

C. H. CROWELL.
MOISTENING MACHINE.
APPLICATION FILED APR. 3, 1912.

1,095,142.

Patented Apr. 28, 1914.

2 SHEETS—SHEET 1.

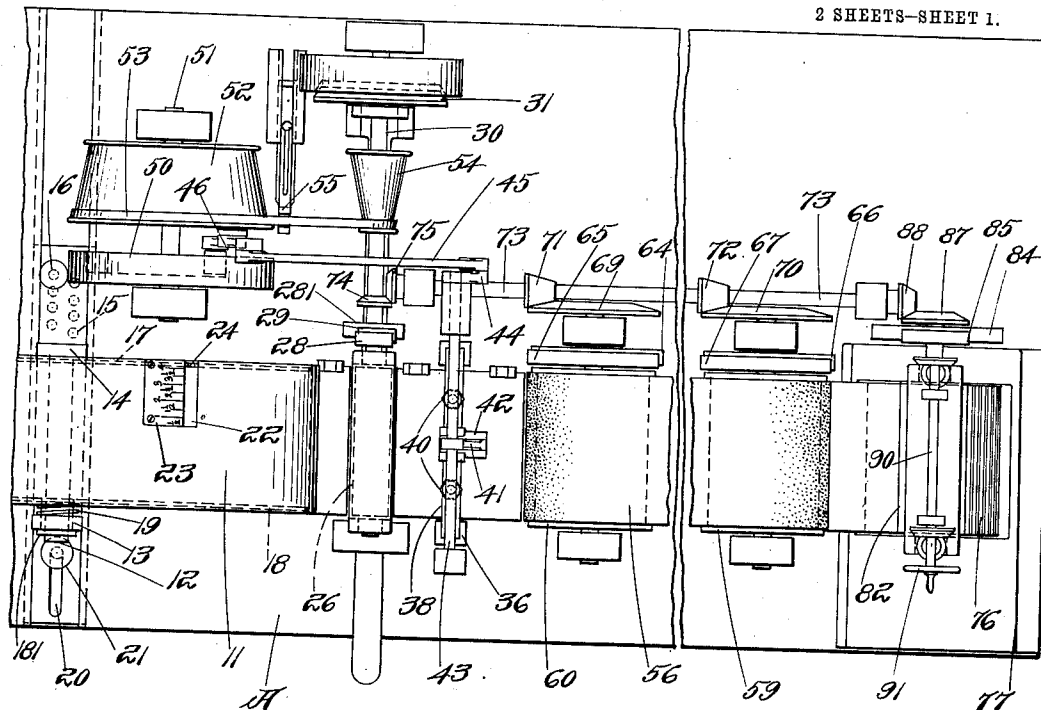


Fig. 1.

