No. 661,679. Patented Nov. 13, 1900.

J. H. WYCKOFF.

MACHINE FOR FILLING PACKAGES.

(Application filed July 12, 1900.)

(No Model.) 2 Sheets—Sheet 1

Fig. 1.

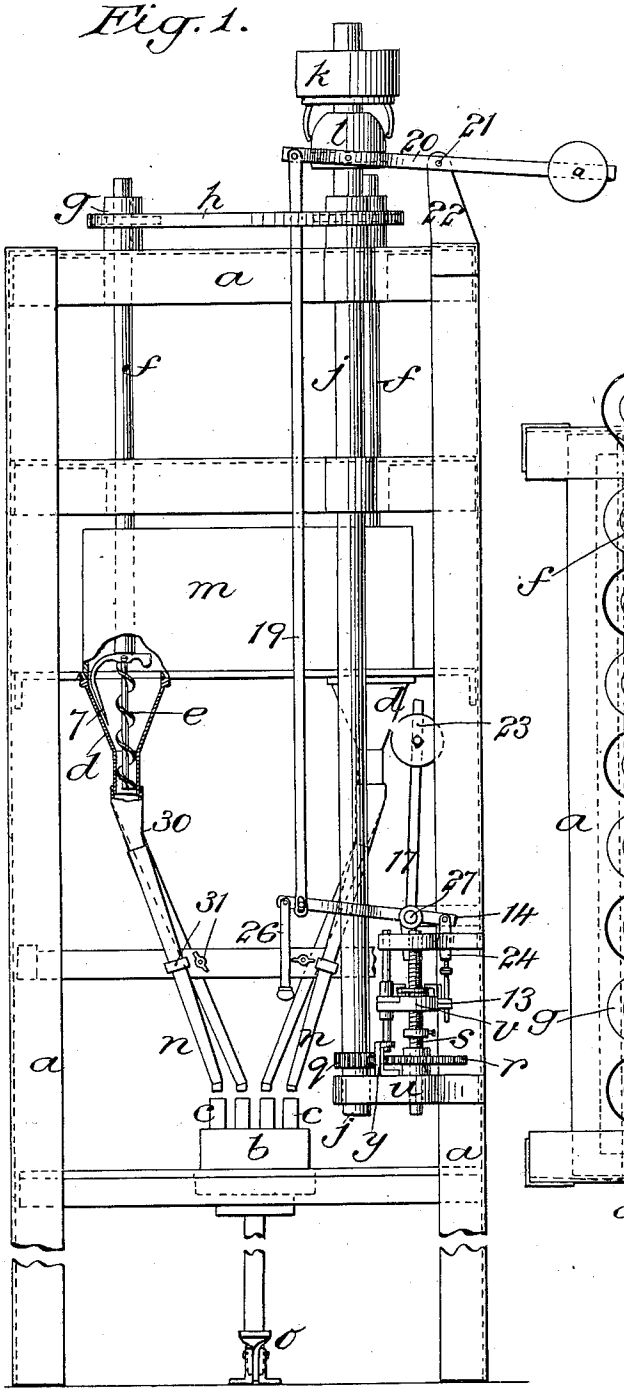
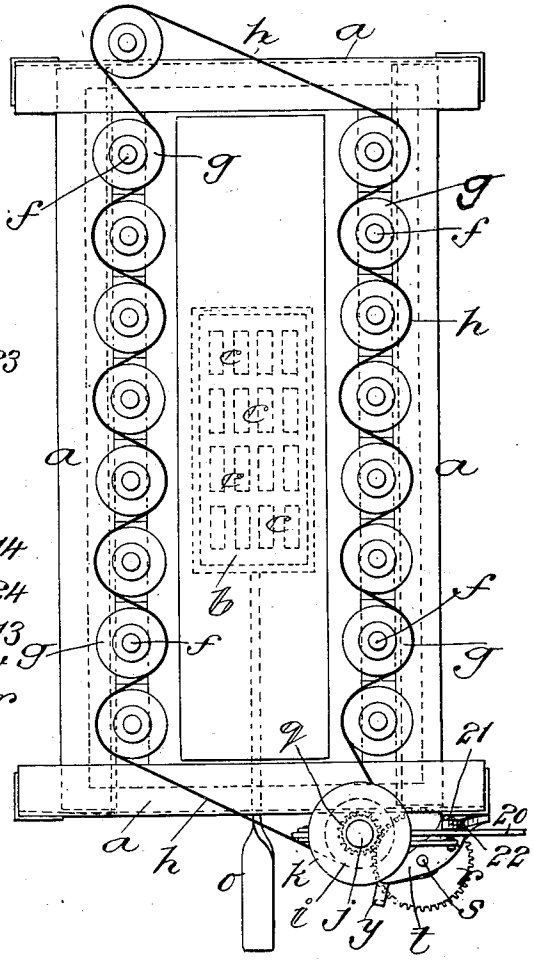


Fig. 2.



