

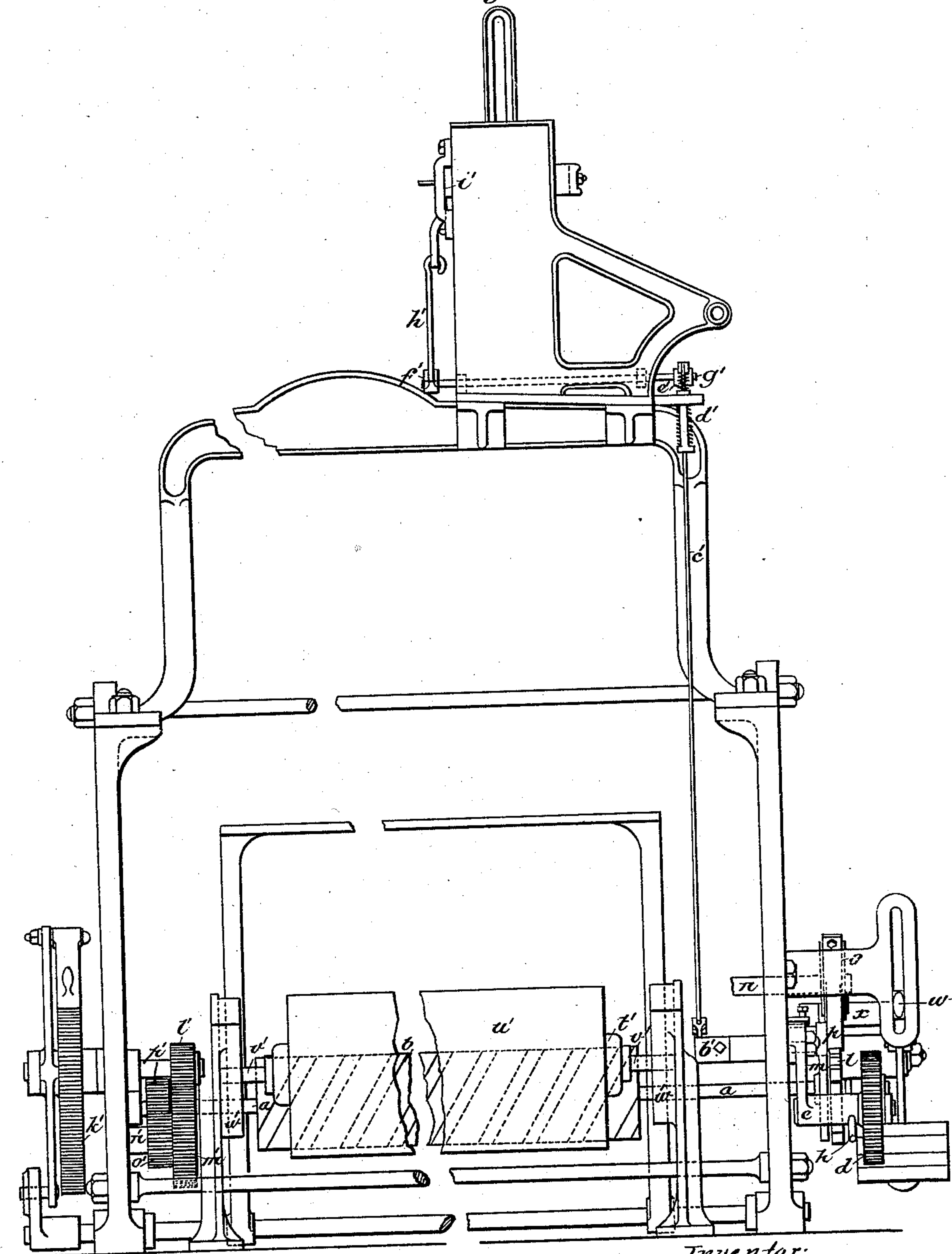
J. LAIRD, Jr.

LOOM FOR WEAVING BAGS, &c.

No. 286,711.

Patented Oct. 16, 1883.

Fig. 1.



Witnesses:
Ed. Dick
Walter Blandford.

Inventor:
John Laird jr.
by Marcellus Bailey
his Attorney

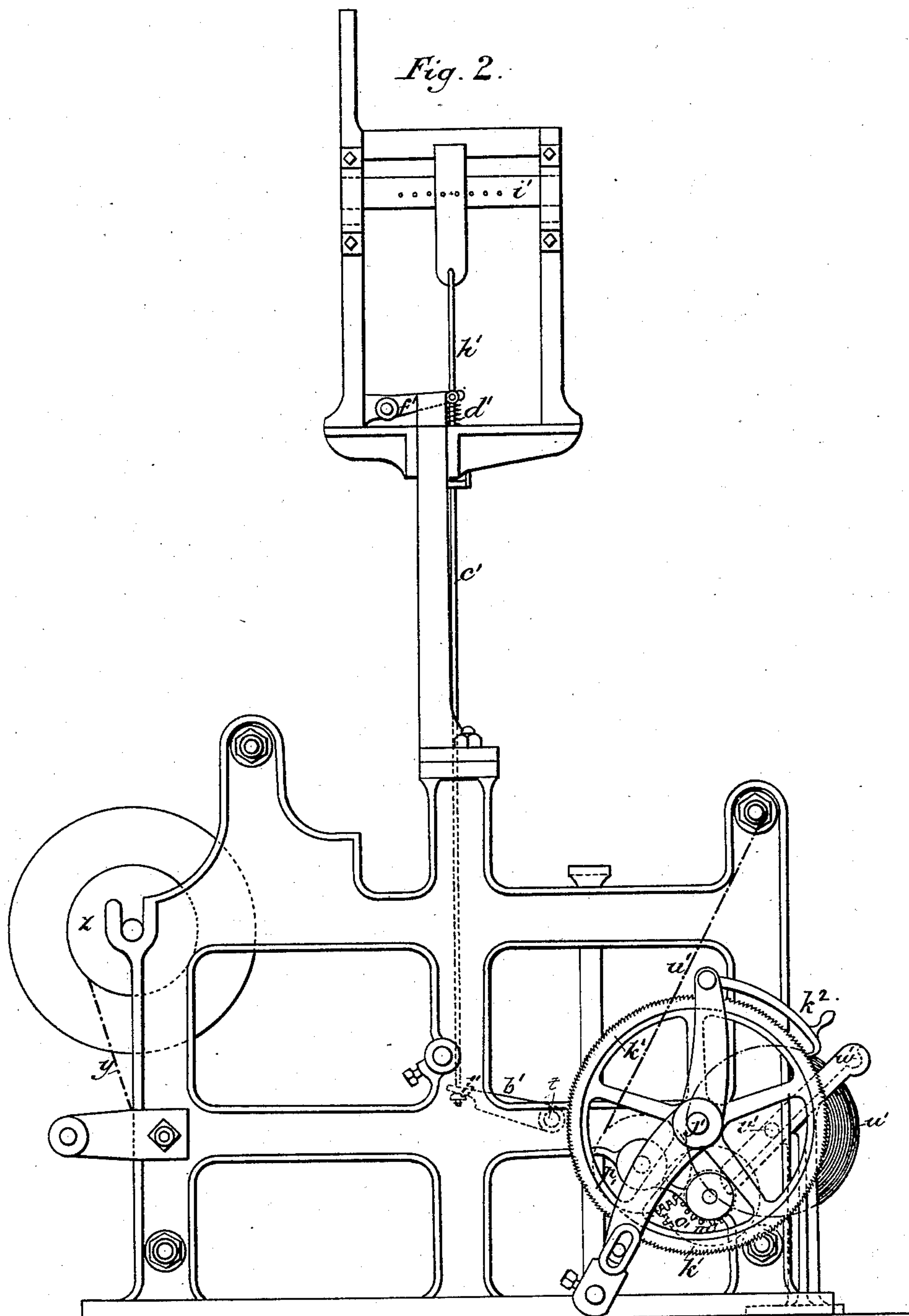
(No Model.)

