

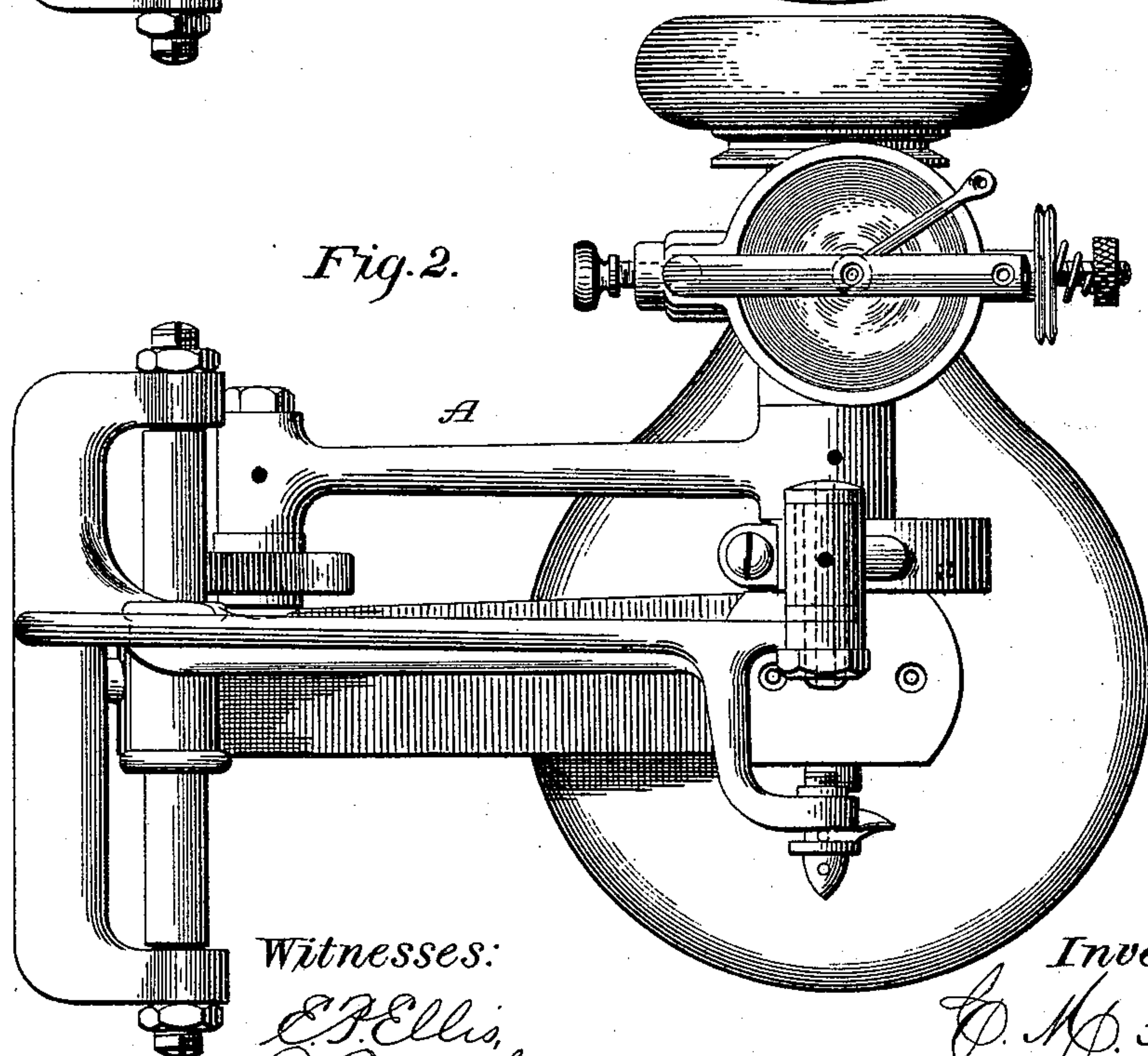
