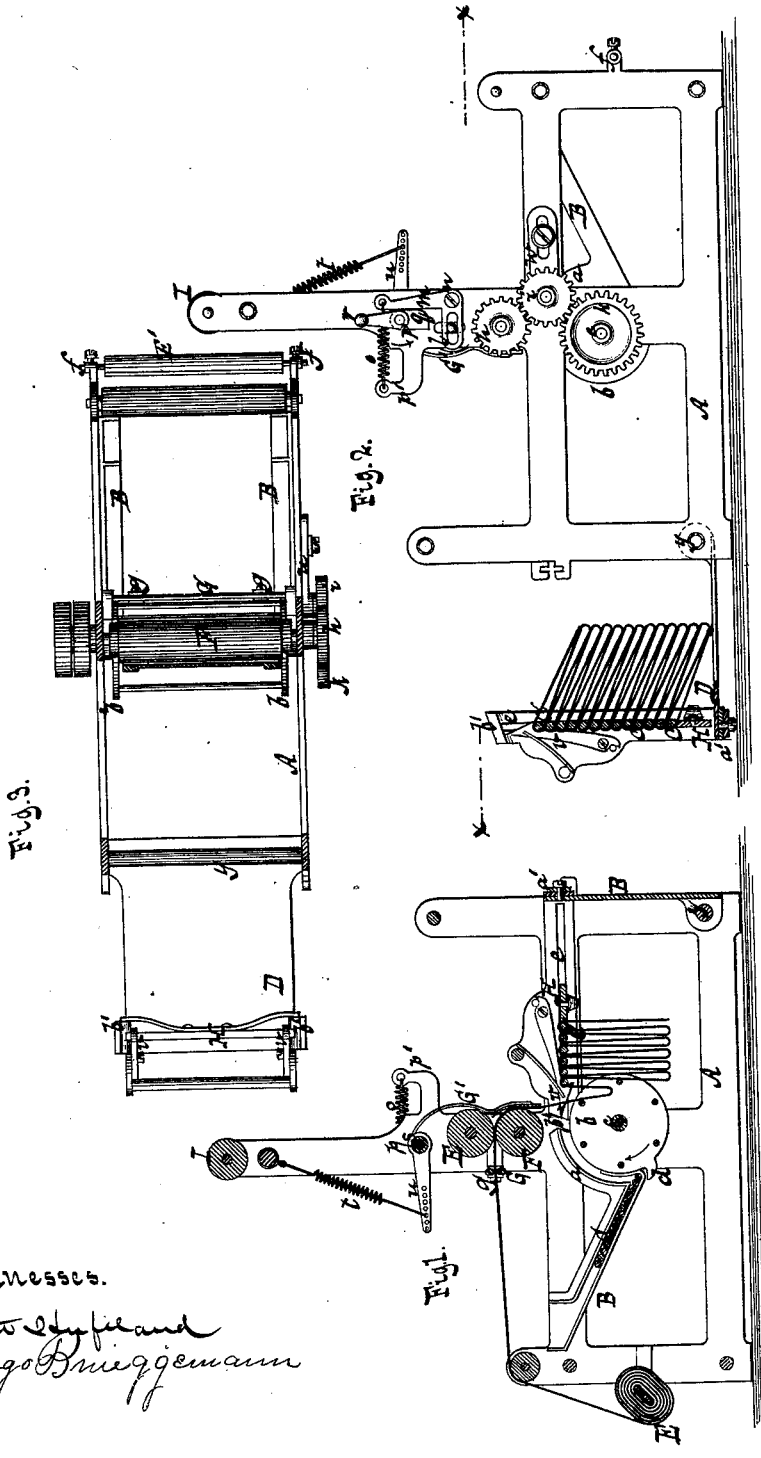
A. WARTH.

Cloth-Folding Machine.

No. 206,651. Patented July 30, 1878.



Witnesses.

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ALBIN WARTH, OF STAPLETON, NEW YORK.

IMPROVEMENT IN CLOTH-FOLDING MACHINES.

Specification forming part of Letters Patent No. **206,651**, dated July 30, 1878; application filed April 3, 1878.

