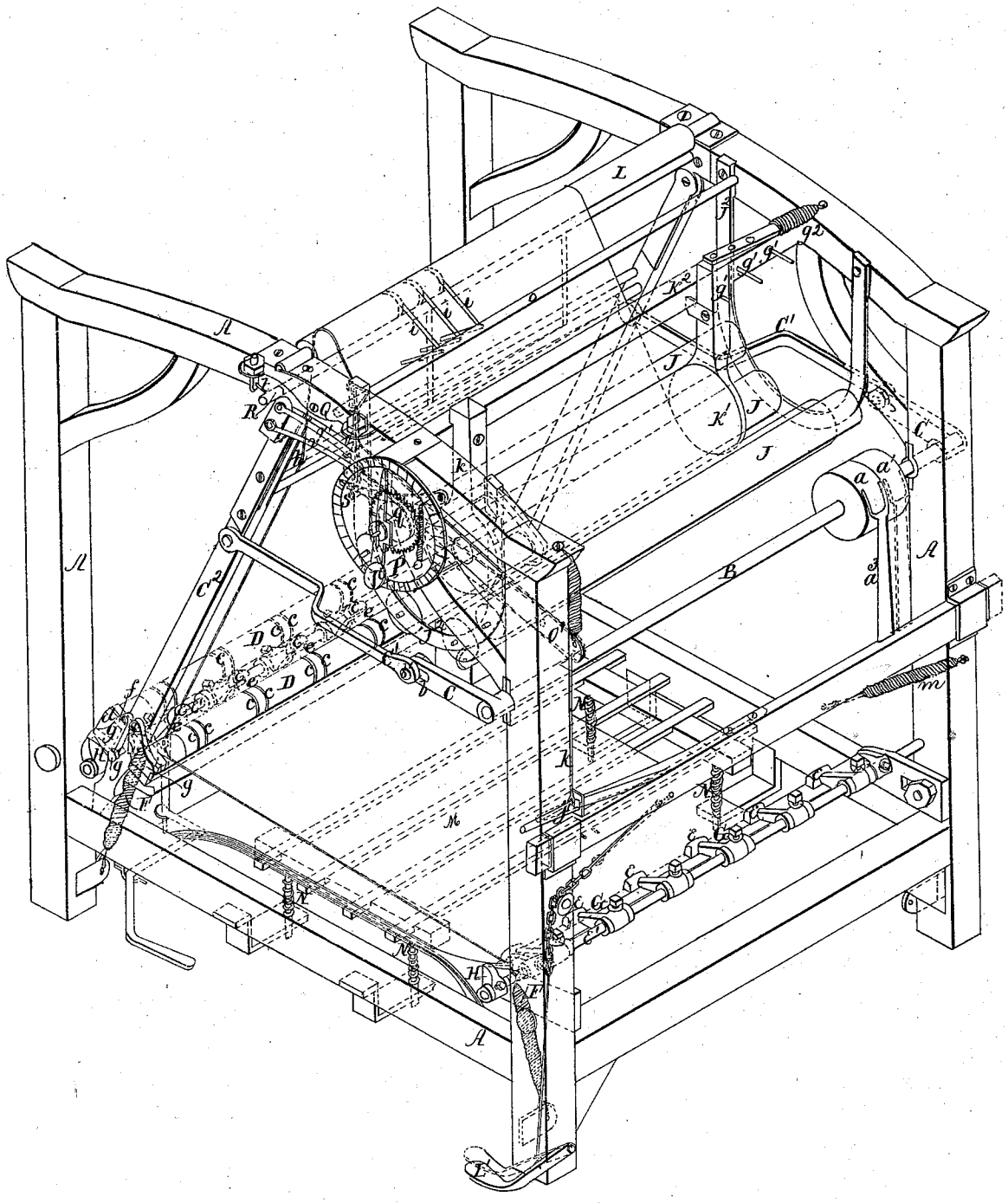
W. F. Heywood.

