

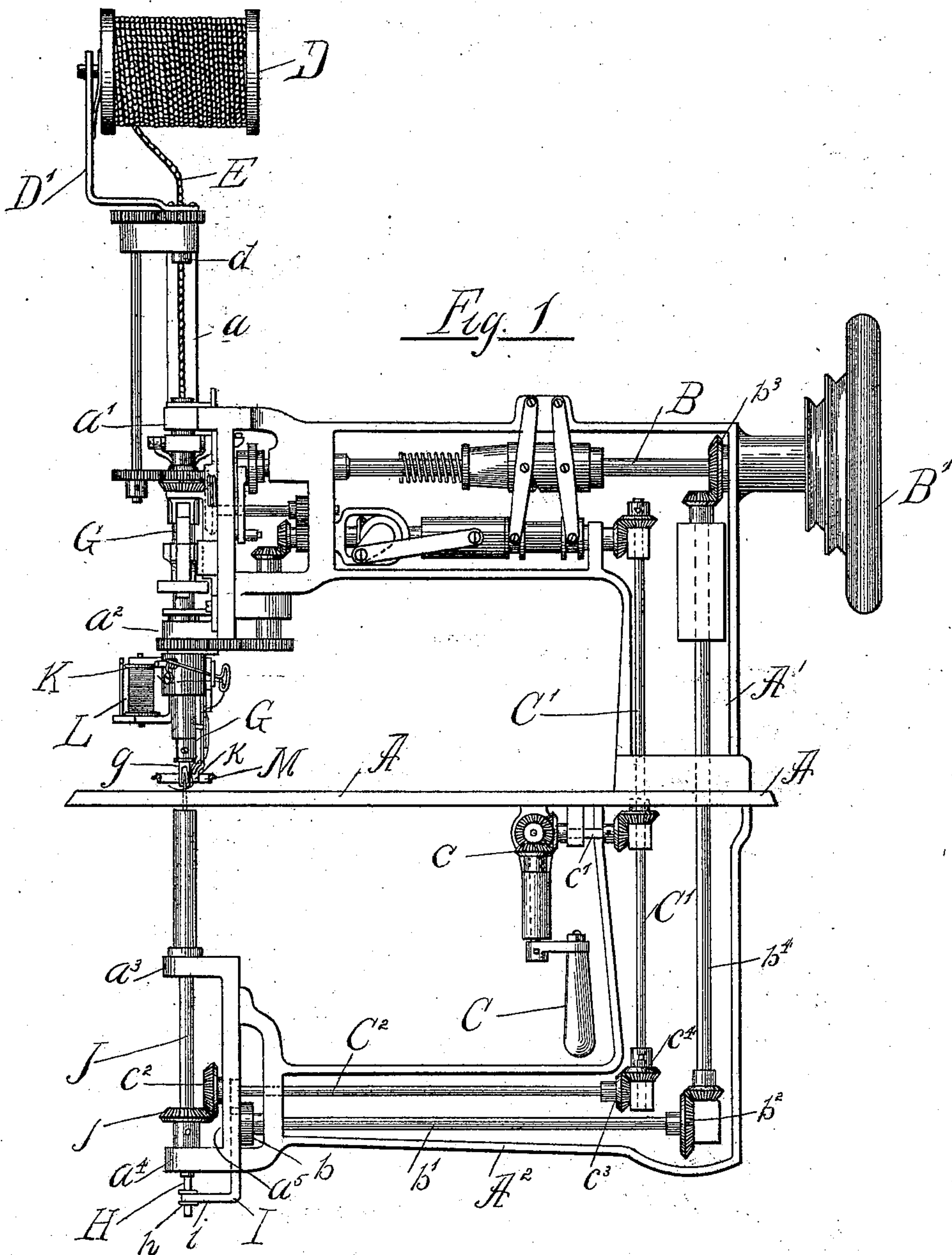
(No Model.)

3 Sheets—Sheet 1.

R. ALBERS.
EMBROIDERING MACHINE.

No. 577,398.

Patented Feb. 16, 1897.



Witnesses.

