

W. C. BRIGGS.
 MECHANISM FOR FEEDING BANDS, LABELS, &c.
 APPLICATION FILED DEC. 23, 1905.

1,001,926.

Patented Aug. 29, 1911.

5 SHEETS—SHEET 1.

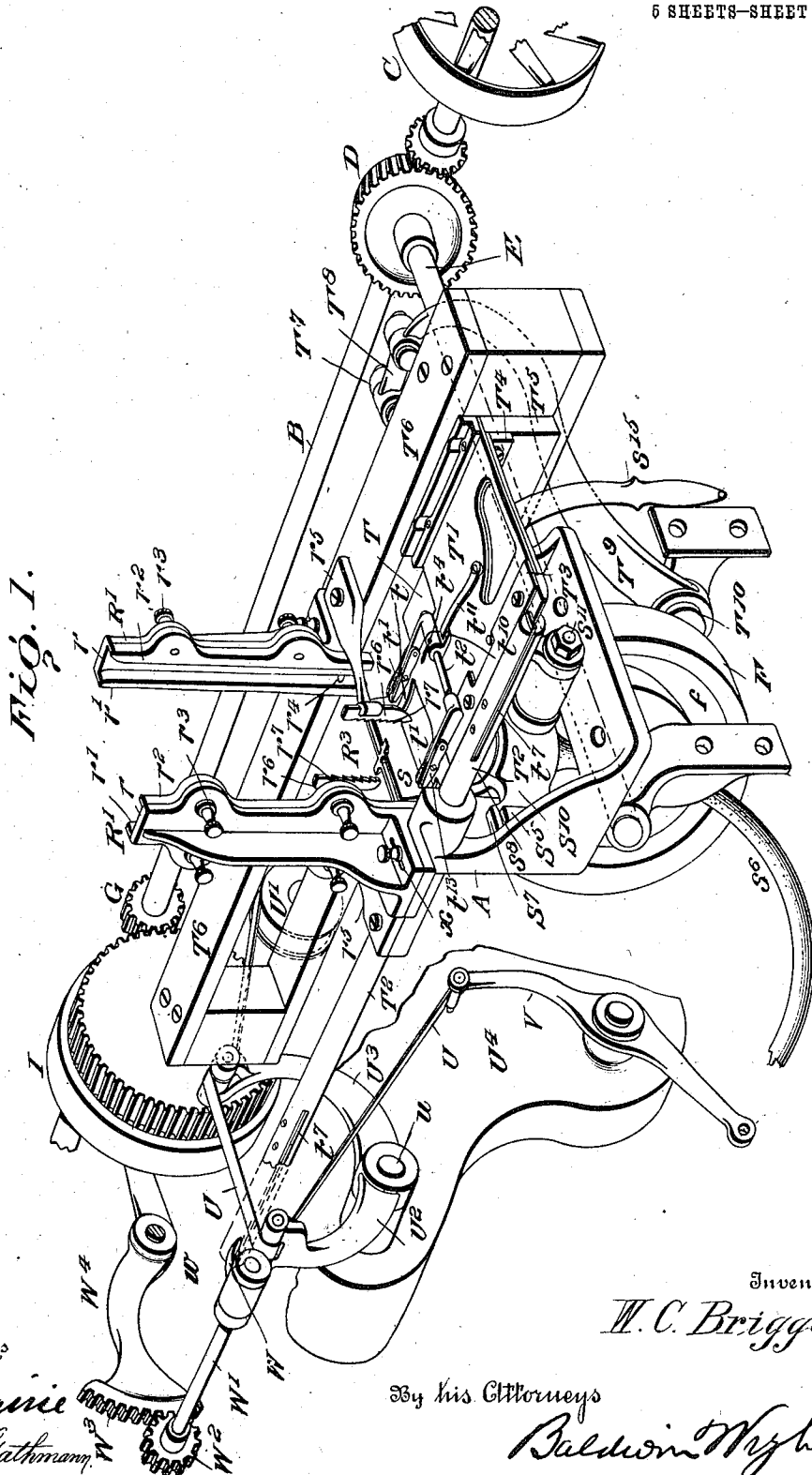


Fig. 1.

