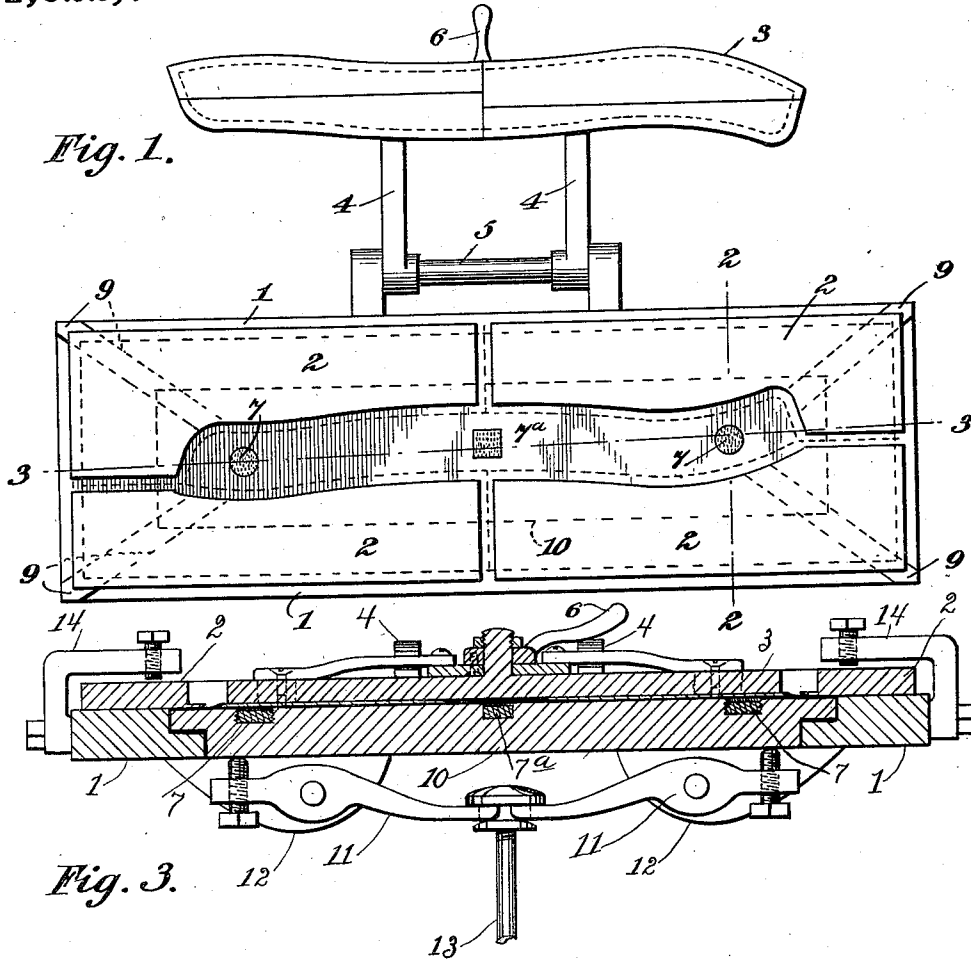


J. W. HOLMES.
FOLDING MACHINE.
APPLICATION FILED MAR. 9, 1910.

1,022,736.

Patented Apr. 9, 1912.



WITNESSES:

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FOLDING-MACHINE.

1,022,736.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN W. HOLMES, a citizen of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Folding-Machines, of which the following is a specification.

The invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a top plan view of a folding-machine embodying my invention, with the collapsible die or templet swung back to inverted position. Fig. 2 is a vertical cross-section taken on the broken line 2—2 in Fig. 2, through the bed of the machine and one of the blank-retaining pads with which said bed is provided. Fig. 3 is a vertical longitudinal section of the same taken on the broken line 3—3 in Fig. 1.

The invention relates to the class of folding-machines adapted for inturning the edges of blanks for shirts, collars and cuffs, by the use of a supporting bed, a templet or die, having thin plates, over the edge of which the edge of the blank is adapted to be inturned, and a folder or folders adapted to inturn the edges of the blanks over the templet, the templet-plate or plates being adapted to be withdrawn from the fold so formed, and the infolder and bed being adapted to crush or press therebetween the fold in the blank after the templet has been withdrawn therefrom.

