Dec. 2, 1930. E. VAN DER PYL ET AL 1,783,912

CARTON FEEDING MAGAZINE

Filed July 2, 1928 6 Sheets-Sheet 1

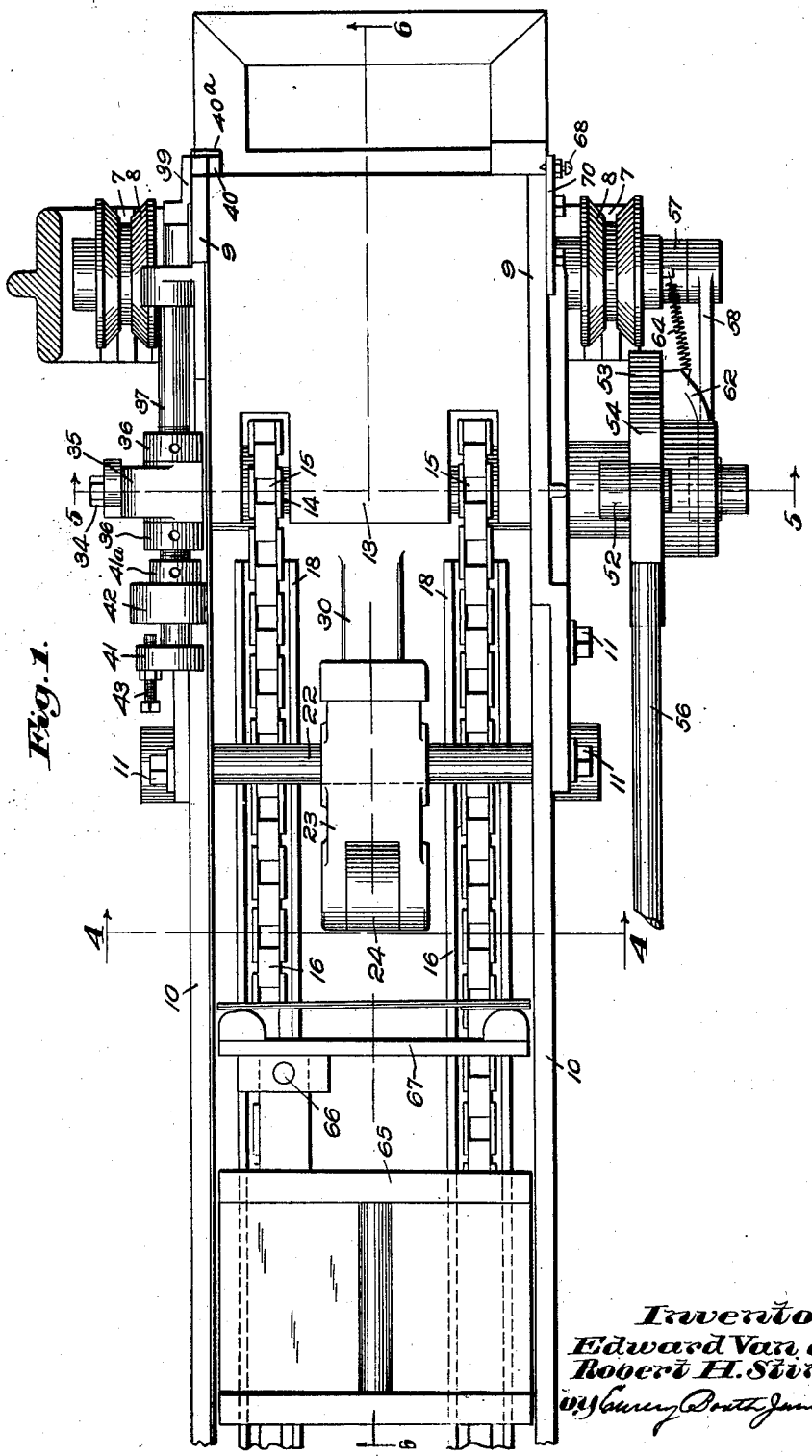


Fig. 1.

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Fig. 2.

