

Aug. 11, 1953

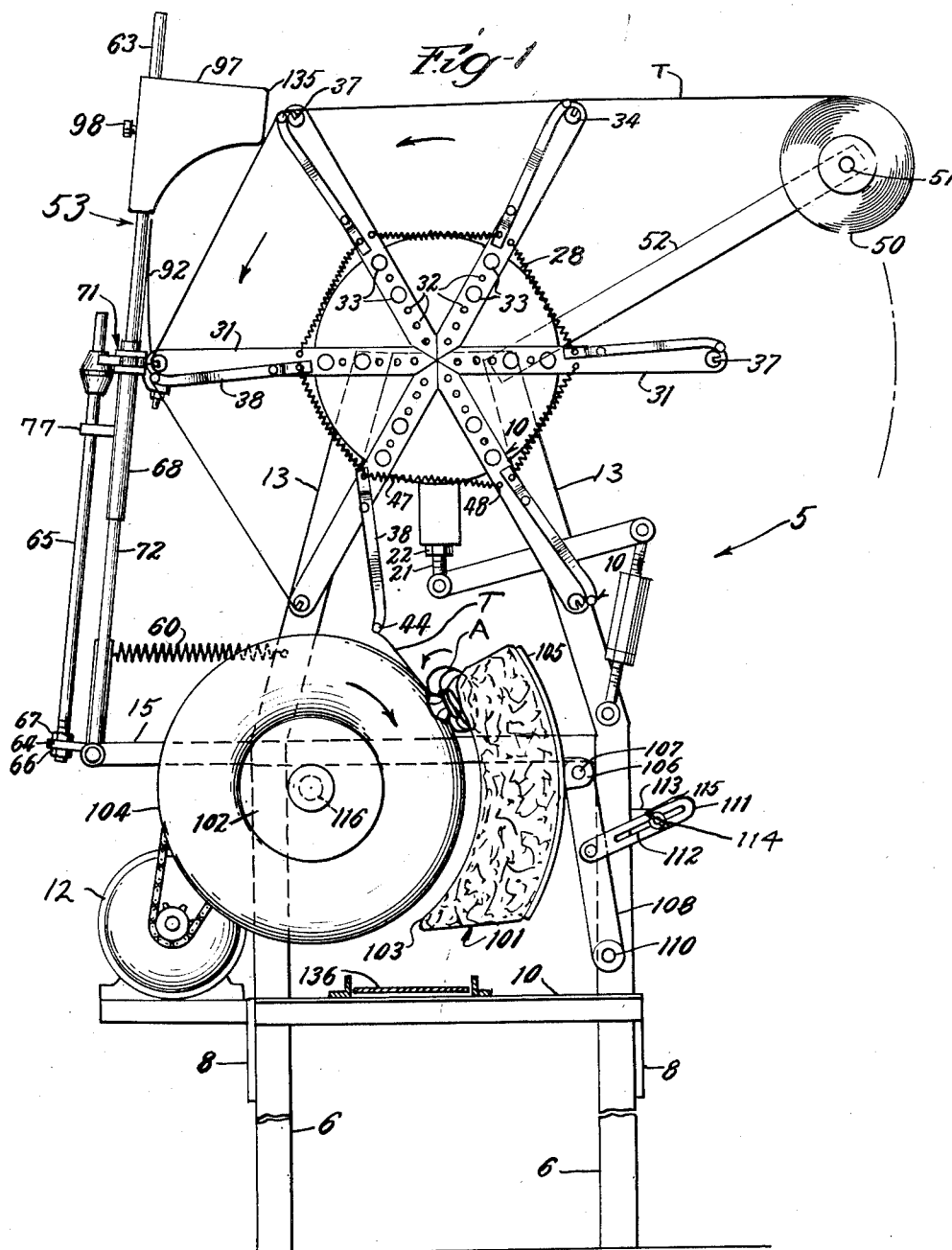
P. J. DEWYER

2,648,382

TAPING MACHINE

Filed April 1, 1950

4 Sheets-Sheet 1



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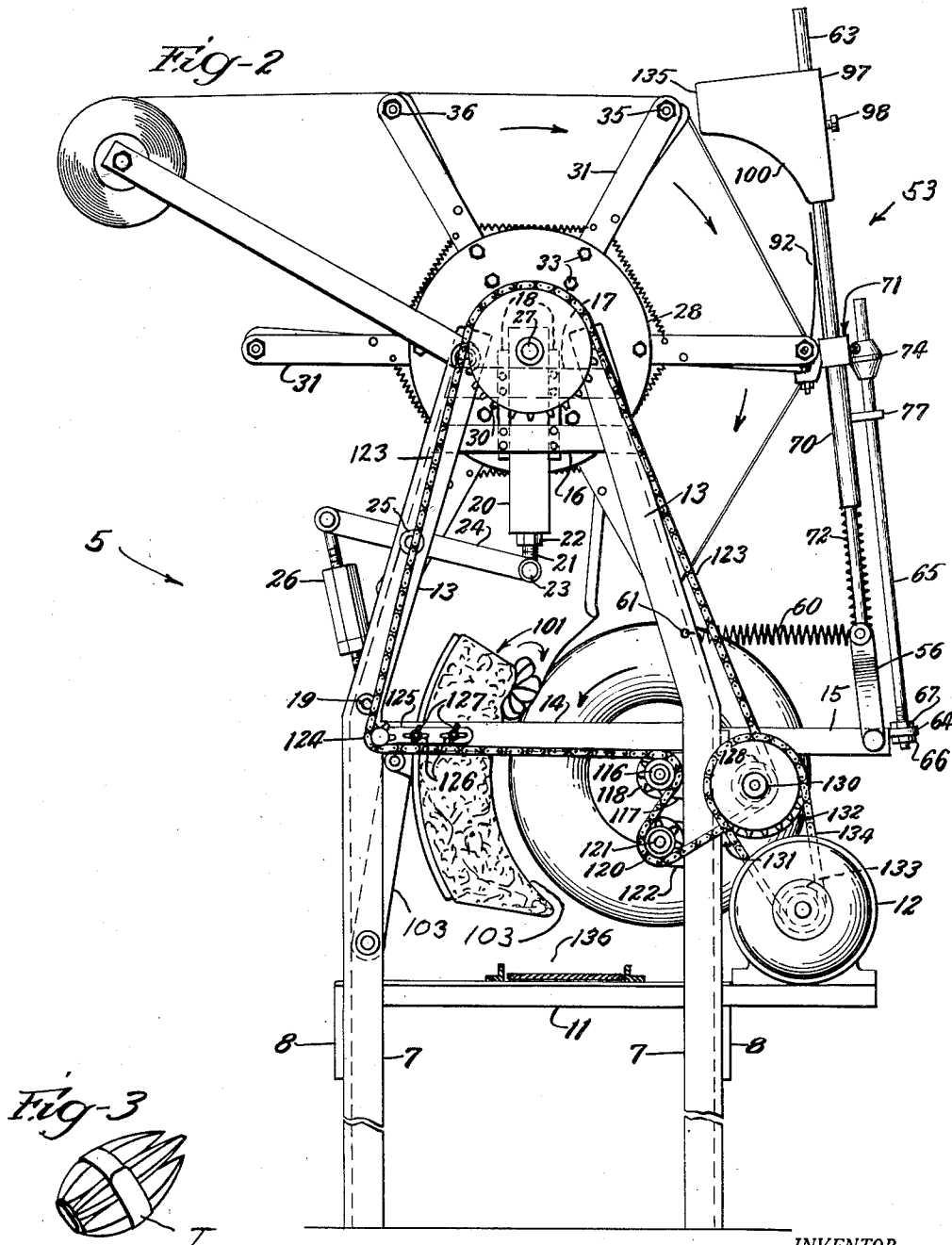
