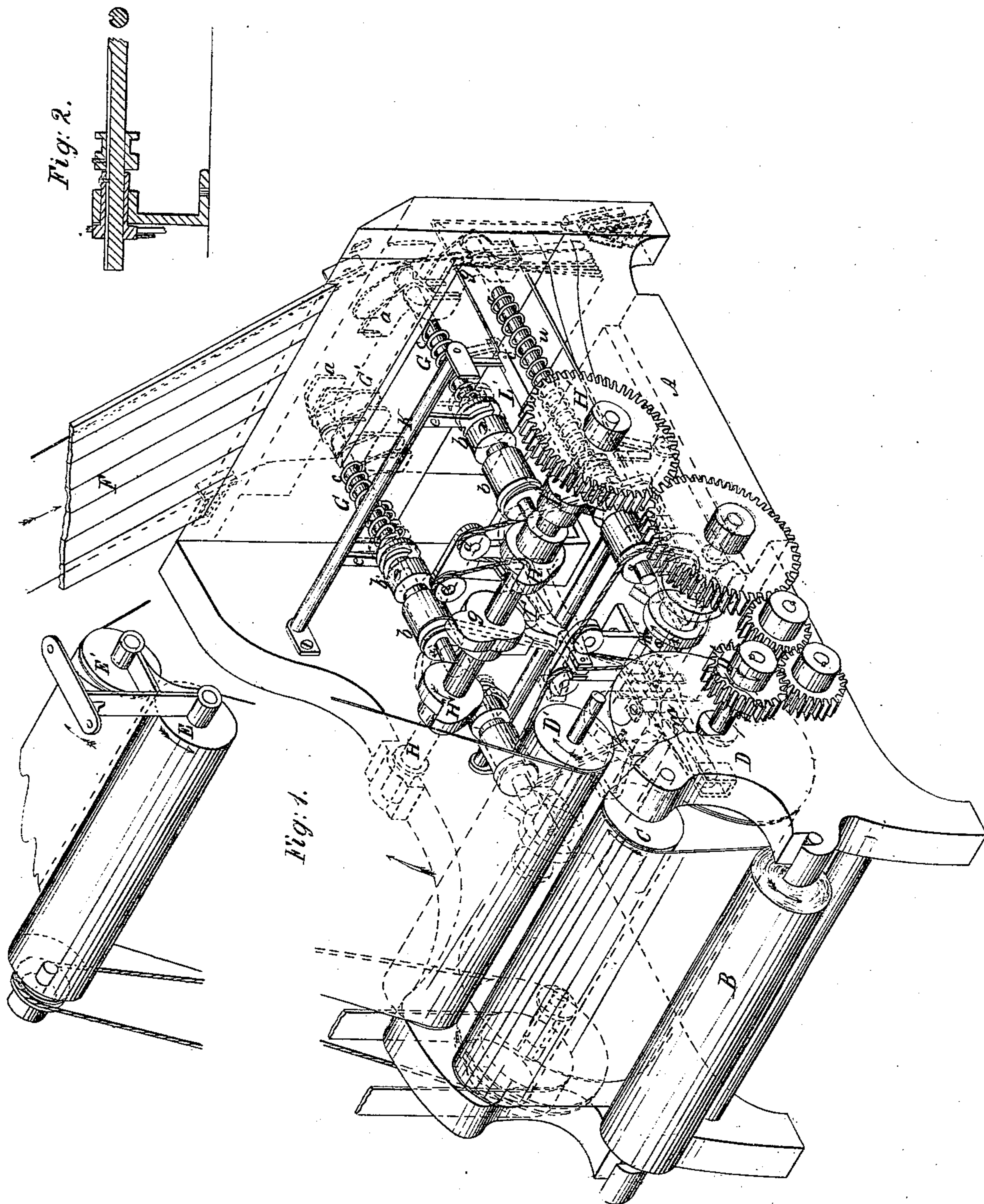


W. Wheeler, Jr.

Mach. for Folding Cloth.

N^o 64,466.

