(No Model.) 4 Sheets—Sheet 1.

F. KESSELRING.

LOOM.

No. 376,312. Patented Jan. 10, 1888.

Fig: 1.

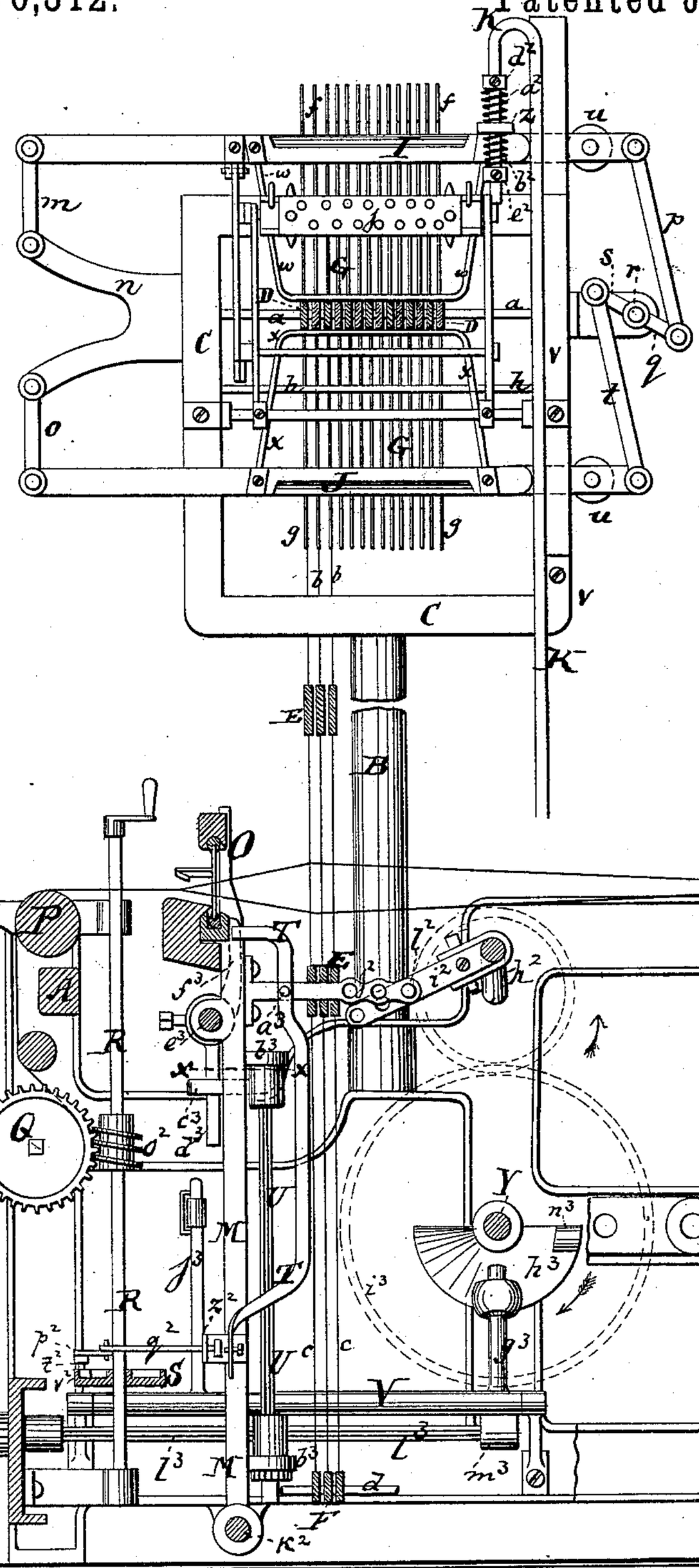
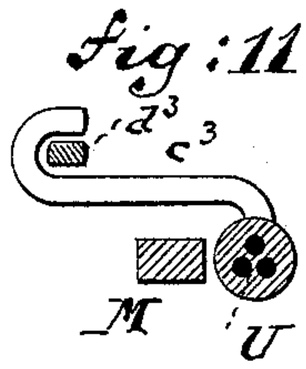


Fig: 11



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ATTORNEYS

(No Model.)

4 Sheets—Sheet 2.

F. KESSELRING.

LOOM.

No. 376,312. Patented Jan. 10, 1888.

Fig: 3.