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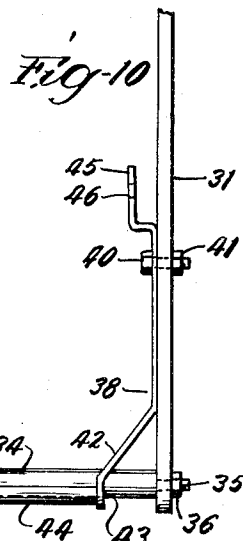
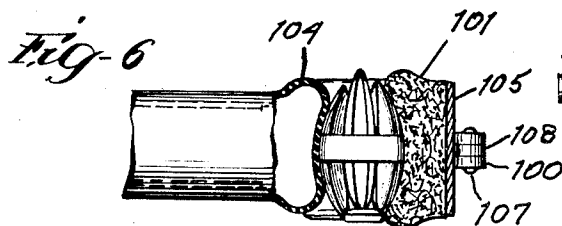
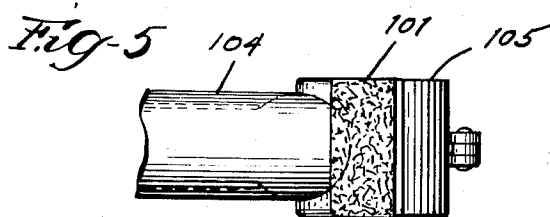
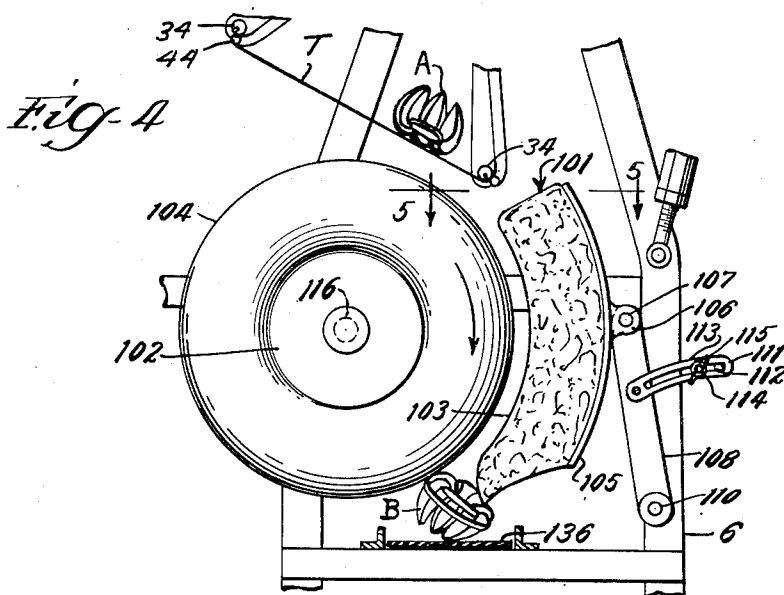
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4 Sheets-Sheet 3



