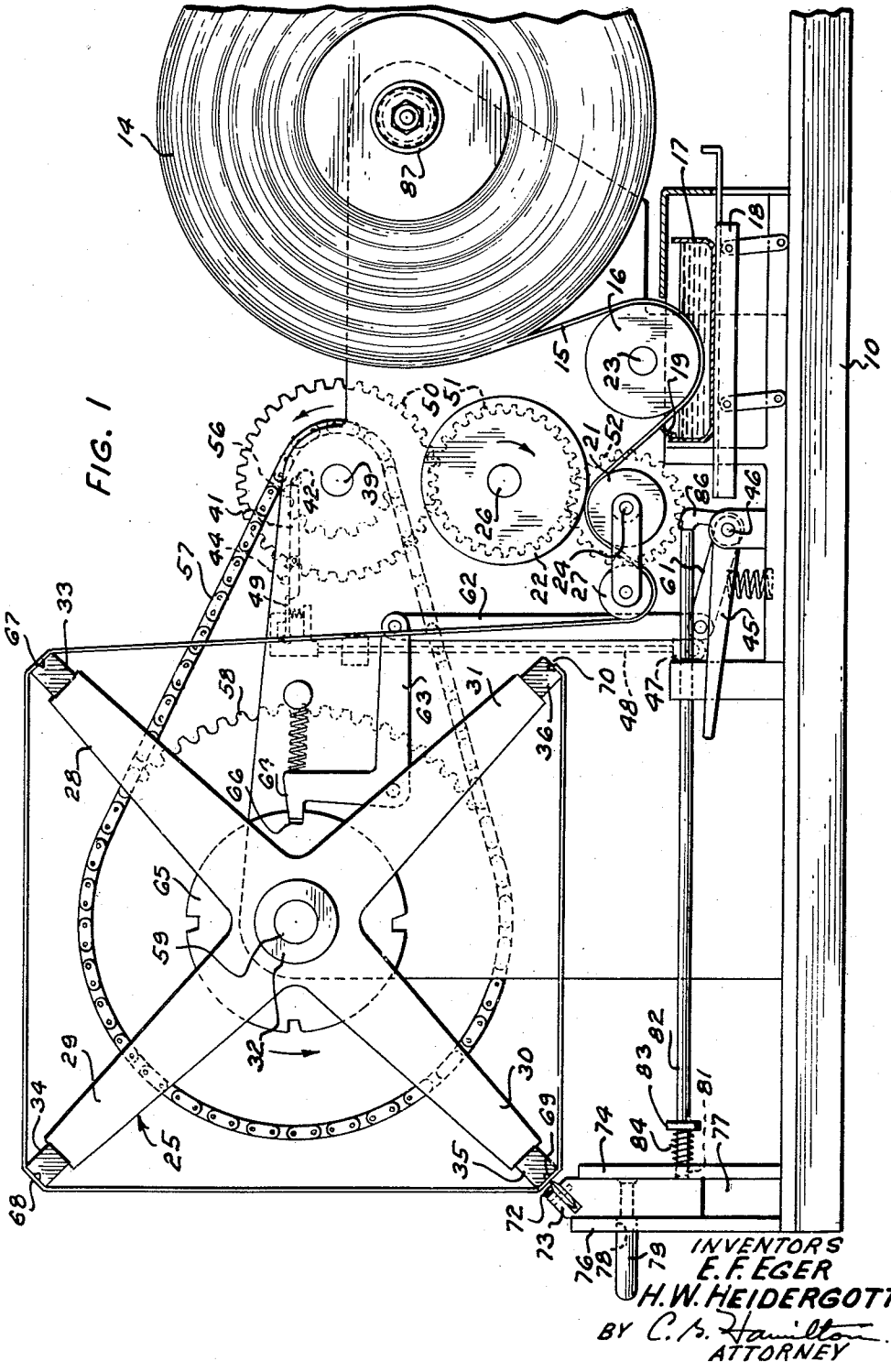
June 17, 1958 E. F. EGER ET AL 2,839,023

