

(No Model.)

4 Sheets—Sheet 1.

E. LANGJAHR.

APPARATUS FOR SIMULTANEOUSLY WEAVING TWO OR MORE FABRICS.

No. 509,476.

Patented Nov. 28, 1893.

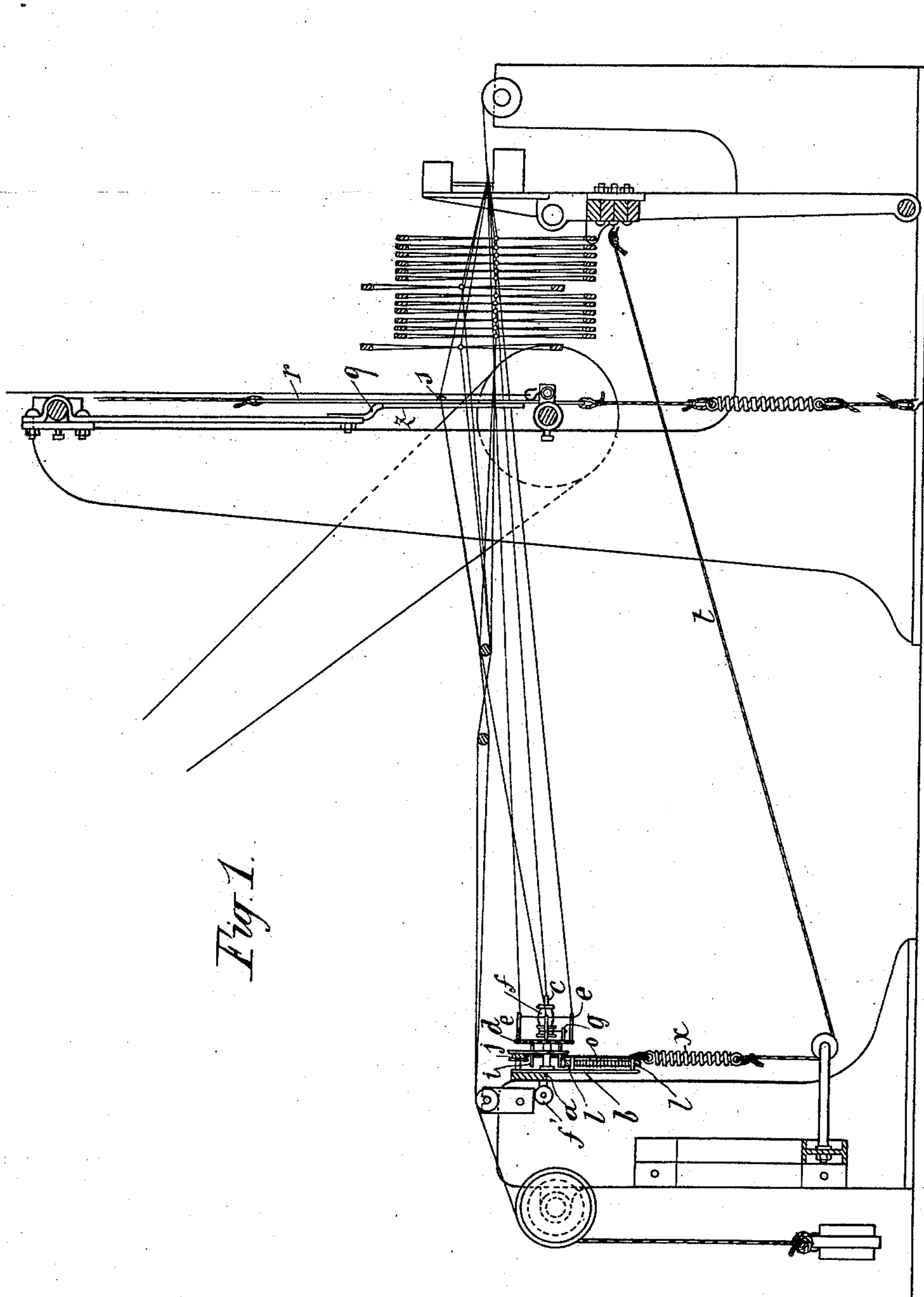


Fig. 1.

