

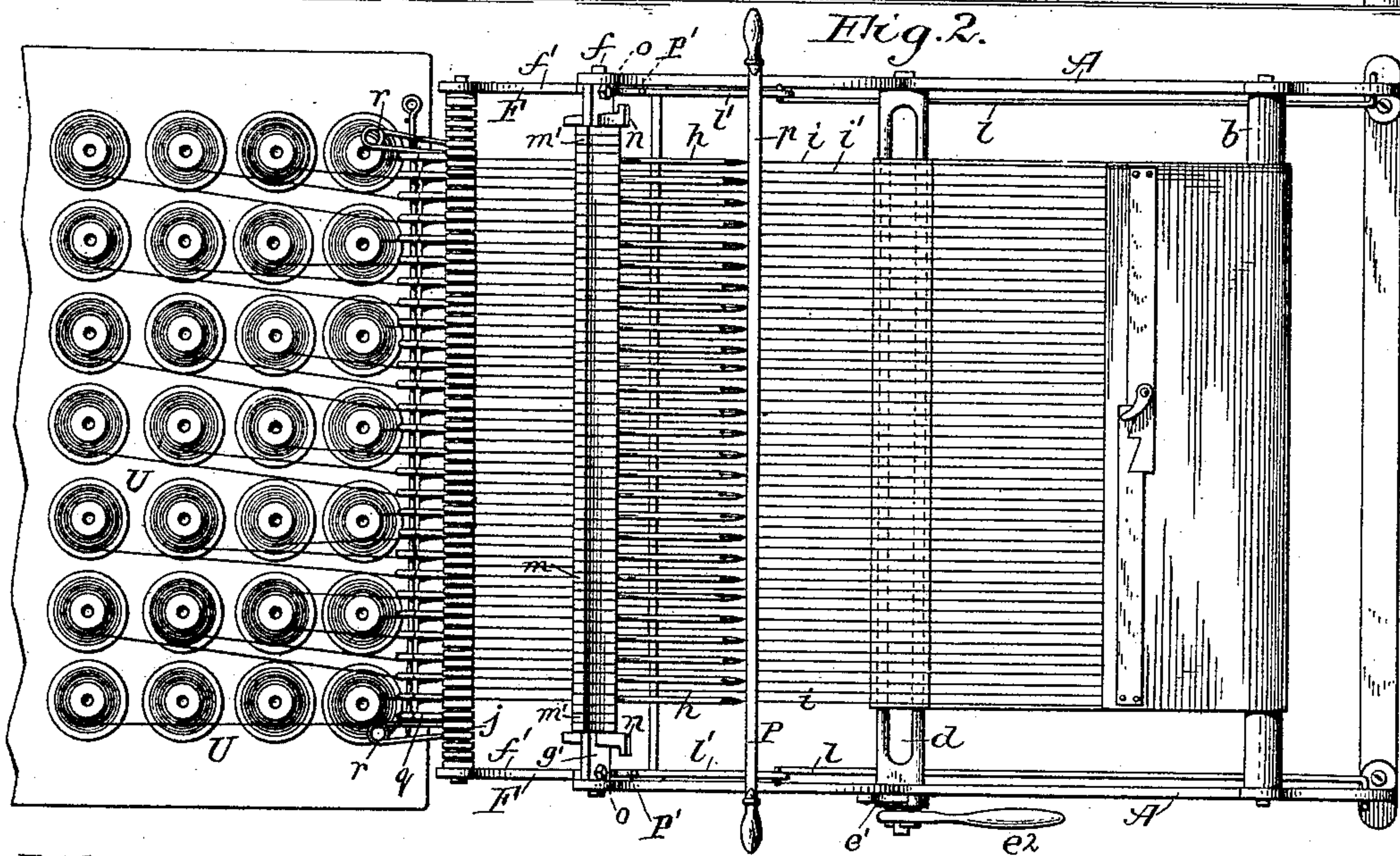
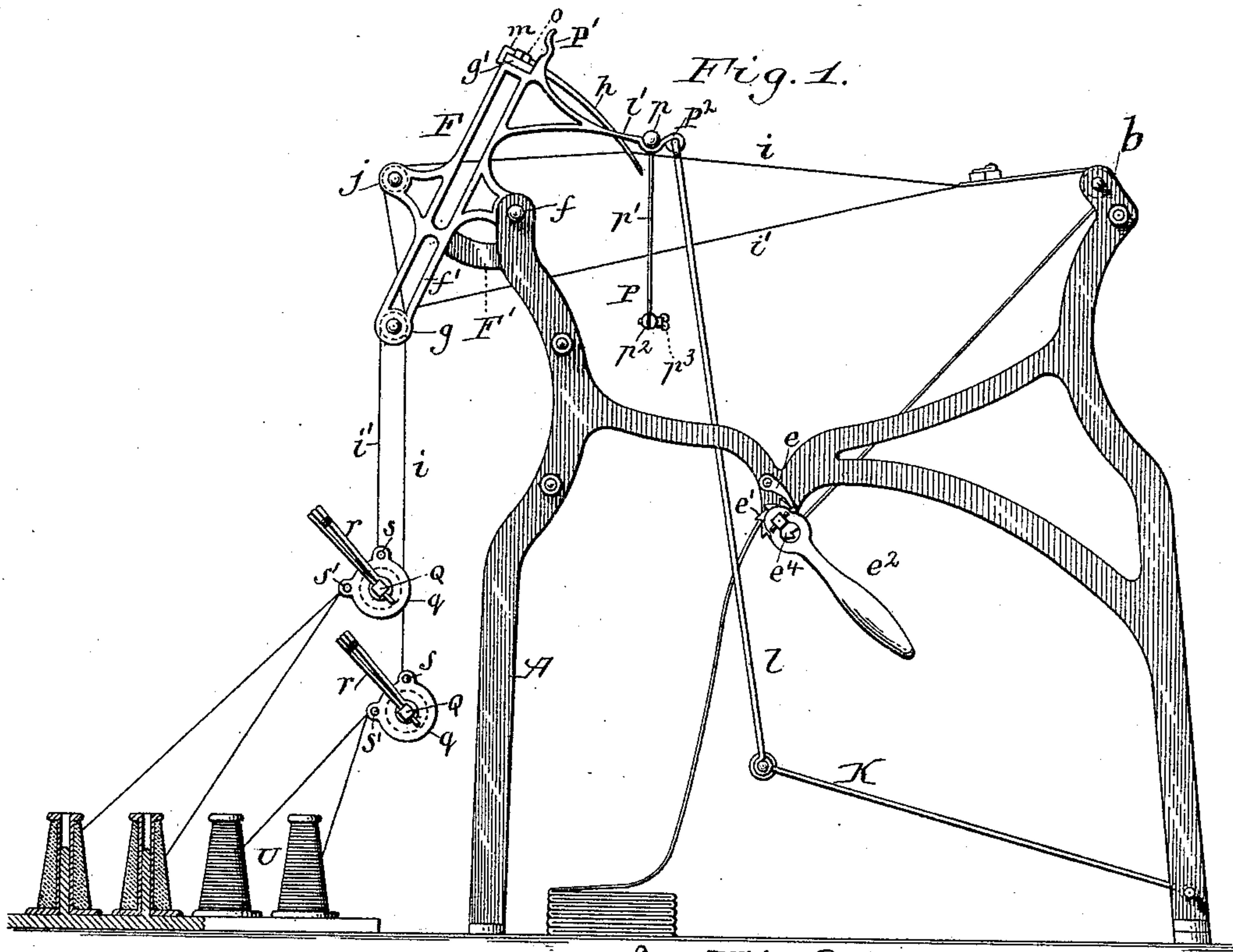
(No Model.)

