

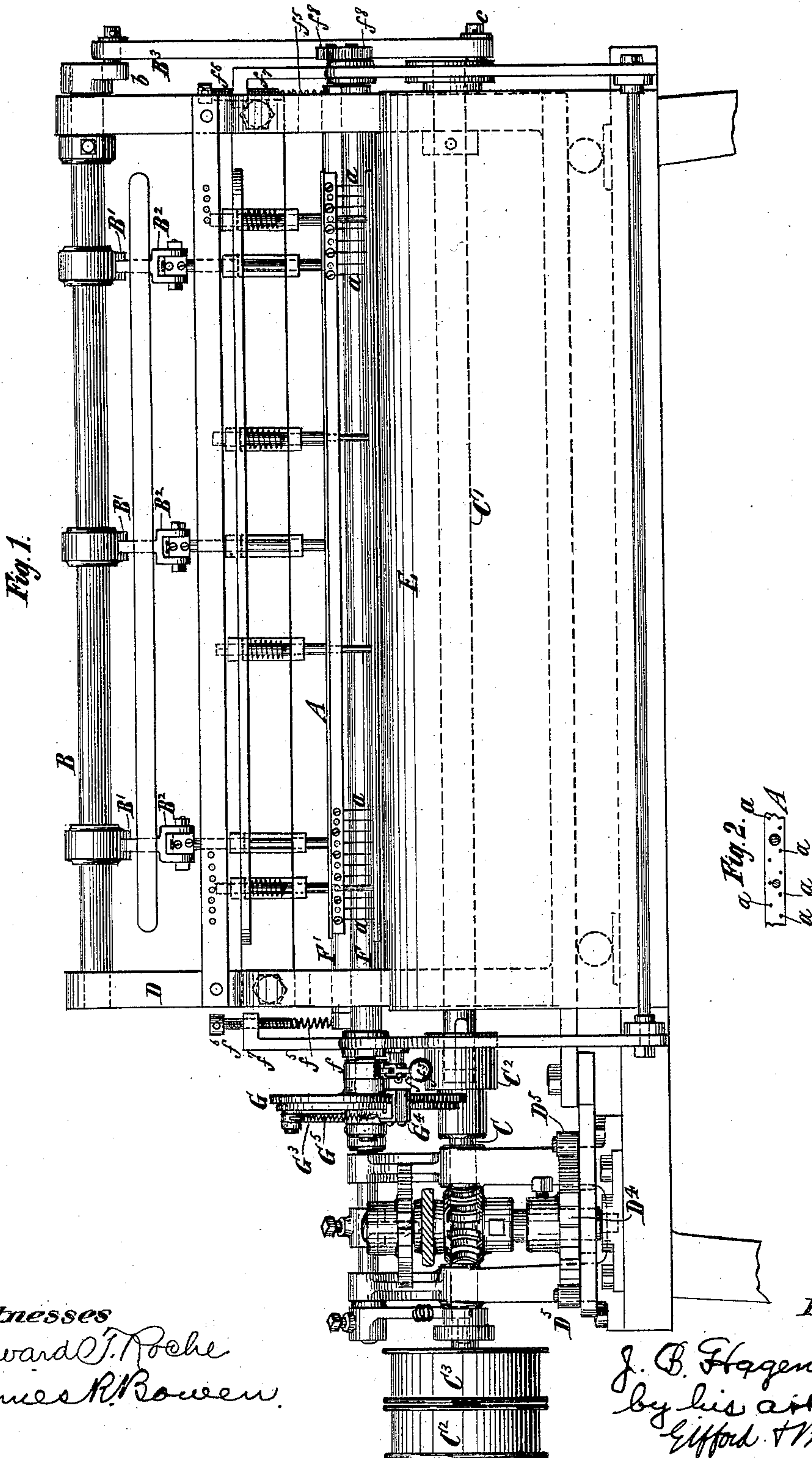
(No Model.)

3 Sheets—Sheet 1.

J. B. HAGENBUCHLE.  
QUILTING MACHINE.

No. 317,995.

Patented May 19, 1885.



Witnesses  
Edward T. Roche  
James R. Bowen.

Inventor  
J. B. Hagenbuchle,  
by his attorneys,  
Elford & Brown

(No Model.)