WITNESSES

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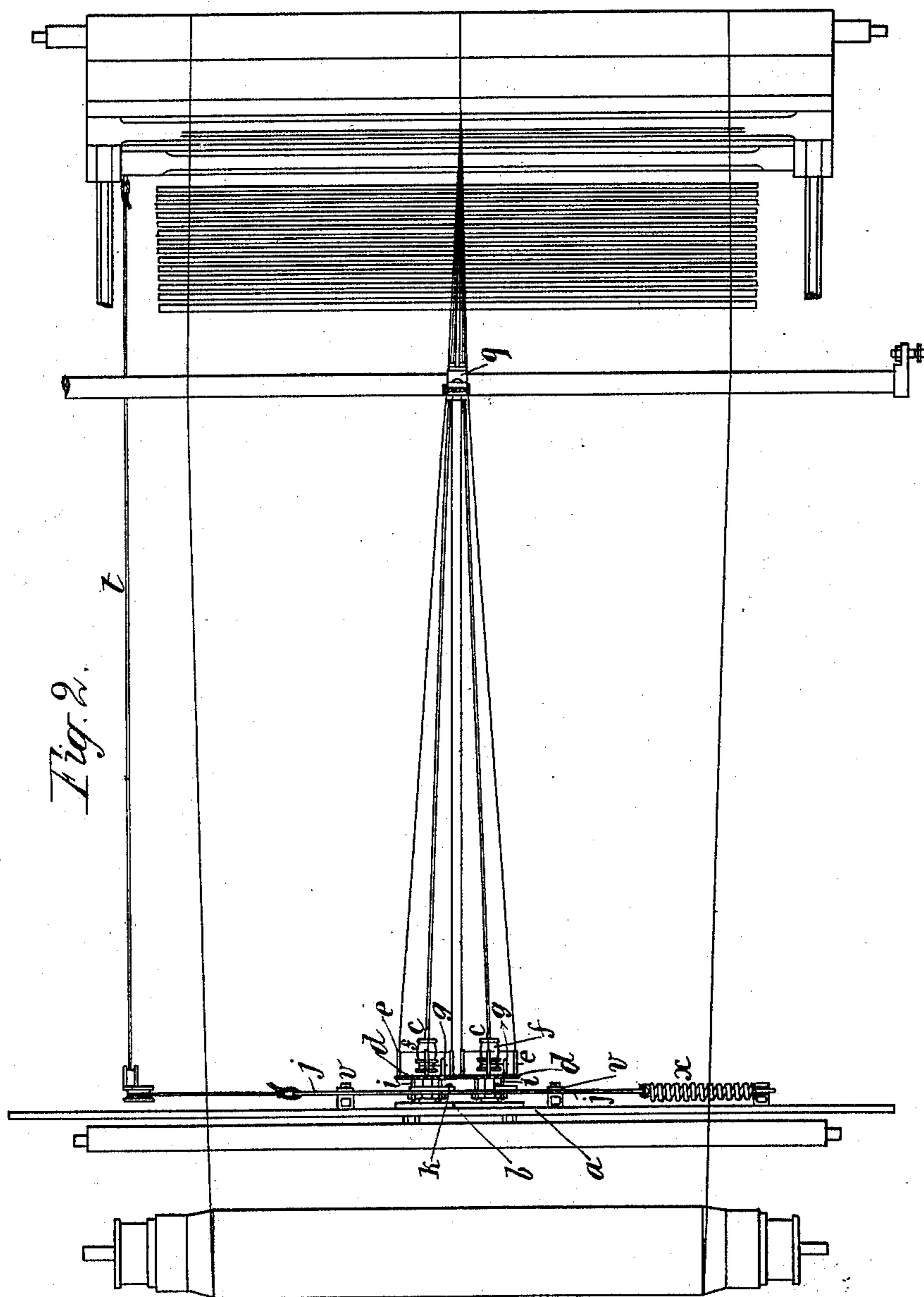