Witnesses:-
George Barry Jr.
Fred Haynes

Inventor:-
James H. Wyckoff
by attorneys
Brown & Seward

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

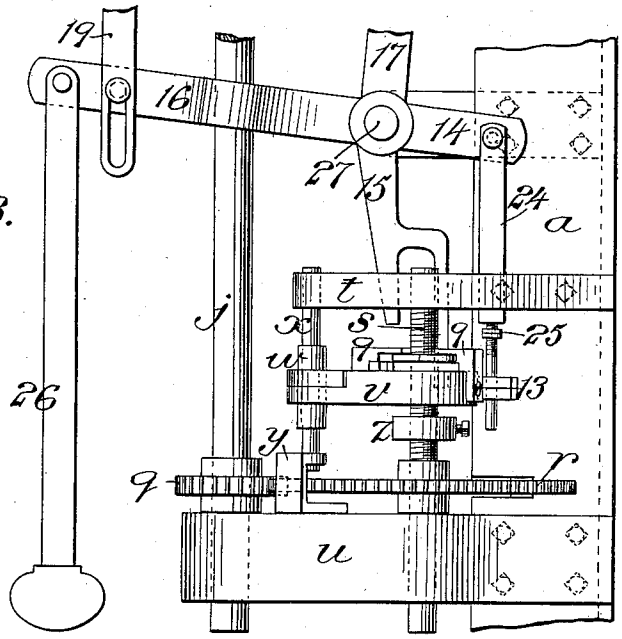


Fig. 4.

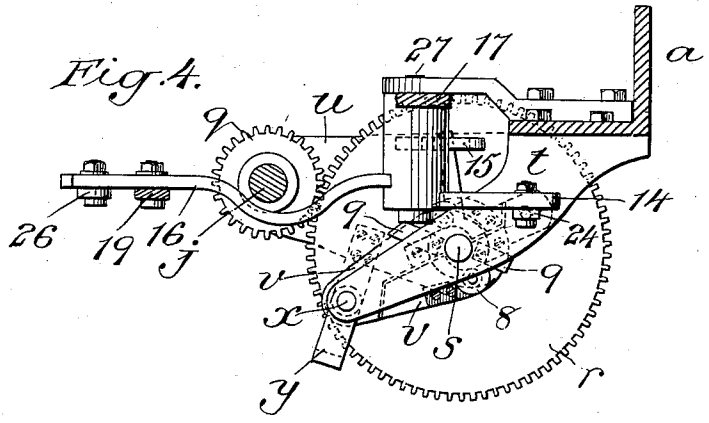


Fig. 5.

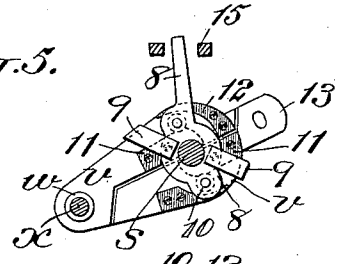
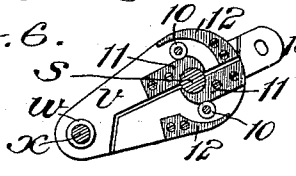


Fig. 6.



Witnesses:-
George Barry Jr.
Fred. Haynes

Inventor:-
James H. Wyckoff
by attorneys
Brown & Seward

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES H. WYCKOFF, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF TO ALBERT STEARNS, OF SAME PLACE.

MACHINE FOR FILLING PACKAGES.

SPECIFICATION forming part of Letters Patent No. 661,679, dated November 13, 1900.

Application filed July 12, 1900. Serial No. 23,304. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. WYCKOFF, a citizen of the United States, and a resident of Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Machines for Filling Packages, of which the following is a specification.

This invention relates to machines in which the filling of packages with predetermined quantities of material is effected by means of a feeding device consisting of a feed-screw rotating within the neck or throat of a funnel or hopper, to which the material is supplied, as illustrated and described in United States Letters Patent No. 219,322 granted and issued September 2, 1879, to Albert Stearns.

