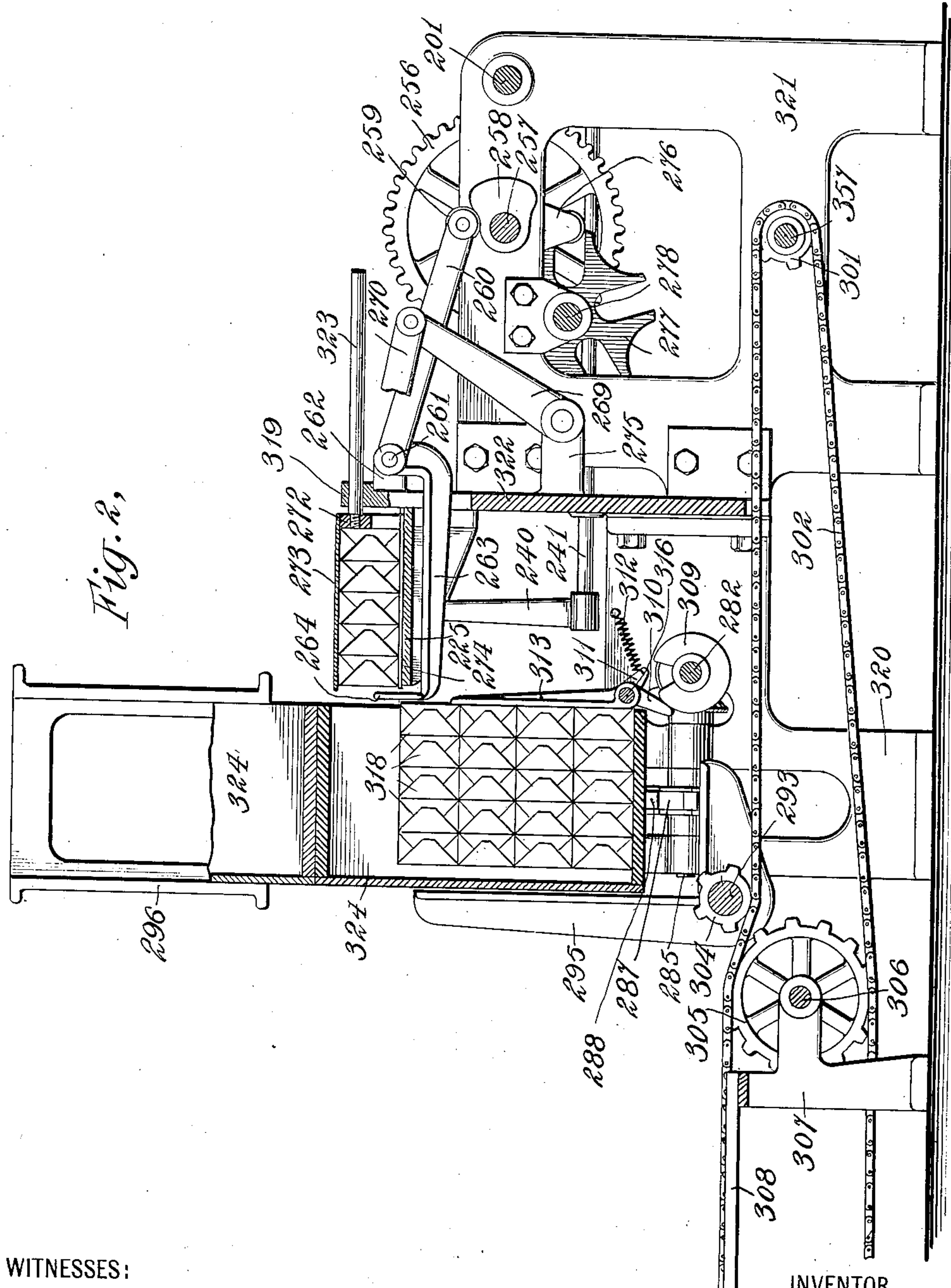
PATENTED MAR. 6, 1906.

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APPLICATION FILED FEB. 1, 1904.