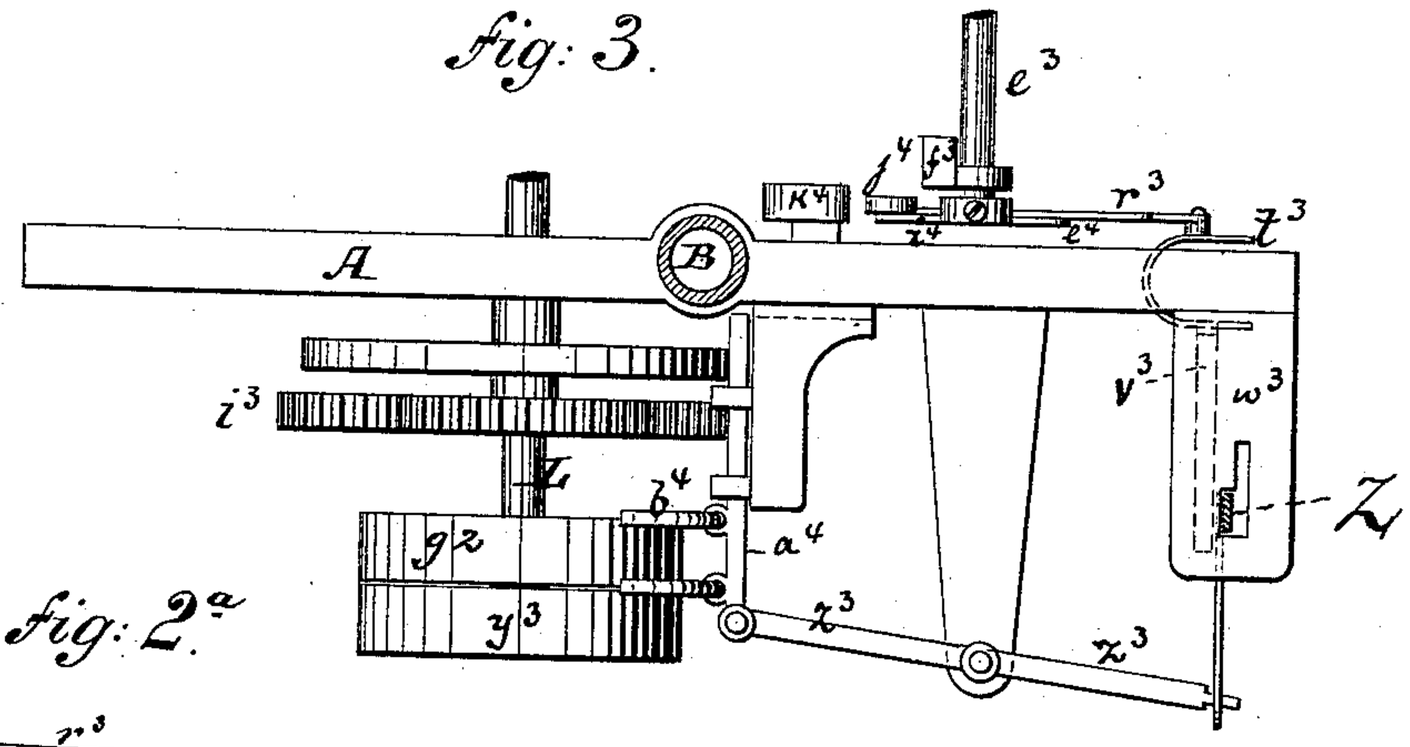


Fig: 2ª.

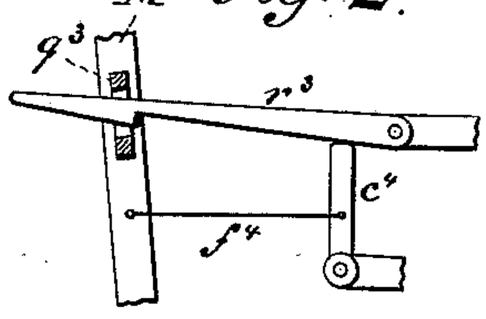
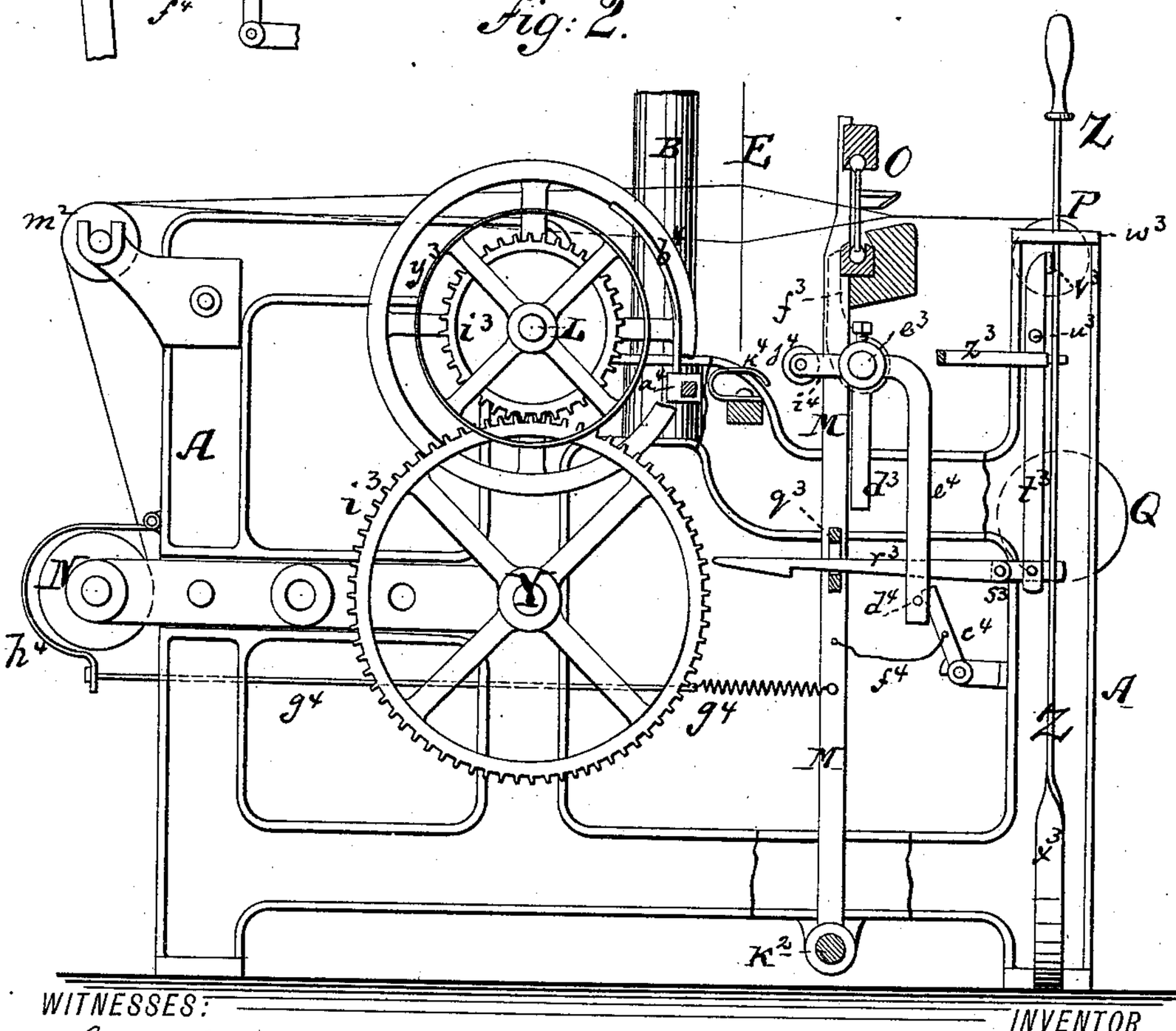


