

J. & A. MOSS.
PICKING MOTION OF LOOMS FOR WEAVING.

No. 452,849.

Patented May 26, 1891.

Fig. 1.

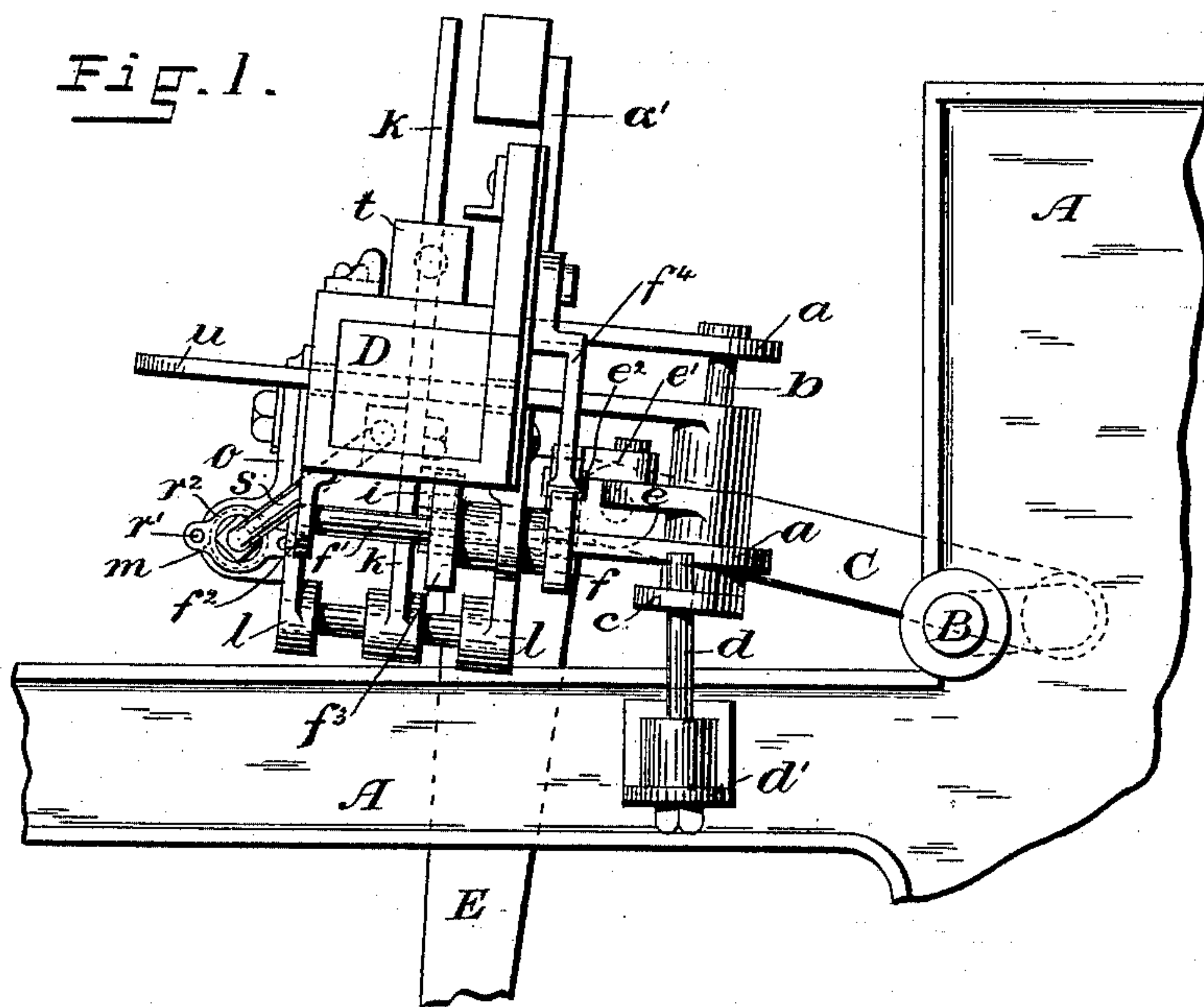
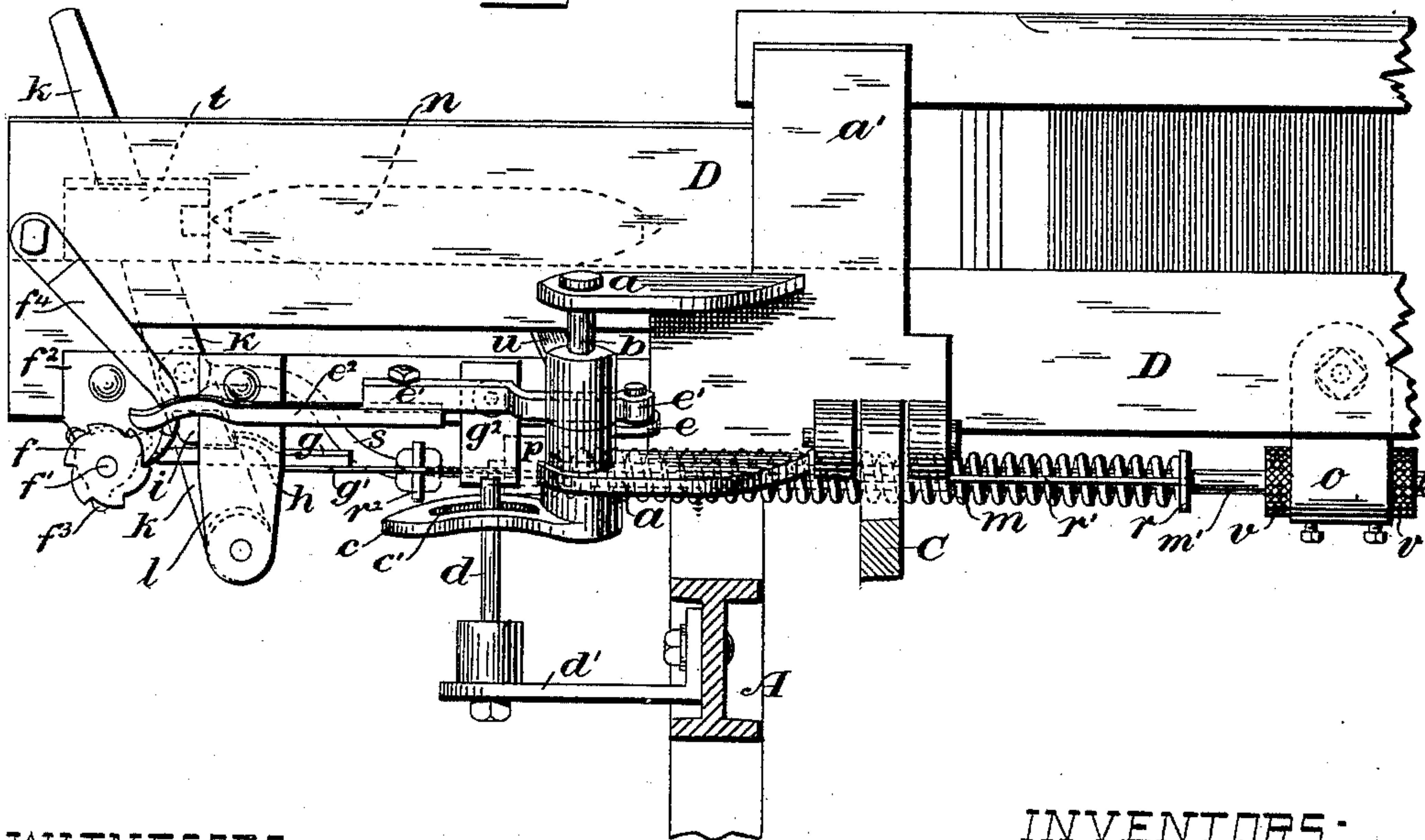