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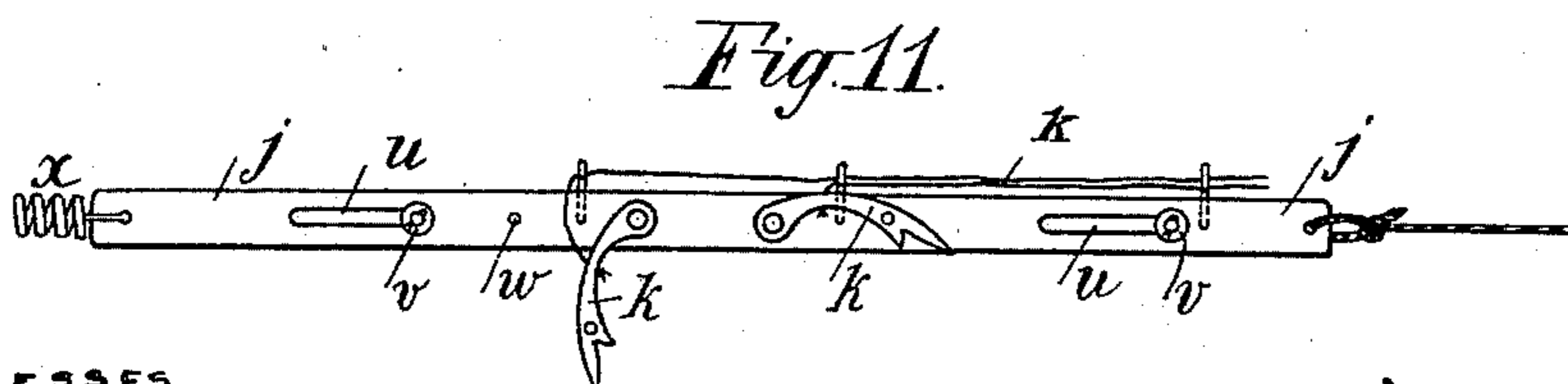
