

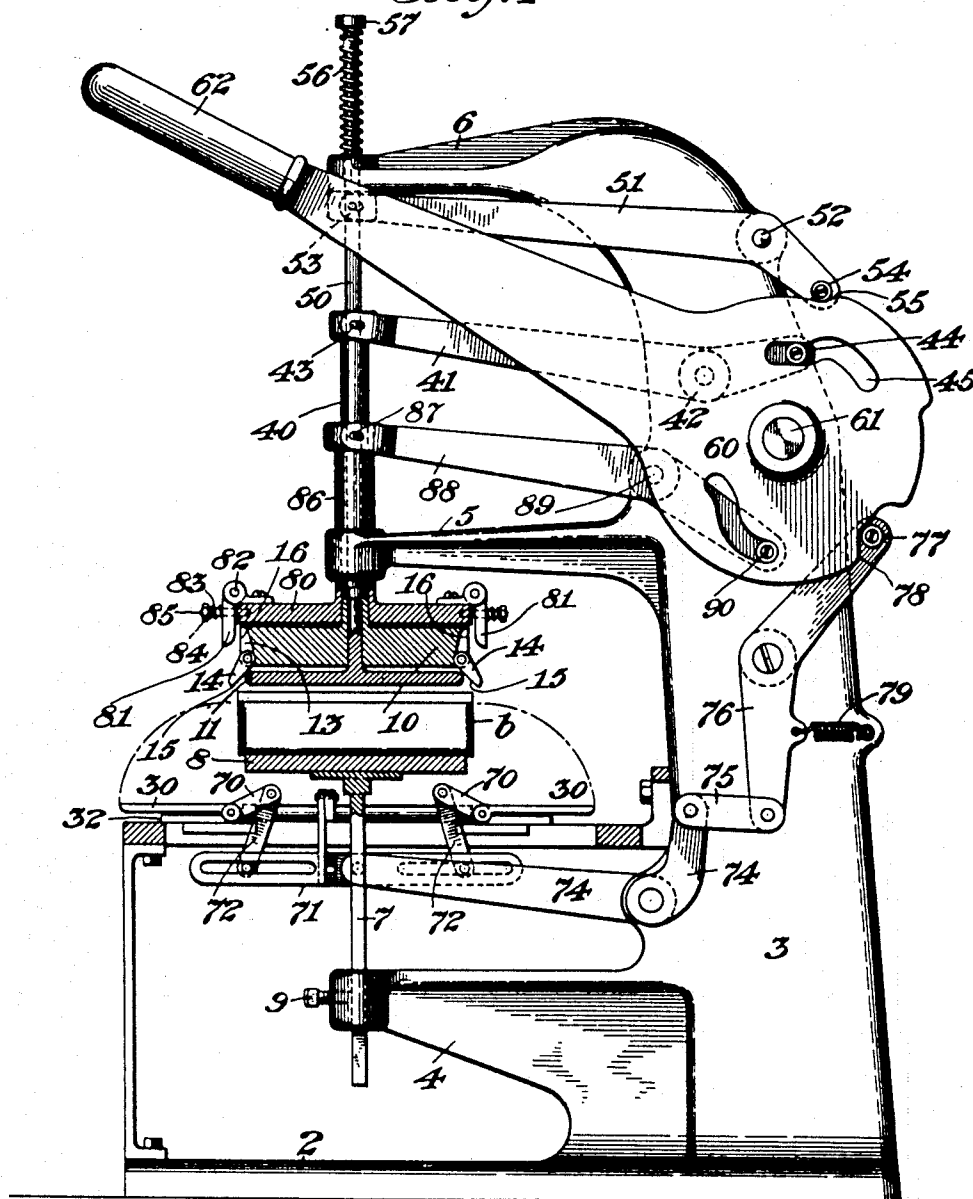
BOX COVERING MACHINE.

1,035,597.

Patented Aug. 13, 1912.

4 SHEETS—SHEET 1.

Fig. 1



Witnesses
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BOX COVERING MACHINE.

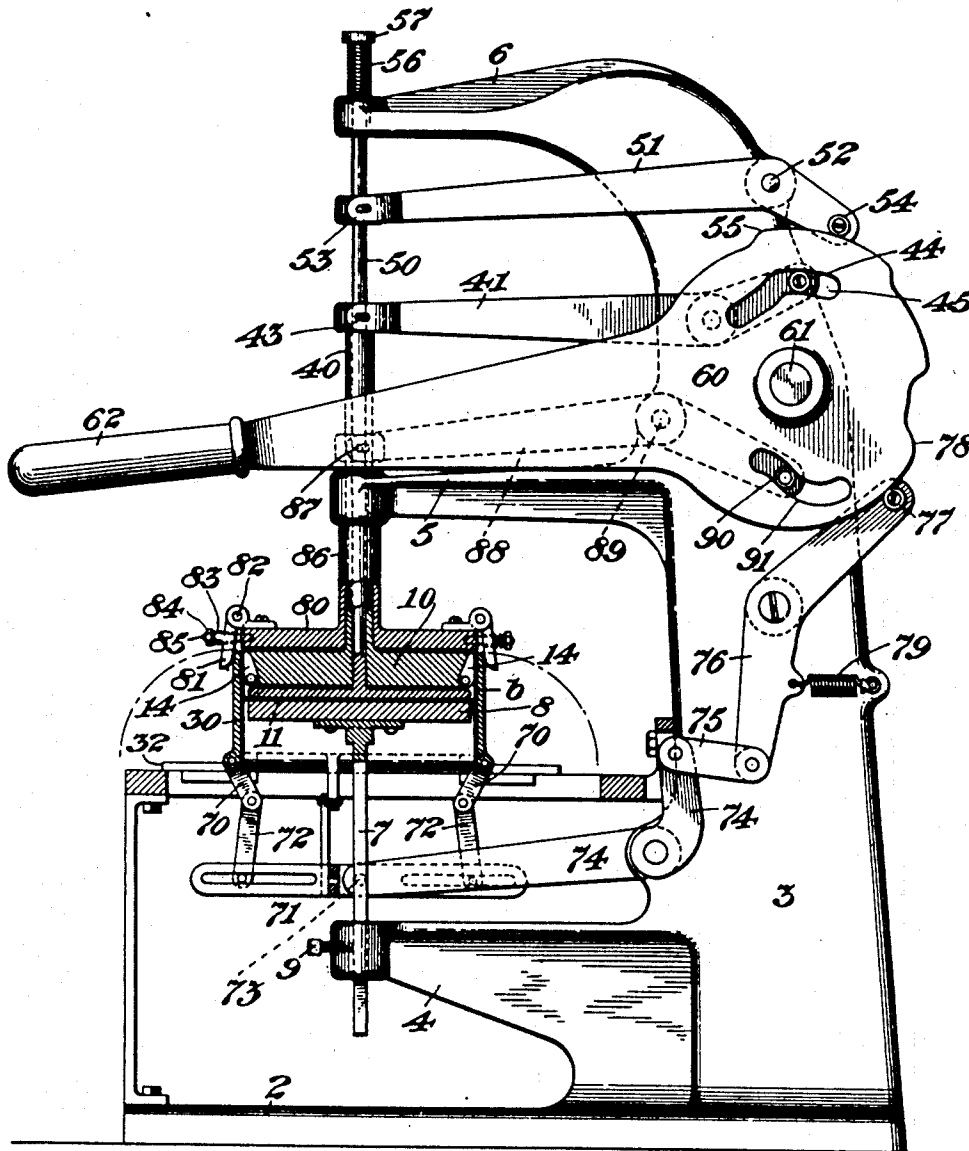
APPLICATION FILED FEB. 11, 1907. RENEWED SEPT. 21, 1907.

