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J. PETERSON ET AL

PACKAGING MECHANISM

Original Filed Feb. 23, 1921 . 3 Sheets-Sheet 1

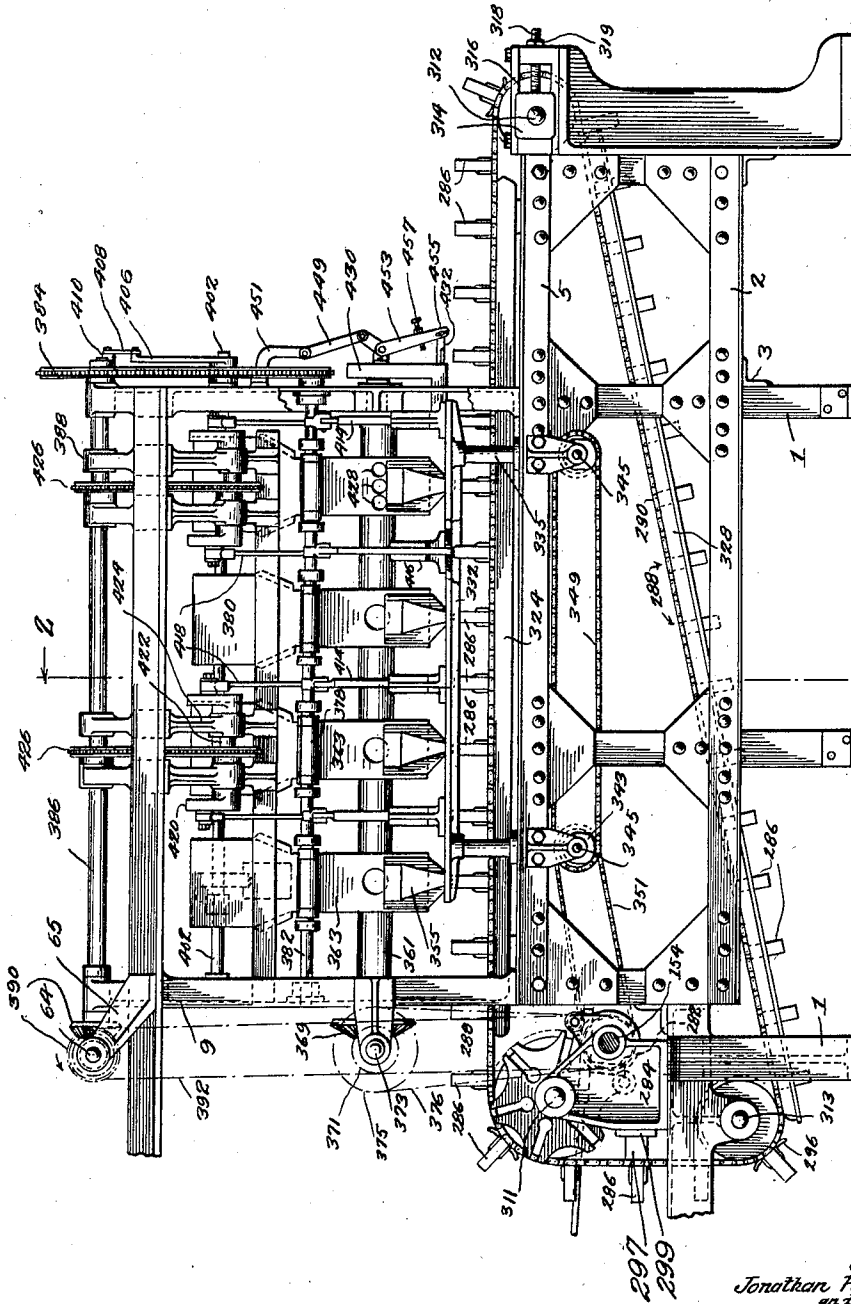


Fig. 1.

Inventor
Jonathan Peterson.
and
James C. Thore.