4 Sheets—Sheet 2.

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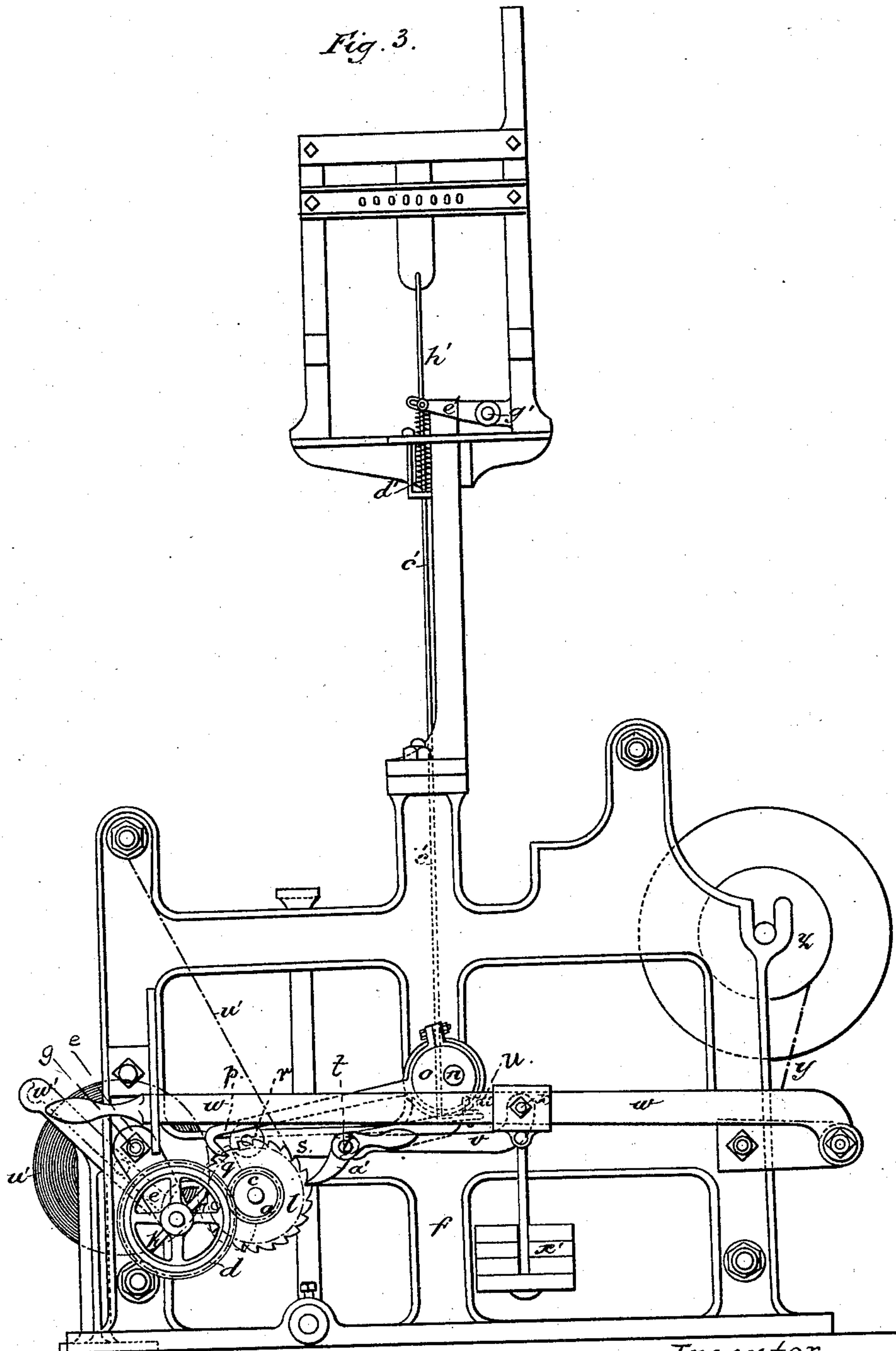
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(No Model.)