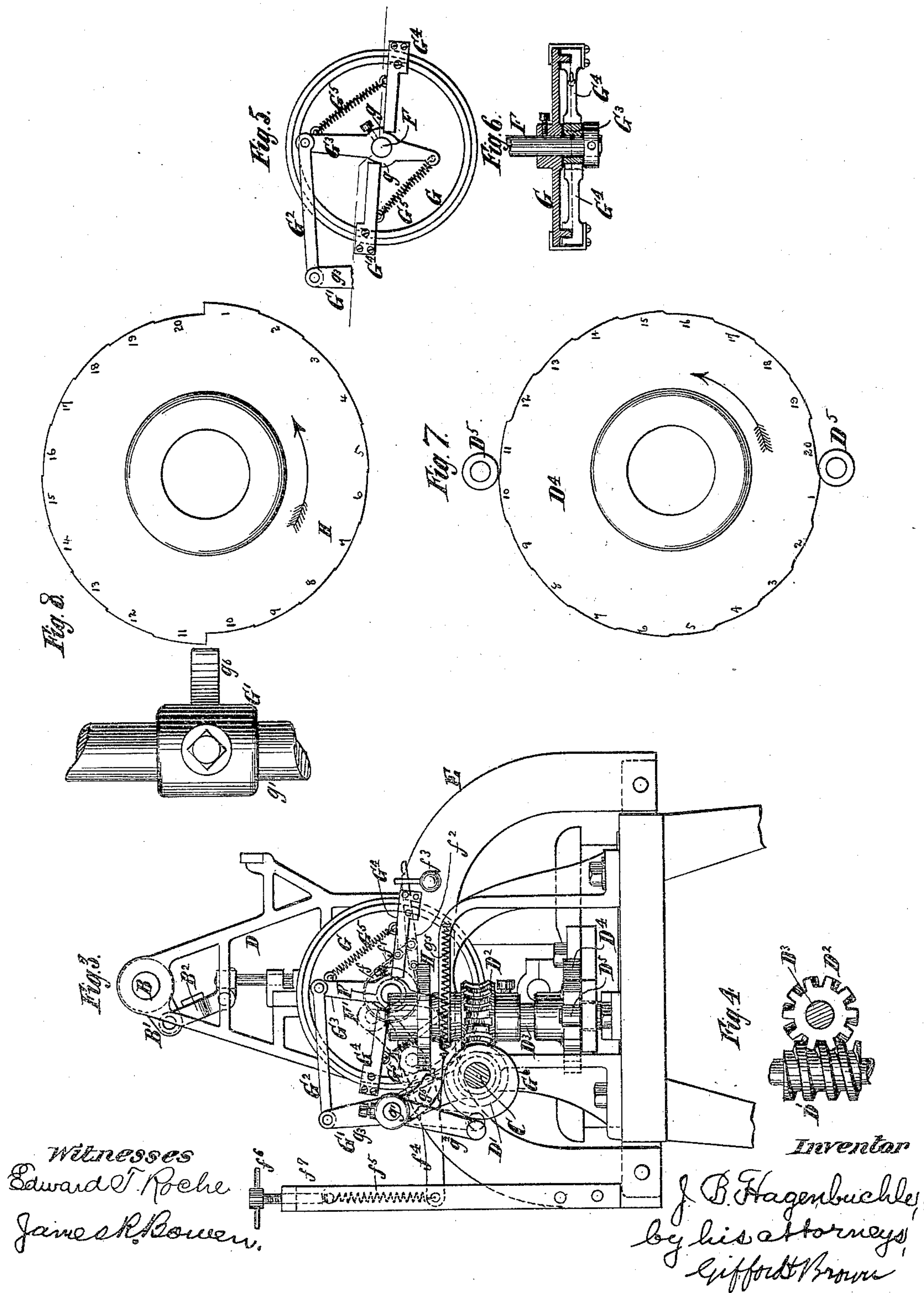
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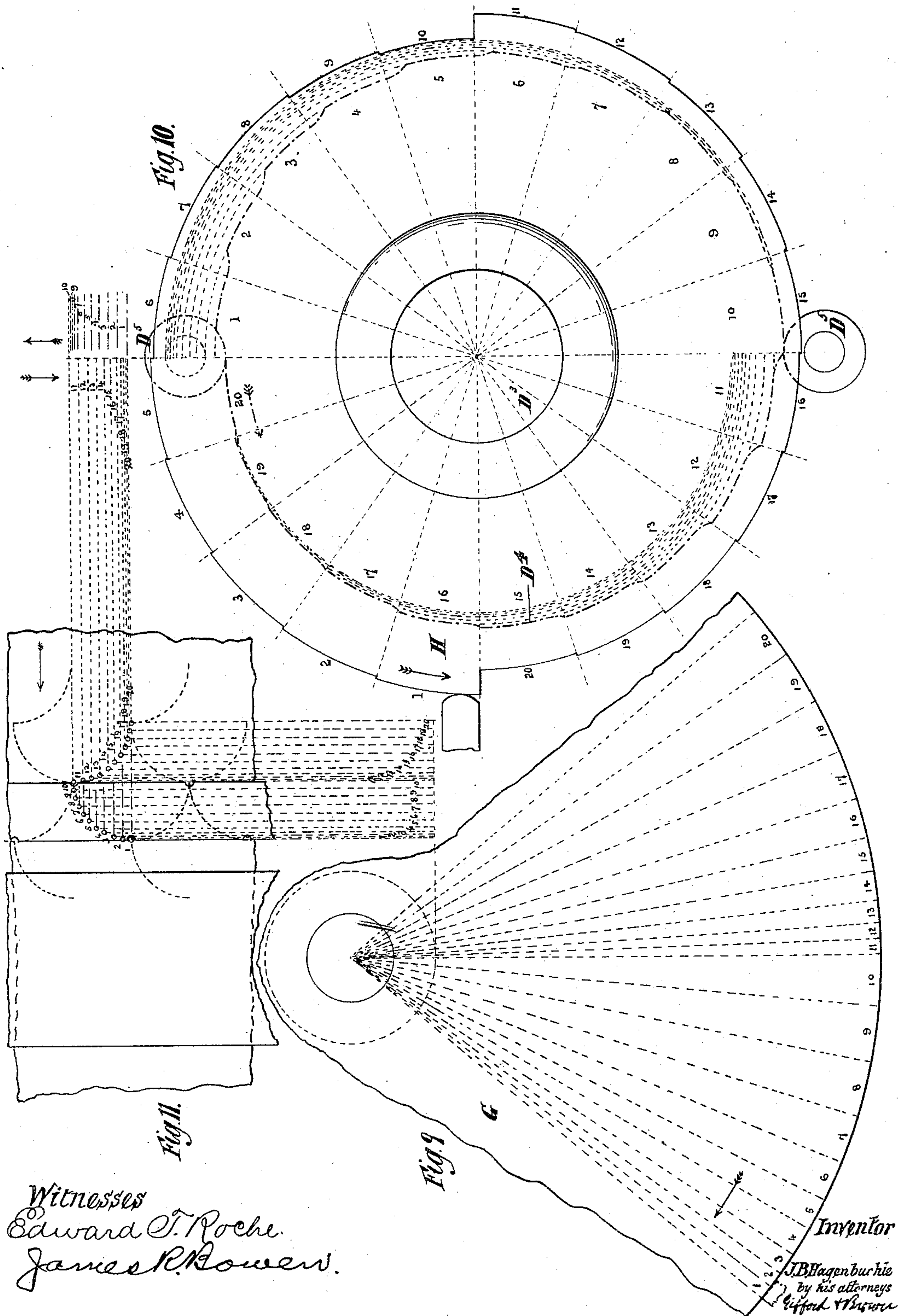
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# UNITED STATES PATENT OFFICE.

