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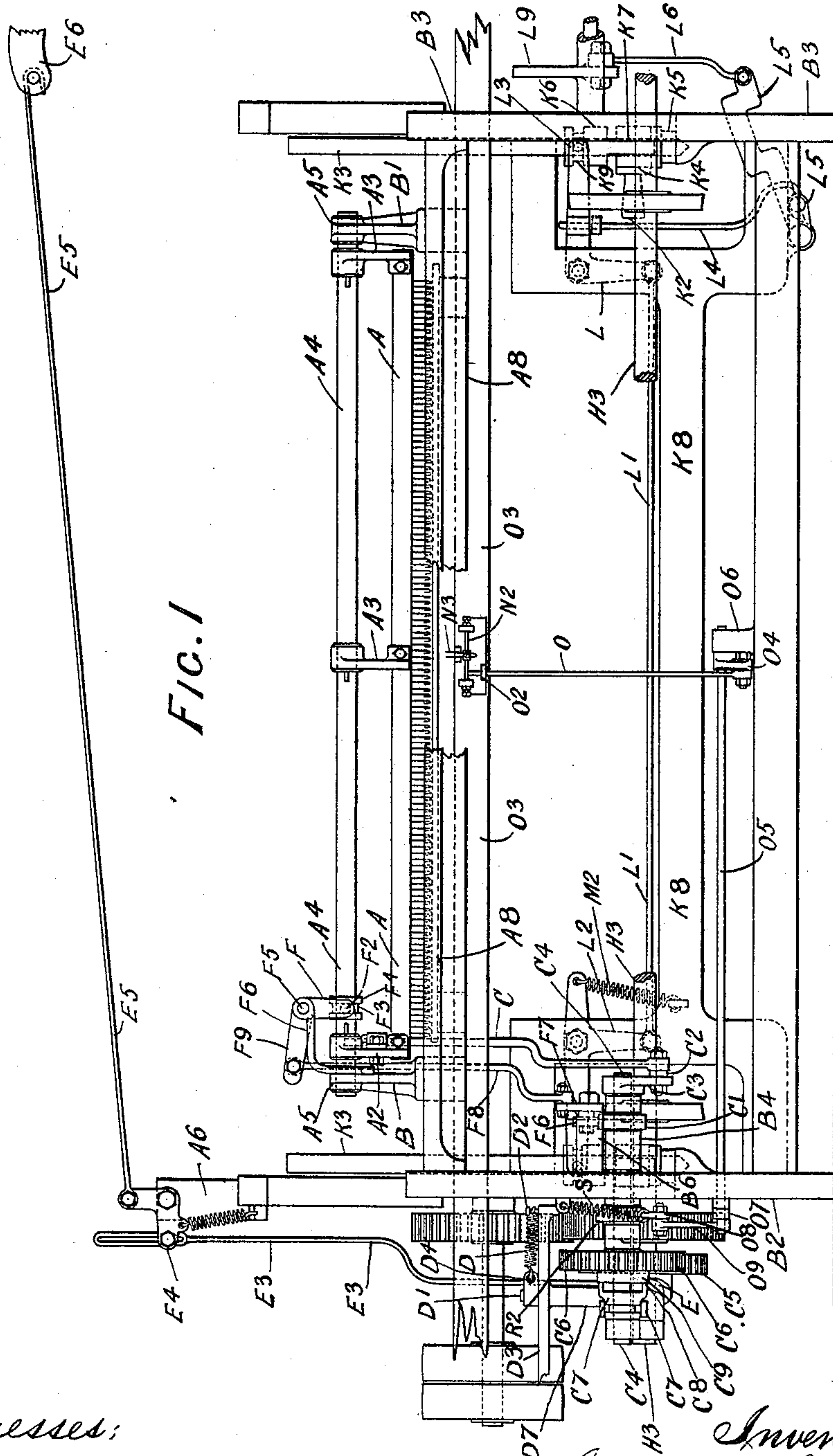
Patented Sept. 13, 1898.