4 Sheets—Sheet 4.

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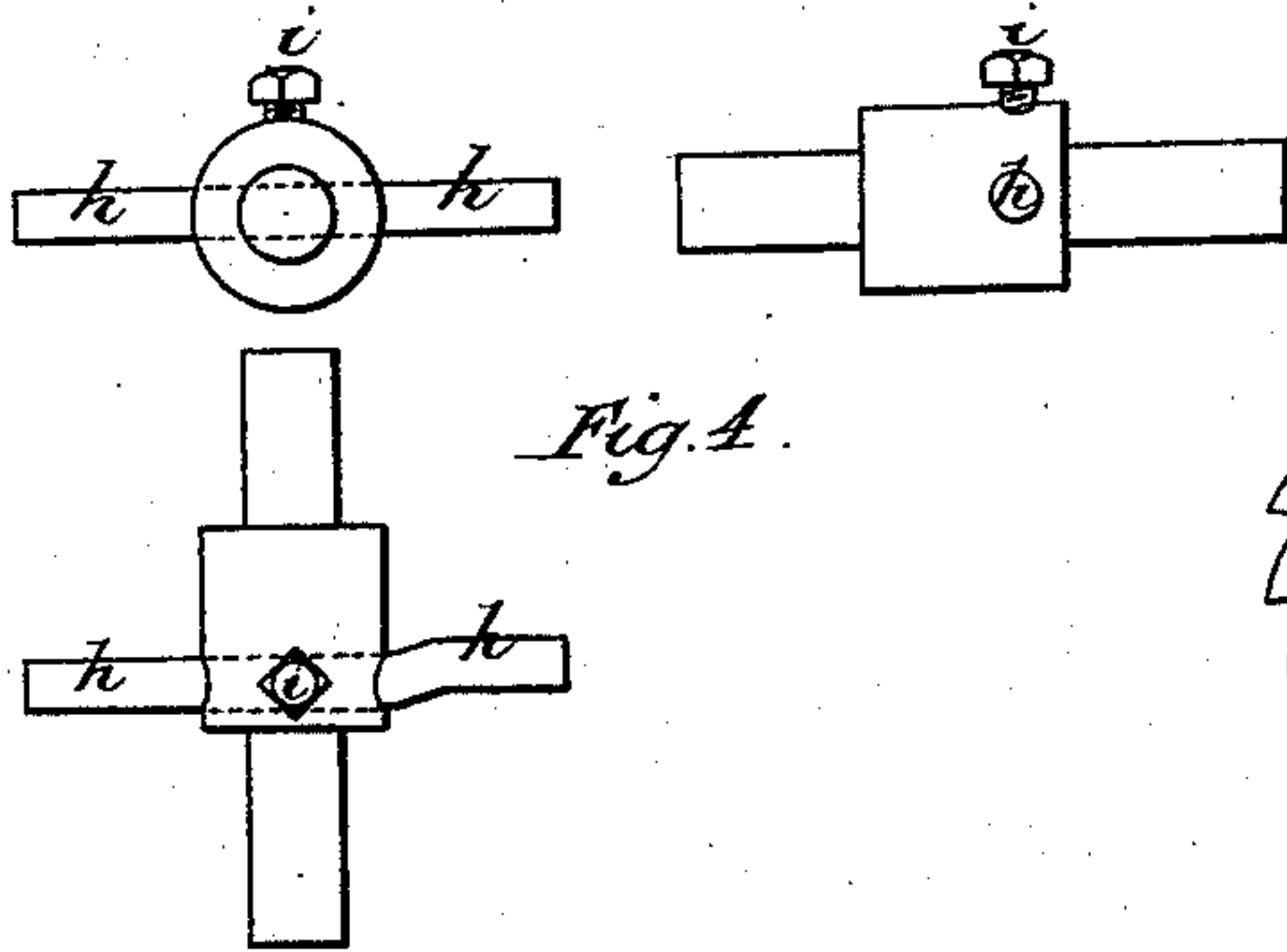


Fig. 4.

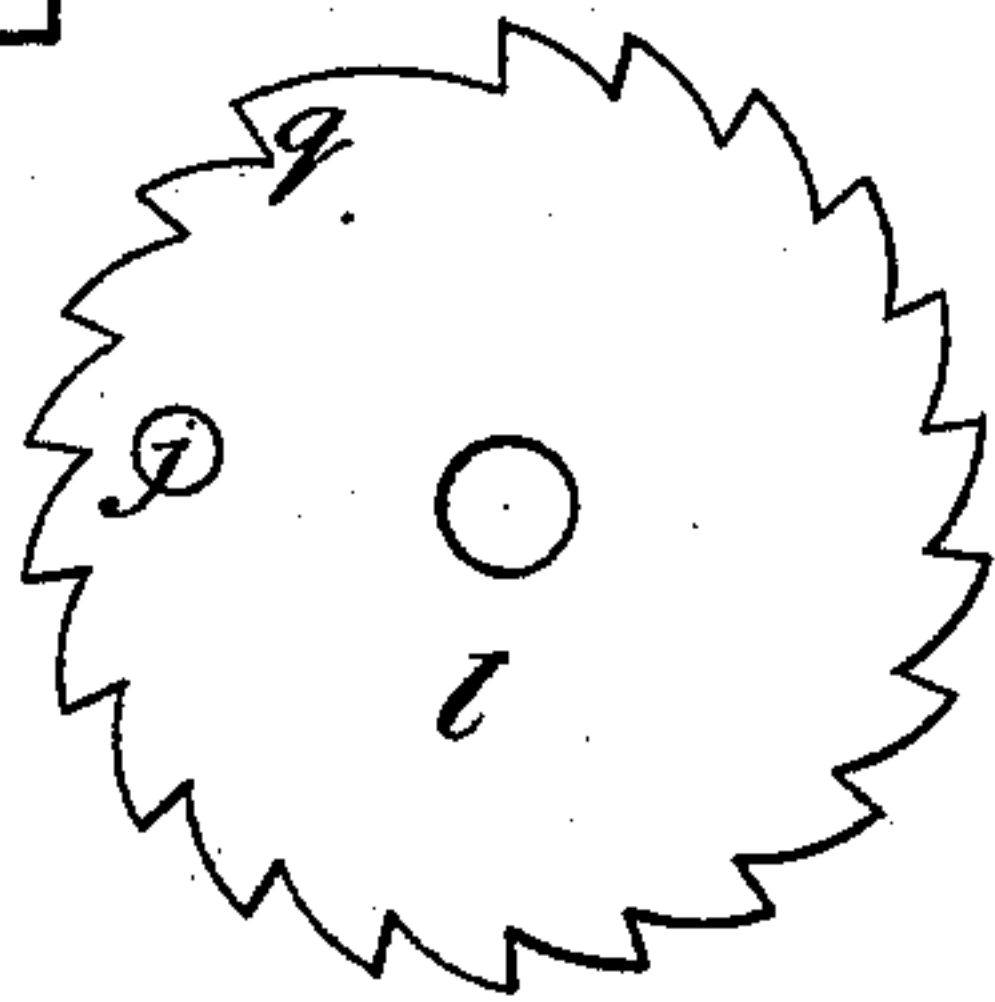


Fig. 5.

