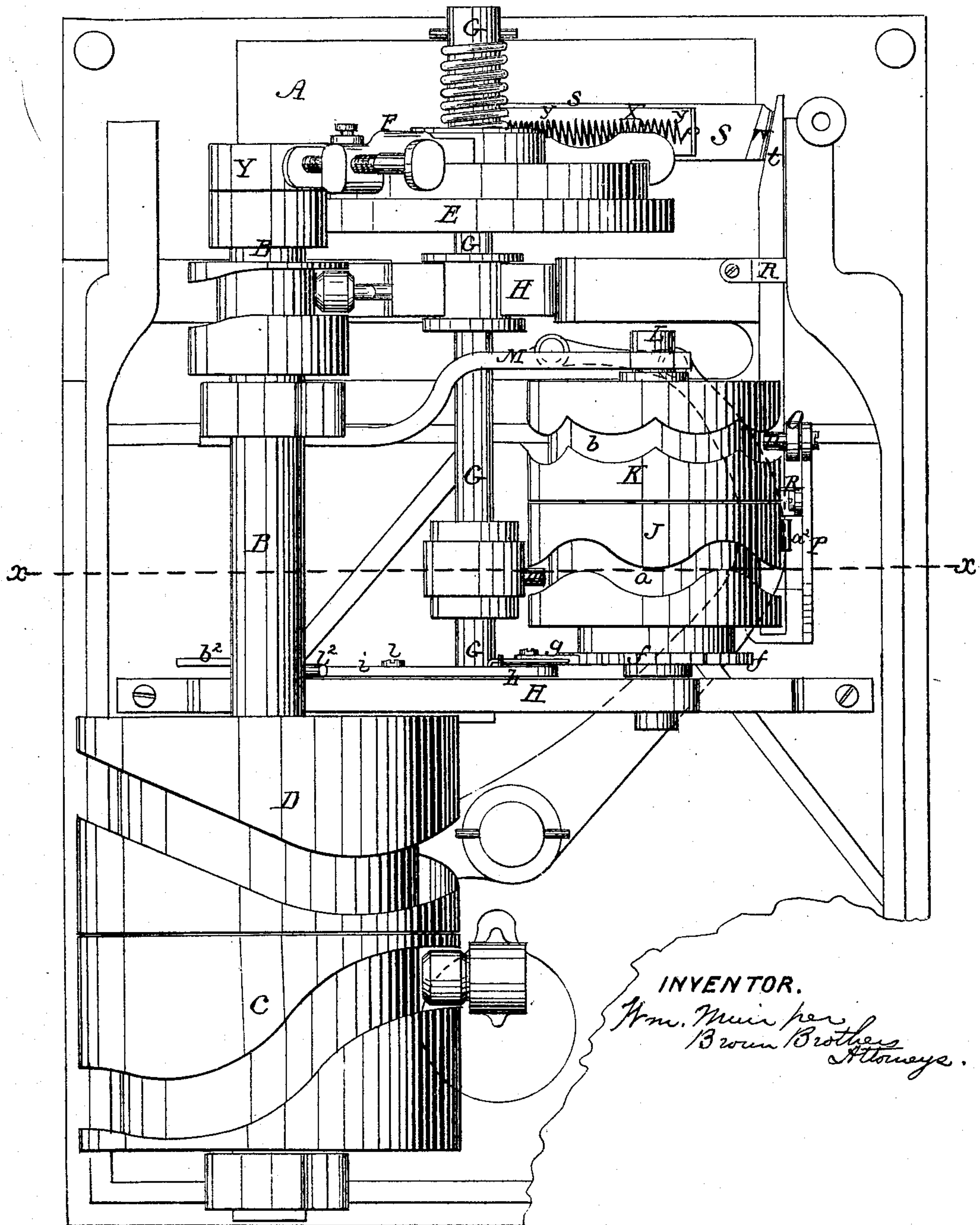


W. MUIR.
Sewing-Machines.

No. 147,152.

