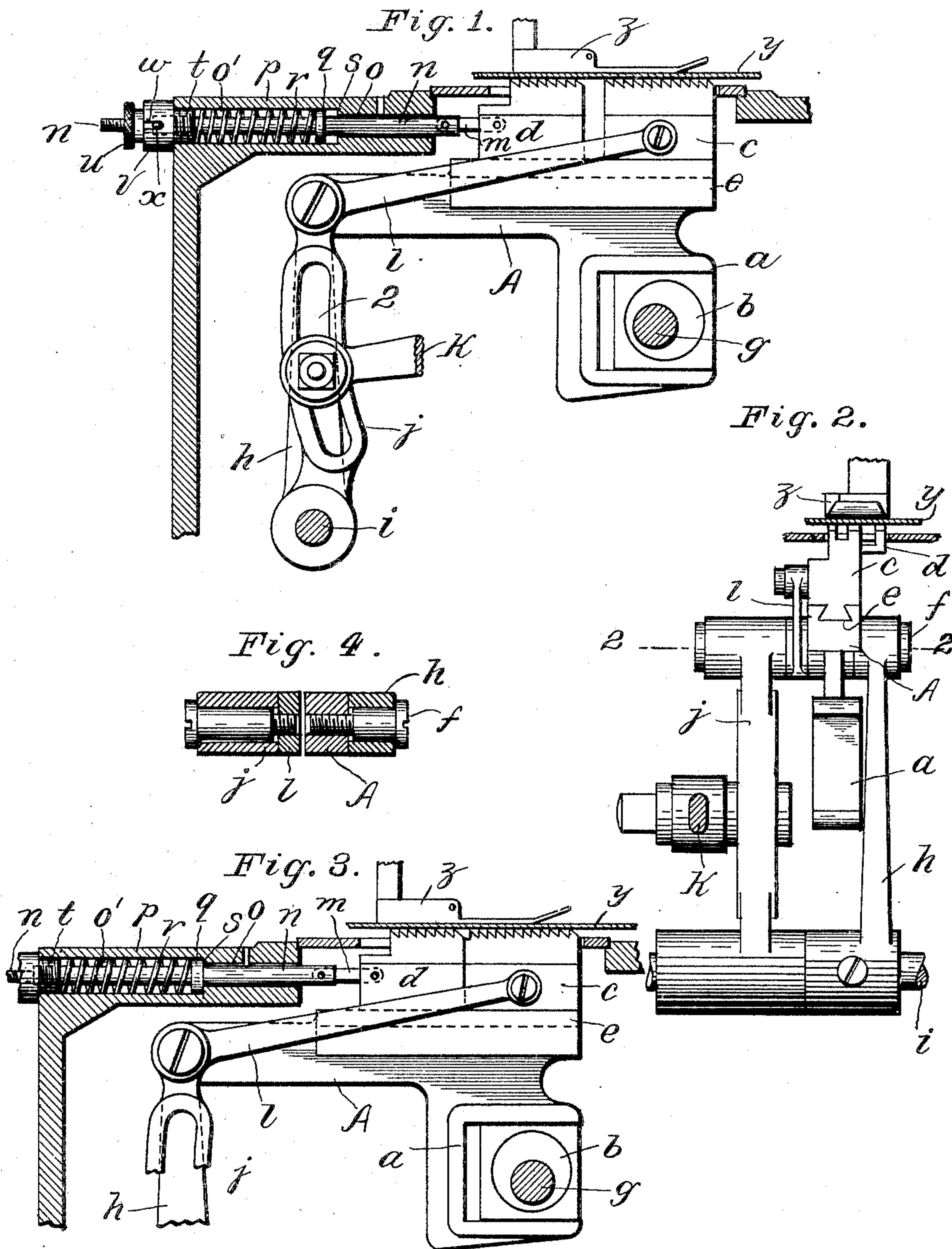


H. A. KLEMM.
FEED MECHANISM FOR SEWING MACHINES.

APPLICATION FILED SEPT. 28, 1904.

