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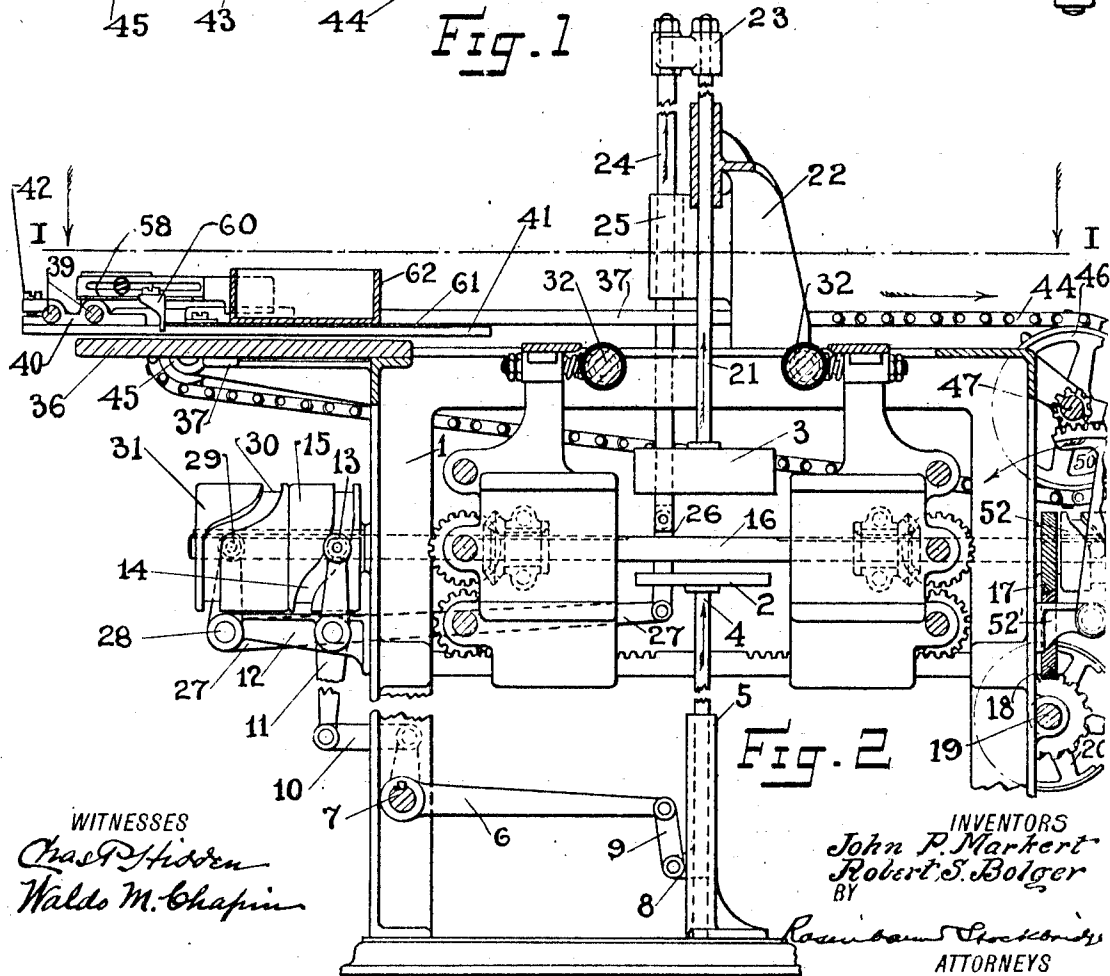