6 SHEETS—SHEET 2.



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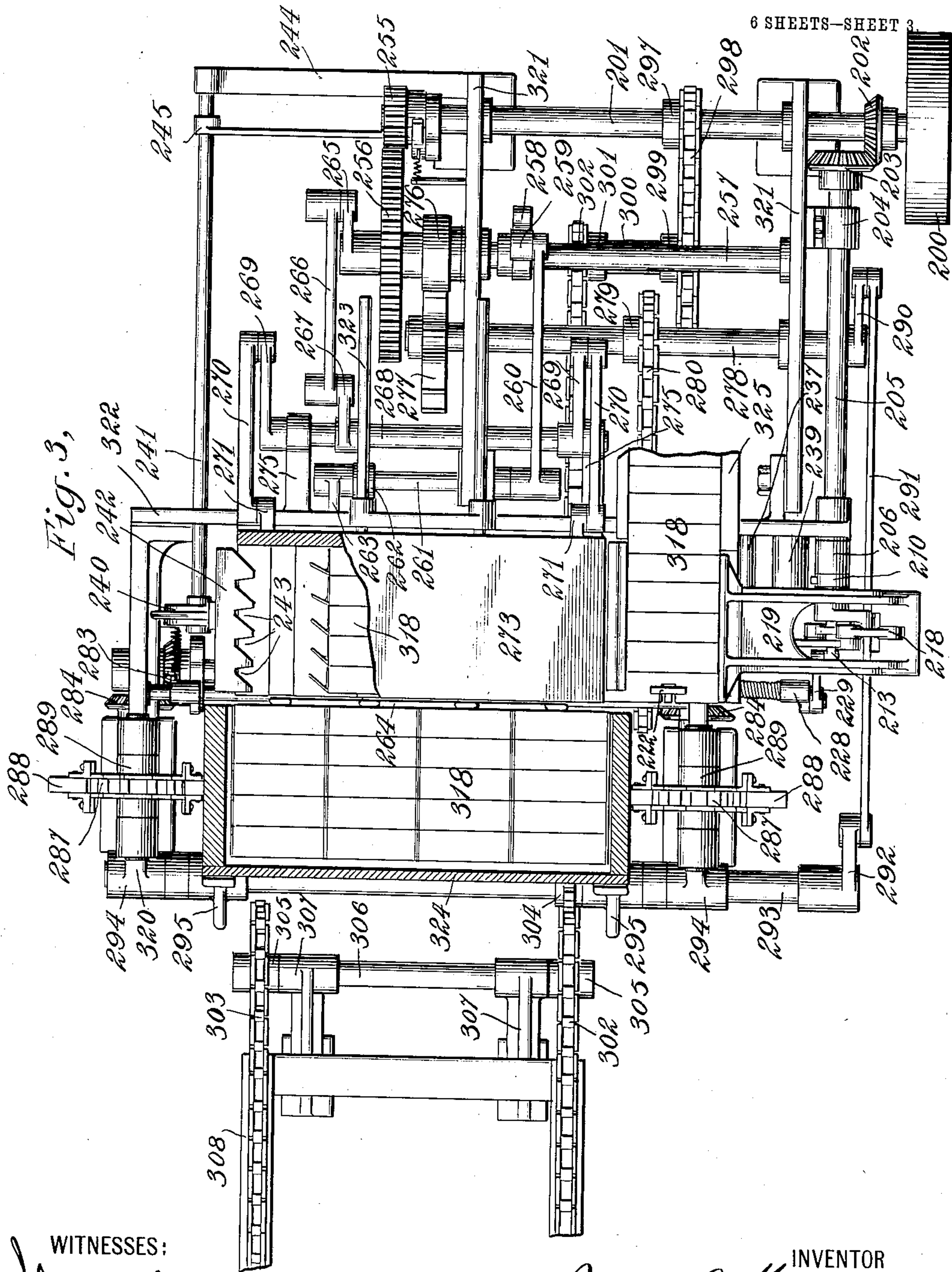


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6 SHEETS—SHEET 3.