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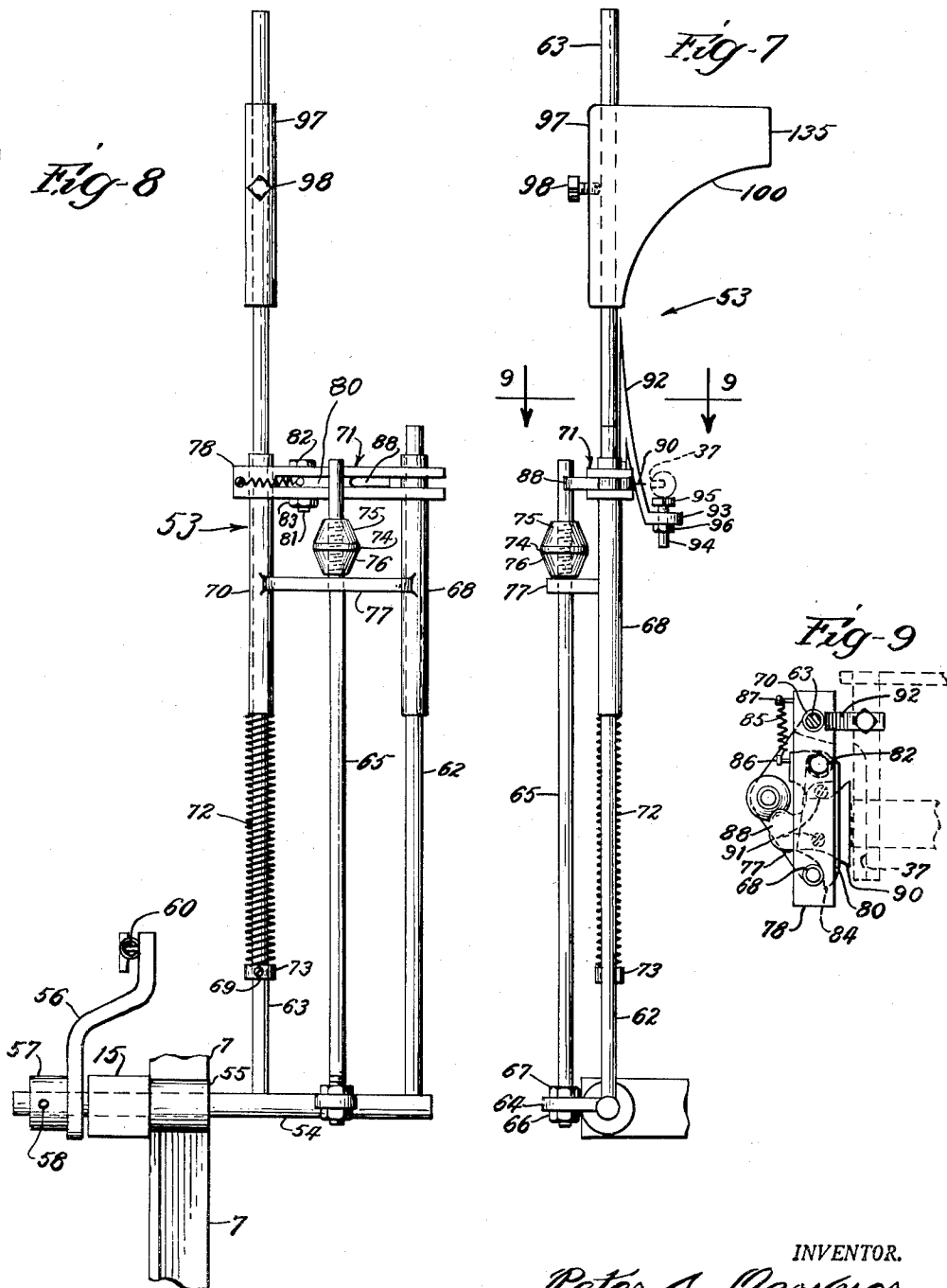
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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,648,382

TAPING MACHINE

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Application April 1, 1950, Serial No. 153,328

7 Claims. (Cl. 164—42)

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This invention relates, generally, to apparatus which will operate to withdraw pressure sensitive adhesive tape from a supply roll, sever it into predetermined lengths and wrap the tape around an object such, for example, as a hand of bananas, a bunch of asparagus, or bundles of objects generally.

In connection with the operation of self-service type groceries and markets, the practice of bundling produce into individual bundles is already established and is being expanded at an increasing rate. For example, it is now the practice to bundle or tape a hand of bananas and then mark on the tape the price of the hand based on the weight thereof or the number of bananas therein. This merchandising technique serves to speed up sales since the customer merely has to pick out a hand of bananas which meets with his approval and has an acceptable price. At the checking station, the checker merely has to note the price of the bundle or hand of bananas so that there is no delay involved in counting or weighing the bananas.

Other items of produce which may also be bundled includes such things as broccoli, rhubarb, asparagus, celery, etc. Outside the produce field, many other articles may be similarly put up into taped bundles including such things as frankfurters, tooth brushes, pencils, straws, cigars, etc.

Various things have been used for securing such items together in bundles including such things as string, rubber bands, wrapping paper, and tape, both the water activated type and the pressure sensitive adhesive type. In so far as I am aware, the tying or taping of such bundles has previously been carried out by hand and the expense involved for labor to perform such operations is substantial.

Furthermore, the hand bundling operations tend to injure certain items of produce which are easily bruised such, for example, as bananas. Such bruising and damaging of the merchandise entails an appreciable loss.

One of the best materials which can be used for securing together bundles of merchandise is pressure sensitive adhesive tape. This can be purchased in a wide variety of colors and can be printed with attractive repeated designs containing advertising or printed matter. Often, it will be desirable to use a crayon or pencil to mark on the tape the price or weight of a taped bundle and pressure sensitive adhesive tape is available which will readily take and retain crayon and pencil marks.

Pressure sensitive adhesive tape is sold in the form of rolls and practical difficulties are involved in removing the tape from a supply roll, severing it into pieces of predetermined length and applying these pieces by hand to items to be grouped or bundled, such as hands of bananas,

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The object of the present invention is apparatus which operates automatically to withdraw pressure sensitive adhesive tape from a supply roll, sever it into pieces of predetermined length and position the severed pieces of tape over a portion of the apparatus which will gently and without injury wrap the piece of tape around a bundle of elongated objects, such as a hand of bananas, when such a bundle is placed into the wrapping mechanism in contact with a portion of the sticky side of the tape.

An important object of the invention is apparatus which will continuously withdraw pressure sensitive adhesive tape from a supply roll thereof, sever the tape into pieces of predetermined length, and support these pieces at opposite ends until removed, with one end being carried on a support which is swingable towards the support for the other end.