Witnesses
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W. C. Briggs

Inventor
W. C. Briggs

By his Attorneys
Baldwin Wright

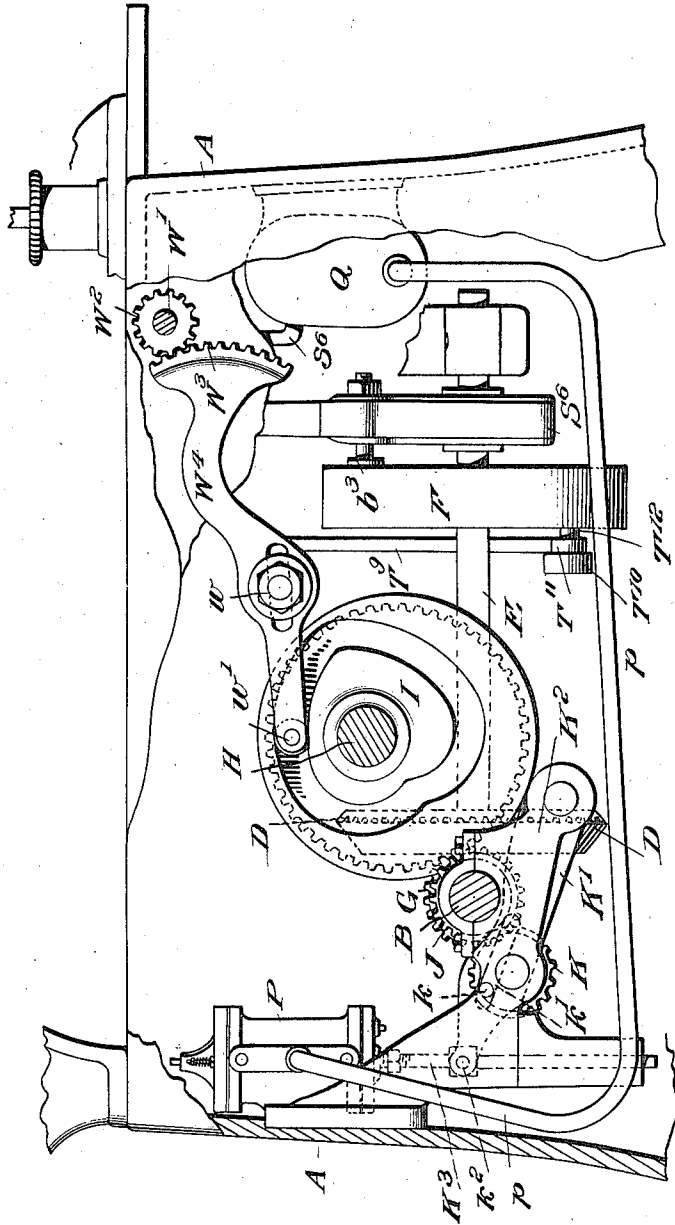
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5 SHEETS—SHEET 2.

FIG. 2.



Witnesses

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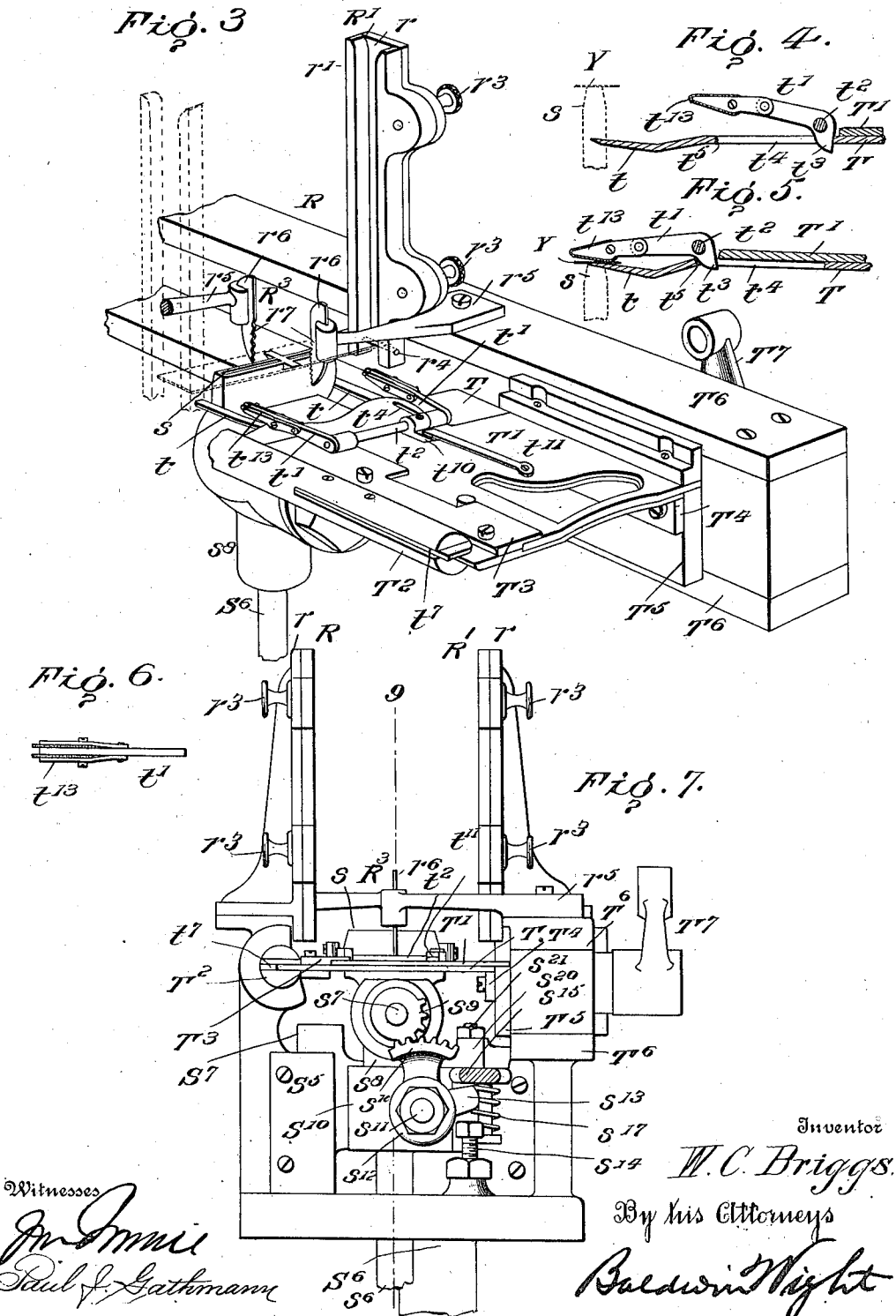
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6 SHEETS—SHEET 3.



