

T. B. Butler.
Felting Machine.

Nº 17020

Patented Apr. 14, 1857.

Fig. 1.

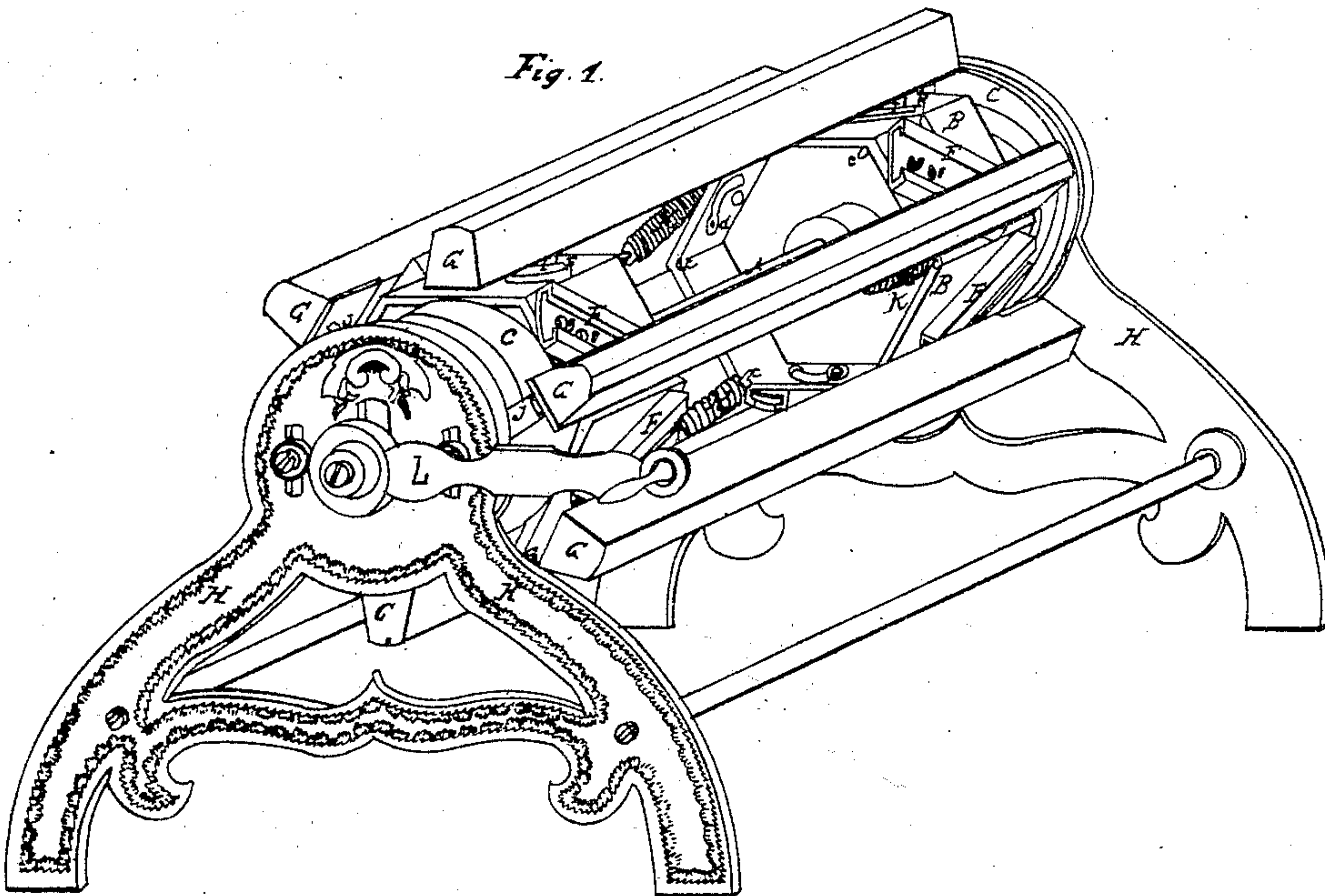
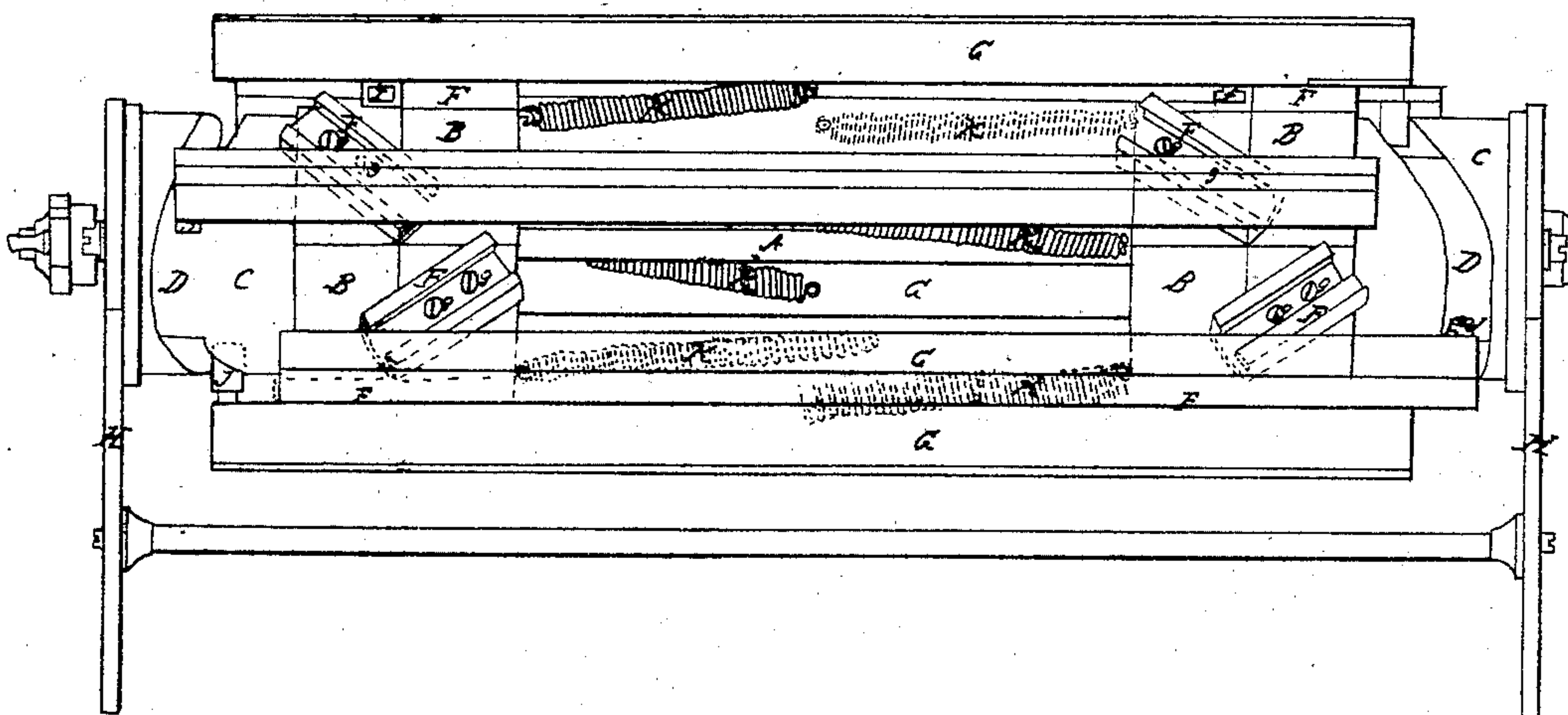