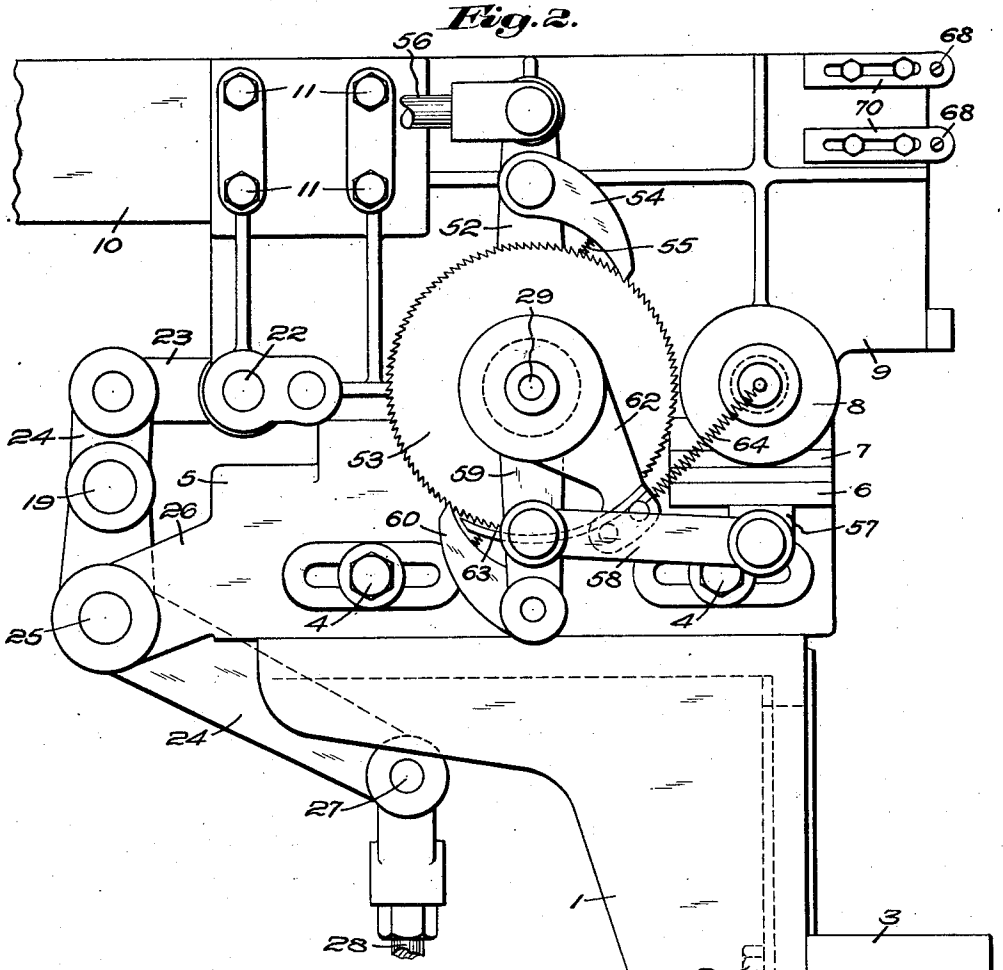
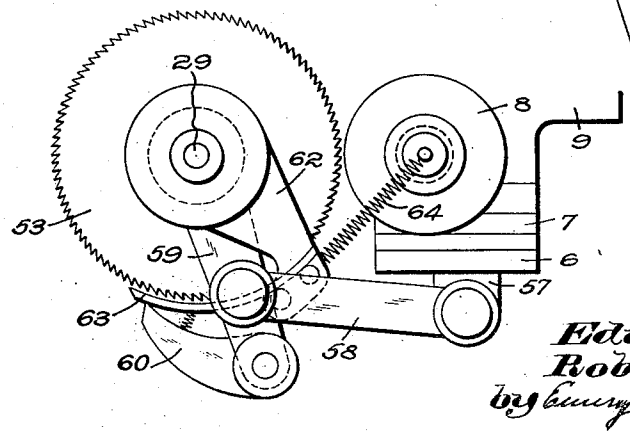


Fig. 7.