Wm. M. Rheims
Clinton Hamlin

Inventor
Rudolf Albers

by Milton P. Brown
his Att'y

(No Model.)

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Fig. 2

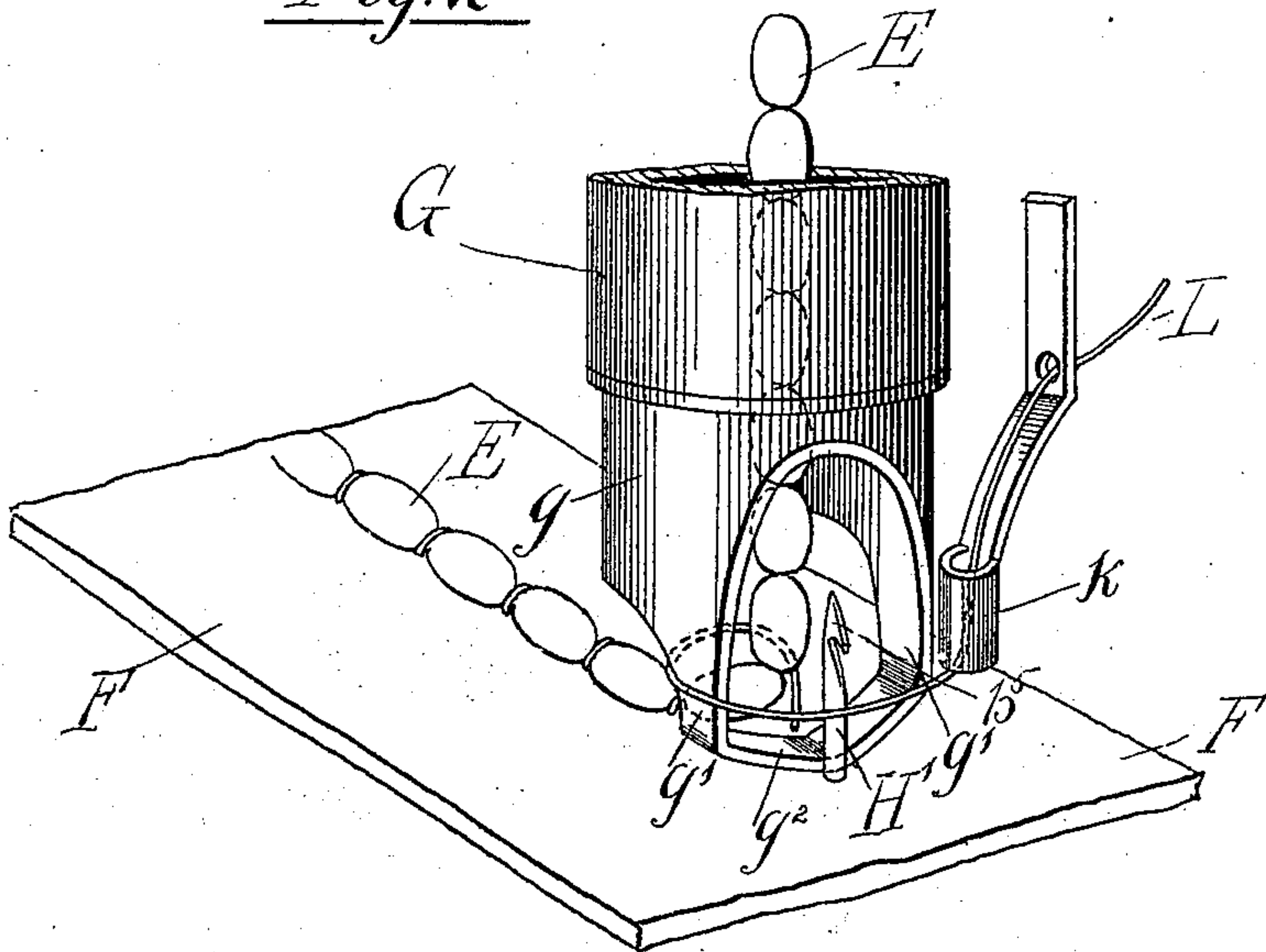
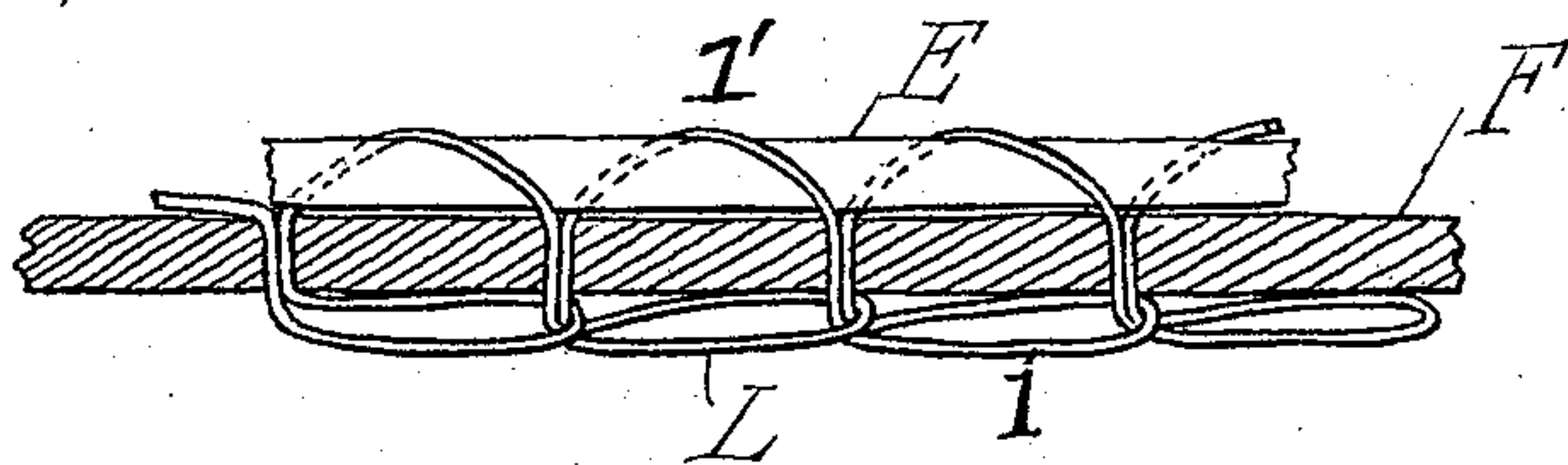


