

S. W. HARDY.  
 SPRING DROPPER JACQUARD FOR LEVERS LACE MACHINES.  
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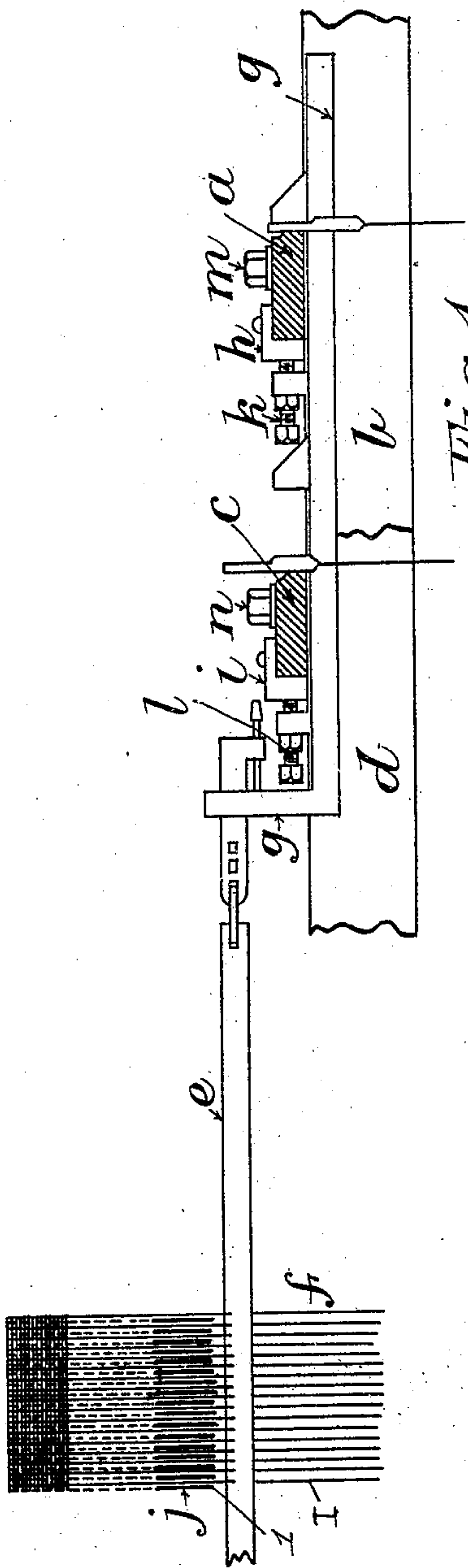