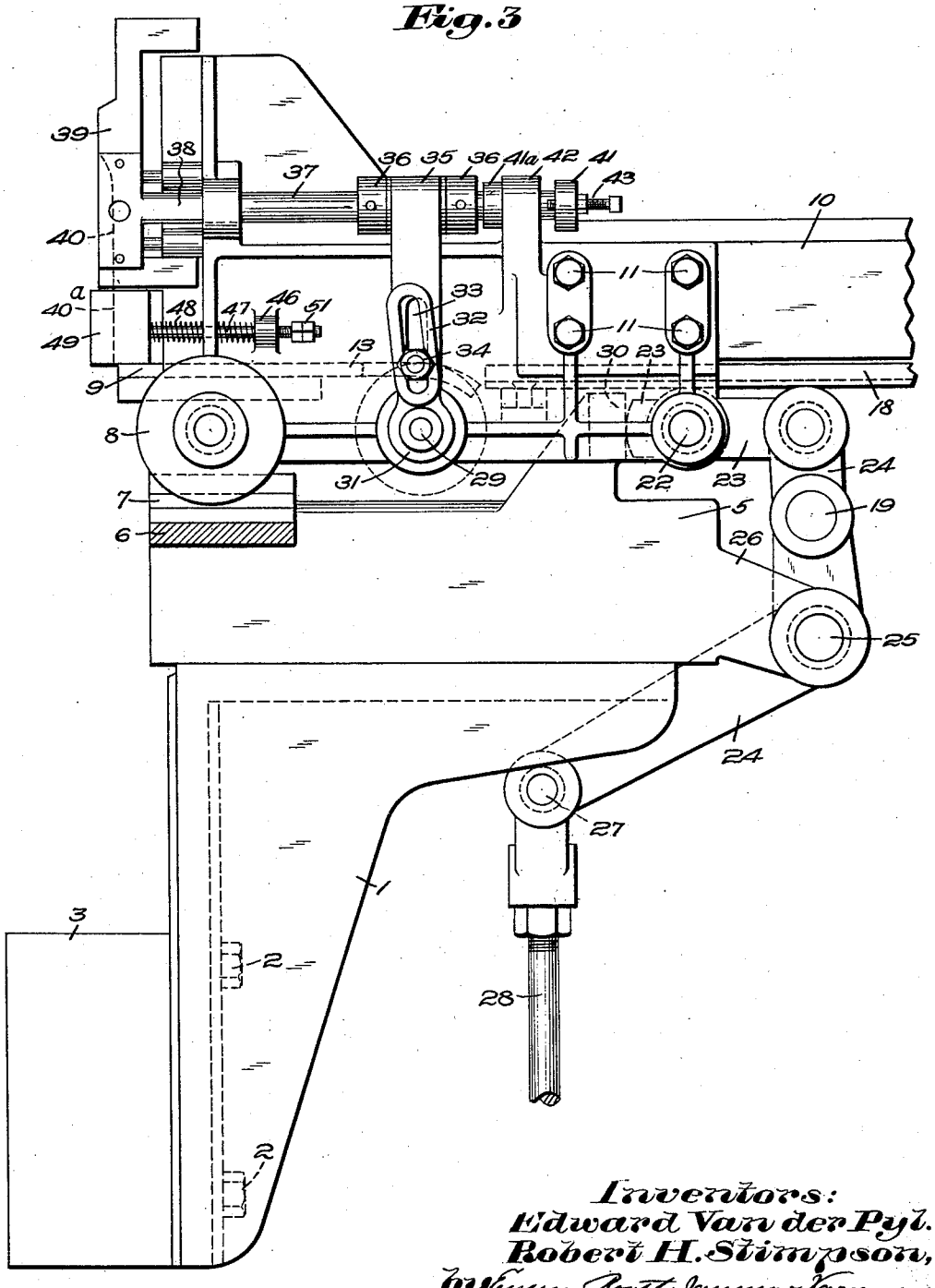
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Fig. 3



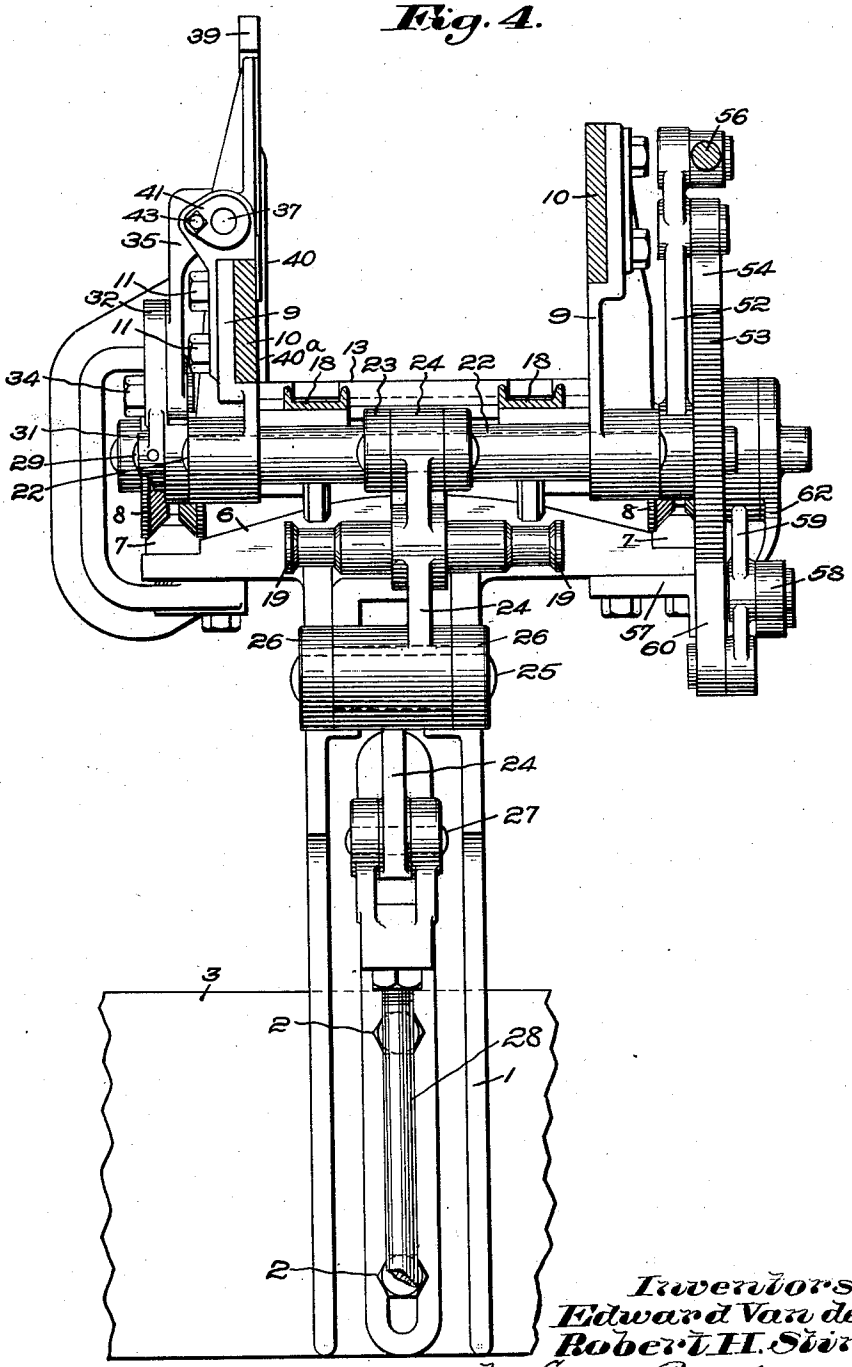
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Fig. 4.