Witnesses
J. J. Miller
Paul J. Lathmann

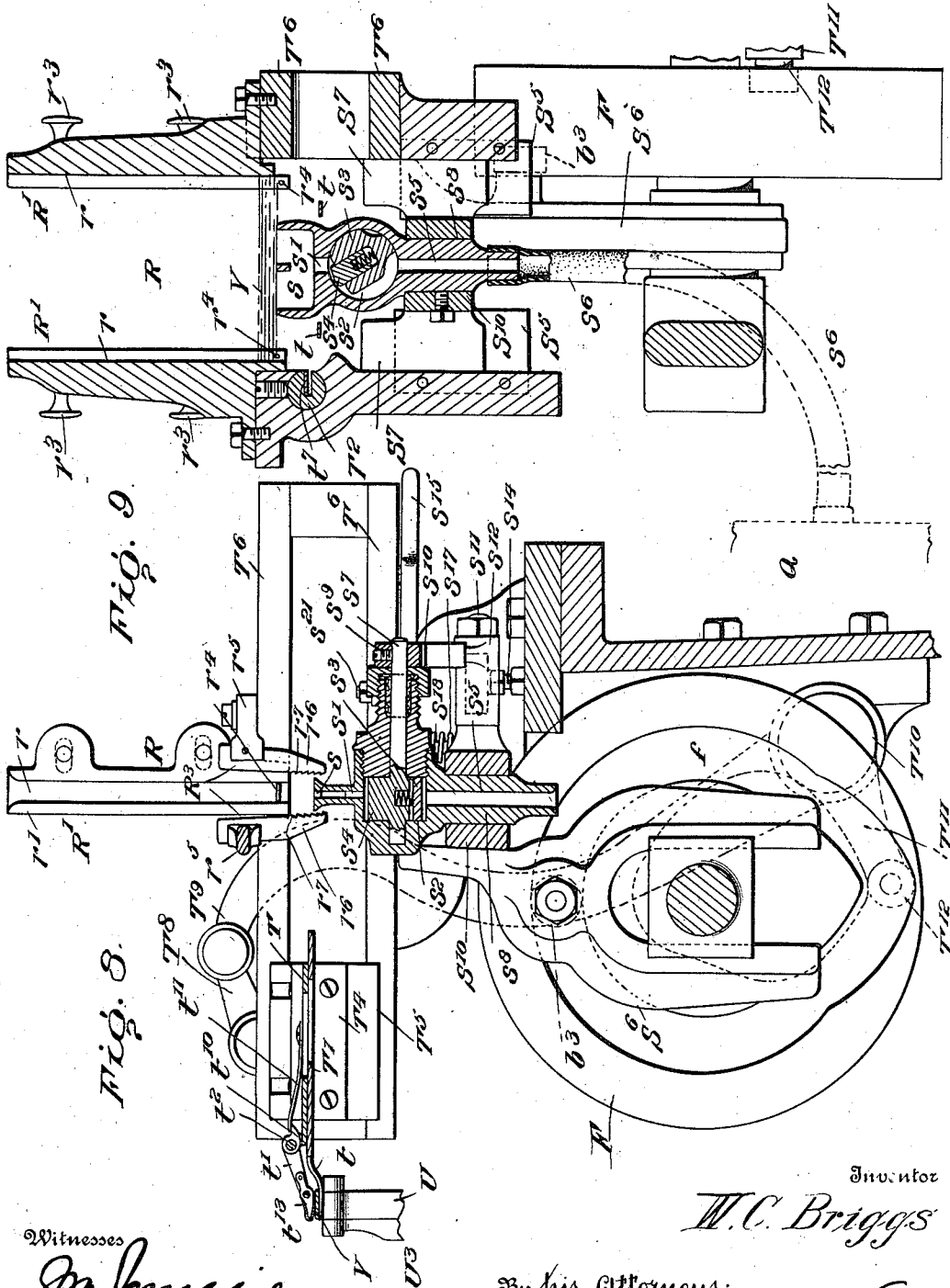
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6 SHEETS—SHEET 4.