Patented Feb. 3, 1874.

FIG. 1.



INVENTOR.

Wm. Muir per
Brown Brothers
Attorneys.

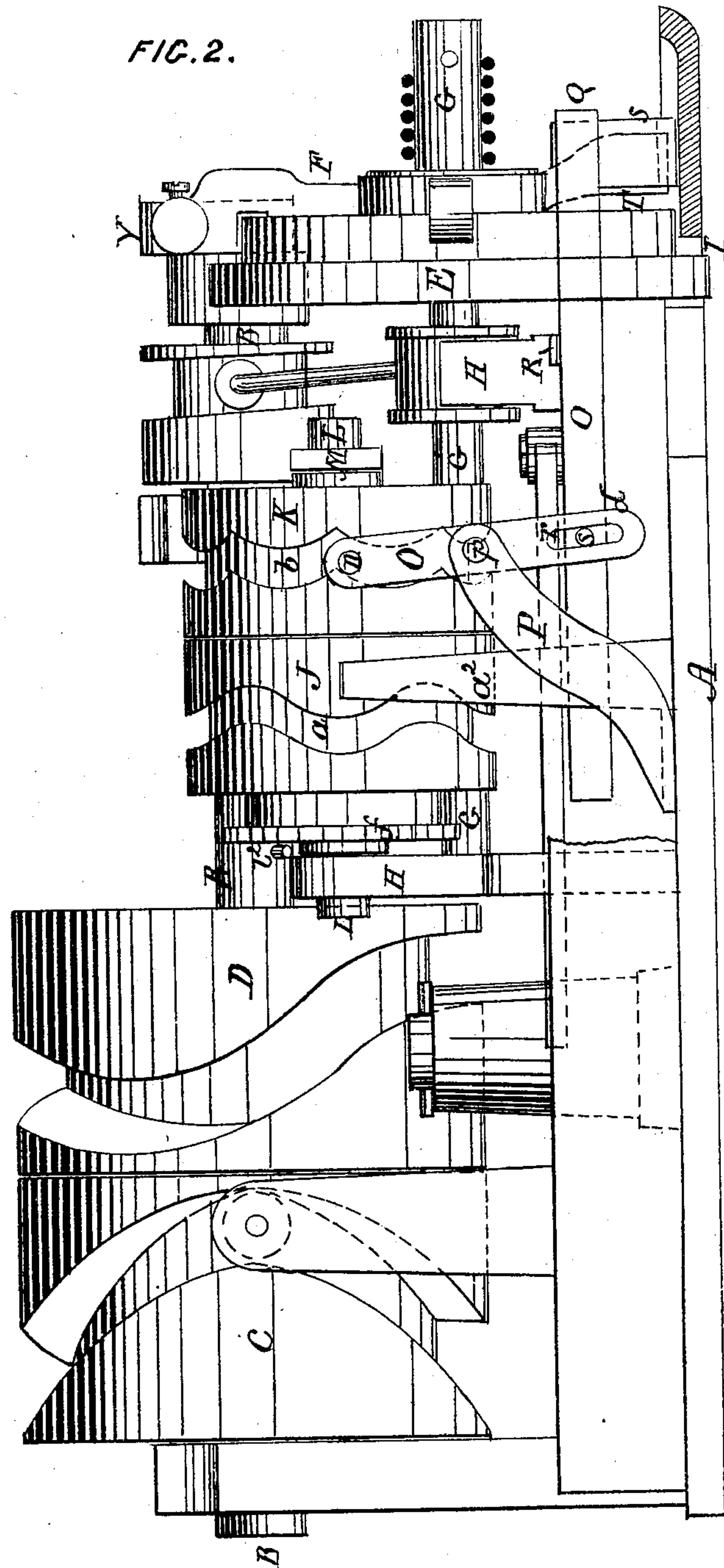
WITNESSES.

