F. COATES.

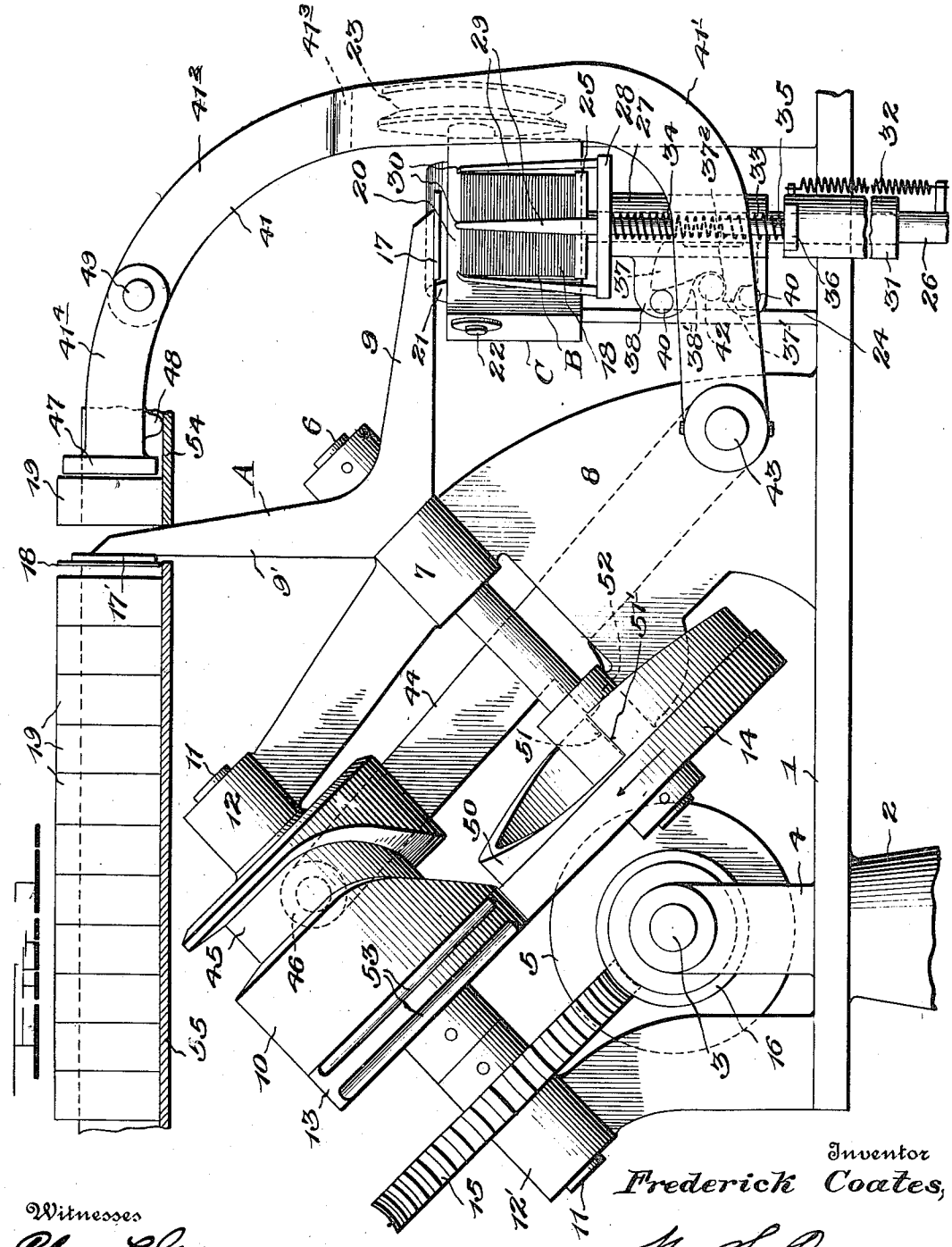
LABELING MACHINE.

APPLICATION FILED MAY 4, 1914.

1,158,787.

Patented Nov. 2, 1915.