Cloth Folding Mach.

No. 56,048. Patented Jul. 3, 1866.



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IMPROVEMENT IN MACHINES FOR FOLDING CLOTH.

Specification forming part of Letters Patent No. **56,048**, dated July 3, 1866.

To all whom it may concern:

Be it known that I, WILLIAM F. HEYWOOD, of Woonsocket Falls, Cumberland, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Machines for Folding Cloth; and I do hereby declare that the following specification, taken in connection with the drawing making a part of the same, is a full, clear, and exact description thereof.

The drawing exhibits the machine in perspective.

The machine herein described is intended for use in cotton and woolen factories, and wherever large quantities of cloth are required to be folded and measured.

In the accompanying drawing, A represents the frame of the machine, conveniently arranged for furnishing bearings for the several shafts and rollers and supports for the different parts. B is the driving-shaft, which is provided with a fast and loose pulley, *a a'*, the belt belonging to which is controlled by the shipper a^2, and is operated automatically to stop the machine when the piece of cloth is run out in a way hereinafter to be explained.

Upon each end of the driving-shaft is placed a crank, C, which is connected by a link, C', to the pendulum-frame C^2. This frame is hinged to the top cross-tie of the machine-frame A, and swings to and fro as the driving-shaft revolves. The length of the arc which its lower extremity shall describe is determined by the length of the operating-cranks C, which are provided with slots *b* as a convenient means for regulating their extent of throw, the wrist-pins *b'*, which connect the links C' with such cranks, being made with a nut and shoulder in a way well understood.

The pendulum-frame, being the cloth-carrier, as will presently be seen, may be boarded up between the sides sufficiently high to prevent the cloth from bellying out with wind as it is carried rapidly to and fro in the operation of folding.

The lower extremity of the frame is furnished with two transverse rollers, D, around the surfaces of which scores or rings *c* are cut to accommodate the spurs of the nipping-jaws, next to be described. These rollers have their axle-bearings in cross-plates *d* upon the foot of the pendulum, and should be made to turn freely therein.

E E G are the nipping-jaws, which, in this instance, consist of a series of arms, E, adjusted upon a transverse rocking-shaft, E', upon each side of the machine. Each of these arms is provided, at or near its extremity, with small spur-points *e*, for holding the fold of cloth until the next fold is made, and each shaft E' is provided with a spring, F, the tendency of which is to hold the ends of the spur-arms E down upon the stationary cross-rail G.

Upon the extremity of each of the rocking shafts E' is placed an arm or projecting piece, H, which can be readily adjusted to any position on the shaft by means of a clamp-screw, and the office of which is, in combination with the bell-crank tappets I upon the pendulum-frame, to open the jaws upon each side, respectively, as the pendulum vibrates. These bell-crank tappets are pivoted at *f* to the side of the frame, and bear against a stud-pin, *g*. Their lower faces are somewhat curved to give unobstructed passage to the ends of the arms H when the nipping-jaws are closing. As the pendulum-frame swings to the one side or the other the toe of the tappet upon that side will encounter in its path the arm H upon the rocking shaft E', and will cause such shaft to be turned in its bearings, and thereby open the jaws E E. The further movement of the pendulum-frame in the same direction will necessarily cause the arc which is described by the toe of the tappet to diverge from the arc described by the end of the arm H, and consequently such arm will be released from the tappet, whereupon the spring F will cause the jaws E to fly against the surface of the nearest friction cloth-roller D, as shown in the drawing, and hook their spur-points into the cloth. These spur-points, however, do not enter the surfaces of such rollers by reason of the scores or grooves *c*, already referred to, which are cut into the rollers to a depth equal to the length of such spur-points, so that upon the return movement of the pendulum-frame the fold of cloth will be left by such roller fast pinned between the arms E and the stationary rail G, against the top surface of which rail the said arms fly as soon as the roller D moves away upon the return beat.