2 SHEETS—SHEET 1.



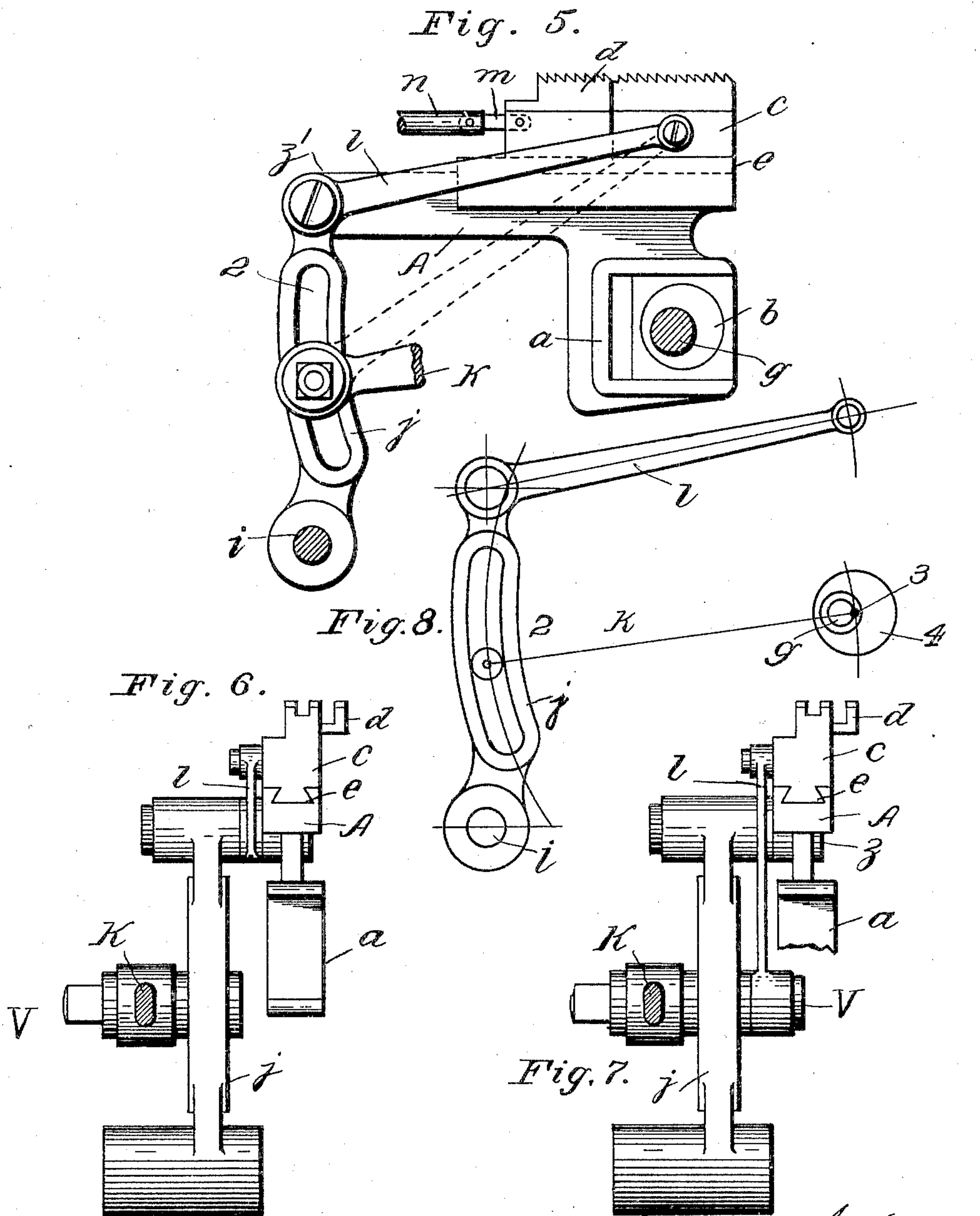
Witnesses
C. Sedgwick
J. M. Leonard

Hermann A. Klemm
Inventor
By his Attorney *C. P. Thayer*

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2 SHEETS—SHEET 2.