By *Meyers, Lavanagh & Whitehead*

Attorney

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3 Sheets-Sheet 2

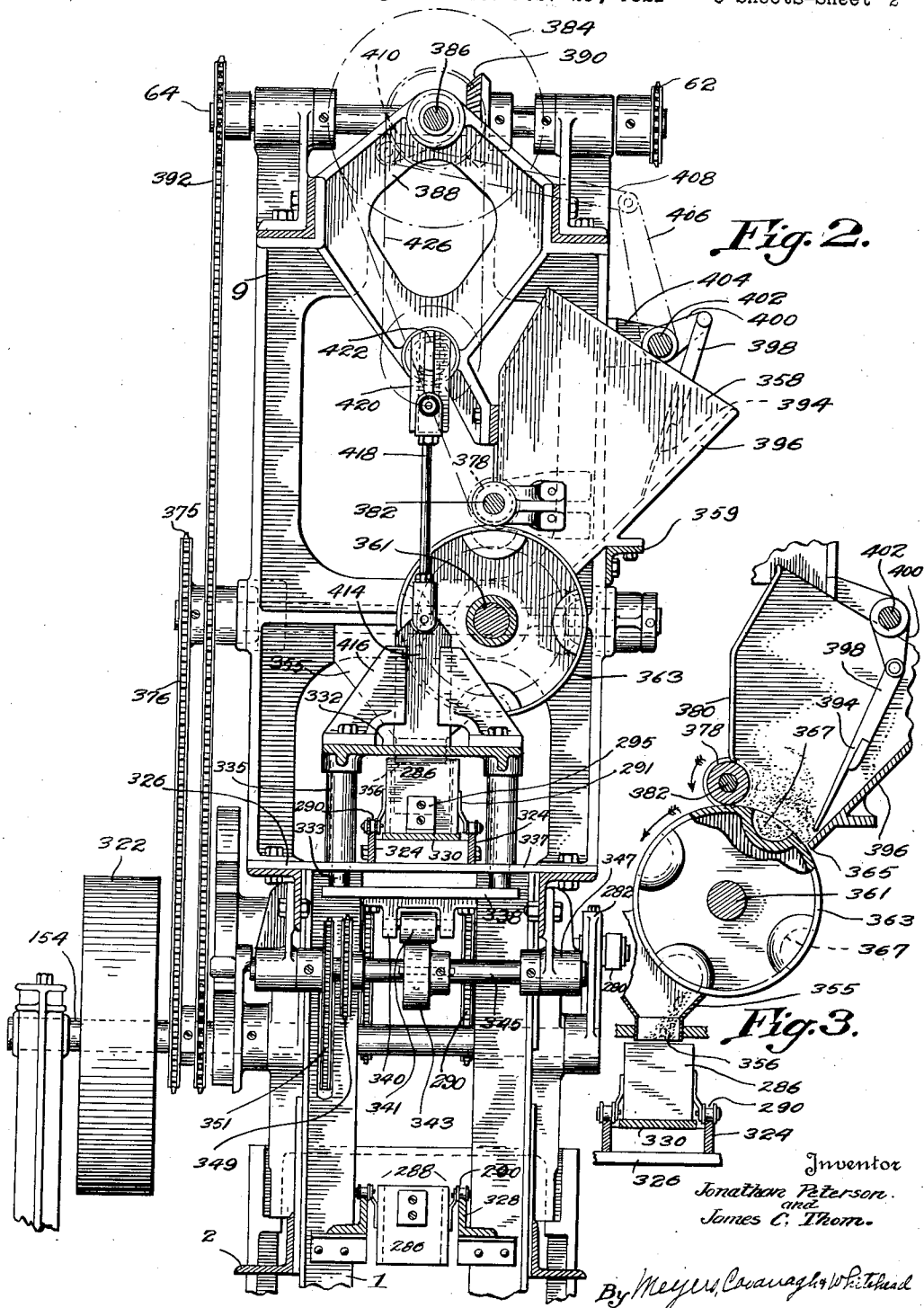


Fig. 2.

Fig. 3.

Inventor
Jonathan Peterson
and
James C. Thorne.

By *Meyers, Casanaga & Pittman*

Attorney

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Fig. 4.