Fig 1

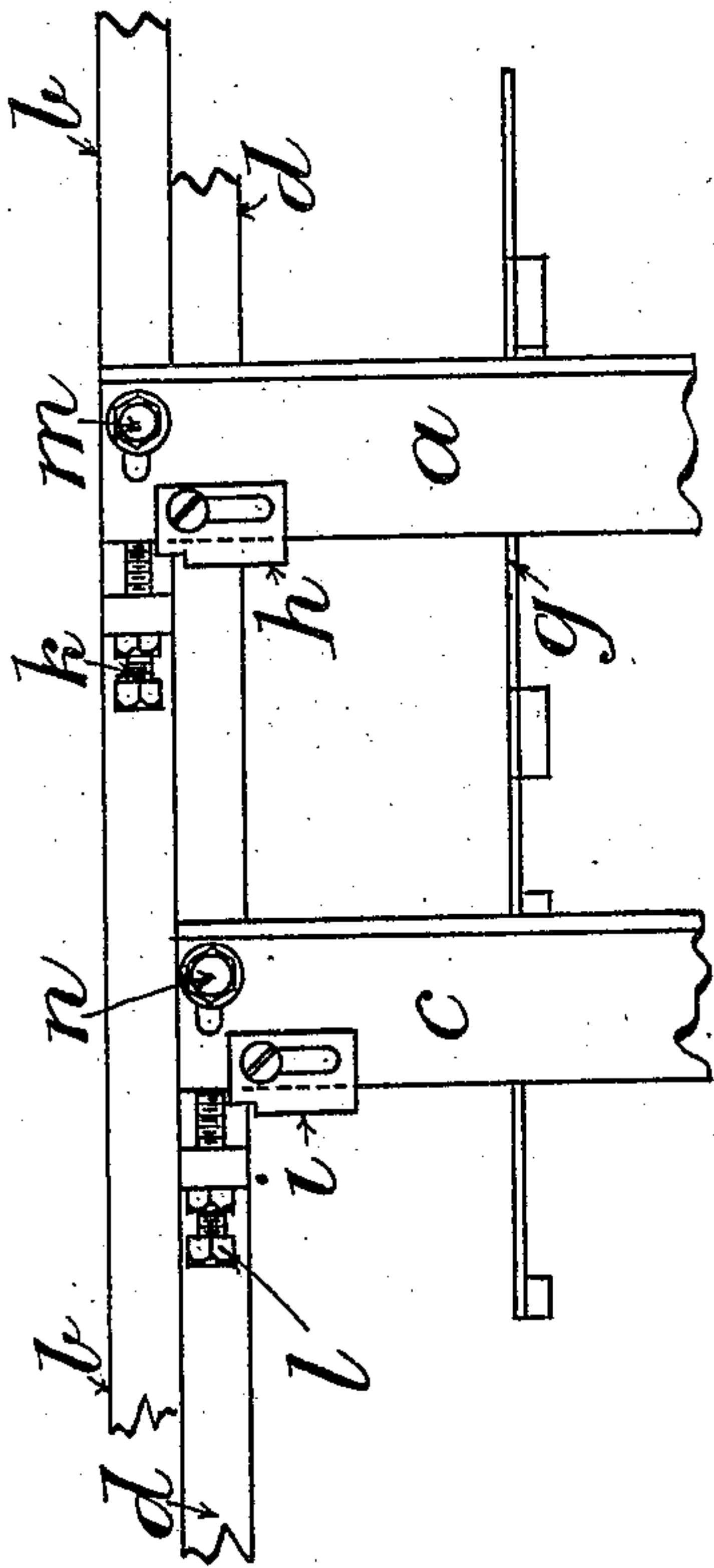


Fig 2

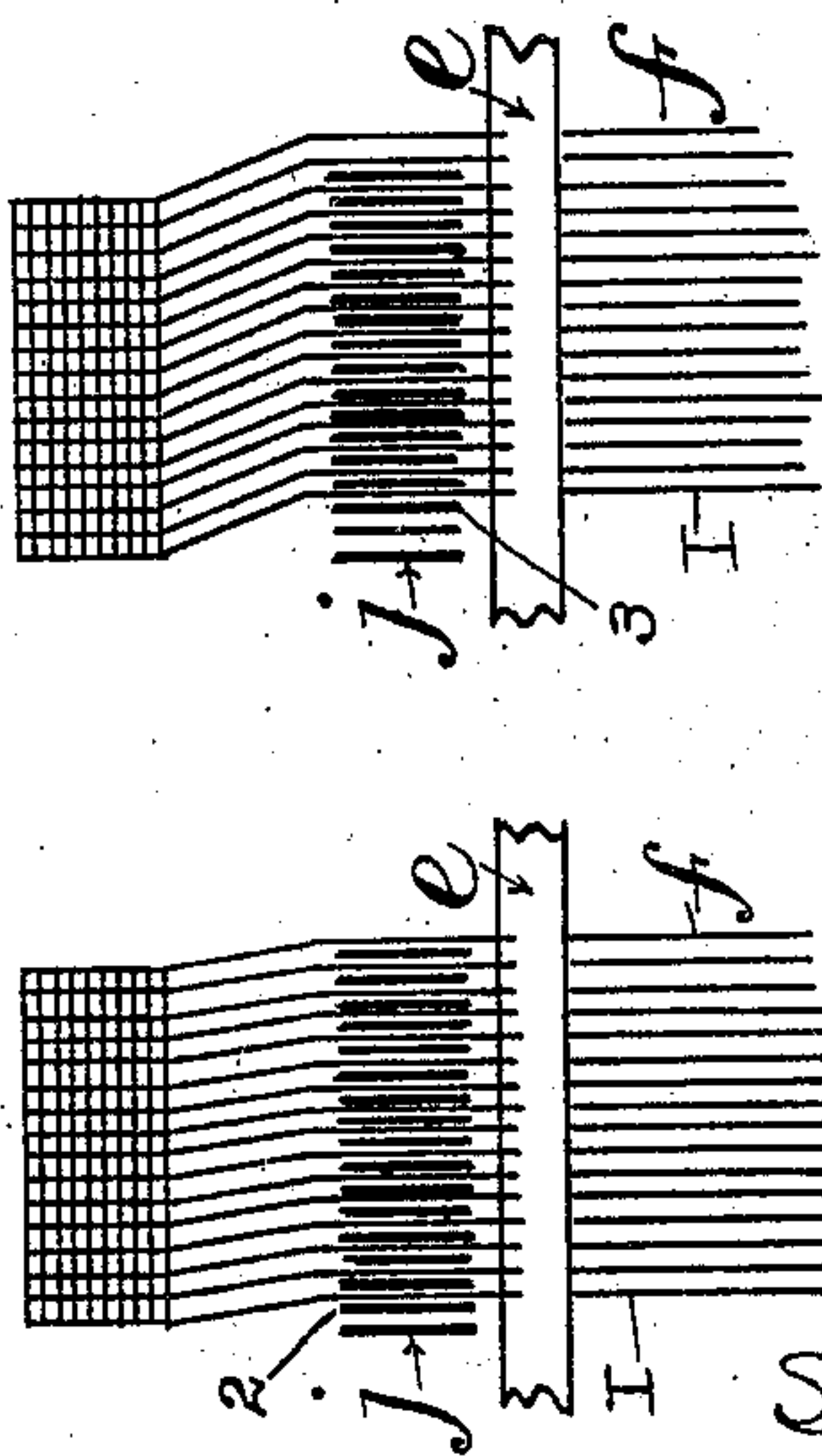


Fig 4

Fig 3

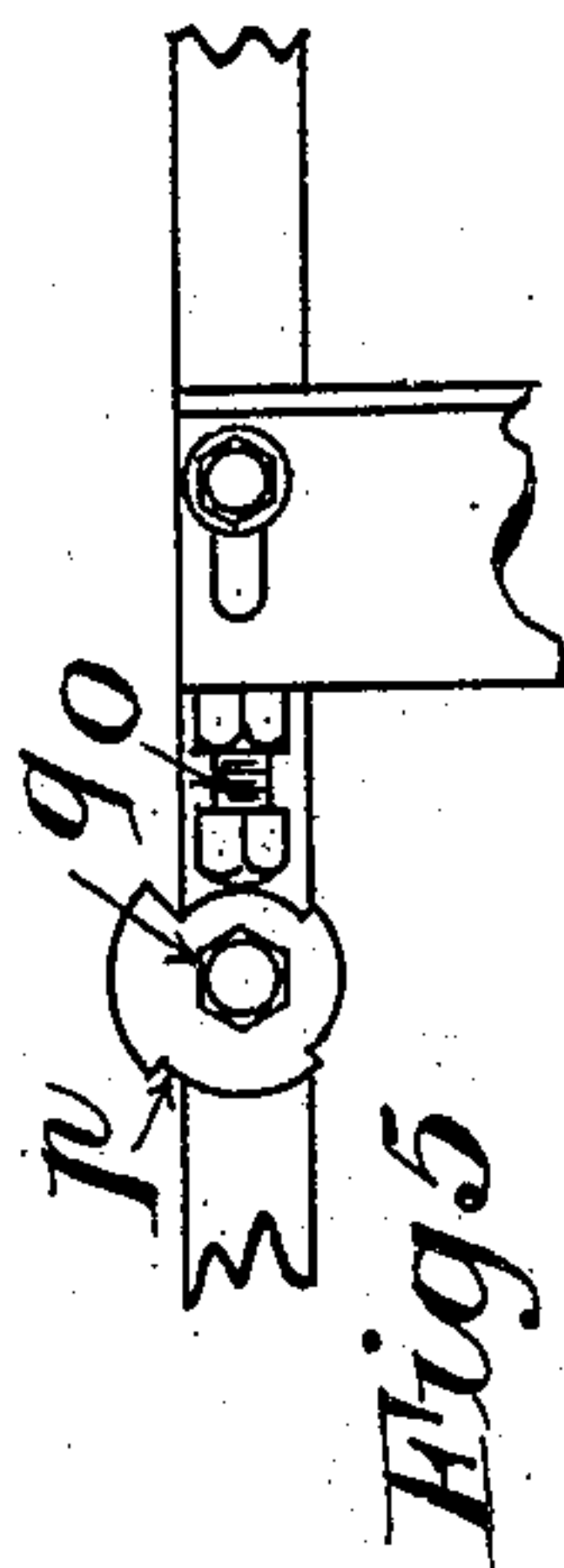


Fig 5

Witnesses:  
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# UNITED STATES PATENT OFFICE.

SILAS WILLIAM HARDY, OF LONG EATON, ENGLAND.

SPRING-DROPPER JACQUARD FOR LEVERS-LACE MACHINES.

934,910.

Specification of Letters Patent. Patented Sept. 21, 1909.

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*To all whom it may concern:*

Be it known that I, SILAS WILLIAM HARDY, a subject of the King of Great Britain, residing at Long Eaton, in the county of Derby, England, have invented new and useful Improvements in Spring-Dropper Jacquards for Levers-Lace Machines, of which the following is a specification.