G. H. SARGENT, R. H. COUPE & B. WALKER.  
LOOM FOR WEAVING LOOPED PILE FABRICS.

(Application filed Sept. 3, 1896.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:  
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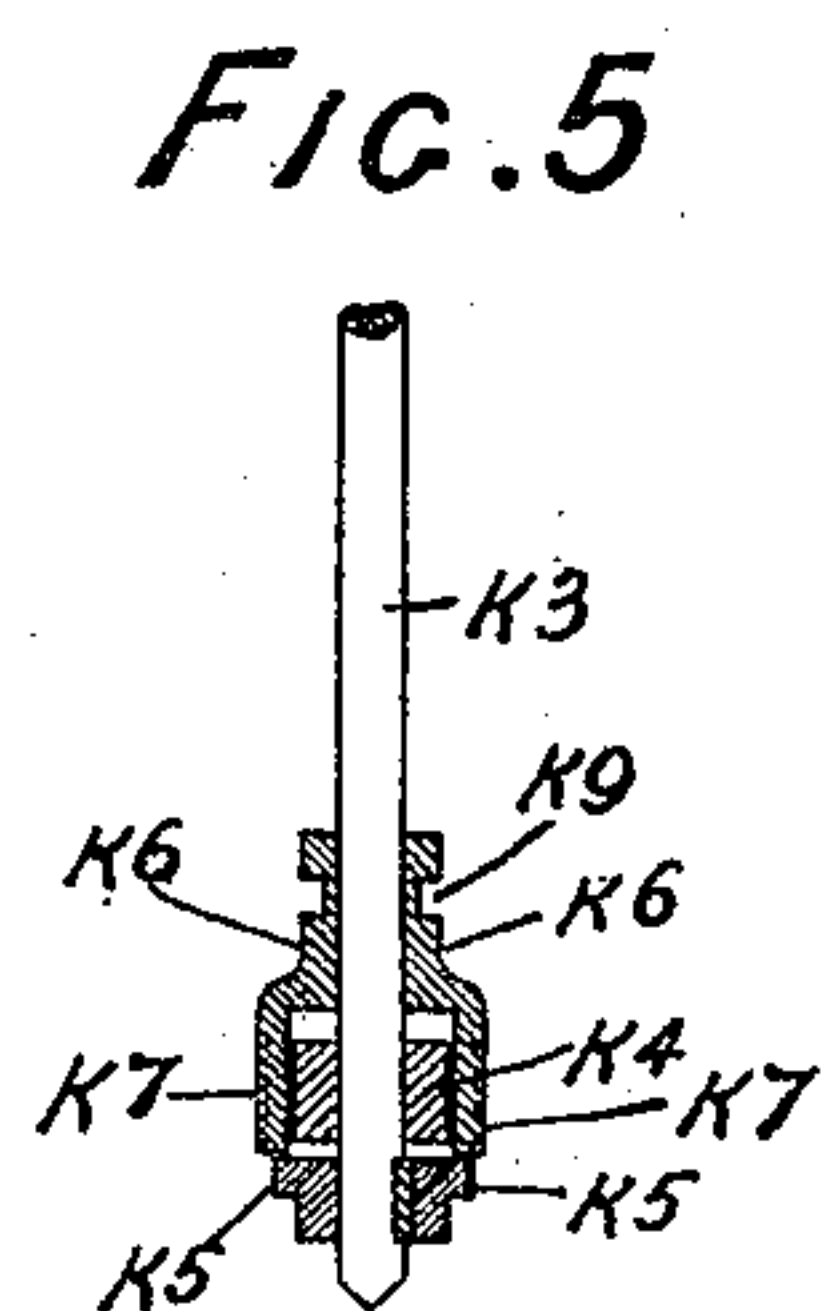
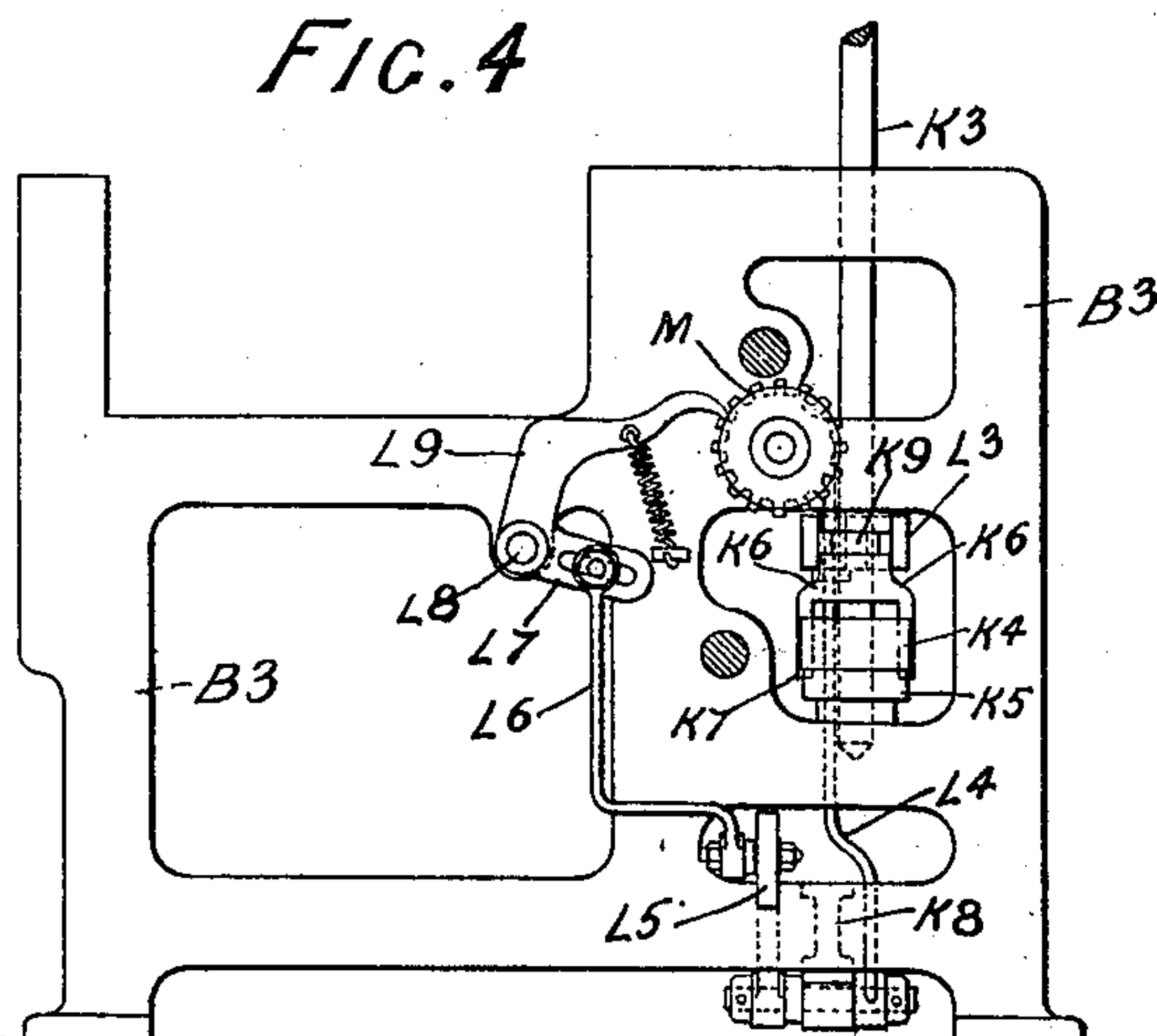
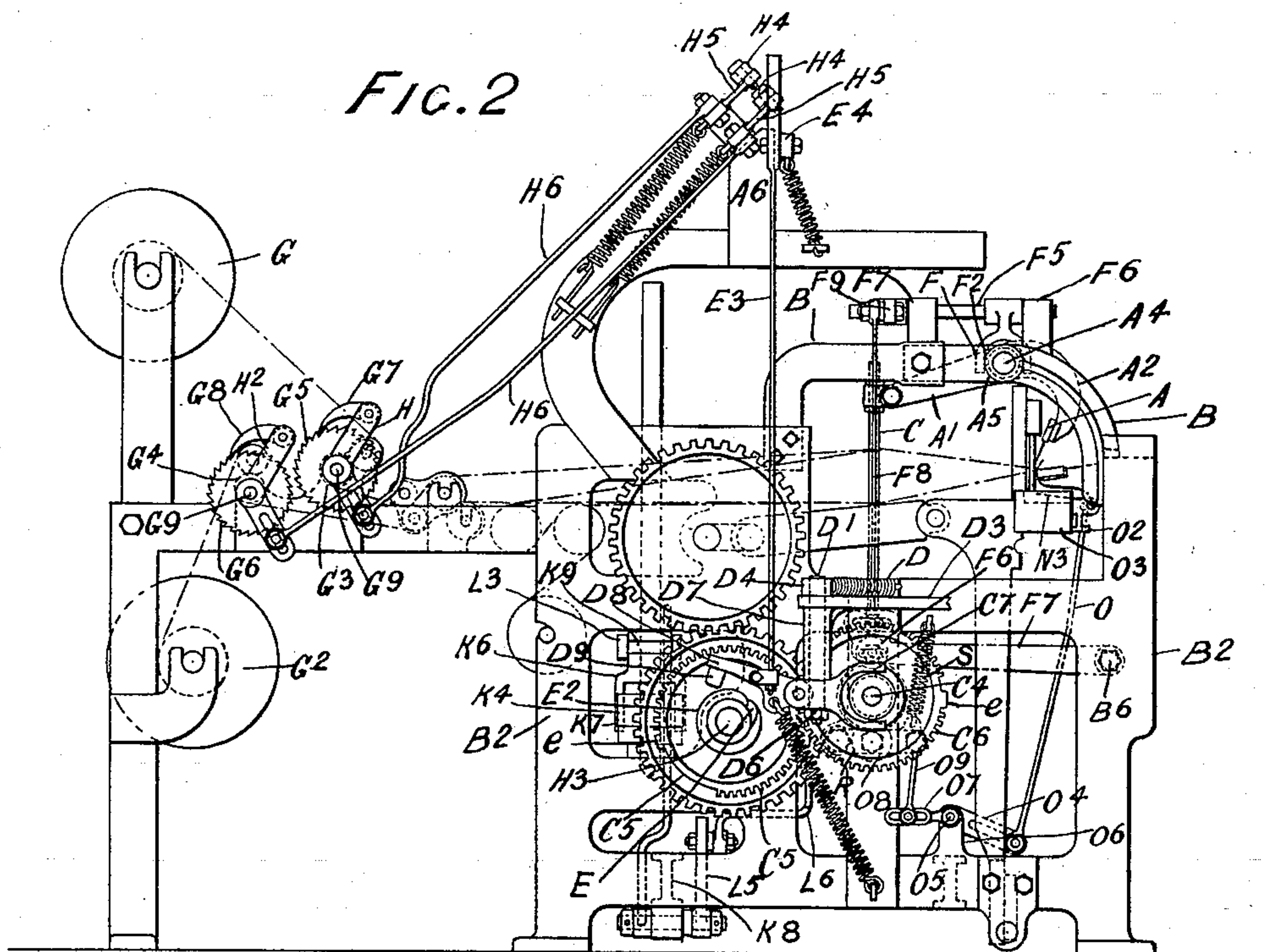