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4 SHEETS—SHEET 2.

Fig. 2



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BOX COVERING MACHINE.

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4 SHEETS-SHEET 3.

Fig. 4

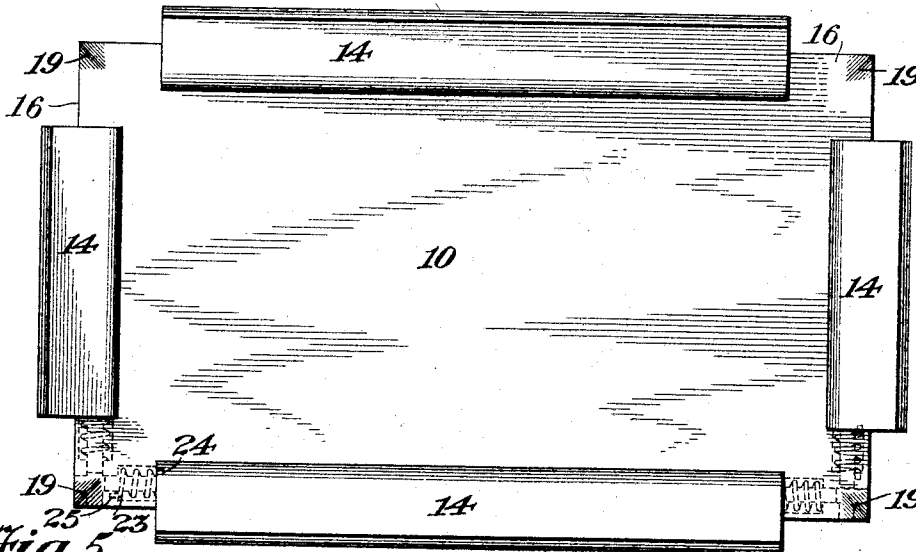


Fig. 5

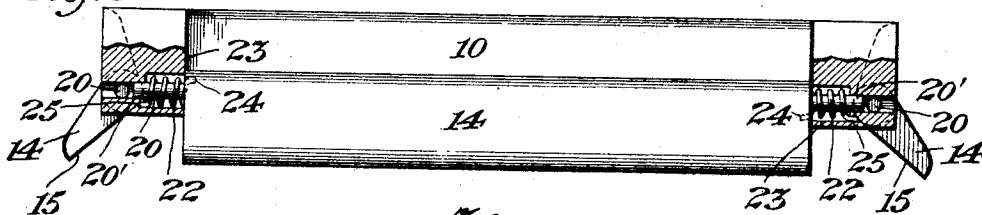
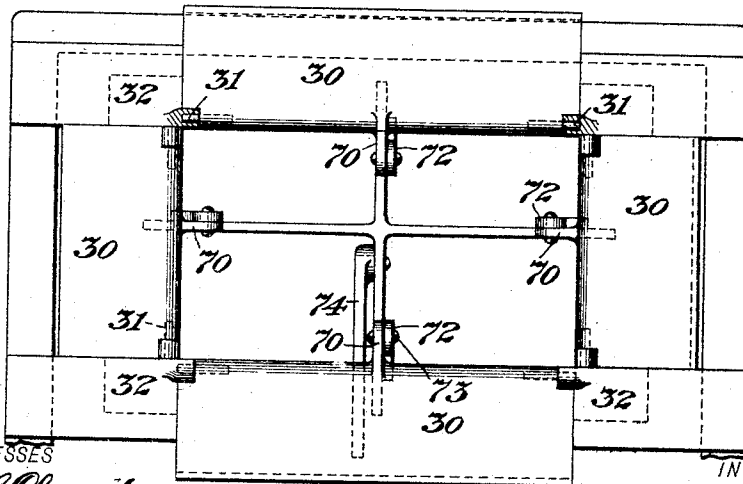


Fig. 3



WITNESSES

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4 SHEETS-SHEET 4.