Fig. 2.



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Fig. 3.

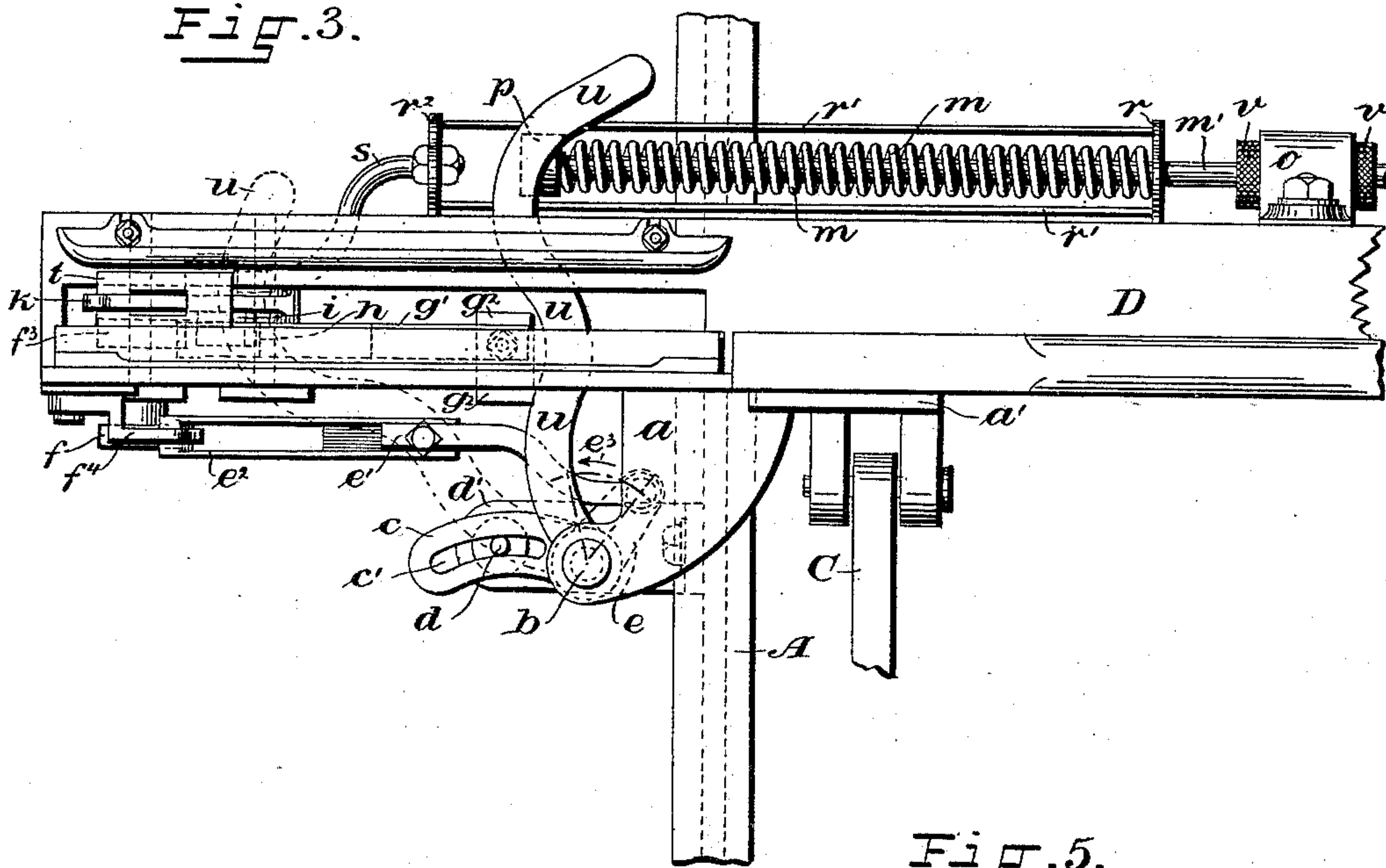


Fig. 5.