APPARATUS FOR DISPENSING AND SEVERING UNIFORM LENGTHS OF TAPE

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FIG. 1

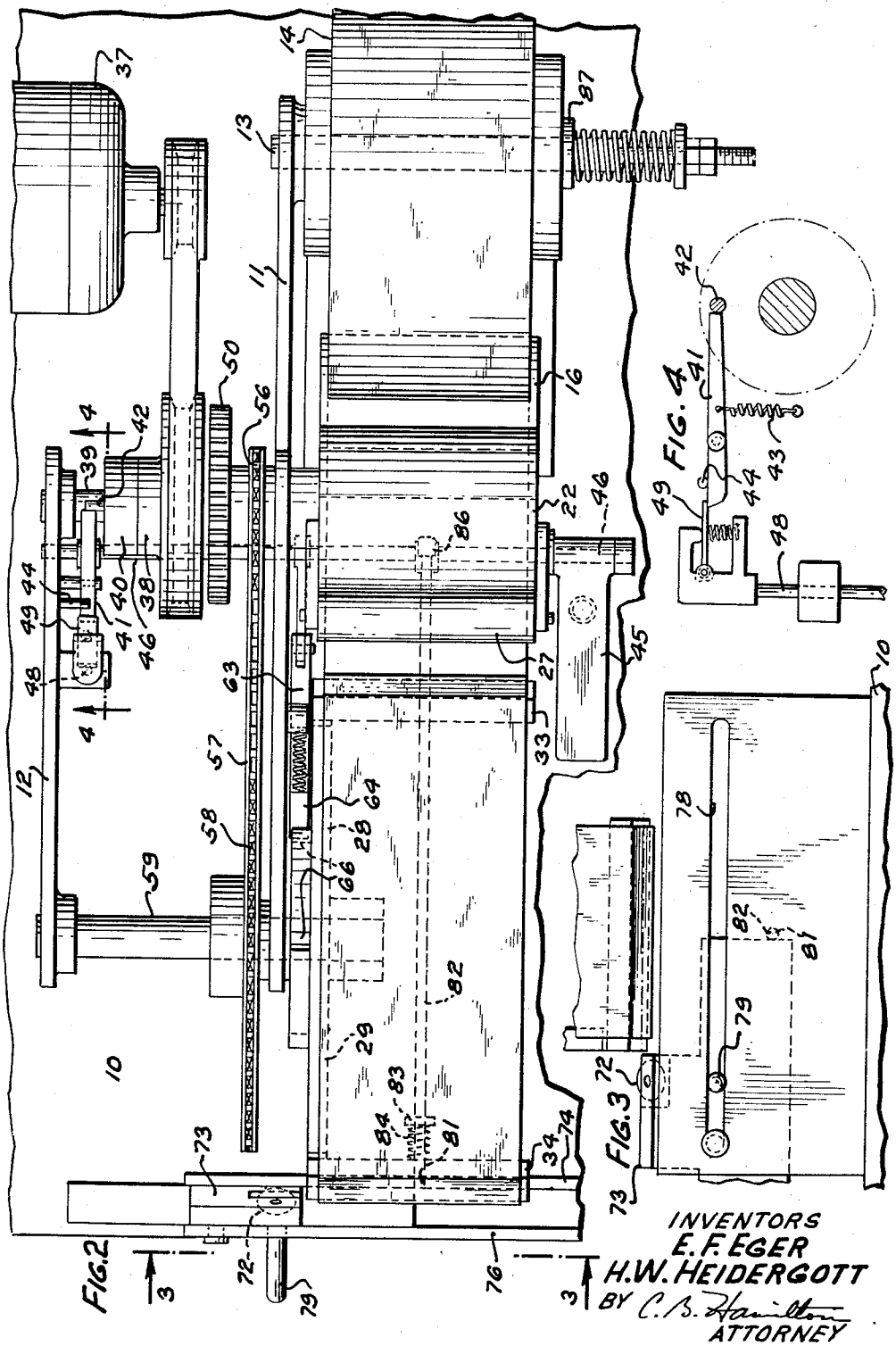


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United States Patent Office

2,839,023

Patented June 17, 1958

2,839,023

APPARATUS FOR DISPENSING AND SEVERING UNIFORM LENGTHS OF TAPE

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Application October 22, 1956, Serial No. 617,574