Fig. 2.



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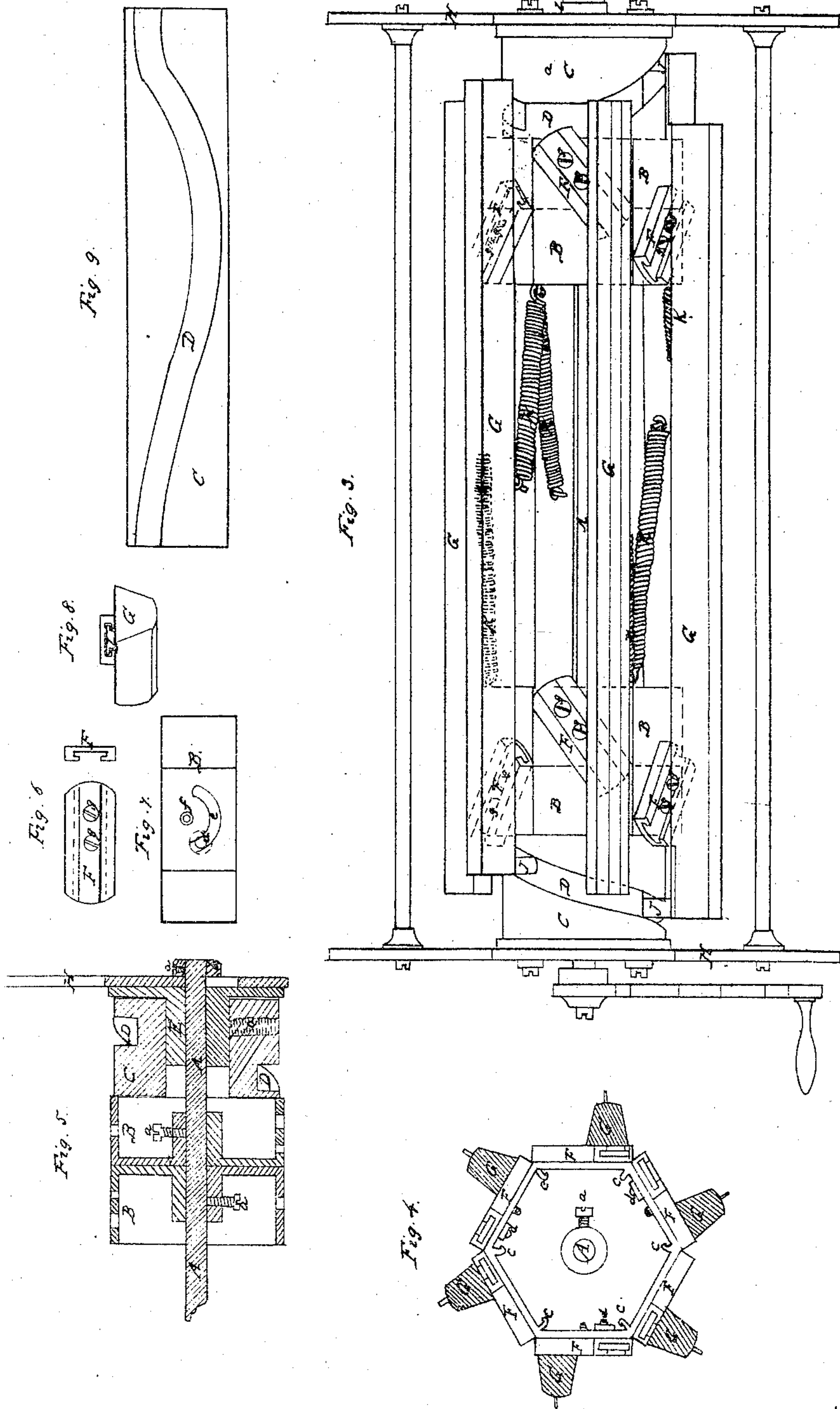
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