Fig. 3



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(No Model.)

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Fig. 4

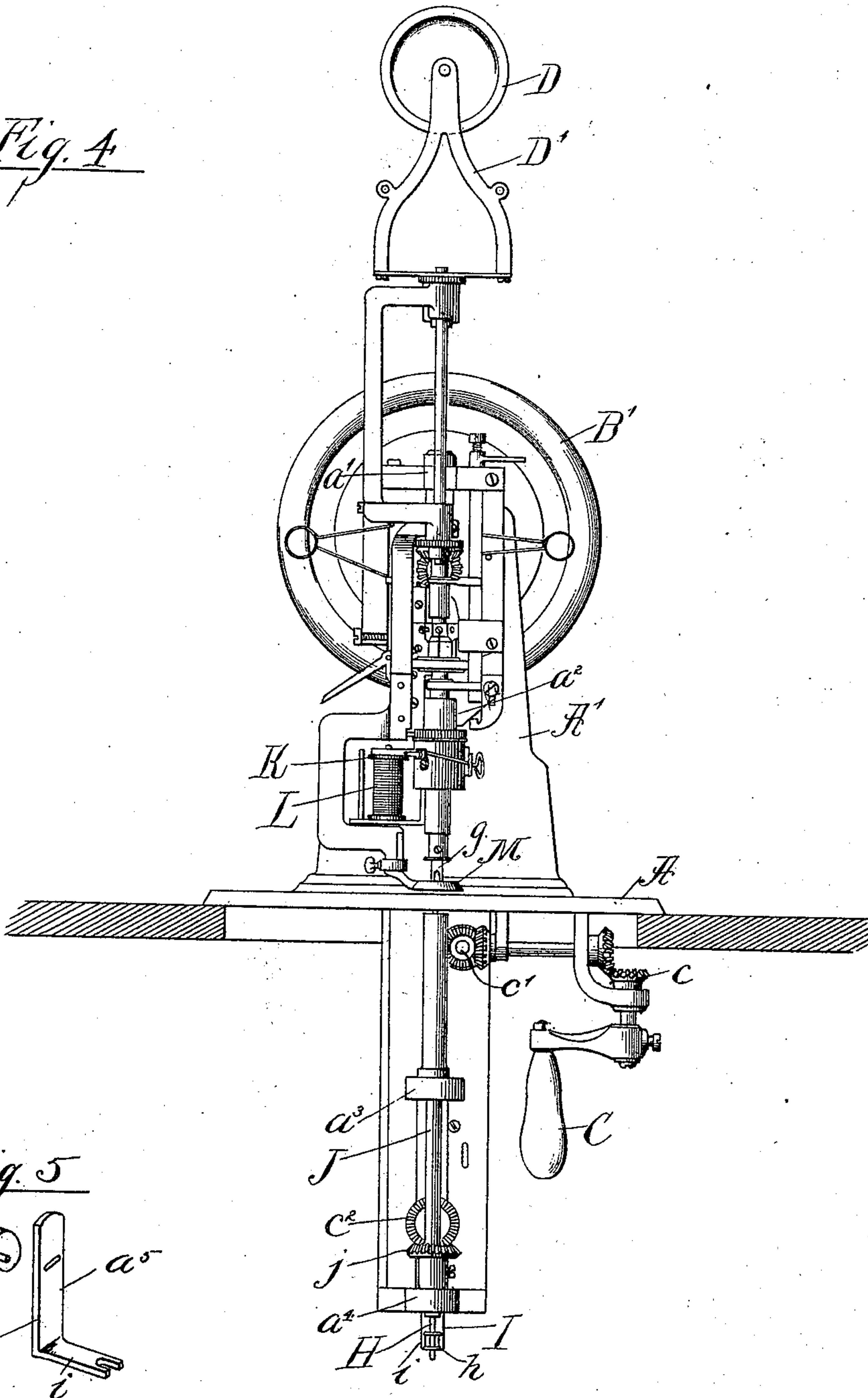
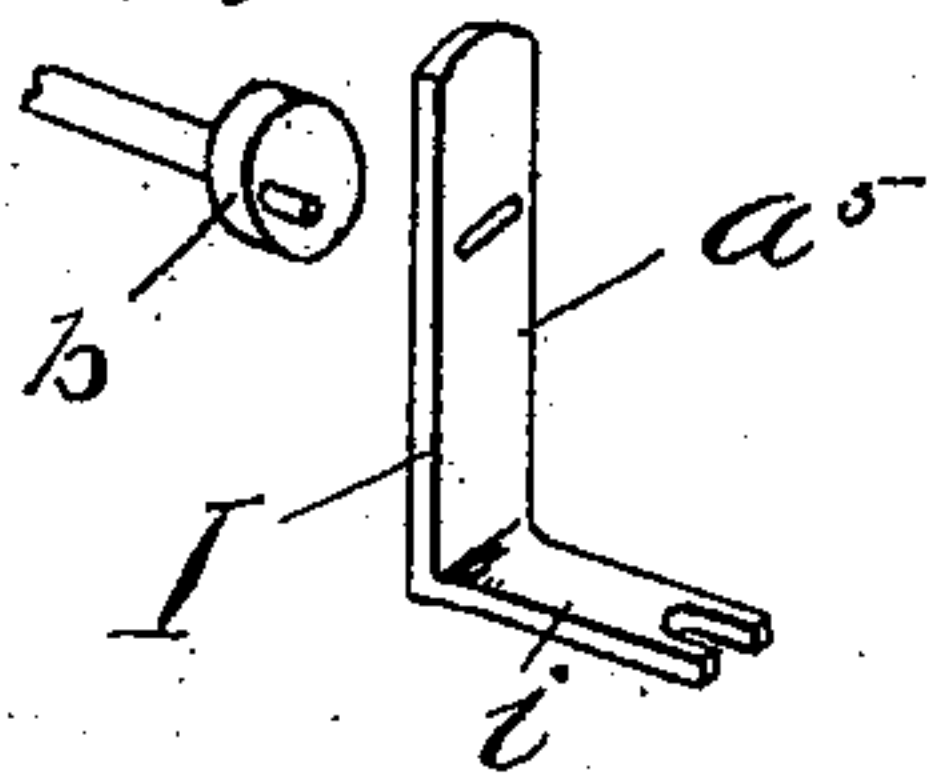