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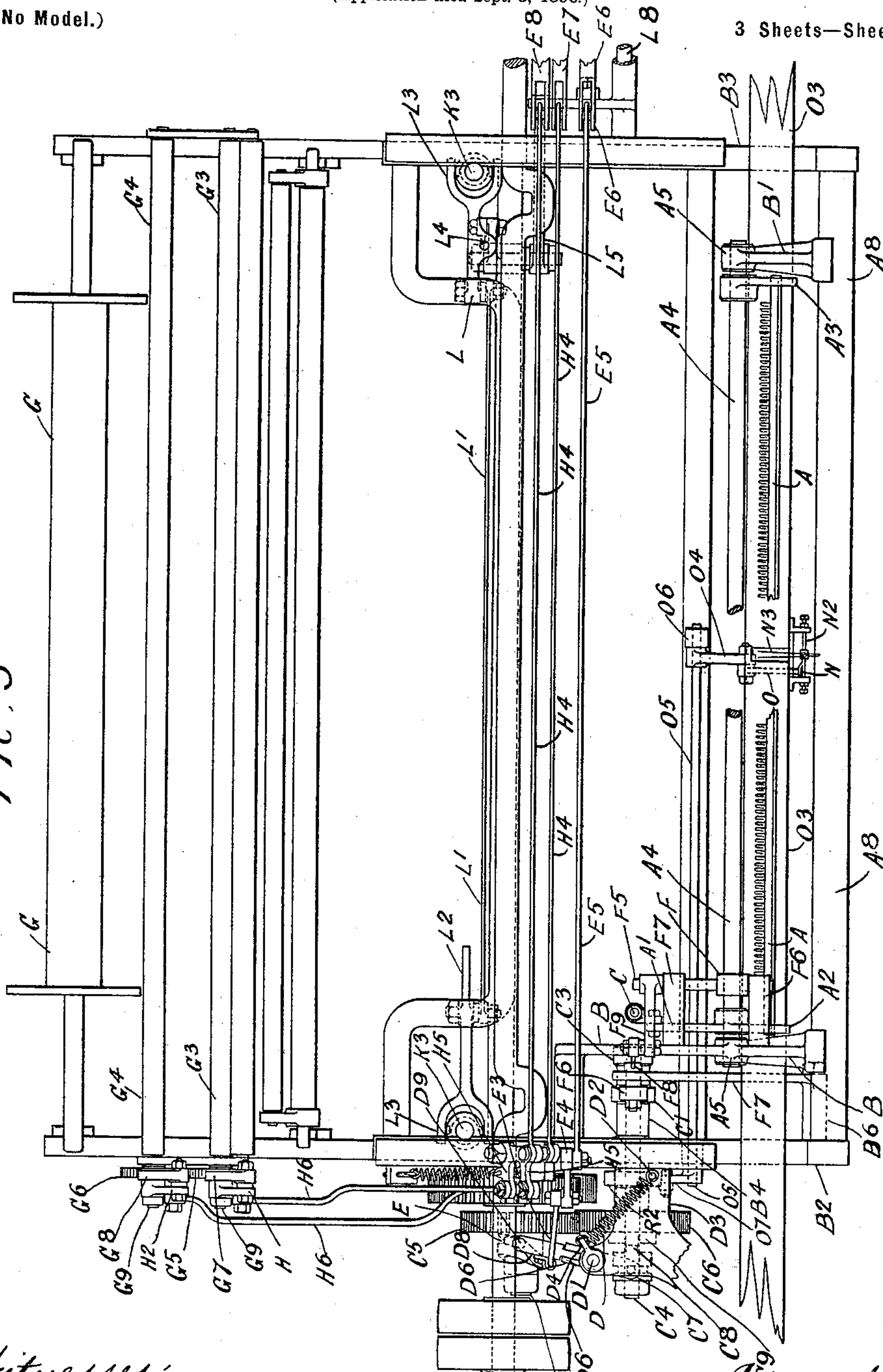
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3 Sheets—Sheet 3.