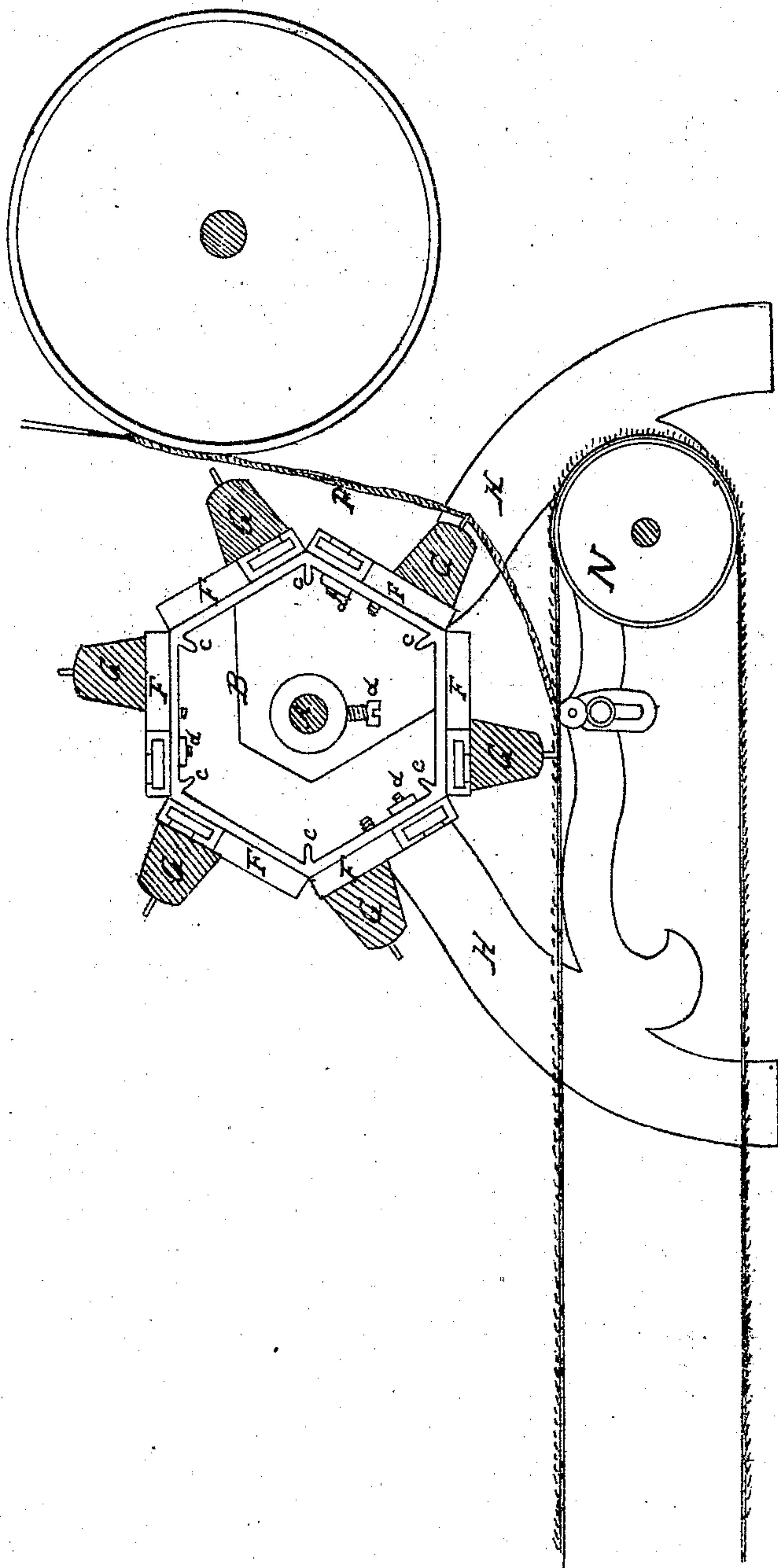
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Fig. 10.