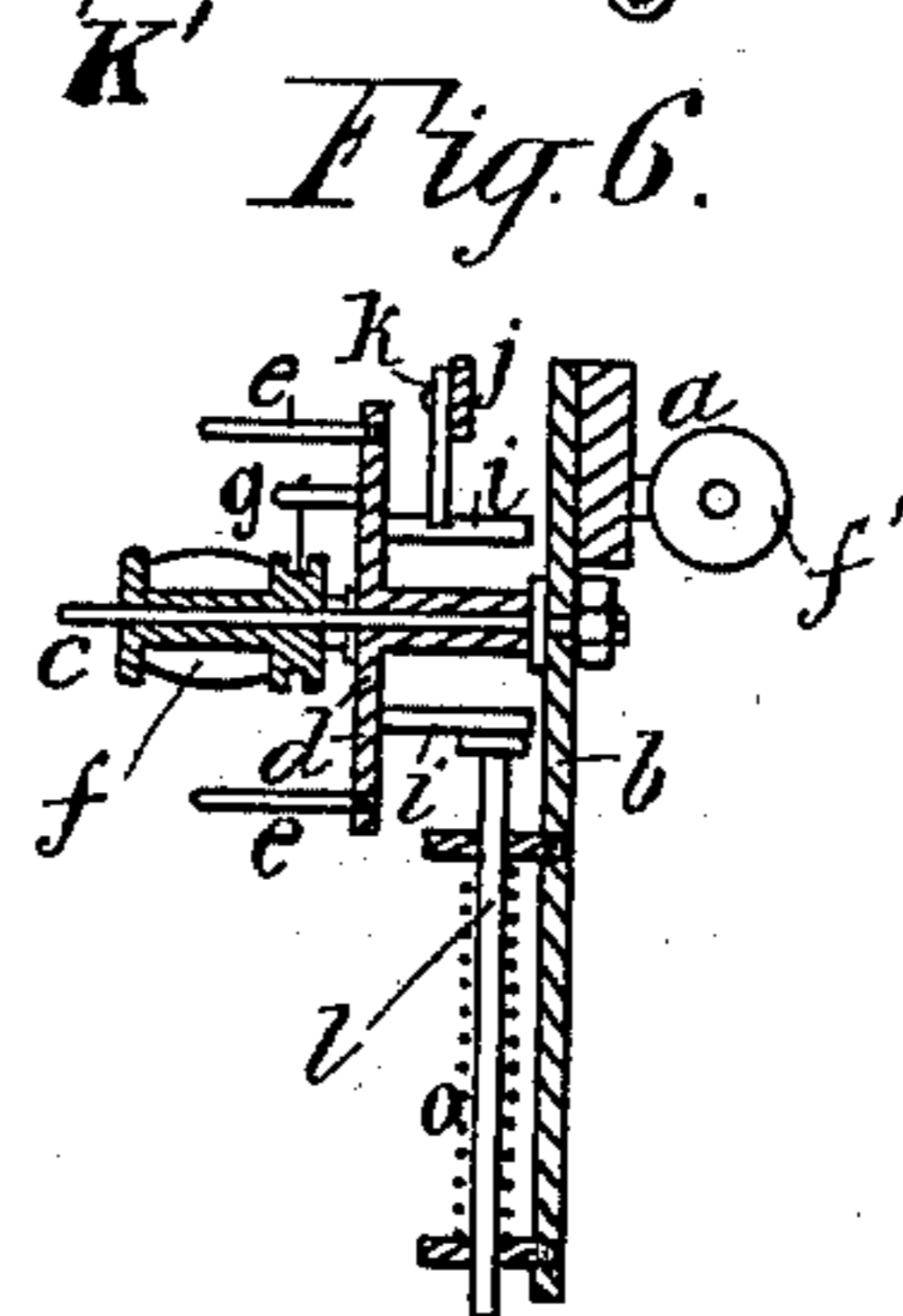
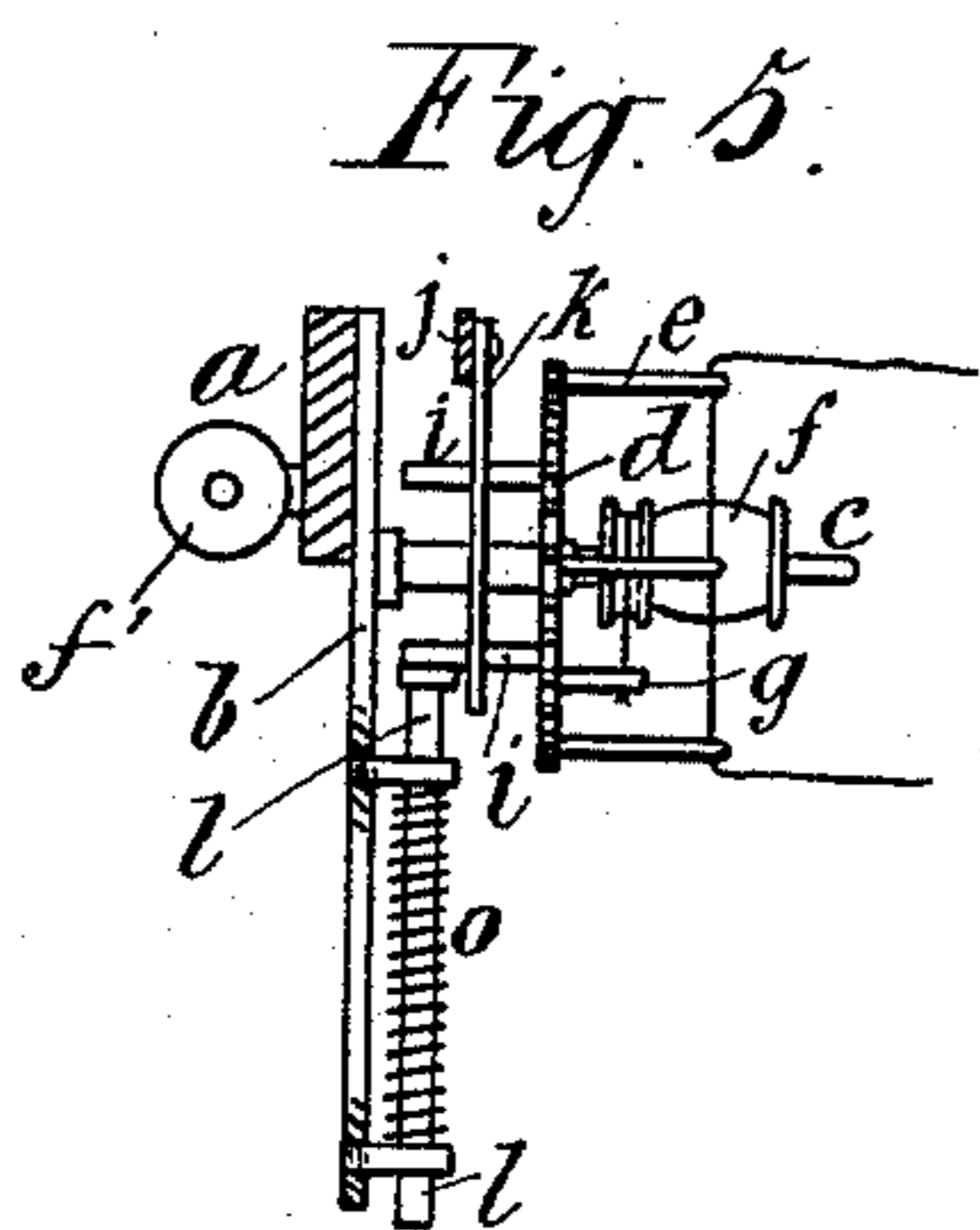
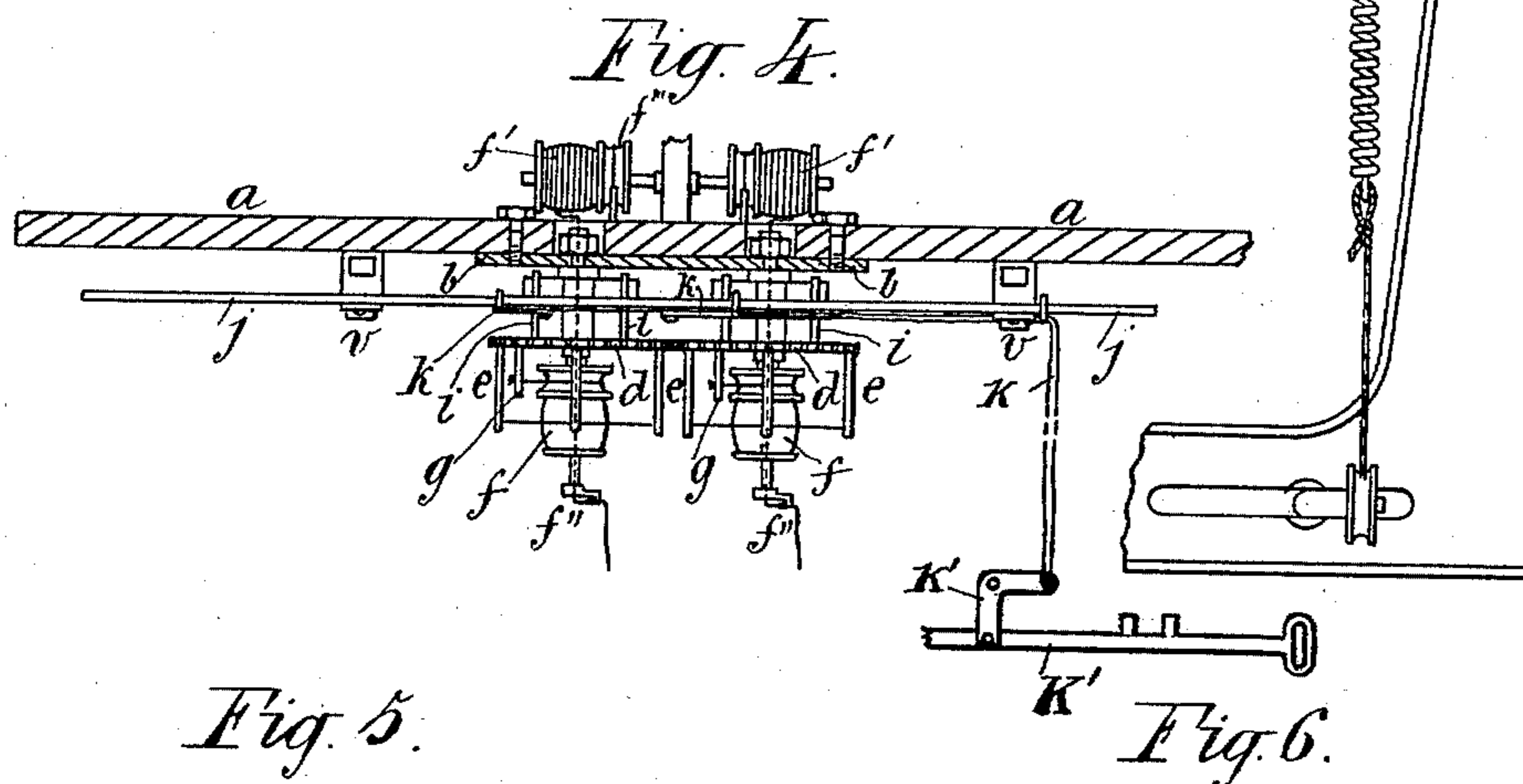