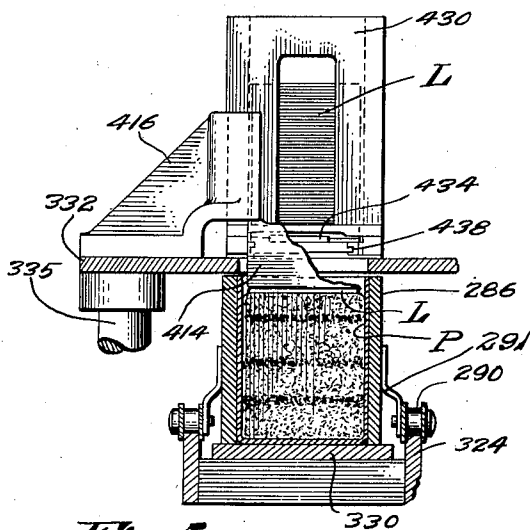
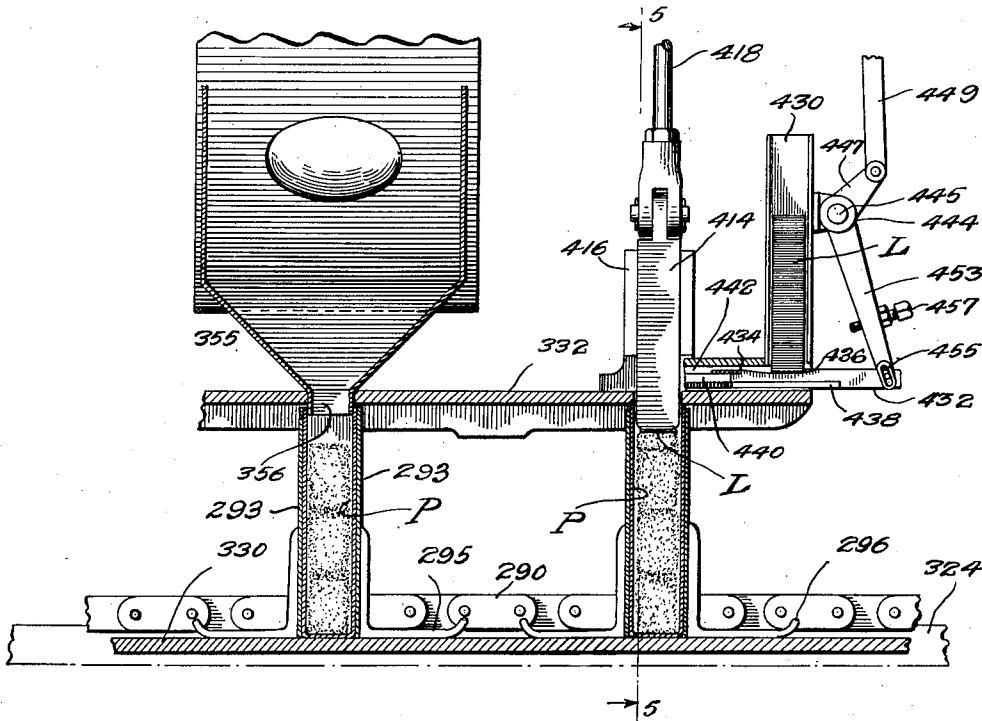


Fig. 5.

Inventor
Jonathan Peterson.
James C. Thore.

By *Meyers, Savanagh, Whitehead*

Attorney

UNITED STATES PATENT OFFICE.

JONATHAN PETERSON, OF BROOKLYN, NEW YORK, AND JAMES C. THOM, OF CHICAGO, ILLINOIS, ASSIGNORS TO COMBINATION MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

PACKAGING MECHANISM.

Original application filed February 23, 1921, Serial No. 447,151. Divided and this application filed January 19, 1923. Serial No. 613,684.

To all whom it may concern:

Be it known that we, JONATHAN PETERSON and JAMES C. THOM, citizens of the United States, and residents of Brooklyn, county of Kings, State of New York, and Chicago, in the county of Cook and State of Illinois, respectively, have invented certain new and useful Improvements in Packaging Mechanism, of which the following is a specification.

Our invention relates to machines especially adapted for packaging tobacco, such as granulated, fine-cut or "cut plug" tobacco, and also for packaging other commodities capable of being handled in a similar way.

This application is a division of our previous application Serial No. 447,151 filed February 23, 1921, which discloses a machine for forming pouch packages and for filling the packages including the insertion of a card or label in each package on top of the contents; and the present application relates to the filling mechanism adapted for filling bags or pouch packages of the kind produced by the bag forming mechanism of said prior application, or similar bags or pouches.

A principal object of the present invention is to provide simple and accurate mechanism for advancing bags or pouches in a series on a suitable conveyor, depositing a measured quantity of a commodity such as tobacco in each pouch, and preferably filling each pouch by the deposit of successive partial charges, the material being packed or pressed in position after each partial charge is deposited in the pouch.