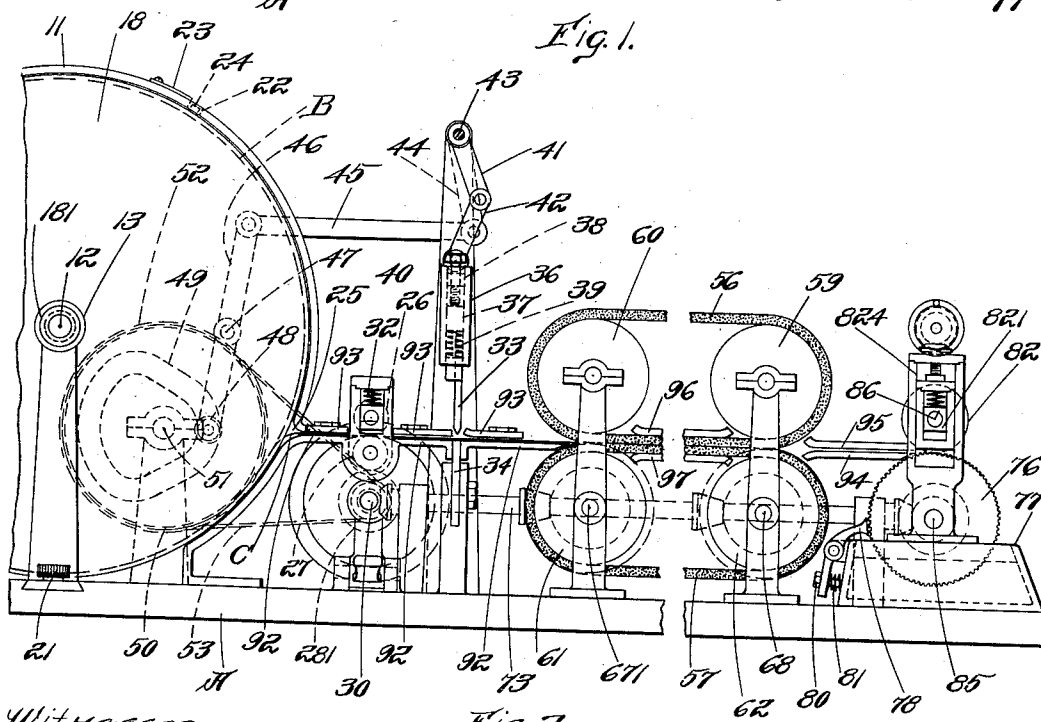


Fig. 2.

Witnesses:

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Inventor:

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2 SHEETS-SHEET 2.

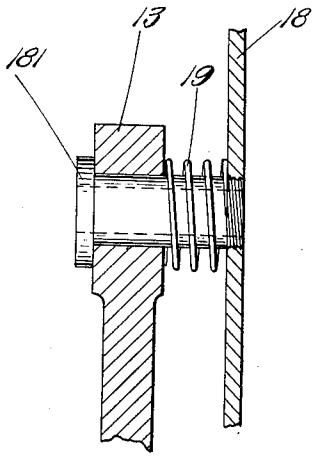


Fig. 6.

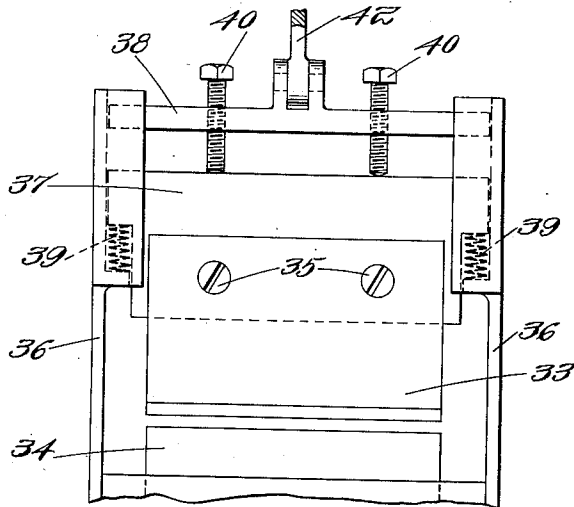


Fig. 7.

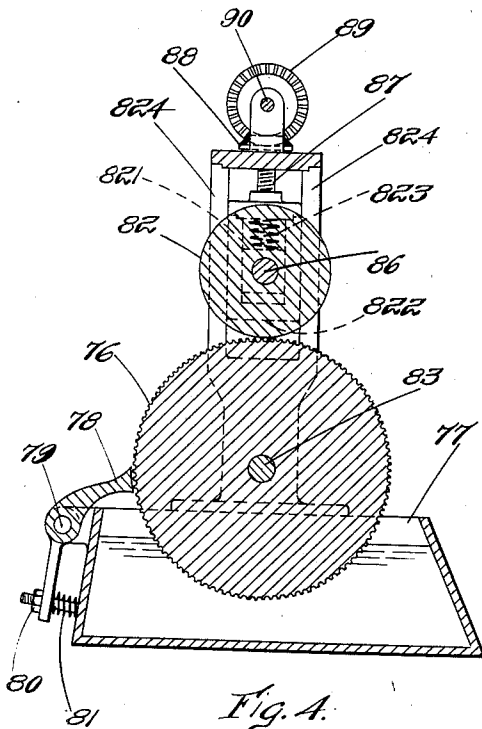


Fig. 4.

