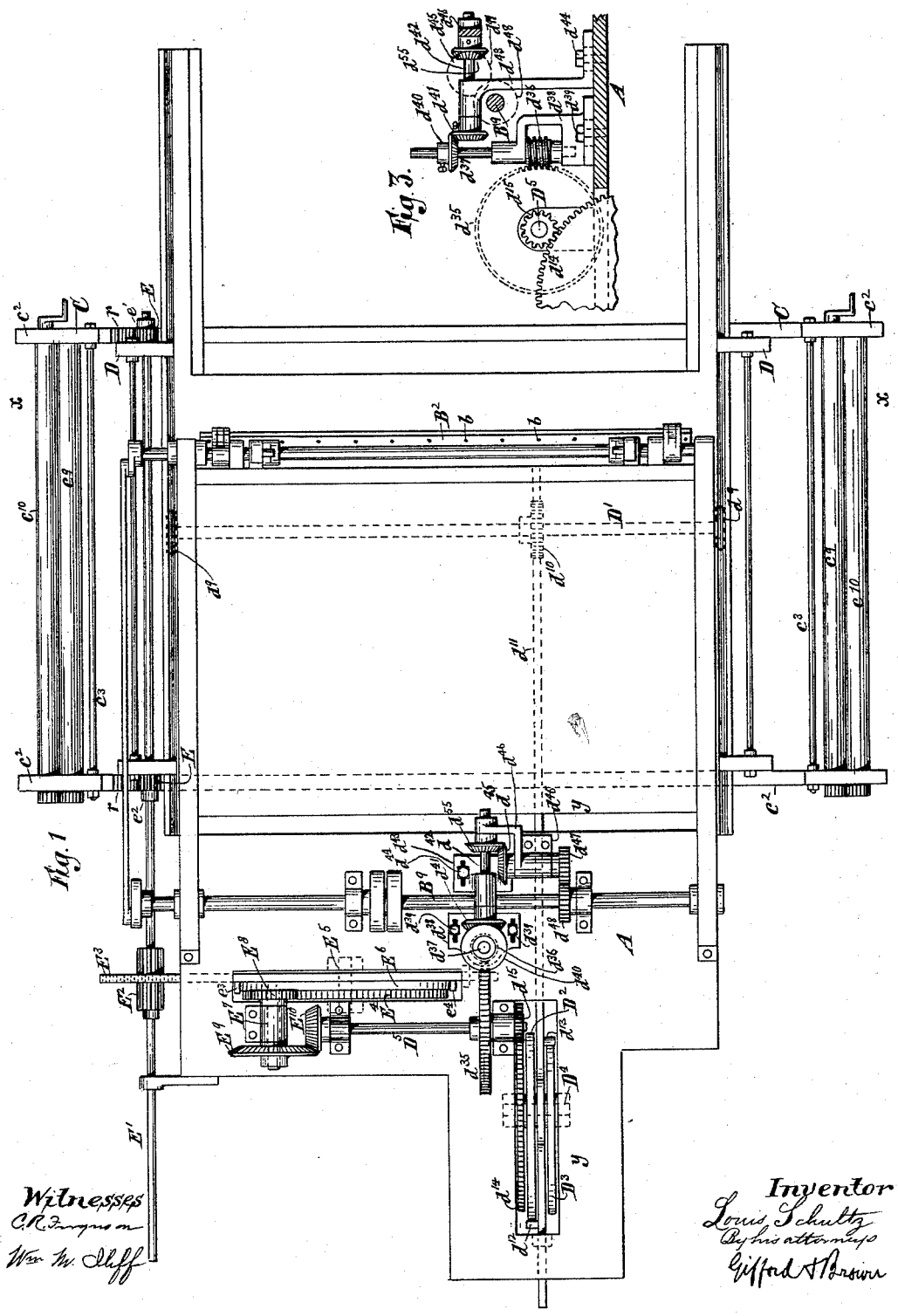
(No Model.) 2 Sheets—Sheet 1.

L. SCHULTZ.

QUILTING MACHINE.

No. 456,735. Patented July 28, 1891.



Witnesses
C. R. Ingram
Wm. M. Duff

Inventor
Louis Schultz
By his attorneys
Gifford & Brown

(No Model.) 2 Sheets—Sheet 2.