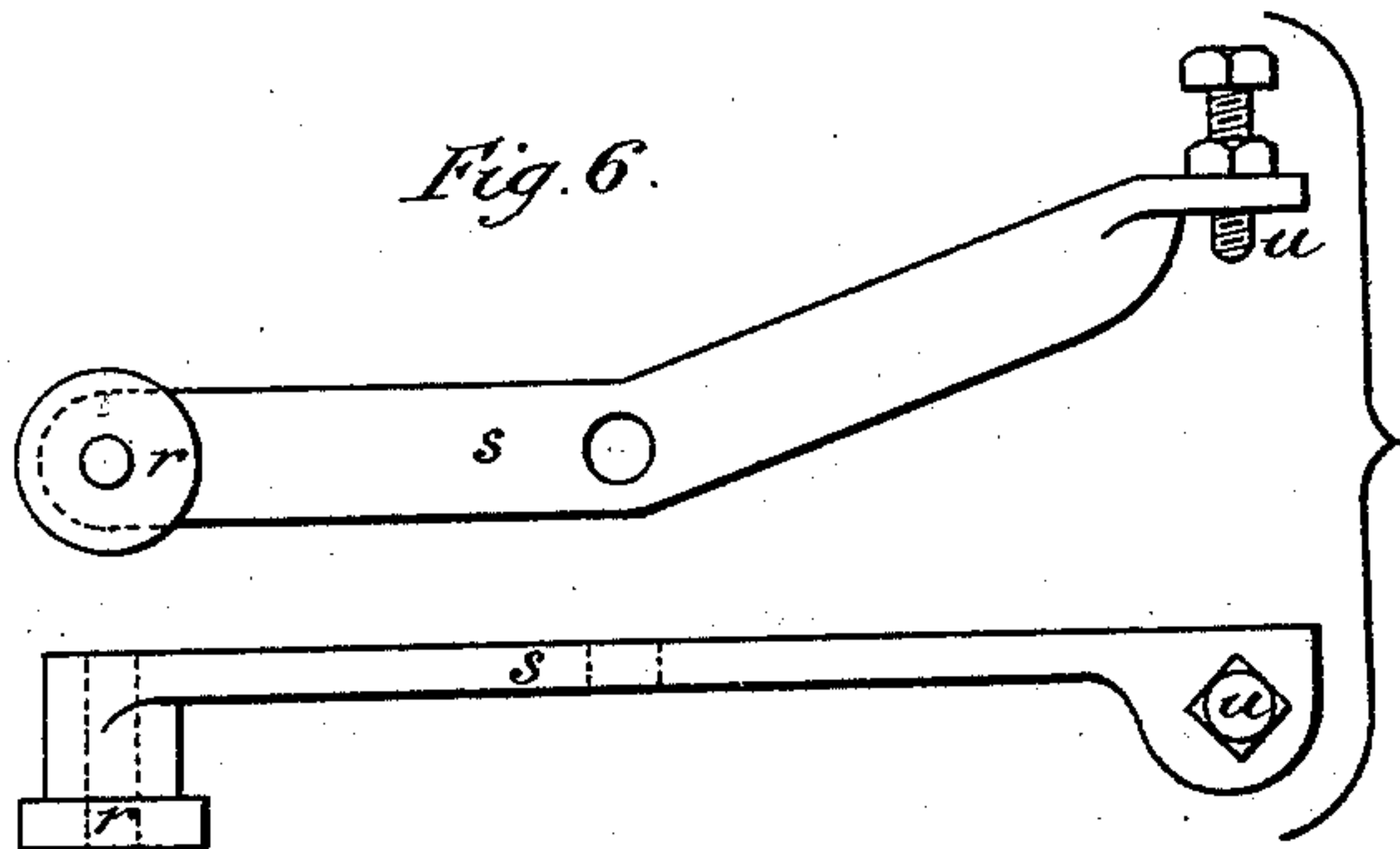
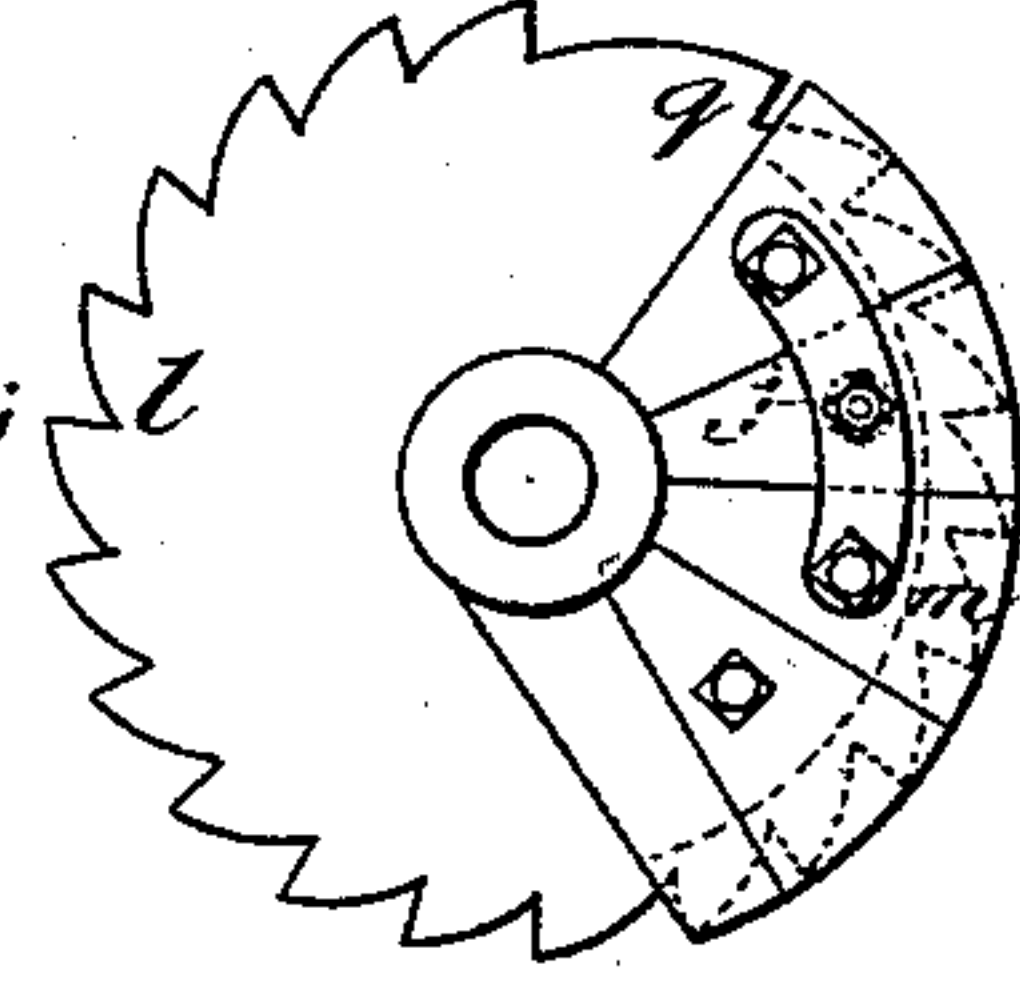
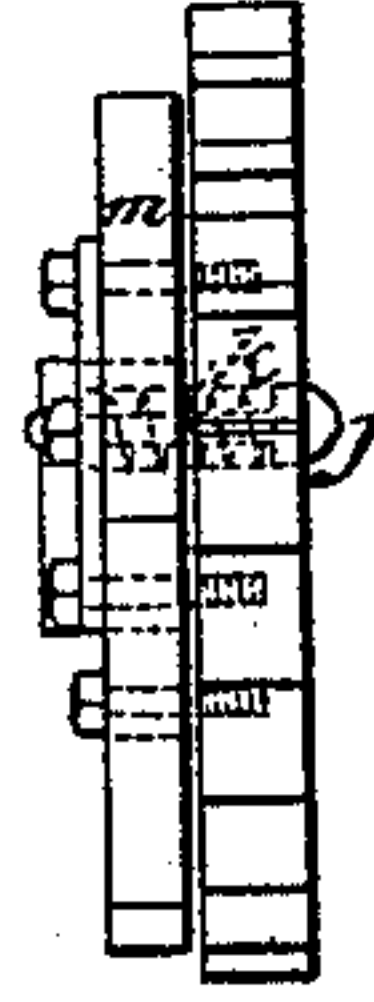