In a machine embodying my invention the quantity of material fed to the package is determined and governed directly according to the number of revolutions made by the feed-screw; and for that purpose my invention consists in the combination, with the feed-screw and its driving mechanism, of a rotating counting-screw and an automatic stop-motion for said driving mechanism controlled by said screw, whereby said driving mechanism is disengaged from its motor or driver and the feeding is stopped by the act of the completion of a certain amount of revolution of said driving mechanism and screw. My invention further consists in the combinations hereinafter described and claimed constituting the stop-motion and the mechanism through which it is acted upon by the counting-screw. In practice I propose generally to employ in one machine several feeding devices for filling several packages at the same time, and in that case one stop-motion is made to control the whole of the feeding devices.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a front elevation, partly in section, of a machine having several supply-hoppers with feed-screws all controlled by a single automatic stop-motion; Fig. 2, a plan of said machine; Fig. 3, a front elevation, on a larger scale, of the principal parts of the stop-motion; Fig. 4, a plan corresponding with Fig. 3; Figs. 5 and 6, plan views of details of the stop-motion which are partly concealed in Fig. 4.

Similar characters of reference designate corresponding parts in all the figures.

a designates an upright framing, within the lower part of which is arranged a table or box *b* for the reception of the packages *c* to be filled and within which, above said table, are arranged the feeding funnels or hoppers *d* and their feed-screws *e*, the latter being attached to the lower ends of upright spindles *f*, which are supported in suitable bearings on or within the framing *a*. The spindles *f* have at their upper ends band-pulleys *g*, represented (see Fig. 1) as driven through a single band *h* from a pulley *i* on an upright driving-shaft *j*, supported in bearings at one end of the framing. This driving-shaft is represented as furnished at its upper end with a loose driving-pulley *k* to receive a driving-belt and with a clutch *l*, through which said pulley is engaged with and disengaged from it. The hoppers *d* are all supplied from a reservoir *m*, and within each hopper is a stirrer 7, carried by the shaft *f* of its respective feed-screw *e*. The table or box *b*, carrying the packages *c*, is supported upon a treadle *o*, by which it is raised to bring the packages to a position to receive the material with which they are to be filled from the delivery-spouts *n* of the hoppers and lowered to a position to permit the removal of the filled packages and the substitution for them of empty packages.

The stop-motion, which constitutes an important feature of my invention, is partly shown in Figs. 1 and 2, but better on the larger scale in Figs. 3, 4, and 5. It is represented as deriving motion from a spur-gear *q* on the upright driving-shaft *j*. This gear engages with and drives a spur-gear *r*, fast on an upright screw *s*, which I term the "counting-screw" and which works in a bearing in a bracket *t*, secured to the framing, and a bearing in a bracket *u*, which is also secured to the framing and which contains or carries the lower bearing for the driving-shaft *j*, the said screw being so fitted to its bearings as to be incapable of longitudinal motion. The said screw is fitted with a divided nut *v*, the two members of which are hinged together by a

hollow pivot *w*, which is fitted to slide freely up and down on a stationary guide-rod *x*, which is held by the bracket *t* and by a stand *y* on the bracket *u*. Below the divided nut *v* there is on the screw *s* a fixed but adjustable collar *z*, onto which the nut when open and disengaged from the threads of the screw falls by its own weight aided by the weight of certain of the engaging and disengaging devices which are attached to it and which are described as follows: 8 is a lever fitted to turn freely on the screw *s* as its fulcrum and held loosely but closely on the top of the nut by two clamps 9, which are so secured to the two members of the said nut as to overlap the said lever. Pivoted to the under side of the lever 8 are two small rollers 10, which by the movement of the lever are caused to act upon eccentric segments 11 12 on the nut for the purpose of closing and opening the latter and engaging it with and disengaging it from the screw *s*. These segments are fully shown in Fig. 6, which represents a plan of the nut and rollers without the lever 8. The nut is provided with a projecting tappet-lug 13, through which projects a rod 24, which is suspended from the arm 14 of a four-armed lever 14 15 16 17, which I will term the "stop-lever," which works on a fixed fulcrum 27. The arm 15 of this lever, which is forked, receives the lever 8 within its fork, as shown in Fig. 5, wherein the said forked arm is shown in section. The arm 16 of the stop-lever is connected by a rod 19 with the lever 20, which operates the movable member of the clutch *l* and which has its fixed fulcrum 21 in a standard 22 on the top of the framing *a*. The connection between the rod 19 and the clutch-lever 20 is slotted to permit of a certain movement of the stop-lever without moving the clutch-lever. The fourth arm 17 of the stop-lever, which projects upward, is furnished with a tumbler-weight 23. The rod 24, dependent from the arm 14, is furnished above the tappet-lug 13 of the nut with a tappet-collar 25, consisting of two jam-nuts fitted to a screw-thread on said rod.