Fig. 6

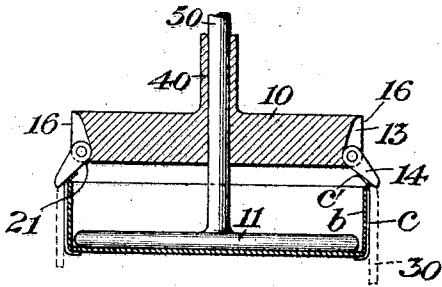


Fig. 8

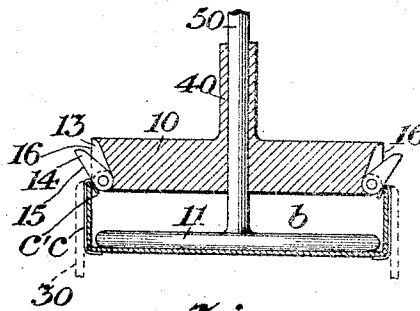


Fig. 7

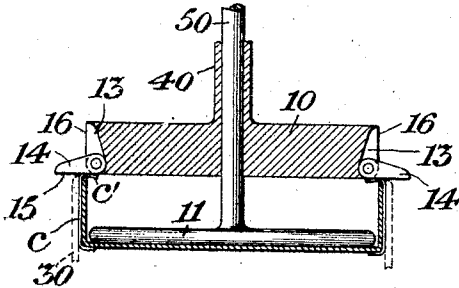


Fig. 9

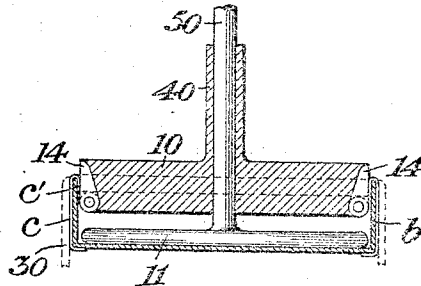


Fig. 11

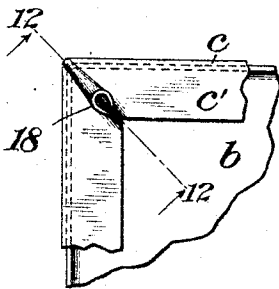


Fig. 10

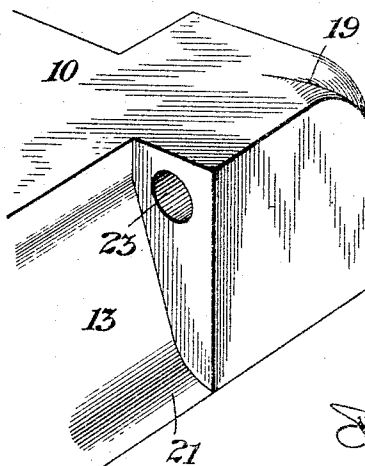
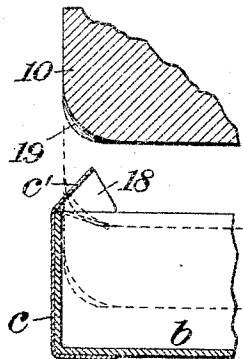


Fig. 12



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UNITED STATES PATENT OFFICE.

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BOX-COVERING MACHINE.

1,035,597.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed February 11, 1907, Serial No. 356,803. Renewed September 21, 1907. Serial No. 393,917.

To all whom it may concern:

Be it known that I, JOHN G. JONES, citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Box-Covering Machines, of which the following is a specification.

In the manufacture of paper boxes, the boxes in some instances are provided with an adhesively affixed covering of paper or other suitable material which is folded or turned in over the upper edge of the box. In the operation of affixing this covering-blank to the box, the covering-blank is first affixed to the exterior walls of the box with its upper edge projecting above the upper edge of the box, which projecting edge of the covering-blank is subsequently turned-in over the edge of the box and affixed to the inner walls thereof. Machines have been provided of more or less effectiveness for performing the different steps in this complete box-covering operation, but my present invention relates more particularly to a machine or mechanism that is adapted for performing only the second part of the box-covering operation referred to, that is, the turning-in of the covering-blank over the upper edge of the box and adhesively affixing it to the inner walls thereof; a machine of such type being adapted to be employed as part of a machine for performing the complete box-covering operation, or as a separate machine for turning-in the covering-blank over the edge of a box to the outer walls of which the covering-blank has been previously affixed either by hand or machine. The main object of my invention has been the provision of a machine for turning in the covering-blank over the upper edge of a box and affixing it to the inner wall thereof that will be simple in construction and effective in operation.

To this end the invention, in a preferred form thereof, comprises a reciprocatory head or plunger operative to enter and withdraw from a box and having at its outer peripheral edge a series of rockable turn-in devices projecting laterally therefrom to a point in advance of its box-entering end, the said turn-in devices being operative

upon the entry of the head into the box to first engage the covering-blank at the outer side of the box and thereafter be rocked over the upper edge of the latter to turn the engaged covering-blank into the box and against the inner walls thereof. In connection with this said head and its supported turn-in devices I prefer to employ a series of form-plates which are operative to engage the walls of a box at their exterior side and hold the same in straight planes at right angles to each other and to the bottom of the box during the turning in and affixing of the covering blank to the inner side of the box walls, as, without the employment of such form plates to hold the box "square" during the turning-in operation, the box walls in some instances would have a tendency to bulge outwardly at their upper edge and so prevent the proper affixing to the inner side of the same of the turned-in edge of the covering-blank. In connection with the head and its supported turn-in devices I also employ a stripper which is operative to enter the box in advance of the head and turn-in devices and subsequently hold the box upon the withdrawal of the head and turn-in devices to strip it from the latter. When the turned-in edge of the covering-blank is pressed against the box-walls between the cooperating pressing surfaces of the turn-in devices and opposing form-plates, it will in most instances be caused to firmly adhere thereto; but it has been found in practice that with certain kinds of covering material and certain kinds of adhesive material, it sometimes happens that the adhesion of the turned-in edge of the covering-blank with the box-walls is not sufficiently strong to withstand the tendency of the said turned-in edge to turn or curl outwardly from the box-walls when released from the pressure of the turn-in devices. For such reason, it has been a further object of my present invention to provide a means for imparting a pressure upon the turned-in edge of the covering-blank additional to that provided by the cooperating turn-in devices and form-plates as referred to, whereby a firmer adherence of the turned-in edge of the covering-blank with the box-walls will be assured under all conditions. In carrying this part of my in-

vention into effect I support the form-plates in a manner to permit of their lateral movement with respect to the box-walls, and provide means for engaging said form-plates subsequent to the turning-in operation and pressing them inwardly against the box-walls for coöperation with the opposing turn-in devices in imparting a continued and additional pressure upon the turned-in edge of the covering-blank over that provided by the preliminary coöperation of the turn-in devices and form-plates.

Other features of my invention, not hereinbefore referred to, will be hereinafter referred to in connection with the detailed description of the invention which follows.