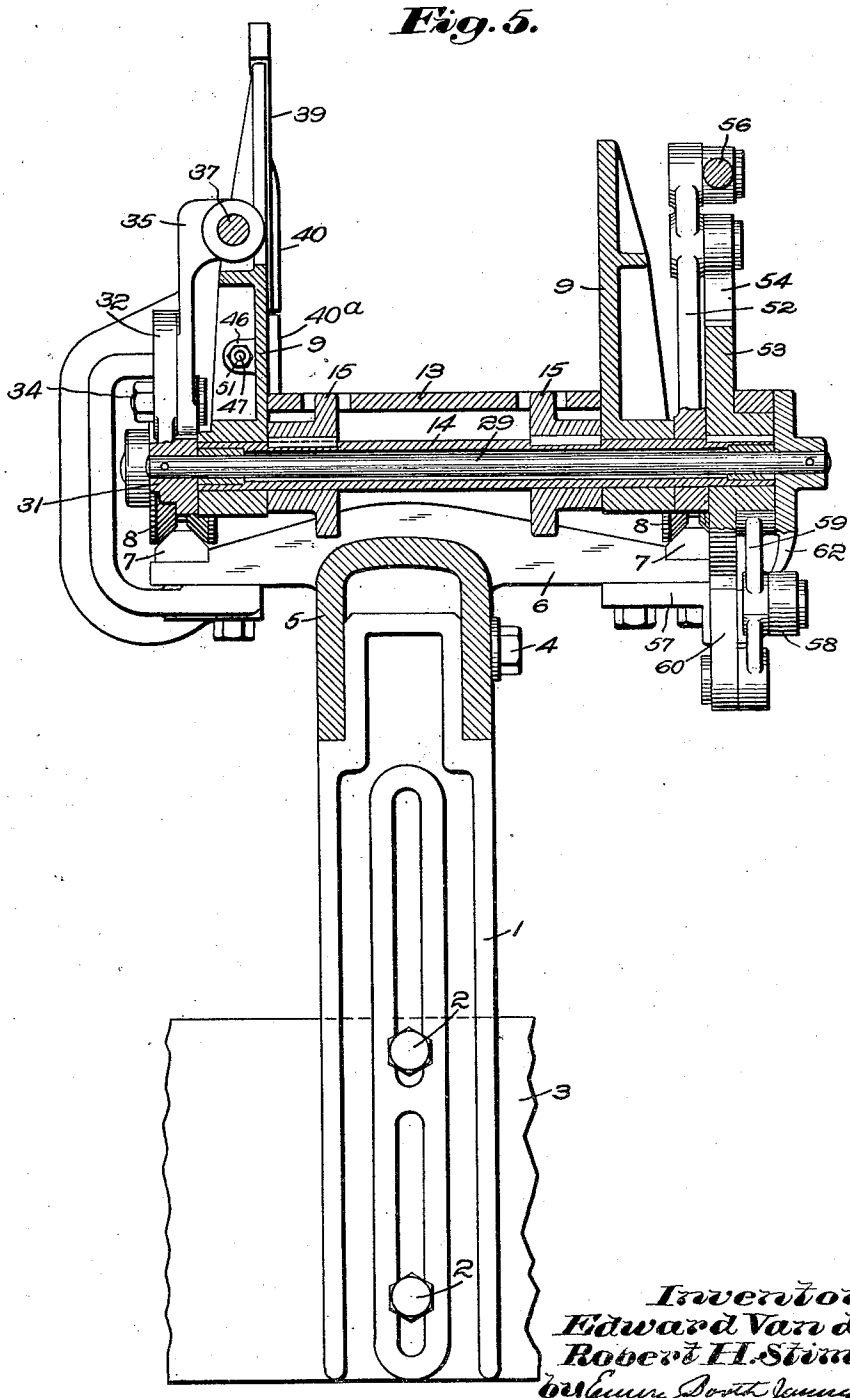
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Fig. 5.