Desirably also a card or ticket is placed in each pouch on top of its contents.

A further object of the invention is to provide means for easily varying the amount of material deposited in the pouch, and especially for regulating the amount of material deposited at the last filling station.

The characteristics and advantages of the invention are further sufficiently explained in connection with the following detail description of the accompanying drawings, which show one exemplifying embodiment, of the invention. After considering this embodiment, persons skilled in the art will understand that many variations may be made within the principles of the invention;

and we contemplate the employment of any structures that are properly within the scope of the appended claims.

In the drawings:

Fig. 1 is a side elevation of filling mechanism embodying the invention.

Fig. 2 is a vertical section at 2—2, Fig. 1.

Fig. 3 is a detail section through one of the commodity hoppers in a plane parallel to the section plane of Fig. 2.

Fig. 4 is an enlarged detail view in longitudinal section.

Fig. 5 is a transverse section at 5—5, Fig. 4, with some parts broken away.

The main frame comprises legs 1, parallel longitudinal members 2 connected by cross-pieces 3, other parallel longitudinal members 5 suitably connected, and upper parallel members 6 connected by suitable cross members and supported by parts 8 and 9.

In the lower part of the framework is a continuous longitudinal conveyor 288, which is intermittently driven to move a succession of pouches for the filling operation. The conveyor comprises a pair of parallel chains 290, to opposite links of which are connected plates 291, and to these plates are connected the pouch holders 286, each of which comprises a pair of plates 293 spaced apart to receive the pouch and shoes 295 extending forward and rearward from the plates in the direction of movement of the conveyor and substantially flush with the open bottom of the holder, the ends of these shoes being outwardly curved as at 296. At a certain point in the upward movement of each holder on the vertical stretch of the conveyor at the left in Fig. 1, the open bottom of the holder is confronted by an abutment consisting of a rubber block 297 carried by a stationary frame piece 299.

In our above mentioned application mechanism for forming pouch envelopes is located at the left of the filling mechanism as shown in Fig. 1, and such pouch forming mechanism includes a plunger upon which the pouches P are formed during the advancing movement of the plunger, and in the latter part of the plunger advance it enters one of the holders properly positioned in front of the abutment 297, carrying the pouch into the holder and against the abutment, and then the plunger is with-

drawn and the pouch at the same time ejected from the plunger, preferably by air delivered from a port in the end of the plunger into the interior of the pouch so that
 5 the pouch remains properly located in the holder as the plunger retreats. Otherwise, for the purposes of the present invention, any similar or suitable pouches may be positioned in the holders at about the location
 10 indicated by the reference character 297 or at any time before the holders reach the first filling position.

The conveyor chains run over pairs of sprockets carried by shafts 311, 312 and
 15 313, supported in suitable bearings on different frame members, bearing blocks 314 for shafts 312 being desirably mounted in guides 316 at the rear end of the frame and provided with adjusting screws 318 and
 20 nuts 319 for properly tensioning the conveyor. One of the conveyor shafts such as shaft 311 is intermittently driven from a main driveshaft 154, by any suitable intermittent driving mechanism, such as the Geneva
 25 wheel and stud carried by shafts 311 and 154, respectively. Shaft 154 may be the main drive shaft of the entire machine, and for that purpose is provided with a driving pulley 322. The upper stretches of the conveyor chains are desirably guided and supported by rails 324 carried by frame cross
 30 members 326, these rails engaging the chain blocks between the side links and the lower stretches of the chains may be similarly supported and guided by rails 328. Between
 35 rails 324 a longitudinal plate 330 is supported which underlies the open bottoms of holders 286 throughout the extent of the different filling and pressing positions, to
 40 support the pouches within the holders.

Between frame uprights 8 and 9, a vertically table 332 is located just above the upper ends of the advancing row of pouch holders. This table is carried by vertical
 45 rods 333 passing through sleeves 335 resting on frame cross members 337; and the lower ends of the pairs of rods are connected by cross pieces 338. Each cross piece is provided on the bottom with a slotted lug 340 carrying a rotatable cam roller 341, and
 50 each roller is engaged by a cam 343 mounted on a transverse shaft 345 carried by bearings 347 below frame members 5. Shafts 345 are connected by sprockets and a chain 349 and the forward shaft 345 is connected by sprockets and a chain 351 to main drive shaft 154. Table 332 carries a row of feed chutes 355, four in the present instance, and each chute has a spout 356 of a size approximating the interior contour of the open end of the pouch, this spout passing through an aperture in the plate. Above and somewhat to one side of each charging chute is a tobacco hopper 358, these being supported by a
 65 longitudinal frame member 359. A shaft

