2 Sheets--Sheet 1.

C. S. CUSHMAN.

Sewing-Machine.

No. 164,529. Patented June 15, 1875.

FIG. 1

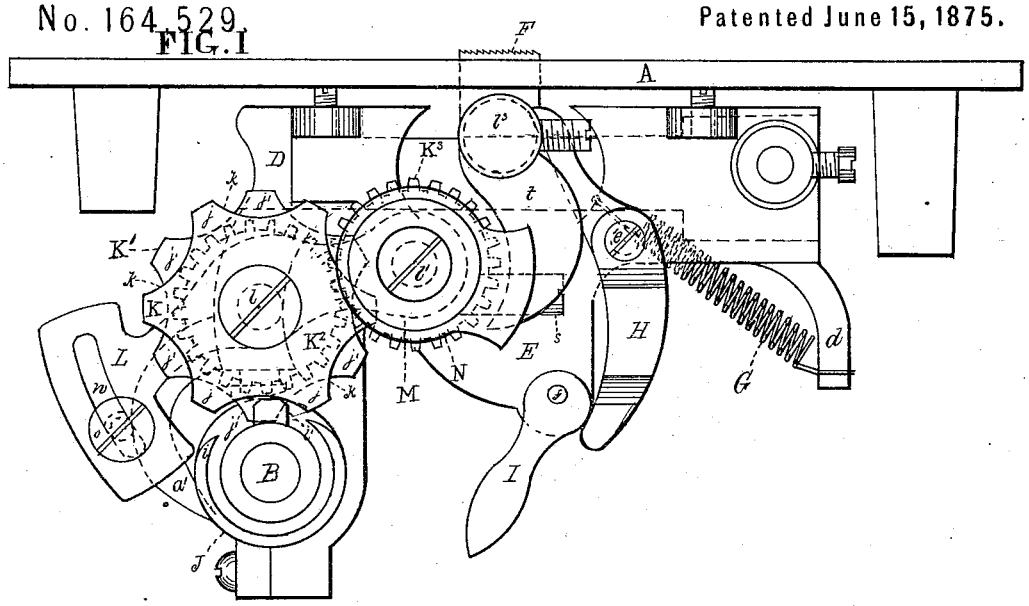
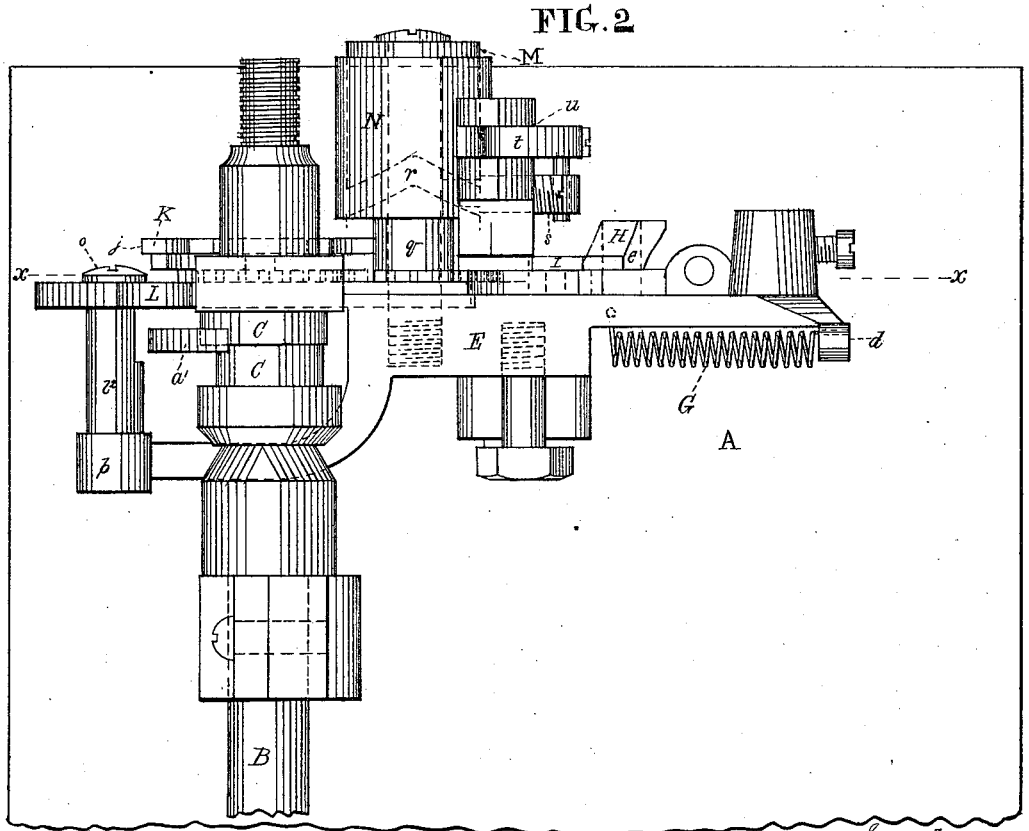


FIG. 2



Witnesses

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2 Sheets--Sheet 2.