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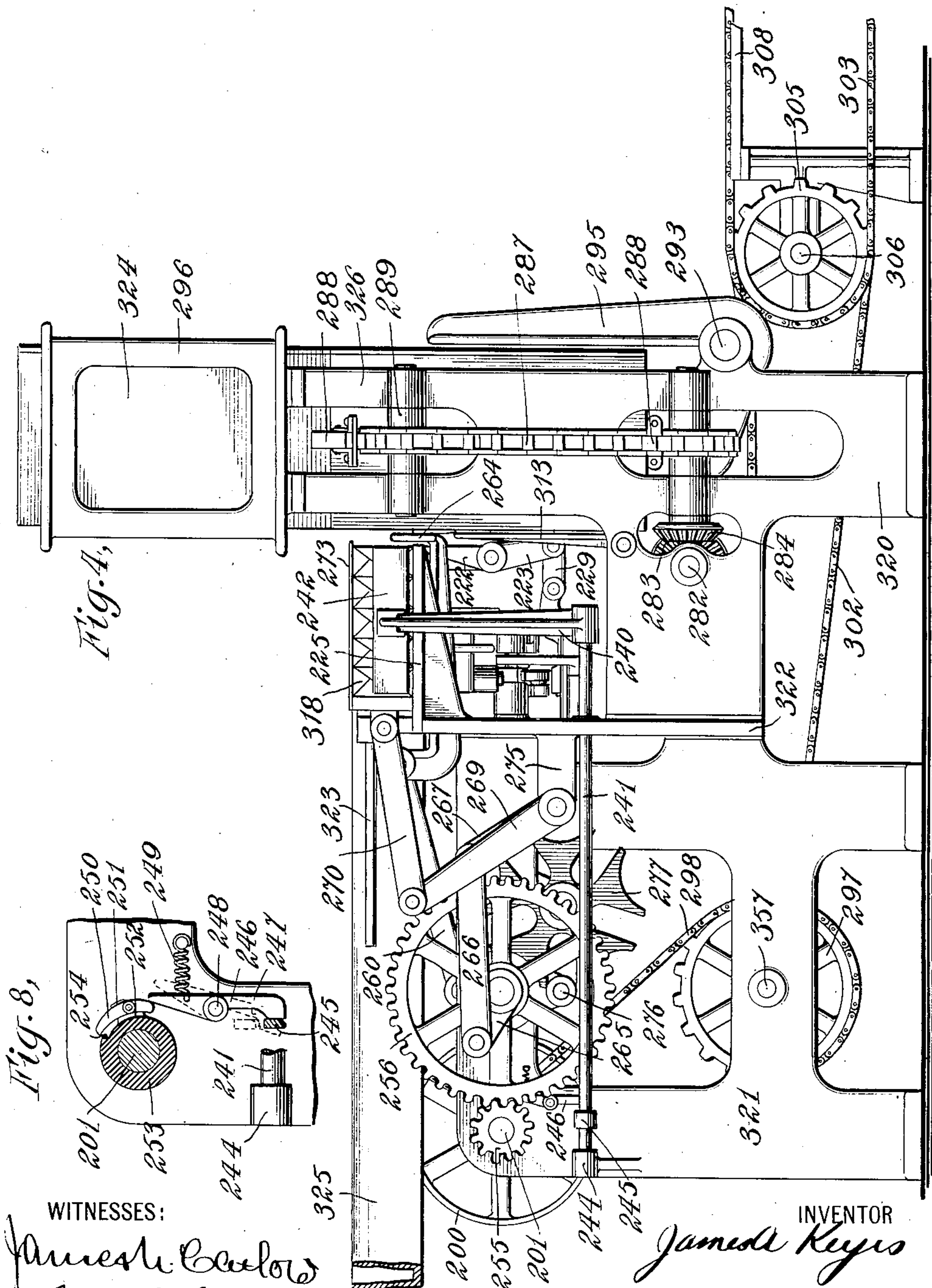
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No. 814,454.