2 SHEETS—SHEET 1.



Witnesses

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Inventor

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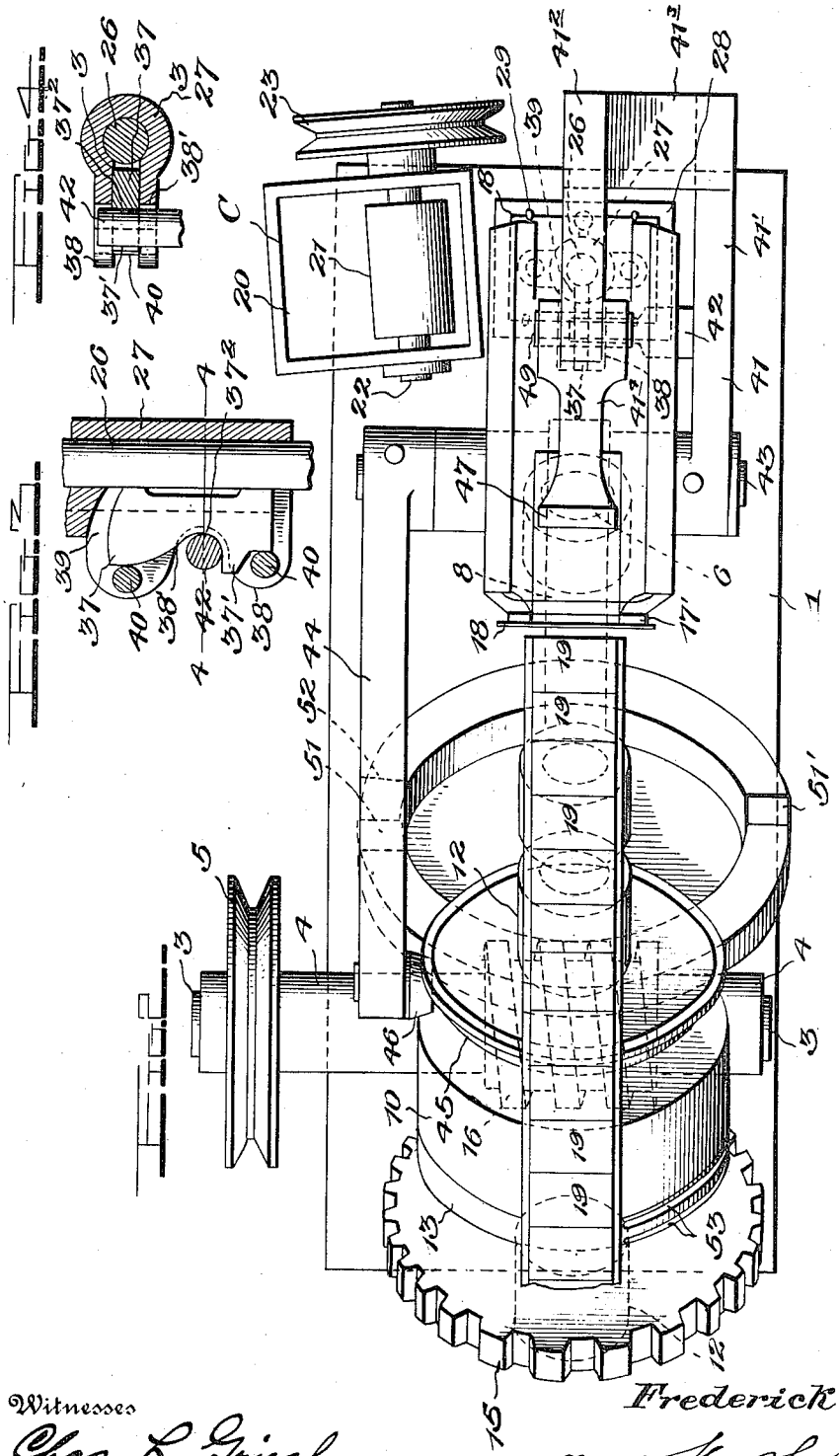
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UNITED STATES PATENT OFFICE.

FREDERICK COATES, OF ROCHESTER, NEW YORK.

LABELING-MACHINE.

1,158,787. Specification of Letters Patent. Patented Nov. 2, 1915.

Application filed May 4, 1914. Serial No. 836,103.

To all whom it may concern:

Be it known that I, FREDERICK COATES, a citizen of the United States of America, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Labeling-Machines, of which the following is a full, clear, and exact description.

