

April 12, 1927.

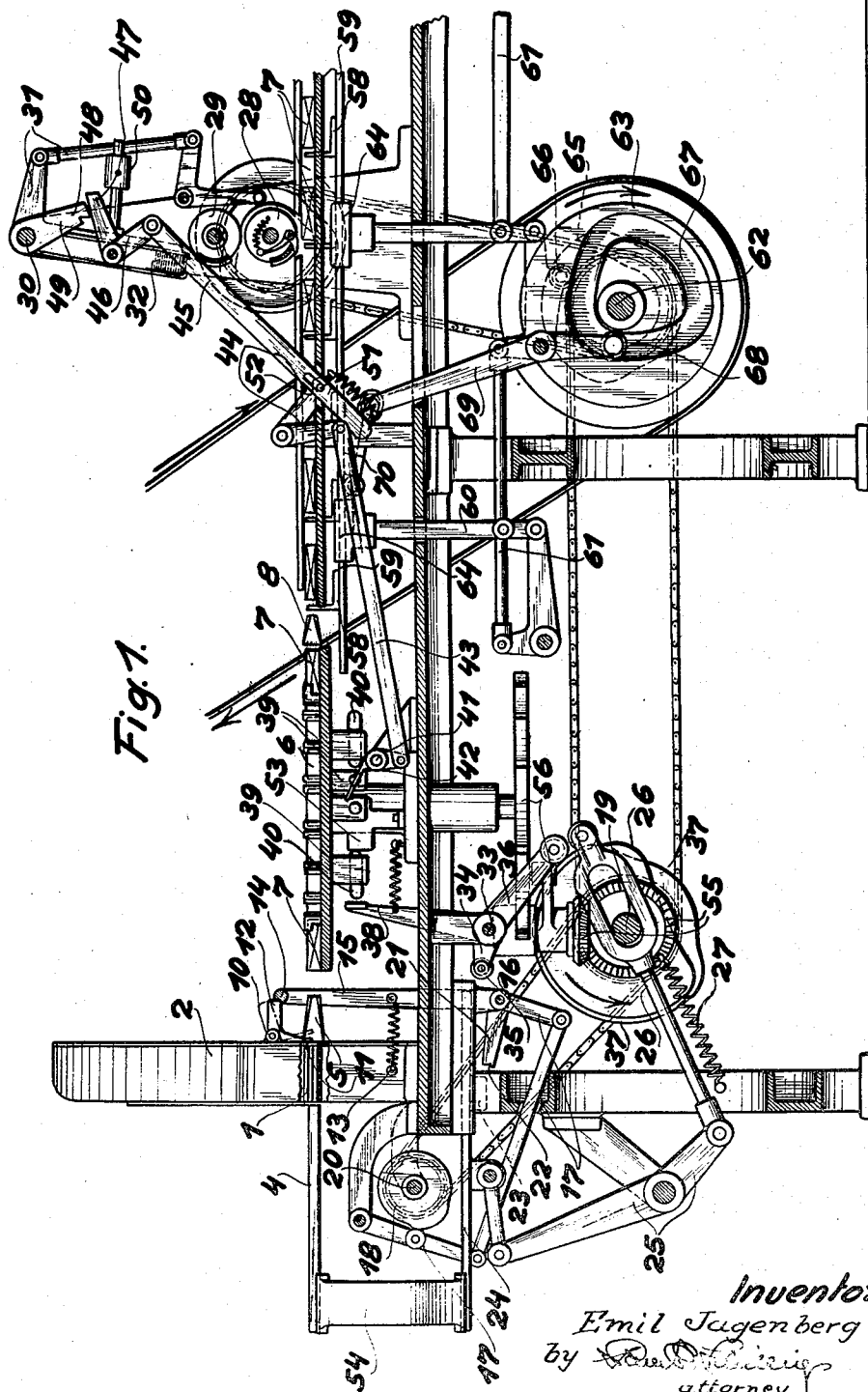
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FILLING AND PACKING MACHINE

