

(Model.)

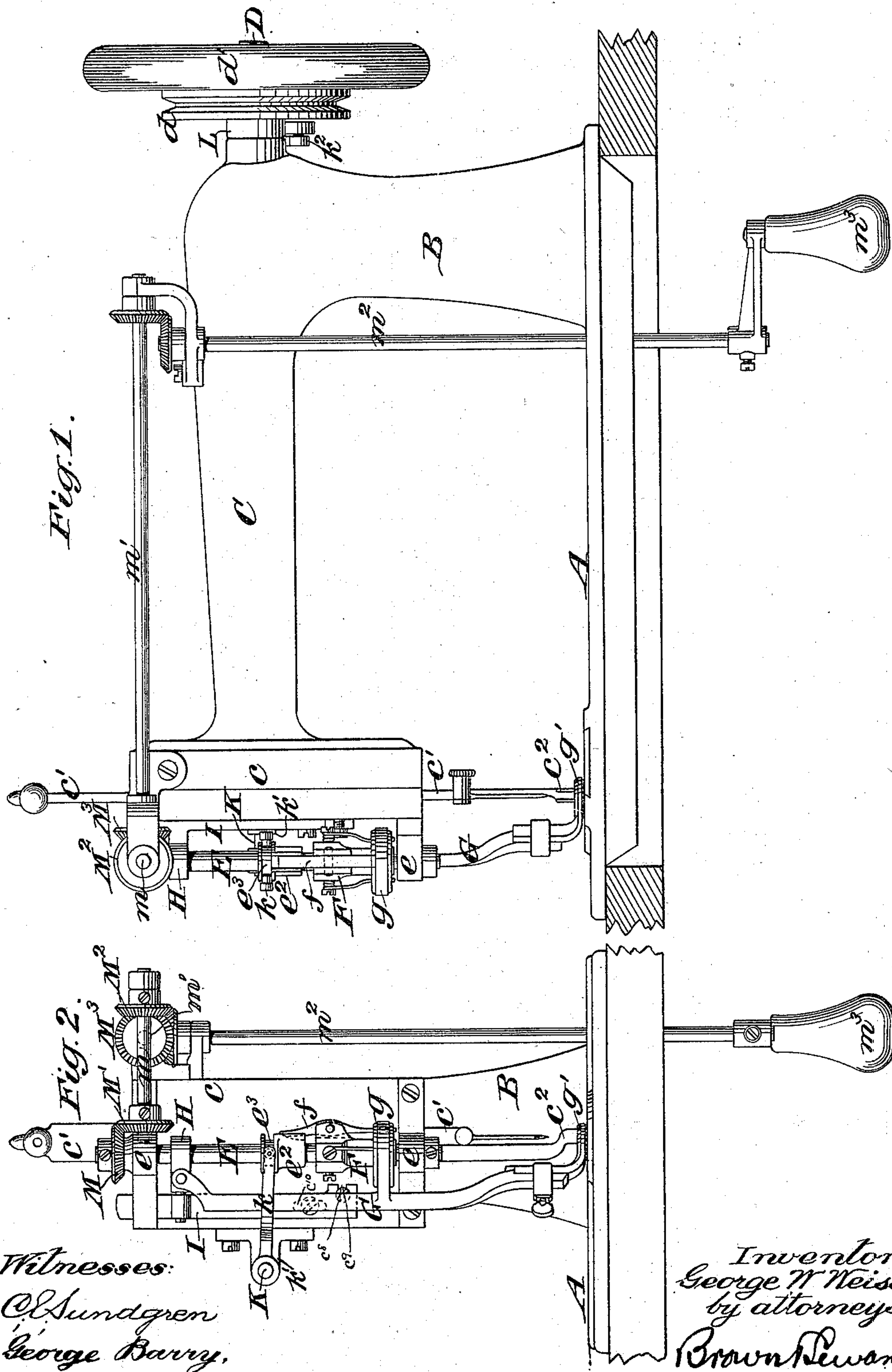
3 Sheets—Sheet 1.

G. W. WEISS.

UNIVERSAL FEED ATTACHMENT FOR SEWING MACHINES.

No. 562,445.

Patented June 23, 1896.



(Model.)