Referring now to the accompanying drawings forming part of this specification,—Figure 1 is a side elevation, partly in section, of a machine embodying my invention, showing the movable parts in their normal inoperative position and also showing a box with a covering-blank thereon supported in position to be operated upon by the machine to have the upper edge of the covering-blank turned-in over the upper edge of the box. Fig. 2 is a similar view showing the position of the parts after the machine has been operated to turn in the projecting edge of the covering-blank over the upper edge of the box and affix it to the inner walls thereof. Fig. 3 is a detail plan of a part of the frame of the machine with the supported form-plates for engaging the exterior sides of the box walls. Fig. 4 is an enlarged bottom plan of the plunger and its connected turn-in devices, showing in dotted lines the pivot connection between the parts and also the springs for yieldingly holding the turn-in devices in normal operative position. Fig. 5 is an edge view of the same, partly in section. Figs. 6, 7, 8 and 9, are enlarged detail views showing the operation of the turn-in devices and their supporting head in turning in the upper edge of the covering-blank over the upper edge of the box. Fig. 10 is an enlarged detail perspective of one corner of the head, and Figs. 11 and 12 are enlarged details to be hereinafter referred to.

The machine illustrated in the drawings comprises a suitable supporting frame having a base portion 2 from which rises a vertical standard 3 having a plurality of forwardly-projecting bracket arms 4, 5 and 6. In the lower of these bracket arms, indicated at 4, is slidably supported a stem 7 having at its upper end a table 8 for the support of a box to be operated upon, the said stem being held stationary in a vertically adjustable position by means of a set-screw 9 in the bracket-arm engaging therewith. The two upper bracket arms 5 and 6, located in position above the said table 8, are adapted for the support, and guidance of the turn-in

head and the stripper, indicated at 10 and 11 respectively, which are herein shown as being provided with stems extending upwardly through openings in said bracket-arms and slidably supported thereby in a manner as will hereinafter be described.

The turn-in head 10, when made of a rectangular form as shown in the drawings, is provided in each of its four edges with a recess 13 in which the turn-in devices, indicated at 14, are pivotally supported, these said turn-in devices as shown being made to conform to the recesses 13 so that when moved to a closed position therein their face sides 15 will be flush with the surface 16 of the adjacent edge of the head at the corners thereof whereby the head will present at its edge a substantially continuous or unbroken surface for a purpose to be hereinafter described. The said turn-in devices, however, which are pivoted at one end adjacent to the lower end of the head, are normally supported with their free ends projecting laterally outward from their recesses in the head in a downwardly-inclined position to a point in advance of the lower or box-entering end of the head, whereby, when the head is moved downward or in a direction toward the box, indicated at b, from its normal raised or inoperative position shown in Fig. 1, the said turn-in devices will first engage with the upper projecting edge c' of the covering-blank c at the outer side of the box, as shown in Fig. 6, and thereafter be operated by the continued descent of the head to rock inwardly over the upper edge of the box and turn the engaged covering-blank into the latter therewith, in a manner as shown in Figs. 7, 8 and 9, the relative arrangement of the said turn-in devices and head being such that the edge of the covering-blank is turned inwardly over the edge of the box and into the path of the descending head prior to the entering of the latter into the box, as shown in Fig. 7. As the head enters the box in its continued descent from the position shown in Fig. 7, it will coöperate at its corners with the turn-in devices in moving the turned-in edge of the covering-blank downward and against the inner wall of the box, the said turn-in devices being forced into their recesses in the head upon the entry of the latter into the box, as indicated in Figs. 2 and 9, whereby they will cause the head at its peripheral edge to present a practically continuous or unbroken surface for pressing the entire turned-in edge of the covering-blank laterally against the inner wall of the box and cause it to become adhesively affixed thereto, it being understood that the covering-blank is provided with an adhesive coating on that side thereof adapted for contact with the box.

When the projecting edge of the cover-

ing-blank is being turned inwardly over the edge of the box by the turn-in devices 14, it is caused to pucker or fold at the corners of the box, as indicated at 18 in Figs. 11 and 12, and, if some means were not provided for properly controlling such puckers or folds during the subsequent portion of the turning-in operation, they would be liable to remain in the turned-in edge of the blank in some form or other and prevent the same being pressed smoothly into the box corners. For such reason I have provided the turn-in head 10 at each of its four lower corners with a groove 19 (see Fig. 10) extending from a point at the under side of the head to a point in the vertical corner edge thereof, to receive the puckers or folds in the covering blank, the walls of which grooves are formed to engage said puckers or folds and so control their position during the descent of the head as to prevent their becoming folded under or over the adjacent portion of the blank, in a manner as will be understood by reference to Fig. 12. During this turning-in operation of the edge of the covering-blank, it will be understood that it is necessary to control or position the corner puckers or folds in the blank only for a short period during the descent of the head, as, after the edge of the blank has been turned down below a horizontal plane it will then immediately begin to take up or draw apart the corner puckers or folds and so enable the square vertical corners of the head into which the grooves 19 terminate to locate the previously puckered portion of the blank smoothly into the inner box corners.

The turn-in devices may be movably supported by the head in any suitable manner to be operated thereby in turning in the covering-blank over the edge of the box as described, the said turn-in devices in the present case each being provided with a short journal 20 at its opposite sides supported in journal bearings 20' in the opposite walls of the recess in which the turn-in device is supported, as most clearly shown in Fig. 5. The turn-in devices as thus connected with the head are movably supported in their normal laterally-projecting operative position by means of the lower inclined walls 21 of the recesses 13 which form a support for the said turn-in devices to rest upon. When the turn-in devices are moved downward by the head into engagement with the projecting edge of the covering-blank, their own weight may be sufficient to force the said edge of the covering-blank inwardly over the upper edge of the box as they are rocked thereover in the manner hereinbefore described, but in order to avoid possibility of ineffective operation on the part of these turn-in devices, I prefer to employ some additional means for coöperation with the turn-in de-

vices to cause them to act with such pressure upon the projecting edge of the covering-blank as will positively assure the turning-in of the same over the edge of the box. For such purpose I employ a spring for acting upon the turn-in device to hold it in its normal operative position with a yielding pressure, the spring employed by me in the present case and as clearly shown in Figs. 4 and 5 being in the form of a coiled spring 22 which is seated in a pocket 23 in the head at one side of the recess 13 and arranged with one end 24 connected with the turn-in device and with its other end 25 connected with the head.