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UNITED STATES PATENT OFFICE.

THOMAS B. BUTLER, OF NORWALK, CONNECTICUT.

MACHINERY FOR CROSSING THE FIBERS OF WOOL IN MAKING FELT CLOTH.

Specification of Letters Patent No. 17,020, dated April 14, 1857.

To all whom it may concern:

Be it known that I, THOMAS B. BUTLER, of Norwalk, county of Fairfield, and State of Connecticut, have invented a new and useful Improved Method of Crossing the Fibers of Wool Diagonally in the Manufacture of Felt Cloth; and I do hereby declare that the same as described and represented in the following specification and drawings to be full and clear to enable others skilled in the art to make and use the same.

I will proceed to describe the construction and operation referring to the drawings in which the same letters indicate like parts in each of the figures.

In the accompanying drawings Figure 1, shows an isometrical view of my improvement; Fig. 2, a side elevation; Fig. 3, a perpendicular view; Fig. 4, a sectional end view; Fig. 5, a horizontal sectional view; Fig. 6, the guide plate; Fig. 7, regular polygon heads; Fig. 8, an end view of the traversing rod, guide plate, and T shaped slide; Fig. 9, a pattern sheet of the circumference of the cam, showing the direction of the groove travel; Fig. 10 shows the manner in which the warp is taken by the pins as it passes from the doffer or card and laid upon the apron.

In Fig. 5, A, is the driving shaft, operated upon by a crank or pulley, outside of the frame-work H, H, and a collar C, upon the opposite end secured by set screws *a*; B, B, are regular polygon heads, secured by set screws *a*, to the shaft A; C, is a cam, the grooves or travel of which propose to vary from time to time, as circumstances require; E, is a flange pivot upon which the cam C is placed, and will allow of an entire revolution and may be secured at any desired point by means of a set screw, *a*, said flange pivot, is made fast to the frame H, by set screws, which are allowed to work in slots in the frame so that the shaft can be elevated or depressed at will. Said flange pivots also form bearings for the shaft to revolve in.