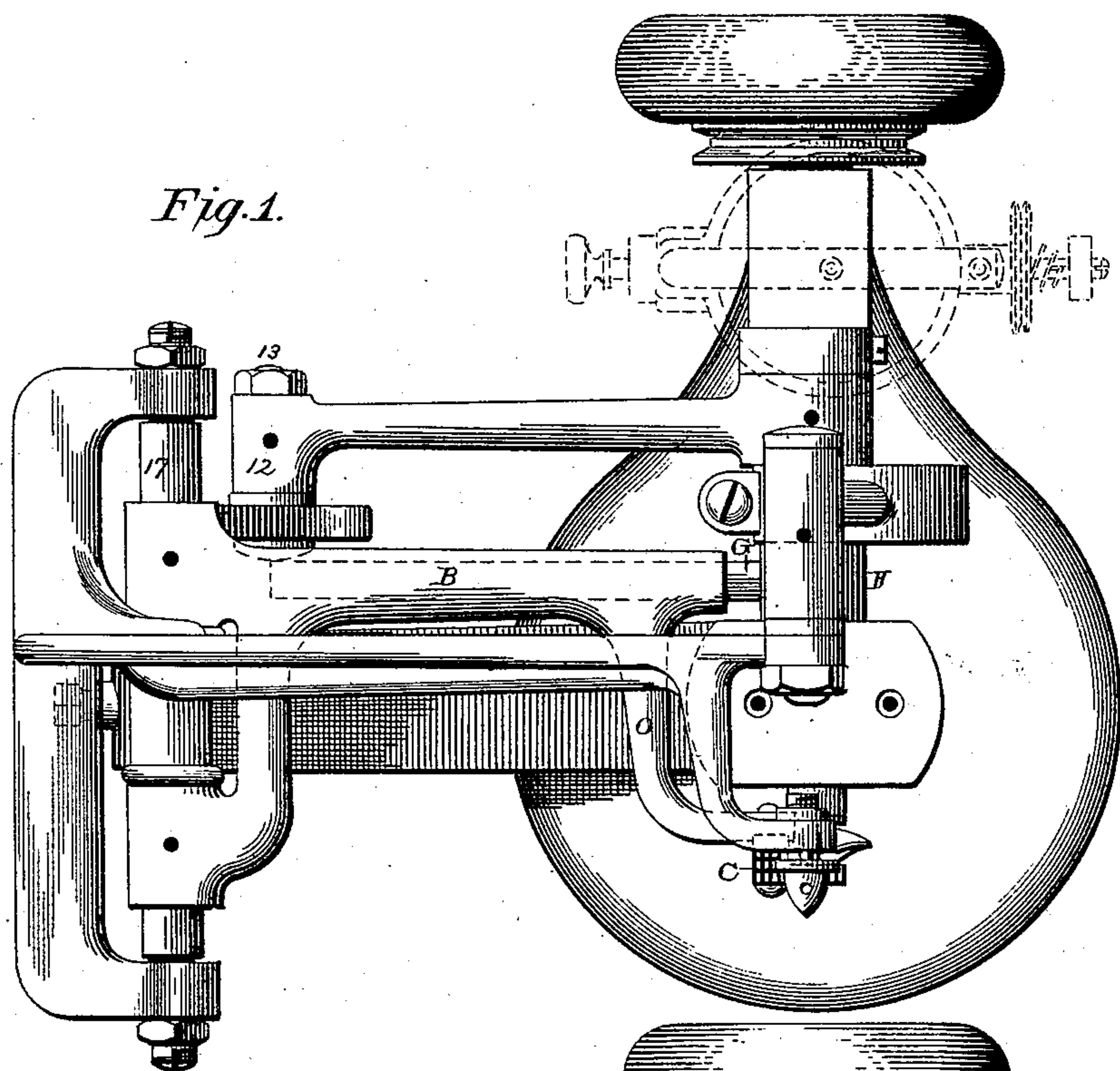
(No Model.)