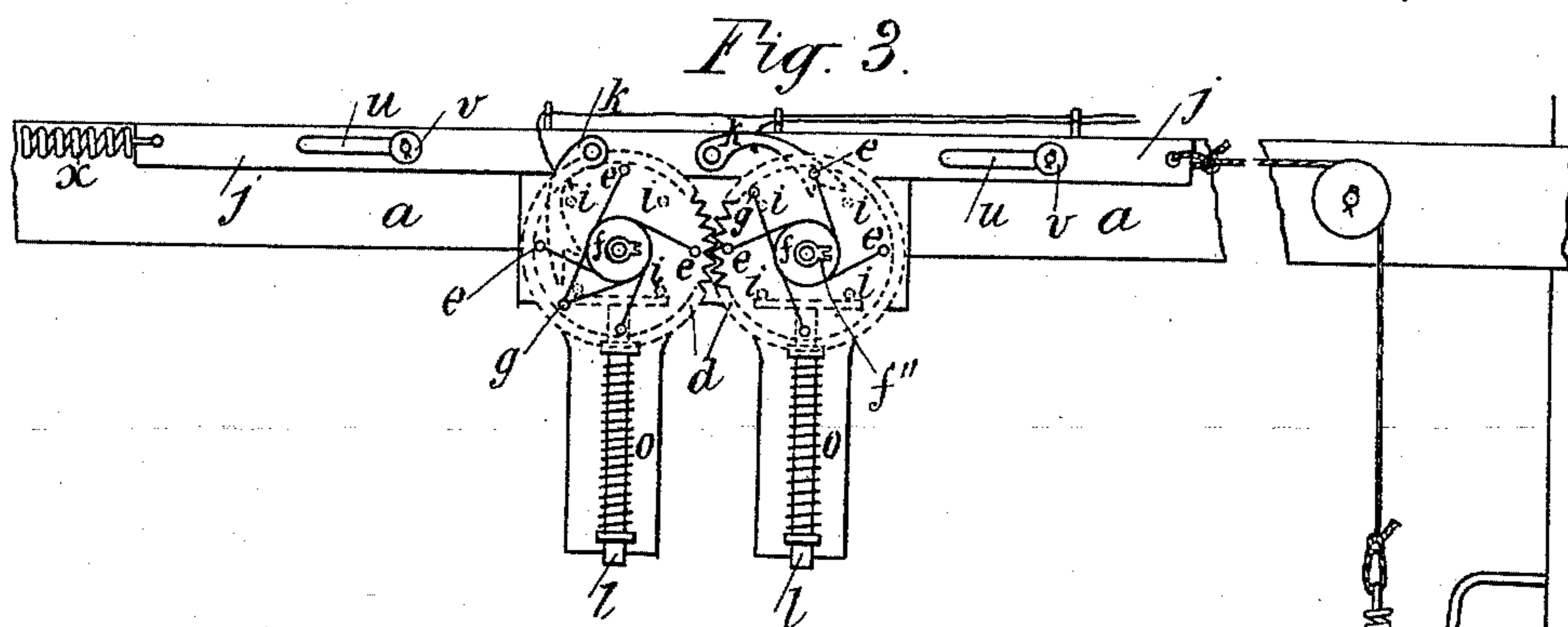
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