The invention is particularly adapted for such folding-machines having what are known as collapsible dies or templets, but it is adapted for use in machines of the character described, wherein the templet-plate is withdrawn in any known manner from the fold in the blank preparatory to pressing the fold between the bed and infolder.

In the operation of machines of this character, it is found that the blanks tend to slip and become disarranged on the bed upon the withdrawal of the templet, thus disturbing the fold; and, to prevent this, it is customary to scratch,

or score with fine grooves, the surface of the bed; but in many cases this is found to be insufficient, and the withdrawal of the templet is accompanied with more or less disarrangement of the blank before the pressing operation is accomplished, resulting in an imperfectly folded blank. To prevent such disarrangement, in carrying out my invention, I provide the bed at such point or points as desired with a surface formed by a plurality of closely assembled points, pins or wires arranged upright, so that their ends are brought into contact with the blank upon the bed, which points, pins or wires engage and penetrate to some extent, or enter between, the fibers or threads of, the blank when the blank is forced down thereupon by the descent of the templet, and serve to prevent lateral movement of the blank upon the bed.

Referring to the drawings, wherein the invention is shown applied to a simple form of folding-machine, 1, represents the bed of the machine upon which rest the infolders, 2, movable inwardly and outwardly diagonally along the guides, 9, the folders being shown by solid lines in their outward position, and their inward position being indicated by dotted lines.

3 is the templet mounted, by means of a frame, 4, to swing upon the shaft, 5, whereby the templet can be lowered upon and raised from the bed. The blades forming the face of the templet are shown by solid lines in their expanded position from which they are adapted to be contracted in the usual manner to the position indicated by dotted lines as shown in Fig. 1. The expansion and contraction of the templet can be accomplished in any known manner by means of the handle 6.

The infolders, 2, can be moved inwardly and outwardly by hand, or in any known manner, and any known means may be employed for causing a relative movement between the infolders and bed to crush or press the fold. In Fig. 3 I have shown a means for causing such a relative movement between the infolders and bed, the bed having a vertically movable section, 10, adapted to be forced upward at certain times by means of a pair of levers, 11, fulcrumed in hangers, 12, on the stationary member of the bed, said levers being adapted to be operated by means of a rod, 13, which may

be connected with a treadle not shown. Brackets, 14, mounted upon the stationary portion of the bed overhang the several infolders and support the same against the upward thrust of the movable section, 10, of the bed.

In the operation of folding a blank, the blank is placed upon the bed with the infolders withdrawn to the position shown by solid lines in Fig. 1; the expanded templet is lowered upon the blank, forcing the same down upon the bed; the infolders are moved inwardly, forcing the edges of the blank over the edges of the templet; the templet is contracted and withdrawn from the fold; and the fold is crushed or pressed between the infolders and bed, all in the usual manner. To prevent, during this operation, the disarrangement of the blank upon the bed when the templet is withdrawn from the fold, I preferably insert in a recess formed in the bed a pad, 7, or 7^a, provided with a considerable number of fine pins or wires, 8, the upper ends of which project upwardly from the pad, preferably to a short distance above the plane of the top of the bed, as shown in Fig. 2, whereby they are adapted to engage and penetrate the fibers or threads of the blank when the same is forced down upon the bed by the descent of the templet.

The wires, 8, do not extend sufficiently above the plane of the top of the bed to penetrate through the fabric of the blank, but merely a sufficient distance to have their ends slightly embedded in the fabric by entrance between the fibers or threads of the fabric.

By locating the wires in an opening in the bed, as shown, and having the ends of the wires approximately in the plane of the top of the bed, the portions of the bed surrounding the opening afford a support to the fabric, which prevents the same from being forced down upon the pins sufficiently to force the pins through the blank, which would be objectionable for work of the character for which the device is intended, because such a penetration of the wires would make holes in the fabric, and would also render it difficult to strip the blank from the wires.

