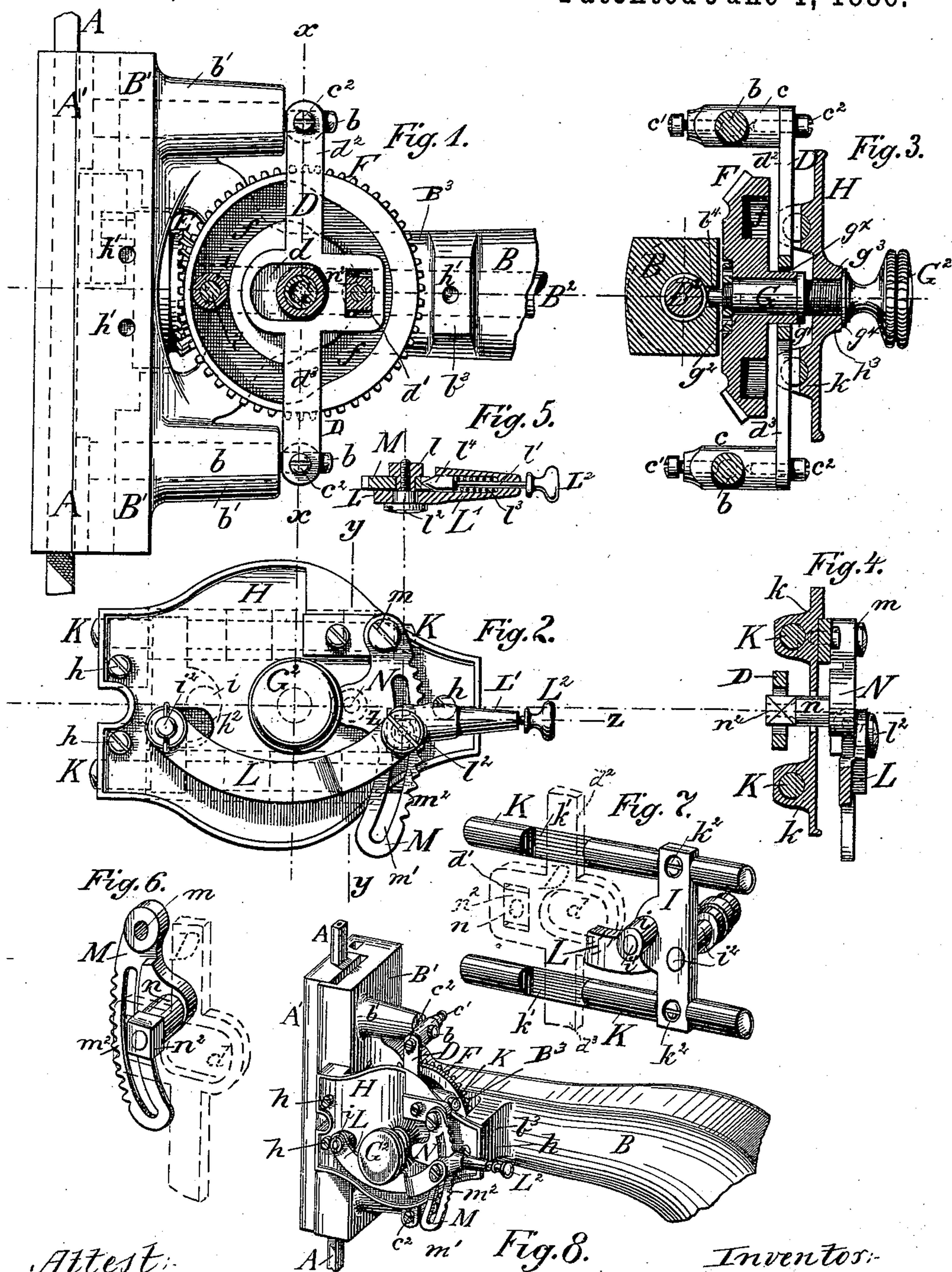


(No Model.)

J. KAYSER.
SEWING MACHINE.

No. 343,036.

Patented June 1, 1886.



Attest:
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UNITED STATES PATENT OFFICE.

JOHN KAYSER, OF KAISERSLAUTERN, BAVARIA, GERMANY.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,036, dated June 1, 1886.

Application filed September 26, 1885. Serial No. 178,271. (No model.) Patented in England January 18, 1886, No. 756.