J J J are friction-rollers having their bearings in the yokes J^2, and arranged in the arc of a circle, so as to form a receptacle for the roll of cloth to be folded and measured. K K′ are the end bearings for the roll while it rests upon the friction-rollers J. Of the two, K is stationary, and K′ is adjustable at different positions upon the cross-rail K^2, and is also pivoted to such rail at g', a spring, g^2, causing a constant pressure to be exerted against the end of the roll.

It will be noticed that the stationary end bearing, K, is scooped out in the form of a dish and has a hole through its center, the object of which is to accommodate those rolls of cloth which are more or less "corkscrew" wound, and to insure, by the aid of the spring-bearing K′, uniformity in the selvage edges of the folds as they are laid one by one.

In order to operate the machine it is necessary to place the roll of cloth upon the friction-rollers J J J so that it will be unrolled from the back side, as shown in the drawing. The end of the piece is brought over the top roller, L, passed behind the keeper *h* upon the pendulum-frame, and brought down between the two transverse rollers D D, and hooked upon the spur-points of the jaws E E upon one side of the machine. The belt is now run upon the fast pulley by depressing with the foot the treadle L′, and, by the action of the pendulum swinging to and fro, the cloth is accurately laid in folds of the required size upon the table M, the spring-nippers releasing at each beat of the pendulum the last fold as they open to take a fresh one.

The table M is, as will be seen, supported at each corner by coiled springs N, the tension of which keeps the top surface of the folded cloth in the proper position for smooth-folding the cloth with reference to the pendulum-frame, while it accommodates the increasing thickness of the piece which is being folded.

It is advisable that the machine should be able to stop itself as soon as the roll of cloth to be folded runs out. This is effected by means of a connection between the belt-shipper and the cloth, as follows: The fingers *i i i* upon the transverse shaft O, whose bearings at each end are in the sides of the frame, rest upon the cloth near where it passes over the roller L, as shown, scores being cut in such roller to allow said fingers to drop and rock the shaft O in its bearings, as shown in red. The rocking of such shaft will cause the end of the lever O′, with which it is connected, to be raised, which, being connected with the belt-shipper latch *j* by the link *k*, releases it and allows the spring *m* attached to the shipper-bar to slide it in its keepers and run the belt onto the loose pulley.

It is necessary, also, that a register for measuring the cloth as it is folded should be combined with the machine. Accordingly I place a dial-plate, P, upon the side of the frame, which has an index-finger, *p*, the end of which opposite to the pointer end is the heavier of the two. Upon its axle is a ratchet-wheel, *q*, (shown in dotted lines,) which is operated by two pawls, *r r′*, attached, as shown, to the pendulum-frame, one of which is acting to thrust forward as the other is drawing back, so that for every beat of the pendulum-frame the pointer will register one space upon the dial. It is obvious that this dial can be graduated with reference to the length of the arc which the pendulum describes, so as to register exactly the number of yards of cloth run off. These pawls are capable of being lifted by a stirrup, *s*, which is connected with the lever Q, pivoted to the side of the frame, which lever operates to lift the pawls whenever a fresh roll of cloth is being adjusted in the machine, the same being influenced by the shaft R, connected with such lever by the arm *t*. As soon as the pawls are raised the index-finger will be free to turn upon its axis and point at zero upon the dial.

I do not mean to limit myself to the precise construction and arrangement of the several parts as described, but mean to include all mere formal variations accomplishing the same mode of operation by equivalent means.

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

1. The spring nipping-jaws E E, in combination with the pendulum-frame C^2, and operating together in the manner substantially as described.

2. An elastic table, M, in combination with the pendulum-frame C^2, substantially as described.

3. Combining with the piece of cloth to be folded the belt-shipping apparatus herein described, operating as and for the purposes set forth.

WILLIAM F. HEYWOOD.

Witnesses:

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