This invention relates to improvements in and applicable to spring dropper jacquards of the kind used in connection with Lever's and go-through lace machines, on which machines edgings, trimmings and other fancy laces are made.

In the working of this class of lace machine the warp, beam, or spool threads are moved to and fro for the production of the pattern by means of guide bars which are connected to and actuated by a jacquard, and for any particular pattern a greater length of bobbin thread is required for certain parts of such pattern than is required for other parts of the same pattern and consequently the bobbins used for such parts of the pattern are emptied sooner than the bobbins used for other parts of the same pattern.

The object of this invention is the provision of means applicable to the jacquard whereby the position of the warp, beam, or spool threads can be changed relatively to the bobbin threads, so that the same bobbin threads can be used for the making of different parts of the same patterns, and the lengths of the thread drawn off the different bobbins is to a great extent equalized.

In the accompanying drawings Figure 1 is a sectional elevation of the upper part of a jacquard. Fig. 2 is a plan of the same. Figs. 3 and 4 are diagrams referred to in the description of the method of working and Fig. 5 is the plan of an alternative arrangement of the improved mechanism.

In the arrangement shown in the drawings the back driving blade *a* is attached at both ends to slides *b* while the driving blade *c* is attached to other slides *d* and such slides are actuated by cams in the usual manner. The thread guide bars *e*, by which the warp, beam, and spool threads *f* are actuated, are adjustably connected to the jacquard boxes *g*, and these parts are constructed, arranged, and operate according to the usual method.

According to this invention the driving blades *a* and *c*, at both ends, are fitted, as

shown in Figs. 1 and 2, with stepped blocks *h* and *i*, and each step is exactly equal to one, two, or more gaits, a gait being equal to the distance between the centers of two adjacent bobbins and carriages *j*. The slides *b* and *d* are provided with adjusting screws *k* and *l* by which the relative positions of the driving blades and slides are adjusted, and when such adjustment has been made the blades are fixed in position by screws *m* and *n*.

At the commencement of the making of a piece of lace the bobbin designated 1 would be working with the set of warp, beam, or spool threads designated 1, and a certain length of lace would be made, during which the same part of the pattern in each breadth of lace would be made by the same bobbin threads. The machine is then stopped and the screws *m* and *n* being loosened the blocks *h* and *i* are moved between the adjusting screws *k* and *l* and the driving blades and consequently all the guide bars *e* are moved toward the right and the bobbin threads which had been used for one part of the pattern are now used for a different part of the same pattern. The diagram Fig. 3 illustrates the relative position of the threads after the guide bars have been moved one gait to the right, the set of warp, beam, or spool threads designated 1 then working with the thread from the bobbin designated 2. In Fig. 4 the guide bars have been moved two gaits to the right and the set of warp threads 1 then work with the thread from bobbin designated 3.

The guide bars may be moved one, two or more gaits at each movement and they may be moved to the right or left of their original position, or, to the right and left of such position.

In the alternative mechanism shown in Fig. 5 the driving blade carries an adjusting screw *o* and the driving blade slide has a stepped cam *p* which can be turned on an axle *q* and thus effect the same object as the sliding stepped cams *i* and *h* herein described with reference to Figs. 1 and 2.

What I claim is:—

1. In a spring dropper jacquard, the combination of the driving blades for the thread guide bars, with the slides carrying the same and means for varying the relative positions of the blades and slides without affecting the operation of the jacquard in producing the pattern as herein set forth.



2. In a spring dropper jacquard, the combination of the driving blades for the thread guide bars, with the slides carrying the same and adjustable gaged stepped blocks for  
5 varying the relative positions of the blades and slides without affecting the operation of the jacquard in producing the pattern as herein set forth.

3. In a spring dropper jacquard, the combination with the thread guide bars of the driving blades, the slides carrying the same, adjustable gaged stepped blocks fitted to  
10 slide on the blades and arranged by their position to determine the position of the blades upon the slides that carry them without affecting the adjustment of the jacquard  
15 or its operation in producing the pattern, and means for securing the blades in posi-

tion after they have been adjusted as herein set forth.

4. In a spring dropper jacquard, the combination of the driving blades with the slides carrying the same, and adjustable gaged stepped pieces on the blades and adjusting  
25 screws by which the relative positions of the blades and slides are adjusted arranged to engage with the said adjustable stepped pieces, the said stepped pieces and adjusting  
30 screws being arranged to change the position of the blades without affecting the operation of the jacquard in producing the pattern as herein set forth.

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Witnesses:

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