Fig: 2.



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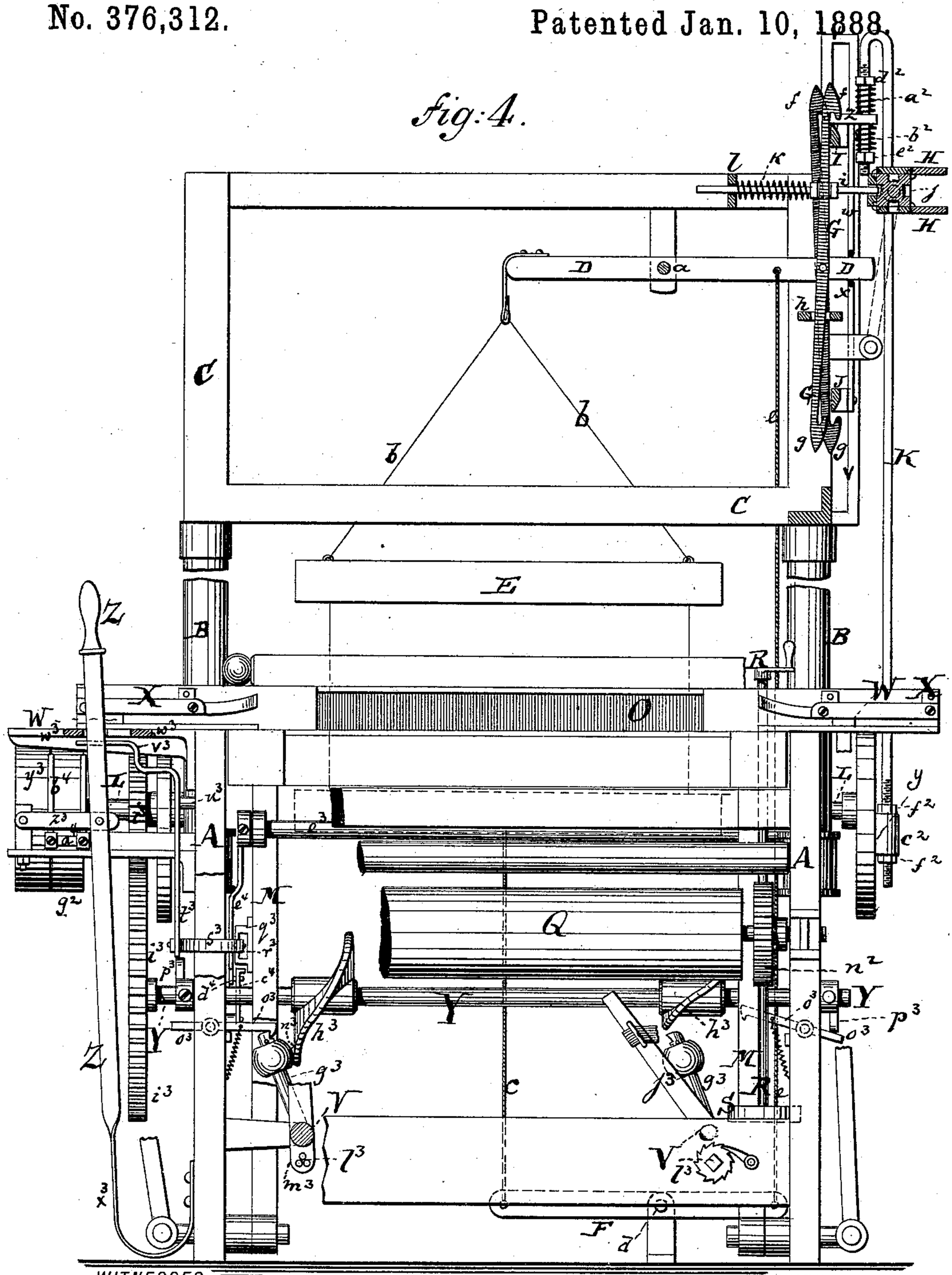
(No Model.) 4 Sheets—Sheet 3.