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C. Sedgwick
J. M. Howard.

Inventor
Hermann A. Klemm.
By his Attorney A. P. Mayor.

UNITED STATES PATENT OFFICE.

HERMANN A. KLEMM, OF NEW YORK, N. Y., ASSIGNOR TO JAMES D. LEYS,
OF YONKERS, NEW YORK.

FEED MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 789,326, dated May 9, 1905.

Application filed September 28, 1904. Serial No. 226,313.

To all whom it may concern:

Be it known that I, HERMANN A. KLEMM, a citizen of the United States of America, and a resident of the borough of Bronx, New York city, State of New York, have invented certain new and useful Improvements in Feed Mechanism for Sewing-Machines, of which the following is a specification.

My invention relates to feed mechanism for feeding knit and other loosely-intermeshed elastic fabrics such as are liable to pucker in the common positive-feed apparatus; and it consists of the hereinafter-described improved differential apparatus comprising a two-part feed-dog and the means of differentially operating them, reference being made to the accompanying drawings, in which—

Figure 1 represents my improved two-part feed-dog and means for operating the same, partly in side elevation and partly in vertical section, with a piece of work as being operated upon. Fig. 2 is an elevation of the same as seen looking from the right-hand side of Fig. 1, also with a piece of work as being operated upon. Fig. 3 is an elevation same as in Fig. 1, showing the feed-dogs in relation to each other different from that shown in Fig. 1. Fig. 4 is a detail in section on the line 2 2 of Fig. 2. Fig. 5 is an elevation of parts of the apparatus shown in Fig. 1, showing a modification of some of the working parts. Fig. 6 is an elevation of the apparatus of Fig. 5 as seen from the right-hand side of said Fig. 5. Fig. 7 is a like elevation as Fig. 5 with a slight modification thereof. Fig. 8 is a diagram showing an advantageous construction of the adjusting apparatus of the means for operating the front feed-dog.

Other parts of the machine not necessary to an understanding of the invention claimed are omitted.

A represents in all the figures substantially the ordinary feed-bar having the usual fork *a*, which rides on the eccentric *b* of the main shaft *g* for being vertically operated to impart the like movements to the feed-dogs supported on it, whereof *c* represents the front dog and *d* the rear dog, both of which, according to my present invention, are mount-

ed on said bar in the slideway *e*, allowing movements of them relatively to the feed-bar lengthwise of said bar. In Figs. 1 to 4, inclusive, the rear end of the feed-bar is pivoted at *f* to the upper end of a vertical support *h*, fixedly connected at its lower end to a stationary rod or bar *i*, so that said feed-bar does not reciprocate. On said rod or bar *i* in close proximity to support *h* there is arranged in practically vertical alignment a rocking lever *j*, which is operated from an eccentric 4 (see Fig. 8) on the main shaft *g* through the connecting-rod *K*, said rock-lever being connected by an ordinary connecting-rod *l* with the front feed-dog *c*, so as to reciprocate said dog for feeding, said rod *k* being adjustable in the slot 2 of said rock-lever for varying the length of the stitches. The rear feed-dog is connected by a flexibly-jointed link *m* with a rearwardly-ranging rod *n*, fitted in a bored slideway *o* under the surface of the table *p*, a part *o'* of which slideway is counterbored for enlargement for a collar *q* of said rod and a coiled spring *r* thereon for retracting feed-dog *d*, the forward movement of which is caused by the action of dog *c* on it. At the rear extremity of the part *o'* of the slideway a plug *t* is screwed in for a support for the end of spring *r*, said spring being suitably tensioned to have power for retracting dog *d*. A nut *u* is screwed onto the extremity of rod *n* outside of plug *t* to regulate the retracting movement of the dog *d*. The plug *t* is slotted at *w*, and the rod carries a radial pin *x*, extending into said slot to prevent the rod from turning with the nut when the latter is being screwed on or off.