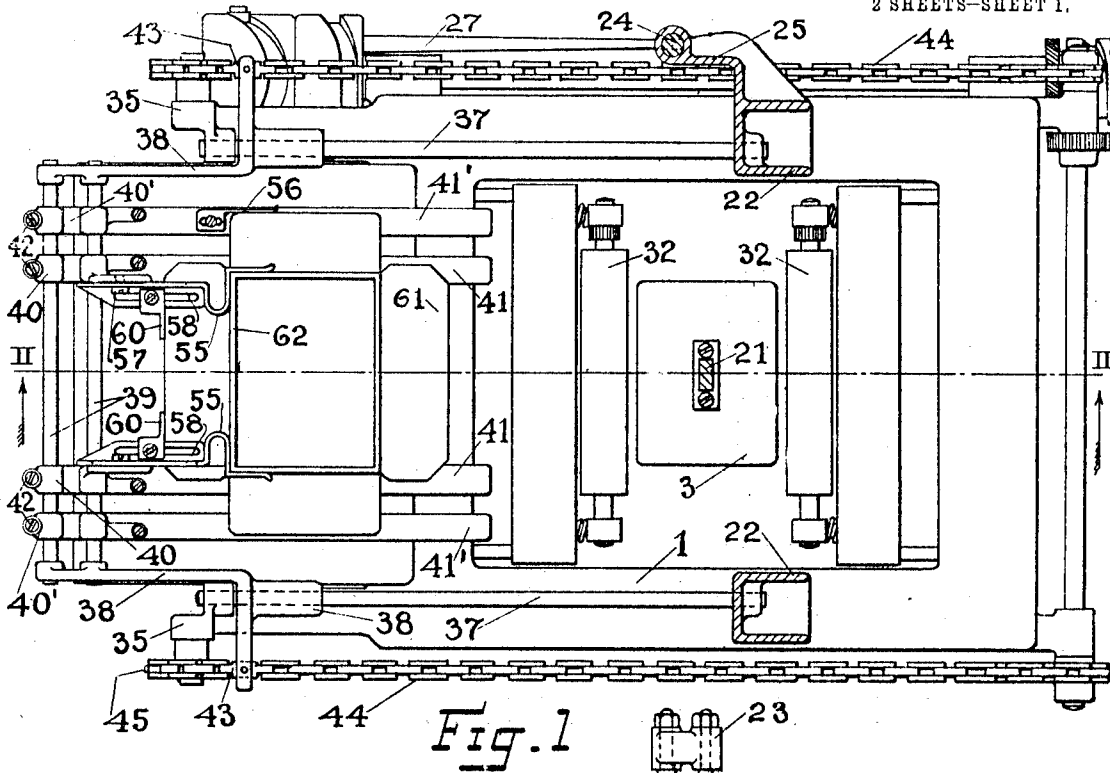
BOX WRAPPING MACHINE.

