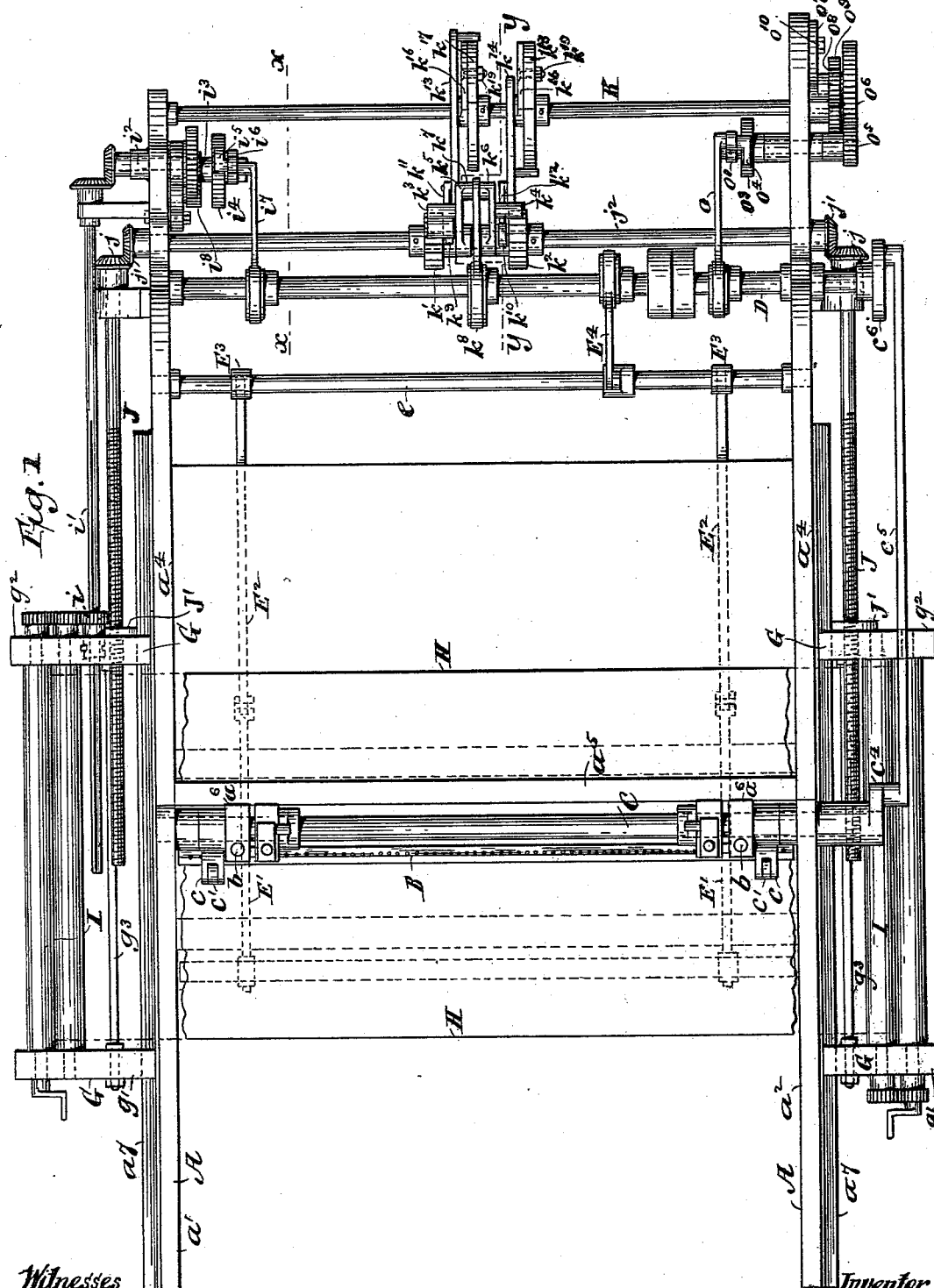


3 Sheets—Sheet 1.

No. 420,276.