Filed Sept. 10, 1926

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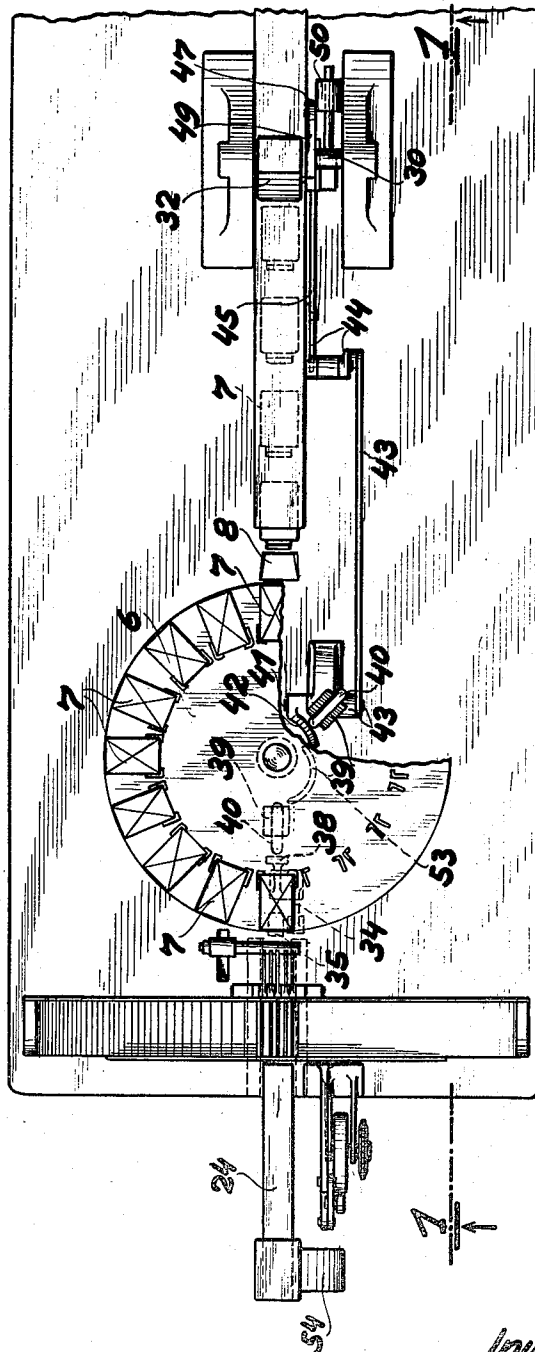
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Fig. 2.