Fig. 5



Witnesses
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John W. Adams.

Inventor
Rudolf Albers
by: Dayton, Poles & Brown
his Attorneys

UNITED STATES PATENT OFFICE.

RUDOLF ALBERS, OF CHICAGO, ILLINOIS, ASSIGNOR TO JOS. ALEXANDER & CO., OF SAME PLACE.

EMBROIDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 577,398, dated February 16, 1897.

Application filed May 18, 1895. Serial No. 549,750. (No model.)

To all whom it may concern:

Be it known that I, RUDOLF ALBERS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Embroidering and Beading Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in embroidering-machines for stitching cord, braid, string-beads, or the like to cloth or other fabrics or materials; and it relates more particularly to that class of such machines in which a thread is passed once around the embroidering cord or braid to secure it to the fabric in distinction from those machines in which the stitches are passed directly through said cord or braid for that purpose.

In the present state of the art it is old to construct machines of the class under consideration with a needle or looper-hook arranged above the work-plate and operating on one thread, so as to form a seam to which the embroidery cord or braid is secured by means of a second thread that is wound around the cord or braid and is passed through the stitches of the seam. Lock-stitch two-thread machines have also been employed in which the stitches are alternately formed on opposite sides of the cord or braid in such manner as to carry the upper thread across the cord or braid in a zigzag line, and thus secure the same in position. Attempts have also been made to avoid the necessity of using two threads by applying the cord, braid, or beading from below and by using a looper arranged above the work-plate and coöperating with an under-thread carrier to form a loop-stitch, of which each stitch is coiled around the cord or braid. With such an arrangement, however, the pattern must necessarily be stamped on the back of the fabric in order that it may be in view of the operator, while its face or embroidery side lies against the work-plate and is entirely concealed from view during the embroidering operation.

A principal object of the present invention,

therefore, is to provide a machine in which but a single thread is required to secure the cord, braid, or beading to the fabric, while at the same time said cord or braid is applied to the upper face of the fabric in plain view of the operator.

The invention consists in the matters herein set forth, and particularly pointed out in the appended claims.

Figure 1 is a front elevation of a beading or braiding machine constructed in accordance with my invention. Fig. 2 is a perspective detail showing the manner of looping the thread around the string of beads, cord, or braid. Fig. 3 is a sectional detail showing the manner in which the thread is disposed in the operation of the machine. Fig. 4 is a front end elevation of the machine shown in Fig. 1. Fig. 5 is a perspective view of the needle-actuating yoke and the front end of the eccentric which actuates the latter, the eccentric being slightly separated from the yoke in order to show its construction more clearly.

In said drawings my improvements are shown as applied to a universal-feed sewing-machine which is similar in most respects to that described in the existing patent to Cornely, No. 262,742, dated August 15, 1882, and as the construction and general operation of machines of this class are well understood and are, moreover, fully set forth in said Letters Patent it will only be necessary to describe in detail herein the particular parts or improvements which constitute or more especially relate to my present invention.

A designates the work-plate of the machine, and A' the usual standard or arm which supports the mechanism above said plate.

B is the main driving-shaft, which is journaled horizontally within the arm A' and to the outer end of which the driving and balance wheel B' is secured.

C is the crank-handle for directing the universal feed, said handle being located, as usual, beneath the table A, and being connected, by means of suitable bevel-gears and stub-shafts c c', with a vertical shaft C', which extends upwardly into the standard A' to operatively engage the feed-controlling devices in the

same manner as in said Cornely patent, No. 262,742, hereinbefore referred to.