This invention has reference to label-applying machines, and it proposes various improvements in the general type of machine disclosed in my companion application, Serial No. 836,104 filed of even date herewith, such machine embodying a two-armed, rotary carrier which is so constructed and arranged that while one of the two arms thereof is engaged in extracting a label from the pile contained in a label-holder, the coated label carried by the other arm is being applied to a package.

The improvement of the present construction relates primarily to the means or mechanism for driving the carrier, and, also, to the device by which the stripping of the labels from the carrier and then fixation to the packages are effected.

The invention further resides in the particular construction and arrangement of the above-mentioned instrumentalities and their component parts, as hereinafter described and claimed.

The accompanying drawings show a construction which for present purposes may be deemed the preferred embodiment of the improved machine, and in said drawings:—

Figure 1 is a side elevation; Fig. 2 is a plan view; Fig. 3 is an enlarged detail view, partly in section, of the coupling device associated with the label-holder; and Fig. 4 is a transverse section on line 4—4 of Fig. 3.

Referring more particularly to said drawing, 1 indicates, generally, the bed of the machine, which is supported upon a pedestal 2, and 3 the horizontally mounted main or driving shaft, the latter being journaled in a pair of bearing brackets 4 fixed to the bed, and being provided with a pulley 5 which is driven by belting, (not shown), from a suitable source of power.

The various working parts of the machine are mounted upon bed 1, and include the carrier A and the label-holding and paste-applying devices B and C. The carrier A is designed for rotation, in the manner about to be described, and, in the construction illustrated, is fixed to the upper end of a shaft 6, which latter is set at an angle of about 45° and is journaled in bearings 7 provided on a standard 8 attached to the bed, the said carrier being here shown as comprising a pair of diverging arms 9 and 9′, disposed at right-angles to each other. The rotary movement which is imparted to the carrier is preferably effected through the agency of a drum 10, that is fixed to a shaft 11, arranged at one side of and parallel with shaft 6, and journaled in bearings 12 and 12′, the latter being mounted upon bed 1, and the former being constructed integral with standard 8. At its lower end, this drum is provided with a friction gear 13 which engages a larger friction gear 14 fastened to shaft 6, while below said drum there is secured to shaft 11 a worm wheel 15 that meshes with and is driven by a worm 16 carried by the drive shaft 3.

The outer ends of the two carrier arms 9 and 9′ are provided with suitable platens 17 and 17′, which are designed to pick up the labels 18 from the holder B, as subsequently explained, and accordingly the said holder is disposed in the path of these platens, or pickers as they may be broadly termed, the arrangement and timing of parts being such that at regular intervals during the movement of the carrier, first one picker and then the other will lie exactly above the holder. The pickers may be of any desired construction, and they are here shown as of skeleton form, the purpose of which is to permit the labels to be stripped therefrom, and to enable the pickers themselves to operate to some extent to center the packages 19 during the actual application of the labels to the same. The paste-applying device C is disposed at one side of the label-holder, and is designed to coat the under face of each picker before the latter reaches its position above the label-holder. For this reason, the construction of the paste-applying device will be taken up ahead of that of the label-holder.

In the illustrated embodiment of the invention, the pasting-device comprises a tank 20 of suitable size and shape, which contains the paste, or other adhesive, and, also, the paste-applying roll 21, the latter being mounted upon a horizontal shaft 22 that is journaled in bearings provided in the end walls of the tank. Shaft 22 carries upon its outer end a pulley 23, adapted to be driven in some suitable manner, and the roll

21 on this shaft is normally disposed in the path of the pickers, so that during the rotation of the carrier the pickers will alternately cross the said roll at predetermined intervals and will be coated by the same as it rubs against their under faces. The tank itself is supported upon feet or brackets 24 affixed to the bed of the machine.