FIG. 3



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# UNITED STATES PATENT OFFICE.

GEORGE HENRY SARGENT, RICHARD HENRY COUPE, AND BENJAMIN WALKER, OF BINGLEY, ENGLAND.

## LOOM FOR WEAVING LOOPED-PILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 610,563, dated September 13, 1898.

Application filed September 3, 1896. Serial No. 604,695. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE HENRY SARGENT, RICHARD HENRY COUPE, and BENJAMIN WALKER, subjects of the Queen of England, residing at Bingley, in the county of York, England, have invented certain new and useful Improvements in Looms for Weaving Looped-Pile Fabrics, of which the following is a specification.

10 This invention relates to improvements in that type of loom for weaving looped-pile fabrics in which the loops are formed by a hooked comb or a series of hooks engaging the pile-warp.

15 In the accompanying drawings, forming a part of this specification, Figure 1 represents a front elevation of such parts of a loom as are necessary to illustrate the application of our improvements. Fig. 2 represents an end view, and Fig. 3 a plan view, of the same. Figs. 4 and 5 are views of details hereinafter referred to.

25 The hooked comb A is mounted on curved arms A<sup>2</sup> and A<sup>3</sup> and A<sup>3</sup>, projecting from the rocking shaft A<sup>4</sup>, mounted in bearings A<sup>5</sup>, formed in the brackets B and B', fixed to the front rail A<sup>8</sup>. The bracket B is continued beyond shaft A<sup>4</sup>, and its inner end is secured to the side frame B<sup>2</sup>. The arm A<sup>2</sup> has an extension A' at the back, connected by the rod C to the crank-pin C<sup>2</sup> of the crank C<sup>3</sup>, fixed on the inner end of the short shaft C<sup>4</sup>, mounted in the bearings B<sup>4</sup>, formed in the side frame B<sup>2</sup>. The short shaft C<sup>4</sup> is intermittently operated by the wheel C<sup>5</sup>, fixed on the tappet-shaft H<sup>3</sup>, engaging the wheel C<sup>6</sup>, loosely mounted on the short shaft C<sup>4</sup>, and this latter wheel is locked to the short shaft by means of the sliding clutch C<sup>7</sup>, the jaws C<sup>8</sup> of which are made to engage the jaws C<sup>9</sup>, cast on the face of the wheel C<sup>6</sup>. The clutch is normally held disengaged from the wheel C<sup>6</sup> by the spring D, stretched between the stud D<sup>2</sup> on the bracket D<sup>3</sup>, (shown partly broken away,) 45 fixed to the side frame B<sup>2</sup>, and the arm or lever D<sup>4</sup>, projecting from the top of the pivot D' of the clutch-lever D<sup>6</sup>. The pivot D' is rigidly secured to the lever D<sup>6</sup> and is mounted in a vertical bearing D<sup>7</sup>, formed in the 50 bracket D<sup>3</sup>. The lever D<sup>6</sup> has a piece D<sup>8</sup> hinged to its rear end, and this piece D<sup>8</sup> is