Another object of the invention is apparatus for withdrawing pressure sensitive adhesive tape from a supply roll and severing it into pieces of predetermined length wherein the tape is withdrawn and supported on pins having longitudinal slots in the tape engaging surfaces thereof and a knife mechanism is arranged to be operated by the pins so that a knife blade is in turn projected into each of the slots as each pin rotates past a cutting station.

Still another object of the invention is apparatus providing an elongated bite opening between cushioned surfaces, one of which is moving relative to the other so that when an object, such as a hand of bananas, with a piece of pressure sensitive tape adhering to one place thereon is pushed into the entrance to the bite opening, the object will be rolled through the bite opening so as to wrap the tape around the object before it is discharged from the bite opening.

Yet another important object of the invention is apparatus for wrapping a piece of tape around an irregular object requiring gentle handling, such as a hand of bananas, which apparatus will continuously withdraw the tape from a supply roll thereof, sever it into pieces of predetermined length, position the severed pieces of tape over the entrance into an elongated bite opening between cushioned surfaces so that when the object is applied to one end of the severed piece of tape and then fed into the entrance to the bite opening, the object will be rolled so as to wrap the tape around the object and withdraw the other end from its support.

Certain other objects of the invention will, in part, be obvious and will, in part, appear hereinafter.

For a more complete understanding of the nature and scope of the invention, reference may now be had to the following detailed description

thereof taken in connection with the accompanying drawings, wherein:

Fig. 1 is a front elevational view of a machine forming one embodiment of the invention which is particularly suited for taping hands of bananas in accordance with the principles of the invention;

Fig. 2 is a rear elevational view of the machine shown in Fig. 1;

Fig. 3 is a perspective view showing a hand of bananas taped or bundled with a piece of pressure sensitive adhesive tape by the machine of Fig. 1;

Fig. 4 is a fragmentary front elevational view of the wrapping mechanism of the machine of Fig. 1 and showing a wrapped or taped hand of bananas being discharged therefrom;

Fig. 5 is a fragmentary detail plan view taken on line 5—5 of Fig. 4;

Fig. 6 is a view corresponding to Fig. 5 but showing the relationship of the cushioned surfaces when a hand of bananas is inserted in the bite opening therebetween;

Fig. 7 is a fragmentary front elevational view on an enlarged scale showing the tape severing mechanism of the machine shown in Fig. 1;

Fig. 8 is an elevational view taken on the left-hand side of the tape severing mechanism as shown in Fig. 7;

Fig. 9 is a fragmentary detail sectional view taken on line 9—9 of Fig. 7; and

Fig. 10 is a fragmentary elevational view on enlarged scale taken on line 10—10 of Fig. 1.

The machine is designated generally in Figs. 1 and 2 by the reference character 5. The machine 5 has a frame which may suitably be fabricated from angle iron stock or other suitable frame material. The frame includes a pair of front legs 6—6 (Fig. 1), a pair of rear legs 7—7 (Fig. 2), with a pair of side members 8—8 extending therebetween. A horizontal frame member 10 extends across the front legs 6 while a frame member 11 extends between the rear legs 7. The members 10 and 11 project beyond one side of the machine and serve as a support for an electric motor 12 which drives the machine.

Converging members 13—13 project from the upper ends of the legs 6—6 and 7—7. Cross members 14—14 extend between the upper ends of the legs 6—6 and 7—7 and have projections 15 extending beyond one side of the machine as shown.

Cross members 16—16 and 17—17 extend between the upper ends of the converging members 13 and serve to support the opposite side members 18—18 of a vertical guideway for the square or rectangular post 20 which fits slidably therebetween.

The bottom end of the post 20 is tapped and a bolt 21 is screwed therein and may be locked in any desired position by a lock nut 22. A pin 23 projecting rearwardly from the bottom end of the bolt 21 fits into an eye on one end of a lever 24 which is fulcrumed intermediate its opposite ends by a pin 25 projecting from one of the converging members 13. The other end of the lever 24 is pivotally connected to the upper end of a turnbuckle connection 26, the bottom end of which is pivotally connected to the converging member 13 at a point below the pin 25 as indicated at 19. It will be seen that the position of the post 20 between the guide members 18 may be adjusted by turning the turnbuckle 26 in the desired direction. Further adjustment

can also be obtained by adjustment of the connecting bolt 21.

The upper end of the post 20 serves as a journal for an axle 27 on the front end of which is mounted a wheel hub 28 in the form of a flat circular plate or disk. A sprocket wheel 30 is mounted on the rear side of the hub plate 28 and provides a means whereby the wheel hub 28 may be rotated by the motor 12 as will be described hereinafter.

The wheel hub 28 serves as a support for six regularly spaced spoke members 31—31. Each of the spokes 31 is rounded at its other end and is so pointed at its inner end that the spokes may be fitted together at the center of the hub plate 28 as shown in Fig. 1. A plurality of holes 32—32, equally spaced apart, are provided in each of the spokes 31 in order that they may be fastened in different positions of radial adjustment on the wheel hub 28, depending on how far out it is desired to have the spokes 31 project. The hub plate 28 is provided with six pair of radially aligned holes which are spaced apart a distance equal to the distance between the center of one of the holes 32 and the center of a second hole 32 away from the first hole so that a pair of bolts 33—33 may be used to retain each of the spokes 31 in place on the hub 28. The position of the spokes 31 may be readily changed by removing the bolts 33 from each of the spokes 31, moving the spoke members so that the desired set of holes 32 register with the holes in the hub plate 28 and then replacing and tightening the retaining bolts 33.

A forwardly projecting tape supporting pin 34 is carried on the outer end of each of the spokes 31. Each of the pins 34 is provided on the rear end with a stud 35 (Fig. 10) which extends through an opening provided therefor in the end of each spoke 31 so that each pin may be retained in place by a nut 36 threaded onto said stud 35 from the backside as shown. Each of the pins 34 is provided with a longitudinal radial slot 37 and each pin 34 is so turned that its slot 37 is turned radially outward as shown, for example, in Fig. 1. The slots 37 permit a knife blade to sever tape carried on the pins 34 as will be described in detail hereinafter.