Patented Jan. 28, 1890.



Witnesses
Wm. L. Robinson.
Fred Kemper

 **Inventor**
Matthias Koch
By his attorneys
Gifford & Brown

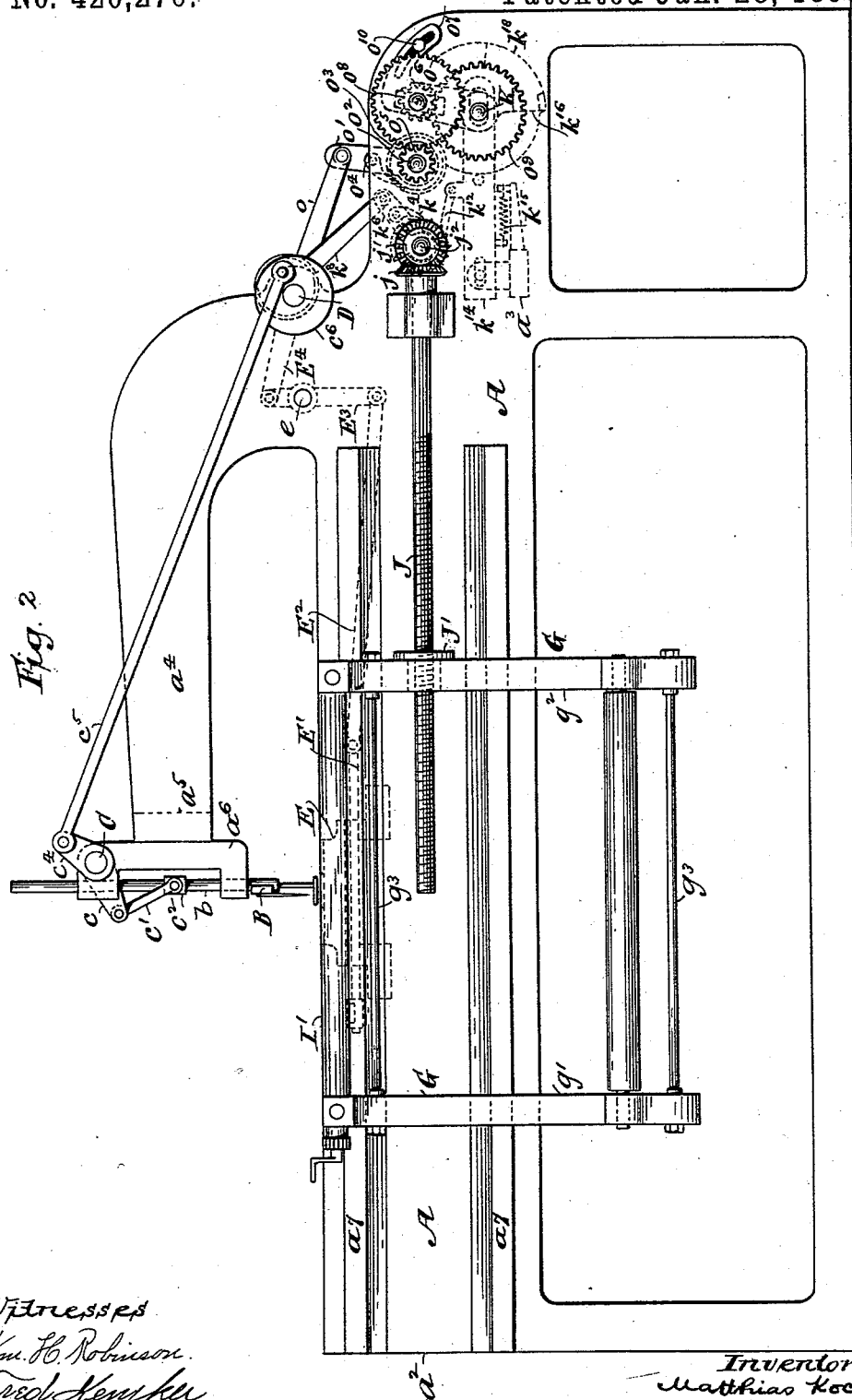
(No Model.)