To all whom it may concern:

Be it known that I, ALBIN WARTH, of Stapleton, in the county of Richmond and State of New York, have invented a new and useful Improvement in Machines for Folding Textile and other Materials, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a longitudinal vertical section, showing the parts in position during the time the operation of folding is in progress. Fig. 2 is a side view, partly in section, showing the receiver turned out for the removal of the folded package. Fig. 3 is a plan or top view.

Similar letters indicate corresponding parts.

This invention consists in the combination, in a machine for folding textile and other materials, of a chute which contains the folding-sticks, a mechanism for raising the folding-sticks, a receiver provided with guide-grooves to receive and with latches to retain the folding-sticks, a friction-slide fitted into said guide-grooves and feed-rollers for presenting the material to be folded to the folding-sticks, said feed-rollers being geared together with the mechanism for raising the folding-sticks into the receiver, so that the successive folds as formed in the receiver are held in close connection by the friction-slide, and a package of uniform width is produced. With the feed-rollers is combined a spring-supported apron, which assists in properly presenting the material to be folded to the folding-sticks. With the feed-rollers, the mechanism for raising the folding-sticks, and the receiver is combined a guide-bar with adjustable stops, which are set to correspond to the width of the material to be folded, and serve to keep the folds in the proper relation to each other.

The upper feed-roller is hung in bell-crank levers, and it is depressed by the action of springs acting on said bell-crank levers. A rock-shaft provided with toes which act on the bell-crank levers serves to raise the upper feed-roller out of contact with the lower feed-roller. The receiver is hinged to the main frame, so that it can be turned down for the purpose of removing the folded package with convenience.

In the drawings, the letter A designates the frame which forms the bearings for the working parts of my folding-machine. On the sides of this frame, one opposite to the other, are two chutes, B B, into which are dropped the folding-sticks or rods C. From the inner ends of these chutes extend segmental guides *a* over the peripheries of two disks, *b b*, which are mounted on a shaft, *c*, and each of these disks is provided with a nose, *d*. When the shaft *c* is turned in the direction of the arrow marked near it in Fig. 1, the noses *d* catch beneath the last folding-stick in the chutes and carry the same up into guide-grooves *e* formed in the side of the receiver D.

The material to be folded is taken from a roll, E′, which revolves between center points *f* secured in the main frame, or it may be taken from any suitable package, and it is fed to the folding mechanism by the action of feed-rollers E F.

Close in front of these feed-rollers is situated a guide, G, provided with two stops, *g g*, Figs. 1 and 3, which can be adjusted to correspond to the width of the material to be folded. The lower feed-roller, F, is geared to the shaft carrying the stick-raising disks *b b* by cog-wheels *h i k*, Fig. 2, and the upper feed-roller, E, has its bearings in the horizontal arms *l* of bell-crank levers *l m*. These bell-crank levers have their fulcra on pivots *n* secured in the main frame, and from the ends of their vertical arms *m* extend springs *o* to fixed standards *p*, so that the upper feed-roller is depressed upon the lower feed-roller with a yielding pressure and caused to revolve by frictional contact. Above the feed-roller E is situated a rock-shaft, *p*, which is provided with toes *q* and with a hand-crank, *r*. By turning this rock-shaft in the direction of the arrow marked near it in Fig. 2, the toes *q* force the vertical arms *m* of the bell-crank levers *l m* back, and the feed-roller E is raised out of contact with the lower feed-roller, F.

On the rock-shaft *p* is fitted a sleeve, *s*, which turns freely thereon, and to which is secured an apron, G′, that is held in contact with the feed-roller by a spring, *t*, which is hitched to an arm, *u*, extending from the sleeve and to a fixed traverse rod in the frame A. The object of this apron is to carry the material, as it leaves the feed-rollers, downward, and to present it to the folding-sticks in the proper position.

On each side of the receiver is placed a latch, *v*, which allows the folding-sticks to be passed freely into the guide-grooves *e* of the

receiver, but prevents the same from receding. In the guide-grooves *e* is fitted a friction-slide, H, which recedes as the folding-sticks accumulate in the receiver. Between this friction-slide and the latches the folding-sticks, together with the material suspended therefrom, are retained in position.