Each of the spokes 31 is provided with a swingable arm 38 which is pivotally attached to the front sides thereof by means of a bolt 40 which extends through holes provided therefor in the arm 38 and the spoke 31 and which may be secured in place by a nut 41 as shown in Fig. 10. The arms 38 are formed of flat stock and they fit flatwise against the spokes 31 for the greater portion of their length. Each of the arms 38 has an outwardly bent portion 42 (Fig. 10) provided with a straight end portion 43 to which is attached a forwardly projecting tape supporting finger 44. Each of the fingers 44 is arranged to fit sidewise against the pin 34 which is associated therewith, and preferably, the outermost longitudinal edge of each finger 44 lies somewhat radially beyond the outermost longitudinal edge of the associated pin 34 as shown, for example, in Figs. 1 and 10.

In order normally to press each of the fingers 44 against the side of the associated pin 34 toward which the spokes 31 and the hub plate 28 rotate, as indicated by the arrows in Figs. 1 and 2, each of the arms 38 is provided with an offset portion 45 at the inner end thereof having a hole 46 therein through which one end of a tension spring 47 may be attached with the other

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end of the spring being connected with the next forward spoke member 31 through an opening 48 provided therein as shown in Fig. 1.

A supply roll 50 of pressure sensitive adhesive tape may be supported on a pin 51 projecting from the outer end of an arm 52 attached to one of the converging frame members 13. The position of the spool 50 is such that it is aligned with the tape carrying pins 34 so that when the spokes and wheel hub 23 are rotated the tape T may be withdrawn from the supply roll 50 and pass over the pins 34 as shown, for example, in Fig. 1. The tape T also passes over the fingers 44 which are pressed against the sides of the pins 34 and since the outer longitudinal edges of these fingers lie somewhat beyond the tape supporting surfaces of the pins 34, the tape adheres to a greater surface on the side of a slot 37 away from the finger 44 than on the side next to the finger 44. This arrangement is beneficial since it facilitates the withdrawal of one end of a severed piece of tape onto one of the fingers 44 while the other end of the piece of tape adheres to the pin 34 carried on the preceding spoke 31, as will be described hereinafter.

The apparatus for severing the tape T supported on the pins 34 is indicated generally in the drawings at 53. This apparatus is swingably mounted at the bottom on a shaft 54 supported in a sleeve bearing 55 attached to the side of the projecting frame member 15 adjacent the outer end thereof. On the rear side of the bearing 55 the shaft 54 is provided with a crank arm 56 having a hub 57 which fits over one end of the shaft 54 and is keyed thereto by means of a pin 58. A spring 60 (Fig. 2) is attached to the outer end of the arm 56 at one end and at the other end is attached to one of the converging frame members 13 through a hole 61 therein. The tension spring 60 thus tends to pull the cutting mechanism 53 inwardly against the rotating tape supporting pins 34.

On the front projecting end of the shaft 54 there are mounted vertical posts 62 and 63. The post 62 is the shorter of the two and the upper end thereof terminates a short distance above the level of the center of the hub plate 23. The longer post 63 extends up to a point which is level with the top of the circle generated by the outer ends of the spoke members 31 when they are adjusted radially to their most extended position.

A lug or ear 64 projects from the side of the shaft 54 away from the machine 5 and serves to support a third vertical post 65. The post 65 is threaded on the lower end and projects through an opening provided therefor in the lug 64 and is secured in place by the locking nuts 66 and 67 lying on opposite sides of the lug 64.

The posts 62 and 63 serve as vertical guides for a knife supporting structure comprising a pair of sleeves 68 and 70 between the upper ends of which a knife mechanism indicated generally at 71 is supported. The sleeve 68 is slidable on the post 62 while the sleeve 70 is slidable on the post 63. The slidable frame structure for the knife mechanism 71 is normally supported in its uppermost position by means of a compression spring 72 fitting around the guide post 63 in-between the bottom end of the sleeve 70 and a stop collar 73 secured in position on the post 63 by a set screw 69. The upward position of the sleeves 68 and 70 is limited by a cam member 74 having upper and lower frusto-conical portions 75 and 76. The cam member 74 has a central hole ex-

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tending therethrough which is internally threaded so as to screw upon threads provided on the post 65. The post 65 extends through an opening provided in a cross member 77 extending between the sleeves 68 and 70 and this member 77 engages the bottom surface of the cam member 74 so as to limit upward movement of the supporting structure for the knife mechanism 71.

The knife mechanism 71 comprises a flat, rectangular member 78 which is slotted from the front end so as to receive in the slot a flat blade-holding clamp 80. The member 78 is provided with vertical holes adjacent opposite ends thereof so as to permit it to fit over sleeve members 68 and 70. The member 78 is attached to the upper ends of the sleeve members 68 and 70 adjacent their upper ends. The blade holder 80 is pivoted adjacent one end on a bolt 81 (Fig. 8) extending through registering holes provided therefor in the member 78. The bolt head 82 fits against the upper side of the member 78 and the bolt is secured in place by a nut 83 screwed on the lower end thereof.

The blade holder 80 has a projection 84 (Fig. 9) on the end opposite to that which is pivoted, which projection 84 engages the adjacent sleeve 68 when the holder 80 is pivoted backwardly by means of a tension spring 85 connected between a pin 86 on the holder 80 and a pin 87 on the slotted member 78, as shown in Fig. 9. The blade holder 80 has a cam engaging portion 88 extending from the rear side thereof which is arranged to repeatedly engage the frusto-conical surfaces of the cam member 74 during operation of the machine as explained hereinafter.

