

J. M. FLAGG,
C. S. FLAGG, Executrix.

3 Sheets—Sheet 1.

Loom.

No. 228,050.

Patented May 25, 1880.

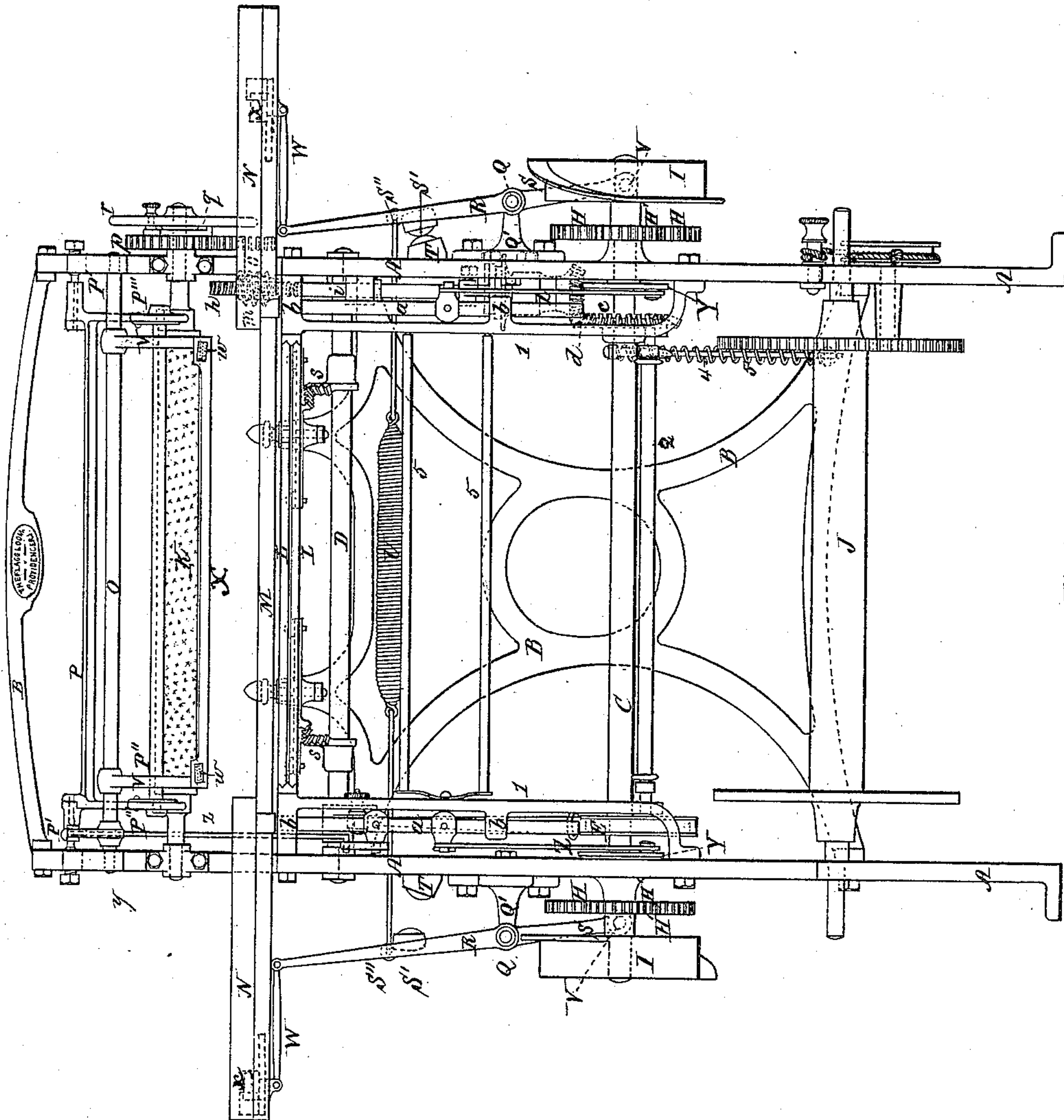


Fig. 1.

Witnesses.