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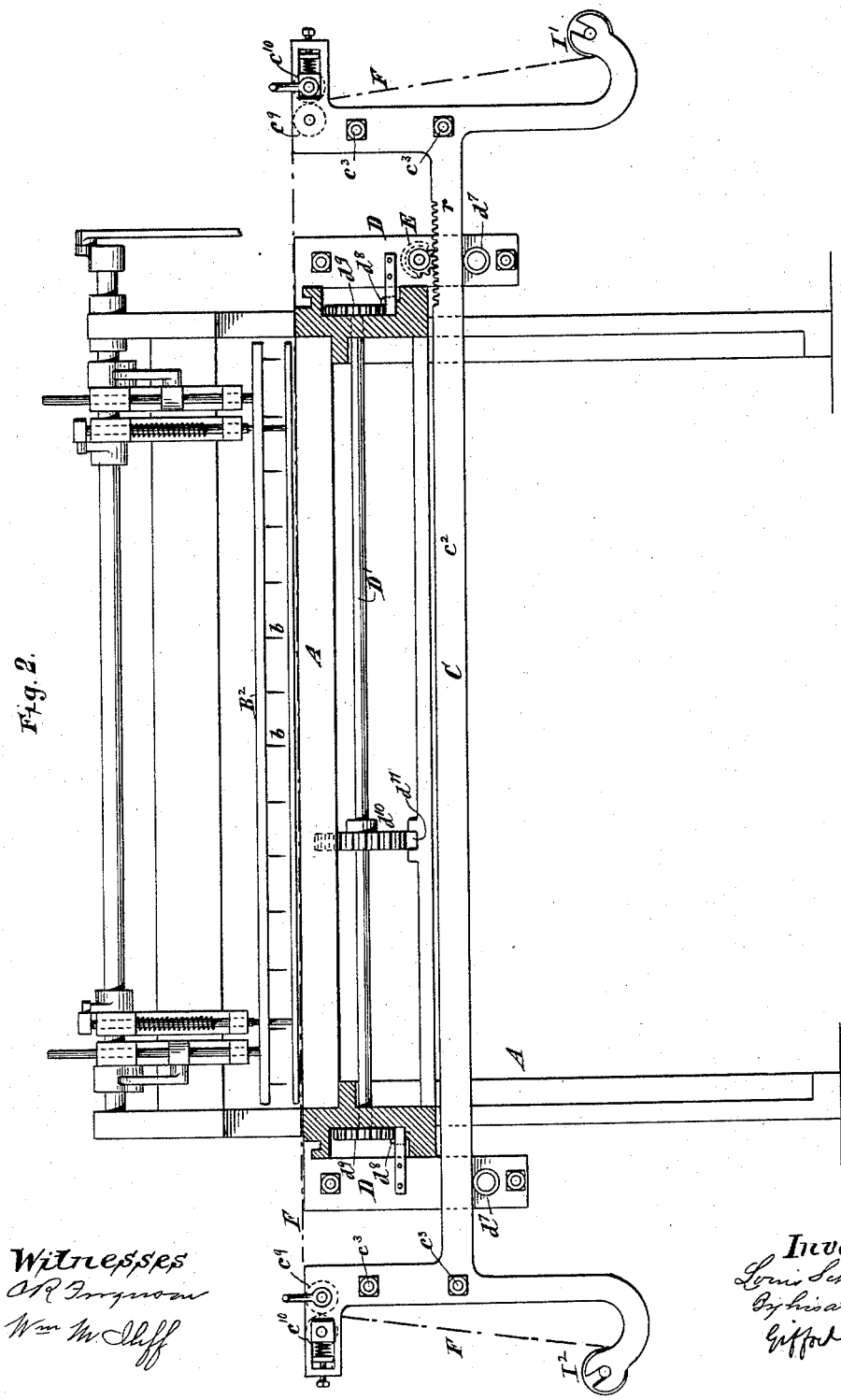

Fig. 2.

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UNITED STATES PATENT OFFICE.

LOUIS SCHULTZ, OF NEW YORK, N. Y., ASSIGNOR TO THE EXCELSIOR QUILTING COMPANY, OF SAME PLACE.

QUILTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 456,735, dated July 28, 1891.

Application filed May 29, 1889. Serial No. 312,602. (No model.)

To all whom it may concern:

Be it known that I, LOUIS SCHULTZ, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Quilting-Machines, of which the following is a specification.