JOHN B. HAGENBÜCHLE, OF NEW YORK, N. Y.

## QUILTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 317,995, dated May 19, 1885.

Application filed May 12, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN B. HAGENBÜCHLE, 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 consists in certain combinations of parts whereby quilting of desirable patterns may be performed.

10 In the accompanying drawings, Figure 1 is a front view of certain parts of a quilting-machine embodying my improvement. Fig. 2 is a plan of a portion of the needle-bar. Fig. 3 is an end view of the machine. Fig. 4  
15 is a plan of a worm and worm-wheel comprised in the machine. Fig. 5 is a side view of a portion of a friction-wheel and dogs comprised in the machine. Fig. 6 is a diametrical section of the friction-wheel and side view of the dogs. Fig. 7 is a top view of a cam and  
20 bowls or rollers, whereby a carriage comprised in the machine is shifted laterally to and fro. Fig. 8 is a top view of a cam and a finger operating in conjunction therewith, whereby the feed  
25 of the work will be regulated. Fig. 9 is a view of a portion of a friction-wheel comprised in the machine, with dotted lines marked on it to illustrate the extent of the movements of the wheel. Fig. 10 is a plan view of two cams  
30 used in the machine, showing their relations and illustrating by dotted lines the extent of the movements that result from them; and Fig. 11 is a diagram illustrating the movements which produce a pattern.