H. W. Hubbard.
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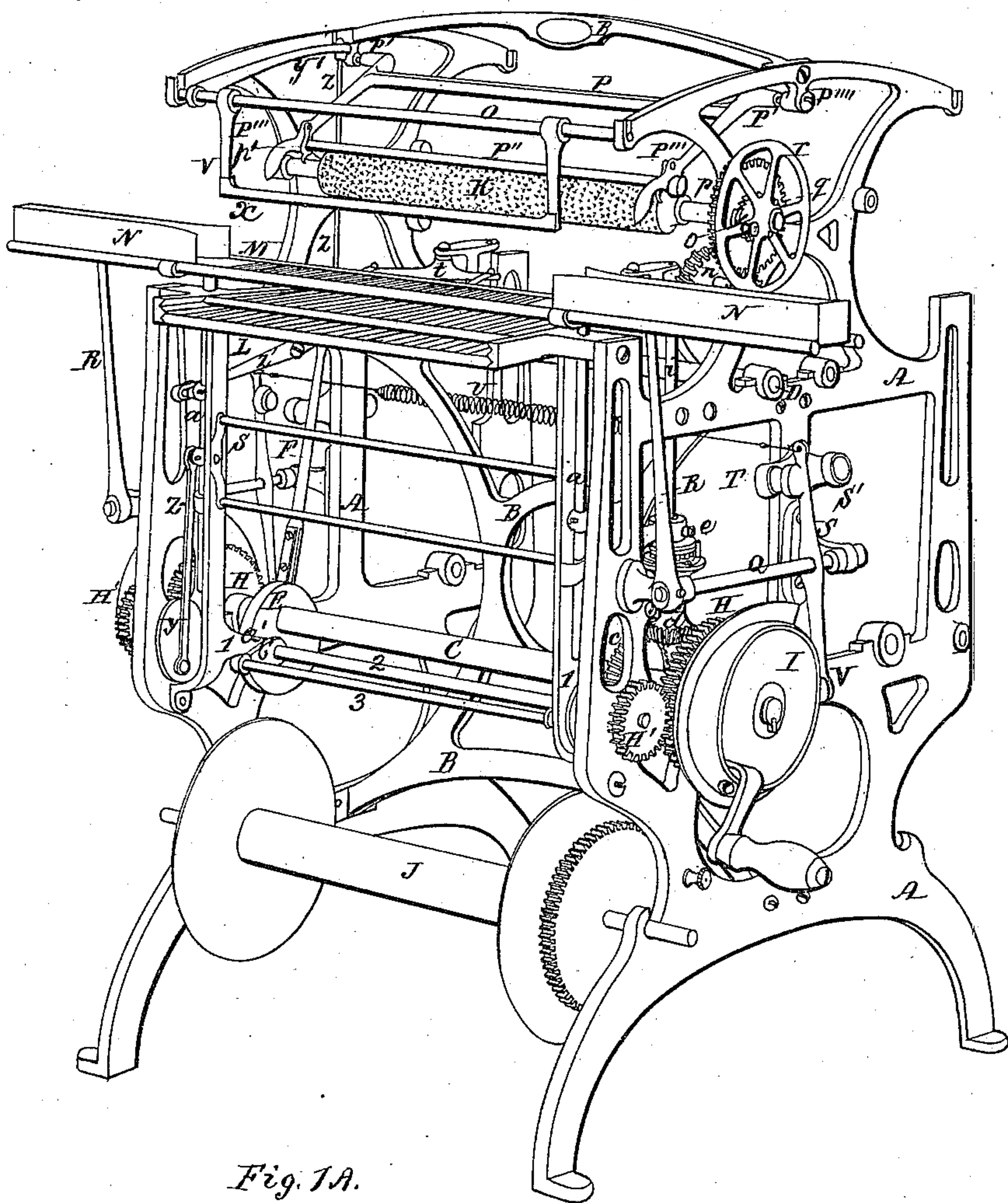


Fig. 1A.