provided with a stud D<sup>9</sup>, adapted to engage the cam-race E, formed in the periphery of the cam E<sup>2</sup>, secured on the tappet-shaft H<sup>3</sup>. The stud D<sup>9</sup> is normally held up clear of the race E by means of the rod E<sup>3</sup>, connecting the piece D<sup>8</sup> to the bell-crank lever E<sup>4</sup>, pivoted on the top cross-rail A<sup>6</sup>, and this bell-crank lever is also connected by the rod E<sup>5</sup> to one of the jack-levers E<sup>6</sup> of a dobby, which 55 latter it has not been deemed necessary to show in the drawings, as its construction and operation are well known; but when the comb requires to be operated to engage the pile-warp the jack-lever E<sup>6</sup> of the dobby is arranged to be operated and thereby lower the piece D<sup>8</sup>, which allows the stud D<sup>9</sup> thereon to engage the cam-race E. As soon as the stud engages the cam-race the lever D<sup>6</sup> is thereby operated so as to throw the clutch into 60 gear with the wheel C<sup>6</sup> and the shaft C<sup>4</sup> is rotated until the jack-lever returns to its normal position and releases the cam-stud D<sup>9</sup> from the cam-race E. The wheels C<sup>5</sup> and C<sup>6</sup> are each provided with a thick strong tooth e, 75 which are arranged to be engaging each other just as the cam throws the clutch into gear and are provided to withstand the extra strain or jerk of suddenly starting the shaft C<sup>4</sup>. The rotation of the shaft C<sup>4</sup> also imparts a 80 longitudinal movement to the shaft A<sup>4</sup>. This is effected by means of the fork F, having projections F<sup>2</sup>, engaging the annular groove F<sup>3</sup>, formed in the collar F<sup>4</sup>, fixed on the shaft A<sup>4</sup>. The fork F is mounted on the cross-shaft 85 F<sup>5</sup>, mounted in brackets F<sup>6</sup> and F<sup>7</sup>, respectively secured to the top bracket B. The shaft F<sup>5</sup> is rocked or operated as required by means of the cam or eccentric C' on the short shaft C<sup>4</sup>, engaging the antifriction-roller 90 F<sup>6</sup>, carried by the arm F<sup>7</sup>, mounted on the stud B<sup>6</sup>, fixed on the side frame B<sup>2</sup>, and the arm F<sup>7</sup> is connected by the rod F<sup>8</sup> to the arm F<sup>9</sup>, rigidly secured to the shaft F<sup>5</sup>.

The pile-warp is mounted on the warp- 95 beams G and G<sup>2</sup> and is let off by means of the let-off rollers G<sup>3</sup> and G<sup>4</sup>, operated by the ratchet-wheels G<sup>5</sup> and G<sup>6</sup>, secured to them and actuated by the pawls G<sup>7</sup> and G<sup>8</sup>, respectively pivoted on the levers H and H<sup>2</sup>, loosely mounted 100 on the arbors G<sup>9</sup> of the rollers G<sup>3</sup> and G<sup>4</sup>. The levers H and H<sup>2</sup> are vibrated by the jack-



levers E<sup>7</sup> and E<sup>8</sup>, Fig. 3, of the dobby and are connected thereto by the rods H<sup>4</sup> H<sup>4</sup>, the bell-crank levers H<sup>5</sup> H<sup>5</sup>, and rods H<sup>6</sup> H<sup>6</sup>.