2 Sheets—Sheet 1.

J. SCHERER.
HAND LOOM.

No. 410,772.

Patented Sept. 10, 1889.



Witnesses:
Theo. L. Popp.
Geo. J. Buchheit Jr.

Joseph Scherer. Inventor
By Wilhelm Monner. Attorneys.

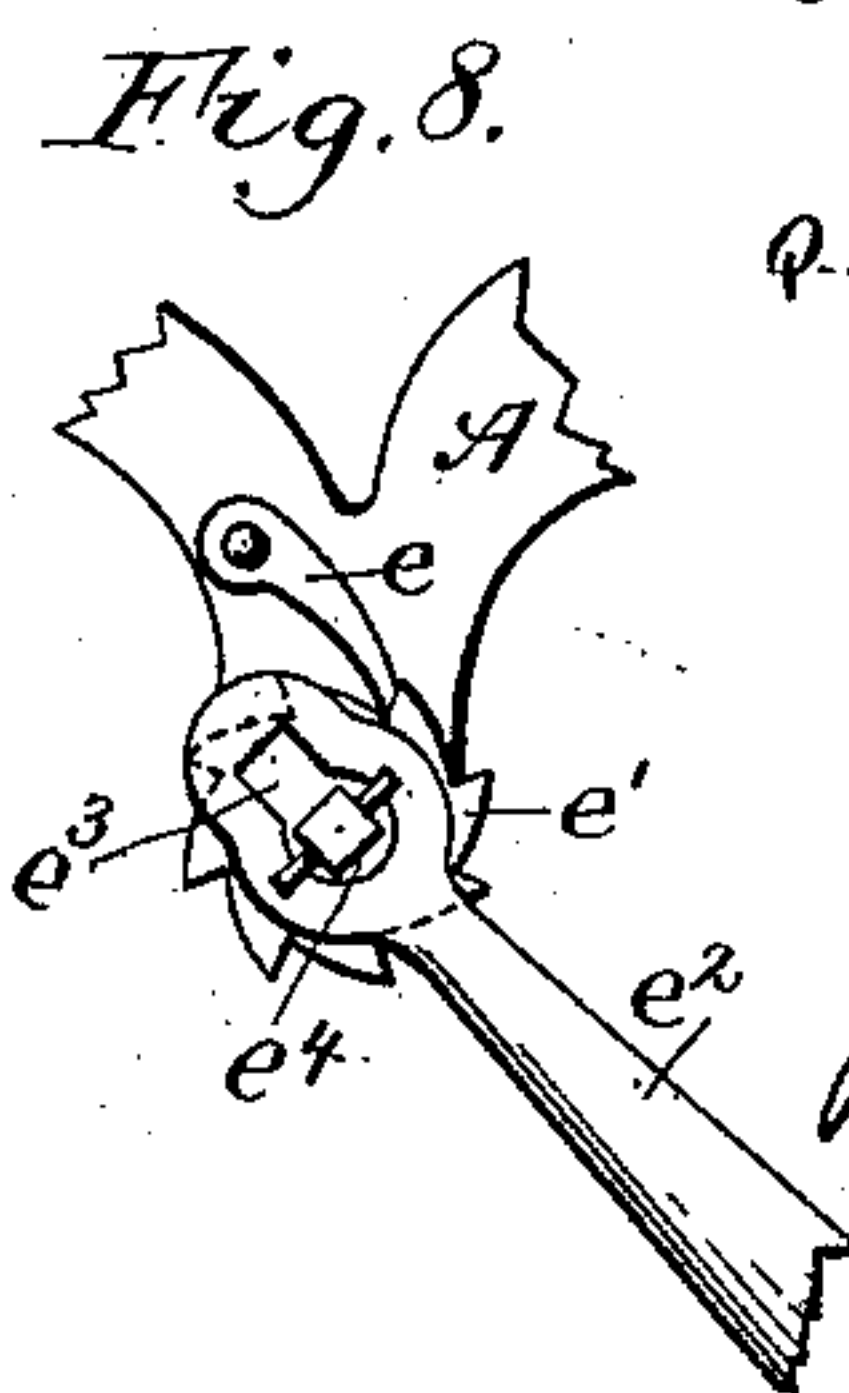
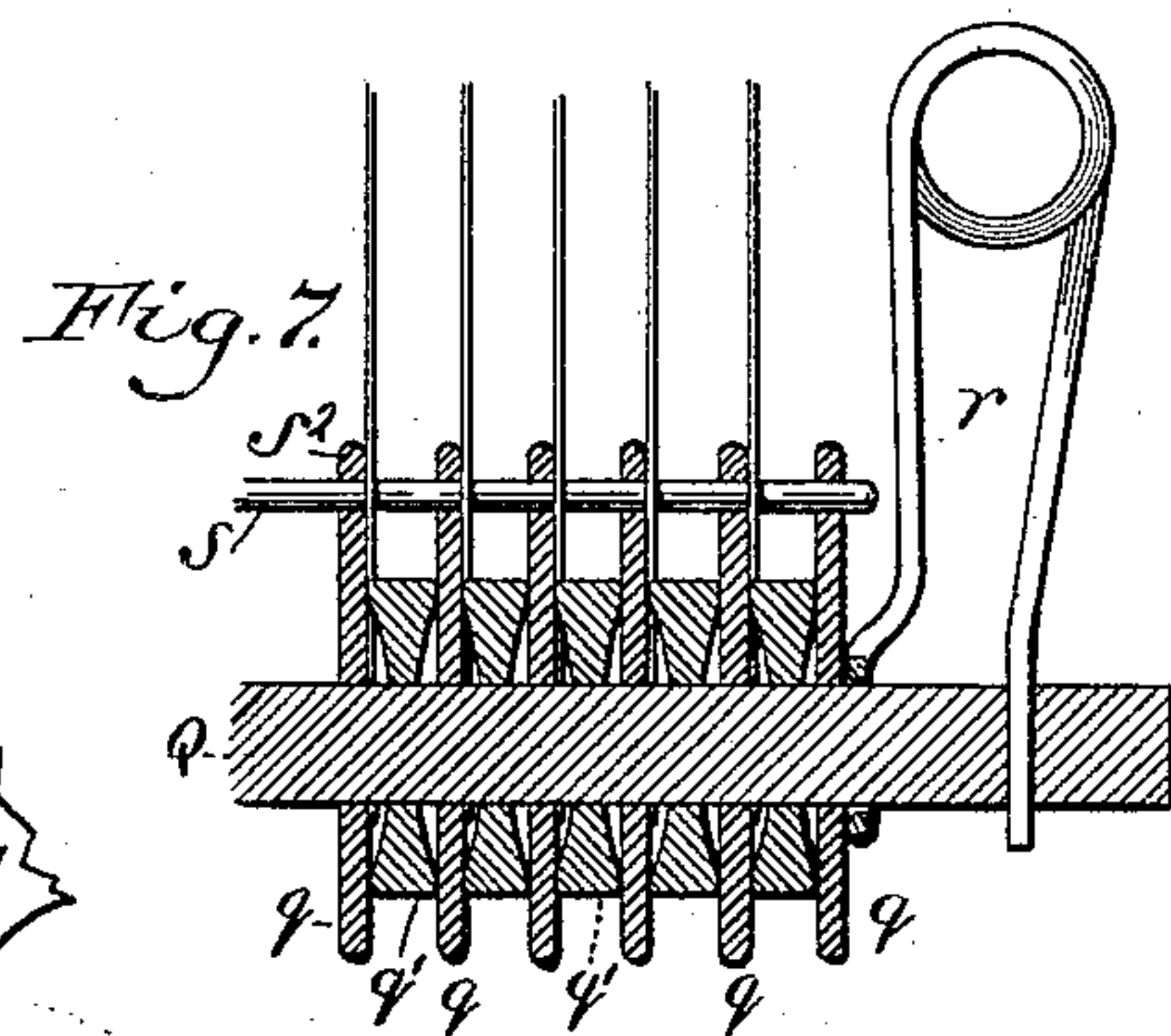