361 supported in bearings in frame uprights 8 and 9, runs between the hoppers and chutes and carries charge transfer wheels 363, one for each hopper and chute. Each wheel is arranged so that an upper surface runs
 70 close to the discharge opening 365 of a hopper, and a lower surface is adjacent to the upper end of the corresponding chute. In the surface of each transfer wheel is a series of equally spaced tobacco pockets 367.
 75 Shaft 361 is driven by a bevel gear 369 at its forward end, engaging a bevel pinion 371 on a transverse shaft 373, which is connected by sprockets 375 and a chain 376 to main drive shaft 154, or another suitable driving
 80 member. A charge controlling roll 378 is arranged to run close to or engage the periphery of each transfer wheel substantially at the top thereof, and these rolls are accommodated by suitable formation of hopper walls 380. Rolls 378 are carried on a shaft 382 mounted in bearings in frame uprights 8 and 9, and are driven in the same direction as shaft 361, so that the surfaces of the charge controlling rolls in engagement with the transfer wheels move in a reverse direction, that is, back toward the hoppers, to move back any surplus amount of tobacco and prevent the transfer of an excessive amount of tobacco in any one charge.
 85 The shaft 382 is driven by sprockets and a chain 384 from a longitudinal overhead shaft 386 carried in bearings 388, and itself driven from a shaft 64 by bevel gears 390. The shaft last mentioned is driven by sprockets and a chain 392 from main drive shaft 154.
 90
 95
 100

In each tobacco hopper a stirring or agitating device is provided to insure a proper movement of the tobacco and filling of the transfer
 105 pockets. Each of these devices consists in the present instance of a stirring or pushing blade 394, the free end of which is arranged to slide against the inclined wall 396 of the hopper, and carried by an arm 398, pivoted
 110 to a crank 400 on a longitudinal shaft 402, mounted in bearings 404. At one end this shaft has another crank arm 406 connected by a pitman 408 with a crank 410 on the adjacent end of overhead shaft 386. In this
 115 way the stirrer shaft 402 is continuously oscillated and the agitator blades are moved up and down to push the contents of the hoppers toward the pockets.

To the rear of each filling device is a charge compressing device comprising a plunger 414 movably arranged in guides 416 carried by table 332 and passing through an aperture in the table, the plunger being formed to fit with suitable clearance within the pouch. Each plunger is connected to a link 418, and each link is connected adjustably to a crank arm 420, so that by adjusting the connection toward and from the crank
 120
 125
 130 rotation center the stroke of the correspond-

ing plunger may be varied. The driving cranks 420 are arranged in pairs on the ends of short shafts 422 carried in bearings 424 on brackets depending from frame members 6, and each of these crank shafts is driven by sprockets and a chain 426 from overhead shaft 386.

While the machine can easily be arranged so that each pouch is entirely filled by one suitable filling device, for instance by making the transfer pockets of sufficient size to carry an entire charge, or rotating a single transfer wheel at such speed that a plurality of small charges will be delivered to the pouch in one conveyor position, and in such cases a single compressor would suffice, it is preferred, as herein shown, to fill each pouch with a plurality of relatively small charges and to compress each charge separately. Consequently the first compressing plunger must descend relatively near to the bottom of the pouch, and the second will not descend so far, and so on to the rear plunger, which descends only a short distance into the pouch. The adjustment of the links 418 above described is provided to enable the strokes of the compression plungers to be conveniently varied for the purpose stated.

It is desirable in some cases, as here shown, to arrange the last charging device in the series so that a smaller charge may be inserted in the pouch than at previous positions, or so that the charge supplied here may be varied as may be necessary or desirable. For this purpose instead of a single transfer pocket at each point on the rear transfer wheel, the periphery of this wheel is desirably provided with equally spaced series of small pockets 428, for instance, three of these pockets in a row, with these rows equally spaced about the wheel perimeter. A part of the open discharge end of the corresponding hopper may be blocked off by inserting a suitable plate, or in other convenient ways tobacco may be prevented from entering any one or more of the transfer pockets of each series and in this way the amount of the last charge may be readily varied.

