

(No Model.)

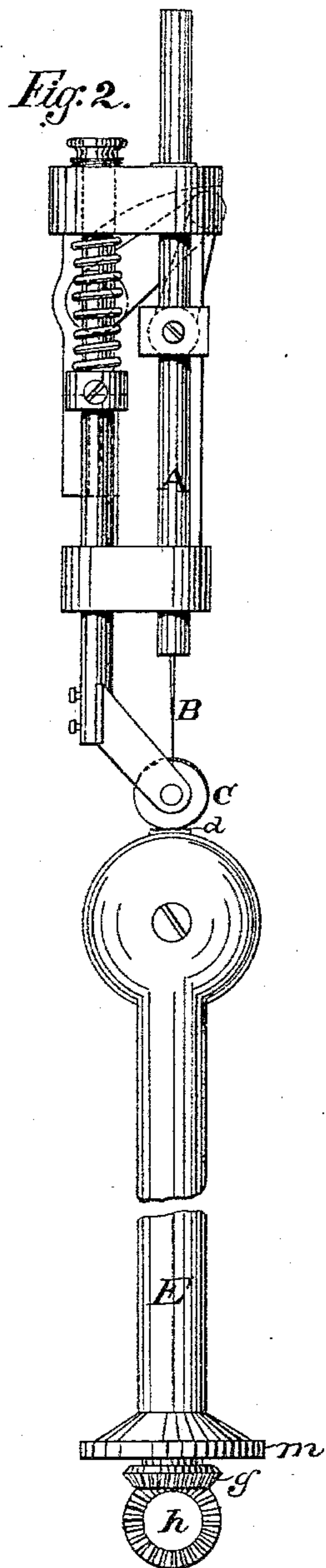
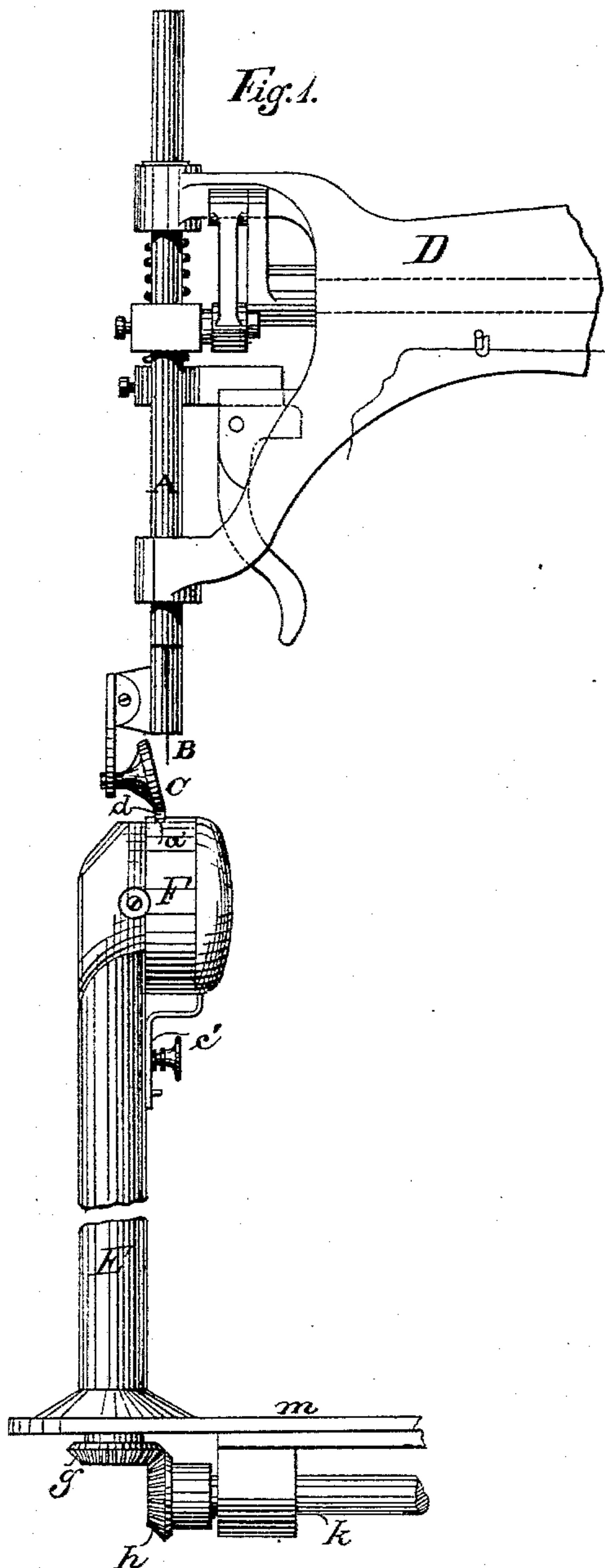
2 Sheets—Sheet 1.