This improvement relates to an improvement in quilting-machines for which, on the 22d day of September, 1888, Matthias Koch filed an application for United States Letters Patent, said application having been numbered Serial No. 286,110.

I will describe such portions of a quilting-machine as are necessary to an understanding of my present improvement, and I will then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a plan of such portions of the machine which are the subject of the said former application as are necessary to an understanding of the present improvement, together with additional parts which are involved in my present improvement. Fig. 2 is a transverse vertical section. Fig. 3 is a vertical section taken lengthwise of the machine.

Similar letters of reference designate corresponding parts in all the figures.

A designates the main frame of the machine.

B^2 designates the needle-bar. It has secured to it a series of needles *b*. The needle-bar, in the present instance, has only a vertically-reciprocating movement, and it may be operated by any suitable means. Shuttle or looping mechanism of any suitable character will be used in conjunction with the needles. As my improvement does not reside in this mechanism, I do not consider a description necessary.

In this machine the work is supported by two carriages, one of which travels in a straight line to and fro upon the main frame of the machine, and the other of which travels upon the first to and fro in a straight line at right angles to the line of travel of the first.

D designates the lower carriage. It is here shown as made in two sections. One section travels along a horizontally-extending portion of one of the side pieces of the frame A, and the other section travels along a similar horizontally-extending portion of the other side piece of the frame A. This lower carriage D travels to and fro in a direction at right angles to the length of the needle-bar.

C designates the upper carriage. It is supported by roller d^7, journaled on the lower carriage D. I call this carriage C the "upper carriage," because it serves to support the fabric. The upper carriage C has a frame composed of two side pieces c^2, connected by stretchers or cross-bars c^3. The side pieces of this frame have horizontally-extending bar-like portions which travel upon the rollers d^7. The engagement of these bar-like portions with the rollers d^7 connects the two sections of the carriage D so that they will travel in unison.

The carriage C travels in a direction at right angles to the direction in which the carriage D moves, and therefore the carriage C travels in a direction parallel with the length of the needle-bar.

F designates the fabric to be quilted. It is held by work-holders consisting of pairs of rollers c^9 c^{10} arranged near the opposite ends of the carriage C. Rollers I′ I^2 are shown as fitted to this carriage for holding the fabric before and after quilting.

The horizontally-extending portions of the side pieces of the frame A are provided with racks d^8. With these engage gear-wheels d^9, affixed to a shaft D′, which is journaled in the two sections of the carriage D and contributes to connect the two sections so that they will travel in unison. On the shaft D′ is affixed a gear-wheel d^{10}, which engages with a reciprocating rack-bar d^{11}. The movements of this rack-bar are caused by two pattern wheels or cams D^2 D^3, affixed to a shaft D^4. The pattern-wheel D^3 operates in connection with a pin or bowl d^{13} on the rack-bar, and the pattern-wheel D^2 coacts with a pin or bowl d^{12} on the rack-bar. On the shaft D^4 is affixed a gear-wheel d^{14}. With this engages a gear-wheel d^{15}, secured on a shaft D^5. On this shaft D^5 is a worm-wheel d^{35}. This engages with a continuously-driving worm d^{36} on an upright shaft d^{37}, which is journaled in a stand or bracket d^{38}, secured to the main frame of the machine. This stand or bracket d^{38} has slots extending at right angles to the axis of the shaft D^5. Through these slots pass screws d^{39}, which engage with tapped holes in the main frame A. By loosening these screws