2 Sheets—Sheet 1.

C. M. HINE.
SEWING MACHINE.

No. 477,302.

Patented June 21, 1892.



Witnesses:

E. J. Ellis,
P. Brockell

Inventor:

C. M. Hine,
per
Lehmann & Patterson,
attys.

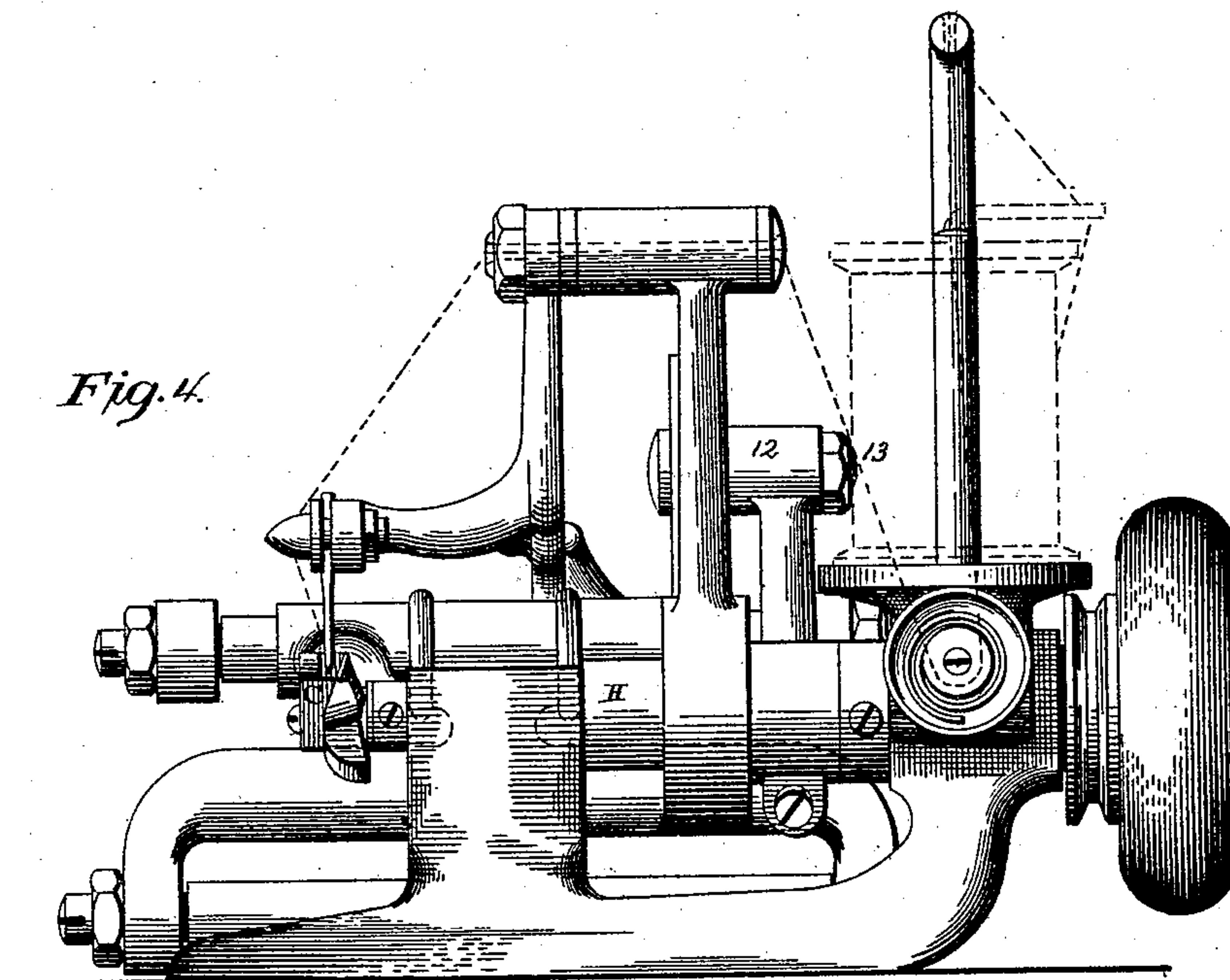
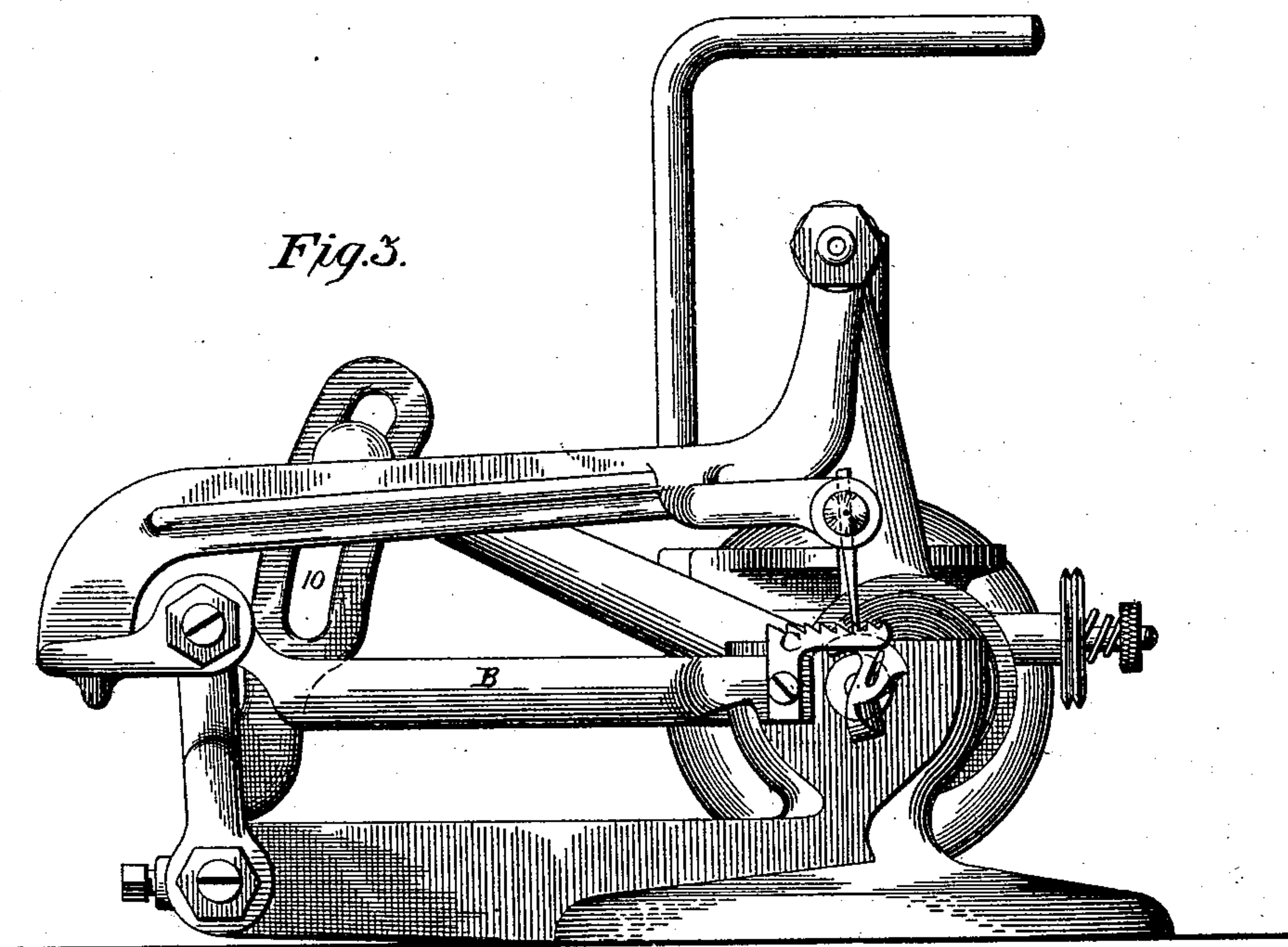
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UNITED STATES PATENT OFFICE.