APPLICATION FILED DEC. 22, 1911.

Patented Feb. 18, 1913.

1,053,519.

2 SHEETS-SHEET 1.



WITNESSES

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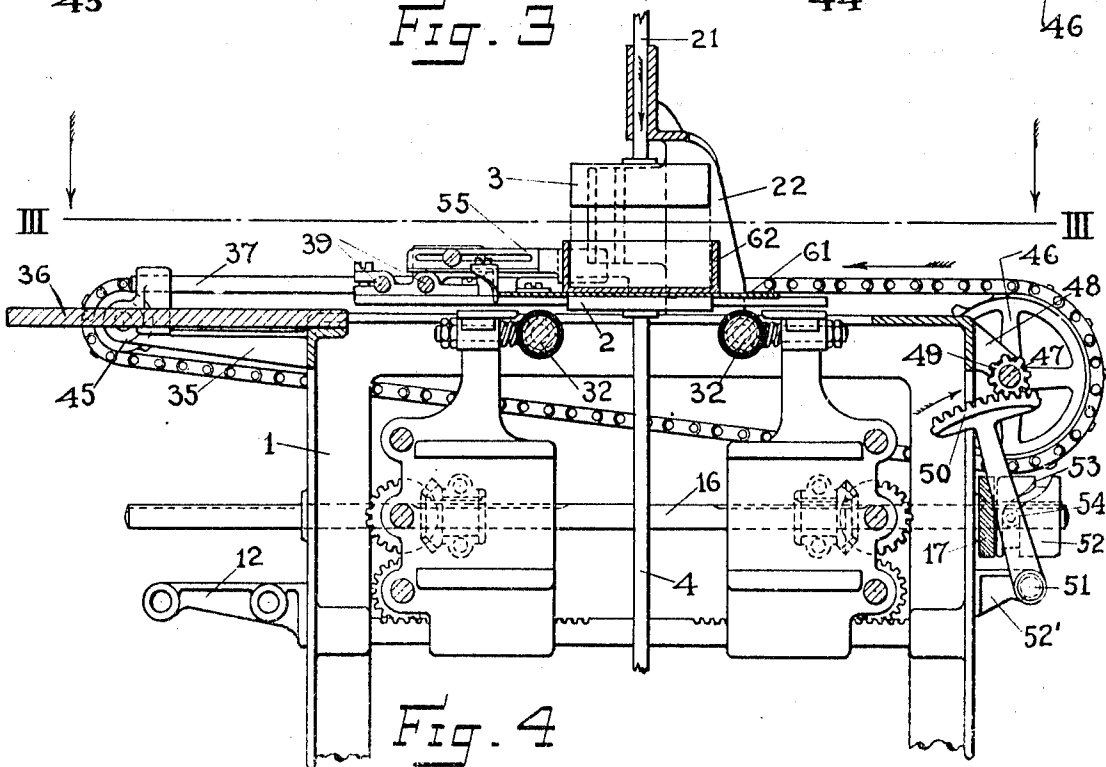
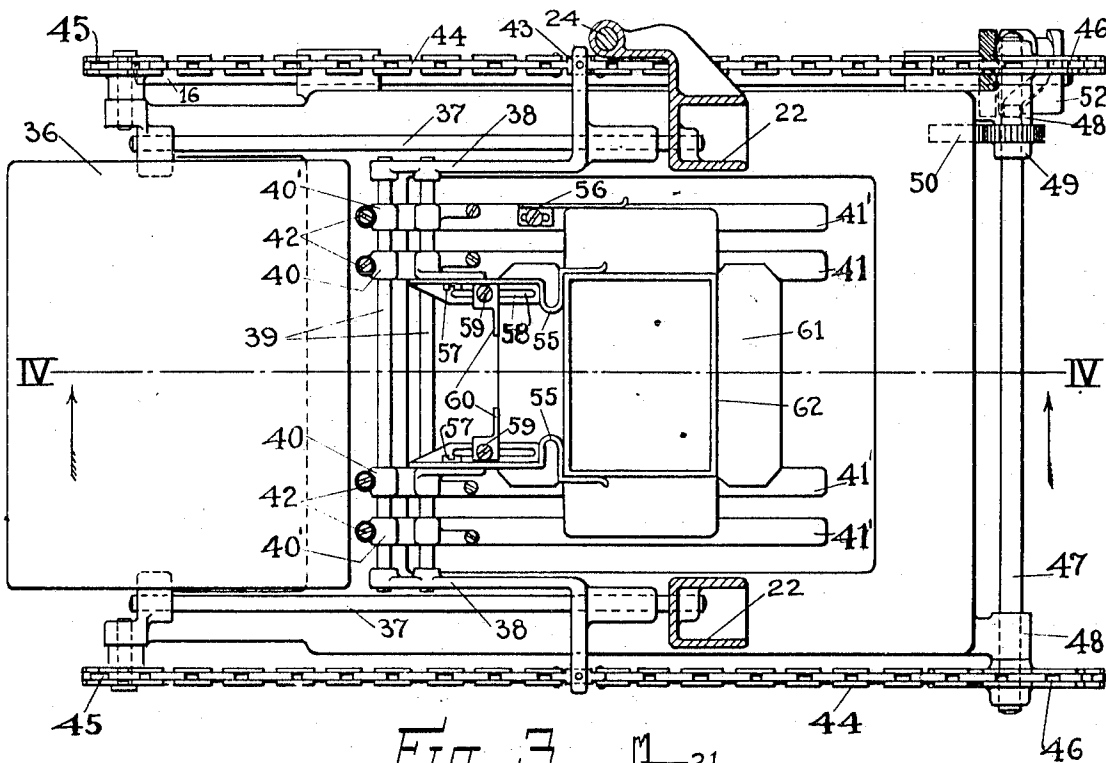
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BOX-WRAPPING MACHINE.

1,053,519.

Specification of Letters Patent.