In the operation of turning in the edge of the covering-blank and affixing the same to the inner wall of the box through the instrumentality of the head and turn-in devices as described, it sometimes happens, particularly in the case of large boxes formed of light or thin stock, that the upper edge of the box walls flare or bulge outwardly and so prevent the proper affixing of the turned-in edge of the blank to the box walls. To avoid possibility of such bulging of the box walls in any event and assure their being held in straight planes at right angles to each other and to the bottom of the box during the operation referred to, I have provided four so-called form-plates 30 for engaging with the box-walls at their exterior side during such operation. These form plates 30 may be supported in any suitable manner to be capable of movement to and from an operative position for engagement with the box walls, the same in the present instance shown being pivoted at 31 to a stationary part 32 of the supporting frame in a position below the box supporting table 8 and being operative to swing upwardly at their free ends from an inoperative horizontal position resting upon the frame 32, as shown in Fig. 1, to an operative position in a vertical plane for engagement with the box walls, as shown in Fig. 2.

The form-plates 30, in addition to their function of holding the box square during the turning-in operation as described, also perform an additional and most important function, as follows: In the operation of the turn-in devices of engaging with the upper projecting edge of the covering-blank and turning or bending it over the edge of the box, it has been found, because of the moist and softened condition of the covering-blank due to its adhesive coating, that the edges of the turn-in devices at the ends thereof have a tendency to crease or otherwise mar the covering-blank adjacent to the edge of the box, and also in some instances the edge of the box itself. Liability of such creasing or marring of the blank and box is avoided in the present case, how-

ever, by the employment of the form plates 30 which extend at their upper edge to a position in line with the upper edge of the box (see Fig. 2) and provide a rigid surface on which the turn-in devices bear while effecting the preliminary portion of the blank turning-in operation, the said form-plates being preferably rounded at their outer edges for the bearing of the turn-in devices as shown. In such coöperation with the turn-in devices at the outer side of the box, the said form-plates constitute guards to prevent injury or marring of the blank and box.

The stripper which I employ in coöperation with the head and turn-in devices is in the form of a flat plate or block supported in a position below the head 10 and operative to enter the box in advance of the head and engage with the lower wall thereof, and subsequently retain such engagement during the withdrawal of the head and turn-in devices from the box so as to strip the latter therefrom.

The turn-in head 10 and the stripper 11 may be supported and caused to operate in the manner hereinbefore described by any suitable means. In the present case, the head 10 is provided with a tubular stem 40 extending upwardly through an opening in the bracket arm 5, and the stripper 11 is provided with a stem 50 which is longer than the said tubular stem of the head and extends upwardly therethrough and also through an opening in the upper bracket-arm 6. In this manner the turn-in head and the stripper are both supported and guided to have a vertically reciprocating movement, and as a simple means for operating the same I have provided an actuator in the form of a lever 60 which is pivoted to the frame of the machine at 61 and has operative connection with the respective stems of the turn-in head and stripper through the medium of levers 41 and 51, the said lever 41 being pivoted to the frame at 42 with one end having a slot-and-pin connection 43 with the stem 40 and its other end having a roller-stud 44 engaging a cam-slot 45 in the actuator, and the said lever 51 being pivoted to the frame at 52 with one end having a slot-and-pin connection 53 with the stem 50 and its other end having a roller-stud 54 engaging a cam-surface 55 of the actuator with which it is held in operative contact by means of a coiled spring 56 located on the stripper stem with its opposite ends bearing against a collar 57 on said stem and the upper side of the bracket-arm 6, respectively, as shown. With this described organization of parts, and the cams 45 and 55 being so formed as to give the desired timing in the relative movement of the actuated parts, downward movement of the actuator handle 62 will operate to first move

the stripper 11 into and against the bottom of the box on the table 8, which box is held in proper position on the table to receive the entering parts by means of the form-plates 30 which are moved into operative position at this time by means as will hereinafter be described. Upon the continued descent of the actuator handle after causing the stripper to be entered into the box, the turn-in head and supported turn-in devices will then be lowered to perform their function and also be entered into the box, as hereinbefore set forth. After such operation of the parts to successively enter the stripper and turn-in devices into the box, an upward movement of the actuator handle operates to first withdraw the turn-in devices from the box, the stripper remaining in the latter to strip it from the turn-in devices, and thereafter upon the continued upward movement of the actuator handle the stripper will also be withdrawn from the box and leave the latter ready for removal from its supporting table.

The form-plates 30 may be operated by any suitable means to be moved into their operative position of engagement with the exterior side of the box walls prior to the action of the turn-in devices, and to be moved to an inoperative position away from engagement with the box walls subsequent to the action of said turn-in devices. In the present case, however, I have provided an operative connection between said plates and the actuator 60 whereby the latter may serve as a common actuator for the several operative parts of the machine. The particular means comprising such connection between the said plates and the actuator as herein shown is as follows: Each of the form plates 30 is provided with a lever arm 70 having connection with a vertically movable frame 71 (in the form of a four-armed spider) through the medium of a link 72, the said frame 71 being pivotally connected at 73 with one end of a pivoted elbow-lever 74, which latter at its opposite end is connected through a link 75 with a second pivoted elbow-lever 76 which is provided with a roller-stud 77 for engagement with a cam 78 on the actuator 60, a spring 79 being provided to hold the lever 76 in position with its said stud 77 in operative engagement with the actuator. The operation of these connections between the actuator and the form-plates in effecting the movement of the latter to and from their operative position is clearly shown in Figs. 1 and 2, which illustrate the vertical movement of the frame or spider 71 as received from the actuator effecting a rocking movement of the form-plates to and from their operative position; the timing of the movements of said form-plates in coöperation with the turn-in devices being controlled by the cam 78.

The form-plates 30 have a sufficiently yielding connection with the spider 71 through the links 72 to permit of their having a slight lateral movement at their upper or free ends when acted upon by the means, hereinbefore referred to, for pressing them against the walls of the box to cooperate with the opposing turn-in devices in effecting a continued and additional pressure upon the turned-in edge of the covering-blank over that provided by the initial pressure of the cooperating turn-in devices and form-plates. The means for so acting upon the form-plates may be of any suitable construction, the same as shown in the present case comprising a reciprocatory block 80 operative in a position above the turn-in head 10 and having at its peripheral edge a series of vertically arranged pressing plates or arms 81 which are pivotally connected at their upper ends with the block 80 at 82, and arranged with their lower ends projecting below said block and in position to engage the upper free ends of the form-plates at their outer sides when lowered into engagement therewith; the said pressing arms 81 being yieldingly held in a laterally movable position relative to the supporting block 80 in a manner whereby they will be caused to exert a yielding inward pressure against the form-plates when engaging therewith. Any suitable means may be employed for yieldingly holding the pressing arms in the manner stated, the means shown in the present case comprising coiled springs 83 expanding between the outer surfaces of said pressing arms and the enlarged heads 84 of screw-studs 85 adjustably connected to the block 80.