Fig. 4: G, is the traversing rod, having pins placed in the center of the outer edge thereof, and to the underside of which is secured the T shaped slide which holds and guides the motion of the rod in the direction indicated by the guide plate and cams. Said guide plates are secured by a center screw *f*, in Fig. 7, and which serves as a fulcrum

on which it may turn, and can be placed and secured at any desired angle, by means of another screw, made to work in a curved slot *e*, Fig. 7. Said guide plates are placed, first upon one head, then the other, in opposite angles on each succeeding sides, as more clearly shown in Fig. 1.

In Fig. 3, J, are friction rollers or shoes, that travel in the grooved cams, D. The pivots upon which said rollers or shoes are placed, are made fast in a plate and secured to the traversing rod by screws.

The springs K, in Figs. 1, 2, 3, serve to give the traversing rod a free and easy motion, as the friction wheel travels down the cam in opposite angles from the guide plate.

In Fig. 10, is shown the manner of placing the above described machine over the apron, and up to the front of the doffer cylinder, so that the pins in the edges of the revolving and traversing rods will take hold of the weft of wool as it is combed from the doffer cylinder.

The operation and advantages of my improvement are as follows: When the machine is placed across the apron on which the bat is formed, it may be placed so near to the doffer M Fig. 10, as to operate on the wool as it passes from the doffer to the apron and bat, O, or, as it may be sometimes desirable to do, the wool may be brought out and adjusted to the rods, by an intermediate revolving roll, or a short apron. As the apron O, Fig. 10, moves on from the carding machine the weft P, is drawn off at a greater or less angle, according to their relative position. The apron may be adjusted to the under surface of the machine by a revolving roller P, supported by a slotted stud, in which the roller has its bearings and is secured to the frame by bolts; as the machine revolves and the wool is drawn off at an angle by the motion of the apron, one of the rods next to the doffer or roll will come in contact with the wool, and the teeth penetrating it, or the wool being attached to a narrow strip of plush glued upon the rod. The rod is then thrown laterally by the inclination of the cam, and forward toward the next preceding rod, by the inclination of the guide plates, *e*, and becomes fixed, by the position of the cam as it passes around in contact with the bat, and the wool felts upon the bat and adheres to it. At the time that the rod which has taken the wool has finished its lateral and forward motion, the

succeeding rod will come in contact with the wool, and commence an opposite lateral and forward throw induced by the opposite cam, and lays the wool on the bat, as it revolves
5 in the same manner; and the alternate and opposite motion of the rods, conveys the fibers of the wool in opposite directions, and lays them upon any desired angle upon the bat. Each rod is returned to its original
10 position as it revolves upward from the bat, by an opposite inclination of the cam. The lateral throw may be increased by increasing the inclination of the cam, and the forward motion of the rod may be increased, by the
15 greater inclination of the guide plate, and the fibers laid upon the bat at an angle more or less nearly approaching a right angle as may be desired. The machine may be constructed with such number and width of
20 rods and such inclination of the cams and guide plates, as to lay the wool very nearly crosswise the apron. It will readily be seen that the several parts may be constructed differently such as the cams, guide plates,
25 &c., and yet operate substantially in the same manner and accomplish the same object.

I do not claim the crossing the wool diagonally, but to have devised a machine which will do it in a better and more perfect
30 manner, and do more work in the same time. Its advantages over other methods are these: 1st, it will lay the fibers diagonally

upon the bat, at any desired angle, and at a greater angle than any other method. 2nd, it makes perfect angles. All methods heretofore devised for laying the fibers diagonally, by trailing the wool across the bat by means of vibrating motions while the bat is moving, do not trail the fibers perpendicularly, but at an angle with the bat, and
40 in reversing the motion of the vibrating roll or apron, the angle that the wool makes with the bat in trailing, must also be reversed, which occupies time, and as the bat is moving on, as perfect angles cannot be found, as by this machine. 3rd, in order to lay the wool by trailing it across the bat by a vibrating motion, the motion of the bat must be comparatively slower than that of the carding machines. But this machine can be
50 worked without lessening the motion of the bat, and at full speed, and much more work can be done with it in a day.

What I claim and desire to secure by Letters Patent is:

The arrangement and use of the regular polygon heads, B, B, cams C, C, guide plates F, and traversing rods, G, connected with, and operated by the shaft A, substantially
60 in the manner and for the purpose specified.

THOS. B. BUTLER. [L. S.]

Witnesses:

JULIUS L. STRONG,
JEREMY W. BLISS.