Patented May 7, 1867.



Witnesses:
Halter B. Vincent
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Inventor:
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TO HIMSELF, PARDON JENKS, AND E. O. POTTER, OF SAME PLACE.

Letters Patent No. 64,466, dated May 7, 1867.

IMPROVEMENT IN MACHINE FOR FOLDING CLOTH.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WALTER WHEELER, of North Providence, in the county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Machines for Folding Cloth; and I do hereby declare that the following specification, taken in connection with the drawings, making a part of the same, is a full, clear, and exact description thereof.

Figure 1 is a view in perspective with a portion of the side frame removed.

Figure 2 is a section through a portion of the operative mechanism to be referred to.

In the accompanying drawings, A represents the frame of the machine to which the several parts of the mechanism are attached. B is the roll of cloth to be folded. Preparatory to putting the machine into operation the end of the roll of cloth is to be passed over the roller C; thence down and around the main cylinder D; thence underneath the roller D'; thence between the two rollers E and E' suspended from the ceiling; thence down the inclined plane F; or it may be made to travel in any other convenient way which will result in the delivery of the cloth upon the inclined plane before mentioned. The cloth is unrolled by the action of the main cylinder D, to which a proper rotary motion is given, and the size of which cylinder determines the length of cloth to be given off at each revolution. The principle of the machine is to form the successive folds by the gravity of the cloth itself, each top fold being held fast while the next fold is being made, the bottom folds being all the time free. The several top folds are held, by means of two sets of clamps acting alternately, against a suitable cross-bar at the front of the machine, each set being operated by similar mechanism, so that a particular description of one set will be sufficient for both. G G are two rods placed parallel with each other, passing through a transverse beam or bar G' at the front of the machine, and furnished at their ends, outside of such beam, with the clamps *a a*, before referred to. These rods are fitted to bearings *b b*. They extend, at their rear ends, through such bearings, and are intended to be capable of movement in the direction of their lengths, as well as of rocking upon their axes. H is a shaft mounted in bearings set in the sides of the frame, and arranged at right angles with the two rods G G above mentioned. This transverse shaft carries several cams, presently to be described, whose offices are to give to the rods G G, and consequently to their clamps *a a*, the requisite movements. A constant rotary movement is given to the cam-shaft by means of the toothed wheel H', which derives its motion from the driving-gear D' on the shaft of the main drum D, through the intermediate train of gears shown. Upon this shaft H, and arranged over against the ends of the rods G G, are two cams H'' H'', identical in-form, and which act, as their bearing faces impinge against the ends of such rods, to thrust them forward, while spiral or other springs *c c* cause the said rods to fly back when the rods are relieved from the action of the cams. Midway between the cams H'' H'' is arranged, upon the shaft H, another cam I, which, at a stated period in its revolution, depresses a treadle, I'. This treadle, when depressed, causes the rods G G to be partially rotated by means of cords or chains, one end of which is connected with the treadle, and passing over the pulley-wheels *d d* respectively, are wound around and made fast to the respective rods G G which they are to operate; and spiral or other springs are also to be connected with such rods in any convenient way to rotate such rods in the reverse direction so soon as the treadle I' is relieved from the action of the cam I. In order that the said clamps may not press against the cloth while the rods G G are being turned upon their axes, the said rods G G are so constructed that the pressure of the springs *c c* can be taken off when it is desired to rotate such rods, and this is done by means of sliding collars *f* located at the rear end of the springs, and thrust forward at the proper moment by the forked levers *e e* attached to the rocker-shaft K, such rocker-shaft being operated by the cam L acting against the end of the rod L'. As already stated, there is a second set of rods M, with clamps *g* at their ends, which are operated in all respects similarly with the set above described; the cam-shaft which gives the motions to them being shown at M', and the treadle at *m*. The time, however, at which they act is in alternation with the time of action of the first set, and their distance apart is greater than the distance of the first set of rods from each other. In other words, the rods of the first set are separated by a distance less than the width of the cloth, while the second set are far enough apart to allow the cloth to pass between them; but when the clamps which are affixed to the ends of such rods are all in the position in which

they are to be to hold the cloth, as hereinafter explained, the tips of the first set and the lower sides of the second set will be in the same straight line.