In the operation of the machine, the block 80 will obviously be lowered to bring its supported pressing arms 81 into operative engagement with the form-plates subsequent to the moving of said form-plates into engagement with the exterior side of the box walls and the entry of the turn-in devices into the box, and will also necessarily be raised to release the pressing arms from engagement with the form-plates prior to the movement of said form-plates and the turn-in devices from engagement with the box. Any suitable means may be employed for so operating the block 80 with its pressing arms, the same being preferably operated from the actuator 60 through means as follows: The block 80 is provided with a tube or stem 86 loosely fitting over the turn-in head stem 40, which stem 86 has a slot-and-pin connection 87 with one end of a lever 88 which is pivoted to the frame 3 at 89 with its other end having a roller-stud 90 engaging a cam-slot 91 in the actuator 60, the said cam-slot 91 being so formed as to properly control the movement of the block 80 and supported pressing arms with respect

to the cooperating turn-in devices and form-plates.

Having thus set forth a simple and practical embodiment of my invention I do not wish to be understood as confining myself to the particular details of construction and arrangement of parts as shown and described, as the same may be materially modified within the scope of my invention as pointed out in the following claims.

What I claim is:

1. In a box-covering machine, the combination with a box-support, of means for turning-in the covering-blank over the edge of a box, comprising a supporting head adapted to be entered into the box and having a rockable turn-in device operative upon the entering of the head into the box to engage the covering-blank at the outer side of the box and turn it into the latter.
2. In a box-covering machine, the combination with a box-support, of means for turning-in the covering-blank over the edge of a box, comprising a supporting head adapted to be entered into the box and having a series of rockable turn-in devices operative upon the entering of the head into the box to engage the covering-blank at the outer side of the box and turn it into the latter.
3. In a box-covering machine, the combination with a box-support, of means for turning-in the covering-blank over the edge of a box, comprising a supporting head adapted to be entered into the box and having a series of rockable turn-in devices operative upon the entering of the head into the box to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box to turn the engaged covering-blank therein.
4. In a box-covering machine, the combination with a box-support, of means for turning-in the covering-blank over the edge of a box, comprising a supporting head adapted to be entered into the box and having a movable turn-in device normally supported in an inclined position with respect to the wall of the box and being operative upon the entering of the head into the box to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box to turn the engaged covering-blank therein.
5. In a box-covering machine, the combination with a box-support, of means for turning-in the covering-blank over the edge of a box, comprising a supporting head adapted to be entered into the box and having a series of movable turn-in devices normally supported in an inclined position with respect to the wall of the box and being operative upon the entering of the head into the box to first engage the covering-blank at the outer side of the box and thereafter

be rocked over the edge of the box to turn the engaged covering-blank therein.

6. In a box-covering machine, the combination with a box-support, of means for turning-in the covering-blank over the edge of a box, comprising a supporting head adapted to be entered into the box and having a movable laterally-projecting turn-in device operative upon the entering of the head into the box to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box and into the latter to turn the engaged covering-blank therein.

7. In a box-covering machine, the combination with a box-support, of means for turning-in the covering-blank over the edge of a box, comprising a supporting head adapted to be entered into the box and having a series of movable laterally-projecting turn-in devices operative upon the entering of the head into the box to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box and into the latter to turn the engaged covering-blank therein.

8. In a box-covering machine, the combination with a box-support, of means for turning-in the covering-blank over the edge of a box, comprising a supporting head adapted to be entered into the box and having a series of movable turn-in devices supported thereby in a laterally-projecting downwardly-inclined position and being operative upon the entering of the head into the box to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box and into the latter to turn the engaged covering-blank therein.

9. In a box-covering machine, the combination with a box-support, of means for turning-in the covering-blank over the edge of a box, comprising a supporting head adapted to be entered into the box, and having a series of movable turn-in devices projecting laterally therefrom to a point in advance of its box-entering end, the said turn-in devices being operative upon the entering of the head into the box to engage the covering-blank at the outer side of the box and be movable transversely over the same to turn the engaged covering-blank therein.

10. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a rockable turn-in device operative during the stroke of the head to engage the covering-blank at the outer side of the box and turn it into the latter.

11. In a box-covering machine, means for turning-in the covering blank over the edge of a box, comprising a reciprocatory head having a series of rockable turn-in devices operative during the stroke of the head to

engage the covering-blank at the outer side of the box and turn it into the latter.

12. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a movable turn-in device operative during the stroke of the head to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box to turn the engaged covering-blank therein.

13. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a series of movable turn-in devices operative during the stroke of the head to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box to turn the engaged covering-blank therein.

14. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a pivoted turn-in device operative during the stroke of the head to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box to turn the engaged covering-blank therein.

15. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a series of pivoted turn-in devices operative during the stroke of the head to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box to turn the engaged covering-blank therein.

16. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a movable turn-in device normally supported in an inclined position and being operative during the stroke of the head to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box to turn the engaged covering-blank therein.

17. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a series of movable turn-in devices normally supported in an inclined position and being operative during the stroke of the head to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box to turn the engaged covering-blank therein.

18. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a movable laterally-projecting turn-in device operative during the stroke of the head to first engage the cover-

ing-blank at the outer side of the box and thereafter be rocked over the edge of the box and into the latter to turn the engaged covering-blank therein.

5 19. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a series of movable laterally-projecting turn-in devices operative during the stroke of the head to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box and into the latter to turn the engaged covering-blank therein.

10 20. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a movable turn-in device supported thereby in a laterally-projecting downwardly-inclined position and being operative during the stroke of the head to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box and into the latter to turn the engaged covering-strip therein.

15 21. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a series of movable turn-in devices supported thereby in a laterally-projecting downwardly-inclined position and being operative during the stroke of the head to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box and into the latter to turn the engaged covering-strip therein.