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6 SHEETS—SHEET 4.



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No. 814,454.

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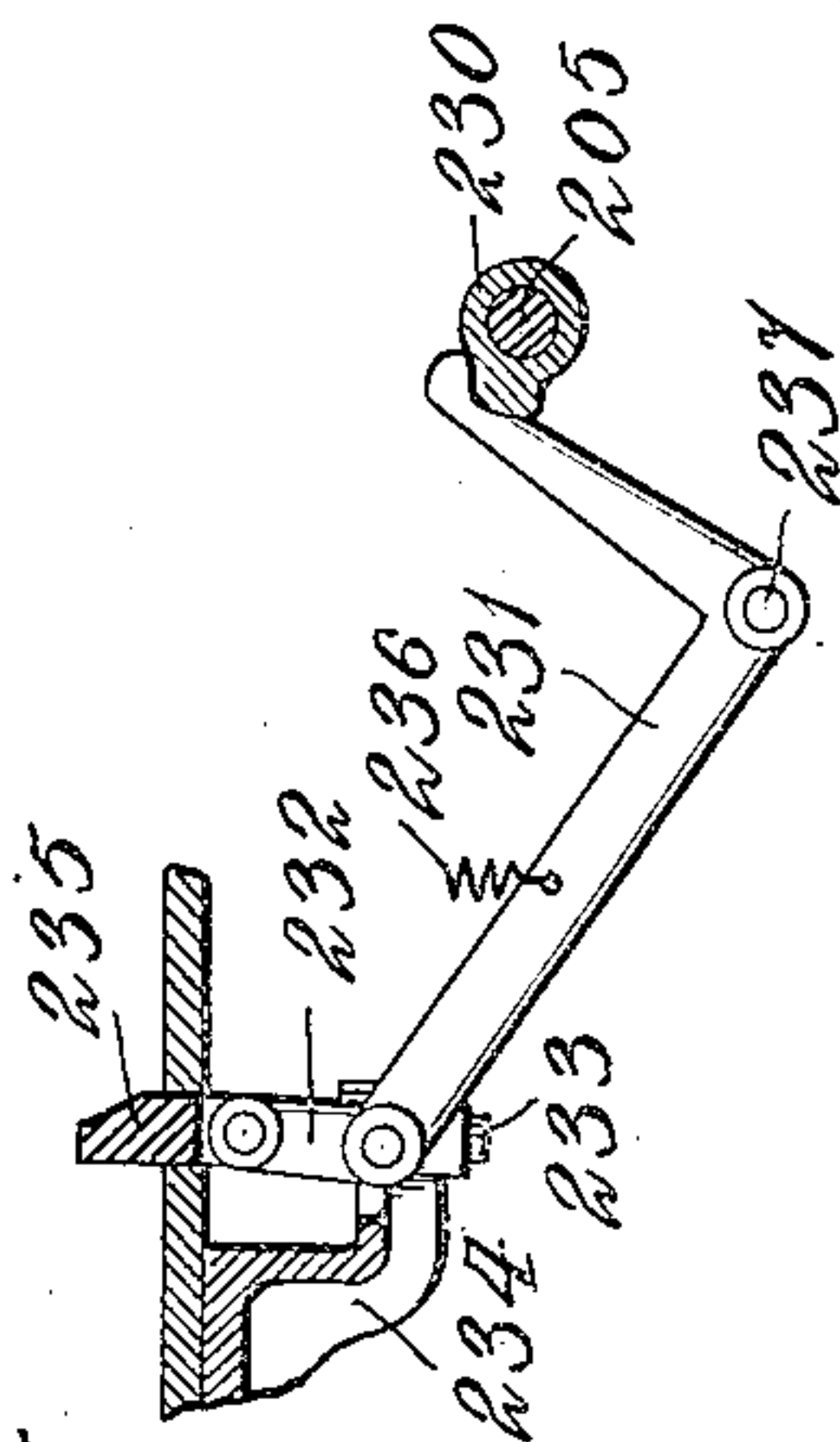
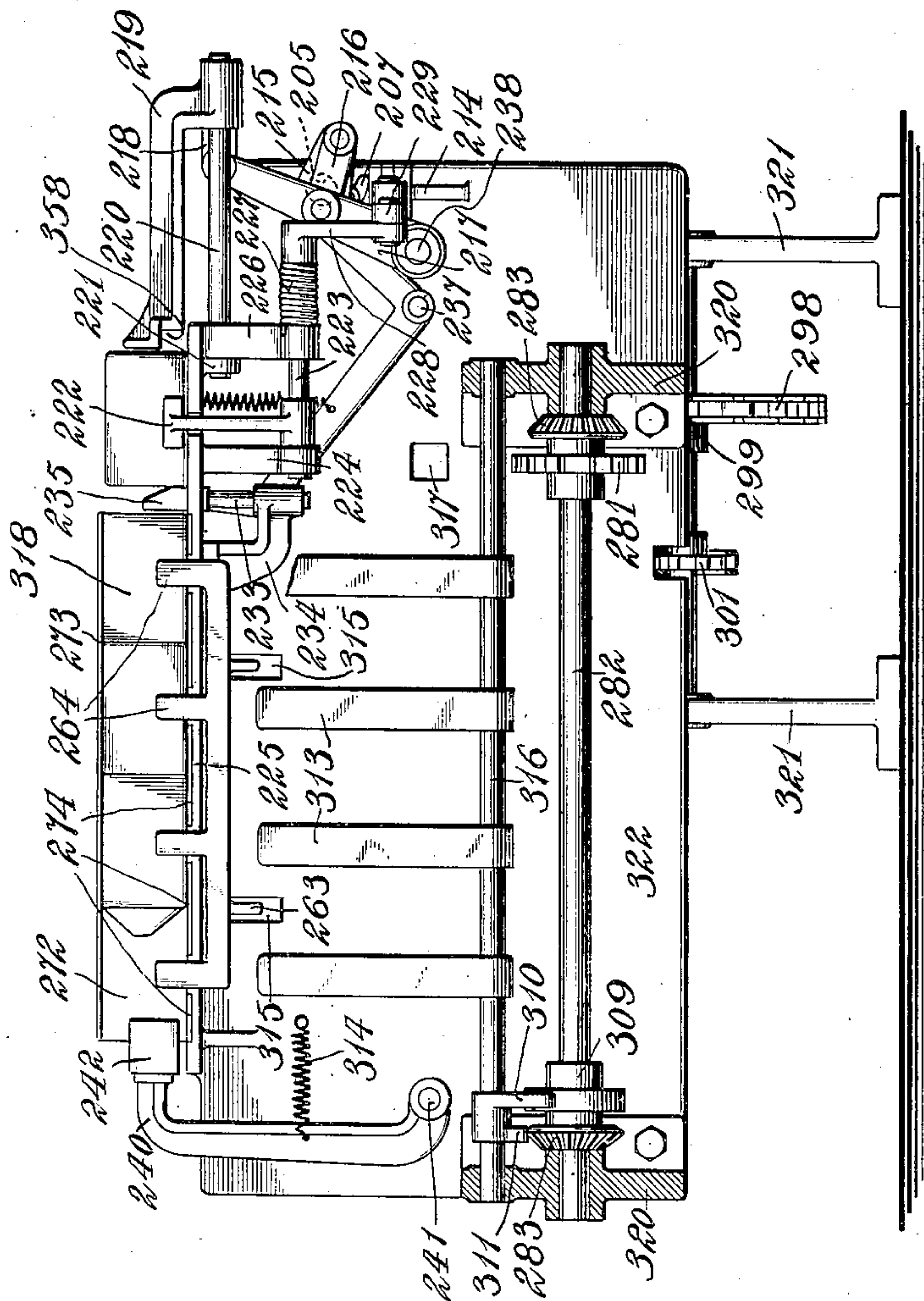
J. A. KEYES.