G. H. W. CURTIS.

SEWING MACHINE.

No. 318,964.

Patented June 2, 1885.



WITNESSES:

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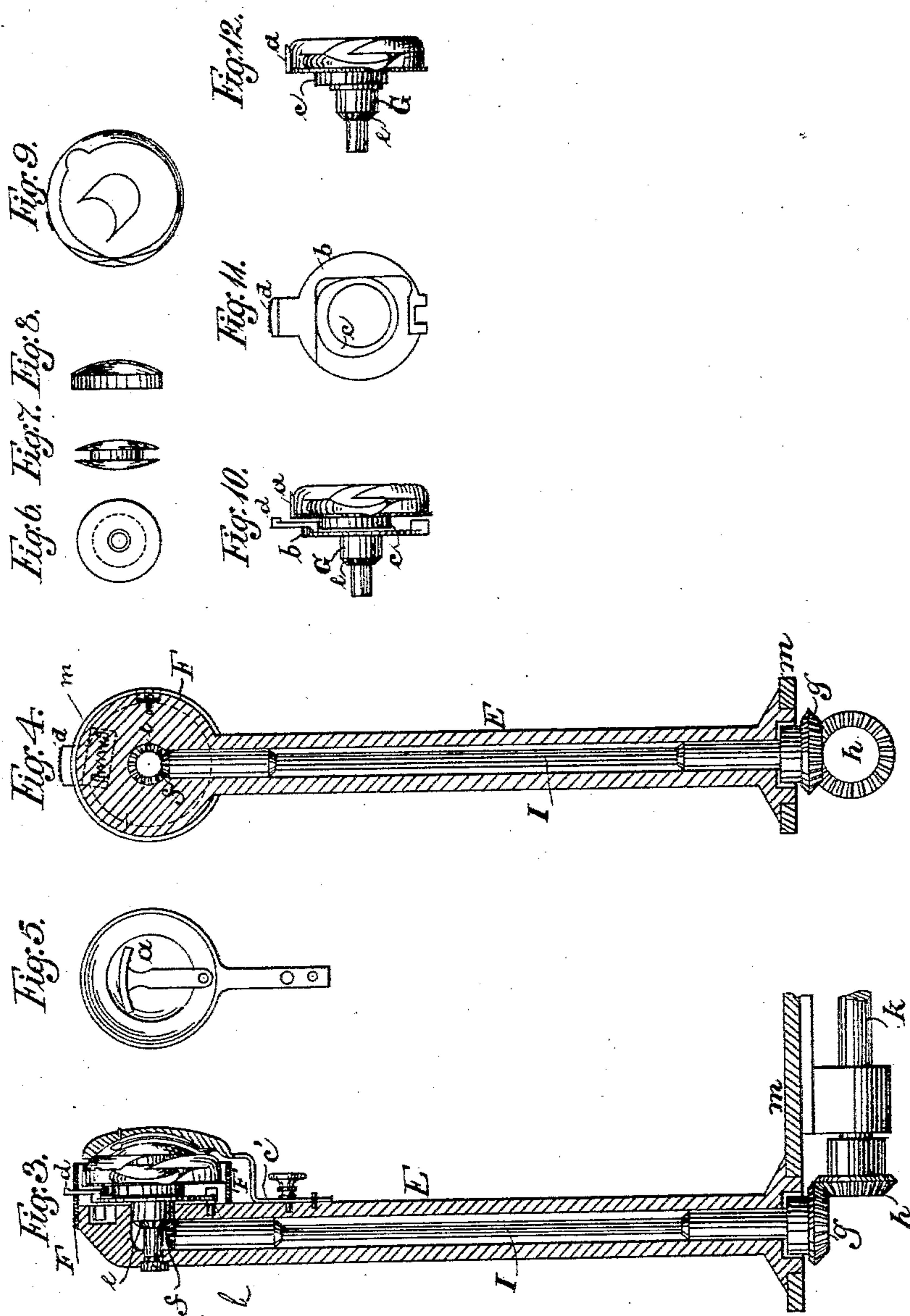
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# UNITED STATES PATENT OFFICE.

GEORGE H. W. CURTIS, OF BROOKLYN, NEW YORK.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 318,964, dated June 2, 1885.

Application filed March 26, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. W. CURTIS, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Sewing-Machines, of which the following is a specification.