4 Claims. (Cl. 118—12)

This invention relates to a dispenser of uniform lengths of tape, and more particularly to a mechanical dispensing apparatus for intermittently advancing and severing uniform lengths of adhesive coated tape.

In both the manufacture and packaging of many diverse types of items, it is necessary to utilize uniform lengths of tapes coated with a tacky adhesive. Obviously manual measuring and severing operations of the tape is a time consuming process that more than likely results in the production of non-uniform lengths of tape.

It is a primary object of this invention to provide a simple and economical apparatus for accurately and rapidly dispensing uniform lengths of tacky adhesive coated tape or sheet material.

Another object of the invention resides in a mechanical device for indexing uniform lengths of tape into position to be severed, whereupon instrumentalities are rendered effective to preclude a further indexing operation until the tape has been severed.

A further object of the invention is the provision of means for precluding operation of the severing device while the tape is being indexed into position to be severed.

With these and other objects in view, the present invention contemplates a drive roller device for advancing tape from a supply roll through an adhesive bath to a dispensing reel. The dispensing reel comprises a plurality of uniformly spaced arms radially extending therefrom, and each is provided with a relatively wide terminal area for engaging the adhesive coated side of the tape. A one-revolution clutch is provided to operate the drive roll and the dispensing reel so that the tape is advanced a distance equal to the distance between the terminal areas on a pair of adjacent dispensing arms.

Upon the dispensing reel being advanced, a severing device positioned in register with one of the arms is actuated to move through a slot formed in the terminal portion of the registered arm to sever the tape. As the severing device is actuated, blocking facilities are rendered effective to preclude further actuation of the one-revolution clutch. Whenever the one-revolution clutch is exercising a cycle of operation, the blocking facilities are rendered effective to preclude operation of the severing device.

Other objects and advantages of the present invention will be apparent from the following detailed description when considered in conjunction with the accompanying drawings, wherein

Fig. 1 is a front elevational view of a tape coating, feeding and severing apparatus embodying the principal features of the present invention;

Fig. 2 is a plan view of the apparatus shown in Fig. 1;

Fig. 3 is a side elevational view depicting the severing mechanism, and

Fig. 4 is a view of the trip mechanism for initiating a cycle of operation of the apparatus.

Referring to Figs. 1 and 2, there is shown a base **10** having perpendicularly mounted thereon a pair of support plates **11** and **12**. The plate **11** has mounted therein an arbor **13** for rotatably mounting a supply reel of tape **14**. This tape may be composed of cellulose acetate or any other material that is desired to be coated with an adhesive compound and severed into uniform lengths. Positioned adjacent to the supply reel is rotatably mounted guide roller **16** for guiding the tape through an adhesive bath contained in a reservoir **17**. The reservoir **17** is supported on a parallel link device **18** for adjusting the position of the reservoir, and hence the surface of the adhesive compound contained therein with respect to the tape **14** passing over the guide roller **16**. Tension is maintained on the tape so that the relatively low viscosity adhesive compound cannot flow between the guide roller **16** and the tape; thus only the exposed side of the tape is coated. Excess adhesive is removed from the underside of the tape by means of a doctor blade **19**.

The tape is advanced by a positive driven roller **21** that cooperates with a rubber covered driver roller **22**. Rollers **16**, **21** and **22** are mounted on shafts **23**, **24** and **26** that are rotatably mounted in the plate **11**. The tape **14** emanating from the rollers **21** and **22** is passed over a further guide and tension roller **27** and from there the tape is fed over four arms **28**, **29**, **30** and **31** of an indexible dispensing device **25**.