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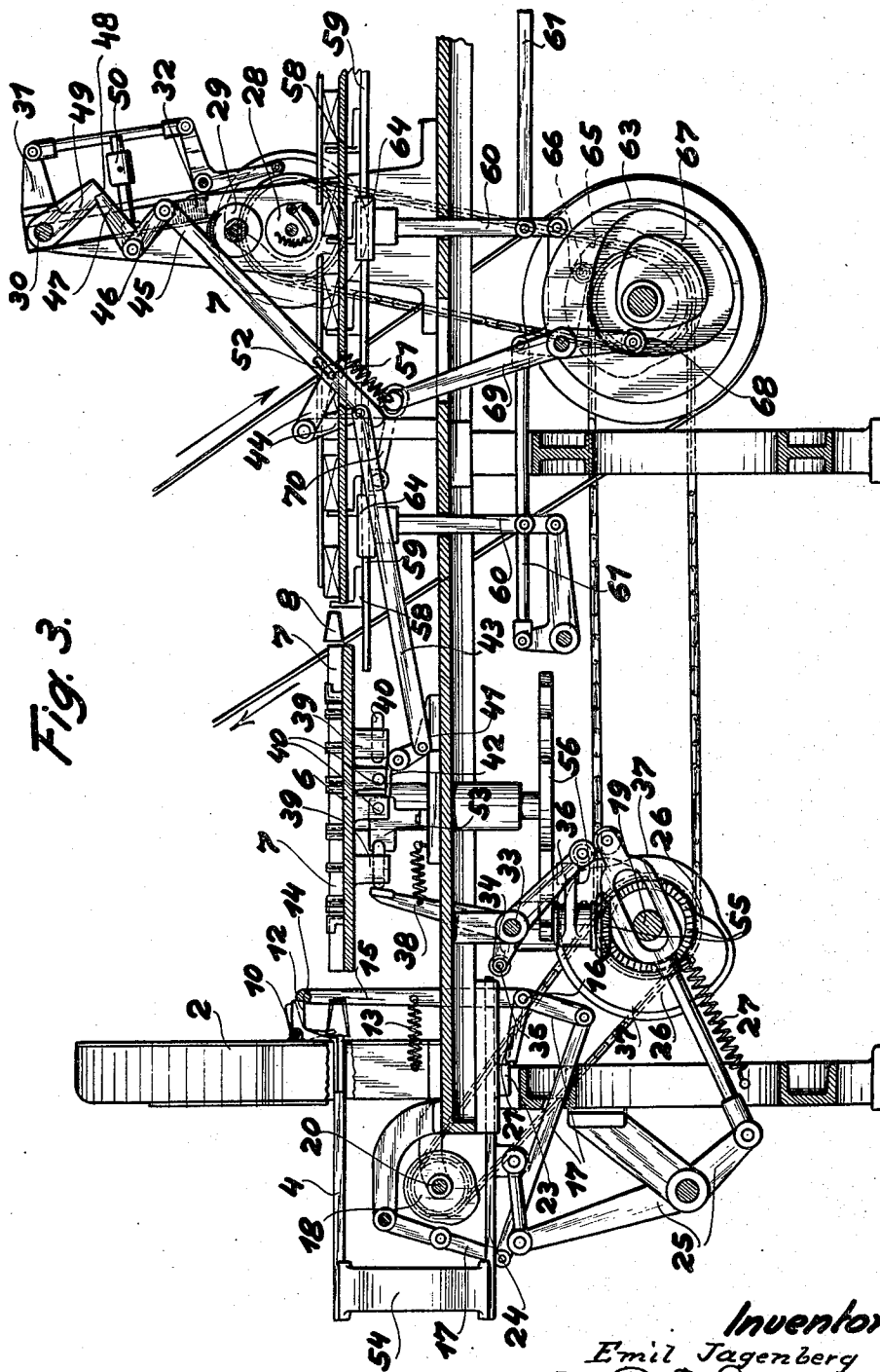


Fig. 3.

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UNITED STATES PATENT OFFICE.

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FILLING AND PACKING MACHINE.

Application filed September 10, 1926, Serial No. 134,632, and in Germany September 1, 1925.

This invention has reference to filling and packing machines for the charging of containers with different kinds of material, goods and articles and for applying closures and bandages to the filled packages, and in particular to machines of the kind referred to in which the articles to be transferred into the container are originally disposed in a charging or filling hopper or the like and are subdivided into certain predetermined quantities and are then transferred into the open containers, boxes or the like which are moved in succession past the charging or filling point, whereupon the packages, containers or the like are closed and, if desired, are labelled and provided with bandages, internal-revenue stamps or banderoles or with other marks and the like.

This invention has for its object to improve the manipulation and manufacture of devices of the kind referred to and to arrive at a greater reliability of the filling and controlling devices, regulating the correctness of the contents of such containers by means of which the charging of the proper amount or proper number of articles such as cigarettes or the like into the packages may be most accurately controlled and determined. In accordance with this invention a feeling instrumentality is provided in the path of movement of the articles fed into the charging position, which is so arranged and constructed that in the case of an incomplete amount of articles of the required quantity or of a deficient unit of material the movement of the feeding or charging members is automatically interrupted, so that the readily presented container or package is not filled up, while the charging unit that has been retained is made up to the proper quantity or amount at the next stage of operation, and any irregularities or disturbances in the operation of the machinery are disposed of. The labelling, marking or banderolling device which may be connected with the filling and packing machine is acted upon in accordance with this invention in such a manner in the case of a deficient filling that no label, mark, revenue stamp or the like is applied upon the particular empty package on its passage through the labelling member and the like. By this means any unnecessary working up and waste of labels and the like, and in particular of the valuable revenue stamps, are avoided, and there is no likelihood that

an unfilled or incompletely filled package will find its way to the customers, inasmuch as such a package will be at once detected and recognized as being deficient.