D designates the spool, upon which the beading cord or braid E is wound, said spool being carried in a frame D', which rotates on a hollow vertical pivot d , that is mounted in a vertical bracket a at the outer end of the machine-arm A'. The beading-braid E is fed downwardly to the fabric F through the hollow pivot d and through the oscillatory hollow spindle G, which is journaled axially beneath the pivot d within vertical bearings a' a'' of the machine-arm. In previous machines of this class and in the former patent, No. 262,742, referred to, said spindle G serves to inclose the reciprocatory needle-bar, and the needle or looper carried by said bar projects downwardly through the lower end of said spindle, so as to penetrate the fabric from above. In the present improvement, on the other hand, the parts which serve to reciprocate the needle and the latter are omitted from the upper machine-head, and the needle is located beneath the work-table A and is adapted to extend upwardly through an opening in said table, so as to penetrate the fabric from beneath. With the exception of the omission of the needle and needle-actuating mechanism and the modification of the lower end of said oscillatory hollow spindle hereinafter described, the upper machine-head remains the same as in said prior patent.

A² designates a second standard or arm made generally similar to the upper arm A' and depending from the table A at a point directly beneath the base of said upper arm. At its free end the arm A² is provided with apertured lugs a^3 and a^4 , within which a needle-bar H is adapted to reciprocate. Said needle-bar is arranged in vertical alinement with the spindle G and carries a needle or looper H' at its upper end in position to project upward through a suitable aperture in the work-plate A. The needle-bar H is herein shown as reciprocated by a crank b , which operates a slide I, that is mounted between vertical guides a^5 in the outer end of the arm A² and projects below the same. Said slide is provided with a forked bracket i , which embraces the lower end of the needle-bar H between two fixed collars h thereon. The crank b is formed at the outer end of a horizontal shaft b' , located within the horizontal portion of the arm A², and said shaft b' is driven from the main driving-shaft B by bevel-gears b^2 b^3 and vertical connecting-shaft b^4 , the latter being located within the vertical portions of the arms A' and A². When applied, as in this instance, to a universal-feed machine, the needle-bar H is rotatively mounted within the lugs a^3 a^4 and is arranged to be turned on its axis by the controlling-handle C at the same time with said feed mechanism. To this end said needle-bar is herein shown as inclosed within a tubular sleeve or hollow spindle J, which extends through the bearing a^3 a^4 and is provided between the latter with a bevel-

gear j . Said pinion intermeshes with a bevel-gear c^2 on the outer end of a horizontal shaft C², that is located within the arm A² above the needle-bar-actuating shaft b' . At its inner end the shaft C² is provided with a bevel-gear c^3 , which intermeshes with a similar gear c^4 on the lower end of the shaft C', the latter being extended downwardly for this purpose. The needle-bar H is connected with the tubular sleeve J by a spline and feather or other suitable device, so as to rotate therewith while capable of reciprocatory motion therein. With this construction, therefore, it is obvious that any movement of the handle C will rotate the sleeve J simultaneously with the universal-feed mechanism, and as the gearing is so designed as to always cause an equal angular movement in each a constant relation between the direction in which the needle or looper-hook faces and the direction of the line of feed is at all times preserved.

K designates the thread-carrier, which contains the spool of thread L by which the beading or braid is secured to the fabric F. Said carrier is revolubly mounted and actuated in the same manner as in the Cornely patent, No. 262,742, referred to, and terminates at its lower end in a guide-eye k , located adjacent to the lower end of the tubular spindle G. The latter, as adapted to the present invention, terminates in a nipple g , (see enlarged detail Fig. 2,) the wall of which is cut away at its front and rear sides, (considered with reference to the direction of the line of feed,) so as to leave depending side arms g' , that are connected by an integral cross-bar g^2 , which operates as a presser-foot to hold the fabric down upon the work-plate.