3 Sheets—Sheet 2.

M. KOCH.
QUILTING MACHINE.

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Inventor
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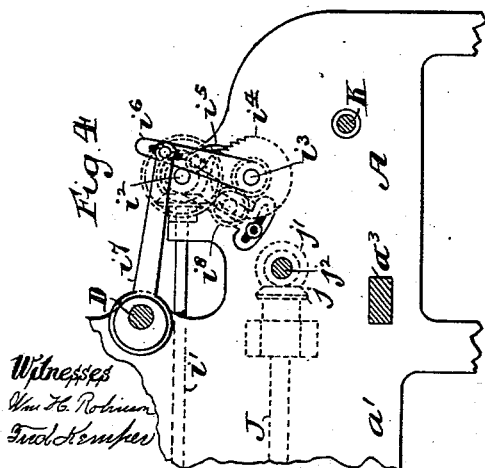
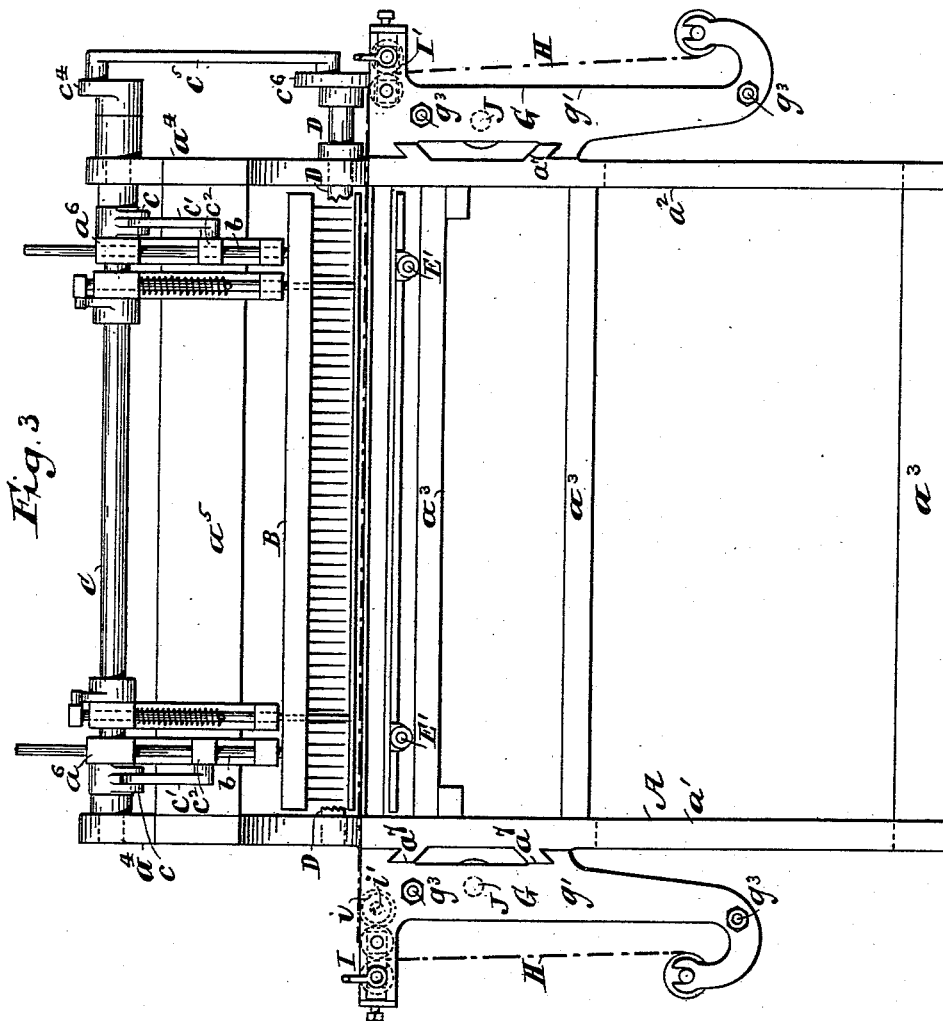
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3 Sheets—Sheet 3.