Fig. 6.

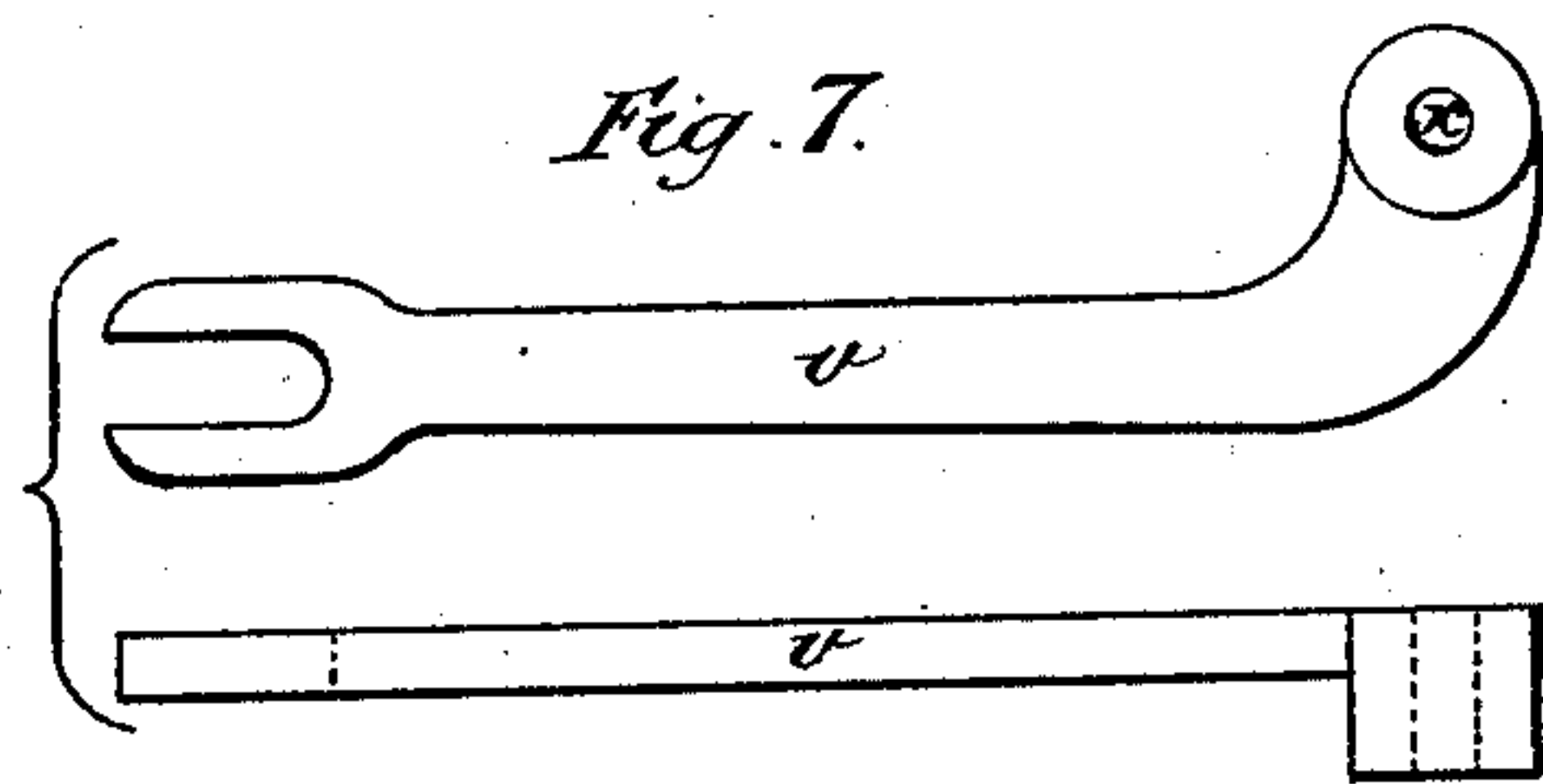


Fig. 7.