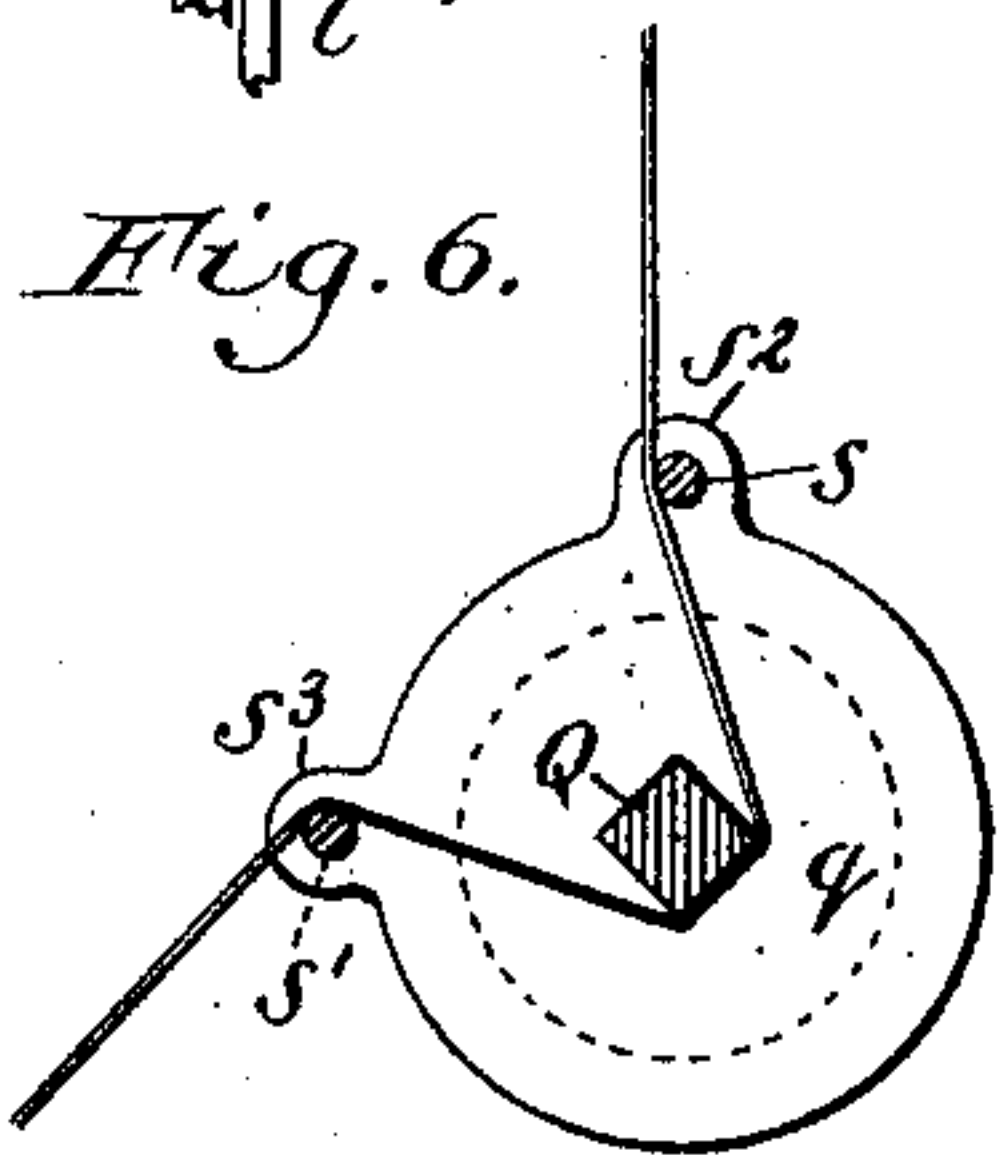
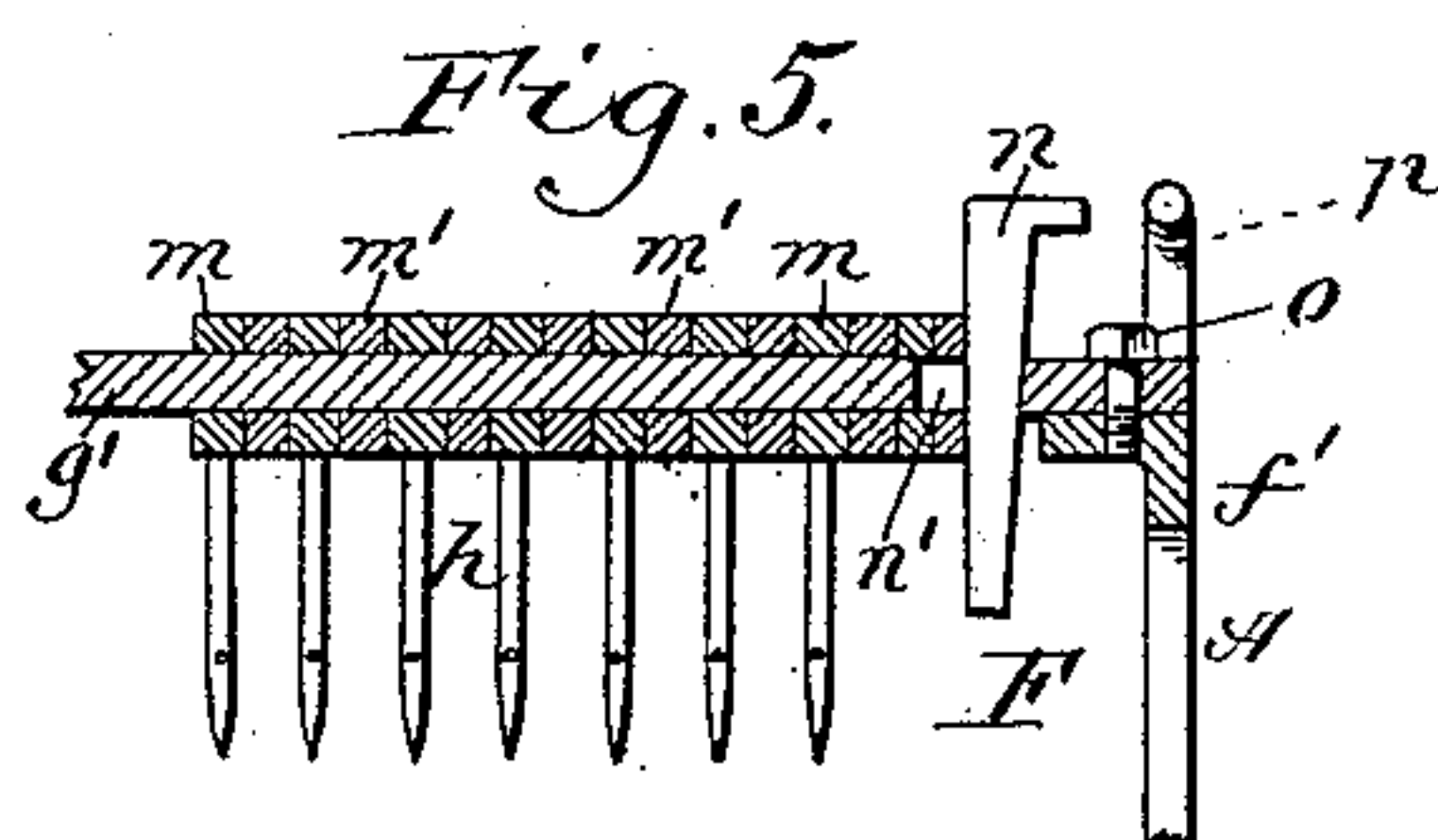
