F. M. JOSLIN.

BOX MACHINE PLUNGER.

APPLICATION FILED MAR. 29, 1920.

1,365,920. **Patented Jan. 18, 1921.**

Fig. 1

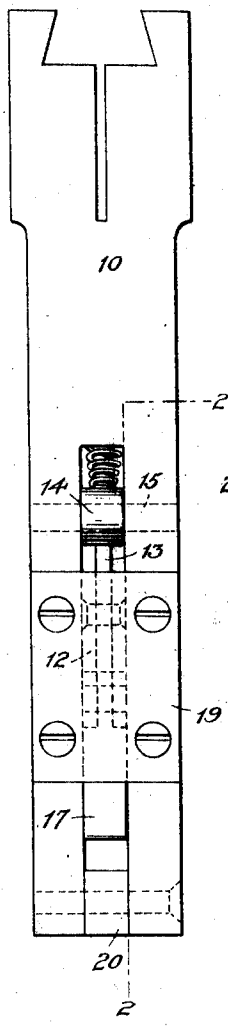


Fig. 2.

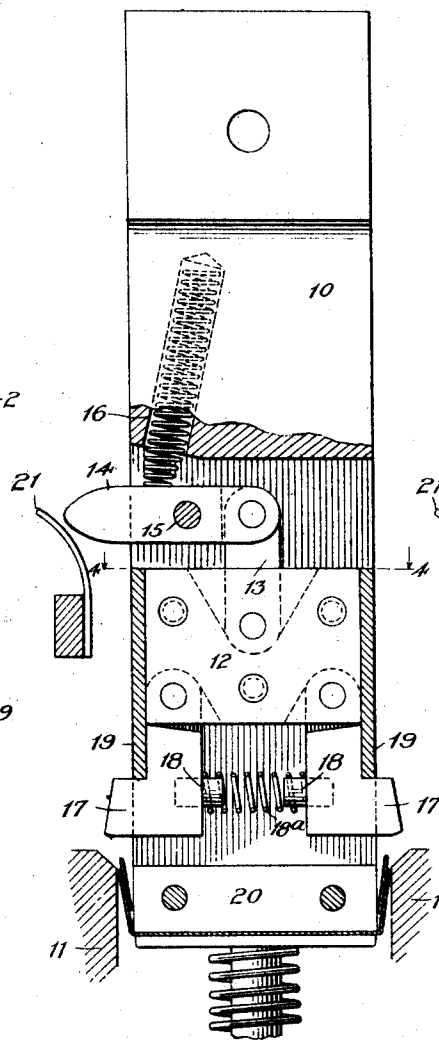


Fig. 3.

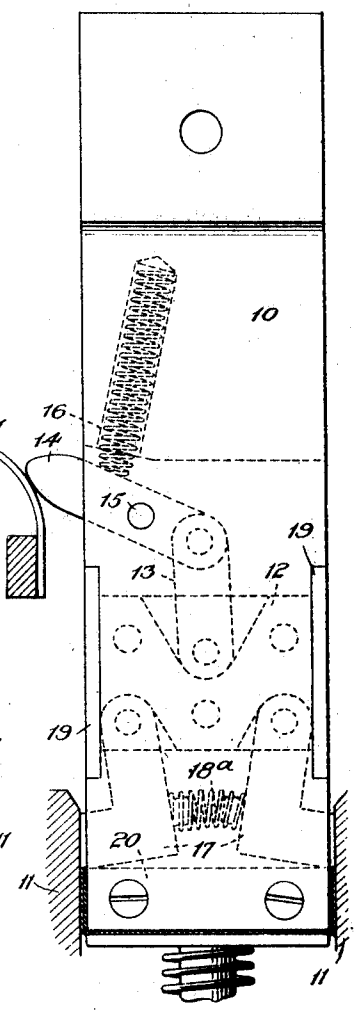
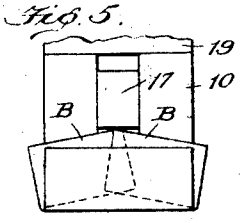


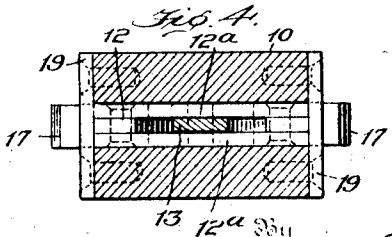
Fig. 5.