It will be seen that with the nut *u* set on rod *n* so as to limit the retracting movement of dog *d*—say as indicated in Fig. 1—dog *d* will rest while dog *c* is feeding the length of the space between the two dogs and thereafter will move as far as dog *c* pushes it, thus differentially feeding the parts of the goods *y* respectively subject to the two dogs and to the presser-foot *z*. The differential movements will be varied according as nut *u* is adjusted more or less. If the nut *u* be slackened sufficiently to allow collar *q* to be thrust back

against shoulder *s*, so that the two dogs have contact, as in Figs. 3 and 5, the feed of the two dogs will be equal, or practically so.

In Figs. 5 to 7, inclusive, I represent the feed-bar A pivoted at *z'* to the same rock-lever *j* that carries the connecting-rod *l*, that operates the front feed-dog *c*, so that the said feed-bar slides in the usual manner, but without effect on the feed-dogs, which has the advantage of economy of construction as far as the support *h* is concerned, and in Fig. 7 I represent the rod *l* connected to the same pin *v* by which rod K is connected to rock-lever *j*. This is also indicated by dotted lines in Fig. 5.

In Fig. 8 I represent the slot 2 in the rock-lever *j*, which operates the front feed-dog, formed concentrically to the axis 3 of the eccentric 4 on the main shaft *g*. When said eccentric is at the point of full throw forward, so that, however, the rod K may be shifted along said slot for varying the length of the stitches, the starting-point of dog *c* for beginning the feed will always be the same. This insures overfeed by dog *c* relatively to the feed of dog *d* proportionately to its feed movements, whether they be longer or shorter, as adjusted by nut *u*, and thus results in more even and satisfactory work.

What I claim as my invention is—

1. The combination in differential-feed mechanism, of a feed-bar, means for effecting the usual vertical movements of the front end, two independently-sliding feed-dogs thereon, means for reciprocating the front dog on the said feed-bar, means for imparting feed movements to the rear dog through the instrumentality of the front feed-dog, and means to vary the movements of said rear feed-dog.

2. The combination in differential-feed mechanism, of a feed-bar, means for effecting the usual vertical movements of the front end, two independently-sliding feed-dogs thereon, whereof the front dog has reciprocating movement on said bar, and the rear

dog has variable movement on the same relatively to the front feed-dog, means for giving the front dog its feed movement consisting of the rock-lever and rod connecting it and said feed-dog, means for operating the rock-lever, and means for giving the rear feed-dog its feed movement by the action of the front dog on it.

3. The combination in differential-feed mechanism, of a feed-bar, means for effecting the usual vertical movements of the front end, two independently-sliding feed-dogs thereon, whereof the front dog has reciprocating movement on said bar, and the rear dog has variable movement on the same relatively to the front feed-dog, means for giving the front dog its feed movement, and means for giving the rear dog its feed movement consisting of the front dog and the retracting-spring.

4. The combination in differential-feed mechanism, of a feed-bar, means for effecting the usual vertical movements of the front end of said bar, two independently-sliding feed-dogs thereon, means for variably reciprocating the front feed-dog for varying the length of the stitches without changing its starting-point and for variably reciprocating the rear feed-dog.

5. The combination in differential-feed mechanism, of a feed-bar, means for effecting the usual vertical movements of the front end of said bar, two independently-sliding feed-dogs thereon, means for variably reciprocating the front feed-dog for varying the length of the stitches without changing its starting-point and for variably reciprocating the rear dog, and means for adjusting said rear feed-dog to feed in unison with the front feed-dog.

Signed at New York this 27th day of September, 1904.

HERMANN A. KLEMM.

Witnesses:

A. P. THAYER,
C. SEDGWICK.