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

Referring first to Figs. 1, 2, 3, 4, 5, 6, and 7, A designates the needle-bar of the machine. The needles *a* which it carries are arranged in  
40 two rows, and so disposed that the needles of each row are opposite the center of the spaces between those of the other row. The needle-bar reciprocates up and down, and is guided during such movements in the usual or any  
45 other suitable manner. Its reciprocating movement is derived from arms B' on a rock-shaft, B, and links B<sup>2</sup> connecting the arms to the needle-bar. The rock-shaft is operated by rod B<sup>3</sup>, connected to a crank, *b*, on the said  
50 rock-shaft, and a crank, *c*, upon the driving-shaft C C' of the machine. This driving shaft

is made in two longitudinal sections, connected by a coupling, C<sup>2</sup>, so that they will turn in unison, but so that the section C' may move longitudinally independently of the section C. 55 The crank *c* is arranged upon the section C'.

The needle-bar, the rock-shaft B whereby it is reciprocated, and the section C' of the driving-shaft, are mounted in bearings in a carriage, D, that is capable of being moved laterally to and fro. This carriage will be provided with looping or shuttle mechanism operating in conjunction with the needles to form stitches. Such mechanism I have not shown, because it may be of ordinary kind and operated in the usual way. 65

The section C of the driving-shaft C C' is provided at the outer end with the usual fast and loose pulleys, C<sup>2</sup> C<sup>3</sup>, for the reception of a belt, through which such shaft is to be driven. 70 It also has mounted on it a worm, D', which engages with a worm-wheel, D<sup>2</sup>, mounted upon an upright shaft, D<sup>3</sup>, journaled in the stationary part of the machine.

On the lower part of the shaft D<sup>3</sup> a cam, D<sup>4</sup>, is affixed. This cam works between two bowls or rollers, D<sup>5</sup>, that are mounted upon studs or shafts arranged upon an extension of the carriage. The periphery of this cam is composed of a number of steps, here numbered consecutively from one to twenty, and serving to cause movements of the carriage D for producing a corresponding number of stitches in quilting the pattern, of which a representation is included in the diagram, Fig. 8. 85 The several steps of this cam are concentric with each other and with the shaft D<sup>3</sup>, on which the cam is mounted. The movements of the carriage D which this cam produces are lateral step-by-step movements, causing the shifting  
90 of the needles over different parts of the work to be quilted. By referring to the representation of the cam shown in the diagram, Fig. 10, and observing the dotted lines that are coincident with the steps of the cam, it will be understood that the first ten steps of the cam are arranged progressively at greater distances from the shaft on which the same is arranged, and that the second ten steps are arranged retrogressively at less distances from the shaft. 100 Owing to this the carriage will be moved step by step successively greater distances from the



commencement of its lateral travel to the end thereof. While the carriage D is thus moved laterally over the work the latter is moved or fed longitudinally under the carriage.

5 The work during its longitudinal feed passes up over a breast-piece, E, from a roller or from the floor to and between feed-rollers F F'. On one journal the roller F has mounted upon it a brake-pulley,  $f$ , around which passes  
10 a brake-strap,  $f'$ . This brake-strap is fastened at one end to the fulcrum of a lever,  $f^2$ , and at the other end to the rear arm of this lever. The forward arm of the lever has a weight,  $f^3$ , adjustably hung on it. By this  
15 mechanism the feed-rollers are prevented from rotating, except when they are desired to rotate. The feed-roller F is mounted in stationary bearings. The roller F', however, is supported in the forward arms of levers  $f^4$ ,  
20 which are fulcrumed to the stationary part of the machine, and at the rear ends are connected to springs  $f^5$ . The force of the springs  $f^5$  may be varied by adjusting-screws  $f^6$ , to which they are connected. The screws  $f^6$  are  
25 fitted in tapped holes in standards  $f^7$ , erected on the stationary part of the machine. Thus the roller F' is forced toward the roller F, so that the two rollers will grip the work properly to enable them to feed it forward.

30 On one journal of the feed-roller F is affixed a friction-wheel, G. Motion is imparted to this friction-wheel by a lever or arm, G', having attached to it near one end a rod, G<sup>2</sup>, that is also connected to one end of a lever, G<sup>3</sup>,  
35 mounted loosely on the journal of the feed-roller F, to which the friction-wheel G is affixed.