The label-holder B, according to this invention is so constructed and arranged that the pile of labels therein is automatically raised toward each picker, as the same reaches a position over said holder, so as to bring the uppermost label against its coated face, and is afterward lowered, thus extracting the label from the pile. In its preferred form, the label-holder consists, as shown, of a platform 25 adapted to support the pile of labels and constituting the head of a plunger, the stem 26 of which fits slidably in the bore of the tubular stem 27 of an element whose head 28 is disposed beneath the said plunger head or platform 25 and is provided along its margin with upstanding spring arms 29. These arms are designed for engagement with the sides of the pile and their terminals 30 are slightly inturned, so that not only are the labels retained in place in the pile, but during the downward movement of the holder the pile is withdrawn from the label attached to the picker. The plunger stem 26 extends in opposite directions beyond the outer stem 27, and its lower portion also projects through and below a vertical sleeve 31 connected to the bed, the upper end of this sleeve and the lower end of stem 26 having fastened thereto the terminals of a retractile coil spring 32, which thus tends to hold the plunger normally elevated. In like manner the head 28 of the outer member of the holder is normally forced upward by means of expansible springs 33, which encircle at their opposite ends pairs of depending and upstanding pins 34 and 35, secured, respectively, to said head 28 and to a flange 36 provided upon the upper end of sleeve 31, the springs 33 also serving as a cushion for said holder member.

In connection with the above-mentioned movement of the holder, means is provided for periodically locking together the two members thereof, and additional means or mechanism for operating the locking means and for depressing the holder members when so locked. The first-named means preferably consists of a wedge-shaped latch 37 which is disposed between spaced vertical flanges 38 provided upon stem 27 and is movable through a vertical slot 39 formed in the latter at such point into and out of frictional engagement with the plunger stem, displacement of the latch being prevented by a pair of cross-pins 40, that connect said flanges, and by the engagement of the lower of such pins with a shoulder 37′ formed on the lower end of said latch. When the two stems are locked together in this way, downward pressure exerted upon the latch will result in the depression of the holder bodily, but when such pressure is removed, the binding action of the latch upon the plunger stem will at once cease, whereupon the latter will be automatically raised by the action of the spring 32.

To effect the inward movement of the latch, and, consequently, the downward movement of the holder, a rocking lever 41 may advantageously be utilized, this lever being provided with a lateral pin 42 that projects through the recessed central portions 38′ of the flanges 38 and through the similarly-recessed portion 37^2 of the latch, into position to frictionally engage the edge of the latter. Lever 41 is secured at its lower end to a horizontal rock-shaft 43 which is journaled in bearings in standard 8 and to this shaft there is secured, in turn, an operating lever 44, actuated from a closed cam groove 45 cut in the peripheral wall of drum 10, said groove receiving therein a roller 46 arranged on the free end of lever 44. The levers 41 and 44 thus combine to form a bell-crank, the arm thereof which is constituted by lever 44 moving toward and from the friction gear 14 on the carrier shaft 6. The other arm or lever 41 has an approximately arcuate shape, in side elevation, as shown, and is, moreover, offset laterally intermediate its ends, the lower portion 41′ thereof (which carries the pin 42), being arranged at one side of the label-holder B, while the upper portion 41^2 extends over said holder and lies in the plane of said carrier shaft, these two portions being connected by the short lateral portion 41^3. The upper portion 41^2 further embodies, by preference, a pivotal terminal portion 41^4 which is provided with the hereinafter-described plunger head 47, and, also, with a depending projection or lug 48, and is joined to the said portion 41^2 by a bolt or pin 49.

The timing of the various parts is such that the bell-crank-arm or lever 44 commences its downward movement toward gear 14 simultaneously with the arrival of the picker on a carrier arm over the label holder. The latter is disposed some distance below the pickers, and must, therefore, be raised in order to bring the top label against the coated face of the picker, this being effected by the action of the spring 32. When lever 44 moves downward toward gear 14, as above stated, the other lever or arm 41 will rise during which time its pin 42 which has previously been caused to bind against the recessed edge 37^2 of latch 37 and to force said latch inwardly through slot 39 into binding engagement with the plunger stem 26, will release its pressure upon the latch. The latter will then release the plun-

ger stem, which will immediately be drawn upward by spring 32, thereby causing the top label to impact against the picker. When the reverse movement of the levers 44 and 41 takes place, pin 42 will again be moved into binding engagement with said latch and in so doing will cause the latch to effect the coupling of the holder members. Thereafter, the depression of the holder, bodily, will be accomplished, the pile of labels being carried downward with said holder and leaving the previously top label adhering to the picker.

