

Sheet 1-2. Sheets.

E. C. Woodman.

Folding and Measuring Cloth.

N<sup>o</sup> 4993.

Patented Mar. 6, 1847.

Fig. 2

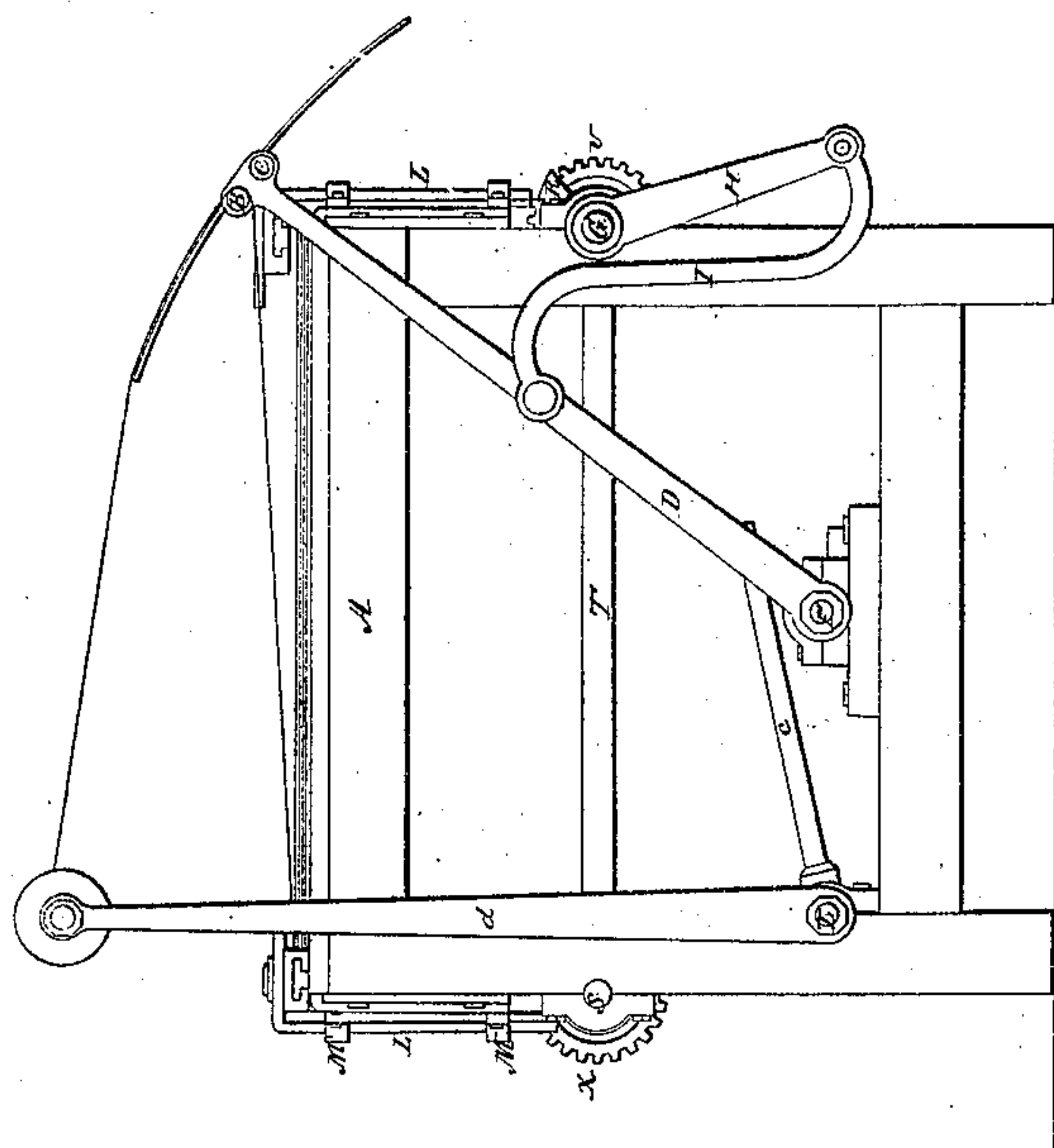
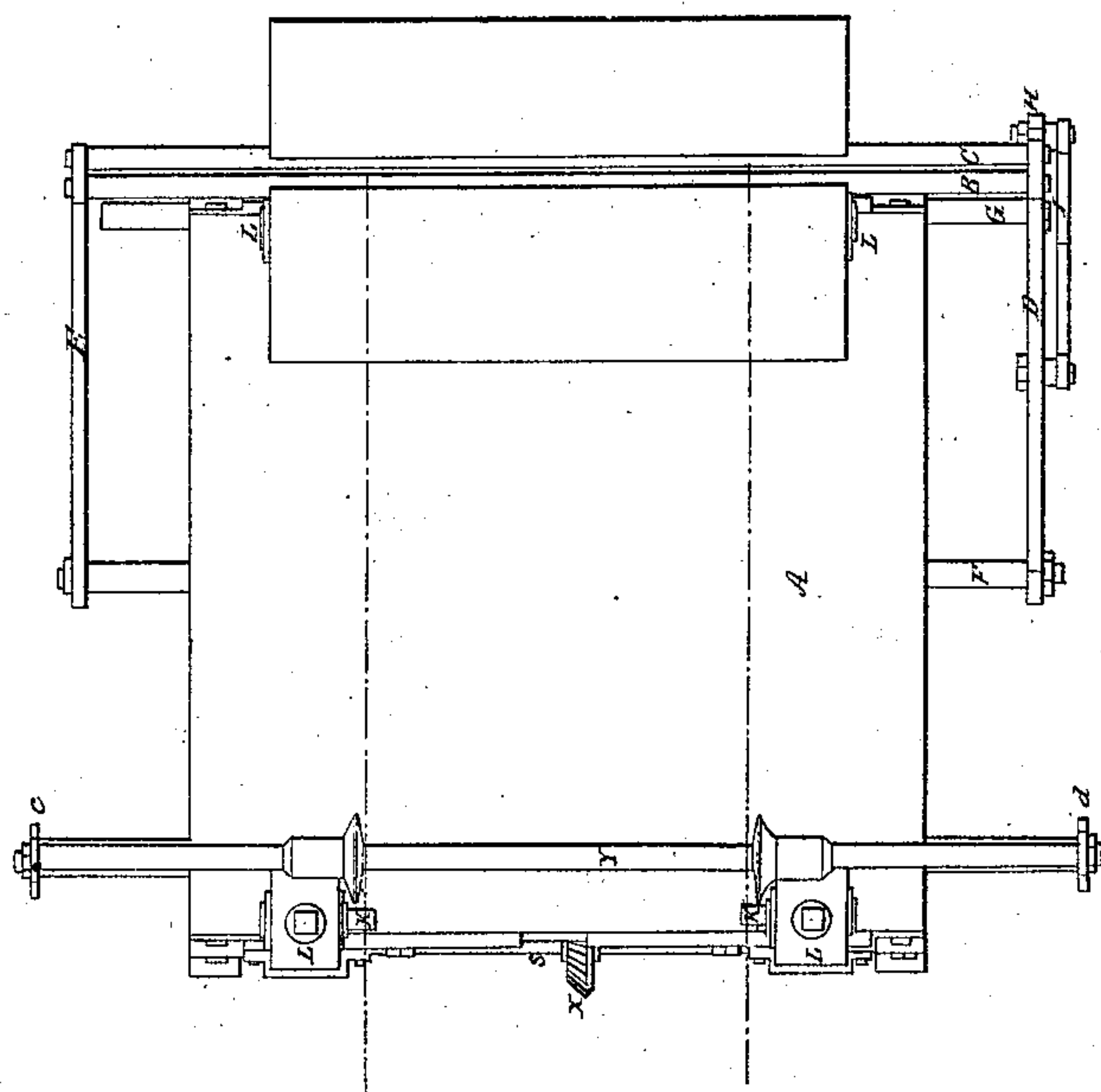