The device as shown affords sufficient resistance to a lateral displacement of the blank, while not forming unsightly apertures in the blank, and not offering material resistance to the lifting of the blank from the bed.

I have ascertained that a pad of card-clothing having the teeth or wires ground down so that they project but slightly above the surface of the canvas, or other body upon which the said teeth are mounted, is adapted for this purpose, but I do not wish to be limited to such a pad, because my in-

vention contemplates providing the bed of the folding-machine in any known manner, at such point or points as may be desired, with fine pins or wires or the like having upwardly presented ends adapted to engage the blank and prevent its lateral movement upon the bed by entering between the fibers of the blank-fabric.

By the use of this invention, the blank will remain throughout the folding and pressing operations in the position which it first assumes upon the bed when forced down thereupon by the templet.

I have shown in the drawings a collapsible templet and infolders adapted to fold a blank on all sides, but I do not wish to be limited to this, as my invention contemplates the folding of one or more edges of the blank, and the withdrawal of the templet-plate or plates from the folds in any known manner, whether by contraction or by bodily movement of the templet as a whole, or by both.

The points, pins or wires can be mounted upon the bed in any known manner.

In Fig. 1, I have shown three pads, two of which, 7, are circular, while the third, 7^a, is square in plan. The circular pads may be screwed into suitable apertures in the bed, as shown in Fig. 2, or they, as well as the square pad, may be cemented into suitable apertures in the pad by the use of any suitable cement capable of withstanding the degree of heat to which machines of this character are subjected in use.

I am aware that the bed of a folding-machine has heretofore been roughened or corrugated with a view to preventing the blanks from slipping thereon, but it has been found impossible by corrugating the bed, or a plate mounted upon the bed, to produce points of such shape as to effectively accomplish the object sought. It is characteristic of my invention, for certain purposes thereof, that the blank-engaging points are in effect wires, the longitudinal surface lines of which, near the blank-engaging end, are substantially parallel, while the diameter of each point or wire is so small that it is adapted to bodily enter between the threads of the fabric; whereas, in a corrugated construction, the points are necessarily more or less pyramidal, that is, their surface lines converge sharply toward the point, and no matter how fine such corrugations may be made, the points formed thereby do not offer the positive resistance to the movement of the blanks that is offered by the wires employed in carrying out my invention.

What I claim as new and desire to secure by Letters Patent is—

1. In a folding-machine having a templet-plate adapted to be withdrawn from a fold in the blank, and means for pressing the

fold after the templet-plate has been withdrawn therefrom, the combination with the blank-supporting bed; of a plurality of separate blank-engaging instrumentalities mounted on said bed, each having a minute end adapted to enter between the fibers of the blank fabric, and having its longitudinal surface lines all parallel adjacent to said end, said bed having portions surrounding said instrumentalities to prevent an excessive penetration thereof into the blank.

2. In a folding-machine having a templet-plate adapted to be withdrawn from a fold in the blank, and means for pressing the fold after the templet-plate has been withdrawn therefrom, the combination with the blank-supporting bed; of a plurality of upwardly projecting wires mounted on the bed, with their ends adapted to engage the blank and prevent lateral displacement thereof, said wires being of such small cross-section that they are adapted to enter between the threads of the blank fabric, and said bed having portions surrounding said wires

adapted to prevent an excessive penetration of the wires into the blank.

3. In a folding-machine, and in combination, a bed to support the blank; a fold-defining templet-plate; means for supporting said templet-plate and moving the same toward and from the bed; means whereby said templet-plate can be withdrawn from a fold in a blank formed thereon; means for infolding the edge of a blank over said templet-plate; means whereby the folded edge of the blank can be pressed after said templet-plate has been withdrawn therefrom; and a pad of card-cloth secured in an aperture in the top of said bed, with the wires thereof adapted to engage and prevent disarrangement of a blank during the folding and pressing operations.

In testimony whereof, I have hereunto set my hand this 3rd day of March, 1910.

JOHN W. HOLMES.

Witnesses:

J. DONSBACH,
E. BAKEMAN.