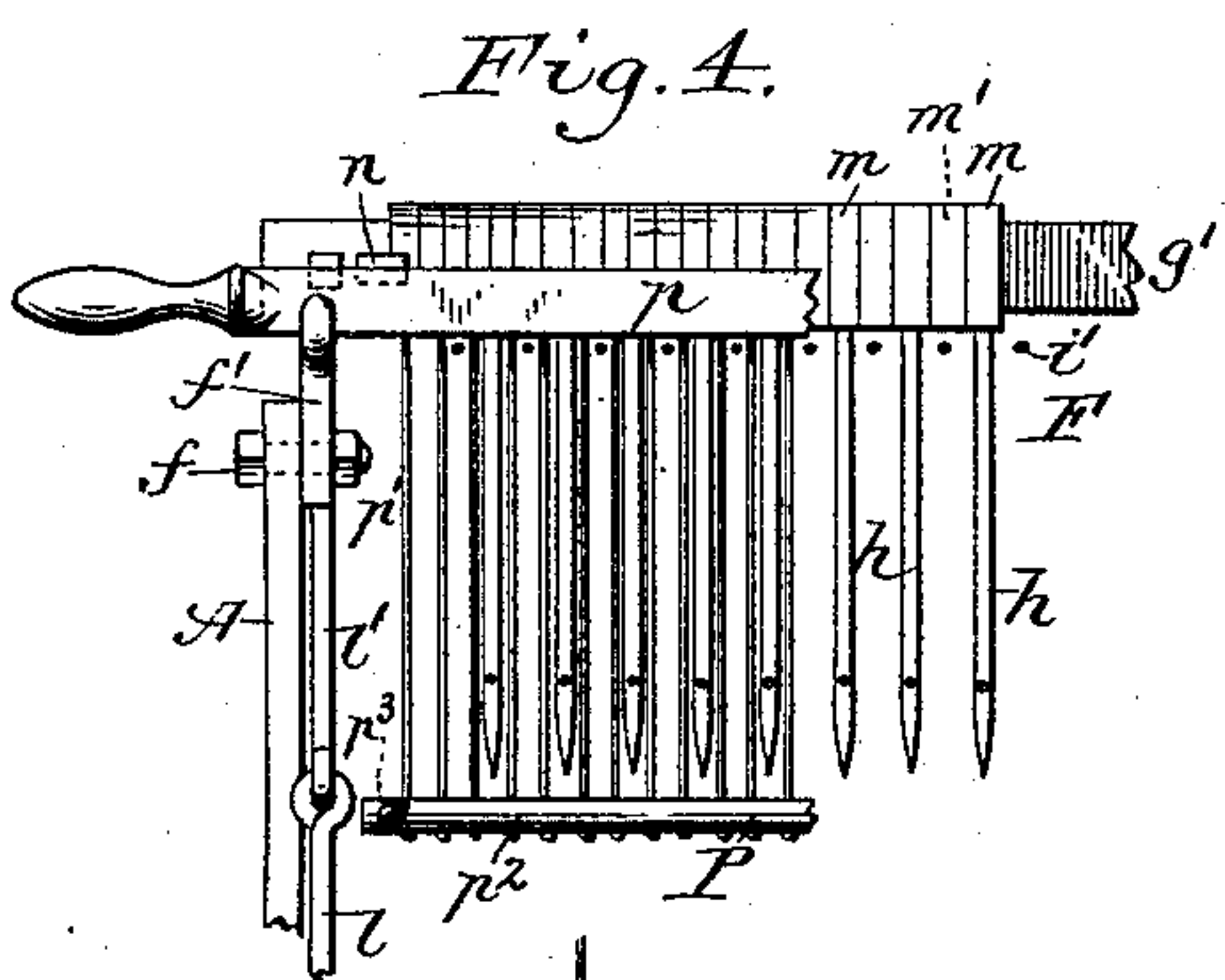
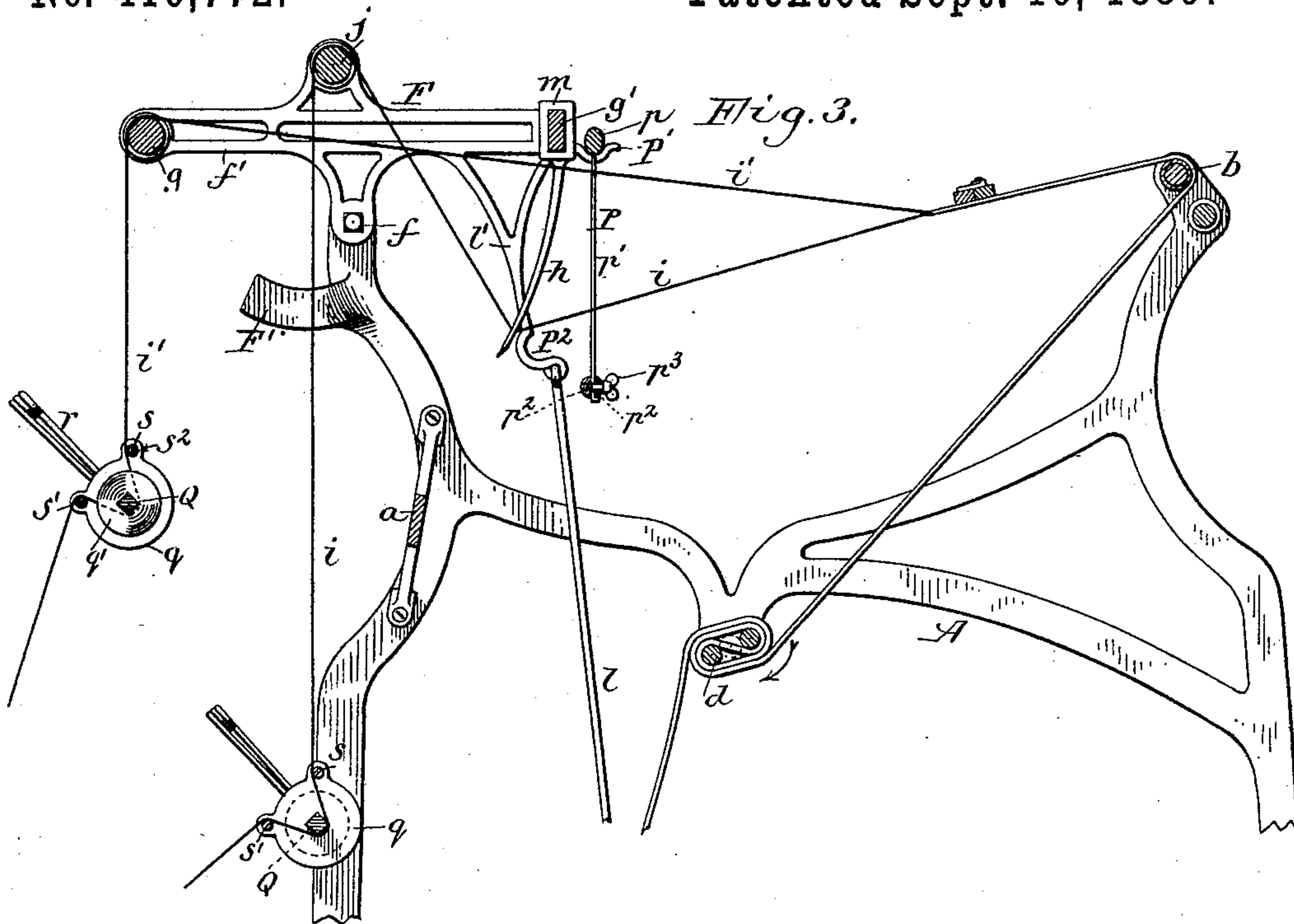
(No Model.)