PACKING MACHINE.

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6 SHEETS—SHEET 5.

Fig. 5,



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Fig. 7,

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No. 814,454.

PATENTED MAR. 6, 1906.

J. A. KEYES.  
PACKING MACHINE.

APPLICATION FILED FEB. 1, 1904.

6 SHEETS—SHEET 6.

Fig. 10,

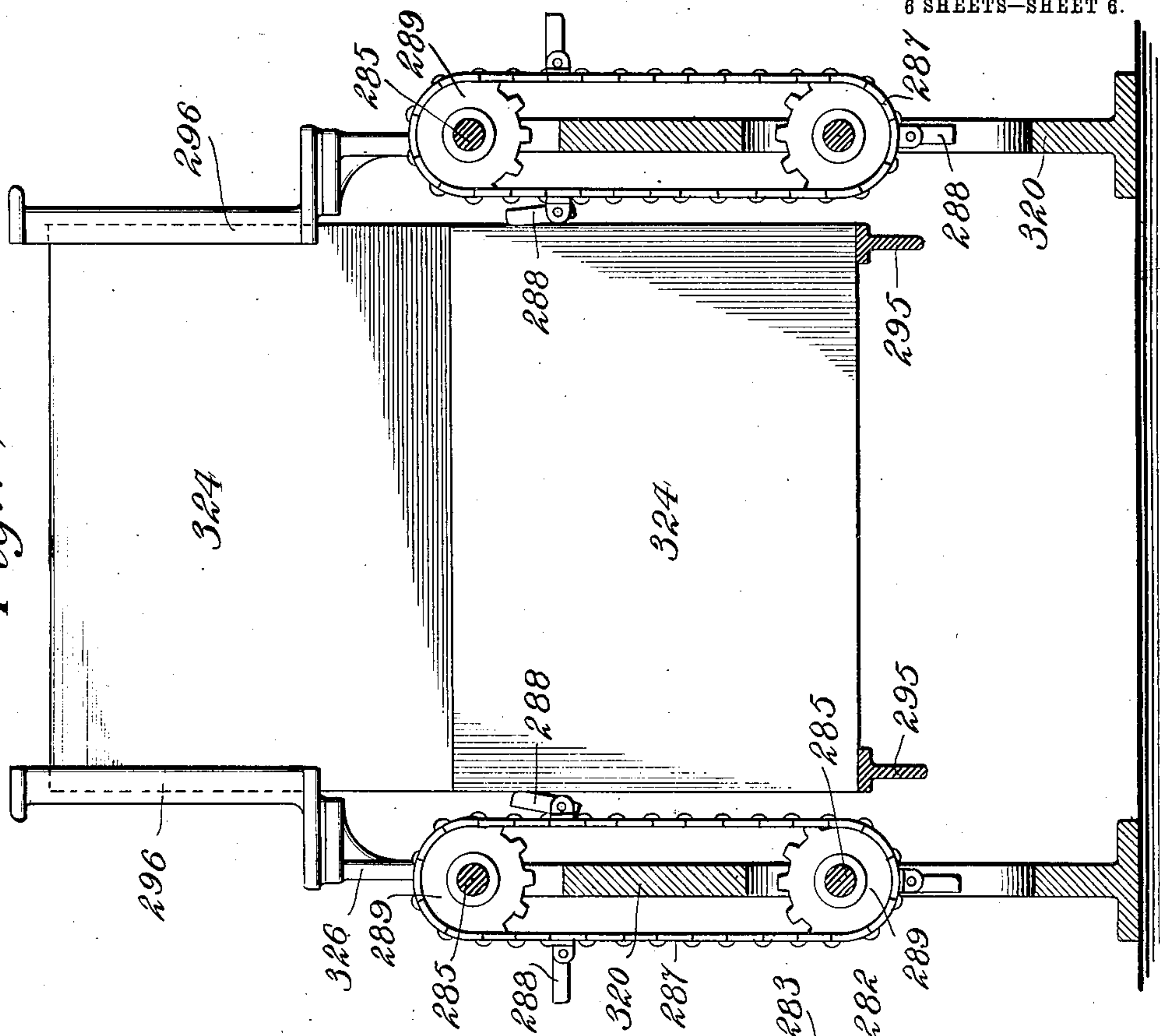
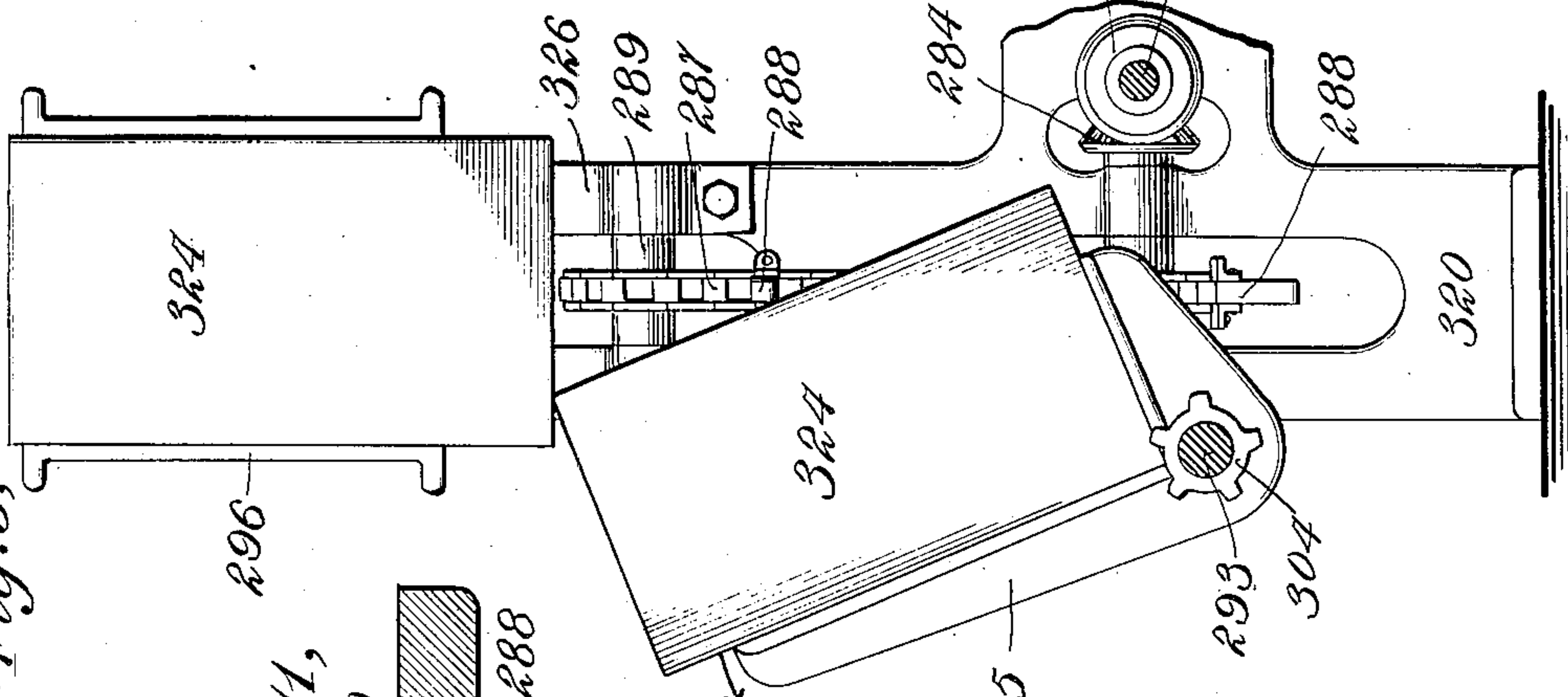