As the carrier must necessarily remain stationary during the application of a label to one of its pickers and the stripping of a label from its other picker, means are provided for periodically interrupting the rotation of the shaft wherein the carrier is mounted, such interruption taking place each time that its pickers are brought into receiving and stripping position. In the present construction, the means in question embody, primarily, an annular flange 50 formed upon the upper face of gear 14 adjacent the peripheral edge thereof and formed with a pair of abrupt projections or shoulders 51 and 51′ located at diametrically-opposite points. These shoulders are designed for alternate engagement with a depending projection or shoulder 52 formed upon the lower edge of lever 44, intermediately its ends, and whenever such engagement occurs, the rotation of shaft 6 will be terminated, as will be understood, although the rotation of shaft 11 is allowed to continue, due to the fact that the periphery of gear 13 is cut-away, as at 53, to reduce the area of surface engagement between that gear and the gear 14. The cam groove in drum 10 is so constructed and timed, and the gears 13 and 14 so proportioned that each time lever 44 starts to descend a shoulder 51 or 51′ will be disposed in position to engage the shoulder 52 during the further downward movement of the lever, the height of the shoulders being such as to permit said lever to make its full down stroke as provided for by said cam groove. At the completion of this stroke, lever 44 starts its upward movement during which time the shoulder 52 is gradually disengaged from the gear shoulder 51 or 51′, the disengagement terminating shortly before the completion of the up-stroke of the lever.

During the initial part of the descent of lever 44, or, in other words, until the engagement of the co-acting shoulders is effected, the rotation of the carrier continues, such engagement taking place, as previously stated, at the time when either picker reaches a position directly above the label-holder. Immediately thereafter, the locking action of the latch upon the holder members ceases, and the plunger rises. As lever 41 continues its upward and inward movement, due to the further descent of lever 44, the swinging plunger section 41^3 of the latter will be caused to approach the adjacent end of the feed chute 54 whereon the packages to be labeled are supported, and will, at length move over said chute, its lug 48 serving to raise the plunger head 47 slightly above the floor of the chute. The packages are fed, one at a time, along this chute in any desired manner, and on reaching the discharge end thereof, are disposed between the plunger head 47 and the picker on the then vertical arm, the said picker being positioned, at that time, in the space or gap between the discharge end of the feed chute, and the receiving end of the delivery chute 55. As the movement of lever 41 continues, its head will force the package at the end of the feed chute between the arms of the picker and onto the end of the delivery chute, thereby stripping the label from the picker and clamping its central portion between that package and the one previously labeled. During the final movement of the lever, the row of packages is advanced one step through the delivery chute, and the projecting ends of the label are wiped against the sides of the packages by means of suitable wipers, thus completing the fixation of the label. The two chutes 54 and 55 are arranged horizontally, and their floors are flush with each other, so as to facilitate the transfer of the package from one to the other, the space or gap between their adjacent ends being sufficiently wide to permit free movement of the carrier arms therethrough.

The operation of the entire machine is as follows:—assuming that the various parts are in the positions depicted in Fig. 1, and that the carrier arms 9 and 9′ have just reached the position which they occupy:—At this moment, lever 44 has completed the initial part of its downward movement, the engagement of shoulders 52 and 51 has just commenced, the rotation of the gear 14, and, consequently, of the carrier A has been interrupted and the pin 42 on lever 41 has just released its pressure upon latch 37, so that spring 32 is about to pull the label-holder B bodily upward. Previous, however, to the movement of picker 9 into position above said label holder, that picker has wiped across the paste-roll 21 of the pasting device C, so that its under face has been coated with the adhesive. As the label-holder ascends under the influence of spring 32, the top label on the pile is brought into contact with the coated face of the picker and is pressed thereagainst, the carrier remaining stationary at that time and thereafter until the shoulders 52 and 51 are disengaged. During the remainder of the downward movement of lever 44 and of the

resultant upward movement of lever 41, which may be considered as the secondary movement of said levers, the label carried by the picker 17′ on the arm 9′ is stripped therefrom in the manner described, and applied to a package, the movement of the levers terminating at the end of the travel of the labeled package into the delivery chute. The upward movement of the lever 44, and the downward movement of lever 41 then ensue, and at the beginning of such movement, pin 42 forces latch 37 into binding engagement with the plunger stem 26, thus coupling together the two members of the holder, the latter being forced downward as the descent of lever 41 continues, and extracting the top label from the pile. At the completion of the descent of the holder, shoulder 52 releases shoulder 51 on gear 14, whereupon the rotation of said gear, the carrier shaft and the carrier again commences. The carrier moves through half of a revolution and is again stopped upon the following down-stroke of lever 44, this time by the engagement of shoulder 52 with shoulder 51′, the picker 17′ on arm 9′ being then in position over the label-holder while picker 17, with the label attached to it, is disposed between the ends of the feed and delivery chutes. The cycle of operation above described is then repeated.