R. H. Morris
J. P. McChoy.

W. MUIR.
Sewing-Machines.

No. 147,152.

Patented Feb. 3, 1874.



WITNESSES.

W. R. Stearns
J. P. M. Choy.

INVENTOR.

William Muir per
Brown Brothers Attorneys.

W. MUIR.
Sewing-Machines.

No. 147,152.

Patented Feb. 3, 1874.

FIG. 3.

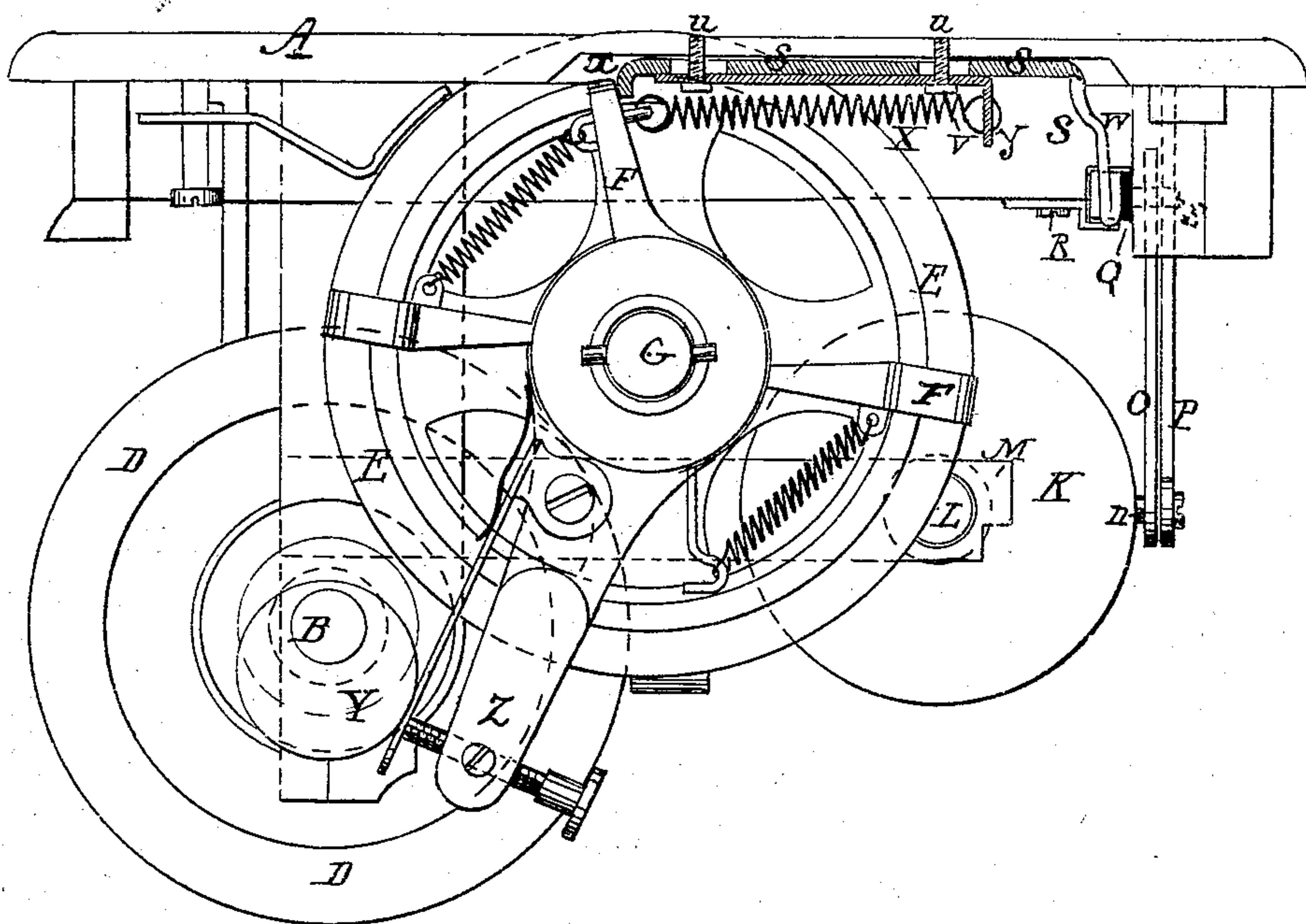
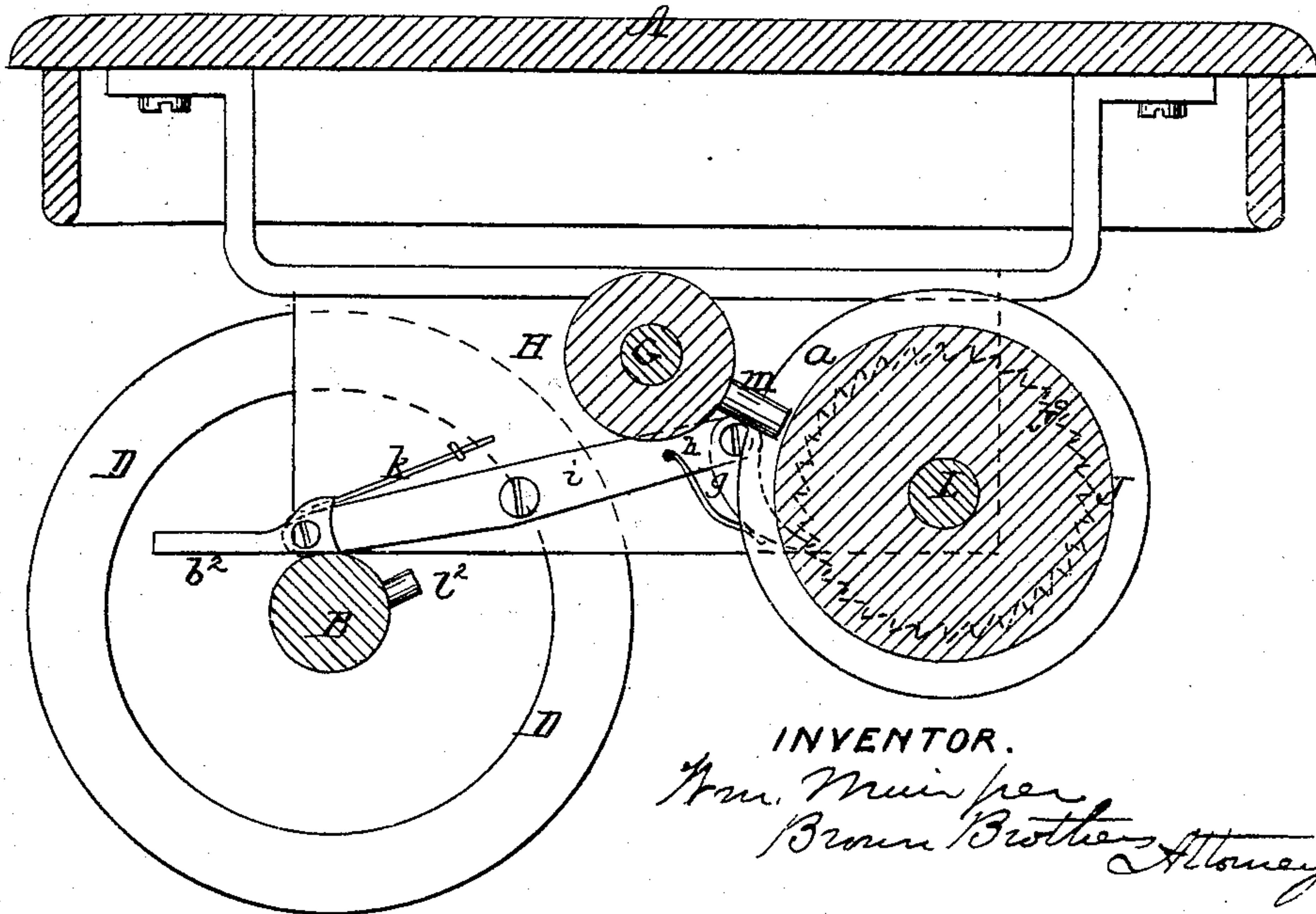


FIG. 4.