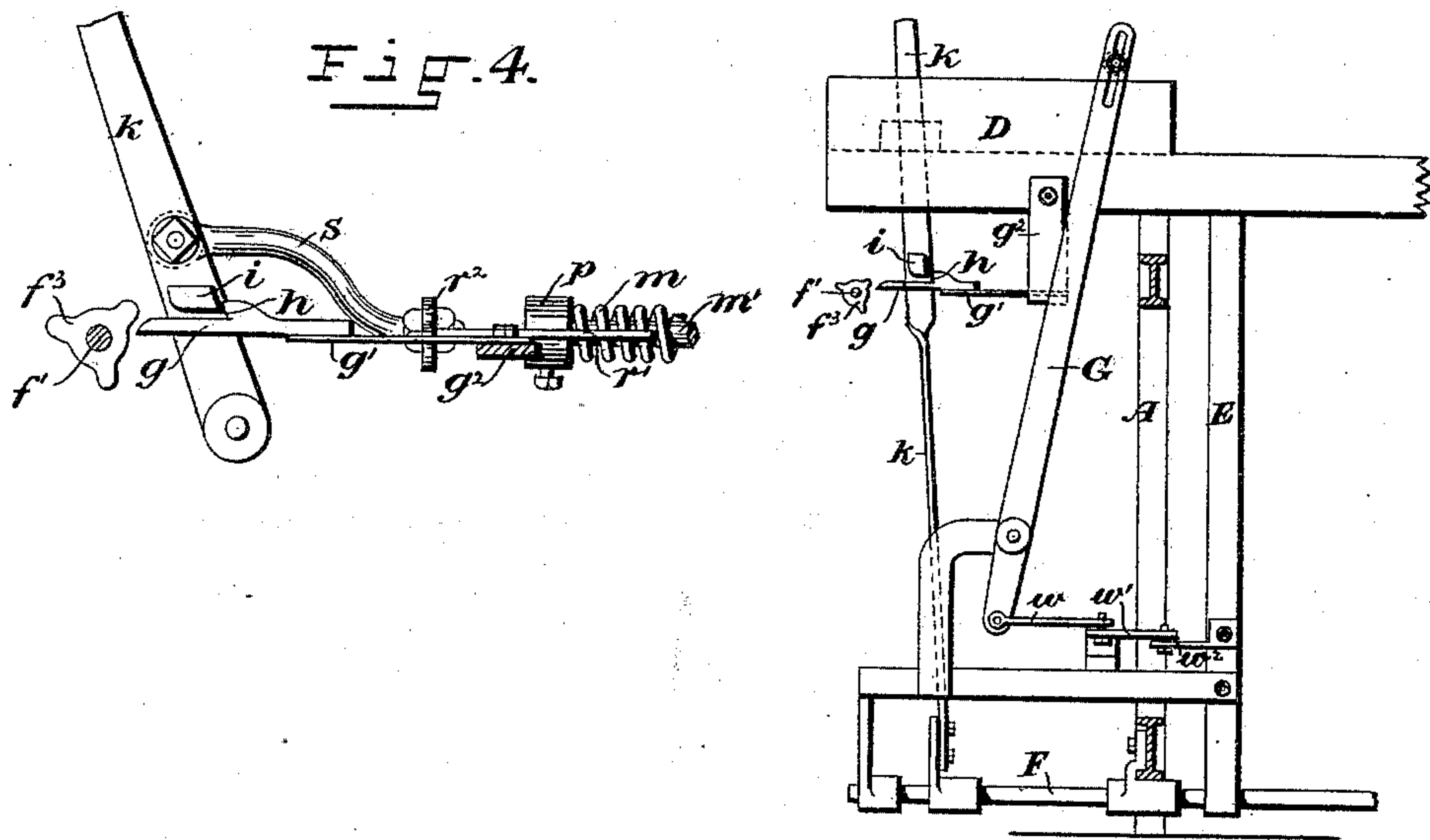


Fig. 6.

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UNITED STATES PATENT OFFICE.

JAMES MOSS AND ABRAHAM MOSS, OF HEBDEN BRIDGE, ENGLAND.

PICKING-MOTION OF LOOMS FOR WEAVING.

SPECIFICATION forming part of Letters Patent No. 452,849, dated May 26, 1891.

Application filed December 31, 1890. Serial No. 376,336. (No model.) Patented in England February 18, 1890, No. 2,582.

To all whom it may concern:

Be it known that we, JAMES MOSS and ABRAHAM MOSS, citizens of Great Britain, residing at Hebden Bridge, in the county of York, England, have invented certain new and useful Improvements in the Picking-Motion of Looms for Weaving, (for which we have obtained a patent in England, No. 2,582, dated February 18, 1890;) and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention has reference to the picking mechanism of looms for weaving, our object being to dispense with the picking mechanism at present employed and to substitute therefor an entirely new and different form of mechanism for sending the shuttle across the loom, consisting of a compressed spiral or other form of spring, together with means for compressing and releasing such spring.

In order that our invention may be more fully understood, we have annexed hereto drawings illustrative thereof, to which reference is herein made.

Figure 1 is an end elevation of the sley or going part of a loom, showing one form of our improved apparatus applied thereto. Fig. 2 is a back elevation, and Fig. 3 a plan view, of same. Fig. 4 is a detail of a portion of our said improvements. Fig. 5 is a plan view showing a modification of the form of the spring for operating the shuttle and the parts which co-operate with the spring. Fig. 6 is a vertical section of the parts shown in Fig. 5.

Referring to the drawings, the same letters of reference indicate corresponding parts throughout.

A represents part of the frame-work of the loom; B, the crank-shaft, connected by crank-arm C to the sley or going part D; which is carried by lathe-swords E, all of said parts being arranged and operated in the ordinary manner.