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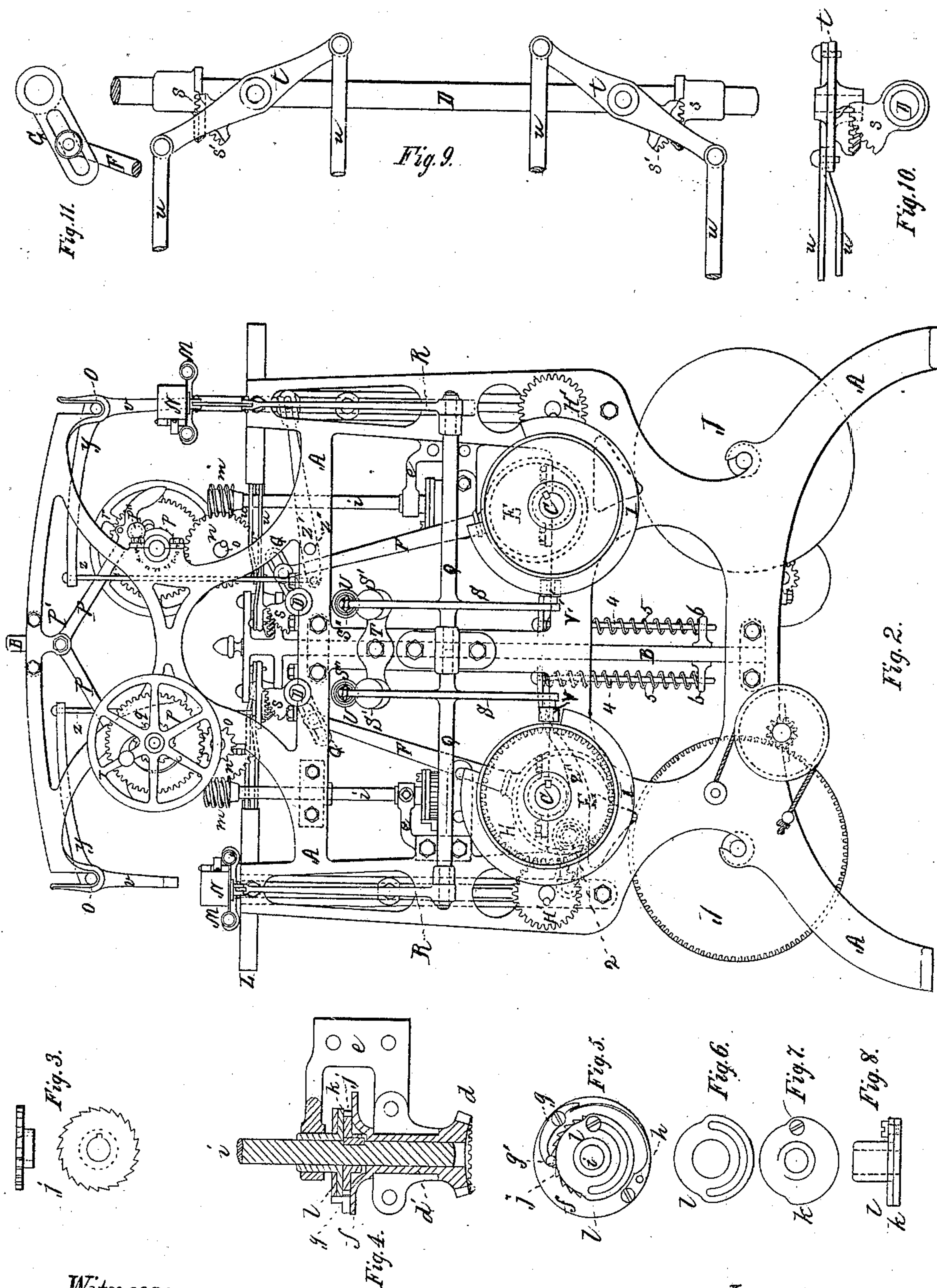
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UNITED STATES PATENT OFFICE.

J. MELLEGE FLAGG, OF PROVIDENCE, RHODE ISLAND, (CLARISSA S. FLAGG, EXECUTRIX.)

LOOM.

SPECIFICATION forming part of Letters Patent No. 228,050, dated May 25, 1880.

Application filed April 28, 1879.

To all whom it may concern:

Be it known that I, J. MELLEGE FLAGG, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Looms, of which the following is a specification.

My invention relates to an improvement in vertical looms of a character similar to that for which a patent was granted to me January 1, 1878; and the object of my present invention is to simplify the construction of the loom, and at the same time still further to facilitate the operation of the working parts.

Referring to the drawings, Figure 1^A is a perspective view of a loom embodying my improvements. Fig. 1 is a front elevation of the same. Fig. 2 is an end elevation. Figs. 3, 4, 5, 6, 7, and 8 are detail views of the take-up motion. Figs. 9, 10, 11 are detail views of the harness attachments.

Similar letters indicate like parts in the several figures.

The loom is to be constructed wholly of metal, and two looms are placed in one frame, thereby effecting a great saving of space and insuring a rigid and evenly-balanced machine.

Fig. 2 represents two looms in one frame; but, as one is a counterpart of the other, a description of one will apply to the other.

A A represent the sides or ends of the frame, each being cast in one piece. The two ends of the frame are connected together by the cross piece or tie B, extending longitudinally through the center.