F. KESSELRING.

LOOM.

No. 376,312. Patented Jan. 10, 1888.

Fig. 4.



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(No Model.) 4 Sheets—Sheet 4.

F. KESSELRING.

LOOM.

No. 376,312. Patented Jan. 10, 1888.

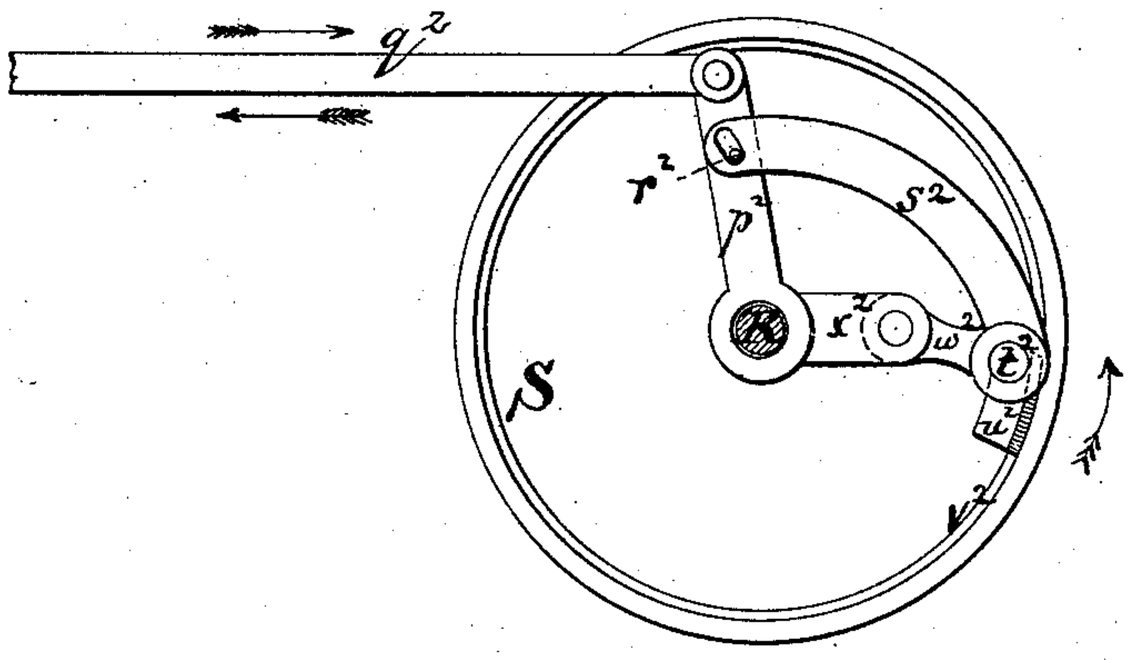

Fig: 5.

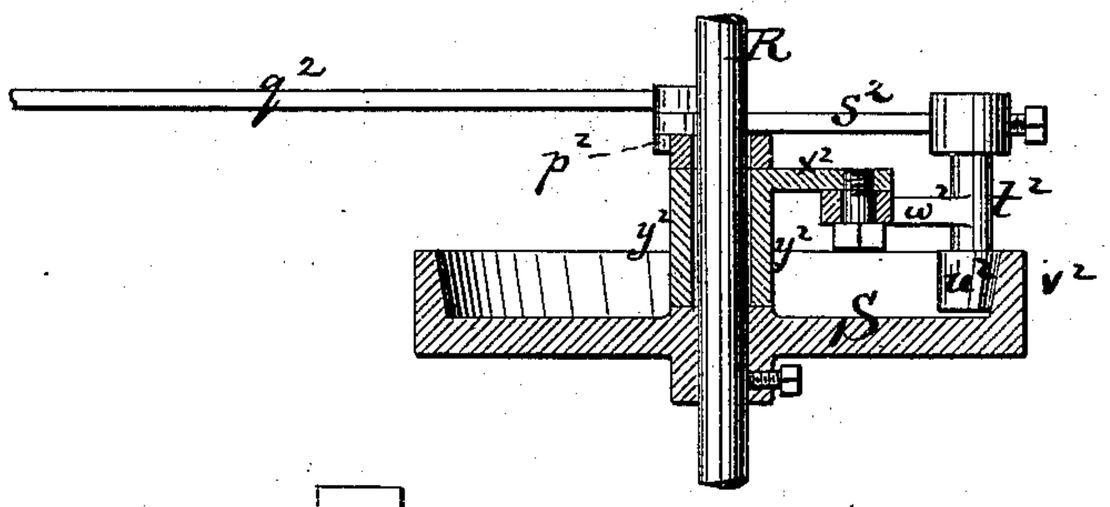

Fig: 6.