Witnesses
Johnnie
Paul J. Gathmann

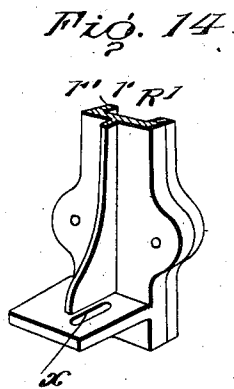
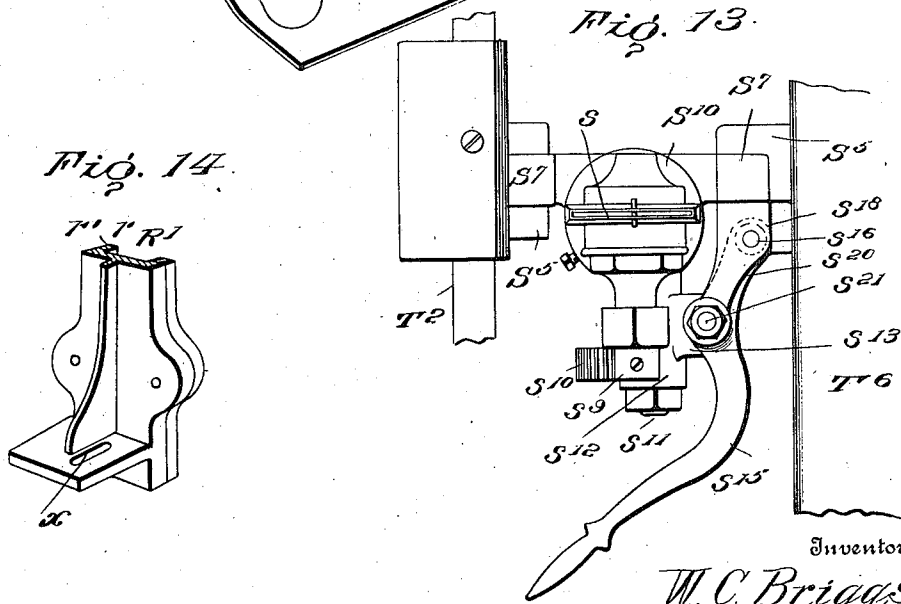
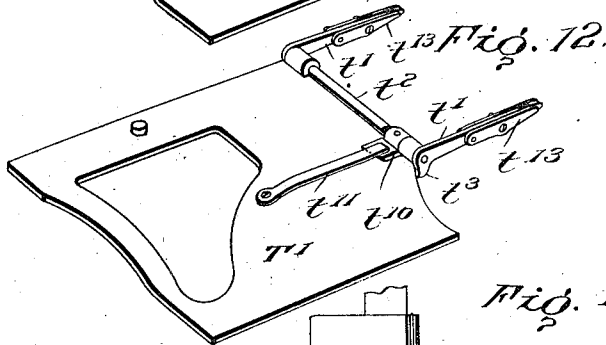
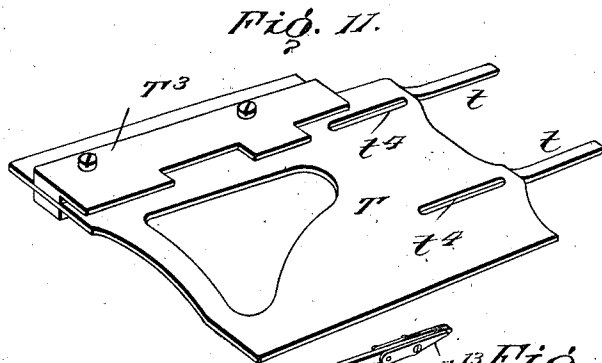
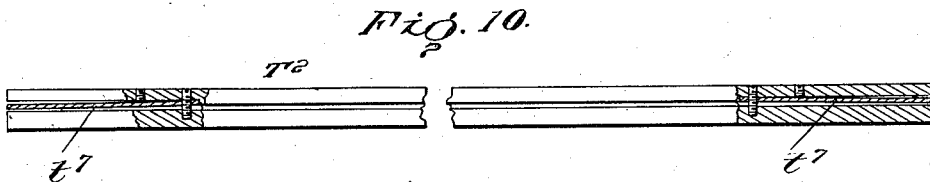
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5 SHEETS—SHEET 5.



Witnesses
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Paul J. Gathmann

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UNITED STATES PATENT OFFICE.

WILLIAM C. BRIGGS, OF WINSTON SALEM, NORTH CAROLINA, ASSIGNOR TO CAROLINA BANDING MACHINE COMPANY, A CORPORATION OF NORTH CAROLINA.

MECHANISM FOR FEEDING BANDS, LABELS, &c.

1,001,926.

Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed December 23, 1905. Serial No. 293,058.

To all whom it may concern.