The invention will be more fully described in the following specification with reference to the accompanying drawings showing by way of example an embodiment of the principles of the invention as applied to a filling or packing machine for cigarettes or the like, in Figure 1 in side-view. Fig. 2 is a fractional plan-view of the device, and Figures 3 and 4 are views substantially corresponding to those shown in Figures 1 and 2, but with different position of the parts. Figs. 5 and 6 represent a detail to be referred to on an enlarged scale.

The articles to be filled or packed, thus for instance cigarettes 1, may be contained in a funnel-like hopper or supply receptacle 2 at the lower discharge opening of which a subdividing member adapted to provide a certain predetermined number of articles or amount of material to be packed is provided. The subdividing member comprises movable sheet metal partition walls in parallel spaced relation to each other, and into the for instance five spaces provided by these partitions the cigarettes are made to enter. By means of the reciprocating slide 4 the two lowermost layers, thus for instance ten cigarettes 1, are transferred into the open container or package 7 which is moved towards the article upon an intermittently movable rotating table 6 and through the intermediary of a substantially funnel shaped nozzle 5, the package being closed upon continuing the rotation of the table 6 and being at last transferred at 8 to the banderolling, marking or equivalent operating member, where the package is provided with a band, revenue stamp or the like. The movement of the rotatable table 6 is effected by the operating shaft 19 and by means of bevel gear wheels 55 and by a Geneva movement or the like 56.

In accordance with this invention a feeling member is provided which in the case of one or more cigarettes 1 or the like being missing is adapted to prevent the feeding of this incomplete amount into the package 7. The feeling device comprises a plurality of bell-crank or angular levers 9 pivotally journaled at 10 and the broadened, plate-shaped ends 11 of which protrude into the path of movement of the upper rows of

cigarettes or the like. Against the lugs or extensions 12 of the levers 9 a stop 14 of a lever 15 is adapted to bear by the pull of the spring 13, said lever 15 being fulcrumed on a shaft 16 and being reciprocated by means of a system of levers 17 from a cam disc 18 mounted upon the shaft 20 which receives its movement from the operating shaft 19. Upon the shaft 16 there is also disposed a lever 21 with a projection or lug 22 which in the position according to Figure 1 is disposed in the path of movement of a stop 23 of the carriage 24. This carriage 24 is moved by a system of levers 25 from a cam disc 26 on the shaft 19 under the tension of a spring 27. During this movement the slide 4 which is connected to the carriage 24 by the cross-piece 54 pushes the two lowermost rows of cigarettes through the nozzle 5 and into the package 7.

If the two rows of cigarettes are complete during this feeding movement, the easily movable bell-crank levers 9 are raised by the upper row of cigarettes upon its being discharged from the section of the container (dotted position in Fig. 5), so that the reciprocating rocking lever 15 and the lug 22 of the lever 21 are also free to be moved into the dotted position. In consequence thereof the projection 23 of the carriage 24 is released, so that the slide 4 is also free to complete its path and to transfer the cigarettes into the open package or container 7. In case, however, one or several cigarettes should be lacking, the particular angular levers 9 retain their position of rest and the movable lever 15 bears with its stop 14 against the lug 12 of the particular angular lever or levers 9 which have not been moved, so that the movement of the lever 15 is arrested and the lug 22 of the lever 21 remains in the raised position and prevents the further movement of the carriage 24 and of the slide 4. The incomplete rows of cigarettes are therefore not transferred to the package, but remain in their position and are supplemented at the next stage of operations, whereupon all the levers 9 are raised and the feeding slide 4 is free to move.

The packages 7 are removed from the rotating table 6 by means of hooks 58 and are transferred to the banderolling or labeling machine. The hooks 58 are disposed on a bar 59 which is carried by the sliding guide 64 and bars 60. The latter bars 60 are connected by a parallelogram-like system of levers 61 adapted to be moved by a cam-disc 63 mounted upon the main operating shaft 62 and provided with a groove 65 with which a roller 66 of the levers 61 is adapted to engage. Another groove 67 is provided on the disc 63 for engagement with the roller 68 of a lever 69 which is connected by a link 70 to the bar 59. By means of this gearing the hooks 58 are continuously horizontally and vertically reciprocated, thereby causing the packages 7 to be moved outwards. The accidentally unfilled package 7 is likewise transferred to the banderolling or labeling device, but it is not provided with a label or a banderole, so that upon leaving the machine it is at once recognized as being empty. The pasting or application of the banderole, label or the like is effected in the usual manner, thus for instance, by means of a gripping cylinder 28 which takes off the banderole or label from a segmental roller 29. The latter roller 29 may be provided with glue in a manner not shown in the drawing and detaches the label or banderole from the supply upon moving past a label holder 32 rockingly disposed upon the shaft 30 and reciprocated by a system of levers 31 which derives its movement from the cam disc 57. Instead of the labeling or banderolling device herein shown by way of exemplification any other suitable labeling instrumentality may be employed.