C is the main shaft, upon each end of which, inside the uprights A, are mounted eccentrics E E. Instead of the eccentrics a crank on the main shaft or other equivalent device may be used. To each eccentric is pivoted a connecting-rod, F, the upper end of which is secured in a slotted arm, G, Fig. 11, attached to a rock-shaft, D, by means of a screw, so that by setting the screw in different parts of the slot the degree of motion to be imparted to the rock-shaft for actuating the harness can be readily adjusted. The rock-shaft D is journaled in the sides of the frame. Attached to or forming a part of the rock-shaft D are two sector-gears, s s, (see Figs. 9, 10,) which mesh with corresponding sector-gears s' s' on the levers t t. The levers t t are attached nearly at their

centers to vertical rods pivoted in arms secured to the central cross-piece, B. The ends of the levers t t are connected by rods u u to the harness-frames L L. The shorter arms of the levers are connected to the upper harness-frame, and the longer arms to the lower harness-frame, the object being to equalize the throw of the same. The lower harness-frame being farther from the reed, it requires more motion to equalize the opening to the shed.

The picker motion.—On the main shaft, one at each end thereof, are attached cams I I, acting alternately on each side, at each revolution of the shaft, upon the rollers V on levers S S, which latter are connected by a tension-spring, U, extending crosswise of the loom, and are secured to shafts Q. R are picker-staffs, connected at their upper ends to the pickers X by links W, and secured at their lower ends upon the shafts Q. The levers S have buffers to strike against buffers on a cross-piece, T, of the frame A.

The reed motion.—At each end of the main shaft C, just outside of the frame, is a gear-wheel, H, gearing two to one into a smaller gear, H'. The gear-wheels H' are attached to short shafts journaled in the sides of the frame, and on the inner ends of these shafts are secured disks Y Y. On the inner face of each disk is a pin, to which is connected a rod, Z, extending upward, and attached at its upper end to a pin projecting from the vertical rod a, which latter moves up and down in a guide, b, attached to the supplementary frame 1. To the upper ends of the upright rods a a is attached the frame which carries the reed M and shuttle-boxes N N. At each revolution of the main shaft C the rods a a, carrying the reed and shuttle-boxes, are caused to move up and down twice by means of their connection with the disks Y Y. The shuttle is thrown across the reed by the pickers while the reed is moving downward, and at its upward movement beats up the filling or woof.

The take-up motion.—Upon the main shaft C, at the inner right-hand side of the main frame, is a bevel-gear, c, gearing two to one with a bevel-gear, d, which is cut on the lower end of a sleeve, d', surrounding a portion of an upright shaft, i, as shown in Fig. 4. To the main frame is attached a bracket, e, hav-

ing two arms, one above the other, the lower one being wider than the upper one. Upon the said arms are cap-boxes, the lower one of which holds the piece-plate *f*, Fig. 5, which forms part of the sleeve *d'*, and upon the lower end of which latter is the bevel-gear *d*, Fig. 4. The upper face of the piece *f* is shown in plan in Fig. 5, upon which is secured a pawl, *g*, which is held in contact with the ratchet *j* by a spring, *h*. The upright shaft *i* turns loosely in the sleeve *d'* of the piece *f*. Immediately above the upper face of the piece *f* is a ratchet-wheel, *j*, Figs. 3 and 5. Keyed to the upright shaft *i*, above the ratchet-wheel *j*, is a stationary cam, *k*, held in position by means of a set-screw in the upper arm of *e*. Fitting on the sleeve portion of the cam *k* is a cam, *l*, Figs. 4, 5, and 6, corresponding in shape to cam *k*, and having a semicircular slot cut in it, as shown in Fig. 6, for the reception of a set-screw. (See Fig. 8.)

By turning the cam *l* on the cam *k* more or less of the teeth of the ratchet *j* will be exposed to the action of the pawl *g*. The pawl *g* has a finger, *g'*, on its free end, projecting upward past the cams *k* and *l*, by which the pawl is allowed to act only when it comes round to the narrow portions of the cams *k* and *l*. As soon as the pawl comes in contact with the ratchet it causes the latter to turn, and with it the shaft *i*, until the pawl is thrown out by the projecting portions of the cams *k* and *l*. Thus, by exposing more or less of the narrow portions of the cams *k* and *l*, the motion of the take-up roll *K* is governed, and the number of picks to the inch is regulated. The parts can be covered with a cap and locked, if desirable.

On the upper end of the shaft *i* is a worm, *m*, engaging with a gear, *n*, attached to a short shaft passing through the side of the frame, and having on its outer end a pinion, *o*, engaging with a larger gear-wheel, *p*, hung loosely on the outer end of the axis of the take-up roll *K*.