The blade holder 80 is itself longitudinally slotted from the end having the projection 84 inwardly adjacent the end which is pivoted on the bolt 81 and a tape cutting blade 90 is clamped in the holder 80 by clamping screws 91-91'. The blade 90 has a razor edge and may be easily removed and replaced by loosening the clamping screws 91.

A cam member 92 (Fig. 7) is attached to the member 78 and sleeve member 70 adjacent the upper end of the latter and on the side towards the machine 5. A projection 93 extends from the lower end of the cam 92 and has a hole therein which is internally threaded so as to receive a set screw 94 having a head 95 on the upper end thereof. A lock nut 96 serves to lock the set screw 94 in any set position. As the wheel hub 23 rotates, the cam 92 serves in turn engage each of the pins 34 behind the fingers 44 of the associated arms 38 and the cam surface controls the position of the cutting mechanism 53 so that each of the pins 34 in turn engages the head 95 on the set screw 94. The set screw 94 is so adjusted that when one of the pins 34 engages the head 95, as shown in Fig. 7, the slot opening 37 in the pin will lie opposite the knife blade 90 so that the knife blade 90 may be projected into and withdrawn from the slot 37, when the knife holder 80 is operated by the cam 74.

A cam block 97 fits slidably over the upper end of the post 63 and is locked in position thereon by a set screw 98. The block 97 has a concave cam surface 100 which is adapted to be engaged in turn by each of the pins 34 before the pin engages the cam surface of the cam 92. The function of the cam block 97 will be made more apparent hereinafter in connection with the description of the mode of operation of the machine 5.

The rotating wheel structure comprising the

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hub plate 28 and the spokes 31 with their associated parts operates in conjunction with the tape severing mechanism 53 to deliver pieces of the pressure sensitive adhesive tape over the entrance to an elongated bite opening provided between a cushion member 101 and a rotating wheel 102 on which is mounted an inflated inner tube 104, such as the type used on airplane wheels. The cushion 101 is preferably formed of a compressible material, such as sponge rubber, air-foam rubber, or the like, and it has a concave surface 103 which has a radius of curvature corresponding to that of the outer periphery of the tubular cushion 104 carried on the wheel 102. The cushion 101 is supported on the backside by a curved plate 105 to which the cushion may be adhesively secured. The plate 105 has a lug or ear 106 projecting from the rear side thereof. A pin 107 extends through the ear 106 and the upper end of a link 108 which is pivotally connected by a pin 110 at the lower end to one of the frame legs 6. The link 108 carries a clamping member 111 which is provided with a longitudinal slot 112. The leg 6 has a projection 113 extending to one side thereof which carries a pin 114 which projects through the slot 112 and is provided with a wing nut 115. By tightening down the wing nut 115 the link 108 can be clamped in any desired angular position relative to the leg 6 so as thereby to position the cushion 101 with respect to the periphery of the tubular cushion 104.

The wheel 102 is carried on a shaft or axle 116 forwardly of the front set of legs 6. The axle 116 is supported on a bearing 117 (Fig. 2) which is bolted to the frame and a sprocket wheel 118 is provided on the rear end of the axle 116. The sprocket wheel 118 is mounted in the same plane as the sprocket wheel 30 carried on the back of the hub plate 28; and beneath the sprocket wheel 118 there is mounted another sprocket wheel 120 carried on an axle 121 supported by a bearing 122 bolted to the frame. A drive chain 123 runs over the sprockets 118, 120 and 30. It also runs over an idler guide sprocket 124 supported on a member 125 having slots 126—126 provided therein by which it may be adjustably clamped on the side of the frame member 14 by means of wing nuts 127—127. The idler sprocket 124 may be adjusted so as to keep the chain 123 tight, depending upon the position of vertical adjustment of the wheel hub 28. That is, if the wheel hub 28 is lowered, then the sprocket 124 is shifted outwardly whereas when the wheel hub 28 is lifted, the sprocket 124 is shifted inwardly.

The chain 123 is driven by means of a sprocket wheel 128 mounted on a shaft 130 carried by a bearing 131 which is bolted to the side of the frame. The axle 130 also carries a larger sprocket 132 mounted in the plane of the drive sprocket 133 of the electric motor 12. A drive chain 134 runs over the sprocket wheels 132 and 133.

It will be seen that the motor 12 acts through the chains 134 and 123 to drive the cushioned wheel 102 in a clockwise direction as viewed in Figs. 1 and 4 while the hub plate 28 with the attached spoke members 31 is driven in a counterclockwise direction.

Mode of operation

The machine 5 operates in the following manner: A roll of supply tape 50 is placed over the supporting pin 51 on the arm 52 and the tape

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T is withdrawn by hand and placed over two of the pins 34 so as to overlie the slots 37 therein. The motor 12 is energized and the machine 5 begins to operate. As the hub plate 28 turns carrying with it the spoke members 31 and their associated parts, more tape is withdrawn from the supply roll 50.

When one of the pins 34 (in approximately the 9:00 o'clock position in Fig. 1) engages the head 95 on the set screw 94 of the cam 92, it serves to depress the knife mechanism 71, carried on the sleeves 68 and 70 against the force of the spring 72. As the knife mechanism 71 travels downwardly in unison with the pin 34 engaging the bolt head 95, the cam projection 88 on the blade holder 80 engages the cam member 74 and is actuated so as to force the cutting blade 90 into the slot 37 of the pin 34. The tape lying over this slot is thereby severed. After the cam engaging projection 88 passes by the center of the cam member 74 and drops down on the bottom surface 76 thereof, the spring 85 serves to retract the knife blade 90 out of the slot 37. It will be noted that during this tape severing operation there is only a slight relative movement between the slot 37 and the knife blade 90 except for the movement of the blade into and out of the slot opening. The width of the slot 37 is sufficient to accommodate such slight relative movement due to the rotation of the pin 34 as it turns with its supporting spoke 31.