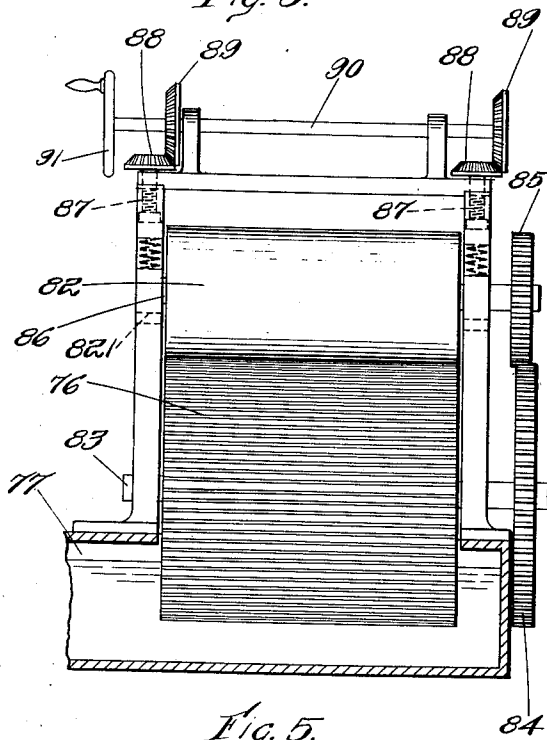


Fig. 5.

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CHARLES H. CROWELL, OF SWAMPSCOTT, MASSACHUSETTS.

MOISTENING-MACHINE.

1,095,142.

Specification of Letters Patent.

Patented Apr. 28, 1914.

Application filed April 3, 1912. Serial No. 638,292.

To all whom it may concern:

Be it known that I, CHARLES H. CROWELL, a citizen of the United States, residing at Swampscott, county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Moistening-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has for its object a machine for cutting strips of gummed tape from a roll, moistening the same and delivering them in a flat condition ready for application to boxes, packages, books, tablets and the like. The same machine may also be employed to apply gum to ungummed tape and cut it into lengths as required.

The machine is especially adapted to be operated by power, and for use where a large number of strips of the same length are required, as for instance in the manufacture of strawboard cartons, packing cases, and the like.

The invention will be fully understood by reference to the following specification, taken in connection with the accompanying drawings, and the novel features thereof are pointed out and clearly defined in the claims at the close of this specification.

In the drawings, Figure 1 is a top plan view of a machine embodying my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a detail of the knife on an enlarged scale. Figs. 4 and 5 are details also on an enlarged scale of the moistening and delivering mechanism. Fig. 6 is a detail of the bracket 13 and the side plate 18.

Referring to the drawings, there is shown at A a suitable frame for the machine. At B is shown a roll of the tape, and, at C the strip or web of tape as it is drawn from the roll B. The roll B is contained in a housing 11 made of suitable sheet metal and is supported on an axle 12 carried on two side brackets 13 and 14. The bed plate of the frame of the machine is provided with a series of holes 15 (seen in dotted lines in Fig. 1) and the bracket 14 is fastened in place by a pin 16, which is pushed into one of the holes 15. By this means the position of the side bracket may be changed as required. To the bracket 14 is secured the side plate 17. The other side plate 18 is provided with a headed sleeve 181, which passes through the bracket 13, there being a spring 19 interposed between the bracket and the

side plate. The end of the axle 12 is received within the sleeve 181 which forms a bearing for it. The bracket 13 is slotted at the bottom, as shown at 20, to receive a thumb screw 21, which is fastened to the frame of the machine. When it is desired to supply the machine with tape of a width different from that previously employed, the bracket 14 is properly located and the pin 16 is put in whichever hole in the bracket registers with a hole 15 in the bed plate A. The roll B of material is then slipped on over the axle 12 and the parts shown in Fig. 6, viz. the side plate 18, spring 19, and bracket 13 are put in place on the axle, being manipulated as a single piece as they are all secured together. The bracket 13 is pushed toward the roll of tape until the pressure necessary to give the tape the proper tension is produced and the bracket 13 is then fastened in place by the thumb screw 21.

As it is essential that the roll of gummed tape be properly centered, I provide a slot 22 in the housing 11, and adjacent this slot place a scale 23 on which are indicated the different widths of tape to be employed. On the end of the side plate 17 is a small projection 24 which projects into the slot 22. When the side plate 17 is put in place this projection 24 should indicate the point on the scale 23 designating the width of the tape. When this has been done correctly the pin 16 will engage the proper hole 15 in the bed plate of the machine, and when the parts are in place the tape will be accurately centered in the housing.

The housing has an opening 25 in one side at a convenient level and is curved adjacent this opening so that the tape may be drawn, either from the top or the bottom of the roll. The web of tape C passes through the opening 25 to a pair of feed rolls 26 and 27, driven by gears 28, 29 and 281 from the main shaft 30 of the machine. This main shaft 30 is provided with a clutch 31 by means of which the machine may be stopped and started. The lower feed roll 27 is fixed so far as vertical movement is concerned while the upper feed roll 26 is allowed to yield vertically by means of springs 32.