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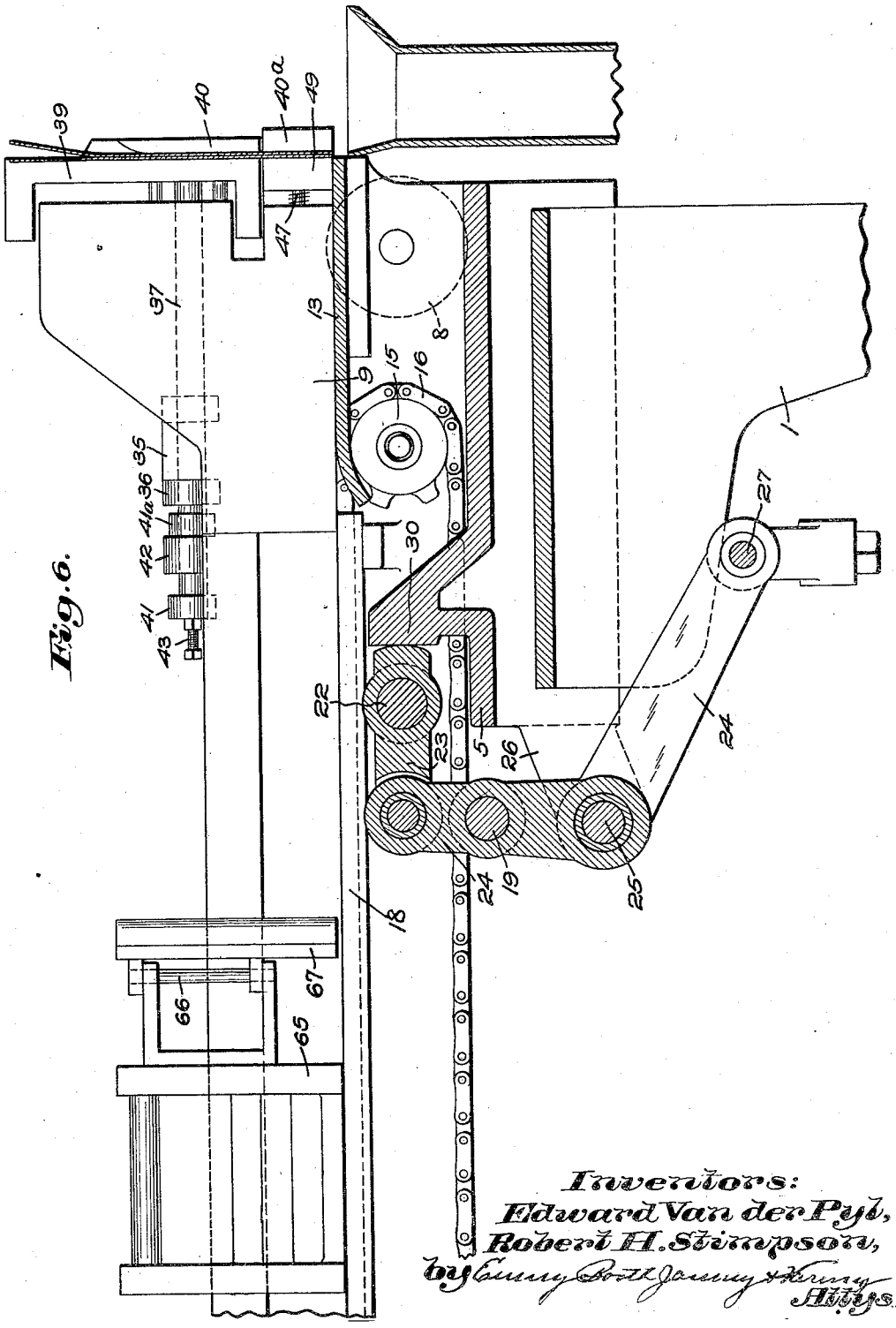


Fig. 6.