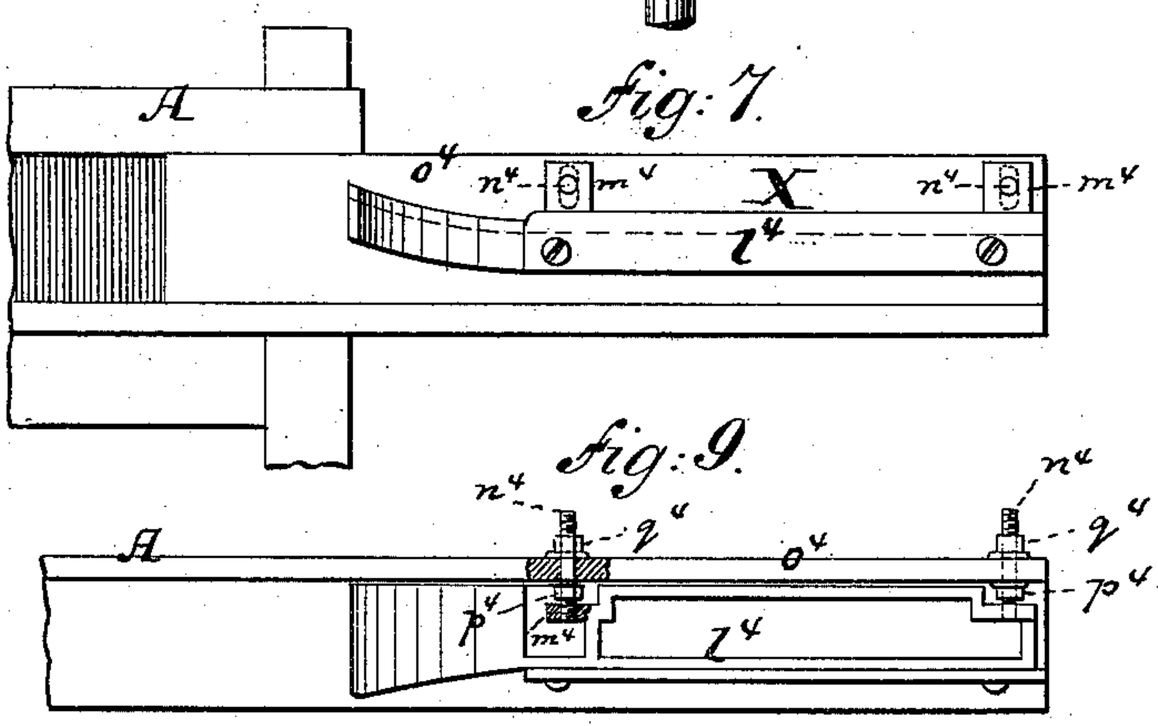

Fig: 7.

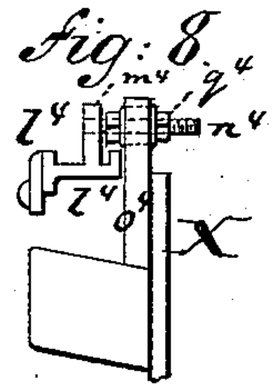

Fig: 8.

Fig: 9.

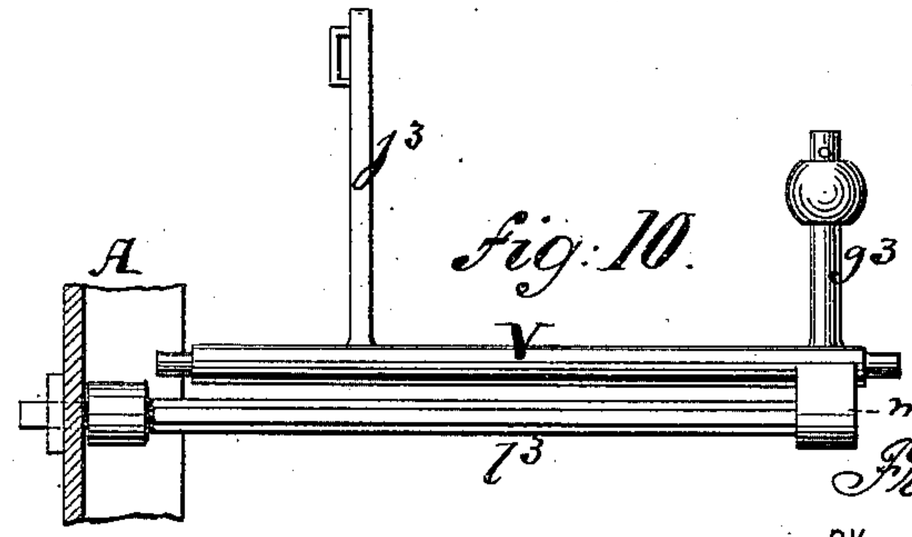

Fig: 10.

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UNITED STATES PATENT OFFICE.

FRIEDRICH KESSELRING, OF PATERSON, NEW JERSEY, ASSIGNOR TO ROBERT S. McCREERY, OF NEW YORK, N. Y.

LOOM.

SPECIFICATION forming part of Letters Patent No. 376,312, dated January 10, 1888.

Application filed March 23, 1886. Renewed November 26, 1887. Serial No. 256,257. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH KESSELRING, of Paterson, county of Passaic, State of New Jersey, have invented an Improvement in Looms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of a loom having my improvements applied thereto. Fig. 2 is a side elevation, partly in section, of the lower part of the said loom looking at it from the side opposite to that which is represented in Fig. 1. Fig. 3 is a detail top view, partly in section, of that part of the loom which contains the belt-shipping contrivance. Fig. 4 is a front elevation, partly in section, of the loom. Fig. 5 is an enlarged top view of the friction-pulley which controls the motion of the cloth-beam and parts connected therewith, the shaft carrying said pulley being shown in section. Fig. 6 is a vertical central section of said pulley and its attachments with the carrying-shaft in elevation. Fig. 7 is a detail face view of the shuttle-box; Fig. 8, an end view of the same; Fig. 9, a top view, partly in section, of the same. Fig. 10 is a detail side view of the picker-stick and of attachments thereof. Fig. 11 is a detail horizontal section, on an enlarged scale, taken on the plane of the line *x x*, Fig. 1.