In front of the feed rolls 26 and 27 is located a vertically reciprocating knife 33 coöperating with an anvil 34 on the under side of the tape. The knife 33 is fastened by two screws 35, 35 (see Fig. 3) to a cross

head movable in ways in a part 36 of the frame of the machine. This cross head is made in two pieces 37 and 38, two springs 39, 39, being placed between the two parts of the cross head so that the lower part 37 is held up against two adjusting screws 40 in the upper part 38, but may be moved down by the screws when it is required to adjust the knife vertically. This construction is such that the knife 33 is held rigidly but may also be adjusted from time to time as required.

The knife 33 is caused to reciprocate vertically by means of a toggle joint composed of two members 41 and 42. The upper of these two members is secured to a shaft 43 which has on one end a lever 44 connected by a link 45 to the cam lever 46. The cam lever 46 is pivoted at 47, and is provided at its lower end with a cam roll 48 moving in a groove 49 in a plate cam 50. This plate cam 50 is located on a shaft 51 which carries a cone pulley 52 driven by a belt 53 from another cone pulley 54 which is located on the main shaft 30 of the machine. The position of the belt 53 on the cones 52 and 54 may be changed by a belt shifter 55. As the main shaft of the machine, by means of which the feed rolls 26 and 27 are driven, runs at a constant speed, it will be seen that by changing the position of the belt 53 on the cone pulleys 52 and 54, the number of strokes of the knife to any given number of revolutions of the feed wheels may be varied, the feed wheels 26 and 27 running at a constant speed. This arrangement, therefore, provides for varying the length of the strip which will be cut off by the knife. The parts are shown Fig. 1 with the belt 53 in the position which it occupies to cut the longest strip which the machine is capable of cutting. After leaving the knife 33, the strip of paper passes to a conveyer composed of two endless belts 56 and 57, running on four rolls 59 and 60, 61 and 62. These endless belts 56 and 57 are of a soft felt and move at the same or slightly greater surface speed than the feed rolls 26 and 27. The endless belts are close enough together so that they will seize the strips of paper before they have been severed by the knife 33 and as soon as the knife has severed them, will advance them to the moistening mechanism, but the belts are not so closely together as to prevent the strips being withdrawn from between them by the moistening mechanism, which, as will be later described travels at twice the surface speed of the feed rolls and endless belts. The rolls supporting the endless belts forming the conveyer are operated by pairs of gears 64-65 and 66-67. The lower shaft of the first pair of rolls is designated 671 and the lower shaft of the second pair of rolls is designated 68. On the end of the shaft

671 is a bevel gear 69 and on the end of the shaft 68 is a bevel gear 70, and these bevel gears mesh with two small bevel gears 71 and 72, respectively located on a shaft 73, which is itself rotated by the main shaft 30, acting through a pair of bevel gears 74 and 75.

The moistening mechanism consists of a pressure roll or top roll 82 cooperating with a corrugated wetting roll 76 dipping in a trough 77 containing water. This wetting roll 76 is provided with corrugations in its surface which take up the water from the trough 77, and deposit it on the gummed surface of the tape. The use of corrugated rolls results in more thorough wetting because the water contained in the grooves or corrugations is not displaced at the point where the roll contacts with the tape, but being inclosed in the corrugations is pressed onto the surface of the tape. A doctor 78, pivoted at 79 removes the surplus water from the surface of the roll and the amount of water applied to the tape may be regulated by changing the position of the doctor. This adjustment is accomplished by means of the nut 80 and the spring 81 which holds the end of the doctor against the nut 80.

The wetting roll 76 cooperates with the top roll 82 which is of relatively small diameter, and both have the same surface speed, which is twice that of the conveyer. The wetting roll 76 is supported on an axle 83 which carries a large gear 84 meshing with a gear 85 on the axle 86 of the top roll. The axle 83 of the lower roll also carries a bevel gear 87 which meshes with another bevel gear 88 on the shaft 73. These parts are proportioned so that the moistening rolls have a speed twice that of the feed rolls 26 and 27, and the endless belts 56 and 57. Each end of the axle of the top roll 82 is supported in a block 821 movable vertically in a box 822, being held down by a spring 823. The boxes 822 are movable vertically in ways in the frame of the machine, said ways being shown at 824. A screw 87 is connected with each box 822 and these screws are provided at their upper ends with a bevel gear 88 meshing with two bevel gears 89 on a cross shaft 90. This cross shaft 90 is provided with a handwheel 91 at one end, by means of which it may be quickly revolved and the top roll raised or lowered away from the wetting roll. The spring 823 permits the roll to yield sufficiently so that the tape will receive a uniform pressure but at the same time any bunch or unevenness in the paper will be able to pass through.