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Patented Dec. 2, 1930 1,783,912

UNITED STATES PATENT OFFICE

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CARTON-FEEDING MAGAZINE

Application filed July 2, 1928. Serial No. 289,654.

This invention relates to packaging machines designed to fill containers, for instance cartons, with powdered or granulated material, or even small pellets or pieces of material, and our invention is aimed to provide for such machines, an improved, automatically operative carton or container feeding magazine for properly presenting the collapsed cartons to be opened and filled, and having, among others, the advantages herein set forth.

While our novel device is adapted for use with machines of varying construction, the particular embodiment thereof herein described and illustrated is especially designed for use with such a machine as that which is the subject of an application for patent by John D. Lane, Serial No. 669,401, comprising a long base or bed plate over which the cartons are conveyed by an endless conveyor while the desired various steps are performed on the carton by appropriate instrumentalities.

Referring to the drawings,

Fig. 1 is a plan;

Fig. 2, a partial elevation from the right of Fig. 1;

Fig. 3, a similar view from the left of Fig. 1;

Fig. 4, a vertical cross-section on the line 4—4, Fig. 1, from the left;

Fig. 5, a vertical cross-section on the line 5—5, Fig. 1, from the left;

Fig. 6, a partial vertical longitudinal section on the line 6—6, Fig. 1, from the right; and

Fig. 7, a partial detail of some of the parts shown in Fig. 2, but with the ratchet shield in a different position.

Referring first to Figs. 1, 2, our novel construction comprises a suitable support as a bracket 1, adapted to be secured, as by bolts 2, to some convenient part of the frame or base plate 3, a portion only of which is shown, of a packaging machine. If used with the machine above referred to, this construction would be secured to it at right angles to the length of a bed plate and adjacent the carton-opening blade.

The bracket 1, Fig. 5, has secured to its upper end by bolts 4, an inverted U-shaped supporting bar 5. The bar 5 carries on its top a cross bar 6 which supports on each end a short rail 7 for a wheel 8 which supports one side plate 9 of the carriage of the magazine, the construction being similar on the opposite or outer end of the magazine, not shown. The side plates 9, Figs. 2, 3, of the magazine, carry side bars 10, one on each side, secured to them as by bolts 11, which side bars extend the length of the magazine and they are connected at their opposite ends by any suitable means, and rest on any convenient support as a post, not shown.

The side plates 9, Figs. 1, 3, 5, are connected at the, Fig. 1, right hand end of the magazine adjacent the packaging machine, by a horizontal plate 13, which forms a bottom and carton supporting member for the magazine. The side plates 9, Figs. 1, 5, carry between them near their bottom edges and through suitable bearings a quill or hollow shaft 14 on which adjacent to and between the members 9 are sprocket wheels 15, over which, Figs. 1, 6, run chains 16 forming an endless carton carrier and feeder, and which are supported at their opposite or outer ends, not shown, by similar sprockets to those shown in Fig. 5. The chains, Fig. 4, run along upper channel supporting members 18 and spool like lower supports 19, and motion is imparted initially to the chains by the forward and backward motion of the magazine as will be presently described.

The side plates 9, Figs. 2, 3, 4, 6, have pivoted to them as by means of a bar 22 a link 23 which, in turn, carries pivoted thereto at its opposite end a lever 24 carrying on one arm, the laterally projecting supports 19 referred to above, and this lever is mounted as by a pin 25 in the downwardly extended arms 26 of the member 5 on the bracket 1. The lower arm of the lever 24 is connected as by a pin 27 to a rod 28 which, in turn, is connected to the operating shaft of the packaging machine, not shown, whereby a longitudinal reciprocating motion is imparted to the magazine, the extent of which is determined by a raised stop mem-

ber 30 on the member 5, Figs. 1, 3, 6, against which the link 23 abuts when moving inwardly or to the right, Fig. 2.

For transmitting motion from the magazine to the carton carrier, we provide, Figs. 3, 5, upon a shaft 29 within the hollow shaft 14 and adjacent one side plate 9, a hub 31 with a rocker arm 32 having a slot 33 and which, by means of such slot and a laterally extended bolt 34, has adjustably secured to it an upwardly projecting arm 35. This arm is adjustably connected by means of collars 36 to a slidable rod 37 having a squared end section 38 carrying an upright bar or carton pressure gauge 39, Figs. 3, 4, 6 and with laterally extended ends thereon, there being on the inner face of the upright bar an upright fin 40, dotted lines, Fig. 3, extended somewhat into the path of the cartons within the magazine. This member 39 thus constitutes, as will be hereafter observed, with the connections to be presently described, a carton feeding gauge which determines the regularity and speed at which the cartons are fed from the magazine to the carton opening instrumentality.