To all whom it may concern:

Be it known that I, JOHN KAYSER, a subject of the King of Bavaria, and a resident of Kaiserslautern, Bavaria, German Empire, have
5 invented certain new and useful Improvements in Sewing-Machines, (for which I have received Letters Patent of Great Britain, dated January 18, 1886, No. 756;) and I do hereby declare the following to be a full, clear, and exact description
10 of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form
15 a part of this specification.

This invention relates to improvements on certain attachments to or for sewing-machines, whereby such machines are adapted to make, besides the ordinary lock or chain stitch, a zig-
20 zag overseam and other ornamental stitches, for which attachment I have obtained Letters Patent of the United States, dated February 24, 1885, No. 312,862.

The object of the present improvement is to
25 simplify the mechanism for imparting to the needle-bar guide and needle-bar a horizontal to-and-fro or reciprocating motion; and the further object of the invention is to provide a more simple and efficient means for regulating
30 the amplitude of said horizontal reciprocation, and thereby varying the length of the stitch.

The invention consists in the construction, combination, and arrangement of the various mechanisms or mechanical parts whereby the
35 objects of my invention are attained, substantially as hereinafter described, specifically pointed out in the claims, and as shown by the accompanying drawings, in which—

Figure 1 shows in side elevation my improved attachment (the face-plate thereof being removed) as applied to the overhanging arm
40 and head of a sewing-machine. Fig. 2 is a like view of the face-plate detached. Figs. 3, 4, and 5 are sections taken, respectively, on lines
45 *x x*, *y y*, and *z z* of Figs. 1 and 2. Figs. 6 and 7 are perspective detail views, and Fig. 8 is a perspective general view of the attachment applied to the head and overhanging arm of a
50 sewing-machine.

In the above drawings, B indicates the overhanging arm of the sewing-machine, terminat-

ing in a head, B', that supports the needle-bar guide A', adapted to reciprocate horizontally, and in which the needle-bar A is reciprocated vertically in any usual manner from a driving-
55 shaft, B², in the overhanging arm B. The construction, arrangement, and operation of these parts being well-known, and as I lay no claim thereto, except to such parts as are or may be directly affected or controlled by the mechan-
60 ism which constitutes the united feature of this invention, a detailed description of such parts is deemed unnecessary. The head B' has rearwardly-projecting bearings b', in which slide the guide-rods b, formed on or con-
65 nected with the needle-bar guide A', and by means of which, and mechanism hereinafter described, the said needle-bar guide-bar is reciprocated horizontally. The overhanging arm B, in rear of head B', has a flat vertical
70 face, B³, to which my improved attachment is applied, and in rear of said vertical face a projecting boss, b³, to which and the head B' the face or supporting plate H, on which the operating mechanism of the attachment is mount-
75 ed, is secured by means of three screws, *h h h*, screwed into suitable holes, *h' h' h'*, formed in said head A' and boss b³, respectively, as shown in Figs. 1, 2, and 8.

E is the bevel-pinion, mounted at the forward end of shaft B², said pinion projecting through an opening in the overhanging arm and meshing with the bevel-wheel F of the attachment. The diameter of the latter wheel
80 is twice that of the pinion, so that said wheel 85 will make one revolution at every two revolutions of the pinion.

The parts just described are constructed and arranged for operation substantially like the corresponding parts described in the Letters
90 Patent above referred to. The wheel F is loosely mounted on a short shaft or stud, G, that has its bearings in a boss, *h*³, formed on the face of plate H, and in a recess, *b*⁴, formed in the overhanging arm B, as shown in Fig.
95 3. The bearing of the shaft G in the boss of the face-plate is screw-threaded interiorly, and the shaft itself is correspondingly screw-threaded at that point, as shown at *g*³, so that
100 when the shaft is rotated in one or the other direction it will be moved endwise or forward or backward a short distance to throw the

wheel F into or out of engagement with the pinion E. The shaft G terminates in a milled head, G^2 , by means of which said shaft is manipulated, and the longitudinal motion of the shaft is limited by a flange, g^4 , on the milled head G^2 and flange or collar g' on shaft G and the inner face of the bearing h^3 in face-plate H. The wheel F is held against endwise motion on shaft G by the aforesaid flange or collar g' on the one hand and a check-nut, g^2 , screwed on an attenuated portion of shaft G, and lying within a suitable recess formed in the rear face of the wheel F, as more plainly shown in Fig. 3. By means of this arrangement sewing machines provided with the attachment may be used for sewing the ordinary chain or lock stitch or a cross or zigzag or other ornamental stitch without disconnecting or removing the attachment from the machine.