The needle or looper-hook H' is arranged to penetrate the fabric in close proximity to said cross-bar g^2 and immediately in front of the center thereof, and the point b^5 of the hook is directed outwardly away from said bar or in a direction opposite to the line of feed. An annular feed foot or ring M surrounds the lower end of the spindle and thread-carrier, as in previous machines of this type.

In the operation of the machine thus described the carrier K makes one complete revolution around the tubular spindle G for each stitch or reciprocation of the needle H' and thereby carries the thread L around the cord or beading E and underneath the hook of the needle. The regular loop-stitch is then formed in the usual manner by the reciprocation of the needle and the feeding forward of the fabric, the loop proper, l , being located beneath or on the under side of the fabric, while the upper portion l' of the stitch differs from the corresponding portion of any ordinary loop-stitch merely in being carried over and around the braid or beading between the points where it enters the fabric. The repetition of this operation will bind the cord or braid closely against the fabric by a continuous series of strands, which will appear to

lie diagonally across the cord in parallel relation to each other when looking at the embroidered fabric from above.

Machines of this type are particularly adapted and intended for use as beading-machines, and in this connection are found to be especially advantageous in avoiding the frequent breakage of needles, which is characteristic of previous machines for that purpose. In such former machines in which the needle is arranged above the work-plate it frequently happens that in stitching the string of beads across a previously-attached line or in attempting to run two lines very closely together, as is often necessary in following intricate patterns, the point of the descending needle strikes one of the beads, and as the work is unyieldingly supported by the work-plate such impact obviously tends either to break the needle instantly or to deflect it sufficiently to strike the work-plate at one side of the throat or aperture in the latter and thereby cause it to break. In the construction herein set forth, on the other hand, the needle merely pushes to one side any bead which it may happen to strike and has no tendency to break, it being obvious that as the fabric is engaged from above only by the presser and feed foot there is nothing to prevent the beads from being thus thrust to one side sufficiently to permit the needle to pass and nothing to intercept and break the needle even if it should be slightly deflected.

The general principles of construction and operation, so far as the location and relation of the several parts of the stitch-forming mechanism are concerned, may obviously be operatively employed in a machine not provided with a universal feed or in which the fabric instead of the feed mechanism is rotated in following the pattern, and such construction will be understood as included within the present invention, as will also the em-

ployment of two or more needles and stitch-forming devices on a single machine, provided such arrangement is otherwise within the scope of the invention set forth.

I claim as my invention—

1. The combination with work-plate and feed mechanism, of a reciprocating needle arranged beneath the work-plate and adapted to project upwardly through the same to penetrate the fabric from beneath, means for reciprocating the needle, a guide for cord, braid or the like, located above the work-plate, and a thread-guide located outside of the cord-guide whereby the thread may be wound around the cord and needle at each stitch, substantially as described.

2. The combination with work-plate and feed mechanism, of a hollow spindle above the work-plate forming a cord-guide, a reciprocating needle below said plate adapted to project upwardly through the same to penetrate the fabric from beneath, means for actuating the needle, and a thread-guide located outside of the cord-guide and adapted to be rotated about said spindle, substantially as and for the purpose set forth.

3. The combination with the work-plate and feed mechanism, of a nipple above the work-plate recessed or cut away on one side to receive the needle, a thread-guide outside said nipple for winding thread around the same, a reciprocating needle working upwardly through the cloth-plate, and operating mechanism for said thread-guide and needle, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 15th day of May, A. D. 1895.

RUDOLF ALBERS.

Witnesses:

TAYLOR E. BROWN,
JOSEPH ALEXANDER.

It is hereby certified that Letters Patent No. 577,398, granted February 16, 1897, upon the application of Rudolf Albers, of Chicago, Illinois, for an improvement in "Embroidering-Machines," were erroneously issued to "Jos. Alexander & Co.," as sole owners of the invention; whereas said Letters Patent should have been issued to *Emile Cornely and Robert Cornely, of Paris, France*, said Emile Cornely and Robert Cornely being assignees, by mesne assignments, of the entire interest of said invention, as shown by the assignments of record in this Office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 2d day of March, A. D., 1897.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.