The arms **28** to **31** of the dispensing device radially extend from a hub **32** that has a shaft **59** passing therethrough which is rotatably mounted in the plates **11** and **12**. The arms have perpendicular extensions **33**, **34**, **35** and **36** that engage the adhesive coated side of the tape. It is contemplated that the adhesive contained in the reservoir be of a tacky composition so that the tape **14** will adhere to the extensions **33**—**36** as the dispensing device is indexed.

Referring to Fig. 2, there is shown a motor **37** for supplying rotative power to a shaft **38** that is selectively coupled to a shaft **39** through the agency of a one-revolution clutch **40**. The clutch **40** is normally maintained disengaged by means of a holding pawl **41** (see Fig. 4) engaging a pin **42** of the release mechanism for the one-revolution clutch. Pawl **41** is maintained in position through the agency of a spring **43** which tends to urge the pawl into engagement with a stop pin **44**. In order to release the clutch, a manually operated lever **45** (see Figs. 1 and 2) is depressed thereby imparting, through a shaft **46**, a counterclockwise movement to a link **47** that has pivotally mounted thereon a rod **48** which in turn is pivotally connected to a spring-biased trip lever **49** positioned to engage and impart a clockwise movement to the pivotally mounted pawl **41**. Movement of the pawl **41** away from the stop pin **44** releases the pin **42** to allow the clutch to transmit rotative power to the shaft **39**. The shafts **39**, **26** and **24** are coupled together by gears **50**, **51** and **52**, respectively, mounted thereon; consequently, rotative movement is imparted to both the rollers **21** and **22** to advance the tape **14** therebetween. Shaft **39** also has mounted thereon a sprocket gear **56** for imparting movement to a chain **57**. A further sprocket gear **58** mounted on the shaft **59** is driven by the chain **57**. Shaft **59** is keyed to the hub **32** and is rotatably mounted within suitable bushings fitted in the plates **11** and **12**. Sizes are selected for the respective sprockets so that upon each revolution of the shaft **39**, a quarter revolution is imparted to the shaft **59**. Thus it may be appreciated that upon each depression of the lever **45**, the arms **28** to **31** are advanced in a counterclockwise direction so as to occupy the position formerly held by the next succeeding arms.

When lever **45** is depressed, a linkage **61**, **62** is actuated to impart a clockwise rotation to a bell crank lever **63** to withdraw a locking cam **64** formed thereon from engagement within a cam shaped slot **66** formed in a locking plate **65** mounted on the shaft **59**. It will be noted that the cam surfaces defining the slot **66** corre-

spond with the wedge-shaped cam 64 so that upon movement of the cam 64 into a slot, a slight movement may be imparted to the shaft 59 to accurately position the arm 28 to 31 between each quarter revolution thereof.

The extensions 33 to 36 are provided with slots 67, 68, 69 and 70 that run across the entire lengths thereof in directions parallel to the axis of rotation of the shaft 59. Spaced from and in register with the slot 69 is a circular cutter 72 rotatably mounted in a slide block 73. This block is slidably mounted within plates 74 and 76 and on a plate 77. The plate 76 is provided with an elongated slot 78 through which extends an operating handle 79 connected to the slide block 73. The plate 74 is provided with an aperture 81 through which a stop rod 82 extends to engage and hold the slide block 73. Stop rod 82 is provided with a collar 83 that is engaged by a compression spring 84 urging the rod 82 to move into engagement with a lever 86 securely mounted to the shaft 46. When the operating lever 45 is depressed, the lever 86 moves in a counterclockwise direction to slide the rod 82 toward the left into position to preclude movement of the slide clock 73 while the power is being applied to advance the tape 14. When the tape has been advanced and the lever 45 restored to the position shown in Fig. 1, the rod 82 is withdrawn and the handle 79 may be operated to slide the block 73 to move the circular cutter 72 through the slot 69 to sever a section of tape.