To the outer face of the gear *p* is secured a small ratchet, *q*, by the side of which is a hand-wheel, *r*, keyed on the axis of the take-up roll. On the hand-wheel *r* is a spring-pawl, by means of which the take-up roll can be held to its work, or loosened, so that it can be turned backward to pull the cloth back or take off the cut.

To the center of the upper part of the loom-frame is pivoted, at *P' P'*, a casting or frame, *P*, having arms *P'''* extending across the take-up roll and holding loosely the cylindrical rod *P''*, upon which the cloth is wound. The rod *P''* is held in the arms *P'''* by means of hooks hinged or pivoted to the same, so that the said rod can be easily removed to adjust or remove the cloth when necessary. The movement of the take-up roll *K* causes the cloth to wind on the rod *P''*, which rises with the frame *P* as the roll increases in diameter.

O is a rod holding the temple-frame, and over which the cloth passes to the cloth-roll

P''. The rod *O* is hung loosely in the front upper ends of the frame.

To the rod *O* is rigidly attached, by means of two depending arms, *v v*, a rod or bar, *X*, arranged centrally over the reed *M*. In the lower ends of the arms *v v* are arranged burr-rolls *w w*, in common use.

At the end of rod *O* on the left is fixed an arm, *y*, extending backward toward the center of the loom, and to the rear end of arm *y* is attached a rod, *z*, extending downward, and at its lower end connected to the end of the shorter arm of a lever, *z'*, which is fulcrumed to the frame *A* at *z''*.

The end of the longer arm of the lever *z'* is attached to the vertically-moving rod *a*, before described. As the rod *a* moves up and down the rod *O* is partially rotated by means of its connection with said rod *a*, thus imparting, by the bar *X* and the arms holding the burr-rolls *w w*, a slight forward movement to the cloth at the moment the rod *a* is at the upward end of its stroke, the object being to put a face on the cloth by loosening one part of the shed and tightening the other part.

The vibrator.—Near the lower ends of the supplementary frames 1 1; Fig. 1, and extending to the rear at each side, are short arms *a'*, extending inward, in the ends of which is pivoted a loose rod, 2. Attached to the rod 2 are two short arms, *u*, extending forward, in the ends of which are slots supporting a rod, 3. At the right hand the arm extends to the rear from rod 2, forming a lever, 2', (indicated in dotted lines in Fig. 2,) through the end of which passes a vertical rod, 4, having a head, by which it is supported in said lever. The rod 4 extends downward and passes loosely through an arm, 6, attached to the cross-piece *B* of the frame. A spiral spring, 5, surrounds the rod 4, and resting upon the arm 6 serves to hold the end of the lever 2' in an elevated position, the purpose of which is to enable the rod 2 to keep the yarns taut, and at the same time to allow the rod to yield to any undue pressure.

What I claim as my invention is—

1. In a loom, a shaft, *i*, the take-up roll, and means, as described, to connect them, a plate, *f*, provided with pawl *g*, and mechanism to rotate said plate, combined with a ratchet and cam-disks, the latter being adapted to be adjusted upon one another, with relation to the ratchet, to determine the duration of the engagement of the pawl with the ratchet for governing the motion of the take-up, substantially as described.

2. The combination of the shaft *i*, the piece or plate *f*, cams *l* and *k*, ratchet-wheel *j*, and spring-pawl *g*, the sleeve *d'*, provided with the bevel-gear *d*, and the actuating mechanism described, for the purpose of effecting the take-up of the woven fabric, substantially as set forth.

3. The combination, with the harness-frames *L L*, of the links or rods *u u*, the levers *t t*, provided with the gears *s' s'*, and the rock-shaft

D, having the gears *s s*, the rod *F*, slotted arm *G*, eccentrics *E E*, and shaft *C*, substantially as and for the purpose specified.

4. The combination, with the cloth-roll *P''*, of the arms *P'''*, frame *P*, pivoted to the main frame *A*, the hinged or pivoted hooks *p'*, and the take-up roll *K*, as and for the purpose set forth.

5. The combination, with the vertically-moving reed *M*, of the rod *X*, the arms *V V*, rod *O*, lever *y*, connecting-rod *z*, lever *z'*, rods *a a*, and the mechanism for actuating the same, as and for the purpose specified.

6. The combination, with the take-up roll *K*, of the loose gear-wheel *p* and pinion *o*, ratchet-wheel *q*, and hand-wheel *r*, provided with a spring-pawl, all arranged and operating as and for the purpose specified. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 20

J. MELLEGE FLAGG.

Witnesses:

J. H. ADAMS,
HARRY VAN DUZEN.