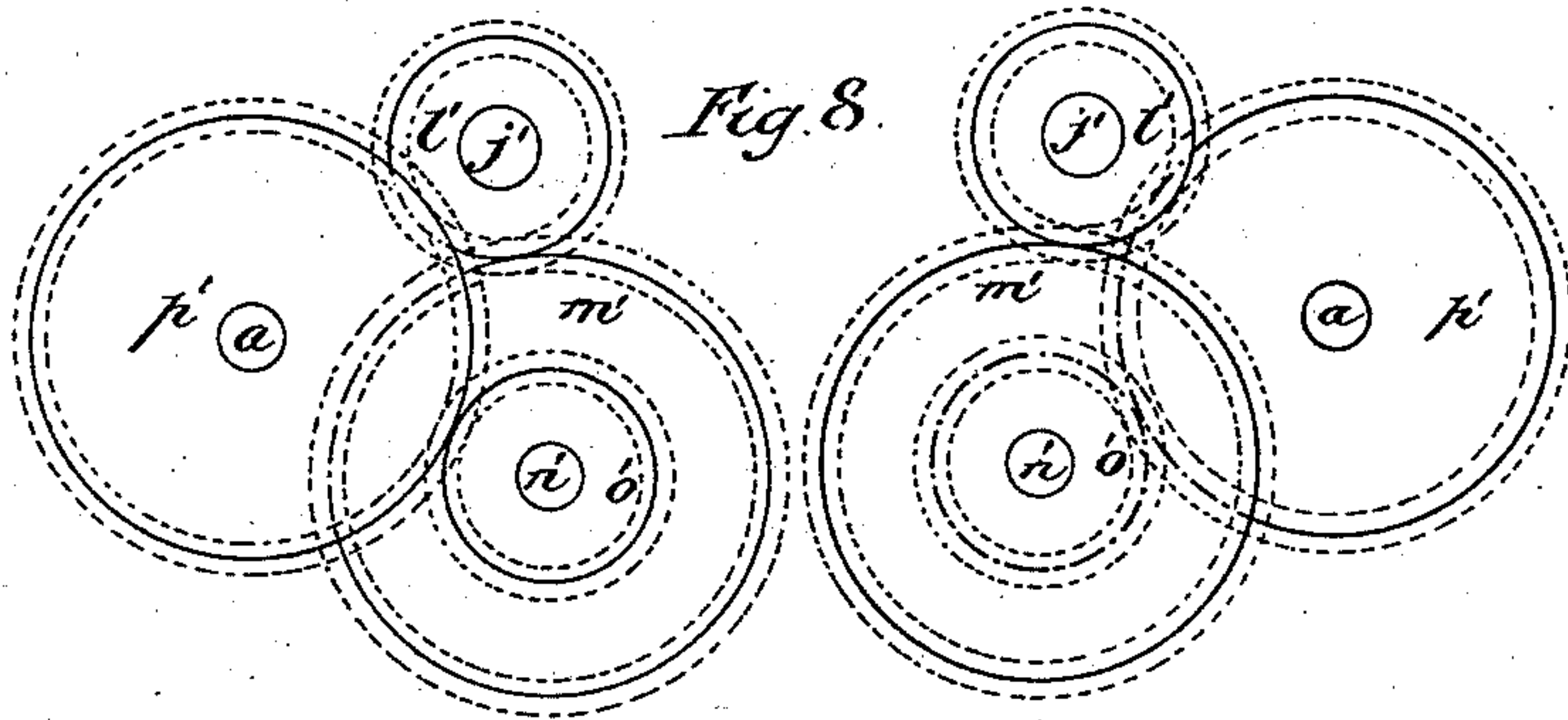


Fig. 8.

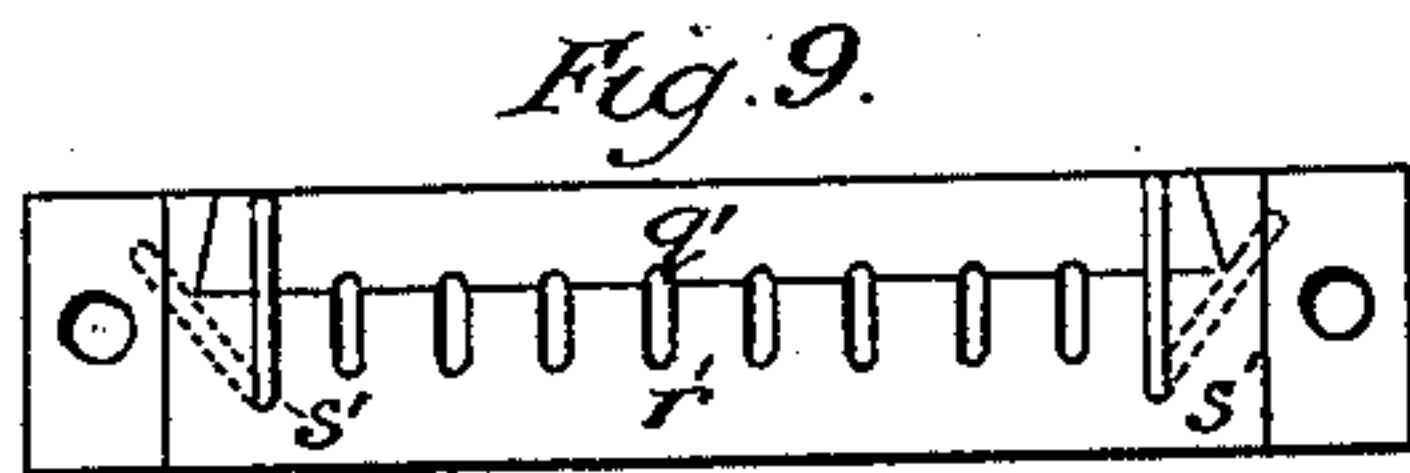


Fig. 9.

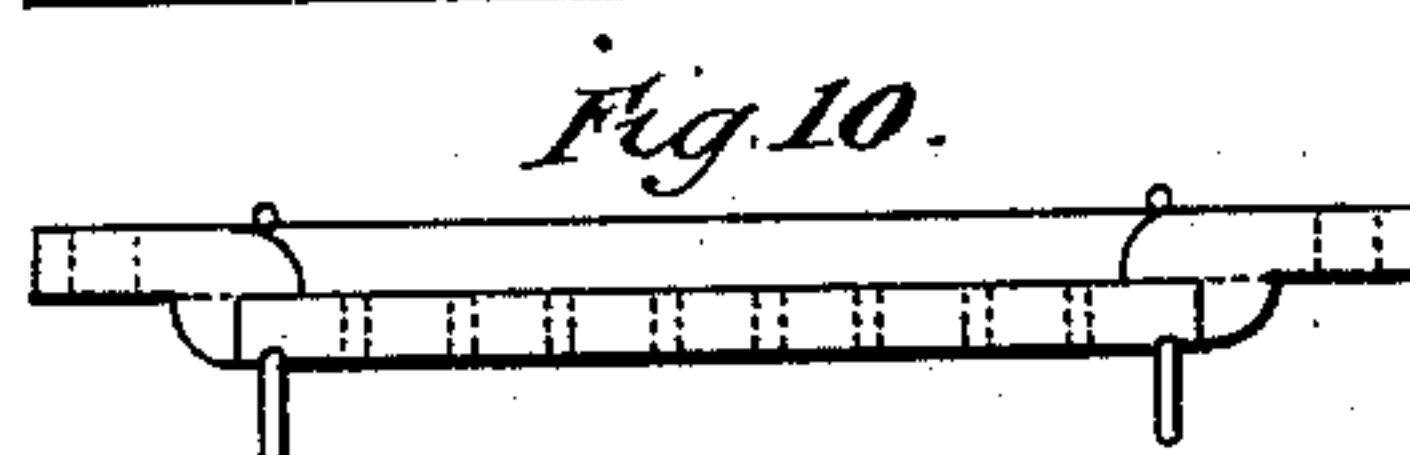


Fig. 10.

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Walter Blandford

Inventor:
John Laird Jr.
by Marcus Bailey
his attorney

UNITED STATES PATENT OFFICE.