In operation of the apparatus the lever 45 is depressed to permit the one-revolution clutch 40 to operate and apply power to drive the rollers 21 and 22 to advance the tape 14 therebetween. The tape 14 is fed off of the supply roll around the guide roller 16 and through the reservoir 17 wherein adhesive is appied to one side thereof. In Fig. 2 there is shown a compression spring-biased plate 87 for holding the supply reel on the arbor 13 and for applying a friction drag so as to maintain proper tension in the tape and prevent overrunning of the supply reel. When the lever 45 is depressed, the locking cam 64 is also withdrawn and rotative power is applied to the sprocket 58 to rotate the arms 28 to 31 through a distance equal to the space between adjacent arms. Upon completion of a revolution of the clutch and a release of the lever 45, the slide block 73 is moved to effectuate a severing of the tape positioned in register with the severing roller 72. It will be noted that when the slide block 73 is moved to the right, as viewed in Fig. 3, the lefthand extension thereof is positioned to the left of the slot 81; consequently, upon subsequent operation of the lever 45, the rod 82 will be moved into position to preclude movement of the slide.

Upon completion of an indexing and severing operation, the attendant will reach up and withdraw the severed section of tape from the extensions 35–36. It will be appreciated that the attendant cannot operate the indexed apparatus during operation of the severing apparatus, and that he cannot operate the severing apparatus during operation of the indexing apparatus.

It is to be understood that the described arrangement of apparatus and construction of elemenal parts are simply illustrative of an application of the principles of the invention and many other modifications may be made without departing from the invention.

What is claimed is:

1. An apparatus for metering predetermined lengths of adhesive coated tape comprising a multi-arm takeup device having areas on the extremity of each arm for engaging the tape, a drive means, a clutch mechanism for connecting the drive means to the takeup device, means for operating the clutch for one revolution, cam means controlled by the operating means for holding and precisely locating said takeup device, a severing device for shearing said tape, and means operated by said operating means during the single revolution of the clutch mechanism for precluding operation of said severing means.

2. An apparatus for producing uniform lengths of adhesive coated sheet material comprising means for rotatably mounting a supply roll of sheet material, an adhesive reservior, a rotatably mounted takeup device adapted to advance said sheet material through said reservoir to coat one side thereof, a plurality of arms radially extending from said takeup device having areas at the extremities thereof for engaging the adhesive coated side of the sheet material, each of said areas being provided with slots thereacross in a direction parallel to the axis of rotation of said takeup device, a severing device, means for advancing said takeup device to successively present each arm to said severing device, means adapted to move said severing device within a registered slot, and means operated by movement of the severing device in said slot for precluding operation of said advancing means.

3. An apparatus for metering predetermined lengths of tape comprising means for rotatably supporting a supply roll of tape, an adhesive reservoir, a takeup device for advancing said tape through said reservoir to coat one side thereof, a drive means, a normally disengaged clutch interconnecting the drive means and the takeup device, means for releasing said clutch for one revolution, a severing device, means adapted to move said severing device to sever the tape on the takeup device, and means actuated by the clutch releasing means during operation of the clutch for locking said severing device in a non-severing position.

4. An apparatus for metering predetermined lengths of tape comprising means for rotatably mounting a roll of tape, a takeup device having a plurality of evenly spaced radially extending arms each of which has a tape engaging area at the terminus thereof, an adhesive reservoir, guide means for directing the tape through said reservoir onto said tape engaging areas of the arms, clutch controlled means for intermittently advancing said tape and takeup device a distance equal to the distance between two adjacent arms, means for operating said clutch means, each area of the arm having slots formed therein, a slide block, a rotatable cutter mounted in the slide block, means for locking said takeup device between advancements, means adapted to slide said block to move said cutter within a slot to sever the tape, and means positioned by the clutch operating means during operation of the clutch for blocking movement of the slide block.

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