When the disks *b b* are revolved the material is drawn in by the feed-rollers and presented to the folding-sticks, thereby forming a series of folds which are suspended from the folding-sticks, as shown in Fig. 1. The length of these folds depends upon the relative speed of the feed-rollers and of the disks *b b*. This speed can be changed by changing the intermediate gear-wheel *i*, which has its bearing on a stud secured to an adjustable bracket, *w*; or, if desired, either of the gear-wheels *h* or *k* may be replaced by one of a different diameter.

When the entire piece of the material has been fed into the receiver, or whenever the receiver has been filled up, said receiver is turned down to the position shown in Figs. 2 and 3. For this purpose the frame of the receiver is hinged to the main frame A by a pintle, *y*, and it is provided with a latch or bolt, *a'*, which serves to lock the same in the position shown in Fig. 1. After the receiver has been turned down the folding-sticks are withdrawn from the guide-grooves *e*, and the folded package is ready to be removed.

If it is desired to examine the material before it is folded, it may be drawn from the original package over a roller, I, situated in the top of the main frame A.

Instead of using the friction-slide H in the guide-grooves of the receiver, each of the folding-sticks may be so constructed as to fit the guide-grooves sufficiently tight to form a friction-slide for itself, or the guide-grooves *e* may be placed in an upwardly-inclined position, so that the folding-sticks, as the same are fed into said guide-grooves, are kept in close contact by their inherent gravity.

In order to cause the folding-sticks to enter the guide-grooves *e* without fail, the ends of the side bars of the receiver are bent out and provided with an inclined shoulder, *b'*, Figs. 1 and 2, which forms the termini of the guide-grooves, so that the lower edge of each guide-groove extends a little beyond the upper edge, and each folding-stick, on being raised by the noses *d* of the disks *b*, is caused to rest first between the lower edges of the guide-grooves and the inclined faces of the latches *r*, and as it is pressed forward by the noses the latches are raised and the folding-stick passes into the guide-grooves.

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

1. The combination, in a machine for folding textile and other materials, of chutes which contain a series of folding-sticks, a mechanism for raising the folding-sticks, a receiver provided with guide-grooves *e* for receiving, and with latches *r* for retaining, the folding-sticks, and feed-rollers for presenting the material to be folded to the folding-sticks, all combined and adapted to operate substantially as and for the purpose shown and described.

2. The combination, in a machine for folding textile and other materials, of chutes which contain a series of folding-sticks, a mechanism for raising the folding-sticks, a receiver provided with guide-grooves to receive, and with latches to retain, the folding-sticks, a friction-slide fitted into said guide-grooves, and feed-rollers for presenting the material to be folded to the folding-sticks, all combined and adapted to operate substantially as set forth.

3. The combination, in a machine for folding textile and other materials, of chutes which contain a series of folding-sticks, a mechanism for raising the folding-sticks, a receiver provided with guide-grooves for receiving the folding-sticks, feed-rollers for carrying the material to be folded to the folding mechanism, and a spring-supported apron for presenting the material to be folded to the folding-sticks, all combined and adapted to operate substantially as shown and described.

4. The combination, in a machine for folding textile and other material, of chutes which contain a series of folding-sticks, a mechanism for raising the folding-sticks, a receiver provided with guide-grooves for receiving the folding-sticks, feed-rollers for presenting the material to be folded to the folding-sticks, and a guide-bar with adjustable stops for keeping the material to be folded in the proper relation to the folding mechanism, all combined and adapted to operate substantially as set forth.

5. The combination, in a machine for folding textile and other materials, of chutes which contain a series of folding-sticks, mechanism for raising the folding-sticks, a receiver adapted to receive the folding-sticks, feed-rollers for presenting the material to be folded to the folding-sticks, and interchangeable gears *h i k* for changing the relative speed of the feed-rollers and the stick-raising mechanism, substantially as shown and described.

6. The combination, in a machine for folding textile and other materials, of chutes which contain a series of folding-sticks, mechanism for raising the folding-sticks, feed-rollers for presenting the material to be folded to the folding-sticks, and a receiver adapted to receive the folding-sticks, and to be turned down from its working position to a position convenient for the removal of the package, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 1st day of April, 1878.

ALBIN WARTH. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.