The wheel F has a cam-groove, f , formed in its front face, the form of which groove is plainly shown in Fig. 1. In this groove rides a roller, i , loosely mounted on a pin or stud, i' , Figs. 1 and 7, secured to a cross or connecting bar, I, that serves to connect two guide-rods, K, that are capable of moving to and fro in bearings k , formed on the rear face of the face or supporting plate H, Fig. 3, said guide rods K being secured to bar I by means of screws k^2 , Fig. 7. The cross-bar I carries a second stud, i^2 , on its front face, on which is pivoted one end of a curved connecting rod or bar, L, whose other end is secured by means of a screw, l^2 , or otherwise to a block, l , that is adapted to slide in a segmental slot, m' , formed in a toothed sector or segmental lever, M, pivoted to the face-plate at m , Figs. 2, 6, and 8. The curved rod or bar L has a tubular extension, L' , in which is arranged a rod, l' , on the inner end of which is secured a prism-shaped stop or tooth, l^4 , and on the outer end a manipulating-button, L^2 . A coiled spring, l^3 , on rod l' tends to hold the tooth in the teeth m^2 in the segmental lever or sector M, as more plainly shown in Fig. 5. If the rod l' is drawn outward against the tension of its spring, its tooth or stop l^4 will be withdrawn from the teeth m^2 of segmental lever or sector M, thereby releasing the connecting rod or bar L, which latter may then be adjusted within the slot m' , to regulate the amplitude of the horizontal reciprocation imparted to the needle-bar guide, as hereinafter described. The segmental lever or sector M has a projection or ear, N, to which is attached a pin or stud, n , that carries a square block, n^2 . (Shown in Fig. 6, and in dotted lines in Fig. 7.) The block n^2 fits into an oblong or vertical slot, d' , formed in a lateral extension of a connecting-bar, D, which connecting-bar has also an oblong horizontal slot, d , through which passes the hub g^x of the bevel-wheel G, on which hub said connecting-bar is loosely seated. The arms d^2 d^3 of connecting-bar D are secured by means of screws c^2 to cross-heads c , which latter are secured by means of screws c' to the outer end of the guide-rods b , attached to the

needle-bar guide A', and by means of which connecting-bar said needle-bar guide is reciprocated horizontally.

As shown in Fig. 7, the guide-rods K K are recessed at k' , and in said recesses reciprocate the connecting-bar arms d^2 d^3 . The object of this arrangement is to save space and give the attachment a more compact form. The connecting-bar D, and through it the needle-bar guide A', is reciprocated as follows: When the bevel-wheel F is rotated by the pinion E, the roller i on cross-bar I, to the stud i^2 of which one end of the connecting bar or rod L is attached, following the cam-groove f in said wheel F, will be moved to and fro, thereby imparting a corresponding movement to the bar I and the guide-rods K, said stud i^2 moving in the slot h^2 , formed in face-plate H, thereby reciprocating the rod or bar L, and through the latter the segmental lever or sector M. The latter lever being caused to swing to and fro on its pivot m , and as said lever carries the block n^2 , that lies in the slot d' of connecting-bar D, said connecting-bar will follow the movements of the block, thus imparting a horizontal reciprocating movement to the needle-bar guide A'. By means of the construction described the bar I is reciprocated directly from the wheel F through the stud or roller thereon and the cam-groove of the said wheel, and the said bar I, which, with the guide-rods K, forms practically a reciprocating frame, is made to reciprocate the needle-bar guide A' through the curved bar L, segmental lever M, and the bar D. The amplitude of this reciprocating movement of connecting-bar D may be varied within certain limits by adjusting the end of the bar or rod L nearer to or farther from the fulcrum of the sector M in the slot m' , to increase or decrease the amplitude of the oscillations thereof. If, for example, the end of the lever L is brought to the lower end of slot m' of the sector M, the amplitude of its oscillations will be least, and when said lever is adjusted or brought to the upper end of the slot m' , then the amplitude of the oscillations of the sector M will be greatest, because in the first instance the distance between the block l and the fulcrum m is greatest and in the latter instance least. Between these limits the amplitude of the oscillations of the connecting-bar D, and consequently of the needle-bar guide and needle-bar, may be regulated at will by means of the toothed portion m^2 of the sector M and the locking-tooth l^4 of the connecting rod or bar L, hereinbefore described.