2 Sheets—Sheet 2.

J. SCHERER.
HAND LOOM.

No. 410,772.

Patented Sept. 10, 1889.



Witnesses:
Theo. L. Popp
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UNITED STATES PATENT OFFICE.

JOSEPH SCHERER, OF BUFFALO, NEW YORK.

HAND-LOOM.

SPECIFICATION forming part of Letters Patent No. 410,772, dated September 10, 1889.

Application filed October 20, 1888. Serial No. 288,642. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SCHERER, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful
5 Improvements in Hand-Looms, of which the following is a specification.

This invention relates to a hand-loom, and has for its object to construct a simple, compact, and inexpensive loom which shall be especially useful in the household for weaving
10 rag carpets, mats, rugs, and for other coarse weaving.

My invention consists to that end of the improvements which will be hereinafter fully
15 described, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of my improved loom. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical longitudinal section of the machine on an enlarged scale.
20 Fig. 4 is a fragmentary front elevation of the oscillating heddle-frame. Fig. 5 is a fragmentary longitudinal section of the needle-bar and connecting parts. Fig. 6 is a cross-section of one of the tension-rods attached to the warp on a still further enlarged scale. Fig.
25 7 is a fragmentary longitudinal section thereof. Fig. 8 is a side elevation of the ratchet mechanism attached to the cloth-beam.

30 Like letters of reference refer to like parts in the several figures.

A A represent the side frames of the machine, which are connected together at their rear portions by a cross-piece *a* and at their
35 front portions by suitable cross bars or rods.

b represents the roller or round cross-bar at the front end of the machine around which the cloth passes when woven, and *d* is the cloth-beam upon which the cloth is wound.
40 The beam-shaft is held against backward movement by a pawl *e* and ratchet-wheel *e'*, and is provided with a hand-lever *e²*. As represented in Figs. 1 and 8, this hand-lever is provided with a square opening *e³*, which
45 fits the square end of the beam-shaft, and with an enlarged opening *e⁴*, communicating with the square opening. The large opening *e⁴* permits the hand-lever to be turned upon the end of the beam-shaft into a convenient
50 position for the operator, when by pulling it forwardly its square opening *e³* will be en-

gaged, with the square beam-shaft and the latter can be turned.

F represents an oscillating heddle-frame arranged at the upper rear end of the machine, and whereby the two sets of warp-
55 threads are alternately raised and lowered, so as to pass each other and form the shed. The heddle-frame is pivoted at or near its center between the upper ends of the side frames A of the machine, as shown at *f*, and is composed, essentially, of end pieces or plates *f' f'*, a rear supporting-rod *g*, and a front connecting bar or rod *g'*, arranged on
60 opposite sides of the pivot *f*.

h represents a series of downwardly-projecting needles attached to the front cross-bar *g'* and provided near their lower ends with eyes through which one set of warp-threads *i* passes. The alternate or other set of warp-
70 threads *i'* passes underneath the front cross-bar *g'* and over the rear supporting-bar *g*. The latter preferably consists of a roller, so as to avoid a rubbing action of the warp-threads at this point. From the needles *h*
75 the warps pass over and around a bar or guide-roller *j*, which is journaled in the heddle-frame F, between the front and rear cross-bars *g g'*. This guide-roller may, however, be attached to the main frame of the machine, if desired,
80 it being only essential to locate the roller in rear of the needles *h* in a place where it will not interfere with the free operation of the heddle-frame and warp-threads.

Motion is imparted to the oscillating heddle-frame F by means of a treadle K, pivoted to the lower portion of the frame A and connected by rods *l* with depending arms *l'*,
85 formed on the heddle-frame, as shown in Fig. 1. The upward movement of the heddle-frame is limited by stops F', formed at the upper portions of the side frames A, and against which the rear portion of the heddle-frame strikes. When the treadle is in an elevated position, the warps *i*, which run through
90 the needles *h*, are above the warps *i'*, passing over the roller *j*, as represented in Fig. 1, and when the treadle is depressed, as represented in Fig. 3, the warps which pass through the needles are below those which pass over the
100 roller *j*. It is therefore obvious that the oscillating movement of the heddle-frame F

causes the set of warps carried by the needles to pass between the other set of warps alternately above and below the latter, thereby forming the shed at the upward as well as at the downward stroke of the treadle.

The needles *h* are provided at their upper ends with rectangular loops *m*, which fit over the front cross-bar *g'*, the latter being of corresponding form, to hold the needles against turning thereon. These needles are held at the proper distance apart by washers or space-blocks *m'*, fitting over the bar *g'* and arranged between the loops of the needles. The needles may be arranged closer together or farther apart for fine or coarse weaving by interposing between them washers of greater or less thickness. The needles and washers are held against lateral movement upon the bar *g'* by wedges *n*, passing through longitudinal slots *n'* in the bar and bearing against the adjacent washers or needles, as represented in Fig. 5. The needle-bar *g'* is detachably secured in the frame *F* by screws *o*, or other means, and the washers are interchanged by removing said rod from the frame.

P represents the batten or reed whereby the woof is compacted. The batten *P* consists of an upper bar *p*, in which the upper ends of the rods or reeds *p'* are rigidly secured, and two removable clamping-bars *p²* *p²*, between which the lower ends of the reeds *p'* are clamped by means of horizontal screws or bolts *p³*, having thumb-nuts, as shown, and passing through both clamping-bars *p²*. This construction permits the clamping-bars *p²* to be removed from the batten and the reeds of the latter to be readily passed between the warps after the same have been strung upon the loom, thereby dispensing with the necessity of drawing each warp-thread through the batten separately in the operation of stringing the warps, which is the case when both ends of the reeds are permanently secured to the cross-bars of the batten.