The object of this invention is to provide an improved machine for sewing the uppers of boots and shoes, feed-bags, pocket-books, &c., and also for the insertion of elastics into new or old boots or shoes, and also for use in the various repairs which are often required after the soles of boots and shoes are sewed to the uppers. This class of work requires the introduction into the interior of the article to be sewed of the whole of the lower portion of the sewing mechanism of a sewing-machine, said portions comprising a feeding device, feed-cam, shuttle-driver, and hook or shuttle, and suitable mechanism for operating the said parts.

Heretofore various machines, to a greater or less extent adapted to work of the class specified, have been devised, but have proved faulty in respect to the facility and convenience with which it is desirable that the sewing devices, as aforesaid, should be passed into the article and brought into such relation with the edges, corners, and, as they may be termed, "remoter portions" of the interior of the article to be sewed.

Among the various machines intended or suggested for such uses, the principal ones have been constructed with a horizontal arm, in the end of which is placed an oscillating shuttle, and a feeding device to propel the article to be operated upon in one or more directions, as may be desired. This construction necessitates much complicated mechanism for operating said oscillating shuttle and feeding device. Such machines are necessarily slow, and at best are not capable of producing work of a fine quality, inasmuch as the shape of the stitch changes with every change in the feed.

Other machines have been made with vertical straight standards, supporting at their upper ends the lower portions of various stitch-forming mechanisms; but in such apparatuses the said lower portions of the stitch-forming mechanisms have no substantial pro-

jection beyond the sides of the standard, and hence are incapable of being brought into close and accurate relation with the more difficult and remoter portions of the work. Such machines are capable of and are more particularly designed for sewing soles to boots and shoes, but are not adapted for the more difficult and higher-class work for which my invention is designed.

Other machines have been made in which the lower portion of the stitch-forming mechanism has been carried on the end of an arm—in some cases adjustable—arranged at an angle to the horizontal. In such machines the angular position of the arm permits the said portion of the stitch-forming mechanism to be measurably thrust into the article to be sewed; but this is neutralized by the lateral position of the arm, which interferes with the adjustment of the work, and which, being itself interfered with by edges of the throat or opening through which the mechanism is thrust into the work, prevents said mechanism from being brought into relation with the remoter and more difficult portions of the work. Such machines, therefore, are only imperfectly adapted to the special kinds of work for which my invention is especially designed.

To obviate the objections inherent in the use of other machines, as aforesaid, I construct my improved machine with a vertical standard provided at its upper end with a lateral offset or bulb, which is substantially cylindrical or circular in its cross-section. In this laterally-projecting bulb I place the throat-plate, feeding device, feed-cam, shuttle-carrier, and shuttle, in such manner that a clear space is left below said sewing mechanism, while at the same time there is no lateral extension, either horizontal or partially so, that will interfere with the introduction of the sewing mechanism into the article to be sewed, the standard passing vertically through the throat or opening of the work to bring the sewing mechanism within the latter, and said sewing mechanism being offset or projected laterally from the top of the standard, so that the same may be brought directly and accurately to the more difficult parts or remoter portions of the work to be sewed. My said



invention comprises certain novel combinations of parts hereinafter more particularly specified in the claims.

Figure 1 is a side view; Fig. 2, a front view; Fig. 3, a central vertical sectional view; and Fig. 4, a vertical sectional view taken in a plane at right angles to that of Fig. 3, illustrating my said invention. Figs. 5 to 12, inclusive, are detailed views of certain parts not so fully represented in the other figures aforesaid.

A is the needle-bar, and B the needle, of a sewing-machine, the said parts being of any usual or suitable construction, operated by the usual or any suitable means, in the usual or in any suitable manner, provided with the usual or any suitable adjuncts—as, for example, with the presser-roller C—and supported in the usual or any suitable manner—as, for example, by the usual arm, D.

E is an upright standard, which, as shown in the drawings, is tubular. This standard has at its upper end, and projecting horizontally therefrom, an offset or bulb, F, which, in order to secure the objects for which my invention is designed, is of substantially cylindrical or circular cross-section taken vertically in a plane at right angles to the length of the machine, and which, projecting inward from the top of the standard, has a clear space below, with the vertical standard itself situated in front of said bulb. This bulb is internally chambered to receive the hook or shuttle and the herein-designated adjuncts thereof. The hook or shuttle is arranged in a vertical plane transverse to the axis of the bulb, so that the latter may combine all the advantages of a circular form with the largest required size or area of the hook or shuttle and its adjuncts. Within this offset projecting shell or bulb is placed, as aforesaid. This hook or shuttle, as the case may be, is of any ordinary or suitable construction, adapted to act in conjunction with the needle, and with suitable adjuncts to form the stitches of the seams. The position of this hook is vertical, as shown in Figs. 1 to 4. The hook is provided with the usual or any suitable tension device—as, for example, as shown at *a*. When the hook is provided as shown in Figs. 1 to 4, inclusive, there may be used in connection therewith the usual feeding device composed of the feed-yoke *b*, working upon and operated by an eccentric, *c*, behind and fast to the hook, said feed-yoke having the feed-point *d* projecting upward through a slot, *a'*, in the upper side of the shell F, which, for purposes of protection, may be placed around the parts, as shown. The feed-yoke and its feed-point operate in the usual manner and require no special description. In any case the hook and its necessary adjuncts should be placed in due relation with the needle, to act in conjunction therewith in the formation of the stitches. In the construction shown in Figs. 1 to 4, inclusive, the hook