Supported by the brackets *a*, cast to or projecting from the plate *a'*, fixed to the back of the sley, and to which the crank-arm C is connected, is a vertical pin or stud *b*, to the lower end of which is secured a short lever-arm *c*, provided with slot *c'*, through which passes a

fixed stud *d*, projecting up from the bracket *d'*, bolted to the frame of the loom. Mounted on the same vertical stud *b* is another short lever-arm *e*, to the extremity of which is connected one end of a horizontal rod *e'*, whose opposite end is secured to a hook-ended finger *e''*, capable of engaging, when moving in one direction, with the teeth of the ratchet-wheel *f*, which is mounted on a stud *f'*, supported on the under side of the shuttle box or sley by brackets *f''*. On the same stud *f'* is a star-wheel *f'''*, having only half the number of teeth or projections possessed by the ratchet-wheel *f*, which, when the said ratchet-wheel *f* is partially rotated, as afterward explained, successively engage with the extremity of a finger *g*, (shown more plainly in Fig. 4,) secured to a flat spring *g'*, attached to the bracket *g''*, bolted to the back of the sley, the said spring *g'* allowing the finger *g*, when the teeth on the ratchet-wheel *f'''* come in contact therewith, to be depressed, so as to withdraw the sneck *h* on said finger clear of the catch or lug *i*, projecting from the side of the picker-lever *k*, leaving such lever *k* free to be operated by the spiral spring *m*, which throws the shuttle *n* across the loom. The picker-lever *k* is mounted on a stud supported by brackets *l* on the under side of the sley. The spiral spring *m* is placed upon a shaft or rod *m'*, secured to a bracket *o* at about the center of and in front of the sley, one end of said spring abutting against a collar *p*, secured by set-screw to one end of the rod *m'*, while the opposite end of said spring abuts against the flange *r*, which is free to move endwise on rod *m'*, such said flange *r* and another flange *r''* being carried by two parallel rods *r'*, connected by the bent arm *s* to the picker-lever *k*. When the picker-lever is in the position shown in Figs. 1 to 4, the spiral spring is compressed between the flange *r* and collar *p*, so that immediately the said picker-lever *k* is released by the revolving star-wheel *f'''*, removing sneck *h* from catch *i*, the force of the spring is exerted upon the flange *r*, which is forced thereby endwise toward the bracket *o*, and by means of the rods *r'*, flange *r''*, and arm *s* draws the picker-lever suddenly toward the inner part of the loom with sufficient force to send the shuttle across the loom to the

opposite side thereof. The picker-lever k carries a metal or other picker t , provided with an india-rubber or other yielding cushion for throwing the shuttle out of the box and also
5 for receiving it when sent home across the loom.

For the purpose of forcing back the picker-lever k and compressing the spring m after each lever has been operated and sent the
10 shuttle across the loom, as explained, we employ a bent lever u , mounted on the vertical stud b , which said lever extends through slots or openings at the back and in front of the sley. Said lever u , after each pick has
15 been made, is placed into the position shown in dotted lines of Fig. 3 by the action of the fixed stud d , working in the slot of the lever-arm c , which operation is performed as the sley beats up the weft-thread. Similar mech-
20 anism to that above described is arranged at the opposite side of the loom for operating the picker-lever in the opposite shuttle-box.

In order to break the force of the spiral springs m when released and prevent concussion and breakage of the parts, we place on
25 the rod m' and against each side of brackets india-rubber or other suitable yielding collars v , which act as cushions for receiving the flanges r when impelled against them by
30 the springs.

The action of our improved picking mechanism, as above described, is as follows: When the loom is set in motion and the sley or going part oscillated backward and for-
35 ward, the vertical stud b alternately approaches and recedes from the lower fixed stud d , which lies in the slot c' of the short lever-arm c , causing such lever-arm to be oscillated or moved upon its fulcrum b as it is
40 carried back and forward by the movement of the sley, thereby giving a corresponding oscillating motion to the said stud b , and also to levers e and u fixed thereon. In the several figures on the drawings the sley is shown
45 at the extent of its backward movement away from the cloth and the picker-lever k held in position ready for throwing the shuttle across the loom after the next beat up of the sley. Assuming, therefore, that the sley is
50 making its return journey, so as to beat up the weft, the lever-arm e commences to move in the direction of the arrow e^3 , (see Fig. 3,) and on the arrival of the sley at the full extent of its forward movement the said lever-arm has completed its motion in the direction
55 of the arrow and forced the end of finger e^2 over the ratchet-wheel f , placing the hooked portion thereof in position to engage with a tooth on said ratchet-wheel, so that when
60 the sley and lever-arm e commence their return or backward movement the hooked portion of the finger e^2 moves such ratchet-wheel a distance equal to one tooth, thereby partially rotating the stud f' and likewise the
65 ratchet-wheel f^3 thereon. The said ratchet-wheel f^3 is shown as having only three teeth, or half the number possessed by the ratchet-