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FIG. 3

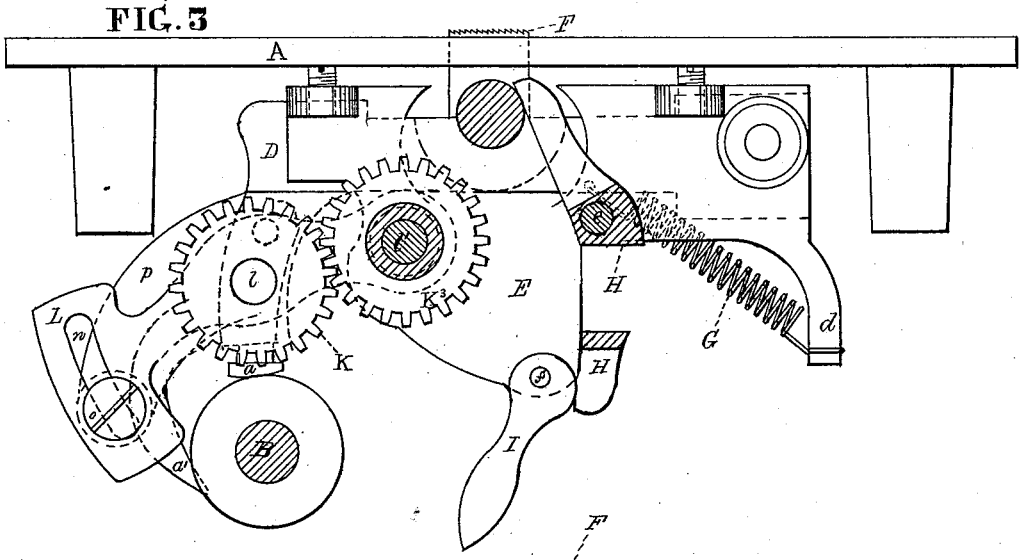


FIG. 4

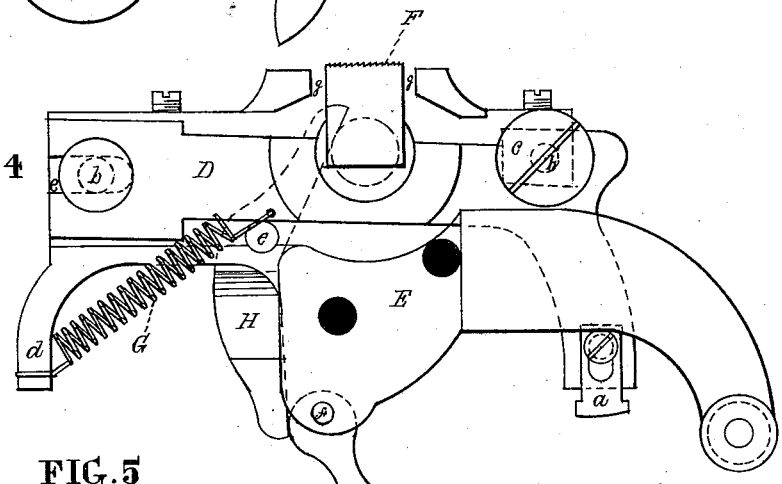


FIG. 5

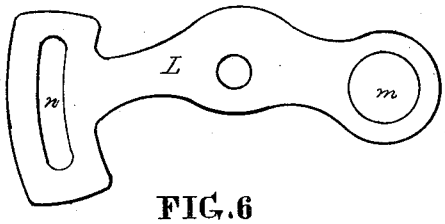


FIG. 6

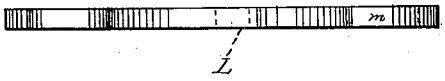
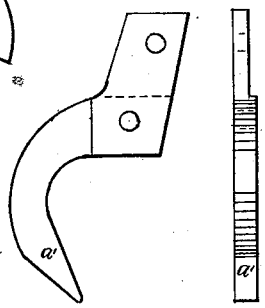


FIG. 7 FIG. 8



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UNITED STATES PATENT OFFICE.