JOHN LAIRD, JR., OF FORFAR, COUNTY OF FORFAR, SCOTLAND, ASSIGNOR
TO WM. RUTHERFORD, OF SAN FRANCISCO, CALIFORNIA.

LOOM FOR WEAVING BAGS, &c.

SPECIFICATION forming part of Letters Patent No. 286,711, dated October 16, 1883.

Application filed February 5, 1883. (No model.) Patented in England December 21, 1882, No. 6,093.

To all whom it may concern:

Be it known that I, JOHN LAIRD, Jr., of the town and county of Forfar, North Britain, manufacturer, have invented Improvements in
5 Looms for Weaving Bags, &c., (for which I have received Letters Patent of the United Kingdom of Great Britain and Ireland, No. 6,093, dated December 21, 1882, and which improve-
10 ments have been patented in no other country or countries,) of which the following is a specification.

This invention has special reference to looms for weaving bags, sacks, and other tubular or double fabrics, in which the cloth has at definite intervals or spaces to be woven into single
15 cloth for the purpose of forming the bottoms or sides of such bags, sacks, or similar articles, according as the said articles are woven with their length lying longitudinally or transversely with the web or warp of the cloth.
20 The object is more especially to render the whole of the operations in connection with the weaving of such goods or fabrics, and especially the bottoming and measuring operations, automatic.

The invention consists in a spur pinion or wheel applied to the end of the shaft which carries the "pace-beam," which wheel or pin-
30 ion gears into and drives a second pinion or wheel of any required diameter carried upon a stud on a lever attached to the gable of the loom. This lever and its stud may be swung on its clamping-screw for accommodating pinions of different diameters. This second pin-
35 ion is provided with an adjustable finger placed transversely to the axis of the pinion, and so shaped that it, at the proper moment or point of its rotation, comes into contact with an elastically-fitted stud—that is to say, a stud acted
40 upon by a spring projecting from the side or face of a ratchet-disk carried loosely upon the pace-beam shaft, and gives to the ratchet-disk a slight motion sufficient to turn a long tooth on the ratchet away from beneath a reciprocating pawl and allow said pawl to engage
45 with the next tooth and give motion to the ratchet-wheel and revolve it progressively. At the back of this ratchet-disk is a cam formed in segments, the extent of whose surface is variable by varying the number or width of the
50 segments (the said segments being removable)

which are at any time attached to the disk, and the number or extent of surface of such segments so used is varied or regulated according to the width of the bottom or sides requiring to be woven into the bag. Upon the second motion-shaft or wiper-shaft, or other suitable shaft of the loom, an eccentric is fitted, which drives the pawl or hook hereinbefore mentioned, giving to the same a constant reciprocating motion. The ratchet-disk has one long tooth, and when this is below the pawl said pawl slides back and forth on it, and no motion can be given to the ratchet-disk by the pawl; but when said ratchet-disk is partially
55 turned the pawl engages with the next tooth and rotates the ratchet-disk progressively, one tooth each movement of the lay, until it has completely revolved such ratchet-disk, when the pawl again rests and slides back and forth
60 upon the long tooth. When the ratchet-disk is so rotated, the adjustable cam at the back thereof acts against a roller carried in a lever, which lever, being raised by the said cam, presses at its opposite end (provided with a
65 screw) down upon an intermediate lever that acts upon the drag-lever, and thereby increases the drag or tension upon the warp during the time the bottoms or sides of the bags are being woven. So soon as the cam on the back
70 of the ratchet-disk is moved out of contact with the roller on the aforesaid lever, the pressure upon the drag-lever is released, so that the drag returns to its normal degree. Simultaneously with the increase of the drag on
75 the warp, the same lever by which that is effected also acts through a rock-shaft arm and draw-rod to pull down the horizontal needle-board of the "Dobbie" machine into a position wherein the needles come opposite that row of
80 holes in the cards or barrel of the dobbie by which the shed of the warp necessary for weaving single cloth is produced, so as to form the bottom or sides of the bag. The dobbie or shedding mechanism acting upon the warps is
85 of any ordinary construction—such, for example, as that shown in the United States Patent No. 152,654, granted June 30, 1874, to which reference may be made—and does not require description or illustration, it being understood
90 that any ordinary and suitable mechanism of this character may be utilized. It is usually
100

preferable that the pattern of the jacquard or dobbie be so made that the warps which form the under side of one bag shall be brought up so as to form the upper side of the next.

5 Another part of the improvements relates to the needle-guide bars wherein the horizontal needles of Dobbie machines are carried, and this part of the improvements is such that each or all of the horizontal needles is or are capable of being removed from the guide-bars with-
10 out removing the guide-bars in their entirety, as hitherto. This is effected by constructing the guide-bars in two portions, the upper part of which is held into the lower part by means of
15 a dovetail tongue or equivalent joint against which springs press, the arrangement being such that on the release of the springs the upper part of the needle bar or guide is easily taken out of place.

20 In the drawings, Figure 1 is a front elevation of a loom fitted with mechanism constructed according to and constituting part of my present invention. Figs. 2 and 3 are elevations of opposite ends of the same. Figs.
25 4, 5, 6, 7, and 8 are enlarged detail views of parts of the mechanism constituting part of my present invention. Figs. 9 and 10 are respectively a front elevation and plan of a needle-guide bar constructed according to and con-
30 stituting another part of my present invention.

Upon one end of the shaft *a* of the pace-beam *b* I key or otherwise suitably fit the spur pinion or wheel *c*, Fig. 3, which pinion or wheel gears into and drives a second spur pinion or wheel, *d*, which may be of any required diameter, being carried upon or in a bearing formed in the lever *e*, attached to the gable *f* of the loom by the pinching-nut *g*, and capable of being adjusted in position on the gable
40 *f*. At the back of this second pinion or wheel, *d*, is provided the finger *h*. (Shown in Fig. 3, and more particularly in Fig. 4.) This finger *h* is capable of being adjusted by the set-screw *i*, so that its end projects more or less. This
45 finger *h* is so shaped that it, at the proper moment or point of its rotation, comes into contact with the elastically-fitted stud *j*, which is acted upon at its back by the spring *k*. (Shown more particularly in dotted lines at Fig. 5.)
50 The stud *j* projects from the side or face of the ratchet-disk *l*, which is carried loosely upon the pace-beam shaft *a* at the back of the spur pinion or wheel *c*, hereinbefore mentioned, and as more particularly seen at Fig. 1. At
55 the back of this ratchet-disk *l* is the adjustable cam *m*, formed in segments, which are secured by screws or otherwise suitably fitted to the back thereof, and the extent of whose periphery may be varied or adjusted by varying the number or width of the segments which are at any time attached to the disk, and the number or extent of surface of such segments so used is respectively increased or diminished,
60 according as the width of the single cloth forming the bottom or sides requiring to be woven into the bag is increased or diminished.
65 Upon the second motion-shaft, *n*, of this loom,