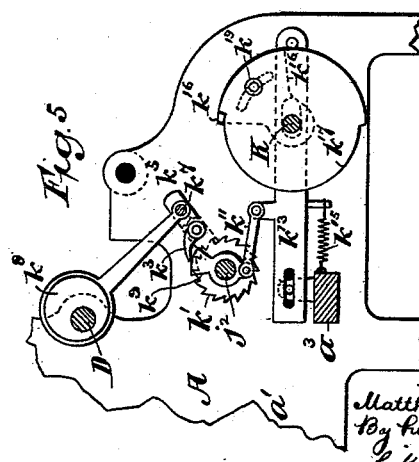
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UNITED STATES PATENT OFFICE.

MATTHIAS KOCH, OF NEW YORK, N. Y., ASSIGNOR TO LOUIS SCHULTZ, OF
SAME PLACE.

QUILTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 420,276, dated January 28, 1890.

Application filed November 20, 1888. Serial No. 291,320. (No model.)

To all whom it may concern:

Be it known that I, MATTHIAS KOCH, 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.

I will describe a quilting-machine embodying my improvement, and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a plan or top view of a quilting-machine embodying the improvement. Fig. 2 is a side elevation of the same. Fig. 3 is an elevation of the machine, taken in a plane at right angles to that in which Fig. 2 is taken. Fig. 4 is a sectional elevation on the plane of the dotted line *xx*, Fig. 1. Fig. 5 is a sectional elevation taken, as indicated, by the dotted line *yy*, Fig. 1.

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

A designates the frame of the machine. It consists, essentially, of two side pieces *a'* *a*² and cross-pieces or stretchers *a*³.

B designates a needle-bar extending between the side pieces *a'* *a*² of the main frame. It has any number of needles secured to it. These needles are shown as arranged in a single row. Attached to the needle-bar are upwardly-extending rods *b*. The side pieces *a'* *a*² of the main frame are provided with long horizontally-extending arms *a*⁴. Between the free ends of these arms *a*⁴ a cross-bar *a*⁵ is secured. Brackets *a*⁶ are secured to this cross-bar *a*⁵. The rods *b*, attached to the needle-bar, are fitted in these brackets and guided thereby when the needle-bar is vertically reciprocated.

C designates a rock-shaft provided with arms *c*, to which are connected at one end links *c'*. These links at the other end are pivotally connected to collars *c*², which are fastened upon the guide-rods *b* of the needle-bar. It will be apparent that when the rock-shaft is turned or oscillated it will impart a vertical reciprocation to the needle-bar and needles.

The rock-shaft C is provided at one end with an arm *c*⁴, to which is pivotally connected a link *c*⁵. This link *c*⁵ is at the other end

connected to a disk *c*⁶, affixed to a shaft D, which constitutes the main shaft of the machine, being provided with fast and loose pulleys in order that rotary motion may be conveniently transmitted to it as desired.

With the needles suitable looping or shuttle mechanism is combined. I have shown a shuttle mechanism consisting, essentially, of race-bars E, shuttle-driver rods E', adapted to reciprocate between the race-bars and reciprocate the shuttles between the race-bars, and links E², connecting the shuttle-driver rods with an oscillating lever E³. This lever is composed of arms arranged out of line upon a rock-shaft *e*. The lever E³ is oscillated by means of an eccentric and eccentric-rod E⁴. This eccentric is affixed to the main shaft D.