Witness

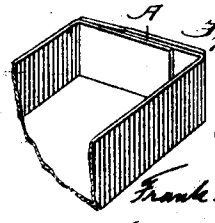
Edwin L. Bradford

Fig. 4.



By

Fig. 6.



Inventor

Frank M. Joslin,

Foster, Freeman, Watson & Coit,

Attorneys.

UNITED STATES PATENT OFFICE.

FRANK M. JOSLIN OF AMSTERDAM, NEW YORK, ASSIGNOR TO INMAN MANUFACTURING COMPANY, INC., OF AMSTERDAM, NEW YORK, A CORPORATION OF NEW YORK.

BOX-MACHINE PLUNGER.

1,365,920. Specification of Letters Patent. Patented Jan. 18, 1921.

Application filed March 29, 1920. Serial No. 369,492.

To all whom it may concern:

Be it known that I, FRANK M. JOSLIN, a citizen of the United States, and residing at Amsterdam, Montgomery county, State of New York, have invented certain new and useful Improvements in Box-Machine Plungers, of which the following is a specification.

This invention relates to plungers of the type particularly intended for use in machines for making boxes from pasteboard or similar material.

In machines of that type and in the manufacture of boxes or similar articles in which the sides or ends are formed by overlapping portions of material, it frequently happens that during the operation of forming the box or other article by the die and plunger, such overlapping portions tend to stand up at an angle to the bottom or body of the box or other article being formed. It is the aim of the present invention to provide a plunger which will remedy this difficulty and which will force such overlapping and upstanding portions into the proper position. This is accomplished by providing the main plunger of the machine with auxiliary plungers and providing means by which such plungers will be caused to move relative to the main plunger during the movement of the latter and when so moved will contact with the overlapping parts of the box or other article being made and force the same into proper position, if they are displaced therefrom, such auxiliary plungers being so attached to the main plunger as to move out of the path of said main plunger after they have performed the function for which they are intended.

With these and other objects in view the invention has been embodied in the construction hereinafter set forth and illustrated in the accompanying drawings in which:

Figure 1 is a side elevation of the plunger;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1, showing the manner of mounting the auxiliary plungers and the means for operating the same;

Fig. 3 is a front elevation of the plunger showing various features of the mechanism in dotted lines;

Fig. 4 is a sectional view on the line 4—4 of Fig. 2 looking in the direction of the arrows;

Fig. 5 is a view illustrating the manner in which the overlapping portions of the box or other article being formed tend to stand up at an angle to the body of the box and also showing the point at which the auxiliary plungers are adapted to operate on such overlapping portions; and

Fig. 6 is a perspective view showing the proper position of the overlapping portions of the box or other article.

Referring to the drawings in detail the numeral 10 designates the plunger in general, it being understood that when used in a machine suitable means are provided for moving the plunger toward and from a die, such as illustrated at 11 and that the plunger and die coöperate to shape the box. The lower portion of the plunger 10 is bifurcated thus forming a recess in which a supporting member 12 is slidably mounted, this member being composed of plates 12^a suitably secured together. A link 13 is secured at one end to the upper portion of the slidable supporting member 12 and at its other end to a lever 14 pivoted at 15 to the plunger 10. A coiled spring 16 is mounted in a recess in the plunger 10 and this spring is arranged in such position as to engage the lever 14 and hold the same normally in a horizontal position and also hold the slidable member 12 in its rearward position. The lever 14 projects beyond the edge of the plunger 10 for a purpose hereinafter described. On its lower portion the slidable member 12 carries two auxiliary plungers 17, 17, such auxiliary plungers being pivotally connected to the member 12. Each of the auxiliary plungers is provided with a pin 18 and a coiled spring 18^a is arranged between such plungers and surrounds the pins 18, this construction constituting resilient means tending to force the auxiliary plungers outwardly. The plunger 10 at each edge is provided with a plate 19, which serves to cover part of the recess formed by the bifurcated portion of said plunger and at the bottom of the plunger a block 20 is secured between the parts of such bifurcated portion for the purpose of providing a continuous plain face upon the front end of said plunger. The auxiliary plungers lie within the recess formed in the bifurcated portion of the main plunger but their ends normally project beyond the sides of the plunger 10 below the plates 19 above mentioned and at