Patented Feb. 18, 1913.

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To all whom it may concern:

Be it known that we, JOHN P. MARKERT and ROBERT S. BOLGER, citizens of the United States, residing in the boroughs of Brooklyn and Queens, respectively, in the city and State of New York, have invented certain new and useful Improvements in Box-Wrapping Machines, of which the following is a full, clear and exact description.

10 This invention relates to box covering or wrapping machinery and has for one of its objects the provision of means for increasing the output of mechanisms of this character.

15 Another object of the present invention is to insure safety to the machine operator.

A still further object of the invention is to so reduce labor that a single attendant can operate the complete mechanism and can by its aid center the box upon its wrapper and cause the box and wrapper to be automatically conveyed to the wrapper folding devices.

25 These and other objects of our invention will be hereinafter referred to and the novel combination of elements whereby they may be attained will be more particularly set forth in the appended claims.

In the accompanying drawings which form a part hereof and in which like reference characters designate like parts throughout the several views, we have exemplified a preferred form of apparatus. We are aware, however, that many modifications and changes in said apparatus may be made within the purview of our invention and hence desire to be limited only by the claims appended hereto.

40 In the drawings: Figure 1 is a horizontal section of said mechanism, the section being taken on line I—I of Fig. 2. Fig. 2 is a vertical, longitudinal section taken on line II—II of Fig. 1. Fig. 3 is a view similar to Fig. 1, but showing the box shifting mechanism in its delivering position. Fig. 4 is a section taken on line IV—IV of Fig. 3, some of the parts shown in the similar Fig. 2, being omitted.

50 The box wrapping mechanism herein shown comprises a frame 1, upon which are mounted various elements of the mechanism. Within this frame are two opposed plungers, preferably movable vertically, the lower of said plungers being designated 2 and constituting a table or support for the

box when the wrapper is being applied thereto. The upper plunger is preferably a wooden block 3 adapted to enter the box and clamp the bottom thereof against the plunger 2. These plungers may both be positively actuated, if desired, the lower plunger 2 being mounted upon a reciprocable standard or shaft 4 which rides in a guide 5 and is reciprocated therein by means of a bell-lever 6 keyed to a rock shaft 7; the longer arm of the said bell-lever being connected to a projection 8 of the standard 4 by means of a link 9. The short arm of the bell-lever is connected by means of a link 10 to a lever 11 which is pivoted to a bracket 12 which extends forwardly from the frame 1.

It may here be noted that the front end of the machine has been disposed at the left hand side of the sheets in the drawing.

The upper extremity of the lever 11 carries a roller 13 which rides in the cam-slot 14 of a cylinder 15. This latter element is mounted upon a shaft 16 which is driven in any suitable manner as by means of a spiral gear 17 which is adapted for engagement with a similar gear 18 mounted on a transverse shaft 19, driven by a pulley 20.

The upper plunger 3 depends from a reciprocable shaft 21 which rides in a suitable bearing carried by the bridge 22 of the frame 1. The upper extremity of shaft 21 may be linked by means of a connection 23 to a bar 24 which extends downwardly through a lateral extension 25 of the bridge 22. The lower extremity of bar 24 is connected by means of a link 26 to bell-lever 27 which is pivoted to the extremity of the bracket 12 above referred to, as at 28. The short and preferably upwardly directed arm of the bell-lever 27 carries a roller 29 which rides in a cam-slot 30 in a cylinder 31. Cylinder 31 may be disposed immediately adjacent cylinder 15; both of these cam cylinders being mounted upon the shaft 16. The respective cams are so shaped that upon the upward stroke of the plungers actuated thereby, the pressure block or upper plunger 3 moves upwardly, at least during some portion of its stroke, faster than the lower plunger or table 2, thereby separating the said plungers to admit of the reception of the box and its wrapper therebetween. When the plungers descend, the cams are so configured that the upper plunger descends

into the box and firmly presses it against the table plunger, thereby clamping the box against displacement and carrying it downwardly together with its wrapper between the folding rolls 32, and other parts, some of which have not herein been shown since they *per se*, form no part of the present invention.