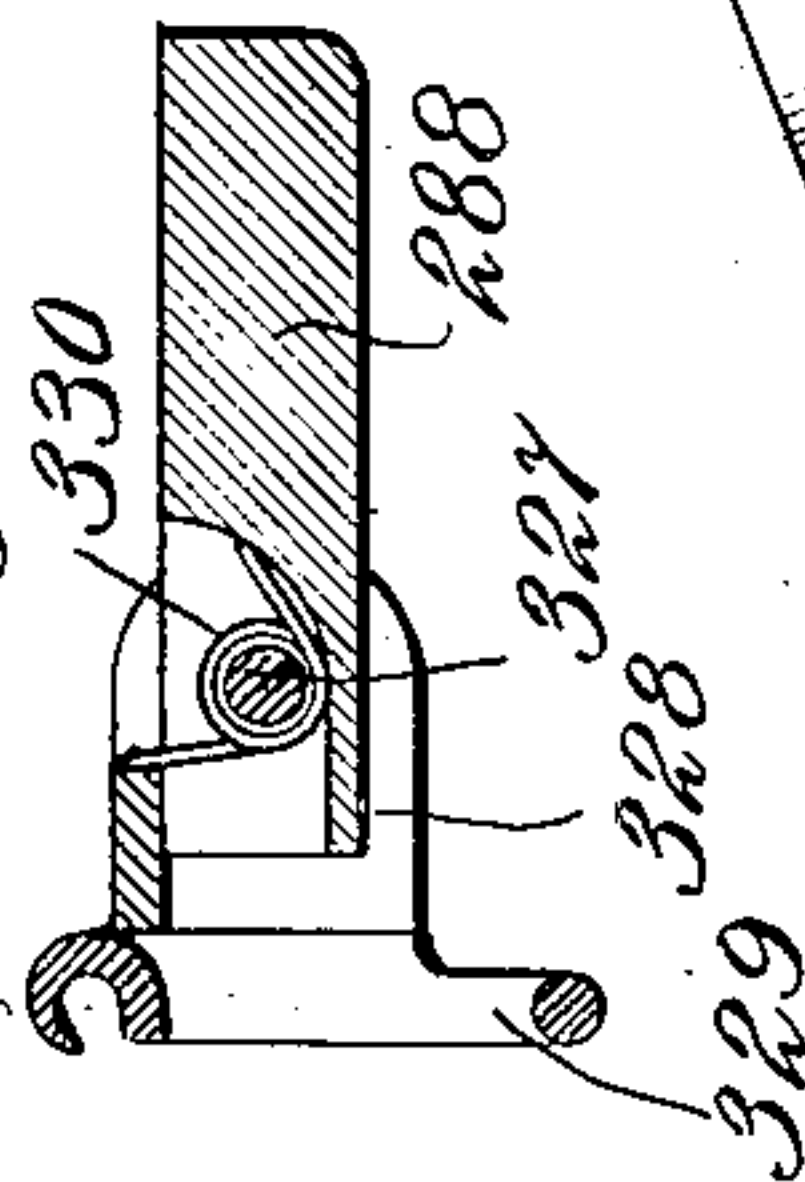
Fig. 9,



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Fig. 11,



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# UNITED STATES PATENT OFFICE.

JAMES A. KEYES, OF NEW YORK, N. Y.

## PACKING-MACHINE.

No. 814,454.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed February 1, 1904. Serial No. 191,480.

*To all whom it may concern:*

Be it known that I, JAMES A. KEYES, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Packing-Machines, of which the following is a specification, taken in connection with the accompanying drawings, which form a part of the same.

This invention relates to packing-machines, and relates especially to machines in which articles, such as wrapped packages, are supplied along a chute in the path of a transferring-plunger which operates to successively transfer rows of these articles to a carrier. This carrier in the embodiment of the invention illustrated is actuated when a complete layer of articles is supplied to it to insert this layer into a box or receptacle supported in suitable guides adjacent the carrier, the box being fed forward intermittently by suitable mechanism.

In the accompanying drawings, in which the same reference-numeral refers to similar parts in the several figures, Figure 1 is a side view of an embodiment of this invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a plan view, partly in section. Fig. 4 is a side view taken in the opposite direction from Fig. 1. Fig. 5 is a transverse sectional view. Figs. 6, 7, and 8 are details. Fig. 9 is a longitudinal sectional view showing the box-feeding mechanism. Fig. 10 is a transverse sectional view of the same. Fig. 11 is a detail.

In the illustrated embodiment of this invention wrapped articles 318 are indicated as being fed along the chute 325, and these articles may issue from a suitable wrapping-machine in which they are formed. The transferring-plunger 219 is mounted adjacent this chute to transfer articles to the adjacent table 225. (Indicated in Fig. 5.) This plunger is supported upon the rods 220, mounted in the lugs 221, and is connected by the short link 218 with the plunger-arm 217, which is shown as pivoted about the pin 238. The plunger-crank 215 is loosely mounted upon the plunger-shaft 205 and is connected by the link 216 with the plunger-arm mentioned, so that upon the rotation of this crank the plunger is reciprocated through this connecting mechanism. A suitable trigger 222 is mounted in the path of the articles, this trigger being indicated as secured to the trigger-shaft 223, which is mounted in suitable bearings in

the brackets 224 226. A suitable spring 227 is provided, tending to hold this trigger forward in the position indicated in Fig. 1, and the arm 228, secured to the trigger-shaft, serves to connect the trigger with the clutch-slide 213, a suitable link 229 being used between these parts. This slide is mounted on a dovetail guide 214, as indicated in Fig. 6.

The shaft 205, running in the bearings 204 and which, as indicated, is driven through the bevel-gears 202 203 from the pulley 200 and drive-shaft 201, carries the spring-pressed clutch 207, which is indicated in Fig. 6 as pivoted about the pin 208 in the lug 206, secured to the shaft. This clutch 207 is spring-pressed, so that it tends to engage the notch 209 in the sleeve 210 of the plunger-crank, so that when this clutch 207 is in the engaged position indicated the plunger-crank is rotated by the shaft 205, and the plunger is thereupon reciprocated. The elevated portion 211 of the clutch-slide 213 is formed of such height that when the parts are in the position indicated in Fig. 1 the tail of the pawl or dog 207 is engaged by this part of the slide 213, and the pawl is thereupon raised out of engagement with its cooperating notch and the plunger-crank remains stationary. As soon, however, as the trigger is engaged by the leading article in the chute the clutch-slide 13 is moved, so that the lower depressed portion 212 of this slide is moved into cooperation with the pawl, which is thereupon allowed to engage the notch 209, the parts assuming the position indicated in Fig. 6 and the transferring-plunger 219 being reciprocated.

The receiving-table 225 is mounted on the rigid frame of the machine, comprising the numbers 320, 321, and 322, and is formed with suitable grooves which support the reciprocating inserting-carrier. This carrier is indicated as having its bottom formed of a series of plates 274, fitting within the slides of the table, and thus accurately guided. This carrier is preferably given the inclosed form indicated in Fig. 2, the bottom plates 274 and the cover 273 being rigidly secured to the back 272 to form an integral structure. The rods 323 may be secured to the carrier and pass through suitable bearings 319, these rods serving to support the carrier when in its advanced position. Any desired means may be used for operating this carrier, the links 270 being indicated as pivoted to the lugs 271 on the carrier-back 272 and being connected



at their other ends to the arms 269 on the rock-shaft 268, which is mounted in the brackets 275. The arm 267 on this rock-shaft is connected by the link 266 with the crank 265 on the cam-shaft 257. The gear 256, which is secured to cam-shaft 257, meshes with the driving-pinion 255, which is loosely mounted on the drive-shaft 201 and operatively connected therewith at the proper intervals by a suitable pawl mechanism.