This invention relates to improvements in looms for weaving fabrics.

The object of the invention is to provide for an exact control of the harness of the loom, so that the same will not fail to assume the motions and positions required, to likewise control the movement of the cloth-winding beam, so that the same shall be intermittently turned while the harness, batten, and shuttle are in proper action, but arrested when these parts get out of order, and to simplify the construction of other parts of the loom and insure the certainty of their co-operation.

The invention consists of the new combinations and arrangements of parts, that are hereinafter more fully described.

In the accompanying drawings, the letter A represents the frame of the lower part of the loom.

B B are columns which rest on the frame A and serve to support an upper frame, C. In this upper frame, C, are pivoted by a pin, *a*, as many levers D D as there are heddles E E, each heddle being suspended by cords or straps *b b* from the inner end of one of these levers. The cords or straps *b b* connect with the upper ends of the heddles, as shown in Fig. 4. The lower part of each heddle connects by a cord or strap, *c*, with the inner end of a lever, F, which is, at *d*, pivoted in the lower part of the frame A. There are as many levers F as there are heddles and levers D. The outer end of each lever F connects by a cord or string, *e*, with the outer part of the lever D that carries the heddle which connects with said lever F. Thus each heddle is connected at its upper and also at its lower part with one of the levers D, so that when said lever is swung on its pivot *a* it will draw the heddle up or down, according to the direction in which said lever is swung. The heddles, in other words, are moved positively up and down by the levers D. Each lever D has pivoted to its outer or free end an upright bar, G, each of said bars carrying a hook, *f*, at its upper end and another hook, *g*, at its lower end. The bars G G pass through a stationary slotted cross-piece, *h*, which keeps them in a substantially upright position, while allowing them to swing on their pivots as far as necessary. Each bar G passes between lugs on a pin or needle, *i*, that extends outward in contact with a card, H, the said card passing around a prism, *j*. Only part of the card H is represented in Fig. 4, and only the one prism *j*. The portion of the card which is not shown is of the ordinary kind, and its support is likewise of usual construction. A spring, *k*, interposed between one of the lugs on the pin or needle and a fixed cross-piece, *l*, serves to crowd the pin or needle *i* against the card H. Whenever an aperture of the card is aligned with a pin or needle, *i*, as in Fig. 4, the bar G connected with that pin will, by the spring *k*, have its upper portion and its hook *f* thrown outward and its lower portion and hook *g* thrown inward. This will bring the hook *f* directly over and in line with a vertically-movable transverse blade, I, and the hook *g* out of line with another vertically-movable transverse blade, J. Those bars G whose pins or needles *i* do not enter apertures of the card H will have their lower hooks, *g*,

directly below and in line with the lower blade, J, and their upper hooks, *f*, out of line with the upper blade, I. One end of the upper blade, I, is pivotally connected by a link, *m*, with a bracket, *n*, that projects from the upper frame, C. In like manner one end of the lower blade, J, is pivotally connected by a link, *o*, with said bracket *n*, as shown in Fig. 1. The other end of the blade I connects by a rod, *p*, with a crank, *q*, that projects from a pin, *r*, which is hung in the frame C. Another crank, *s*, on the pin *r*, which is diametrically opposite to the crank *q*, connects by a rod, *t*, with the free end of the blade J. The blades I and J carry rollers *u* in contact with a vertical rail, *v*, of the frame C. The connections of the blades I and J with one another, hereinabove referred to, have for their object to insure their simultaneous movement in opposite directions. Thus, if by the means hereinafter described or by any other means the upper blade, I, is moved upward from the position shown in Fig. 1, it will by the connections *p*, *q*, *r*, *s*, and *t* cause the blade J to move downward in the same ratio, the rods *p* and *t* being of equal length and the cranks *q* and *s* being also of equal length. Whenever the blade I is moved up it will engage the hooks *f* of the bars G, whose needles *i* enter apertures of the card H, and will lift the said bars; and the blade J when moved down will engage the hooks *g* of the bars G whose needles *i* do not enter apertures of the card H and will lower the said bars. As each bar G connects with a lever D, and as each lever D carries a heddle E, it follows that at every upward stroke of the blade I either all the heddles are raised or all the heddles are lowered, or some raised and all the others lowered according to the disposition of apertures in the card.