CHARLES M. HINE, OF PITTSBURG, ASSIGNOR TO HELEN D. SHIELDS, OF ALLEGHENY COUNTY, PENNSYLVANIA.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 477,302, dated June 21, 1892.

Application filed January 16, 1891. Serial No. 378,017. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. HINE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain
5 new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use
10 it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in sewing-machines, and is intended especially
15 as an improvement upon the application filed by me May 7, 1890, Serial No. 350,873; and it consists in the addition or application of an under-feed to the machine, which is shown and described in the said application, as will
20 be more fully described hereinafter.

The object of my invention is to apply to the said machine an under-feed, which is positively adjusted to the length of stitch by the adjustment which is given to the needle, so
25 that in adjusting the length of stitch the under-feed is adjusted exactly at the same time without any care or attention on the part of the operator.

Figure 1 is a plan view of a machine which
30 embodies the invention set forth in my application above referred to and with the addition of the under-feed. Fig. 2 is a similar view, showing the same machine without the addition of the under-feed. Fig. 3 is a side
35 elevation of the same. Fig. 4 is a front view of the same.

A represents a sewing-machine such as is described in my application filed May 7, 1890, and bearing Serial No. 350,873, and which
40 need not, therefore, be more fully described in this specification. In that application the entire feeding of the goods is done from above by means of the needle; but as an under-feed is desirable upon some fabrics in that con-
45 nection I have added to the said machine a bar B, provided with the curved arm O, to the forward end of which the feed-dog C is fastened. The rod 17 shown in said application passes through the rear ends of the bar B, and
50 upon which rod the bar has a slight move-

ment while the machine is in operation. The front end of the bar B, which is tubular, projects forward, so that its front end is adjacent to the rear and at the right of the looper, and projecting into and through this bar is a slid-
55 ing eccentric-rod G, which forms a part of the eccentric-strap H. This rod is made sufficiently long to extend through the bar for the purpose of supporting the front end of the bar and securing a long bearing. The
60 eccentric-strap, by means of the rod, imparts a fixed rising-and-falling motion to the feed at the same time that the play or movement of the yoke imparts to the feed-bar a reciprocating movement. The feed-bar plays back
65 and forth over the eccentric-rod which extends through it, and the amount of this play or movement is variable at the will of the operator by the adjustment of the stud 12 and nut 13 and in the slot 10, as shown in my ap-
70 plication above referred to. While the up-and-down movement of feed-dog always remains the same the longitudinal movement is variable, and the operator in adjusting the length of the stitch adjusts both the needle
75 and the feed simultaneously and exactly. By means of the construction here shown a positive four-motion feed is produced, and with the addition of only the feed-bar and the eccentric-rod which extends through it. As
80 here shown, the feed-dog is preferably made separate from the feed-bar, as is usually done; but it may be formed as a part of the bar, if so desired. The eccentric upon the main shaft is here shown as made separate
85 from the shaft; but, if so desired, it may be formed as a solid part thereof. I do not limit myself to any details of construction in this respect, for these may be varied at will with-
90 out departing from the spirit of my invention.

Heretofore in sewing-machines it has been necessary for the feed to move the fabric while the needle is out of the goods; but by the construction here shown this operation is reversed, the needle being given a back-and-
95 forth motion by the rocking or vibration of the yoke, and the eccentric on the main shaft is so timed that the feed is raised against the fabric and is given its forward movement at the same time that the needle is depressed to
100

its lowest point and is moving forward in exact unison with the feed. The needle alone, by being given a back-and-forth movement, will feed the fabric where it has sufficient
 5 body or dressing to enable it to be readily moved; but where the fabric is of a soft yielding material, which will readily crowd together, the under-feed becomes desirable and necessary.

10 By combining both a needle and an under-feed all the disadvantage and trouble of having the two pieces of the fabric not move uniformly is entirely obviated and a greater amount of work is accomplished in a given
 15 time than is possible where the operator has frequently to stop to even the two parts. After the goods are once started through, the operator has only to see that the edges are kept even, but need pay no attention to the
 20 two parts of the fabric from coming out even if of equal length.

Although the eccentric and the eccentric-strap are hereshown inside of the front main shaft-bearing of the frame, they may be placed
 25 at the outer hook end of the driving-shaft, but this is not desirable, because the needle loosens the dressing of the fabric, causing it to drop through the needle-hole upon the eccentric and absorb the lubricating-fluid, and thus
 30 making this location objectionable for this reason. Another advantage in not placing the eccentric upon the end of the shaft consists in moving the points of lubrication away from the fabrics, and thus preventing the fabrics or thread while passing through the machine from being soiled.

Having thus described my invention, I claim—

1. In a sewing-machine, a driving-shaft, a needle-arm carrying a needle, an eccentric 40 upon the shaft for moving the arm longitudinally, and an eccentric for moving the arm vertically, combined with a feeder, an eccentric for moving the feeder longitudinally in unison with the needle-arm, and an eccentric 45 for moving the feeder vertically in opposition to the needle-arm, substantially as set forth.

2. In a sewing-machine, a driving-shaft, a pivoted laterally-vibrating yoke, an eccentric upon the shaft for moving it laterally, a 50 needle-arm carrying a needle, connected at one end to the said yoke, an eccentric connected with the opposite end of the arm for moving it vertically, a feeder connected at one end to the yoke, whereby it is moved longitudinally, and an eccentric connected with the opposite end of the feeder for moving it vertically, the parts combined substantially as described.

3. The combination of the main shaft provided with an eccentric, an eccentric-strap provided with a rod, a hollow feed-bar provided with a feed-dog and in which hollow feed-bar the strap-rod reciprocates, a yoke by means of which the feed-bar is given a back- 65 and-forth motion, means for operating said yoke, and a needle-arm carrying a needle, which is given by a suitable mechanism an up-and-down and a back-and-forth motion, substantially as specified. 70

In testimony whereof I affix my signature in presence of two witnesses.

C. M. HINE.

Witnesses:

F. A. LEHMANN,
 E. P. ELLIS.