The extent of the sliding motion of this arm 35 is determined by collars 41^a, 41, on the rod 37 on opposite sides of a boss 42 on the plate 9, the extent of the travel of the arm 35 being still further determined, Fig. 3 by a screw 43 in the collar 41 and adjustable therein against the boss 42.

On the same plate 9 and below the rod 37, Fig. 3, is an ear 46 through which extends a rod 47 slidable therein and within a spring 48, and carrying a carton fashioning block 49 at the end of the plate 9, the extent of the movement of this block and rod by the spring 48 being determined by positions of nuts 51 on the rod 47. The spring 48 is seated at its opposite ends against the block 49 and ear 46 respectively, and acts normally to hold the block 49 in extended position so far as the nuts 51 will permit, and the block has on its inner face also, Fig. 3, 5, a fin 40^a registering vertically with the fin 40 on the member 39. The shaft 14 carries also near its, Fig. 5, right hand end adjacent the opposite side plate 9, Fig. 2 and loosely thereon, an arm 52. Also fast on the shaft 14 and adjacent this arm, Figs. 2, 4, 5, is a ratchet wheel 53 engaged from above by a pawl 54 on the arm 52 and held in engagement therewith by a spring 55 on said arm and pawl. A rod 56 also runs longitudinally of the arm 52 to the opposite end of the magazine, not shown, for the manual manipulation of the ratchet wheel, and its connected parts including the chain carrier, when and if desired, from any convenient point.

From the member 5 just below the track 7, Fig. 2, extends outwardly a post 57 carrying pivoted at its outer end a link 58 having pivoted on its opposite end an upwardly extended arm 59 supported loosely on the shaft 14 and on the end of the arm 59 is a pawl 60 which engages the ratchet 53 from below and is held thereagainst by the spring 60^a thereon and on the member 5. It will be seen that this construction is such that each time the magazine moves away from the packaging machine or to the Figs. 2, 6, left, it causes the pawl 60 to swing to the right, and as the magazine returns to the right, Figs. 2, 6, the arm 59 by means of the pawl 60 will cause the ratchet wheel 53 to rotate clockwise or toward the packaging machine from one to seven notches or within whatever limits may be provided, the number of notches representing the movement of the wheel each time, being determined by the novel device which we will now describe.

On the same end of the shaft 29, Figs. 2, 7, already referred to, which extends through the hollow shaft 14, it carries fast thereon a tapering arm 62 which, at its outer end, has secured to it a curvilinear shield or teeth covering member 63 closely overlying the teeth and normally, Fig. 2, not beneath the end of the pawl 60.

If, however, the carton carriers 16 feed the cartons forwardly against the fins 40 on the carton pressure gauge 39 and block 49 already described, faster than the opening member opens and removes the cartons from the magazine end, the pressure created by the crowding of the cartons against the fins 40 will cause the rod 37 carrying the fin 40 to slide inwardly or to the left, Fig. 3, swinging the arm 32 likewise, and turning the shaft 29 and causing the arm 62 on its opposite end to swing to the left, Fig. 2, and project the shield 63 forwardly beneath the pawl 60. The result of this will be that when the pawl moves to engage the ratchet wheel 53, it will ride for a short distance on this shield 63 and skip some of the teeth of the wheel 53, Fig. 7, and will not on its return swing, engage these teeth and advance it to the normal and full extent, but will engage the first teeth available after the pawl leaves the shield.

As soon as the pressure on the fins 40 is reduced by this diminished feeding action of the cartons, the shield 63 is withdrawn to its normal position by the spring 64 on the arm 62, the shaft 29 rotated at the same time in the same direction, and the member 39 withdrawn to its normal position, as shown in Fig. 3.

The outward or, Fig. 3, right hand movement of the magazine does not carry with it the block 49 until the ear 46 on the plate 9 reaches the nuts 51 on the rod 47 and hence this results in a delayed movement of the block 49 and rod 47, and the block remains in extended position long enough to serve as a support and fashioning member for the

carton while the carton opening member is engaged in opening it, and the carton is given its square, regular formation by the knife, not shown, pressing it against the block, and hence it may be said to constitute a carton squaring or fashioning member to ensure the carton being regular in shape so that it will pass regularly and without distortion into the carrier waiting below.

At the, Fig. 6, left hand end of the magazine, the carrier is provided with a follower block 65 which rests on the chains 16 and acts, as it is fed forward by the chains, to press the cartons firmly together and maintain them in proper position as they approach the opening elements.