Fig. 1.







# UNITED STATES PATENT OFFICE.

E. G. WOODMAN, OF NORTH CHELMSFORD, MASSACHUSETTS.

## MACHINERY FOR MEASURING AND FOLDING CLOTH.

Specification of Letters Patent No. 4,993, dated March 6, 1847.

*To all whom it may concern:*

Be it known that I, ELBRIDGE G. WOODMAN, of North Chelmsford, in the county of Middlesex and State of Massachusetts, have  
5 invented certain new and useful Improvements in Machinery for Folding and Measuring Pieces of Cloth; and I do hereby declare that the same is fully described and represented in the following specification  
10 and accompanying drawings, letters, figures, and references thereof.

Of said drawings, Figure 1 exhibits a top view of my said machine. Fig. 2 is a side elevation. Fig. 3 an end elevation. Fig. 4  
15 another end elevation.

In said figures A denotes the table or frame upon which the piece of cloth is folded and to which the folding machinery is attached. The first portion of the mechanism to be described is what I term the vibrating lapping frame. It consists of two  
20 rods B, C, arranged parallel to each other, and at a little distance apart and secured to two arms D, E, extending from the opposite  
25 ends of a horizontal shaft F resting and moving in suitable bearings or boxes fixed to the frame A. The said rods B, C and arms D E have a reciprocating vibratory motion imparted to them in such manner as  
30 to carry the rods alternately forward and backward over the table. The said motion is obtained from a horizontal driving shaft G which has a crank H applied to one end of it, the said crank being jointed to a connecting rod I which is also jointed to one of  
35 the arms D or E as seen in the drawings. The continued revolutions of the driving shaft cause reciprocating vibratory movements of the lapping frame.