Be it known that I, WILLIAM C. BRIGGS, a citizen of the United States, residing at Winston Salem, in the county of Forsyth and State of North Carolina, have invented certain new and useful Improvements in Mechanism for Feeding Bands, Labels, &c., of which the following is a specification.

In my application for Letters Patent of the United States, filed November 15, 1905, No. 287,511, I have shown a machine especially designed for applying bands to cigars. This machine involves, among other things, mechanism for withdrawing bands one at a time from a magazine and a carrier which conveys the bands one at a time from the magazine to devices which wrap the bands around the cigars. In that application claims are not made to the construction of the band feeding mechanism, such mechanism forming the subject-matter of the claims herein.

It is often desirable to feed bands, labels, wrappers, sheets of paper, etc., from a magazine, or place where they are piled, individually to wrapping or other mechanism, but difficulties are often encountered in separating the bands, etc., from others in the pile and in conveying and delivering them individually.

My improved mechanism, while especially designed for feeding cigar bands, is also adapted for feeding other things, such as labels, wrappers, etc., and may be embodied in various types of mechanism, but I will herein describe my invention as adapted for use in a machine for applying bands to cigars in the manner described in my application for patent above mentioned.

The magazine for the bands comprises a pair of uprights both of which are attached to a fixed frame, and one of which is adjustable on the frame in such manner as to accommodate bands of different lengths or to hold the bands either straight or inclined, and both uprights are adjustable to accommodate bands of different widths. The bands are arranged in a vertical pile in the magazine, which is open at the bottom, and rest on rods near the bottom thereof. Below the open bottom of the magazine is arranged a pneumatic band withdrawing device which reciprocates vertically into and out of the magazine causing a band to adhere to it on its upward movement and withdrawing a

single band on its downward movement and holding it in the path of a carrier which at the proper time grips the band held by the withdrawing device and conveys it to the mechanism where it is deposited. As soon as the band is deposited at the proper place a clamping device is brought into operation which holds the band securely while the carrier is retreating.

It has heretofore been difficult to separate labels, bands, etc., from others in a pile by pneumatic devices owing to the fact that a few of the labels, or those next the one attached to the withdrawing device adhered to it and leave the magazine with it. To prevent this I employ novel retarding devices which are arranged below the band supports in the magazine and which engage the bands while they are being withdrawn, causing such bands as follow the lowermost one to be arrested and supported over the path of the carrier. In this way one band at a time is delivered to the carrier and only one band at a time is entirely withdrawn from the magazine.

The band carrier comprises two plates, one of which carries fixed gripping jaws, while the other carries movable jaws. One of the plates moves relatively to the other to a limited extent to open and close the jaws, and both plates move together while gripping a band and conveying it to its destination.

In the accompanying drawings, Figure 1 is a perspective view of my improved band feeding mechanism showing its relation to a cigar banding device and illustrating also the necessary driving mechanism. Fig. 2 shows a longitudinal section of the same. Fig. 3 is a perspective view of the magazine for the supply of bands and the mechanism for taking individual bands therefrom and delivering them to the wrapping mechanism. Figs. 4 and 5 are detail views in section of the gripping jaws of the carrier which engage the individual bands and hold them while being transferred from the magazine to the wrapping mechanism. Fig. 6 is a detail view of one of the gripping jaws. Fig. 7 shows in elevation the magazine for the bands and the pneumatic mechanism for taking individual bands from the magazine. Fig. 8 shows in vertical section the mechanism for withdrawing bands individually from the magazine and convey-

ing them to the wrapping mechanism. Fig. 9 shows a vertical central section on the line 9—9 of Fig. 7. It will be observed that the parts in Figs. 8 and 9 are in different positions. Fig. 10 is a detail view in section of the guide bar for the band conveying devices which is provided with means for exerting a friction on part of the mechanism at certain times. Figs. 11 and 12 are perspective views of the plates carrying the gripping jaws. Fig. 13 is another view in plan of the pneumatic mechanism for withdrawing bands from the magazine. Fig. 14 is a detail view showing an adjustment of the band magazine.

In the drawings I have shown only enough of the main frame, A, to indicate how the parts of the band-feed mechanism may be supported and only so much of the operating mechanism, such as the power shaft, gearing, etc., as is necessary to an understanding of the manner in which the mechanism comprising my invention operates.

As before stated, a complete machine for feeding bands and wrapping them around cigars is shown in my application before mentioned.

Referring particularly to Figs. 1 and 2, the power shaft, B, may be supported in any suitable bearings in the main frame, A. This shaft carries a belt-pulley, C, and gears at D with a shaft, E, carrying a cam, F, hereinafter more particularly referred to. The shaft, B, also gears at G with a shaft, H, carrying a cam, I, and at J the shaft, B, gears with a pinion, K, carrying a pin, k , which engages a slot, k' , in a lever, K' , pivoted to a bracket, K^2 , of the main frame and engaging at k^2 the vertical rod, K^3 , of the exhaust pump, P, which may be of any suitable construction, the arrangement being such that as the pinion, K, revolves a reciprocating movement is given to the pump rod to operate in such manner as to produce a vacuum in the exhaust chamber, Q, which is connected with the withdrawing devices for taking bands from the band magazine. The pump, P, is connected with the exhaust chamber, Q, by a flexible pipe, p . This mechanism is similar in all respects to corresponding mechanism in my application for patent above referred to.