In order to provide for the omission of the detaching and applying of a label or banderole upon the passing of an empty package or container means are provided as follows: In the path of movement of the carriage 24 a lever 34 pivoted at 33 is provided carrying a roller 35 and adapted to be actuated by a lever 36 from a cam disc 37 on the shaft 19 and adapted for the reciprocation of a lever 38. On the rotating table 6 guides 39 are provided for studs or bolts 40 adapted to be moved in the guides 39 against a certain jamming or pinching action and the outer extremities of which are disposed in the direction of the feeding slide 4 and a short distance in front of the end of the lever 38. In case the quantity of material or articles, such as cigarettes or the like to be transferred is complete, the carriage 24 will move past the roller 35, thereby retaining the levers 34, 36, 38 in their position according to Figure 1 while in the case of the container remaining empty according to Figure 3 the levers 34, 36, 38 are free to be tilted and will thereby force the stud or bolt 40 situated below the empty package inwards. If upon continuing the movement of the rotating table this stud or bolt 40 is moved into the path of movement of one of the levers 42 which are fulcrumed at 41, the bolt will move the inwardly projecting ends of the lever 42 downwards (Fig. 3), so that by means of a system of levers 43, lever 44, bar 45 and lever 46 the supply of labels, banderoles or the like is locked in its position of rest in which a lever 47 bears against the projection or lug 48 of a lever 49 keyed to the shaft 30 of the container 32 for the labels or the like. A weight 50 has a tendency to return the levers 43-47 into the initial position, while a spring 51 locks

the lever 44 which by means of a pin engages a slot 52 in the bar 45 in the position according to Figures 1 and 3. By this means it becomes possible for the bar 45 with the levers 46 and 47 to be moved resiliently out of the way, when the supply container is returned upon the tilting of the lever 47. The lever 42 is disposed two stations to the rear of the delivery station 8 on the rotating table 6, so that upon the passing of the empty box or package below the gripping cylinder 28 no label or banderole will be applied or pasted thereto. The bolt or stud 40 which has been turned back is returned to its initial position by means of a stationary cam guide 53 (Figs. 2 and 4) on the continuation of the movements of the rotating table.

By the automatic interruption of the operation of a slide 4 for the transferring of the cigarettes it is also possible to operate a signal, or to automatically arrest the machine, so that any further feeding of empty packages will be stopped.

These and other modifications and changes in the shape and arrangement of parts are possible within the scope and spirit of the invention, without deviating from the principles thereof except as otherwise stated in the claims hereunto appended.

I claim:

1. In a filling and packing machine in combination, a container for a plurality of articles, an intermittently movable table carrying a plurality of empty packages, a carriage adapted to be reciprocated into and out of contact with the articles in the container, feeling means pivotally disposed intermediate the container and the movable table and adapted to be operated by the articles in the container and means on said feeling means adapted to be moved in and out of the way of the carriage by the operation of the feeling means.

2. In a filling and packing machine in combination an open holder for a plurality of articles, an intermittently movable table carrying a plurality of empty containers for said articles, a carriage adapted to be reciprocated into and out of contact with the articles in the holder, substantially lever-shaped feeling means pivotally disposed on the holder, adapted to be engaged with the articles and to be operated by the movement thereof, stopping means operatively connected to said feeling means and movable in and out of contact with the carriage, marking and labeling means associated with the movable table, and locking means for the marking and labeling means engageable with the carriage.