G designates a carriage, upon which, in the present example of my improvement, the fabrics to be quilted are supported. This carriage consists, essentially, of two side pieces *g'* *g*² and cross-bars or stretches *g*³. The side pieces of the main frame are provided with shears or ways *a*⁷. The side pieces *g'* *g*² of the carriage G engage with these shears or ways, and the carriage is therefore adapted to slide in the direction of the length of the side pieces of the main frame, or, in other words, transversely to the length of the needle-bar and row of needles.

I have indicated the fabric to be quilted by a heavy dotted line H in Fig. 3, and I have shown the said fabric in Fig. 1 with the ends broken away. It is marked H in Fig. 1.

The fabrics to be quilted pass between pairs of rollers I I', arranged at the ends of the upper portion of the carriage. One of the rollers of each pair is preferably made adjustable toward its fellow in a well-known manner. The rollers I serve to impart motion to the fabric. The rollers I', however, simply hold it under tension. The rollers constituting each pair are geared together. Motion is imparted to the rollers I by a gear-wheel *i*, engaging with the gear-wheel of the nearest roller of this pair. The gear-wheel *i* is supported in the carriage G, so as to be free to rotate, but so as to be incapable of any other motion independently of the carriage. A shaft *i'* passes through the gear-wheel *i*.

This shaft is grooved and the gear-wheel i is secured to it by means of a spline or feather. Motion of the gear-wheel with the carriage lengthwise of the shaft i' is thus permitted.

5 The shaft i' is connected by bevel-gearing to a shaft i^2 , which derives motion through a pawl-and-ratchet movement from the main shaft D. The shaft i^2 is connected by gear-wheels with the shaft i^3 . The latter carries
10 a ratchet i^4 . A pawl i^5 , which engages with the ratchet, is carried by an arm i^6 , and an eccentric and eccentric-rod i^7 , combined with the main shaft D, operate the pawl. The shaft i^2 receives motion from the shaft i^3 , not
15 by having the latter geared directly to it, but through the intervention of a gear-wheel i^8 , which is supported upon a swinging frame. The swinging frame renders it possible to employ an intermediate gear-wheel of any desired size for any particular work.

The carriage G is reciprocated under the arms a^4 and beneath the needles by means of screws J, supported in bearings, one on each of the side pieces of the main frame of the machine and extending lengthwise thereof.
25 These screws engage with nuts J' , connected to the side pieces g' g^2 of the carriage. The screws are provided at one end with bevel-gears j , engaging with bevel-gears j' , mounted upon a shaft j^2 . This shaft j^2 is rotated by a pawl-and-ratchet movement, which I will now describe.

k' k^2 designate ratchet-wheels affixed to the shaft j^2 . Their teeth extend in reverse directions. k^3 k^4 designate pawls operating in conjunction with these ratchet-wheels. The pawls are pivotally connected to rods k^5 k^6 , mounted loosely upon the shaft j^2 , so as to be free to turn upon the same. The rods k^5 k^6
40 are connected by a cross-rod k^7 , so that they in effect constitute one rod or frame. An eccentric k^8 upon the main shaft D has its rod connected to the rod k^7 , so as to oscillate the rods k^5 k^6 to cause the pawls k^3 k^4 to play over the ratchet-wheels k' k^2 . The pawls k^3 k^4 have combined with them lifters k^9 k^{10} , consisting of levers loosely mounted upon the shaft j^2 . These levers are independently oscillated. When one is oscillated into a position to lift its pawl out of engagement with the corresponding ratchet-wheel, the other will be oscillated to occupy a position in which it will not interfere with the coaction of its pawl with the corresponding ratchet-wheel, so as to rotate the shaft j^2 . The lifters k^9 k^{10} are connected by links k^{11} k^{12} with slider-bars k^{13} k^{14} . These slider-bars are supported by the main frame of the machine. Motion is imparted to them in one direction
60 by springs k^{15} , and in the other direction by cams k^{17} k^{18} , mounted upon a shaft K, supported by the side pieces of the main frame of the machine. The peripheries of the cams k^{17} k^{18} severally consist of two approximately
65 semicircular portions, one being larger than the other. During one half of the rotation of each cam it maintains its slider-bar in its