The frames 1 and brackets 35, which project out toward the front of the machine therefrom, support a table 36 and upon either side of the machine and also supported by said brackets and the bridge 22, above referred to, are guide rods 37. Slidably mounted on these guide rods are the traveling frames 38 which are connected together by means of two cross rods 39. Connected to these cross rods by means of brackets 40—40' are a series of rails or supporting bars for the labels or wrappers to be handled by the machine. These support bars have been designated 41—41' and are adjustable along the length of the cross rods so as to accommodate wrappers or labels of various widths. They may be clamped in position upon the cross rods by means of bolts 42. The traveling frame is connected as at 43 to chains 44; one of which is disposed upon either side of the machine. At the forward end of the machine these chains pass over idler sprockets 45 and at the rear end over sprocket wheels 46. These wheels are fixedly mounted upon a shaft 47, which is journaled in brackets 48, secured to the rear end of the frames 1, and this shaft is driven by means of a pinion 49 thereon which is in mesh with a gear segment 50, pivotally connected at 51 to a bracket 52', which latter is also secured to the rear end of one of the frames.

The gear segment mounted on stud 51 is caused to rock by means of a cam 52 mounted upon the rear extremity of the shaft 16 above referred to. The cam slot in the cam cylinder 52 has been designated 53 and is adapted for the reception of a roller 54 which is mounted upon the outer side of the arm of gear segment, as shown in Fig. 4. It is evident therefore that rotation of shaft 16 will effect an oscillation of the gear segment and thereby cause shaft 47 to rock. As this shaft carries the sprocket wheels 46, the chains 44 will be pulled around first in one direction and then in the other; and as the traveling frames 38 are connected to these chains, they also will be caused to reciprocate toward and from the plungers.

The brackets 40—40' carry gages for centering the box and its label or wrapper so that they may be moved by the traveling frame directly into position upon the lower plunger. To this end we may provide box gages 55 which are connected to the inner pair of brackets, 40, and a label or wrapper gage 56 which may be connected to one of

the outer bars 41'. These gages are preferably resilient, especially those which are adapted to engage the box; which latter, designated 55, are secured to their respective supporting brackets by means of bolts 57 and may have the bodies thereof slotted as at 58 for engagement with a screw 59 which secures the front label gages 60 adjustably thereto. The gage 56 is also preferably made adjustable lengthwise of the adjacent bar 41'.

The operation of the mechanism is as follows: Assuming that the traveling frame is disposed as shown in Fig. 1 and that it be desired to cover loose-wrap boxes, the operator stations himself at the front of the machine adjacent the outermost position of the traveling frame and places a wrapper or label 61 upon the supporting bars 41, 41' accurately positioning the wrapper by means of the side gage 56 and rear gages 60. He then places a box 62 upon the wrapper, centering it accurately with respect to the plungers by means of the box gages 55. The traveling frame is then caused to traverse the guide rods 37 through the instrumentality of the chains 44 in the manner above described, and during a portion of one rotation of the cam 52 and also, of course, of the shaft 16, the traveling frame will advance from the position in which it is shown in Fig. 1 to that in which it is shown in Fig. 3, thereby placing the wrapper and box directly in position upon the lower plunger. The continued rotation of shaft 16 causes the upper plunger to first descend into engagement with the bottom of the box through the intermediation of the cam cylinder 31. Thereafter, the box and its wrapper, being firmly clamped together between the plungers, are caused to descend through the folding rolls 32, and the box is wrapped in the well known manner. The present invention is not concerned with the various operations which may be performed in applying the wrapper to the box after the wrapper has been folded over against the side walls of the box by being passed through the wiping rolls. It is important to note, however, that before the plunger descends with the box and its wrapper, the smooth support bars 41, 41' are withdrawn from beneath the wrapper by means of the traveling frame and its operating mechanism. Since the gages are all in engagement with those portions of the box and its wrapper which are nearest to the operator, or to the front of the machine, there is nothing to hinder their being drawn freely away from the box and wrapper when these have been clamped between the plungers in the manner described. It is essential, however, that this clamping or gripping action should have occurred before the withdrawal of the supporting bars, since otherwise the wrapper

would probably be displaced with respect to the box, unless some equivalent wrapper holding means be provided. The wrapped box is preferably fed downwardly through the machine and disposed of in a manner which we need not here discuss. In the meantime the traveling frame has moved back toward the operator and by reason of the shape of the cam 52, said frame is allowed to dwell for some time at the front end, of the machine, affording the operator sufficient time to place the next wrapper or label and box upon the support bars carried thereby. This box and its wrapper are in turn conveyed toward the plungers in the manner already described, completing the cycle of operation.