the rear of the block 20. Mounted adjacent the path of movement of the plunger 10 is a stationary contact member 21, which is so positioned as to contact with and move the lever 14 as the plunger 10 descends toward the die 11.

Briefly outlining the operation of the device, it will be apparent that when the lever 14 comes in contact with the member 21 on the downward movement of the plunger 10, the slidable member 12 will be caused to move relative to and in the same direction as the body of the plunger 10 with the result that the auxiliary plungers will be advanced simultaneously and more rapidly than the plunger 10 and brought into contact with the overlapping and upstanding portions of the box, if any such portions are present, as shown at B, B, in Fig. 5, and by reason of such contact such misplaced portions of the box will be forced into proper position, this position being illustrated at A in Fig. 6. As the plunger 10 continues to descend it is to be understood that the auxiliary plungers 17 will come in contact with the inclined portions 11^a of the walls of the die and will be forced into the plunger 10 and thus will not interfere with the movement of said plunger during the remainder of the operation of forming the box or other article. When the plunger 10 is withdrawn from the die the parts will resume their normal position by means of the action of the spring 16 and the spring 18^a arranged between the auxiliary plungers.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a device of the kind described, a main plunger, an auxiliary plunger carried thereby and positioned at the rear of the front end thereof, and means for causing said auxiliary plunger to move relative to and toward the front end of the main plunger during the movement of said main plunger and at a predetermined point in its travel.

2. In a device of the kind described, a main plunger, an auxiliary plunger carried thereby and positioned at the rear of the front end thereof and means controlled by movement of said main plunger for causing said auxiliary plunger to move relative to and toward the front end of the main plunger at a predetermined point in the travel of said main plunger.

3. In a device of the kind described, a main plunger, a sliding member carried by said main plunger and movable relative thereto, an auxiliary plunger carried by said sliding member, and positioned at the rear of the front end of the main plunger and means for causing said sliding member and auxiliary plunger to move relative to and toward the front end of said main plunger at a predetermined point in the travel of the latter.

4. In a device of the kind described, a main plunger having a recess formed therein, a sliding member mounted in said recess and movable relative to said main plunger, an auxiliary plunger carried by said sliding member and positioned at the rear of the front end of the main plunger, and means for causing said sliding member and auxiliary plunger to move relative to and toward the front end of said main plunger at a predetermined point in the travel of the latter.

5. In a device of the kind described, a main plunger, a plurality of auxiliary plungers carried by said main plunger and normally projecting beyond the sides of the main plunger at the rear of the front end thereof, and means for moving said auxiliary plungers relative to and toward the front end of said main plunger during the movement of the latter.

6. In a device of the kind described, a main plunger, an auxiliary plunger carried thereby, means for causing said auxiliary plunger to move more rapidly than the main plunger during a predetermined part of the travel of the latter.

7. In a device of the kind described, a main plunger, a slidable member mounted thereon, an auxiliary plunger carried by the slidable member, means for causing said slidable member and auxiliary plunger to move relative to the main plunger during the travel of the latter, said means including two contact members one carried by said main plunger and the other mounted in stationary position in the path of movement of the other.