Having described my invention, what I claim is—

1. The combination, with the overhanging arm and head of a sewing-machine, the shaft B^2 , carrying pinion E, and the needle-bar guide A', of the bar D, connected with the needle-bar guide and provided with a vertical slot, d' , an actuating-block operating in said slot, the bevel-wheel F, intermediate connections for reciprocating the block and through the lat-

ter the connecting-bar D from the bevel-wheel, and a supporting-plate for said devices detachably connected with the arm and head of the machine, substantially as and for the purpose specified.

2. The combination, with the driving-shaft B², the needle-bar guide A', having guide-rods b, and the bar D, connected with said guide-rods, and having a slot, d', of an actuating-block, n², fitted in slot d', a connecting-rod connected with the block, and mechanism for imparting a reciprocating movement to the said rod from the driving-shaft B², substantially as and for the purpose specified.

3. The combination, with the overhanging arm and head of a sewing-machine, the driving-shaft B², carrying a pinion, E, and the needle-bar guide A', of the bevel-wheel F, the bar D, provided with a vertical slot, d', a block, n², fitted in said slot, a reciprocating frame operated from the bevel-wheel, and a connection between said frame and the block, substantially as and for the purpose specified.

4. The combination, with the overhanging arm and head of a sewing-machine, the driving-shaft B², carrying a pinion, E, and the needle-bar guide A', of the bevel-wheel F, the bar D, connected with the needle-bar guide and provided with a vertical slot, d', the reciprocating frame I K, operated from wheel F, the block n², operating in the slot of bar D, a lever for reciprocating the block, and a connection between said lever and the frame I K, substantially as and for the purpose specified.

5. The combination, with the overhanging arm and head of a sewing-machine, the driving-shaft B², carrying a pinion, E, and the needle-bar guide A', of the bevel-wheel F, the bar D, connected with the needle-bar guide and provided with a vertical slot, d', a block, n², fitted in said slot, the reciprocating frame I K, for operating said block, a segmental lever connected with the block and frame, and a connecting-rod, L, adjustably connected with the lever, and carrying a roller or pin working in a cam-groove of the wheel F, substantially as and for the purpose specified.

6. Means for adjusting the amplitude of the reciprocations of the needle-bar, which consist in the combination, with the needle-bar guide, the bar D, connected thereto, the driving mechanism E F, and a slotted and toothed lever for reciprocating the bar D, of a connecting-bar for connecting the driving mechanism with and oscillating the lever on its ful-

crum, said bar being adjustable in the slot of the lever, and a locking-tooth operating to engage the teeth of the lever to lock the connecting-bar into position when adjusted, substantially as and for the purpose specified.

7. The combination, with the overhanging arm and head of a sewing-machine, the reciprocating needle-bar guide A', and the driving-shaft B², carrying a pinion, E, of the bar D, connected with said needle-bar guide, the block n², working in a slot of the bar, the lever M, connected with said block, the frame I K, the bar L, connected with said frame and lever, the wheel F, operating to reciprocate the bar L and frame I K, and through said bar the lever M, and a supporting-plate for said devices detachably connected with the overhanging arm and head of the machine, substantially as and for the purpose specified.

8. The combination, with the overhanging arm and head of a sewing-machine, the driving-shaft B², carrying a pinion, E, and a reciprocating needle-bar guide, A', of the bar D, connected with said guide, the block n², working in a slot of the bar, the lever M, connected with said block, the frame I K, the rod L, connected with said frame, the wheel F, operating to reciprocate frame I K, means, such as described, for regulating the amplitude of the reciprocations of the bar D, and a supporting-plate for said devices detachably connected with the overhanging arm and head of the machine, substantially as and for the purpose specified.

9. The combination, with the overhanging arm and head of a sewing-machine, the driving-shaft B², carrying a pinion, E, and a reciprocating needle-bar guide, A', of the bar D, connected with said guide, the block n², working in a slot of the bar, the lever M, connected with said block, the frame I K, the rod L, connected with said frame and lever, the wheel F, operating to reciprocate frame I K, means, such as described, for regulating the amplitude of the reciprocations of the bar D, means for throwing the bevel-wheel F into and out of gear with the pinion E, and a supporting-plate, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN KAYSER.

Witnesses:

OSCAR RUNDSCHUH,
FRANZ MÜLLER.