If it be desired to cover tight-wrap boxes, the adhesive initially applied to the wrapper or to the box by the operator, or by a gumming machine, will hold the box and wrapper together, so that the gages 56 and 60 may be dispensed with, if desired. In operating upon either tight or loose wrap boxes however, it will be observed that the box and its wrapper are disposed in juxtaposition at a point readily accessible to the machine operator and are conveyed together to a point substantially in alinement with the plungers. It is desirable also that the support bars should be withdrawn before the plungers descend, to avoid complication of the mechanism.

Finally we desire to call attention to the fact that it is by no means essential that both of the plungers or even one of them, be made movable but in general may state that it is necessary that some form of covering blank (or strip) folding means be provided, as well as some means, preferably clamping in character, for holding the blank and box together while subject to the action of said folding means; that one of these said means be movable with respect to the other in a determined line or path; and that some form of movable support be provided for transferring the covering blank to a point in said line or path. It is further, practically essential that the support should move toward the aforesaid movable means in timed relationship to said means.

Having described our invention, we claim:

1. A box covering machine comprising mechanism for applying covering material to side walls of a box, said mechanism including a plurality of cooperating plungers, adapted to clamp said covering material against the box, and means for actuating said plungers, a movable support provided with devices for holding the covering material and box in fixed relation to each other, said support adapted to transfer the covering material and box from a point accessible to the machine operator to a point substantially in alinement with said plungers, and

mechanism for moving said support toward said plungers in timed relationship to movements of said plungers.

2. A box covering machine comprising mechanism for applying covering material to side walls of a box, said mechanism including a plurality of cooperating plungers adapted to clamp said covering material against the box, and means for actuating said plungers, a reciprocable support provided with devices for holding the covering material and box in fixed relation to each other, said support adapted to transfer the covering material and box from a point accessible to the machine operator to a point substantially in alinement with said plungers, and mechanism for reciprocating said support toward and from said plungers in timed relationship to movements of said plungers.

3. A box covering machine comprising mechanism for applying covering material to side walls of a box, said mechanism comprising covering material folding means and clamping means for holding said material and box together while in engagement with said folding means, one of said means being movable with respect to the other in a determined line, a movable support provided with devices for holding the covering material and box in fixed relation to each other, said support adapted to transfer the covering blank and box from a point accessible to the machine operator to a point substantially in said determined line, and mechanism for moving said support toward said movable means in timed relationship to the movements of the latter.

4. A box covering machine comprising mechanism for applying covering material to side walls of a box, said mechanism comprising covering material folding means, and means for holding said material and box together while in engagement with said folding means, one of said means being movable with respect to the other in a determined line, a movable support provided with devices for holding the covering material and box in fixed relation to each other, said support adapted to transfer the covering material and box from a point accessible to the machine operator to a point substantially in said determined line, and mechanism for moving said support toward said movable means in timed relationship to the movements of the latter.

5. A box covering machine comprising mechanism for applying a covering blank to side walls of a box, said mechanism comprising covering blank folding means, and means for holding said blank and box together while in engagement with said blank folding means, one of said means being movable with respect to the other in a determined line, a movable support for trans-

ferring the covering blank and box from a
point accessible to the machine operator to
a point substantially in said determined
line, said support comprising a plurality of
5 supporting elements for the covering blank
and box adjustable laterally with respect to
each other, and mechanism for moving said
support toward said movable means in timed
relationship to the movements of the latter.

In witness whereof, we subscribe our sig- 10
natures in the presence of two witnesses.

JOHN P. MARKERT.
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Witnesses:
WALDO M. CHAPIN,
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