3 Sheets—Sheet 2.

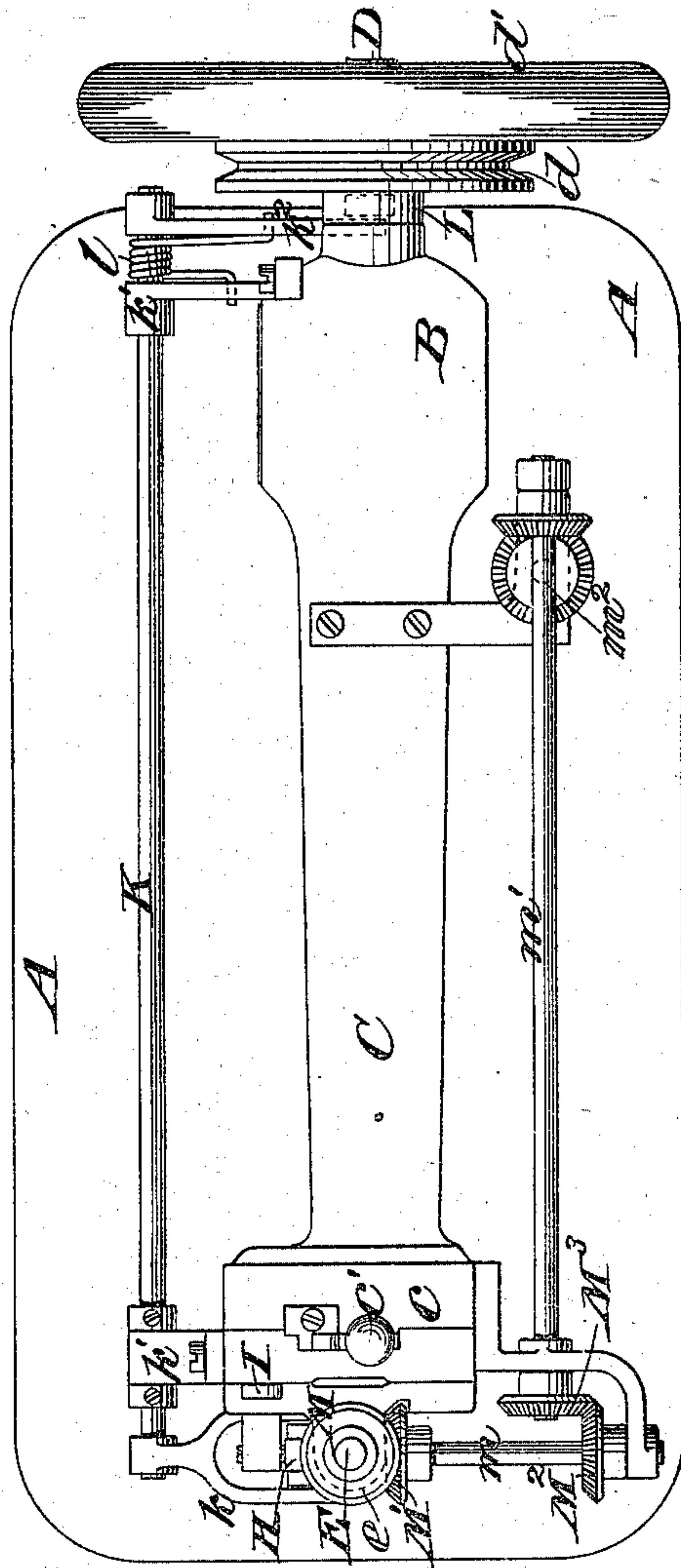
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Fig. 3.



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(Model.)