20 22. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a pivoted spring-pressed turn-in device supported thereby in a normal laterally-projecting downwardly-inclined position and being operative during the stroke of the head to first engage the covering-blank at the outer side of the box and thereafter be rocked into the latter to turn the engaged covering-blank therein.

25 23. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a movable turn-in device projecting laterally therefrom to a point in advance of its box-entering end, the said turn-in device being operative during the stroke of the head to engage the covering-blank at the outer side of the box and be moved transversely over the same to turn the engaged covering-blank therein.

30 24. In a box-covering machine, means for

turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a series of movable turn-in devices projecting laterally therefrom to a point in advance of its box-entering end, the said turn-in devices being operative during the stroke of the head to engage the covering-blank at the outer side of the box and be moved transversely over the same to turn the engaged covering-blank therein.

35 25. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a movable turn-in device projecting laterally therefrom to a point in advance of its box-entering end and in position to extend across the edge of the box and be rocked thereover when moved by the head into engagement therewith.

40 26. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and being formed to engage the inner walls of the latter when entered therein, and movable turn-in devices for acting on the covering-blank carried by the head in advance of its box-entering end.

45 27. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and being formed to engage the inner walls of the latter when entered therein, and movable turn-in devices for acting on the covering-blank carried by the plunger in a position projecting laterally outward from its box-engaging walls and forwardly in advance of its box-entering end.

50 28. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a series of recesses in its outer peripheral wall, and a series of turn-in devices pivoted to the head within its said recesses and normally projecting outwardly therefrom in position to act upon the covering-blank when the head is entered into the box, for the purpose set forth.

55 29. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a series of recesses in its outer peripheral wall, and a series of turn-in devices pivoted to the head within its said recesses and being movable to and from a position in the latter with their working faces flush with the outer face wall of the head, the said turn-in devices being normally supported in a position projecting laterally outward from the head to act upon

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the covering-blank when the head is entered into the box.

30. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a head adapted to be entered into the box, the said head being provided with a groove having its walls arranged to engage with and position a pucker or fold in the covering-blank upon the descent of the head into the box.

31. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, the said head being provided with a groove extending from a point in its box-entering end to a point in its box-engaging side and having its walls arranged to engage with and position a pucker or fold in the covering-blank upon the descent of the head into the box.

32. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a series of rockable turn-in devices operative during the stroke of the head to engage the covering-blank at the outer side of the box and turn it into the latter, the said head also being provided with positioning grooves or recesses located between the said turn-in devices for coöperation with puckers or folds in the covering-blank.

33. In a box-covering machine, means for turning-in the covering blank over the edge of the box, comprising a reciprocatory head movable to enter and withdraw from the box and having a series of recesses in its outer peripheral wall, and a series of turn-in devices pivoted to the head within its said recesses and normally projecting outwardly therefrom in position to act upon the covering blank when the head is entered into the box, the said head also being provided with positioning grooves or recesses for coöperation with puckers or folds in the covering-blank at points intermediate of the said turn-in devices.

34. In a box-covering machine, the combination with a box-support, of a reciprocatory plunger movable toward and from a box on said support and having a rockable turn-in device operative during the stroke of the head to engage with a covering-blank at the outer side of the box and be rocked over the edge of the box and into the latter to move the engaged covering-blank therein, and a stripper engaging with the box and operative to hold the same upon the withdrawal of the turn-in device therefrom.

35. In a box-covering machine, the combination with a box-support, of a reciprocatory plunger movable to enter and withdraw from a box on said support and having a rockable turn-in device operative during the stroke of the head to engage with a covering-blank at the outer side of the box and be rocked over the edge of the box and into

the latter to move the engaged covering-blank therein, and a stripper engaging with the box and operative to hold the same upon the withdrawal of the head and turn-in device therefrom.

36. In a box-covering machine, the combination with a box-support, of a reciprocatory head movable to enter and withdraw from a box on said support and having a rockable covering-blank turn-in device, a stripper for entering and engaging with the box, and actuating means for the head and stripper operative to enter the stripper into the box prior to the entry of the head therein.

37. In a box-covering machine, the combination with a box-support, of a reciprocatory head movable to enter and withdraw from a box on said support and having a covering-blank turn-in device carried and operated thereby, a reciprocatory stripper for entering and engaging with the box, and actuating means for the head and stripper operative to enter the stripper into the box prior to the entry of the head therein and subsequently to withdraw the head from the box prior to the withdrawal of the stripper from holding engagement therewith.

38. In a box-covering machine, means for turning in the covering-blank over the edge of a box, comprising a reciprocatory head having a rockable turn-in device operative during the stroke of the head to engage the covering blank at the outer side of the box and turn it into the latter, in combination with a guard for coöperation with the said turn-in device at the outer side of the box.

39. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a rockable turn-in device operative during the stroke of the head to engage the covering-blank at the outer side of the box and turn it into the latter, in combination with a movable guard for coöperation with the said turn-in device at the outer side of the box.

40. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a series of rockable turn-in devices operative during the stroke of the head to engage the covering-blank at the outer side of the box and turn it into the latter, in combination with a series of movable guards for coöperation with the said turn-in devices at the outer side of the box and means for simultaneously operating said guards.

41. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a movable laterally-projecting turn-in device operated thereby to first engage the covering-blank at the outer side of

the box and thereafter be rocked over the edge of the box and into the latter to turn the engaged covering-blank therein, in combination with a guard for coöperation with the said turn-in device at the outer side of the box.

42. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a series of movable laterally-projecting turn-in devices operated thereby to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box and into the latter to turn the engaged covering-blank therein, in combination with a series of movable guards for coöperation with the said turn-in devices at the outer side of the box, and means for simultaneously operating said guards.

43. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a rockable turn-in device operative during the stroke of the head to engage the covering-blank at the outer side of the box and turn it into the latter, in combination with a form-plate for engaging with the box at the outer side thereof.

44. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a rockable turn-in device operative during the stroke of the head to engage the covering-blank at the outer side of the box and turn it into the latter, in combination with a form-plate movable to and from an operative position for engaging with the box at the outer side thereof, and means for operating said form-plate.

45. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory plunger having a series of rockable turn-in devices operative during the stroke of the head to engage the covering blank at the outer side of the box and turn it into the latter, in combination with a series of form-plates movable to and from an operative position for engaging with the outer walls of the box, and means for simultaneously operating said form-plates.