What I claim is:—

1. In a label-applying machine, the combination, with a rotary label-carrier, and a shaft whereon the same is mounted; of mechanism for rotating said shaft embodying a driving shaft arranged parallel therewith, and coöperating friction gears mounted on said shafts; means for supplying labels to said carrier; a label-affixing lever; a rocking lever to which the first-named lever is connected for actuation thereby; means on the second-named shaft for operating said rocking lever; and means for periodically terminating the rotation of the carrier shaft during a portion of the movement of the second-named lever in one direction.

2. In a label-applying machine, the combination, with a label-carrier and operating means therefor; of means for supplying labels to said carrier, a label-affixing lever; and a lever connected to the first-named lever for continuously operating the same and provided with means for periodically interrupting the operation of said carrier.

3. In a label-applying machine, the combination, with a label-carrier and operating means therefor; of means for supplying labels to said carrier; and a continuously operating bell-crank lever having one arm provided with label-affixing means and the other arm provided with means for periodically interrupting the operation of said carrier.

4. In a label-applying machine, the combination, with a label-carrier and operating means therefor; of means for supplying labels to said carrier; and a continuously operating bell-crank lever having one arm provided with means for periodically interrupting the operation of said carrier and the other arm with means for affixing the labels to the articles to be labeled during such periods of interruption.

5. In a label-applying machine, the combination, with a label-carrier; and a shaft whereon the same is mounted; of mechanism for rotating the carrier shaft including a shaft parallel therewith, and coöperating gears mounted on said shafts, the gear on said carrier shaft being provided with a pair of shoulders; and a rocking label-affixing element having a shoulder adapted to alternately engage the first-named shoulders during the movements of said element in one direction, to periodically interrupt the rotation of the carrier.

6. In a label-applying machine, the combination, with a label-carrier, and a shaft whereon the same is mounted; of mechanism for rotating the carrier shaft including a shaft parallel therewith, and coöperating gears mounted on said shafts, the gear on said carrier shaft being provided with a pair of shoulders; and a rocking bell-crank lever having one arm provided with label-affixing means, and the other arm provided with a shoulder adapted to alternately engage the first-named shoulders during the movements of said lever in one direction, to periodically interrupt the rotation of the carrier.

7. In a label-applying machine, the combination, with a label-carrier, and a shaft whereon the same is mounted; of mechanism for rotating the carrier shaft including a drive shaft parallel therewith, and coöperating friction gears mounted on said shafts, the gear on said carrier shaft having a pair of projections; and a rocking label-affixing element provided with a shoulder adapted to alternately engage the first-named shoulders during the movements of said element in one direction, to periodically interrupt the rotation of said carrier, the friction gear on the drive shaft having its friction surface reduced, to lessen its surface-engagement with the friction surface of the gear on the carrier shaft when the rotation of the latter is terminated.

8. In a label-applying machine, the combination, with connected driving and driven shafts; of a label-carrier mounted upon the driven shaft; means for supplying labels to the carrier; a rocking label-affixing element; and a grooved cam mounted upon the driving shaft and engaged with said element for continuously operating the same.

9. In a label-applying machine, the combination, with connected driving and driven shafts; of a label-carrier mounted upon the

driven shaft; means for supplying labels to the carrier; a rocking element provided with means for interrupting the rotation of the driven shaft and with label-affixing means and a grooved cam mounted upon the driving shaft and engaged with said element for continuously operating the same.

10. In a label-applying machine, the combination, with connected driving and driven shafts; of a label-carrier mounted upon the driven shaft; a label-holder and means for normally holding same in operative position; a rocking label-affixing element having means arranged to engage and move said holder into inoperative position; and a grooved cam mounted upon the driving shaft and engaged with said element for continuously operating the same.

11. In a label-applying machine, the combination, with a label-carrier, and operating means therefor; of a movable device for supplying labels to the carrier; label-affixing means having means for controlling the operation of said device; and means for operating said label-affixing means.