The blade I carries a downwardly-projecting U-shaped wire or other frame, *w*, directly above the levers D. The blade J carries a similar upwardly-projecting frame, *x*, directly below the levers D, as shown. By these frames *w* and *x* the levers D are swung back into their normal or central position, (shown in Figs. 1 and 4,) when the blade I is lowered and the blade J elevated back into the normal position represented in Figs. 1 and 4. The upper blade, I, connects by a rod, K, with a wrist-pin, *y*, on a revolving shaft, L, which shaft is hung in the lower frame, A, of the loom. When this shaft L is revolved it serves by the rod K to raise and lower the blade I, and thereby to set the heddles in manner stated. The connection of the blade I with the rod K is shown in Fig. 1. The rod passes loosely through an eye, Z, that projects from the blade and carries a spring, a^2, above said eye and another spring, b^2, below said eye. These springs bear against adjustable collars d^2 and e^2, respectively, which are attached to said rod K. The springs cushion the blade and prevent jars and shocks in its movement and in the movement of the parts which it controls. The lower end of the rod K is fitted through a socket, c^2, which is pivoted to the wrist-pin *y*, and in which the rod K can be adjusted and held by nuts f^2. This makes the rod K lengthwise adjustable for the purpose of regulating the stroke of the blade I and of the parts which it sets in motion, as already described.

The rod K may be connected with the lower blade, J, instead of with the upper blade without any departure from the principles of my invention.

The mechanism for turning the prism *j* and adjusting the position of the card H from time to time is not part of the present invention, and is therefore not shown. Any well-known contrivance for turning the prism may be used. It may, in fact, be turned by hand, if desired.

The shaft L, hereinbefore referred to, is the driving-shaft of the loom. Rotary motion in the direction of the arrow (shown near it in Fig. 1) is imparted to it by a belt whenever said belt passes over a pulley, g^2, Fig. 3, which is fixed upon said shaft. A crank, h^2, on the shaft L connects by a rod, i^2, with an arm, j^2, which projects rigidly from the lay M, the said lay being pivoted at k^2 to the lower part of the frame A.

It will be observed from an inspection of Fig. 1 of the drawings that the rod i^2 has three holes and that the arm j^2 also has three holes, the pin l^2 uniting these parts being shown in the hole of i^2 which is nearest the shaft L and in the hole of j^2 which is farthest from the lay. By putting the pin in the middle hole of rod i^2 and arm j^2, or in the hole of i^2 which is farthest from the shaft L and in that of j^2 which is nearest the lay, the character of the motion imparted to the lay will be varied without at the same time changing the extent of its motion. The farther away the pin l^2 is placed from the shaft L and the nearer the lay the more violent will be the throw or beating action of the lay, while said beating action will be rendered more gentle by placing the pin l^2 in the position represented in Fig. 1. By this adjustability of the pin l^2, I am enabled to beat home some shuttle-threads more violently than others without increasing or diminishing the sweep of the lay. This is important, because fine fabrics should receive less violent treatment than fabrics of coarser texture.

The warp-threads for the fabric to be woven are taken from a beam, N, passed over a roller, m^2, passed through the heddles E E, and thence through the reed O, and the completed fabric is then passed over a roller, P, and wound upon a drum, Q. This drum carries a worm-wheel, n^2, which gears into a worm, o^2, mounted upon an upright shaft, R. The shaft R has its bearings in the frame A and carries a flanged friction-pulley, S. This friction-pulley and its appurtenances are indicated in Fig. 1 of the drawings, but more clearly shown on an enlarged scale in Figs. 5 and 6. The upright shaft R carries a loosely-fitting crank-arm,

p^2, which connects at its outer end with an actuating-rod, q^2. A pin, r^2, on the crank-arm p^2 passes through a slot in one end of a curved bar, s^2. The other end of the curved bar s^2 has rigidly secured to it, by a thumb-screw or otherwise, a stem, t^2, to which is attached a pad, u^2, of leather or other pliable material, the said pad being in contact with the inner circumference of the rim or flange v^2 of the friction-pulley S. The stem t^2 has a lug, w^2, which is pivotally connected with an arm, x^2, of a sleeve, y^2, that loosely embraces the upright shaft R. It will be remembered that the pulley S is fast on the shaft R and that the crank arm p^2 is loose thereon, and that the sleeve y^2 is also loose thereon. Whenever the rod q^2 is moved toward the shaft R it pushes the loose crank-arm p^2, and this pushes the curved bar s^2, which in turn carries the lug w^2 of the stem t^2 out of line of the arm x^2, thus moving the pad u^2 loosely along the inner side of the rim v^2; but when afterward the rod q^2 is moved away from the shaft R it draws on the crank-arm p^2 and curved bar s^2, so as to draw the lug w^2 and arm x^2 nearly in line with one another, thereby causing the pad u^2 to bite on the inner circumference of the rim v^2 and turn the pulley S part way around in the direction of the arrow shown near it in Fig. 5. When the pulley S and its shaft R are thus partly turned, the drum Q is also turned to wind up part of the finished fabric. The actuating-rod q^2 of this friction-pulley just described passes freely through a lug, z^2, that projects from the lay M, and the said rod is headed at its free end. A lever, T, which at a^3 is pivoted to the arm f^2 or other part of the lay, has its lower end opposite the headed end of the rod q^2 and its upper end directly behind the lower part of the reed O.