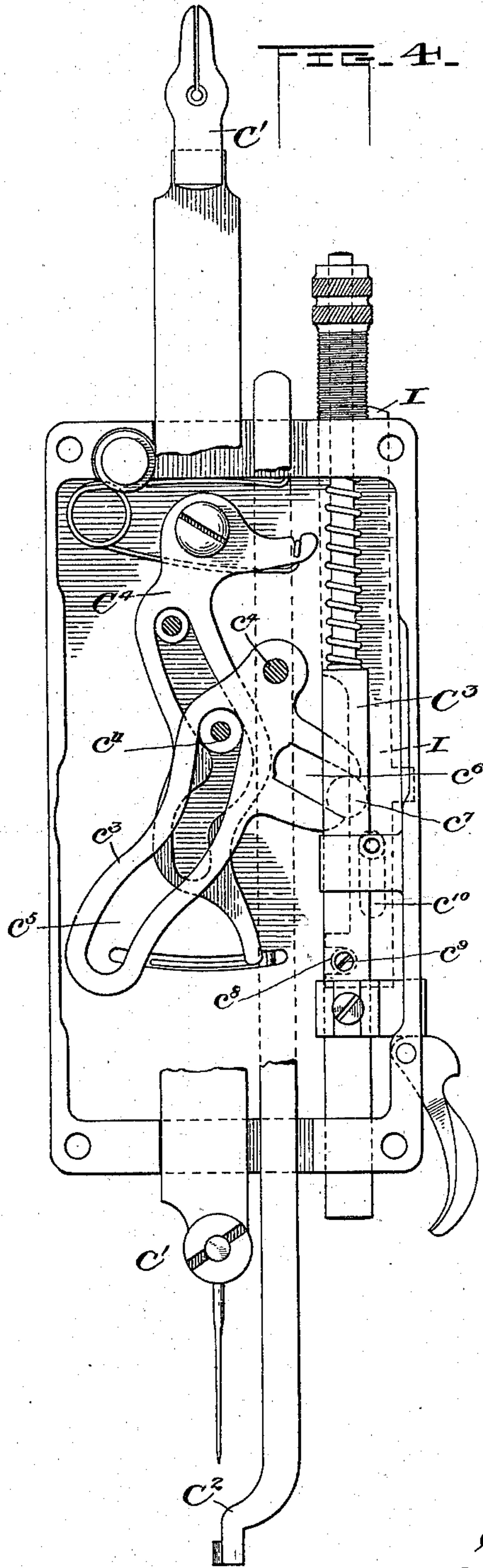
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No. 562,445.

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UNIVERSAL-FEED ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 562,445, dated June 23, 1896.

Application filed August 15, 1893. Serial No. 483,188. (Model.)

To all whom it may concern:

Be it known that I, GEORGE W. WEISS, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Universal-Feed Attachments for Sewing-Machines, of which the following is a specification.

My invention relates to an improvement in universal-feed attachments for sewing-machines, in which a universal feed of the Bonnaz type may be applied to a lock-stitch sewing-machine of ordinary structure without any extensive reorganization of parts, and without great expense.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a view of a machine in side elevation, showing the position of the attachment. Fig. 2 is a view of the same in end elevation, and Fig. 3 is a top plan view. Fig. 4 is a rear elevation of the head of the machine, showing the actuating mechanism for the helper and feed bars.

The machine which I have chosen to illustrate the practical operation of the attachment is what is known in the art as the "Davis Lock-Stitch Machine," and, while the attachment may be readily adapted to other types of machines, this particular type has one particular advantage in the presence of the helper-bar which may be made to coact with excellent results with the feed bar.

A represents the table, B the standard, and C the overhanging arm, of a sewing-machine, the arm C being provided with a head *c* for supporting the needle-bar *c'* and the helper-bar *c''*, and their operating mechanism, as is usual. The drive-shaft D with its drive-pulley *d* and hand and balance wheel *d'* are also arranged as is common for imparting motion to the needle and helper bars. The shuttle and its operating mechanism are not shown, it being understood that they may be of any well-known or approved construction suitable for the machine.

The universal feed is accomplished by mechanism working on the principle of what is well known in the art as the "Bonnaz feed." The said mechanism is, however, modified in some important particulars to adapt it to its

present purpose, as follows: The rotary shaft E, which supports the devices for imparting to the feed-bar its movements in any desired direction in the plane of the work-table, is mounted in brackets *e*, attached to the front of the head *c*, and has mounted and splined thereon the cam-sleeve *e'* with its annular groove *e''*, and the fixed collar F with the tilting dog *f*, one end of which is adapted to engage the cam-sleeve as the latter is slid along the shaft, and the other end of which is adapted to engage a ring *g* on the feed-bar G to impart the lateral movement to the bar.

The feed-bar G is pivotally secured at its upper end to a rocking cross-head H, loosely embracing the shaft E and journaled in a vertically-reciprocating slide I, operated by mechanism within the head *c*, in the present instance the well-known mechanism which operates the helper-bar. Said mechanism consists of a slotted bell-crank lever *c'*, pivoted at *c''* to the helper-bar *c''*, the longer arm of which is provided with a cam-slot *c'''* and the shorter arm with a bifurcation *c''''*.

c''' is a guide-bar normally spring-depressed and having a pin *c''''*, engaging the bifurcation *c''''*, and which guide-bar actuates the slide I by engaging the bifurcated end *c''''* through the medium of a pin *c'''''*. The slide I is guided in its movements by a pin carried by the frame of the head which engages the slot *c''''*. From this construction it will be seen that as the main shaft rotates, the pin *c''''* on the needle-bar will actuate the lever *c'* and cause the same to vibrate on its pivot *c''*. This movement will cause the alternate rise and fall of the helper-bar and feed-bar, the feed-bar rising as the helper-bar presses upon the work and thereby affords a steady fulcrum for the operative action of the bell-crank *c'*. The feed-bar, after having been returned to the proper extent to begin a new feed movement, is then caused to descend by the action of the bell-crank, and having made a firm grip upon the work becomes a fulcrum against which the bell-crank will operate to lift the helper-bar to allow the proper feed-motion. Thus it will be seen that the feed-bar is reciprocated in alternation with the helper-bar and that this operation is derived from the mechanism which operates the helper-bar.