wheel f , this being designed so that the picker-lever shall only be operated every other pick, or alternately with the operation of the picker-
70 lever at the opposite side of the loom. The movement of the ratchet-wheel f a distance equal to two of its teeth brings a tooth on ratchet-wheel f^3 into contact with the finger
75 g , which, by reason of its connection to the flat spring g' , is thereby depressed and removes the catch i clear of the projecting sneck h on the picker-lever, so as to set the spring m free, whereupon the shuttle is sent
80 across to the opposite side of the loom. A holding-catch f^4 , pivoted to the back of the sley or shuttle-box, prevents any return movement of the ratchet-wheel after being partially rotated by the hook-ended finger e^2 .
85 At the next beat up of the sley the picker-lever k is forced back into the position shown in the drawings by means of the bent lever u , which, as before described, is moved to the position shown in dotted line in Fig. 3 by the
90 action of the fixed stud d on the slotted lever-arm c as it is moved backward and forward by the sley, the projecting sneck h on the picker-lever k riding over and depressing the finger g until it is next engaged and locked
95 by the catch i thereon. Simultaneously with the act of placing the picker-lever into position, as just described, the spiral spring m is also compressed between the flange r and collar p , fixed on the end of rod m' .

Fig. 5 shows the picker-lever k as forming
100 a spring in itself, being composed of a blade of strong spring-steel and connected to a bracket secured on the shaft F , upon which the sley oscillates. When the lever k is released by finger g being depressed and sneck
105 h moved clear of catch i , projecting from the spring-lever, the energy or force stored up in the said spring-lever k by being bent out of the perpendicular immediately exerts itself, and the lever moves suddenly forward in the
110 shuttle-box to send the shuttle across the loom. The picker-lever is then moved back to the position shown, on the backward movement of the sley, by means of lever G , operated through the medium of the connecting-
115 rod w , (see Fig. 6,) bell-crank lever w' , and bracket w^2 , bolted to lathe-sword E .

The spring picker-lever may be employed in place of the springs shown in Figs. 1, 2,
120 and 3.

The improvements herein fully described may be applied either under or above the loom.

By the employment of the mechanism herein fully shown and described the picking tap-
125 pets and bowls, picking arms and straps, and other mechanism usually employed therewith for sending the shuttle across the loom are now dispensed with, and in the abandonment of leather straps alone a considerable saving
130 in cost for renewals is effected, while the mechanism above described and comprising an improved picking-motion is certain, effective, and smooth in action, and as it is oper-

ated entirely by the movement of the sley is better adapted for performing the work specified than the ordinary picking-motions.

We would have it understood that we do not confine ourselves to the exact construction and arrangement of parts forming our improved motion, as herein shown and described, which may be altered and varied in detail by the employment of equivalent and well known mechanical devices without departing from the main features embodied therein.

We claim as our invention—

1. The combination, with the picker-lever *k* and a spring operatively connected thereto and adapted to throw the shuttle, of the oscillating lever *u*, operated by the sley and adapted to draw back the picker-lever and spring, a spring-supported finger *g*, engaging with a sneck on the picker-lever, and a star-wheel operated by the sley and adapted to release the said finger at intervals and permit the spring to actuate the shuttle, substantially as set forth.

2. The combination, with the picker-lever *k* and a spring operatively connected thereto, of the spring-supported finger *g*, engaging with a sneck on the picker-lever, the star-wheel for releasing the said finger at intervals, the ratchet-wheel having twice as many teeth as the star-wheel and secured on the star-wheel shaft, and a finger operated by the

sley and adapted to engage with the said ratchet-wheel, substantially as and for the purpose set forth.

3. The combination, with the picker-lever *k*, of the bent lever *u*, secured on shaft *b*, the oscillating sley provided with a bracket for supporting the said shaft, the slotted lever *c*, also secured on the said shaft, and the stationary pin *d*, supported by the frame and engaging with the said slotted lever, whereby the lever *u* may be operated to draw back the picker-lever, substantially as set forth.

4. The combination, with the retractible picker-lever *k*, of the stationary spindle *m'*, provided with a collar *p*, the rods *r'* and flanges secured thereto, the spring *m* between the collar *p* and one of the said flanges, and the rod *s*, connected to the other said flange and to the said picker-lever, whereby the said spring may be compressed when the picker-lever is drawn back, substantially as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES MOSS.
ABRAHAM MOSS.

Witnesses:

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