rearmost position, and thereby keeps the corresponding lifter in a position to disengage the corresponding pawl from its ratchet-wheel, and during the other half of its rotation it will allow its slider-bar to occupy its forward position, wherein it leaves the corresponding pawl free to operate with its ratchet-wheel. Each cam has combined with it a sector-shaped plate k^{16} . Such plate is loosely mounted upon the shaft K and clamped against its cam by means of a screw k^{19} or other suitable device. By slackening the clamping device the plate may be adjusted
80 rotarily of the shaft to form a greater or less prolongation of the peripheral portion of larger diameter of the cam. When the pawl k^3 coacts with its ratchet-wheel k' , the shaft j^2 is rotated in one direction and the work-supporting carriage is moved in one direction. When the pawl k^4 coacts with its ratchet-wheel k^2 , it rotates the shaft j^2 in the reverse direction and also moves the carriage in the reverse direction. The adjustable sector-shaped plates, by affording provision for prolonging the length of the approximately semicircular portions of the cams which are the larger in diameter enables the length of the travel of the carriage to be
95 varied in either direction.

I will now explain how the shaft K is rotated. The main shaft D, through an eccentric and eccentric-rod o , which are combined with it, oscillates a lever o' , loosely mounted upon a shaft o^2 . On the shaft o^2 is a ratchet o^3 . A pawl o^4 , carried by the lever o' , engages with the ratchet o^3 , and through it imparts a rotary motion to the shaft o^2 . The shaft o^2 has affixed to one end a gear-wheel o^5 . This engages with a gear-wheel o^6 , mounted upon a stud, with which an adjustable hanger o^7 is provided. On the stud is also mounted a gear-wheel o^8 , which rotates with the gear-wheel o^6 and engages with a gear-wheel o^9 , affixed to the shaft K. The stud upon which the gear-wheels o^6 o^8 are mounted is adjustable in a slot lengthwise of the hanger o^7 . The hanger is mounted loosely upon the shaft K and secured in position by a screw or like device o^{10} , passing through a slot in it and engaging with a tapped hole in the main frame of the machine. By the employment of this hanger gear-wheels of different sizes may be arranged upon the said stud to produce any desired speed in the motion of the shaft K.

In pending applications, serially numbered, respectively, 199,412, 263,559, 263,560, and 286,110, I show and claim mechanism similar to that shown but not claimed herein.

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

1. In a quilting-machine, the combination of a movable carriage, a screw for imparting motion to the carriage, reversely-set ratchet-wheels having operative connection with the screw, a rod or arm, pawls upon the rod or arm, lifters coacting with the pawls, and revolving cams having adjustable portions for

operating the lifters, substantially as specified.

2. In a quilting-machine, the combination of a movable carriage, a screw for imparting motion to the carriage, reversely-set ratchet-wheels having operative connection with the screw, a rod or arm, pawls upon the rod or arm, lifters coacting with the pawls, cams for operating the lifters, and an adjustable sector-shaped plate combined with one of the cams, substantially as specified.

3. In a quilting-machine, the combination of a movable carriage, a screw for imparting motion to the carriage, reversely-set ratchet-wheels, a rod or arm, pawls upon the rod or arm, lifters coacting with the pawls, cams having a slide connection for operating the

lifters, and adjustable sector-shaped plates combined with the cams, substantially as specified.

4. In a quilting-machine, the combination, with reversely-set ratchet-wheels having operative connection with a movable carriage, and pawls engaging said ratchet-wheels, of lifters operating the pawls, slides having link-connection with the lifters, rotating cams moving said slides, sector-shaped plates loosely mounted on the cam-shaft, and a clamping-screw engaging a cam and a plate, substantially as specified.

MATTHIAS KOCH.

Witnesses:

WILLIAM H. ROBINSON,
FRED. KEMPER.