The cam block 97 is so positioned and constructed that after the cutting operation has been completed, the pin 34 in approximately the 11:00 o'clock position will engage the vertical edge 135 of the cam block 97 and tilt the cutting mechanism 53 away from the wheel structure. This tilting action disengages the bolt head 95 of the set screw 94 from the pin 34 where the cutting action has just taken place and permits the knife mechanism 71 to be snapped to its upper position where the cross piece 77 engages the bottom of the cam 74.

After the 11:00 o'clock pin 34 passes around the bottom end of the vertical edge 135 of the cam block 97, it engages the curved portion 100 thereof and is maintained thereagainst by means of a tension spring 60. In this manner, each of the pins is guided into position by the surface 100 and the surface of the cam 92 so as to engage the bolt head 95. Thereupon, the cutting operation is repeated so that the tape T is severed where it lies over each of the slots 37.

After passing the cutting station, each piece of the pressure sensitive adhesive tape is supported on the front end on one of the pins 34, as shown in Fig. 4, while the following end of the severed piece of tape is supported on the finger 44 of the swingable arm 38 carried with the following pin 34. As the wheel structure rotates, this piece of severed tape is brought down over the upper end or entrance to the elongated bite opening between the cushion 101 and the tubular cushion 104. The machine attendant now places a hand of bananas indicated at A in Fig. 4 on the upper adhesive coated piece of tape adjacent the pin 34 to which the leading end of the adhesive tape is attached. The operator presses down on the hand of bananas A thereby freeing the piece of tape from the pin 34 and inserting the hand of bananas into the entrance to the bite opening, as shown in Fig. 1. Thus, as the hand of bananas enters into the bite opening, one end of the piece of tape is stuck to the side of the hand of bananas A while the main length of the piece of tape is free and attached at the rear end to the finger 44 of the fol-

lowing arm 38 which is swung outwardly from its associated pin 34, as shown in Fig. 1. As soon as the hand of bananas is caught in the bite opening, the relative movement between the tubular cushion 104 and the stationary cushion member 101 serves to roll the hand of bananas downwardly through the bite opening in a counterclockwise direction as viewed from Fig. 1. This action serves to wrap the free portion of the piece of tape around the hand of bananas and eventually pulls the end of the piece of tape free from the supporting finger 44. The bite opening is of such a length as to insure that the piece of tape will be completely wrapped around the hand of bananas A before it is discharged from the machine as indicated at B in Fig. 4.

The bottom end of the cushion 101 is unsupported by the backing plate 105 and as the hand of bananas approaches the discharge end of the bite opening, it acts to outwardly deform the unsupported end of the cushion member as shown in Fig. 4. This action allows the hand of bananas to be gently discharged onto a traveling conveyor belt 136 so as to be carried away from the machine 5.

While the operation of the machine 5 has been described in connection with the taping or bundling of a hand of bananas with a taped hand being represented in Fig. 3, it will be appreciated that the machine 5 may be used as shown, or with minor adjustment and modification, to apply and wrap pressure sensitive adhesive tape around other objects including bunches of carrots, celery, broccoli, asparagus, and other items, such as pencils, glass rods, sausages, etc.

The cushion member 101 may be replaced by a pneumatic type cushion and the inflated tube 104 may be replaced by a sponge rubber tire. The depth and hardness of the cushion members may be selected in accordance with the requirements of the objects being handled.

It will be understood that the machine 5 may be used to sever pieces of tape of greater length by moving out the spoke members 31 and then lifting the entire wheel structure mechanism by adjusting the turnbuckle 26 so that each piece of severed tape will be properly positioned over the entrance to the bite opening between the cushion members.

Since further changes may be made in the foregoing construction, and different embodiments of the invention may be made without departing from the spirit and scope thereof, all matter described above or shown in the accompanying drawings is intended to be interpreted as illustrative and not in a limiting sense.

What is claimed as new is:

1. Apparatus for withdrawing pressure sensitive adhesive tape from a supply roll thereof, supporting predetermined lengths of the tape from opposite ends while each length of tape is severed, and swingably supporting one end of a severed length of tape after the opposite end has been freed from its support, comprising in combination, a wheel structure, supporting means for said wheel structure whereby it is rotatable about its principal axis, a plurality of tape supporting pins regularly spaced around said wheel structure and projecting at right angles to one side thereof, said pins serving to in turn engage the adhesive side of said tape as said wheel structure rotates so as to withdraw the same, each of said pins having a longitudinal slot centrally located in the tape engaging surface thereof into which a tape severing knife blade may be projected, a tape supporting finger ex-

tending along each of said pins on the side toward which said wheel structure is adapted to rotate in operation, supporting means for each of said fingers whereby it is movable away from the pin with which it is associated in the direction of rotation of said wheel structure, and spring means connected with each of said fingers for pressing it towards its associated pin, each of said fingers serving to assist in withdrawing said tape by engaging the end of a length of tape that is also engaging the adjacent tape supporting pin and to temporarily support said end of the tape after it has been pulled off from the adjacent tape supporting pin when the opposite end of the length of tape has been pulled off from its tape supporting element.

2. Apparatus for withdrawing pressure sensitive adhesive tape from a supply roll thereof, supporting predetermined lengths of the tape from opposite ends while each length of tape is severed, and swingably supporting one end of a severed length of tape after the opposite end has been freed from its support, comprising in combination, a wheel structure, supporting means for said wheel structure whereby it is rotatable about its principal axis, a plurality of tape supporting pins regularly spaced around said wheel structure and projecting perpendicularly to one side thereof, said pins serving to in turn engage the adhesive side of said tape as said wheel structure rotates so as to withdraw the same, each of said pins having a longitudinal slot centrally located in the tape engaging surface thereof into which a tape severing knife blade may be projected, a tape supporting finger extending along each of said pins on the side toward which said wheel structure is adapted to rotate in operation, supporting means for each of said fingers whereby it is movable away from the pin with which it is associated in the direction of rotation of said wheel structure, spring means connected with each of said fingers for pressing it towards its associated pin, and tape severing means mounted so that the blade thereof is arranged to in turn enter into each of said slots in said pins so as to sever the tape adhering thereto, each of said fingers serving to assist in withdrawing said tape by engaging the end of a length of tape that is also engaging the adjacent tape supporting pin and to temporarily support said end of the tape after it has been pulled off from the adjacent tape supporting pin when the opposite end of the length of tape has been pulled off from its tape supporting element.