46. In a box-covering machine, means for turning in the covering-blank over the edge of a box, comprising a reciprocatory head having a rockable turn-in device operative during the stroke of the head to engage the covering-blank at the outer side of the box and turn it into the latter, in combination with a pivoted form-plate for engaging with the box at the outer side thereof.

47. In a box-covering machine, means for

turning-in the covering-blank over the edge of a box, comprising a reciprocatory head having a series of rockable turn-in devices operative during the stroke of the head to engage the covering-blank at the outer side of the box and turn it into the latter, in combination with a series of pivoted form-plates for engaging with the outer walls of the box, and means for simultaneously operating said form-plates.

48. In a box-covering machine, means for turning-in the covering-blank over the edge of a box, comprising a reciprocatory head movable to enter and withdraw from the box and having a movable laterally-projecting turn-in device operated thereby to first engage the covering-blank at the outer side of the box and thereafter be rocked over the edge of the box and into the latter to turn the engaged covering-blank therein, in combination with a form-plate for engaging with the box at the outer side thereof.

49. In a box-covering machine, the combination with a box-support, of a reciprocatory stripper movable to enter a box on said support and engage the bottom thereof, a reciprocatory plunger movable to enter and withdraw from said box and having a rockable covering-blank turn-in device carried and operated thereby, a form-plate for engaging with the box at the outer side thereof, and actuating means operative to successively enter the stripper into the box, move the form-plate into engagement with the outer side of the box, and thereafter enter the plunger with its turn-in device into the box.

50. In a box-covering machine, the combination with a box-support, of a reciprocatory stripper movable to enter a box on said support and engage the bottom thereof, a reciprocatory plunger movable to enter and withdraw from said box and having a series of rockable covering-blank turn-in device carried and operated thereby, series of form-plates for engaging with the box at the outer side thereof, and actuating means operative to successively enter the stripper into the box, move the form-plates simultaneously into engagement with the outer side of the box, and thereafter enter the plunger with its turn-in devices into the box.

51. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof, of a movable form-plate for engaging the exterior wall of the box, and means for pressing the form-plate against the box.

52. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,

of a movable form-plate for engaging the exterior wall of the box, and means for engaging said form-plate and pressing it against the box.

5 53. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof, of a pivoted form-plate for engaging the
10 exterior wall of the box, and means for engaging said form-plate adjacent to its free end and pressing it against the box.

54. In a box-covering machine, the combination with means for turning-in the
15 covering-blank over the edge of a box and pressing it against the inner wall thereof, of a movable form-plate for engaging the exterior wall of the box, and means for yieldingly pressing said form-plate against
20 the box.

55. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,
25 of a movable form-plate for engaging the exterior wall of the box, and reciprocatory means movable to and from a position for pressing said form-plate against the box.

56. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,
30 of a pivoted form-plate for engaging the exterior wall of the box, and reciprocatory means movable to and from a position for engaging said form-plate adjacent to its free end and pressing it against the box.

57. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,
40 of a movable form-plate for engaging the wall of the box at the exterior side thereof, and a reciprocatory head movable in a plane parallel with the wall of the box and having means for engaging the form-plate
45 and pressing it against the box.

58. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,
50 of a movable form-plate for engaging the wall of the box at the exterior side thereof, and a reciprocatory head movable in a plane parallel with the wall of the box and having yieldingly-held means for engaging the form-plate and pressing it against the box.

59. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,
60 of a movable form-plate for engaging the wall of the box at the exterior side thereof, and a reciprocatory head movable in a plane

parallel with the wall of the box and having
65 pivoted spring-pressed means for engaging the form-plate and pressing it against the box.

60. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,
70 of a movable form-plate for engaging the wall of the box at the exterior side thereof, and a reciprocatory head movable in a plane parallel with the wall of the box and having means movable laterally relatively to its path of movement for engaging the form-plate and pressing it against the
80 box.

61. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,
85 embodying a reciprocatory form-block operative to enter and withdraw from the box, of a form-plate movable to and from a position for engaging the wall of the box at that side thereof opposite the form-block, and a reciprocatory head operative in the same
90 plane as that of the form-block and having means for engaging the form-plate and pressing it against the box.

62. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,
95 embodying a reciprocatory form-block operative to enter and withdraw from the box, of a form-plate movable to and from a position for engaging the wall of the box at that side thereof opposite the form-block, and a reciprocatory head operative in the same plane as that of the form-block and having yieldingly-held means for engaging the form-plate and pressing it against the box.
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63. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,
110 embodying a reciprocatory form-block operative to enter and withdraw from the box, of a form-plate movable to and from a position for engaging the wall of the box at that side thereof opposite the form-block, and a reciprocatory head operative in the same plane as that of the form-block and having pivoted spring-pressed means for engaging the form-plate and pressing it against the box.

64. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof,
120 embodying a reciprocatory form-block operative to enter and withdraw from the box, of a form-plate movable to and from a position for engaging the wall of the box at that side thereof opposite the form-block, and a
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reciprocatory head operative in the same plane as that of the form-block and having means movable laterally relative to its path of movement for engaging the form-plate and pressing it against the box.

65. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof, embodying a reciprocatory form-block operative to enter and withdraw from the box, of a form-plate movable to and from a position for engaging the wall of the box at that side thereof opposite the form-block, and a reciprocatory head operative in the same plane as that of the form-block and having means for engaging the form-plate and pressing it against the box, and actuating means for successively operating the said form-plate, form-block, and pressing means.

66. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof, of a movable form-plate independent of said turning-in means for engaging the exterior

wall of the box, and means for pressing the form-plate against the box.

67. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof, of a movable form-plate for engaging the exterior wall of the box, and means independent of said turning-in means for pressing the form-plate against the box.

68. In a box-covering machine, the combination with means for turning-in the covering-blank over the edge of a box and pressing it against the inner wall thereof, of a movable form-plate independent of said turning-in means for engaging the exterior wall of the box, and means independent of said turning-in means for pressing the form-plate against the box.

Signed at Rochester, in the county of Monroe and State of New York, this 30th day of January, A. D. 1907.

JOHN G. JONES.

Witnesses:

F. K. KNOWLTON,
WILLIAM B. FARNHAM.