the stand or bracket may be moved toward and away from the shaft D^5. This makes it possible to use differently-proportioned worm-gears and worms in conjunction with the shafts D^5 and d^{37}. Upon the shaft d^{37} is affixed a bevel gear-wheel d^{40}. It is shown as clamped in place by a screw passing through its hub to impinge upon the shaft. This bevel gear-wheel engages with a bevel gear-wheel d^{41}, affixed to a horizontal shaft d^{42}, which is journaled in a stand or bracket d^{43}. This stand or bracket d^{43} has in its foot-piece slots extending at right angles to the shaft D^5. Screws d^{44} pass through these slots and engage with tapped holes in the main frame A. Provision is afforded by this manner of securing the stand or bracket d^{43} in place for adjusting it toward and from the shaft D^5, and consequently toward and from the shaft d^{37}. Owing to this the bevel-wheels d^{40} d^{41} may be removed and bevel-wheels of different relative proportions may be substituted for effecting a connection between the shaft d^{42} and the shaft d^{37}. The shaft d^{42} is rotated by means of a bevel gear-wheel d^{45}, engaging with a bevel gear-wheel d^{55}, affixed to said shaft. The bevel gear-wheel d^{45} is affixed to a horizontal shaft, which extends parallel with the shaft D^5 and is supported in a bracket or stand d^{46}. This bracket or stand d^{46} also serves to support the shaft d^{42}. The shaft, which is furnished with the bevel gear-wheel d^{45}, has also affixed to it a gear-wheel d^{47}. This engages with a gear-wheel d^{48}, affixed to the main driving-shaft B^9. It will be readily seen that by this train of gearing motion is transmitted from the driving-shaft to the shaft D^5 continuously, or, in other words, non-intermittingly, and therefore that the pattern-wheels rotate continuously, and by operating the rack-bar non-intermittingly move the carriage D non-intermittingly whenever the carriage has motion. To make this still more clear, I will say that what I mean is that whenever the carriage D does have motion through this new mechanism it will not have a stop motion, such as results from a pawl-and-ratchet movement; but it will have a continuous motion. Manifestly in making some patterns the carriage D may be absolutely at rest during certain intervals; but this will arise from the shape of the pattern-wheels, not from the mechanism which transmits the motion to the pattern-wheels.

I will now briefly describe the mechanism for imparting motion to the upper carriage C. The shaft D^5 has affixed to it a bevel gear-wheel E^{10}, which meshes with a bevel gear-wheel E^9, affixed to a shaft E^7, journaled in a bracket secured to the main frame of the machine. On the shaft E^7 is a gear-wheel E^8, which engages with a gear-wheel E^4, affixed to a shaft E^5. The shaft E^5 has affixed to it a pattern-wheel E^6, which coacts with pins or bowls e^3 e^4 upon a rack-bar E^3. The rack-bar E^3 engages with a pinion E^2, which is secured to a shaft E′, and which is made very long in the direction of the axis of the said shaft, so that the pinion may move with the shaft longitudinally and yet remain in gear with the rack-bar.

The shaft E′ is journaled in one section of the carriage D, and has secured to it collars e' e^2 beyond the side frames of this section of the carriage, so that the shaft will move longitudinally, corresponding to the carriage D. On the shaft E′ gear-wheels E are affixed. These engage with racks r on the horizontally-extending bar-like portions c^3 of the carriage C. It will readily be understood that when the shaft D′ rotates it will, according to the direction of its rotation, move the carriage C horizontally in a direction parallel with the length of the needle-bar.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a quilting-machine, the combination of a series of needles, a carriage movable to and fro upon the main frame of the machine, a second carriage supported upon the first carriage and movable in a direction at right angles to the movement of the first carriage, a main driving-shaft, a pattern-wheel for causing the movement of the first carriage, and gearing consisting of a shaft d^{37} rotated by the main driving-wheel, a continuously-driving worm rotated by said shaft d^{37}, a shaft D^5, and a worm-wheel d^{35}, engaging with said worm and rotating the pattern-wheel, substantially as specified.

2. In a quilting-machine, the combination of a series of needles, a carriage movable to and fro upon the main frame of the machine, a second carriage supported upon the first carriage and movable in a direction at right angles to the movement of the first carriage, a main driving-shaft, a pattern-wheel for causing the movement of the first carriage, and gearing comprising an upright shaft d^{37}, a shaft D^5, carrying a worm and transmitting motion to the pattern-wheel, the shaft d^{37}, having a worm engaging with the said worm-wheel, said shaft d^{37} being supported in adjustable bearings, substantially as specified.

3. In a quilting-machine, the combination of a series of needles, a carriage movable to and fro upon the main frame of the machine, a second carriage supported upon the first carriage and movable in a direction at right angles to the movement of the first carriage, a main driving-shaft, a pattern-wheel for causing the movement of the first carriage, and gearing comprising an upright shaft d^{37}, and a shaft d^{42}, the latter being supported in movable bearings and both shafts d^{37} and d^{42} having bevel gear-wheels removably connected to them, substantially as specified.

LOUIS SCHULTZ.

Witnesses:
C. T. WAGNER,
PAUL OTTO.