G<sup>4</sup> designates dogs, which embrace a rim with which the friction-wheel is provided  
40 and impinge against shoulders  $g$  on the lever G<sup>3</sup>. Springs G<sup>5</sup> connect the outer portions of the dogs G<sup>4</sup> with lever G<sup>3</sup>. When the lever G<sup>3</sup> is rocked in one direction, the dogs play freely along the rim of the friction-wheel G;  
45 but when the said lever G<sup>3</sup> is moved in the reverse direction the dogs G<sup>4</sup> grip the rim of the friction-wheel G and impart motion to the said wheel.

The lever G' is operated by an eccentric,  
50 G<sup>6</sup>, mounted on the section C of the driving-shaft C C'. The lever G' consists of a rock-shaft,  $g'$ , journaled in bearings on the stationary part of the machine, an arm,  $g^2$ , affixed to such shaft and bearing against the eccentric  
55 G<sup>6</sup>, and an arm,  $g^3$ , having the rod G<sup>2</sup> connected to it. The lower arm of the lever G' is drawn toward the eccentric by a spring,  $g^5$ .

The lever G' has a third arm,  $g^6$ , which may be made separate from the other arms and  
60 mounted on the rock-shaft aforesaid like the other arms. This third arm,  $g^6$ , operates in conjunction with a cam, H, that is affixed to the upper part of the shaft D<sup>3</sup>. This cam prevents the lower arm,  $g^2$ , of the lever G'  
65 from always following the eccentric back, when the periphery of the latter recedes, as

far as it would otherwise do, and therefore said cam prevents the eccentric from always shifting the friction-wheel G as far as it would otherwise do. This cam consequently regu- 70  
lates the action of the eccentric. The periphery of this cam is composed of steps which are concentric with each other and with the shaft D<sup>3</sup>. It has two similar series of steps numbered from one to twenty. 75

The operation of the eccentric is so regulated by the cam H that the lever G' and dogs G<sup>4</sup> will move the friction-wheel G, and consequently the feed-roller F, various distances.

The feed-rollers are made to run in unison 80  
by means of gear-wheels  $f^8$  on their journals.

The varying feed which the work derives step by step and the varying distances which the needles in the carriage D are moved laterally step by step over the work, results in 85  
stitching zigzag curved lines and in the formation of a pattern. By varying the cams H and D<sup>4</sup> different patterns may be made.

In Fig. 9 I have illustrated by dotted lines numbered from one to twenty the movements 90  
which the friction-wheel G has during twenty stitches. In Figs. 10 and 11 I have numbered from one to twenty the facets of the cams D<sup>4</sup> and H, and I have indicated by dotted lines the extent of the movements resulting from 95  
each of these cams during a half-rotation. In Fig. 11 I have illustrated by two sets of dotted lines each numbered from one to twenty the movement which the work derives and the movement which the needles receive. I have 100  
also here illustrated by circles the positions which a needle will have relatively to the work during twenty stitches. Of course it will be understood that the needles do not travel in curved lines, but that the positions 105  
illustrated will occur as a result of the combined movements of the needles and work.

I am aware that quilting-machines have been made with feed-rollers having an intermittent rotary motion, said motion being im- 110  
parted thereto by a pawl carried upon a lever and adapted to engage with a ratchet-wheel having teeth at uniform distances apart, which ratchet-wheel is secured upon one of said rollers, an eccentric being employed to impart 115  
an up-and-down motion to the lever. In this device, also, the pawl-lever is intermittently but uniformly raised high enough to prevent it from having contact with its operating eccentric. By my arrangement I am able to se- 120  
cure an accurate feed, while the feed-rollers producing the same are subject to variations in their intermittent rotary motion.

What I claim as my invention, and desire to secure by Letters Patent, is— 125

In a quilting-machine, the combination of needles, feed-rollers for the work, a cam, D<sup>4</sup>, for producing a lateral movement between the needles and work, a friction-wheel, G, a lever or arm, G', mounted on a shaft,  $g'$ , which is separate and independent of the shaft upon which the friction-wheel is mounted, a dog,



G<sup>3</sup>, an eccentric, G<sup>6</sup>, for imparting motion to the lever or arm G', and mounted on the driving-shaft, an arm, g<sup>2</sup>, operating in conjunction with the eccentric G, and mounted on the  
5 driving-shaft, a cam, H, for varying the throw of the lever or arm G', an arm, g<sup>6</sup>, operating in conjunction with the cam H, and an upright shaft, D<sup>3</sup>, upon which are mounted the cams H and D<sup>4</sup>, substantially as specified.

JOHN B. HAGENBÜCHLE.

Witnesses:

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E. T. ROCHE.