The batten, while the shuttle is being passed through the shed, is preferably supported upon hooks *P'* *P²*, arranged, respectively, at the front end of the heddle-frame *F* and at the lower end of the arms *l'*, as represented in Figs. 1 and 3; but, if desired, the batten may be suspended overhead.

The rear portions of the warp passing over the rollers *g* and *j* are kept taut by a tension device, which is constructed as follows: *Q* represents a horizontal supporting-rod upon which are loosely arranged a series of clamping-disks *q*, and *q'* are washers also loosely arranged upon said rod and interposed between the clamping-disks *q*. These clamping-plates and washers are forced against each other by springs *r*, attached to the rod *Q* and bearing against the outer clamping-disks. These springs preferably consist of two branches connected together by a coil, one of which branches is secured to the rod *Q*, while the other is provided with an eye which encircles the rod and bears against the adjacent

end-clamping plate or washer, as shown in Fig. 7. The rear portions of the warp-threads underneath the heddle-frame are placed between the disks *q* and the washers *q'* and are clamped by the same, the rod *Q*, with the plates and washers, being suspended from the warp-threads, and by their weight keeping a proper tension on the threads. *s s'* represent horizontal rods or pins passing through perforated ears *s²* *s³*, formed respectively at the top and at one side of each disk *q*. These pins prevent the clamping-plates from turning on the warps and stripping themselves from the warps, the force of the springs *r* being sufficient to prevent the clamping-plates from slipping on the warps. As the weaving proceeds the tension-rods *Q* are gradually raised, and when they have been elevated to within a short distance of the heddle-frame they are lowered by moving the springs *r* from the clamping-plates and drawing the rods *Q* and connecting parts downwardly. The springs are then released, whereby the plates are again clamped against the warps. In placing the warps between the clamping-plates the rods *s s'* are withdrawn from the openings in the plates, and after the warps have been drawn between the plates the rods are again replaced.

By providing the intermediate washers *q'* the warps may be placed only between one side of the plates and the adjacent washers for coarse weaving; or double the number of warps may be employed for finer weaving by placing a warp between each side of the plates and the adjacent washers.

The warp is preferably wound upon separate bobbins *U*, as shown.

My improved loom is operated in the following manner: The heddle-frame being in the position shown in Fig. 1, the shuttle carrying the woof is passed through the shed and the woof so formed is compacted against the preceding woof-threads by the batten in the usual manner. The treadle is then depressed, whereby the needles carrying the upper set of warps are caused to pass between the lower set of warps, as shown in Fig. 3, and thereby form a new shed. The treadle is now held in a depressed position and the shuttle is again passed through the shed and the woof compacted. The treadle is then released, whereby the heddle-frame is shifted to its former position by the weight of the depending tension devices, and the two sets of warps are again caused to cross each other and form a new shed.

My improved machine is especially desirable as a domestic loom, as the simplicity of its construction enables it to be made in small and compact form, so as to occupy but little room.

I claim as my invention—

1. The combination, with the stationary main frame of the machine, of an oscillating heddle-frame pivoted to the main frame and provided on one side of its pivot with a se-

ries of needles which carry one set of warps and at the opposite side of its pivot with a support which carries the other set of warps, substantially as set forth.

5 2. The combination, with the main supporting-frame of the loom, of an oscillating heddle-frame pivoted at or near its center to the main frame and provided on the front side of its pivot with a series of depending
10 needles which carry one set of warps and on the rear side of its pivot with a roller or support carrying the other set of warps, and a guide roller or support over which the portions of the warps in rear of said needles pass,
15 substantially as set forth.

3. The combination, with the stationary main frame of the machine, of an oscillating heddle-frame pivoted to the main frame and provided on one side of its pivot with a series
20 of needles which carry one set of warps and at the opposite side of its pivot with a support which carries the other set of warps, and a treadle whereby said heddle-frame is operated, substantially as set forth.

25 4. The combination, with the main supporting-frame of the loom, of an oscillating heddle-frame pivoted at or near its center to the main frame and provided on the front side of its pivot with a series of depending needles which carry one set of warps and on the
30 rear side of its pivot with a roller or support

carrying the other set of warps, a guide roller or support over which the portions of the warps in rear of said needles pass, and suspended tension-weights adapted to be applied
35 to the depending portions of the warp-threads passing over said guide-roller and the support or roller at the rear end of the heddle-frame, substantially as set forth.

5. The combination, with the heddle-frame
40 provided with a rectangular needle-supporting bar g' , of the needles h , provided with rectangular loops fitting over said needle-bar, washers arranged between said loops, and
45 wedges n , passing through longitudinal slots in said supporting-bar and bearing against the endmost needles or washers, substantially as set forth.

6. The combination, with the rod Q , of the clamping-disk q , provided with perforated
50 lugs or ears, pins or rods passing through said ears, washers q' , interposed between said clamping-disks, and springs attached to the rods Q and bearing against the end clamping-disks, substantially as set forth.
55

Witness my hand this 9th day of October, 1888.

JOSEPH SCHERER.

Witnesses:

C. F. GEYER,
C. D. HOWE.