The next portion of the machinery is the latch bolts represented at K K K K. There are four of them arranged upon the table as seen in the drawings. They are each supported by one of four elevating frames L L,  
45 &c., and are so adapted to the said frames, as to be capable of being moved or slid from and toward the piece of cloth which is stretched between and underneath them. Fig. 5 exhibits a rear elevation of one of the frames L as it appears when removed  
50 from the guides M, M', by which it is held up against the table, and through which the frame freely rises and falls. Each of the latch bolts is jointed to the upper end of a  
55 lever N which turns upon a fulcrum at O, and is placed within a recess or space P

formed in the rear side of the frame L. A spring Q placed in said recess and between the side of it and the upper arm of the lever N, presses the said arm forward, after  
60 it has been operated on by the cam beneath it to be hereinafter described. The lower arm of each lever N extends a short distance below its frame L and so as to be in juxtaposition with the side of a double cam R  
65 placed under the said frame. Two of said cams R are fixed upon the driving shaft G and the other two upon another shaft S arranged upon the opposite end of the machine and parallel to the said driving shaft.  
70 Between the two shafts G and S is another horizontal shaft T which is disposed at right angles to them, and sustained by suitable bearings within which it revolves. A bevel gear V is fixed upon the driving shaft G and  
75 engages with another such gear V fixed upon the shaft T. The said shaft T has a similar beveled gear W fixed upon it near its opposite end which (gear W) plays into another and similar beveled gear X fixed  
80 upon the shaft S. Consequently the shaft S derives motion from the driving shaft G. Each double cam is an eccentric having a shape as represented in side view in Fig. 6, also as seen in edge or end view in Fig. 7.  
85 The relative positions of the cams to one another and upon their respective shafts and frames L, L, &c., are exhibited in the drawings.

The aforescribed machinery operates in  
90 the following manner. The piece of cloth to be folded has its end passed between the bars of the lapping apparatus as exhibited by red lines in the drawings. Thence it is carried toward two of the locking bolts at  
95 that end of the machine nearest to the cloth and passed under them, in such manner that they may project over its sides or edges. The mechanism is then put in motion so as to cause the vibrating lapping frame to move  
100 toward and beyond the opposite end of the machine and so as to carry and lay the cloth down upon the table. While this is being accomplished the double cams at the end of the machine toward which the lapping  
105 frame has been carried, have acted upon the frames L L, (at said end) and their levers N, in such manner as to elevate the frames, and throw back the latch bolts in order that the cloth may not be obstructed while being  
110 carried down toward the table, and also to raise the latch bolts, high above the table.



As soon as the cloth is fairly spread or laid down upon the table the extreme eccentric portions of the cams pass beyond the frames L in such manner as to permit the levers N to be thrown forward by their springs, and to force the latch bolts forward over the cloth and also to permit the two frames L to drop downward until the latch bolts rest upon the cloth. The lapping frame is next moved in an opposite direction so as to carry the cloth with it and lap it down over that first laid upon the table the latch bolts at the end thereof to which the lapping frame is moved being made to rise and fall and secure the cloth in its place. Thus the operation is repeated until the whole piece of cloth is laid in folds upon the table.

The next part of my improvements is what I term the slacking apparatus. It consists of a cross bar Y connected to a horizontal shaft Z by two arms *c, d*. The said horizontal shaft has an arm *e* extending from which it acts in connection with a cam *f* fixed upon the shaft F, the shape of this cam being represented in Fig. 8. The said cam has two sudden rises *e' f' g h* which should be so arranged and made, that they will act upon the lever in such manner, just before each fold of cloth is laid down as to cause it to throw the bar Y forward a little or toward the lapping frame, in order to so slacken the cloth as to enable the lapping frame to fold it down without undue strain.

I am aware that there are other kinds of folding apparatuses in use particularly those described in the patents of Joel Spaulding and Silas C. Durgin. My machinery is

much simpler and more effective in its operations than such. I do not make use of folding boards as they do—such as are made to slide over the surface of the cloth and press it down upon the cloth below it and with such force as to often draw it from underneath the latch bars used in such mechanism. I do not use latch bars which rest on the upper surface of the cloth—but simple bolts which pass over the edges of the cloth, and over which the cloth is folded and by which it is so held as not to be pulled away by the lapping frame. My lapping frame I conceive to be a very different matter from the folding boards used by Spaulding.

I therefore do not claim a combination of reciprocating folding boards and latch bars such as are described in the specification of the patent of Joel Spaulding, but

That which I do claim is—

My improvements therein, the same consisting first in the vibrating lapping frame apparatus as constructed and made to operate substantially as above described—second in the latch bolts or apparatus made to operate over the sides or edges of the cloth, as specified—third in the slacking apparatus as constructed and combined with the lapping frame and latching machinery and operating therewith substantially as set forth.

In testimony whereof I have hereto set my signature this twenty first day of November A. D. 1846.

ELBRIDGE G. WOODMAN.

Witnesses:

BENJN. ADAMS,  
CHARLES E. PAIGE.