3. The apparatus of claim 2 wherein said knife means is actuated by means operated by rotation of said wheel structure.

4. Apparatus for withdrawing pressure sensitive adhesive tape from a supply roll thereof, supporting predetermined lengths of the tape from opposite ends while each length of tape is severed, and swingably supporting one end of a severed length of tape after the opposite end has been freed from its support, comprising in combination, a wheel hub, supporting means for said wheel hub whereby it is rotatable about its principal axis, a plurality of regularly spaced spoke members mounted on said hub, a tape supporting pin mounted on and adjacent the end of each of said spoke members, each of said pins extending at right angles to the plane of said spoke members and projecting from the same side thereof and each pin having a longitudinal slot centrally located in the portion of the surface thereof which is engaged by tape

supported on said pins as said spoke members rotate with said hub, said slots serving as openings into which a knife blade may be projected for severing said tape extending thereacross, a finger-carrying arm pivotally mounted on each of said spoke members so as to be swingable parallel to the plane of said spoke members, a tape engaging finger mounted on the outer end of each of said arms so as to fit sidewise against that side of the pin carried on the associated spoke member toward which the spoke members rotate during operation of said apparatus, and spring means connected with each of said arms for normally pressing the finger carried thereon into said sidewise fit against its associated pin, each of said fingers serving to assist in withdrawing said tape by engaging the end of a length of tape that is also engaging the adjacent tape supporting pin and to temporarily support said end of the tape after it has been pulled off from the adjacent tape supporting pin when the opposite end of the length of tape has been pulled off from its tape supporting element.

5. The apparatus of claim 4 wherein the tape engaging surface of each of said tape engaging fingers is spaced radially beyond said tape engaging surface of the associated pin whereby tape fitting around said pins and fingers has greater surface engagement with each pin on the side of said slot away from the associated finger.

6. Apparatus for withdrawing pressure sensitive adhesive tape from a supply roll thereof and severing it into pieces of predetermined length which are supported at opposite ends until removed, comprising in combination, a wheel hub, supporting means for said wheel hub whereby it is rotatable about its principal axis, a plurality of regularly spaced spoke members mounted on said hub, a tape supporting pin mounted on and adjacent the end of each of said spoke members, each of said pins extending at right angles to the plane of said spoke members and projecting from the same side thereof and each pin having a longitudinal slot centrally located in the portion of the surface thereof which is engaged by tape supported on said pins as said spoke members rotate with said hub, said slots serving as openings into which a knife blade may be projected for severing said tape, a finger carrying arm pivotally mounted on each of said spoke members so as to be swingable parallel to the plane of said spoke members, a tape engaging finger mounted on the outer end of each of said arms so as to fit sidewise against that side of the pin carried on the associated spoke member toward which the spoke members rotate during operation of said apparatus, each of said fingers having a tape-engaging surface disposed so as to engage the tape and assist in the withdrawal thereof, spring means associated with each of said arms normally pressing the finger carried thereon into said sidewise fit against its associated pin, and tape severing means mounted in operative relationship with said pins so as to in turn sever tape supported thereon, said tape severing means comprising, a frame structure, support means for said frame structure whereby it is swingable about a fixed axis towards and away from the sides of said pins as the latter turn with said spoke members and wheel hub, a knife mechanism slidably mounted on said frame structure having a cam operated knife blade positioned to be in turn projected into

each of said slots in said pins as the latter rotate with said wheel hub, a knife operating cam carried in fixed position on said frame structure so as to be operatively engaged by said knife mechanism during the course of its sliding movement, a projection extending from said knife mechanism so as to be in turn engaged by each of said pins as said wheel hub rotates thereby sliding said knife mechanism on said frame structure with the blade of said knife mechanism lying opposite the slot in the pin engaging said projection whereby said blade operates to sever the tape on said pin during the sliding movement of said knife mechanism, and a cam mounted on said frame structure adapted to be in turn engaged by each of said pins for swinging said tape severing means out of its operative position so as to in turn free said projection from engagement with each of said pins at the end of said sliding movement.

7. Apparatus for withdrawing pressure sensitive adhesive tape from a supply roll thereof, supporting predetermined lengths of the tape from opposite ends while each length of tape is severed, and swingably supporting one end of a severed length of tape after the opposite end has been freed from its support, comprising in combination, wheel means including a plurality of tape supporting elements fixedly spaced around the periphery of said wheel means each of which has a raised tape-engaging surface extending at least approximately perpendicular to the plane of said wheel means, each of said elements serving to successively engage and withdraw the tape and to support the same as the same is severed into said predetermined lengths, a tape supporting finger normally extending alongside each of said tape supporting elements on the side thereof towards which said wheel means is adapted to rotate, support means for supporting each of said fingers on said wheel means so that it will engage the end of a severed piece of tape which is engaged with the adjacent tape supporting element and so that it will be swingable away from its associated tape supporting element in a direction corresponding to the direction of rotation of said wheel means, and spring means connected with each of said fingers and a fixed portion of said wheel means for normally pressing each of said fingers towards its associated tape supporting element, each of said fingers serving to assist in withdrawing said tape and to temporarily support the end of a length of tape engaged therewith after this end has been pulled off from the adjacent tape supporting element when the opposite end of the length of tape has been pulled off from its tape supporting element.

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