CYRUS S. CUSHMAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO NESBITT D. STOOPS, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **164,529**, dated June 15, 1875; application filed April 14, 1875.

To all whom it may concern:

Be it known that I, CYRUS S. CUSHMAN, of the city and county of Philadelphia, in the State of Pennsylvania, have invented an Improvement in Sewing-Machines, of which the following is a specification:

My invention consists in the first place of a geared connection of a circumferential cam with the driving-shaft, as hereinafter described, for giving an intermittent rotary motion to the pattern-cam of a sewing-machine, substantially as set forth.

In the accompanying drawings, Figure 1 is an end elevation of the bed-plate A and feeding apparatus connected with its lower side. Fig. 2 is a bottom view of the feeding apparatus in connection with the bed-plate A. Fig. 3, Sheet No. 2, is a vertical section taken at the line *x x* of Fig. 2. Fig. 4 is a rear view of the detachable frame E, and parts attached removed from the machine. Figs. 5 and 6 are a side and edge views, respectively, of the adjustable plate L. Figs. 7 and 8 are a side and edge views, respectively, of the finger *a'* of the feed-bar.

Like letters of reference in all the figures indicate the same parts.

A is the bed-plate of my improved machine. B is the driving-shaft, which has on its front end the double feed-cam C, for giving the up and down and forward movements to the feed-bar D, the cams bearing against the shoe *a* and finger *a'*. The bar is hung at one end, by means of the pin *b*, to the detachable frame E, the pin passing through the slot *c*, whereby it is capable of its forward and backward movements. The pin *b'* in the other end of the bar is free to move up and down in the opening C of the said frame, for giving the up-and-down movement to the feed-surface F.

The backward movement of the feed-bar is given by means of the pull-spring G, connected at one end to the projection *d* of the frame E, and at its other end to the feed-bar. The backward throw of the feed-bar D, whereby the length of the stitches is regulated, is adjusted by means of the lever H on the fulcrum-pin *e*, in combination with the cam-lever I hung on the pin *f*. The feed-surface F is separate from the feed-bar, and has a sliding lateral movement in the slot *g* of the bar, for producing ornamental stitching. For giving this movement there is a wheel, J, a portion of the periphery of which is cut away to form the tooth *i* that engages with the teeth *j* of the plate-wheel K. It has also a tooth, *i'*, in a different plane from the tooth *i*, which engages with the teeth *j'* of the plate-wheel K^1, the teeth of each wheel K and K^1 being formed by curves *k*, of somewhat larger radius than the radius of the wheel J, to give smoothness to the working of the teeth. The teeth *j'* of the wheel K^1 are arranged circumferentially between the teeth *j* of the wheel K, whereby the teeth of the two wheels are acted upon alternately, to insure an easy movement of the wheels, and free from jar.

The wheels K and K^1 are situated upon the stud *l*, which projects from the plate L, which has a hole, *m*, at one end, as seen in Fig. 5, that fits on the stud l^1 that projects from the frame E, and is adjustable, so as to regulate the connection of the teeth of the wheels K and K^1 with the teeth *i* and *i'*, by means of the slot *n* that is concentric with said hole *m*, and the screw-pin *o*, which confines it to the outer end of the stud l^2 that projects from the arm *p* of the frame E. On the stud *l* there is also a spur-wheel, K^2, which gears into the teeth of the wheel K^3, which is fast to the hub *q* on the inner end of the cylinder M.

By the combination and arrangement of the series of gear-wheels above described, an intermittent rotary movement is given to the said cylinder M, which has a circumferential cam-groove, *r*, that receives the inner end of the pin *s* of the sleeve N, whereby a reciprocating movement is given to said sleeve, for the purpose of giving a reciprocating lateral movement to the feed-surface, there being an arm, *t*, on the outer end of the stud l^3 of said surface, which connects with the slot *u* of the sleeve.

I claim as my invention—

1. The combination of the wheel J, having teeth *i* and *i'*, teeth-wheels K and K^1, spur-wheels K^2 and K^3, and the cylinder M, having

a circumferential cam-groove, *r*, with the sleeve N, having pins for giving a reciprocal lateral movement to the feed-surface F, for producing ornamental stitching, substantially as set forth.

2. The wheel J, having teeth *i* and *i'*, in combination with teeth-wheels K and K^1, constructed as described, for giving an intermittent rotary motion to the pattern-cam of a sewing-machine, substantially as described.

CYRUS S. CUSHMAN.

Witnesses:

THOMAS J. BEWLEY,

STEPHEN USTICK.