The magazine, R, for the bands, Y, is located at the front right hand side of the machine in a depressed portion of the main frame, as indicated in Fig. 1. It is shown as consisting of two upright guides, R' , adjustably secured to a stationary part of the machine. Each portion, r , of each guide is flanged at r' , while the other portion r^2 is adjustable by means of adjusting devices, r^3 , so as to vary the size of the channels in the magazine to accommodate bands of different widths. The manner of effecting this

adjustment is so clearly shown in the drawings that it need not be further described. In this way bands of different sizes and shapes may be accommodated and preferably the arrangement is such that the magazine may be adjusted to hold the bands in either a straight or inclined position so that they may be delivered in this manner to the point where they are to be used. By reference to Fig. 14 it will be observed that the guide R' has its face slotted at x . The adjustment for the purpose of holding the band in an inclined position relatively to the line of feed need only be a very slight one and the slotted guide may be turned to a very slight extent about the axis of the pivot screw as a center. This will shift the bands slightly so as to hold them at a slight angle to the line of feed. The portion r^2 of the guides being adjustable may be properly set to accommodate the inclined positions of the guide. This adjustment is sometimes important as where bands are fed to mechanism for applying them to cigars a slight inclination of the band is desirable to accommodate cigars when tapered. By means of the slot x and the adjusting screw the magazine may be adjusted to accommodate bands of different lengths. It will be understood that the bands are piled one upon another in the magazine and rest on pins, r^4 , and on opposite sides of the magazine below the pins I provide retarding devices, R^3 . Each of these is shown as consisting of an arm, r^5 , adjustably attached to a stationary part of the frame and carrying a vertical plate, r^6 , formed with saw-teeth, r^7 , which do not normally engage the pile of bands in the magazine being located below it, but when a band is being withdrawn by the pneumatic withdrawing device, presently described, should more than one band follow this device those not in direct contact or engagement with it, or adhering thereto, will be caught by the teeth and held between the retarding devices, thus only one band at a time can possibly be entirely withdrawn from the supply. The arms r^5 are held in place by screws as shown, but these screws may be loosened and the arms adjusted to change the position of the toothed plates relatively to the longitudinal edges of the bands. As the withdrawing device again rises the bands held by the teeth are raised and when the device again lowers with a band adhering to it, other bands are caught by the teeth in a similar way should they tend to leave the magazine.

In order to withdraw the bands from the magazine, I preferably employ a pneumatic withdrawing device, the head or mouth, s , of which is preferably elongated and divided as shown, and it is adapted to operate upon the middle portion of the bottom band in the pile. When the withdrawing device is ele-

vated to the position shown in Fig. 9, it presses against the pile of bands and lifts them, at this time air is exhausted, and the lower band in the pile adheres to the withdrawing device and recedes with it when it is moved downward, the other bands in the pile which tend to follow the lower band being arrested by the retarding devices, R³, and by the pins, r⁴. When the withdrawing device descends the opposite ends of the bottom band are bent or curved upwardly so as to pass the pins r⁴. The mouth s of the withdrawing device communicates by means of an orifice, s', with a valve chamber, s², containing an oscillatory valve, s³, having a spring actuated reciprocating member s⁴. The valve chamber communicates by means of a passage, s⁵, with the flexible tube, s⁶, which in turn communicates with the chamber, Q, from which air is exhausted by means of an exhaust pump, P. The casing, s⁸, has secured to it a collar, S¹⁰, carrying wings or slides, S⁷, that move vertically in guides, S⁵, in the frame, and said casing is also connected with a yoke, S⁶, that embraces the shaft, E, driven from the main or power shaft, B, in the manner before described. The shaft, E, carries a cam wheel, F, having a cam, f, with which a roller, b³, carried by the yoke engages, the arrangement being such that as the shaft, E, continuously revolves the yoke will be raised and lowered and will correspondingly raise and lower the band withdrawing device at regular intervals. The valve, s³, is attached to a valve-rod, s⁷, on the outer end of which is a pinion, s⁹, which meshes with a segment of teeth, s¹⁰, on a short shaft or rod, s¹¹, attached to an arm, s¹², formed on the collar S¹⁰. The segment, s¹⁰, has a laterally projecting arm, s¹³, shown in Fig. 7, which at times is adapted to engage an adjustable stop-screw, s¹⁴, and at other times is adapted to engage the under side of a lever, s¹⁵, shown in section in Fig. 7. As the withdrawing device is raised and lowered by its cam, the arm, s¹³, will alternately engage the stop, s¹⁴, and the lever, s¹⁵, and thus the valve, s³, will open and close communication between the mouth of the withdrawing device and the exhaust. As shown in Fig. 9 the parts are elevated and the exhaust is opened, but when the mechanism is lowered the arm, s¹³, engages the stop, s¹⁴, and the valve is turned to shut off communication between the withdrawing device and the exhaust chamber. The lever, s¹⁵, is pivoted at s¹⁶, to the stationary frame and it is pressed upon by a spring, s¹⁷, carried by a bracket, s¹⁸, so that it will remain in the position to which it is set. In Fig. 7, the lever is in position to engage the arm, s¹³, and thus open the valve, but the lever may be turned over to one side out of the way of the arm, s¹³, so that when the mechanism rises the exhaust will not operate to with-