is fast upon the end of a short shaft, G, which works in suitable bearings provided in the upper part of the standard, and which has fast upon it a bevel-pinion, *e*, which gears into a corresponding pinion, *f*, upon the upper end of a shaft, I, which works in suitable bearings provided upon the standard, the shaft I being preferably placed within the standard, as represented in Figs. 3 and 4. At its lower end the shaft I has a bevel-pinion, *g*, which gears into a like pinion, *h*, on a driving-shaft, *k*, which by any suitable gearing or other mechanism is connected and caused to rotate in unison with the mechanism by which operation is given to the needle-bar. By this means the requisite rotation of the hook in forming the stitches is provided for. As this connection of the shaft *k* with the other parts of the machine, as just indicated, is a matter of mere workshop skill, it need not be detailed here.

It is to be observed that with the hook placed within the offset or overhanging bulb F, and in a vertical position, as described, at the top of an upright or substantially vertical standard, as described, the latter has clear and free space all around it to a depth equal to the height of the standard, or, in other words, equal to the distance from the said hook to the bed of the frame of the machine to which the standard is affixed, while the overhanging bulb, which carries the sewing mechanism beyond the side of said standard, enables said mechanism to be thrust into the remoter portions, corners, edges, &c., of the work to an extent impracticable with machines in which the standard or supporting-arm for such mechanism is coincident with the sides of said mechanism, while the substantially circular cross-section of the overhanging bulb F not only enables the size of the parts to be introduced into the work to be kept within the smallest practicable space in proportion to the size of the shuttle or hook and its adjuncts, but such circular or substantially cylindrical form enables the bulb to be insinuated in the most effective and convenient manner into the more remote portions of the interior of the work. By this means the hook and its immediate adjuncts may be thrust into the article to be sewed to any extent desired, and said article may be turned around by the operator to any position required, and may in like manner be moved in any direction which may be requisite or desirable in the sewing of the various seams in directions different one from another.

In the detail views, Figs. 5 to 12, Fig. 5 represents the cover, which is attached to the standard, as shown in *c'*. Fig. 6 is a face view of the bobbin detached from its place, and Fig. 7 is a sectional view thereof. Fig. 8 is a view of the bobbin-cap. Fig. 9 is a detailed view of the hook shown in Fig. 3. Fig. 10 is a detached view of said hook with the feed-yoke attached. Fig. 11 is a detached view illustrating the position of the feed point and yoke



in relation with the eccentric which actuates the same. Fig. 12 is a detached view of the hook without the feed-yoke. It is of course to be understood that these details may be varied at will within the limits of fair mechanical judgment.

As the vertical post must be small to enter the interior of small shoes or pocket-books, specially-arranged means of operating the feed are required. Referring to Fig. 11, the feed-cam *c* lifts the feed *d* and yoke *b*, rocking on pin *l*, and carries it forward. The spiral spring *m* forces it down and back into position, to be raised by the feed-cam *c*, thus obtaining a four-motion feed in a very small space.

What I claim as my invention is—

1. In a sewing-machine for sewing hollow articles, the combination of a vertical hollow standard terminating at the top in a hollow side overhanging bulb, *F*, a rotating hook arranged in a vertical plane upon a horizontal shaft within said bulb, a pressing device arranged above and directly over said overhanging bulb, and operating with the feed-dog to feed the material, and a vertical gear-operating shaft having gear-connection with the

shaft of said rotating hook arranged within the standard at the side of the overlapping bulb, substantially as and for the purpose herein set forth.

2. In a sewing-machine for sewing hollow articles, the combination of a tubular substantially vertical standard, *E*, constructed with a horizontal substantially cylindrical or overhanging bulb having a bearing communicating with the interior of the said tubular standard, the vertical revolving hook placed in said bulb in a position transverse to the same, the shaft *G*, working through the bore of the bulb, and having attached to it the hook at one end and the bevel-pinion *e*, and the shaft *I*, arranged in bearings in the vertical tubular standard, and having the bevel-pinion *f*, gearing into the pinion *e*, the said parts being constructed and arranged for joint use and operation, substantially as and for the purpose herein set forth.

GEORGE H. W. CURTIS.

Witnesses:

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