INVENTOR.

Wm. Muir per
Brown Brothers Attorneys.

WITNESSES.

Robert Morris.
J. P. McElroy

UNITED STATES PATENT OFFICE.

WILLIAM MUIR, OF MONTREAL, CANADA.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **147,152**, dated February 3, 1874; application filed January 29, 1874.

To all whom it may concern:

Be it known that I, WILLIAM MUIR, of Montreal, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Sewing-Machines; and that the following description, taken in connection with the accompanying plates of drawings hereinafter referred to, forms a full and complete specification of the same.

The present invention relates to ordinary sewing-machines having a wheel-feed; and it consists, first, in the application to such sewing-machines of mechanical devices, to be hereinafter described, that are adapted to receive motion through the driving-shaft of the machine, and are so arranged that when operated they move the feed-wheel laterally across its plane of revolution without interfering with the ordinary feed of the feed-wheel, causing thereby a lateral feed or movement of the fabric being sewed under the plane of movement of the needle; second, in the application to such sewing-machines of mechanical devices, to be hereinafter described, that are adapted to be moved through the driving-shaft of the machine, and arranged, in connection with the mechanism for rotating the feed-wheel, to limit the action of such mechanism on the feed-wheel, and thus to automatically vary the extent to which the goods being sewed are fed forward to the needle at each stroke of the feed-wheel.

In the accompanying plates of drawings my improvements in sewing-machines are illustrated.

Figure 1, in Plate 1, is a plan view of the under side of a wheel-feed sewing-machine with my improvements applied thereto; Fig. 2, in Plate 2, a view from one side of the parts shown in Fig. 1, Plate 1; Fig. 3, in Plate 3, an end view; and Fig. 4, a transverse section in plane of line *x x*, Fig. 1, Plate 1.

A in the drawings represents the bed-plate of a wheel-feed sewing-machine, upon the under side of which is arranged the horizontal driving-shaft B, carrying cams C and D, respectively, for operating the needle-bar and the shuttle-carrier of the machine, both of which are arranged and operate in the usual manner, and therefore require no more particular description herein; E, the feed-wheel lo-

cated upon the under side of the bed-plate A, and arranged, except so far as the present improvements pertain, to be actuated as in ordinary sewing-machines; F, the clutch for carrying the feed-wheel forward, constructed and arranged as ordinarily; G, the feed-wheel shaft. This shaft is elongated, and is arranged horizontally to turn in bearings of standards H on the under side of bed-plate A, and through these bearings it is susceptible of being slid forward and backward, moving thereby the feed-wheel across the width of the opening I in the bed-plate, which, to allow of such movement, is somewhat widened. J and K, two wheels fixed to a common shaft, L, one along side of the other. Each wheel J and K is provided with a peripheral cam-groove, *a* and *b*, respectively, and the shaft carrying them is arranged horizontally under the bed-plate A to turn at each end in fixed bearings M H. The position of cam-shaft L is to one side of the feed-wheel shaft G, bringing the feed-wheel shaft between it and the driving-shaft B, but the several shafts are, however, in different horizontal planes. The cam J is for moving the feed-wheel laterally across the line of sewing, and the cam K for varying the forward feed of the feed-wheel. *f*, a ratchet-wheel fixed to cam-wheel shaft L; and *g*, a spring-pawl, to operate or turn the ratchet-wheel *f*, and thus to turn the cams carried by its shaft. This pawl *g* is hung to the inner end *h* of a lever-arm, *i*, hung to a fulcrum, *l*, on the bearing H of cam-wheel shaft L. The outer end of lever *i* is in position to bear across and against the periphery of driving-shaft B, being confined to it by a bent spring, K, properly applied. The shaft B in line of bearing of lever *i* thereon has a cam projection or pin, *l'*, to cause, in the rotation of the shaft, a swinging of the lever *i*, and thus, through its pawl, a rotation of the ratchet and cam-wheel shaft, L, for a portion of its periphery. *m* is a stud, projecting from a fixed collar on the feed-wheel shaft G, and into the cam-groove *a* of cam-wheel J. *n* is a stud projecting from one end of a vertical arm, O, hung to a fulcrum-pin, *p*, of a post, P, fixed to the under side of the bed-plate A, and the end *d* of the arm is slotted at *r* and connected with the pin *s* of a horizontal bar, Q, arranged along the under side of bed-plate A, and sup-