12. In a label-applying machine, the combination, with a label-carrier and operating means therefor; of a movable device for supplying labels to the carrier; means for normally holding said device in raised position; and label-affixing means movable toward and from the article to be labeled and adapted to depress said device during the latter movement.

13. In a label-applying machine, the combination, with a label-carrier and operating means therefor; of a movable device for supplying labels to the carrier; means for normally holding said device in raised position; and a rocking label-affixing lever movable toward and from the article to be labeled and having means adapted to engage and depress said device during the latter movement.

14. In a label-applying machine, the combination, with a label-carrier and operating means therefor; of a label-holder embodying a label-supporting plunger; means for normally holding same in raised position, and a geared element having a tubular stem wherein the stem of said plunger slidably fits; a latch carried by said element for engagement with the plunger stem, to couple the former and said plunger together; and a rocking label-affixing element movable toward and from the article to be labeled and having a member arranged to engage and operate said latch during the latter movement, to depress said holder bodily, and to release said latch during its first-named movement.

15. In a label-applying machine, the combination with a label-carrier, and operating means therefor; of a label-holder comprising a plunger having a label-supporting head and a depending stem; means for normally holding said plunger in raised position and a guard element having a stem wherein the plunger stem slidably fits and a pair of spaced wings with a slot between the same; a latch mounted in the space between said wings for movement through said slot into and out of engagement with the plunger stem, to couple said plunger to and release it from said element, and a label-affixing element movable toward and from the article to be labeled and having a member arranged to engage and operate said latch during the latter movement to depress said holder bodily, and to release said latch during its first-named movement.

16. In a label-applying machine, the combination, with a label-carrier, and operating means therefor; of a label-holder comprising a plunger having a label-supporting head and a depending stem; means for normally holding said plunger in raised position and a guard element having a stem wherein the plunger stem slidably fits and a pair of spaced wings with a slot between the same; a latch mounted in the space between said wings for movement through said slot into and out of engagement with the plunger stem, to couple said plunger to and release it from said element; and movable label-affixing means having a member connected thereto for periodically engaging and operating said latch and depressing said holder bodily.

17. In a label-applying machine, the combination, with a label-carrier, and operating means therefor; of means for supplying labels to the carrier; and a rocking lever having means operable during the initial part of its movement in one direction to terminate the operation of the carrier, and means operable during the remainder of such movement to affix a label to an article to be labeled.

18. In a label-applying machine, the combination, with a label-carrier, and operating means therefor; of means for supplying labels to the carrier; and a rocking bell-crank lever having one arm provided with means operable during the initial movement of said lever in one direction to terminate the operation of said carrier, and its other arm provided with means operable during the remainder of such movement to affix a label to an article to be labeled.

19. In a label-applying machine, the combination, with connected driving and driven shafts; of a label-carrier mounted upon the driven shaft, a movable label-holder; and a label-affixing element having means for periodically interrupting the operation of said carrier and additional means for controlling the movement of said holder.

20. In a label-applying machine, the combination, with connected driving and driven

shafts; of a label-carrier mounted upon the driven shaft, a movable label-holder; means for normally elevating said holder; and a rocking label-affixing element having means for interrupting the operation of the carrier during its movement in one direction and additional means for depressing said holder during its movement in the opposite direction.

21. In a label-applying machine, the combination with connected driving and driven shafts; of a label-carrier mounted upon the driven shaft, a movable label-holder embodying a pair of relatively movable members, and coupling means carried by one member for engagement with the other; and a label-affixing element having means for periodically terminating the operation of said carrier and additional means for periodically operating said coupling means and moving said holder bodily in one direction.

22. In a label-applying machine, the combination, with connected driving and driven shafts; of a label-carrier mounted upon the driven shaft, a movable label-holder embodying a pair of relatively movable members, and coupling means carried by one member for engagement with the other; and a rocking label-affixing element having means for interrupting the operation of said carrier during its movement in one direction, and additional means for operating said coupling means and depressing said holder bodily during its movement in the opposite direction.

Signed by me at Rochester, N. Y., in presence of two subscribing witnesses.

FREDERICK COATES.

Witnesses:
R. TINSLEY SHAFER,
JAMES H. SNYDER.