or other suitable shaft, the eccentric *o* is fitted, which drives the pawl or hook *p*, which, while the ratchet *l* is in the position indicated in
70 Fig. 3, slides idly upon the long tooth *q*, but engages the next tooth of the ratchet immediately after the latter has been advanced a step by the finger *h* at the back of the second pinion or wheel, *d*, coming into contact with the
75 elastically-fitted stud *j*, and then causes the ratchet to be progressively moved round until the long tooth *q* again comes under the pawl or hook *p*. When the ratchet-disk *l* is so rotated, the cam *m* at the back thereof bears in
80 an upward direction against the anti-friction roller *r*, carried in one end of the lever *s*. (Shown more particularly at Fig. 6.) The lever *s* is mounted upon a rock-shaft, *t*, so that when the one end is raised by the cam *m* in the man-
85 ner described its other end is depressed, so that the adjustable screw *u* therein bears upon and presses down one end of the lever *v* and the drag-lever *w*, to which it is pivoted at *x*, (from which part the weights *x'* are suspended,) 90
and thereby increases the pressure exerted by the chain (represented in dot and pick lines at *y*) upon the drag-wheel *z*, thus increasing the tension upon the warp during the time the bottoms or sides of the bags are being woven. 95
The lever *v* (shown more particularly at Fig. 7) is supported at its one end at *x*, as hereinbefore mentioned, and at its other end is carried and is free to slide longitudinally upon the rock-shaft *t*, forming the pivot of the here- 100
inbefore-mentioned lever *s*. Upon the end of the rock-shaft *t* is also pivoted the pawl *a'*, to retain the ratchet wheel or disk *l* in the position it has been brought to by the action of the eccentric *o* and pawl or hook *p*. So soon 105
as the cam *m* on the back of the ratchet-disk *l* is moved out of contact with the anti-friction roller *r* in the hereinbefore-mentioned lever *s*, the pressure of that lever upon the lever *v*, and thereby upon the drag-lever *w*, is 110
released, so that the drag returns to its normal tension. When the ratchet-disk has completed its rotation, the pawl or hook *p* again bears and slides idly backward and forward upon the long tooth *q* in the ratchet-disk *l* 115
until the said disk is again started forward so as to be engaged with by the pawl or hook *p* by the action of the finger *h* on the stud *j*, in the manner hereinbefore described. The rock-shaft *t*, to which the lever *s* is made fast, passes 120
through the side frame, and is provided with a crank-arm, *b'*, to the outer end of which arm the draw-rod *c'* is connected. This rod effects a change in the order of shedding through the agency of the levers *e'* and *f'*, shafts *g'*, and 125
link *h'*, which pulls down the horizontal needle-board *i'* from that position wherein the needles come opposite the row of holes in the cards or barrel of the dobbie, by which double weaving is produced, to a position opposite 130
the row of holes, whereby the sheds of the warp necessary for weaving single cloth, so as to form the bottom or sides of the bag, is produced.

It is to be understood that the spring d' acts to draw up the rod c' and press the roller r toward the cam m , and to restore the parts to their normal position after the cam m moves
5 away from under the roller r .

For the purpose of driving the pace-beam, I fit upon the inner end of the shaft j' of the ratchet-wheel k' (which is similar to those generally used for the take-up motion) the
10 pinion-wheel l' , which gears with the change-wheel m' . The wheel k' has ratchet-teeth upon its periphery, and the pawl k^2 thereof receives motion from a lever moved by a rocker upon the lay, or in any other convenient manner.
15 The wheel m' is carried upon a stud, n' , fitted into an adjustable lever, (not shown on the drawings,) but constructed similar to the adjustable lever e , hereinbefore described. At the back of the change-wheel m' , and fitted on
20 the same stud, n' , is the pinion o' , which gears with the wheel p , fitted on the shaft a of the pace-beam b .

It is obvious that the speed of the pace-beam b is regulated by the change-wheel m' , and it
25 may either be increased or diminished, according as the size of the change-wheel m' is altered. Another part of my present invention consists of the formation of the needle-guide bar in two parts, as represented at Figs. 9 and 10 of the accompanying drawings, in which the upper part,
30 q' , is dovetailed into the lower part, r' , and held therein by the springs s' , which are pivoted into the lower part, r' , and which, on being turned into the position represented by the
35 dotted lines, render the upper part, q' , and thereby the needles, removable.

The shaft of the cloth-beam t' rests upon inclined guides w' , and the beam receives its motion from the pace-beam b , and the cloth is
40 wound upon such beam t' .

The diagrams Fig. 8 show the two sides of the gearing l' , m' , o' , and p' , that intervenes between the shaft j' of the ratchet-wheel k' and the shaft a of the pace-beam, whereby the latter
45 is slowly revolved as the weaving progresses.

I claim—

1. The combination, with the pace-beam of a loom, of the ratchet-disk l , having a long tooth, q , the eccentric and means to operate the same, and pawl acting in connection with
50 such ratchet-disk, the gearing driven by said pace-beam, and finger h , moved by such gearing, the yielding stud j upon the ratchet-disk, and the cam m , and mechanism brought into action thereby for weaving the single portion
55 of the bag when the long tooth of the ratchet-disk has been moved away from beneath the pawl by the finger h , substantially as set forth.

2. The combination, with the ratchet-disk l , the cam m , and means, substantially as
60 specified, for bringing such ratchet-disk into action periodically, of the lever s and levers v w , chain y , and warp-beam, for increasing the tension of the warps while the single portion of the bag is being woven, substantially
65 as set forth.

3. The combination, with the pace-beam of a loom, of the ratchet-disk l , having a long tooth, the eccentric and means to rotate the same, and pawl acting in connection with such
70 disk, the gearing driven by such pace-beam, and finger h , moved by such gearing, the yielding-stud j upon the ratchet-disk, the cam m , lever s , shaft and arm b' , rod c' , the needle-board, and means for connecting the same with
75 the rod c' , substantially as and for the purpose set forth.

4. The needle-guide bar, formed of the part r' and the bar q' , dovetailed at its ends, in combination with the movable springs s' , for
80 holding the bar q' into its place, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN LAIRD, JR.

Witnesses:

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U. S. Consul, Dundee, Scotland.

WILLIAM MCINTYRE,

U. S. Vice Consul, Dundee, Scotland.