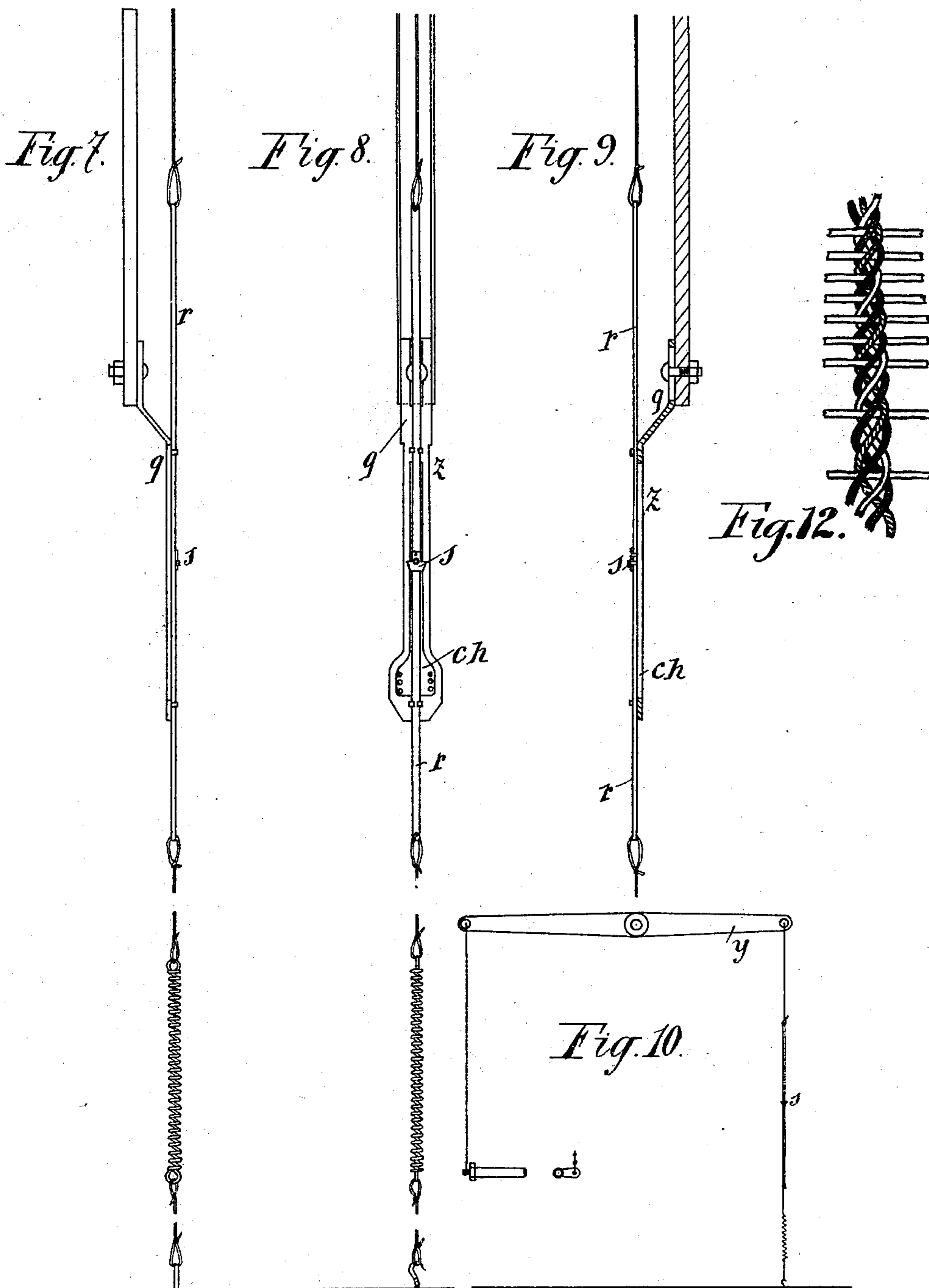
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UNITED STATES PATENT OFFICE.