C⁴ indicates the take-up, which is of ordinary form and actuated by mechanism which forms no part of this invention.

From its point of support the feed-bar depends along down at one side of the shaft E to a point near the work-table where it is provided with a removable foot *g'* in the form of a ring surrounding the helper-bar foot and the path of the needle.

The cam-sleeve on the shaft E is slid up and down on the shaft to operate the dog *f* by means of a forked arm *k* on a rock-shaft K, journaled in brackets *k'*, attached to the back of the overhanging arm C and adapted to be rocked in one direction by a tappet *k*² in engagement with a rotary cam L on the drive-shaft and in the opposite direction by a spring *l*, surrounding said shaft and connected to said tappet *k*² and to the adjacent bracket *k'*.

The shaft E is adapted to be rotated to change the direction of the lateral movement of the feed-bar by means of a bevel-gear M on the shaft engaged with a corresponding bevel-gear M' on a short shaft *m*, the latter being engaged at its opposite end by means of bevel-gear M² with a corresponding bevel-gear M³ on the shaft *m'*, extending along the overhanging arm C, and the shaft *m'* being engaged by bevel-gear with a vertical operating-shaft *m*², provided with an operating-handle *m*³, which may be located beneath the table A.

In operation, the helper-bar is so timed with respect to the feed-bar G that while the feed-bar is being lifted from the table to return and take a new hold, the helper-bar will remain depressed and hold the material being operated upon in place, and just as the feed-bar drops to engage the material and feed it the helper-bar will be lifted from the goods. Upon rotation of the main shaft the cam L will rock the shaft K and cause the vertical reciprocation of the cam-sleeve *e*², which latter will rock the dog *f*, thereby imparting movement to the feed-bar G, to which one end of said dog is connected. By manipulating the handle *m*³ the feed-bar may be made to feed in any direction desired, the feed being always in a straight line. The direction in which the feed is set to work depends manifestly upon the degree of rotation of the shaft E, which carries with it the cam-sleeve *e*² and the dog *f*.

With a few small brackets and some slighter fitting, including the changing of the collar on the main shaft to serve as the cam L, the ordinary Davis machine may have the universal-feed attachment secured thereto and become thereby a universal-feed machine, capable of performing the functions of a spe-

cially-constructed machine of the universal type.

What I claim is—

1. The combination with the helper-bar and means for operating said bar, of a vertically-reciprocating slide connected to and operated by the means which operate the helper-bar, a rocking cross-head journaled in said slide, a feed-bar pivoted to said cross-head, mechanism for operating said feed-bar comprising means for reciprocating the latter vertically alternately with the helper-bar, and means for changing the direction of the feeding movement of the feed-bar; substantially as described.

2. The combination with the helper-bar and means for actuating said bar, of a vertically-reciprocating slide connected to and operated by the means which actuate the helper-bar, a feed-bar, means for giving the feed movements to said bar, mechanism for changing the direction of said feed movement comprising a rotary shaft, a cross-head journaled in said slide, pivoted to and supporting said feed-bar and loosely surrounding said shaft, and means for reciprocating said feed-bar vertically, alternately with the helper-bar; substantially as described.

3. The combination with the helper-bar and means for vertically reciprocating the same, of a feed-bar, means for vertically reciprocating the same in alternation with the helper-bar, means for giving the feed movement to said bar, comprising a rotary cam, a rock-shaft having an arm at one end spring-pressed upon said cam, a rotary shaft carrying a cam, a second arm upon said rock-shaft loosely connected to said cam, and means for rotating said rotary shaft, its cam and the dog to change the direction of the feed; substantially as described.

4. The combination with the helper-bar and means for vertically reciprocating the same, of a feed-bar, means connecting the helper-bar with the feed-bar for vertically reciprocating the latter in alternation with the former, means for imparting to the feed-bar its feeding movement, and means for changing the direction of such feeding movement comprising two vertical shafts and two horizontal shafts operatively geared together for rotation, and one of the vertical shafts carrying and operating certain of the parts which give the feeding movement; substantially as described.

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