8. In a device of the kind described, a main plunger, an auxiliary plunger carried by the main plunger and normally projecting beyond the side of the main plunger at the rear of the front end thereof, resilient means for holding the auxiliary plunger in operative position, and means for causing said auxiliary plunger to move relative to and toward the front end of the main plunger during the movement of the latter.

9. In a device of the kind described, a main plunger, a movable member carried thereby, a plurality of auxiliary plungers carried by said movable member, resilient means mounted between said auxiliary plungers and tending to hold the same in operative position, and means for simultaneously moving said movable member and auxiliary plungers relative to and toward the front end of the main plunger during the movement of the latter.

10. In a device of the kind described, a main plunger, a slidable member mounted thereon, means for causing said slidable member to move relative to the main plunger at a predetermined point in its travel, said means comprising a contact member pivotally mounted on said main plunger

and connected to said slidable member and a second contact member mounted in stationary position in the line of movement of said first named contact member, resilient means for holding said first named contact member in normal position when free from said second contact member, and a plurality of auxiliary plungers carried by said slidable member.

11. In a device of the kind described, a main plunger, an auxiliary plunger carried thereby, said auxiliary plunger normally projecting beyond the side of the main plunger at the rear of the front end thereof, and means for causing said auxiliary plunger to move toward the front end of the main plunger during the forward movement of the latter.

12. In a device of the kind described, the combination of a die, a main plunger adapted to enter and recede from said die, an auxiliary plunger carried by said main plunger and movable laterally thereof, said auxiliary plunger normally projecting beyond the side of the main plunger at the rear of the front end thereof, and means for yieldingly holding the said auxiliary plunger in such normal position, the projecting portion of said auxiliary plunger being arranged to contact with said die and be moved thereby laterally of said main plunger as the latter enters the die.

13. In a device of the kind described, a main plunger, a slidable member carried thereby, one or more auxiliary plungers carried by said member and positioned at the rear of the front end of said main plunger, and means for moving said member and auxiliary plungers toward the front end of the main plunger at a predetermined point in the movement of the latter.

14. In a device of the kind described, the combination of a die, a main plunger adapted to enter and recede from the die, an auxiliary plunger pivotally supported by said main plunger and normally projecting beyond the side of said main plunger at the rear of the front end thereof, and means for yieldingly holding the auxiliary plunger in said normal position, said auxiliary plunger being arranged to contact with and be moved by a part of said die as the main plunger enters the die.

15. In a device of the kind described, a main plunger, a supporting member slidably carried thereby, an auxiliary plunger pivotally mounted on said member and having a portion thereof projecting beyond the side of said main plunger at the rear of the front end thereof, means for yieldingly holding said support and auxiliary plunger in a rearward position, and means for moving said member and auxiliary plunger toward the front end of the main plunger at a predetermined point in the forward movement of the latter.

16. In a device of the kind described, a main plunger, a supporting member slidably carried thereby, a plurality of auxiliary plungers supported on said member and normally projecting beyond the sides of said main plunger at the rear of the front end thereof, means for yieldingly holding said auxiliary plungers in such normal position, means for yieldingly holding said member and auxiliary plungers in a rearward position, and means for moving said member and auxiliary plungers toward the front end of said main plunger at a predetermined point in the movement of the latter.

17. In a device of the kind described, a main plunger having a recess in the front portion thereof, a supporting member slidably mounted in said recess, one or more auxiliary plungers pivotally carried by said supporting member and each having a part thereof normally projecting beyond the side of the main plunger at the rear of the front end thereof, means for yieldingly holding said auxiliary plungers in such normal position, means for yieldingly holding said member and auxiliary plungers in a rearward position, and means for moving said member and auxiliary plungers toward the front end of said main plunger at a predetermined point in the forward movement of the latter.

18. In a device of the kind described, a main plunger, two auxiliary plungers supported thereby, said auxiliary plungers normally projecting beyond the sides of the main plunger at the rear of the front end thereof, and means for moving said auxiliary plungers toward the front end of the main plunger at a predetermined point in the movement of the latter.

In testimony whereof I affix my signature.

FRANK M. JOSLIN.