EMILE LANGJAHR, OF TRÜBAU, AUSTRIA-HUNGARY.

APPARATUS FOR SIMULTANEOUSLY WEAVING TWO OR MORE FABRICS.

SPECIFICATION forming part of Letters Patent No. 509,476, dated November 28, 1893.

Application filed December 29, 1892. Serial No. 456,635. (No model.) Patented in France February 27, 1892, No. 219,728; in England March 2, 1892, No. 4,108; in Austria-Hungary March 7, 1892, No. 42 and No. 4,085; in Switzerland March 28, 1892, No. 4,830; in Belgium April 3, 1892, No. 99,158, and in Germany April 6, 1892, No. 65,354.

To all whom it may concern:

Be it known that I, EMILE LANGJAHR, a citizen of the Republic of France, residing at Trübau, Moravia, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Apparatus for Simultaneously Weaving Two or More Fabrics, (for which I have obtained the following patents: in Great Britain, No. 4,108, dated March 2, 1892; in France, No. 219,728, dated February 27, 1892; in Austria-Hungary, dated March 7, 1892, No. 42 and No. 4,085; in Switzerland, No. 4,830, dated March 28, 1892; in Germany, No. 65,354, dated April 6, 1892, and in Belgium, No. 99,158, dated April 3, 1892,) of which the following is a specification.

This invention relates to apparatus employed in looms for simultaneously weaving two or more fabrics, for the purpose of forming false selvages. In such apparatus as at present generally constructed, one of the false selvage threads passes alternately to the right and to the left of a fixed thread, and several attempts have been made to secure by such apparatus a selvage which is not liable to unravel, but without complete success. In place of adopting this method of forming the false selvages, I employ a rotary motion of false selvage threads so as to form with them a kind of continuous cord in the strands of which the weft threads are very securely bound.

An apparatus constructed for the purpose of this invention is illustrated by the accompanying drawings to which reference is to be had, in which—

Figure 1 is a side elevation. Fig. 2 is a plan. Fig. 3 is a front elevation of the twister for the selvage threads. Fig. 4 is a plan of the same. Fig. 5 is a side view of a twister. Fig. 6 is an axial section thereof. Figs. 7, 8, 9, and 10 illustrate the guides and their connected parts. Fig. 11 shows the bar which carries the dogs to actuate the twisters. Fig. 12 illustrates the fabric.

The apparatus consists of two essential portions; that, is to say,—first, of a support *b* upon which are fixed two pins *c c* each of which has mounted upon it a metal disk *d* having a maximum diameter of about four

inches. These two disks are provided with teeth and are geared together. The support *b* may be fixed upon an iron bar *a* secured to the framing of the loom preferably below the warp, and in such a manner that the two disks *d* are respectively opposite to the selvages which are required to be produced.

Second, the apparatus consists of a vertical guide *q* in the middle of which there is mounted an iron or steel bar *r*, carrying a double hook *s*, the shape and dimensions of this hook and of the bar being arranged to suit the work to be done in each case. The guide *q* is arranged perpendicularly between the two selvage cords and behind the healds and mails. Each of the disks carries upon its front side, or the side facing the loom, a bobbin having four threads thereon, and four thread guides, each bobbin turning upon the same pivot as the disk. This pivot is hollow and is traversed by a central thread which passes through the hollow pivot from a bobbin arranged upon the apparatus. The passage of this thread is regulated and guided by the thread tension regulator *f''*. The four thread guides *e* are equally spaced around the edge of the disk, and each of them is provided with an eye which receives a thread from the bobbin thereon. At the back of each disk there are arranged four driving studs *i*, equally spaced and arranged in a square, and with these there engages suitable clicks or dogs *K* by means of which the disks may be turned at each stroke of the lay through either a half or a quarter turn as may be desired. A detent *l*, is arranged to press by means of a spring *o* against two of the driving studs *i*, so as to keep the disks in a fixed position after each half or quarter turn. A flat bar *j* which carries the clicks or dogs *K* receives through the intermediary of a suitable cord, or wire *t*, or of other suitable connecting device, from the lay, a to and fro motion of such a kind that the clicks when they are both arranged to act upon the driving studs of the disks *d*, impart to them a half turn for each stroke of the lay, and a quarter turn only when a single click only operates upon the driving studs, one click operating upon the movement of the bar *j* in one

direction, and the other click upon the return stroke of the bar. The flat bar *j* is provided with two slots *u*, and is supported by two gudgeons *v* which are arranged upon the bar *a*, and it is pulled in one direction by the cord *t*, in consequence of the motion of the lay, and is returned in the other direction by the action of a spring *x* attached to the other end of the flat bar.

If it should be desired that the disks *d* be turned through a half turn for each stroke of the lay, the two clicks will remain down and in operation, but if on the contrary, a quarter turn only should be desired, one of the clicks will be put out of action by lifting it out of engagement against the flat bar *j*, by means of a disengaging screw or otherwise as indicated by Fig. 11. Further, the two clicks *K* are connected by means of cords *k* with the stop motion *K'* of the loom by means of a screw eye on each click, and a bell-crank lever *k'* or other equivalent device. By this means the operative is in complete command of the apparatus for the purpose of piecing broken ends and for other purposes, for, independently of this automatic disconnecting of the clicks, she can also put them out of action by hand.

The two disks which carry the bobbins, because of the engagement of their teeth, turn one to the right and the other to the left, and the holes *w* bored and tapped in the flat bar *j* permit the positions of the clicks to be altered if necessary.