The latch-bar 242, which is mounted in the path of the leading row of articles in the carrier, is preferably formed with the notches 243, (indicated in Fig. 3,) so as to accommodate the folds of the wrappers on these articles. This latch is mounted on the latch-bar 240, secured to the latch-rod 241 and normally held inward in operative position by the spring 314. This latch-rod, whose outer end is mounted in a suitable bearing in the member 244 of the frame, carries the latch-finger 245. The outer end of this finger engages the pivoted detent 246, which is shown in Fig. 8 as engaged by the spring 249 and pivoted about the pin 248.

The pawl mechanism used to connect the driving-pinion 255 with the driving-shaft 201 comprises the spring-pressed pawl 250, pivoted in the lug 251 on the drive-shaft and adapted to engage the notch 254 in the sleeve 253 of the pinion. As long, however, as the latch-finger engages the detent and holds it in the position indicated in full lines in Fig. 8, the pawl 250 is held out of engagement with the cooperating notch 254 and the pinion is disengaged from the drive-shaft, the inserting-carrier being thus maintained in inoperative position. When a full layer of articles has, however, been transferred to the carrier, the leading row of these articles engages the latch-bar 242 and through the connecting mechanism described lifts the latch-finger 245 away from the tail of the detent, the parts thereupon assuming the dotted positions indicated in Fig. 8 and the nose of the pawl 250 being spring-pressed into engagement with the notch 254. The carrier is thereupon reciprocated and inserts the full layer of articles into the box, the latch and clutch mechanism being held in operative position during this interval by any desired means. As indicated, the link 270 is shown as formed with its outside face substantially flush with the back of the carrier, and the latch-bar 242 is adapted to ride upon the outside face of this link, and thus maintain the latch in proper position until the carrier once more resumes its receiving position. (Indicated in Figs. 2 and 3.) Then the latch-bar is pressed forward by its spring, and the latch-finger 245 rides down the inclined portion 247 of the detent, and the parts of the pawl mechanism once more resume the position indicated in full lines in Fig. 8.

A suitable stop is preferably provided to

remove the articles from the carrier on its rearward movement, so as to leave these articles in position in the box. A series of stop-fingers 264 may be employed for this purpose and may be mounted upon the arms 263, operating in the slots 315 and secured to the shaft 261, mounted in suitable bearings in the lugs 262. The arm 260, which is also secured to the shaft 261, is provided at its outer end with the roller 259, which engages the stop-cam 258 on the cam-shaft 257. By this means the stop-fingers 264 are withdrawn below the level of the table 225, when the inserting-carrier moves forward into the box; but as soon as its rearward movement commences the stop-fingers rise through the slotted bottom of the carrier in front of the articles therein and discharge these articles from the carrier, leaving them in proper position in the box. A suitable stop may also be employed between the chute 325 and the table 225 to keep the articles transferred into the carrier in proper alignment. This stop may take the form indicated in Figs. 5 and 7, the stop 235 being indicated as formed with suitable rods 233 at its lower end, which are mounted in guides in the brackets 234. The link 232 connects this stop with the rock-lever 231, pivoted about the pin 237 and engaged by the spring 236 indicated. The free end of this rock-lever coöperates with the cam 230, formed on the sleeve 210 of the plunger-crank 215 on shaft 205, so that when the transferring-plunger 219 begins to move forward the stop 235 is momentarily withdrawn by the cam below the surface of the table. Thereafter the spring 236 raises the stop behind the articles into engagement with the under surface of the plunger and as the plunger moves backward the stop moves upward into the notch 358 and holds the articles in position in the carrier, thus engaging them before the articles are released by the plunger.

The box-guide 296 is rigidly secured to the frame and serves to keep the boxes 324 in proper position as they are fed downward into coöperation with the inserting-carrier. Suitable feeding means which may take the form of the feed-chains 287 are mounted adjacent the box-guide and serve to control the feed of the boxes in the machine. As seen in Figs. 9, 10, and 11, each feed-chain 287 is mounted upon the sprockets 289, secured to the shafts 285, the lower shaft being connected by the bevel-gears 284 283 with the transverse feed-shaft 282, so that the feed-chains are operated in unison. A series of spring-pressed lugs 288 are secured to the chains, these lugs, as indicated in Fig. 11, being pivoted about the pins 327 and being provided with a suitable spiral spring 330; the end of each lug operating in a suitable slot 328 in the pivot-link 329 of the chain. These lugs are spaced apart on each chain at distances corresponding with and equal to a multiple of