draw a band. In this way the machine may be run if desired without withdrawing bands. A bracket arm, s²⁰, projects from the frame to a point over the arm, s¹³, and carries a set screw, s²¹, which bears on the top of the lever when the latter is in operation. After a band has been withdrawn from the magazine by the pneumatic withdrawing devices it is seized by grippers on a carrier which convey the band to the place where it is deposited. For this purpose I employ gripping jaws which are constructed and operate in the manner next to be described.

The stationary gripping jaws, t, project from a plate, T, and the movable gripping jaws, t', are attached to a rod, t², mounted in bearings on a plate, T', which latter rests on the plate, T, and the outer ends of the gripping jaws when gripping are arranged over the outer ends of the stationary gripping jaws as illustrated in Fig. 5. The tails, t³, of the movable gripping jaws project through slots, t⁴, in the plate, T, just in rear of the stationary jaws, t, and are adapted to move endwise therein. When the plate, T', is moved to the left as viewed in Fig. 3, the tails, t³, of the movable jaws will move along the slots and will strike the ends, t⁵, thereof and cause the movable jaws to be lowered in the manner indicated in Fig. 5. It will be understood that the plate, T', moves for a time relatively to the plate, T. Thereafter, the plates are moved together in the manner presently described. The plate, T, on one side, that is to say, the front side, as indicated in Fig. 1, is guided by a guide bar, T². This bar is slotted to receive the edge of the plate, T, and it extends from the band magazine to a point near the place where the band is deposited. Within its opposite ends it is provided with friction devices, t', which may be pieces of spring steel secured in the manner indicated and which tend to retard the movements of the plate T, and do so retard it while the plate, T', is moving relatively to the plate, T, to operate the gripping jaws. The plate, T, carries a guide, T³, for the front edge of the plate, T', and the opposite or rear edge of the plate, T, rests on a plate, T⁴, attached to the slide, T⁵, to which the rear edge of the plate, T', is firmly secured in the manner clearly shown in Fig. 3. The rod, t², carries an arm, t¹⁰, with which engages a spring, t¹¹, secured to the plate, T'. This spring tends to elevate the movable jaws, t'. As soon as the tails, t³, of the jaws recede from the ends, t⁵, of the slots, the spring elevates the jaws to the proper extent.

The slide, T⁵, reciprocates horizontally in guides, T⁶, clearly shown in Figs. 3 and 8, and carries the jaws back and forth between the band magazine and the place where the bands are deposited. The slide has secured to it an arm, T⁷, which is connected by a link, T⁸, with the upper end of a lever, T⁹,

which is pivoted at T^{10} , in a stationary frame and has an arm, T^{11} , carrying a roller, T^{12} , engaging a cam groove in the cam wheel, F . This groove is suitably shaped to operate the lever, T^9 , in such manner as to reciprocate the gripping jaws at the proper time to carry bands to the wrapping mechanism.

After a band has been withdrawn from the magazine by the pneumatic withdrawing devices the gripping jaws in an open condition, such as indicated in Fig. 4, move to the left and then close upon a band, Y , as indicated in Fig. 5, just after the exhaust mechanism has been cut off and the withdrawing mechanism has dropped to a position below the plane of the plates, T , T' . The jaws continue their movement to the left and carry the band with them in the manner indicated in Fig. 8. When the slide to which the plate, T' , is rigidly secured, reaches the end of its guide, T^6 , and commences to recede, the plate, T' , first moves while the plate T , remains stationary being held by the friction devices, t^7 . As soon as the plate, T' , has moved to a short extent the movable jaws will be raised by the spring, t^{11} , and thus the band will be released. As soon as the tails, t^8 , of the jaws strike the ends, t^8 , of the slots, the plate, T , will be connected with the plate, T' , and both plates will recede together. Preferably the engaging ends of the movable jaws are constructed as indicated in Figs. 4, 5, and 6, being provided with plates, t^{13} , of rubber or similar material which will enable the jaws to take a firm hold on the band without danger of slipping.

It will be understood that the band, label or other article conveyed by the carrier may be deposited at any desired place in any machine where it is suitable to use such mechanism as I have before described. I have indicated in the drawings one way in which the bands delivered by the feed mechanism may be received and used, that is to say, I have illustrated a device which may receive a band and which may be employed for wrapping the band around a cigar. The mechanism illustrated is similar to that shown in my application for patent above mentioned, but only part of this mechanism is shown.