The reciprocating bar *r* which carries the double hook *s* is carried in two grooves or slides formed in the middle of the guide *q*, and is moved positively in one direction at the same time with the healds at each stroke of the lay. The return movement is effected by a light spring *r'*, or by a weight.

The threads for the false selvages pass from the bobbins *f* through their respective thread guides, and a long slit *z* in the guide *q*, the four threads of the right bobbin to the right of the double hook, the four threads of the left bobbin to the left, and thence directly through the dents of the reed. The long slit *z* in the guide is larger at the one end than at the other as shown in Fig. 8, and forms a kind of chamber *ch*, on each side of the hook. It is in this space or chamber that the bobbin threads successively present themselves to the hook.

During the operation of the loom, the two disks *d* turn one quarter or one half turn for each stroke of the beat up, and twist the threads from each bobbin into a cord. At each stroke, the double hook seizes, to the right and to the left, a thread from each bobbin, and these threads are then moved with the healds so that the shuttle may pass. The threads are then returned simultaneously with the shed, and at the next stroke the following two threads are presented and moved, always one to the right and one to the left of

the double hook, and these motions are repeated throughout the weaving so that for every stroke the positions of the threads are changed in the chambers, by being turned around each other as they approach and leave the hooks.

The false selvages obtained as hereinbefore described are completely solid, and greater or less substance may be given to them by using thicker or thinner harder or softer yarn as may be required by the fabric to be woven.

The tension of the false selvage threads may be regulated by means of india rubber cords secured to screws *g'* secured in the disks. These cords pass over the bobbins on which they act as brakes, and the amount of friction may be regulated at will by turning the screws.

By employing on one bobbin threads of different colors, a multi-colored twist edging may be obtained, such as cannot be secured by any other means and which may thus form a characteristic means for identification or trade mark.

Several of the disks and related parts may be arranged on the same bar so as to enable more than two fabrics to be woven simultaneously and by employing smaller disks and by super-imposing two or more ranges of them, the narrowest ribbons may be woven.

More or fewer than four threads may if desired be used on each bobbin as may be required in particular cases, but for ordinary purposes I prefer to employ four as described.

While I have shown the twisting apparatus as placed below the warp and the hooks arranged to lift the threads, yet I do not limit myself to this precise construction since the relative positions of the parts, and their direction of movement may be considerably altered without departing from the spirit of my invention.

When the apparatus is arranged below the warp, it is preferred to cover it with wire work grill or grating to prevent the entanglement or breaking which might possibly arise from contact of the warp threads with the false selvage threads.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an apparatus for producing false selvages, the combination with two bobbins each carrying two or more threads, of a rotary disk concentric with each bobbin and having a guide for each thread, means for driving said disks intermittingly, and means for lifting said threads in succession, substantially as described.

2. In an apparatus for producing false selvages, the combination with two bobbins, each carrying two or more threads, of a rotary disk concentric with each bobbin and having a guide for each thread, means for driving said disks intermittingly and means for lifting one

thread from each bobbin simultaneously, the threads from each bobbin being lifted in succession, substantially as described.

3. In an apparatus for producing false selvages, the combination with a tubular bobbin holder, of a bobbin thereon carrying several threads, a second bobbin carrying a thread which passes through the tubular holder, a rotary disk concentric with said holder and carrying a guide for each thread from the first named bobbin, means for intermittently rotating said disk, and means for lifting the threads in succession, substantially as described.

4. In an apparatus for producing false selvages, the combination with two bobbins, each carrying two or more threads, of a rotary disk concentric with each bobbin and having a guide for each thread, driving mechanism for actuating said disks simultaneously and intermittently, and operating connections between said driving mechanism and the lay of the loom, substantially as described.

5. In an apparatus for producing false selvages, the combination with two fixed spindles, of a bobbin mounted on each spindle, and carrying two or more threads, a disk rotatably mounted on each spindle, carrying a guide for each thread, and provided with pins, a reciprocatory bar carrying two dogs for engagement respectively with the pins of said

disks, and operating connections between said bar and the lay of the loom, substantially as described.

6. In a machine for producing false selvages, the combination with the fixed tubular spindles *c*, of the bobbins *f f*, the disks *d* geared together and carrying the thread guides *e* and the pins *i*, the detents *l* adapted to engage with said pins, the bar *j*, the dogs *k* attached thereto and operating upon the pins *l*, and means for reciprocating the bar *j*, substantially as described.

7. In an apparatus for producing false selvages, a guide for the selvage threads, comprising a stationary chamber for the threads, and a movable hook for removing one or more threads from said chamber, substantially as described.

8. In an apparatus for producing false selvages, a guide for the selvage threads, having grooves, and a lifting bar sliding in said grooves, said guide having also a long slit for the selvage threads, provided at one end with a chamber, substantially as described.

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

EMILE LANGJAHR.

Witnesses:

HENRY DAUDET,
LUCIEN CRESPIEN.