The knife and the conveyer are separated from each other by a distance which is less than the length of the shortest strip to be cut off by the knife. Likewise the moistening mechanism is set at substantially the

same distance from that end of the conveyer, this distance being less than the length of the shortest strip to be cut.

The tape is guided from the opening C in the housing or container to the feed rolls, and between the feed rolls and the knife, and between the knife and the conveyer, by suitable bed-plates 92, with each of which coöperates a hinged top plate 93, which may be lifted up when it is necessary to thread a new strip of tape through the machine. A similar bed plate 94 and top plate 95 are provided between the conveyer and the moistening roll. Also, to make sure that the portions of the endless belts 56 and 57, which are in contact with the tape, shall not sag, or become displaced, there are provided two guides 96 and 97, supported from the sides of the frame.

The operation of the machine is as follows: After the type has been threaded through the machine, and the belt 53 has been located so that the knife will cut the strips to the right length, the machine is started. The two feed rolls 26 and 27 draw the tape from the roll B and push it along to the knife 33, between the bed-plate 92 and the top plate 93. The knife 33 severs the strips from the web, but the front end of each strip has passed into the conveyer before the knife has separated it from the web of tape. The strip is then carried along by the conveyer, and its end is inserted between the moistening roll 76 and the top roll 82. As the moistening roll and the top roll are running at twice the surface speed of the conveyer, the strip is pulled quickly out of the conveyer by the moistening rolls, is moistened and thrown out of the machine, while the next strip is entering the conveyer, so that the operator has plenty of time to apply the moistened piece of tape to the article, before receiving the next moistened piece delivered from the moistening roller.

What I claim is;

1. The improved moistening machine for gummed tape which comprises means for delivering the tape, feeding means, cutting means, a conveyer, and moistening mechanism, the feeding means and the conveyer having substantially the same peripheral speed and the moistening means having a peripheral speed which is greater.

2. The improved machine for moistening

and severing strips of gummed paper which consists of a pair of feed rolls, a conveyer, cutting means to sever the paper and located between the said feed rolls and the said conveyer, and moistening mechanism, said moistening mechanism having a surface speed greater than that of the conveyer.

3. In a machine of the character described, the combination with a pair of feed rolls, of a conveyer, said feed rolls and conveyer having substantially the same surface speed, cutting means located between the feed rolls and the conveyer, a main shaft rotating the parts, and variable connections between the cutting means and the said main shaft, whereby the number of strokes of the cutting means to a given number of revolutions of the main shaft may be varied.

4. In a machine of the character described, the combination with a pair of feed rolls, a conveyer having substantially the same surface speed as the feed rolls, cutting means located between the feed rolls and the conveyer, means for varying the number of strokes of the cutting means, the distance between the feed rolls and the cutting means and between the cutting means and the conveyer being less than the length of the shortest strip that can be cut.

5. In a machine of the character described, the combination with a container, a pair of feed rolls, a knife, and a conveyer, of means for guiding the tape from one set of instrumentalities to the next succeeding set comprising a bed plate and a hinged top plate.

6. In a machine of the character described, the combination with a pair of feed rolls, a vertically reciprocating knife, a conveyer comprising two endless belts in contact with each other, of moistening mechanism, comprising a wetting roll and a top roll, said endless belts exerting a gentle pressure on the material as it passes between them and the said moistening roll running at a greater surface speed than the said conveyer so that a severed piece of the material will be drawn from between the belts.

In testimony whereof I affix my signature, in presence of two witnesses.

CHARLES H. CROWELL.

Witnesses:

WILLIAM A. MACLEOD,
ALICE H. MORRISON.

It is hereby certified that in Letters Patent No. 1,095,142, granted April 28, 1914, upon the application of Charles H. Crowell, of Swampscott, Massachusetts, for an improvement in "Moistening-Machines," an error appears in the printed specification requiring correction as follows: Page 3, line 21, for the word "type" read *tape*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of June, A. D., 1914.

[SEAL.]

J. T. NEWTON,

Acting Commissioner of Patents.