It will now be seen that the mode of operation of the machine is as follows: The end of the piece of cloth to be folded is brought down the inclined plane F by the operator, and folded at the point where the lower folds are to be made, and the end of the piece then carried up to the first set of clamps *a a*, and placed so as to be held by the pressure of the same against the cross-bar G'. The line of cloth which extends from the fold above mentioned to the delivery rollers at the ceiling will of course overlie both sets of clamps. Before any more cloth is delivered the second or lower set of clamps will be rotated in opposite directions to the extent of about one-fourth of a circle, and so that their tip ends will point directly downwards. By this operation they will be entirely clear of the cloth and be free to be moved forward without interfering with it; the rods to which such clamps are attached being separated by a greater distance than the width of the cloth. By the action of the cams before mentioned the rods to which such clamps are attached are now thrust forward to the extent which it is intended the thickness of the aggregate number of folds shall be, when they are rotated in the reverse direction, and stand, as at first, with the tip ends pointing toward each other. The rods to which they are attached are now released from the action of the cams which thrust them forward, and they fly against the cloth and clamp it fast. A length of cloth is now given off from the delivery rollers, and falls naturally, so as to make a fold directly over the one first made by the operator at the bottom, a top fold being made over the clamps last mentioned. The first set of clamps, whose tip ends stand pointing downward, are now rotated a quarter of a circle, and so that their tips will point toward each other. In this position they are clear of the top fold, and can be thrust forward to the requisite distance to comprehend the thickness of all the folds to be made. They are then rotated in the reverse direction, and so soon as their tips point downward they fly backward and clamp the cloth over the last top fold. While this is being done, a fresh length of cloth has been delivered, and the action of the second set of clamps is repeated. In this way the cloth is being continuously given off from the delivery rollers and laid in successive folds, and held alternately, first by the one set of clamps and then by the other; the tips of the first set and the lower edges of the second set, when in the position for clamping the cloth, being in the same straight line. Inasmuch as the cloth is delivered upon an incline depending upon the degrees of inclination of the plane F, and as the space below the transverse bar G', against the surface of which the top folds are laid, is open, the cloth, after it is so folded, will hang perpendicularly, and the angle formed by these two planes will produce a sharp and well-defined fold, which is of great advantage in folding cambrics or goods which have been finished stiff.

The advantages which this apparatus possesses over other machines for a similar purpose, which employ a vibrating frame for delivering the cloth, are obvious. In the class of machines referred to the cloth must be nipped or hooked at each fold, so that it will be retained while the frame is delivering the next length; and if from any cause the cloth is not given off freely, a severe and injurious strain upon the fabric will ensue. Besides, too, as such frame describes the arc of a circle, the length of which is the same as that of the length of the folds, and which is to be of a definite measure, as, for instance, one yard, and the several lengths are to be registered by a counter, it is very difficult to adjust the frame so accurately that it will not deliver either more or less cloth in the aggregate than by the register is recorded.

In a machine operating upon the principle described, it is certain that no strain will happen which can injure the cloth; and as the extent of surface motion of the main cylinder determines the quantity of cloth given off for each fold, it is easy to make this extent of motion correspond accurately with any desired length of fold. A register can be combined with the machine for recording the number of yards of cloth folded, as conveniently as with any other machine for a similar purpose in use.

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

1. An apparatus for folding cloth which employs two sets of holding-clamps, or the equivalent thereof, acting in alternation to hold the cloth suspended by the upper folds, already made, while a new fold is being laid, and operating for the purpose substantially as described.

2. The combination, in a machine for folding cloth, of the following: first, delivering-rolls or equivalent means for supplying cloth to be folded; second, an inclined conductor F and transverse folding-bar G', and two sets of clamps working in alternation, all substantially as herein described.

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Witnesses:

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