To explain the operation of this stop-motion, I will first suppose the nut *v* to be open and at rest on the collar *z* of the screw *s*, the tumbler-arm 17 of the stop-lever being then thrown over to the right, the arm 16 being depressed, the clutch *l* uncoupled, and the driving-shaft *j* and feed-screws to be at rest. To start the operation, an attendant pushes up the arm 16 of the stop-lever by a handle-rod 26, thus moving the tumbler-arm 17 to a position beyond the vertical, when the weight 23 quickly throws over the said arm 17 to the right and so at the same instant causes, by the connection of the arm 16 and rod 19 with the clutch-lever 20, the engagement of the clutch *l* and also produces by the action of the lever 8 on the segments 11 the closing of the nut *v*. The engagement of the clutch produces the revolution of the driving-shaft, the feed-screws *e*, and the screw *s*, which may be termed the "counting-screw." The latter screw acting on the closed nut causes the latter to rise to the tappet-collar 25 and so push up the rod 24 and the lever-arm 14 until the tumbler-arm 17 passes the vertical position, when the movement of the said arm to the left is accelerated by the weight 23 and the arm 16, acting through the rod 19, is caused to instantly pull down the clutch-lever and disengage the clutch *l* and stop the machine. The forked arm 15, acting at the same time on the nut-lever 8, is caused to produce the action of the rollers on the nut-segments 12 to open the nut, which, being then disengaged from the counting-screw *s*, falls back to the collar *z* on the screw, where it remains while the filled packages are removed from the table *b* and replaced by hand, which having been done the attendant pushes up the arm 16 of the stop-lever and produces the re-engagement of the clutch *l* and the closing of the nut *v* to repeat the operation of the feeding-screws *e* for filling the packages and the stoppage of said operation on the completion of such amount of revolution of said screws as is necessary for the filling of the packages with the determined quantity of material. This quantity may be most exactly gaged by the adjustment of the tappet-collar 25 on the rod 24, by which the number of revolutions of the feeding-screws before their stoppage may be determined to the smallest fraction of a revolution, so that the packages may be filled with the required quantities of material in the most exact manner.

In order to provide for the filling of packages *c* of different size, the spouts *n*, requiring their mouths to be more or less separated, are represented as connected with the necks or throats of the filling hoppers or funnels *d* by flexible connections 30 and as provided with clamps 31, by which they may be secured to the framing with their mouths in proper relation to the packages.

It may be mentioned that the mode of driving the several feed-screws by a single band *h*, as shown in Fig. 2, whereby alternate feed-screws are driven in reversed directions, requires the screws to have right and left hand threads alternately.

What I claim as my invention is—

1. In a machine for filling packages, the combination with a filling-hopper and a feed-screw working therein, of a counting-screw, mechanism for rotating said feed-screw and counting-screw and a stop-motion for said mechanism controlled by said counting-screw, substantially as herein described.

2. In a machine for filling packages, the combination with a filling-hopper and a feed-screw working therein, of a counting-screw, mechanism for driving said feed-screw and counting-screw, a stop-motion for said mechanism, a divided nut on said counting-screw for actuating the stop-motion and means for

disengaging said nut from the counting-screw by the action of said stop-motion, substantially as herein described.

3. In a machine for filling packages, the combination with a filling-hopper and a feed-screw working therein, of a counting-screw and bearings therefor in which it is confined lengthwise, a driving-shaft and means for transmitting motion therefrom to said feed-screw and counting-screw, a driving device on said shaft and means for engaging it therewith and disengaging it therefrom, a divided nut fitted to the counting-screw, a lever fulcrumed on said screw for closing and opening said nut to engage it with and disengage it from the counting-screw, and a stop-motion controlled by said nut for simultaneously disengaging said driving device from said shaft and opening said nut after a determined amount of revolution of said counting-screw, substantially as herein described.

4. In a machine for filling packages, the combination with a filling-hopper and a feed-screw working therein, of a counting-screw and bearings therefor in which it is confined lengthwise, a driving-shaft and means for transmitting motion therefrom to said feed-screw and counting-screw, a driving device on said shaft and a clutch for engaging said device with and disengaging it from said shaft, a divided nut fitted to the counting-screw, a lever fulcrumed on said screw for opening and closing said nut, a clutch-operating lever, a stop-lever engaging with the first-mentioned lever, a tappet carried by said stop-lever to be actuated by said divided nut, a connection between said stop-lever and the clutch-operating lever, and a tumbler carried by said stop-lever, substantially as herein described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 28th day of June, 1900.

JAMES H. WYCKOFF.

Witnesses:
GEO. E. KITTLE,
C. R. ALVORD.