ported within guide-loops R. The stud *n* enters the cam-groove *b* of cam-wheel K, and the bar Q extends beyond the plane of the feed-wheel, and its end *t* is of wedge shape toward the face of the feed-wheel. S, a bar or plate, fastened, through slots *u* and set-screws *v*, to the under side of the bed-plate A, in a plane at right angles to the length of the bar Q, and its end *w* bears against the wedge-shaped face *t* of the bar Q, and its other end, *x*, abuts against the arm T of the feed-wheel clutch F. The bar S, through its fastening, above described, while held from detachment, is susceptible of being moved in the direction of its length. Y is a plate, fastened, by screws *u*, to the bed-plate, and it bears against the under side of the bar S. This plate Y is stationary. Bar S moves between it and the plate A, and a spring, X, connected to the arm F, is also connected to S. This arm throws the clutch back after each operation of the cam Y of the driving-shaft B on its arm Z.

By the cam J the feed-wheel is moved laterally, the extent of its lateral movement depending upon the shape of the cam-groove *a*, as is obvious, thereby enabling the machine, with a proper shaped cam-groove, *a*, to sew in a zigzag, serpentine, or other line, varying from a straight line.

By the cam K the bar Q is moved to bring its wedge-shaped face *t* more or less against the end of slide-bar S, and, thus moving it along, reduce or increase the backward throw of the clutch F, and consequently reduce or increase its forward throw through the cam Y of driving-shaft B, from the fact that the more said slide-bar S is moved along toward or beyond the center of rotation of the feed-wheel the less its clutch F can be thrown back, and vice versa. This reduction or increase of the forward feed of the feed-wheel necessarily reduces

or increases the length of stitches, and it is obvious that, with a proper shaped cam-groove, *b*, to operate the wedge-bar Q, taken in connection with the lateral movement of the feed-wheel, as described, the feed of the fabric can be made automatically to so vary as to produce a uniform length of stitches, whatever may be the line or direction in which the machine is sewing from the operation of the lateral feed, as aforesaid.

*a*² is a bent spring bearing on the periphery of cams J K to prevent any backward throw. *b*² is a lever hung to the outer end of the arm *h*, in a position so that it may be turned and cause the arm *h* to be released or removed from the path of the arm or projection *l*² of shaft B. The lever *b*² bears on a concentric portion of the shaft B.

To remove the cams J K for substituting others of a different pattern, it is only necessary to uncover the bearings of their journal or shaft.

Having thus described my improvements in sewing-machines, I shall state my claims as follows:

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

1. The cam K, ratchet-wheel *f*, and the driving-shaft B, in combination with the wedge-shaped bar Q, slide-bar S, and arm F of feed-actuating clutch, substantially as described, and for controlling the length of the stitches.

2. The cams J K, driving-shaft B, feed-wheel shaft G, ratchet-wheel *f*, pawl *g*, bar Q, slide-bar S, and clutch F, when all are combined, constructed, and arranged together substantially as and for the purpose described.

WM. MUIR.

Witnesses:

ROBT. COCKBURN,
A. I. HELLIWELL.