It is desirable in many cases to insert in each pouch on top of the contents a card or ticket. For this purpose a vertical holder 430 for a stack of cards or labels L is supported on table 332 rearward of the last compression plunger. A slide 432 moves under the card stack and the upper face of this slide is provided with two card engaging shoulders 434 and 436. The slide has lateral flanges 438 co-operating with guide members 440 at opposite sides of the slide and the upper surfaces of these guide members provide supports 442 for the ends of the cards in intermediate positions during retreat of the slide. The slide is operated

by a bell crank 444 fulcrumed at 445 on the rear wall of the card holder. Short arm 447 of the bell crank is connected by a link 449 to a stationary bracket 451; and the long arm 453 of the bell crank is connected by a pin and slot connection 455 to the outward end of the slide. An adjustable stop may also be provided in the form of a screw 457 carried by bell crank arm 453, to limit advance movement of the slide. At each upward movement of table 332, the bell crank acts just after the adjacent compression plunger has been withdrawn, and a filled pouch has been brought into position under the plunger, to advance a card and drop it through the table aperture into the pouch; and at the same time the rearmost shoulder 436 of the slide engages the under card of the stack and moves it to an intermediate position where it rests on guide blocks 442; in the descending movement of the plate the slide is retracted and the rearmost shoulder is ready to engage another card and feed it from the stack while the foremost shoulder 434 is ready to engage the intermediately positioned card and move it forward for deposit in the pouch at the next upward movement of the table, and so on.

The vertical center axes of the filling spouts 356 and plungers 414 are spaced equally apart so that equal movements of the pouch conveyor from the first filling position move a pouch successively to the next compressing position, then to the next filling position, and so on, each pouch thus occupying eight active positions in the filling mechanism.

Before the conveyor commences each movement table 332 is raised, retracting the filling spouts from the pouches. The conveyor then shifts the pouches, table 332 descends, inserting each filling spout in a pouch opening; a partial charge is deposited in each pouch by the charging mechanism and at the same time the charge is compressed in each pressing position by one of the plungers. The manner in which the cards are inserted has been sufficiently described. The filled pouches may be delivered to suitable closing mechanism, or may be removed by hand and disposed of in any desired way.

I claim:

1. In mechanism for filling pouches with tobacco or similar commodities, in which successive open topped pouches are presented for filling, a plurality of filling devices, a conveyor having a series or spaced pouch holders, means for moving the conveyor intermittently, a plurality of charging devices located at different pouch holder positions, each device including a filling spout, and a vertically movable support for the spouts serving to insert

them simultaneously in the corresponding pouches.

2. In mechanism for filling pouches with tobacco or similar commodities, in which
 5 successive open topped pouches are presented for filling, a plurality of filling devices, a conveyor having a series of spaced pouch holders, means for moving the conveyor intermittently, a plurality of charge
 10 devices located at different pouch holder positions, each device including a filling spout, and a vertically movable table supporting the spouts and serving to insert them simultaneously in the corresponding
 15 pouches, pressing plungers intermediate the filling devices, and means for operating the plungers.

3. Mechanism for filling pouches with tobacco or similar commodities, comprising
 20 means for supporting and advancing along a substantially straight course a spaced series of flexible pouches with their mouths open for filling, a series of equally spaced filling spouts, means for raising and
 25 lowering the spouts simultaneously to insert the spout mouths in the pouches and withdraw them, a hopper, and a pocketed delivery wheel co-operating with the hopper to discharge a measured amount of ma-

terial from the hopper into the spout at each filling location of the pouches said filling devices being located along said straight course of pouch advance.

4. Filling mechanism of the class described comprising a longitudinal conveyor having a spaced series of pouch holders, means for driving the conveyor intermittently, a series of filling stations, a hopper, a pocketed delivery wheel and a spout at each filling station, a longitudinal table
 40 supporting said spouts and apertured to accommodate the spout mouths, means for lowering and raising the table to simultaneously insert the spout mouths in pouches
 45 at the filling stations and withdraw them after a filling operation, and a pressing plunger arranged to enter a pouch and press the contents therein subsequent to each filling station

Signed by JONATHAN PETERSON at Brooklyn, in the county of Kings and State of New York, this 15th day of January A. D. 1922. 50

JONATHAN PETERSON.

Signed by JAMES C. THOM at Chicago, in the county of Cook, and State of Illinois, this 13th day of Jan., 1923. 55

JAMES C. THOM.