a thickness of a layer of articles and equal to the width of a number of layers, these distances being different from the height of a box and preferably being less than the height of a box by a sufficient amount to compensate for the thickness of the adjacent sides of the boxes. As is seen in Fig. 1, the feed-shaft 282 is operated by a suitable sprocket-chain 280, which passes through the aperture 317 and is driven by the sprocket 279 on the stop-shaft 278. This shaft is intermittently rotated by a Geneva stop-motion, the roll on the lug 276 upon the cam-shaft engaging the radial slots in the star-wheel 277 on the stop-shaft, so that every time that the inserting-carrier operates the boxes are fed downward a distance corresponding to the thickness of a layer of articles. The pivoted discharger 295, which receives the filled boxes, is mounted upon the shaft 293, running in the bearing-lugs 294 and which is operated by the arm 292, secured thereto and connected with a suitable crank 290 on the stop-shaft by the link 291. This discharger is arranged to receive the filled boxes when they are released by the feed-lugs and to swing them out of the box-guide, as is indicated in Fig. 9, so that each filled box is turned upward with its open side uppermost and is laid on the conveyer 308, resting on the sprocket-chains 302 and 303, which carry it away. As is seen in Fig. 2, the chains 302 and 303 pass over the sprockets 305 on the shaft 306, supported by the brackets 307, and over the idle sprocket 304 and the driving-sprocket 301, secured to the sleeve 300 on the shaft 357. This sleeve is connected with the sprocket-wheel 299, engaged by the sprocket-chain 298, which also engages the sprocket 297 on the drive-shaft 201. (See Figs. 1 and 3.) After each layer of articles has been inserted into the box the box-feed operates to feed the boxes downward a distance corresponding to the layer of articles inserted, the boxes being normally supported, as indicated in Fig. 2, by the spring-pressed lugs 288, which snap outward into supporting position at right angles to the chain. (See Figs. 10 and 11.) These lugs are adapted, however, to be swung backward into inoperative position by engagement with the sides of the box, as is shown in Fig. 10. When, however, the filled box is swung outward in the direction indicated in Fig. 9, these lugs as soon as the filled box moves out of engagement with them snap outward into supporting position. The lugs thus engage the empty box, which descends upon them and which is fed downward at uniform intervals until it is filled and removed from the guide by the discharger.

A series of retainers may be employed to hold the articles in position in the box, the retainer-arms 313 being shown in Fig. 5 as secured to the shaft 316, mounted in suitable bearings. The arm 310 on this shaft engages

the retainer-cam 309 on the feed-shaft 282, and this cam allows the retainers to be thrown forward at the time that the discharger removes the box from the guide by the spring 312, which engages the arm 311 on the retainer-shaft. The articles are thus held in proper position in the box at this time, and the retainers also serve to keep the articles in alinement as the partially-filled box is fed down past them.

It is of course understood by those familiar with this art that many modifications may be made in the form, proportion, and number of parts of this machine. Furthermore, parts of the same may be omitted and parts may be employed in connection with other devices without departing from the spirit of this invention or losing the advantages of the same. I do not, therefore, desire to be limited to the details of the disclosure which has been made in this case; but

What I claim as new, and desire to secure by Letters Patent, is set forth in the appended claims:

1. In packing-machines, a chute for supplying articles, a table adjacent said chute, a carrier mounted on said table, a plunger adjacent said chute, means to operate said plunger, said means comprising a trigger in the path of said articles to be engaged by the foremost article of a row, a stop between said chute and said table and means to operate said stop when said plunger is operated, a latch adjacent said table, means to operate said carrier when said latch is engaged by the foremost row of a layer of articles in said carrier, box-feeding means and means adjacent said table to engage said articles inserted into said box by said carrier.

2. In packing-machines, a table, a substantially inclosed carrier mounted on said table, means to feed a series of articles into said carrier, means to operate said carrier, a stop adjacent said table and means to operate said stop to engage said articles in said carrier when said carrier is operated.

3. In packing-machines, a table, a substantially inclosed carrier mounted on said table, means to operate said carrier to insert articles into a receptacle, a stop coöperating with said carrier and means to operate said stop to discharge the articles from said carrier after their insertion into said receptacle.

4. In packing-machines, a table, a carrier comprising a series of supporting-plates, means to operate said carrier to insert articles into a receptacle, and a stop to pass between said plates and to engage the articles in said carrier after they are inserted in said receptacle.

5. In packing-machines, a box-guide, a feeding-chain coöperating with said box-guide, spring-pressed pawls mounted on said chain at distances corresponding with and equal to a multiple of the thickness of



layers of articles to be inserted in boxes and a discharger cooperating with said guide to remove boxes therefrom.

5 6. In packing-machines, a box-guide to receive a series of boxes, means to insert articles in said boxes, feeding means cooperating with said guide, spring-pressed lugs on said means spaced apart at distances corresponding with and equal to a multiple of the thickness of layers of articles in said boxes and a pivoted discharger at the end of said guide and spring-pressed retainers opposite said discharger to remove filled boxes from said guide.

15 7. In packing-machines, a box-guide to support boxes, means to insert articles horizontally into said boxes, means to feed said boxes along said guide and a discharger cooperating with said guide to remove filled boxes therefrom and to turn them over with their open sides uppermost.

25 8. In packing-machines, a vertical box-guide to receive boxes, means to insert articles into said boxes, means to feed said boxes vertically during the insertion of said articles and a discharger to receive the filled boxes and to rotate them out of said guide to turn the open side of said boxes upward.

30 9. In packing-machines, a chute to supply articles, a table adjacent said chute and on the same level therewith, a carrier cooperating with said table, a spring-pressed latch adjacent said table to operate said carrier, a plunger to transfer articles from said chute upon said table and a stop between said table and said chute to engage said transferred articles and hold them on said table.

10. In packing-machines, a chute to supply

ply wrapped articles, a table adjacent said chute, means to transfer articles from said chute to said table, a carrier to discharge said articles from said table and a notched latch-bar adjacent said table to be engaged by the foremost row of said articles to actuate said carrier.

45 11. In packing-machines, a chute to supply wrapped articles, a table adjacent said chute to receive articles therefrom, means to discharge said articles from said table and a latch-bar adjacent said table to be engaged by said articles to actuate said means, said latch-bar having recesses to engage said articles without disturbing their wrappers.

50 12. In packing-machines, a table, a carrier cooperating with said table to receive and support articles, means to operate said carrier to insert articles into a receptacle and a stop cooperating with said carrier to discharge the articles therefrom after their insertion into said receptacle.

60 13. In packing-machines, a carrier to receive and support articles, means to operate said carrier to insert said articles into a receptacle and means to engage said articles to discharge them from said carrier after their insertion into said receptacle.

65 14. In packing-machines, a movable carrier to receive a series of articles and insert them into a receptacle and a stop cooperating with said carrier to discharge the articles therefrom after their insertion into said receptacle.

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