Inasmuch as one of the broad sides of each carton is partly of double thickness where the edges are lapped, such doubling will naturally result gradually in an uneven feeding of the carton to the opening blade, one side of the carton being slightly farther advanced than the other and this would sometimes act to prevent proper engagement of the blade with the carton. To correct this difficulty, the follower 65 has a post 66 thereon to which is pivoted a movable front pressure plate 67 which is free to contact with the cartons evenly across their entire face, and by which the pressure is evenly distributed against them.

The withdrawal or outward movement of the magazine is timed by appropriate cam action, not shown, to take place just as the carton opening instrumentality has completed the opening of the carton and the latter is free to be released and carried down by the proper element therefor, to the carton carrier, not shown, and the movement of the magazine described acts, therefore, both to facilitate the freeing of the carton from the magazine and the feeding of the cartons within the magazine through the ratchet motion already described.

To cooperate with the fins 40 on the members 39, 49, we provide on the edge of the plate 9, Fig. 2, inwardly extended pins 68 on the straps 70 secured to the side member 9 by screws or otherwise.

Manual operation of the feeding of the carrier chain 16 with its cartons may be had at any time when necessary by means of the rod 56 already described through which the ratchet mechanism may be actuated at will without corresponding movement of the magazine.

The foregoing described construction provides an adequate magazine, as to size, provided with an automatically adjustable feeding means always ensuring a regular and ample supply of cartons, presented in proper condition and position for opening and suitably shaped for further action.

Our invention is not restricted to the precise embodiment thereof described and illustrated.

Claims:

1. In a packaging machine, a reciprocating magazine, carton feeding means actuated thereby, and feed regulating means also actuated thereby.

2. In a packaging machine, a support, a base thereon, a magazine movable on the base, an endless carton feeder for the magazine and operated thereby, and feed regulating means for the feeder also actuated by the magazine.

3. In a packaging machine, a base with a track, a magazine movable thereon, a feed equalizing carton feeder operated thereby, and regulating means for the feeder also actuated by the magazine.

4. In a packaging machine, a magazine, a carton feeder therein with a two part follower-block thereon for equalizing the feed action on the cartons, and feed regulating means therefor.

5. In a packaging machine, a movable magazine, a carton feeder comprising a follower-block having an adjustable front face for equalizing the feed action on the cartons, and feed regulating means therefor.

6. In a packaging machine, a magazine, a carton feeder therefor comprising a follower-block with an adjustable section thereon for equalizing the feed action across the cartons, and pressure controlled feed regulating means for the feeder.

7. In a packaging machine, a magazine movable longitudinally, a carton feeder therefor and a pressure controlled member on the magazine operated thereby and constructed to modify the carton feed action.

8. In a packaging machine, a magazine, a carton feeding ratchet wheel and pawl therefor, actuated thereby, and means modifying the action of the ratchet wheel including a pressure actuated member.

9. In a packaging machine, a movable magazine, a carton feeding ratchet member and actuating pawl therefor actuated by the magazine, and a pressure responsive member thereon with a shield for the ratchet, connected thereto, operative under an excess degree of pressure upon the cartons to modify the feeding action, and manually operative means for the carton feeding members.

10. In a packaging machine having a movable magazine, a carton feeder therefor including a toothed feed member and a pressure controlled member on one side of the magazine to shield the teeth of the feeding member on the opposite side of the magazine constructed to modify the extent of the carton feeding action.

11. In a packaging machine having a magazine, a carton feeding ratchet wheel and pawl therefor below the magazine and a

curved toothed shielding member actuated thereby, and means at the top of the magazine for modifying the action of the ratchet wheel including a carton pressure actuated member.

12. In a packaging machine having a movable magazine, a carton feeding ratchet member and actuating pawl therefor controlled by the movement of the magazine, and a carton pressure responsive member on the magazine with a pawl controlling tooth covering shield for the ratchet member connected thereto, operative by and to an extent controlled by the degree of pressure upon the cartons to modify the feeding action.

13. Carton feeding means comprising a base, a movable elongated magazine thereon with carton follower block, a block actuating member in the magazine bottom, and means connecting said actuating member with the base and including ratchet members operable by the moving magazine to feed the cartons simultaneously with the forward movement of the magazine.

14. Carton feeding means comprising a base, a movable magazine thereon with a self-adjusting follower block therein, a driving member therefor in the magazine, and actuating means for both magazine and block driving member including a track on the base, a hollow shaft on the magazine body carrying wheels on the track, a block operating shaft within the hollow shaft carrying a toothed member, a pawl on the base operatively connected with and driving the toothed member upon movement of the magazine, and controlling means for the toothed member and pawl under control of the moving cartons comprising a gauge restraining the cartons and connected with the opposite end of said block operating shaft, and a toothed member shield on the block operating shaft adjacent the pawl and between it and the toothed member.

In testimony whereof, we have signed our names to this specification.

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