As illustrated particularly in Fig. 1, U , indicates a tape which passes from a spring drum, U' , over arms, U^2 , U^3 , supported at, u , on a frame, U^4 . The arm, U^2 , may be stationary, while the arm, U^3 , is pivoted. After passing over the arms the tape extends down to a lever, V , to which it is secured. It may be assumed that the lever is operated by hand. After a band is deposited on the tape, U , a cigar may be placed crosswise of the band and tape and then if the cigar be pressed down the arm, U^3 will

be swung on its pivot and the cigar and band will be inclosed in the pocket of the tape, if then the outer end of the band, which has been previously gummed, is moistened and the lever V is operated the band and cigar will be rotated and the former will be wrapped around the cigar, the end of the band being made to adhere to the portion of the band which it overlaps. This operation is fully described in my before mentioned application. I have shown in connection with this mechanism, a clamping device, W , which operates to clamp the band delivered by the carrier on the tape allowing the carrier to recede without drawing the deposited band with it and also holding the band securely while it is being wrapped around the cigar prior to the rotary movement before referred to given to the band and cigar. As shown the clamp, W , is secured to a shaft, W' , carrying a pinion, W^2 , meshing with a segment of teeth, W^3 , on a lever, W^4 , pivoted at, w , to the main frame and carrying a roller, w' , traversing a groove in the cam wheel, I , as clearly illustrated in Fig. 2. The parts are so timed that as soon as a band is deposited on the tape, U , the clamp, W , is lowered and presses one end of the band against the tape and holds it securely as long as needful and at the proper time the clamp rises and releases the band.

I claim as my invention:

1. The combination of a reciprocating carrier, a magazine for bands or labels, comprising uprights having adjustable flanges and means for adjusting the uprights to change the vertical plane in which they are disposed whereby the bands or labels may be tilted or inclined with reference to the line of reciprocation of the carrier.

2. The combination of a magazine for bands or labels open at the bottom, means therein for supporting a pile of bands at their extreme outer ends, retarding devices arranged below said supporting means, and a withdrawing device reciprocating below the magazine and adapted to move up into the magazine and carry bands from the retarding devices to a plane above the supporting means in the magazine.

3. The combination of a magazine for bands or labels open at the bottom, means for supporting a pile of bands therein at their extreme opposite ends, retarding devices on opposite sides of the pile of bands intermediate the opposite ends of the magazine, and a withdrawing device reciprocating below the magazine and adapted to move up into the magazine and carry bands from the retarding devices to a plane above the supporting means in the magazine.

4. The combination of a magazine for bands or labels open at the bottom, means for supporting a pile of bands at their op-

posite ends, vertical serrated plates on opposite sides of the pile of bands below the band supports, and a withdrawing device reciprocating below the magazine and adapted to move up into the magazine and carry bands from the retarding devices to a plane above the supporting means in the magazine.

5. The combination of a magazine for bands or labels open at the bottom, means for supporting a pile of bands therein at their opposite ends, vertical serrated plates on opposite sides of the pile of bands, adjustable arms on which the plates are carried, and a withdrawing device reciprocating below the magazine and adapted to move up into the magazine and carry bands from the retarding devices to a plane above the supporting means in the magazine.

6. The combination of a magazine for bands, a band carrier, means for reciprocating it, gripping devices mounted on the carrier comprising the upper and lower plates, the stationary gripping jaws carried by one of the plates and jaws pivoted to the other plate; means for reciprocating one of the plates, friction devices for retarding the movement of the other plate and connections between the pivoted jaws and the plate carrying the stationary jaws which as one plate reciprocates the other is also reciprocated and the pivoted jaws are moved.

7. The combination of an open bottomed bands magazine and a vertically reciprocating

band withdrawing device, comprising a valve chamber having an open mouth adapted to receive a band, a valve in the valve chamber, and means for opening and closing the valve as the withdrawing device reciprocates, which are constructed at times to permit the withdrawing device to reciprocate without opening the valve.

8. The combination of a bands magazine open at the bottom and a vertically reciprocating band withdrawing device comprising a valve chamber having an open mouth adapted to receive a band, an oscillating valve in the valve chamber, gearing for oscillating the valve, an arm projecting from the gearing, and upper and lower stops with which the arm alternately engages.

9. The combination of a reciprocating carrier, a magazine for bands or labels open at the bottom, means for supporting the bands at the bottom of the magazine, a withdrawing device reciprocating vertically below the magazine, gripping devices which take the labels from the withdrawing device and hold it on the carrier, and means for adjusting the magazine to change the angle of the labels relatively to the line of reciprocation of the carrier.

In testimony whereof, I have hereunto subscribed my name.

WILLIAM C. BRIGGS.

Witnesses:

W. C. IDOL,
R. M. OGLENON.