It is generally desirable to miss a pick while the looping mechanism is in operation. For this purpose the loom may be arranged at suitable intervals to miss a pick at one end and make two picks in succession at the other end, the second pick being made when the shuttle is in the opposite shuttle-box. For this purpose the cone or antifriction-roller K<sup>2</sup> on each of the picking-shafts K<sup>3</sup> is carried by a collar K<sup>4</sup>, loosely mounted on said shaft. This collar is connected to the collar K<sup>5</sup>, rigidly fixed below to the shaft by means of the sliding key-piece K<sup>6</sup>, having two projecting keys K<sup>7</sup> K<sup>7</sup>, fitting grooves formed in the periphery of the collar K<sup>4</sup>, and the ends of said keys project into notches formed in the upper face of the collar K<sup>5</sup>. Fig. 5 represents a separate sectional view of these parts. To disconnect the picking-shafts from the collars K<sup>4</sup>, the lever L is provided at one side and the lever L<sup>2</sup> at the other. These levers are each pivoted upon the lower cross-rail K<sup>8</sup> and are provided with forked ends L<sup>3</sup>, engaging grooves K<sup>9</sup> formed in the said key-pieces. The levers L and L<sup>2</sup> are connected together by means of the rod L<sup>1</sup>. The lever L is connected by the rod L<sup>4</sup> to the lever L<sup>5</sup>, pivoted to the bottom cross-rail K<sup>8</sup>, and its free end is connected by the rod L<sup>6</sup> to the lever L<sup>7</sup>, mounted on the stud L<sup>8</sup>, projecting from the side frame B<sup>3</sup>. These parts are clearly shown in Fig. 4, which represents an elevation of a portion of the opposite side of the loom to that shown in Fig. 2. The lever L<sup>7</sup> is provided with an arm L<sup>9</sup>, which bears upon the peg-cylinder M or equivalent device. The lever L<sup>2</sup> is held by the spring M<sup>2</sup> in the position shown and the keys K<sup>7</sup> are disengaged from the collar; but the pegs in the cylinder M are so arranged that each time a pick is required to be made at this end of the loom the arm L<sup>9</sup> is raised, which through the medium of the connecting mechanism operates the levers L and L<sup>2</sup>, thereby disconnecting the picking-cone K<sup>2</sup> on the right-hand side of the loom and connecting the one on the left-hand side with the picking-shaft, and while they remain thus a pick will not be made on the right-hand side of the loom. On the other hand, a pick is only made at the left-hand side when the cone on the right hand is disconnected from the picking-shaft. The cylinder M is driven in a similar way to the cylinder operating the "drop-box" mechanism

of a "drop-box" loom or in any other convenient manner.

To prevent the weft-fork mechanism from operating the stop mechanism when a pick is missed in this way, we provide a projection N on the spindle N<sup>2</sup>, carrying the weft-fork N<sup>3</sup>, which projection is engaged by the top of the rod O each time a pick is missed, and the weft-fork is thereby prevented from falling and putting the stop mechanism into operation.

The rod O passes through the top guide O<sup>2</sup>, secured to the front of the slay O<sup>3</sup>, and is hinged below to the arm O<sup>4</sup>, projecting from the front of the rocking shaft O<sup>5</sup>, mounted in bearings O<sup>6</sup> O<sup>6</sup>. The shaft O<sup>5</sup> is vibrated each time the comb A is operated by its arm O<sup>7</sup>, connected to the arm O<sup>8</sup> by the rod O<sup>9</sup>. The arm O<sup>8</sup> carries an antifriction-roller R, which is kept in contact with the periphery of the cam R<sup>2</sup> (rigidly secured to the boss of the wheel C<sup>6</sup>) by the spiral spring S.

The comb and the mechanism for operating the same are not claimed herein, the same forming the subject of a separate application of even date, designated by Serial No. 604,694.

We claim—

1. In a loom for weaving looped-pile fabrics, the combination with pile-forming mechanism and the weft stop-fork and its spindle, of means controlled by the pile-forming mechanism for holding the weft-fork out of action when a pick requires to be missed comprising a projection on the weft-fork spindle, a rod adapted to engage said projection when a pick is missed and hold the fork out of operation, and a vibrating shaft with which said rod has a jointed connection, adapted to be vibrated each time the comb of the pile-forming mechanism is operated.

2. In a loom for weaving looped-pile fabrics, the combination with the weft stop-fork, of the pile-forming mechanism, a device adapted to hold the weft-fork out of action when a pick requires to be missed, and connections between the said device and the pile-forming mechanism whereby the latter controls the said device, as described.

In testimony whereof we have hereunto set our hands in the presence of the two subscribing witnesses.

GEORGE HENRY SARGENT.

RICHARD HENRY COUPE.

BENJAMIN WALKER.

Witnesses:

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