3. In a filling and packing machine in combination, an open holder for subdivided material, an intermittently movable table carrying a plurality of empty containers for

said subdivided material, a carriage adapted to be reciprocated into and out of contact with the subdivided material in the holder, a plurality of feeling levers on the holder and corresponding to the subdivisions of the material, means operatively connected with the levers and engageable and disengageable with the carriage, marking and labeling means associated with the table, means to withdraw the packages from the table intermediate the same and the marking and labeling means, and locking means for the marking and labeling means engageable with the carriage.

4. In a filling and packing machine in combination, an open holder for subdivided material, an intermittently movable table on one side of the holder and carrying a plurality of empty containers for said subdivided material, a carriage adapted to be reciprocated into and out of contact with the subdivisions of the material in the holder, a plurality of feeling levers on the holder intermediate the same and the table and corresponding to the subdivisions of the material, stopping means operatively connected with the levers and engageable with the carriage, reciprocable package-withdrawing means on the other side of the table, marking and labeling means associated with the withdrawing means, and locking means for the marking and labeling means engageable with the carriage and adapted to be operated in the case of a stoppage of the carriage incident upon irregularities in the subdivisions of the material.

5. In a filling and packing machine in combination, an open holder for subdivided material, an intermittently rotated table operatively associated with the holder and carrying a plurality of empty containers for the subdivided material, a carriage adapted to be reciprocated into and out of contact with the subdivisions of the material in the holder, a plurality of feeling levers on the holder intermediate the same and the table and corresponding in number to the subdivisions of the material, stopping means for the carriage operatively connected to the levers and engaging and arresting the carriage incident upon irregularities in the subdivisions of the material, horizontally and vertically reciprocable substantially hook-shaped withdrawing means engageable with the containers on the table, marking and labeling means operatively associable with the withdrawing means, locking means for the marking and labeling means and stopping means on said locking means engageable with the carriage.

6. In a filling and packing machine in combination, a rotatable table carrying a plurality of empty containers for subdivided material, an open holder on one side of the table and containing subdivided material, a plu-

1 rality of feeling levers on the holder corresponding in number to the subdivisions of material, a feeding carriage movable into and out of contact with the holder and the subdivisions of material therein, stopping means operatively connected to the feeling levers and engageable with the carriage, reciprocable package-withdrawing means on the other side of the table engageable with the containers thereof, marking and labeling means operatively associated with the withdrawing means, a plurality of reciprocable pins on the table, locking means for the marking and labeling means adapted to be 15 operatively engaged by certain of said pins, additional stopping means engageable with the pins and movable into and out of contact with the carriage.

20 7. In a filling and packing machine in combination, a rotatable table carrying a plurality of empty containers for subdivided material, an open holder on one side of the table and containing subdivisions of material, a plurality of feeling means on the holder corresponding in number to the subdivisions of material, a feeding carriage movable into and out of contact with the holder and with the subdivisions of material therein, stopping means operatively connected to the feeling means and engageable with the carriage, reciprocable package-withdrawing means on the other side of the table engageable with the containers thereof, marking and labeling means operatively associated with the withdrawing means, a plurality of reciprocable pins slidingly disposed on the table, stopping means intermediate the pins and the carriage and adapted to be simultaneously engaged with either 40 of them, locking means engageable with the

marking and labeling means, an operating lever for said locking means adapted to be engaged by the pins in a certain position of the same, and link connection between said operating lever and the locking means. 45

8. In a filling and packing machine in combination a rotatable table carrying a plurality of empty containers for subdivided material, an open holder on one side of the table and containing subdivisions of material, a plurality of feeling levers on the holder corresponding in number to the subdivisions of material, a feeding carriage movable into and out of contact with the holder and with the subdivisions of material therein, stopping means operatively connected to the feeling levers and engageable with the carriage incident upon irregularities of the subdivisions of material, reciprocable package-withdrawing means on the other side of the table engageable with the containers thereof, label and mark applying means operatively associated with the package-withdrawing means, a reciprocable label-container engageable with the applying means, locking means for said label container, rockable carriage arresting means, adapted to be swung into and out of contact with the carriage, rockingly disposed operating levers for the locking means, and actuating means on the table intermediate said operating levers and the last mentioned arresting means and adapted to simultaneously actuate the arresting means and the locking means incident upon irregularities in the subdivisions of material. 55 60 65 70 75

In testimony whereof I affix my signature.

EMIL JAGENBERG.