The lay M carries in lugs b^3 b^3 an upright torsional spring, U, the upper part of which has a projecting arm, c^3, hook-shaped, as in Fig. 11, which engages the downwardly-projecting arm d^3 of a horizontal rock-shaft, e^3, that is pivoted in the forward part of the lay M. An upwardly-projecting arm, f^3, of the rock-shaft e^3 bears against the reed O, as shown, and serves to hold it in position on the lay. When the lay is vibrated on its pivot k^2, it carries the reed O with it, but this reed, being loose, will, when it strikes the fabric, bear against the arm f^3, and thereby move the arm d^3 in the hook-shaped arm c^3, so as to partly turn and strain the upright torsional spring U. The same motion of the reed causes it, if the shuttle threads are properly in the warp, to strike the upper end of the lever T and move that inward, thereby causing its lower end to push the rod q^2 and set the friction-pad u^2 in the pulley S ready for action upon the rim thereof. When afterward the lay M is moved back toward the shaft L, its lug z^2 will draw the rod q^2 by its head in the same direction, so as thereby to cause the pad u^2 to bite on the rim v^2 of the wheel S and turn the latter; hence the cloth is wound upon the drum Q at every backward movement of the lay, the forward movement of the lay being utilized in so far as it causes the reed O to act upon the lever T for pushing the rod q^2 outward and setting the actuating parts of the friction-pulley into position for giving a new turn of the drum Q.

On each side of the loom-frame A is hung therein a horizontal shaft, V, which is intended to move one of the pickers W in the shuttle-boxes X. The shaft V has rigidly attached to it a crank, g^3, which at the proper time is in contact with a cam, h^3, on a transverse shaft. Y, that is hung in the frame A. The shaft Y receives rotary motion by gear-wheel connection i^3 from the main shaft L. To the shaft V is also rigidly affixed the picker-stick j^3, which, by the usual flexible connection, operates the picker W and throws the shuttle. A torsional or other spring, l^3, (see Fig. 10,) connects with a crank, m^3, which is also rigidly attached to the shaft V. Thus the solid shaft V is made in one piece with the crank g^3, picker-stick j^3, and crank m^3, which I deem a great advantage over the construction shown in my former patent, No. 332,400, in which the torsional spring was contained within a tubular shaft, thereby greatly weakening the said shaft and rendering it impracticable to forge the crank and picker-stick to the same. These parts, being under great strain, should be made as strong as possible.

The cam h^3 is of such a shape that it will crowd the crank g^3 into the position shown at the left-hand side of Fig. 4. In this position the spring l^3 is strained. At its end the said cam h^3 has a small button or projection, n^3, which crowds the end of the crank g^3 under a spring-actuated latch, o^3, that is pivoted to the frame A. This latch o^3 holds the crank g^3 and holds the spring l^3 under strain until the proper time arrives for throwing the shuttle. At this time a crank, p^3, on the shaft Y touches the outer end of the said latch o^3 and lifts the latch off the crank g^3, thereby releasing the spring l^3, which will at once throw the shaft V around into its normal position and cause it to sharply carry the picker-stick j^3 inward, thereby moving the picker W and throwing the shuttle. The shaft V at the right-hand side of Fig. 4, with its attachments, is shown in the normal position after having thrown the shuttle. From this position the shaft is turned to the other extreme by the cam h^3 engaging the crank g^3. The cam h^3, in face view, is of semi-annular form, as shown in Fig. 1, so that no part of it will be in the way of the crank g^3 when the latter is thrown by the force of the spring l^3.

The lay M carries on its outer side a perforated lug, q^3, through which extends the shank of a hook, r^3, which is at s^3 jointed to a lever, t^3. This lever at w^3 is pivoted to the frame A, as shown in Fig. 2. A horizontal arm, v^3, of the lever t^3 (see Fig. 3) extends along the inner face of the belt-shipping lever Z. This lever, in the position in which it holds the belt

on the fixed pulley g^2, rests in the broad part of an L-shaped slot in a plate, w^3, that projects from the frame A. When in this projection, the lever Z strains a spring, x^3, with which it is connected and which spring has a tendency to throw the lever Z into the narrow part of the slot in the plate w^3, the shoulder or inner end of the broad part of said slot alone preventing the said spring from throwing the lever Z into the narrow part of said slot and from thereby shifting the belt from the fast pulley g^2 to the loose pulley y^3 on the shaft L. The lever Z connects by a lever, z^3, with a slide, a^4, which carries the fork b^4, that embraces and moves the belt. When the lever Z is in the broad part of the slot of the plate w^3, as in Fig. 3, the said fork b^4 will be aligned with the fast pulley g^2; but when the lever Z is in the end of the narrow part of said slot the fork b^4 will be aligned with the loose pulley y^3.

Beneath the hook r^3 is pivoted to the frame A a trigger, c^4, whose upper part leans normally against a pin, d^4, that projects from an arm, e^4, of the rock-shaft e^3, as shown in Fig. 2. A cord, f^4, connects the trigger c^4 with the lay M. Whenever the lay is moved forward to beat the shuttle-threads home, its perforated lug q^3 will slide along the shank of the hook r^3, and, as the rock-shaft e^3 is carried by the lay, its arm e^4 is moved outward with the lay, but not sufficiently far to make the pin d^4 entirely raise the trigger c^4. This entire raising of the trigger is accomplished only if the reed O, moving inward, swings the arm f^3 backward, and thereby the arm e^4 outward farther than the lay alone would carry it. When this is done, the pin d^4 raises the trigger c^4 entirely, so that the trigger will lift the hook r^3. This elevation of the hook r^3 brings its beak to a height sufficient to let it pass freely through the slot of the lug q^3 on the subsequent backward or inward stroke of the lay. (See diagram Fig. 2*a*.) At the end of this inward stroke the lay M will pull the trigger c^4 by the cord f^4 back into the inclined position, causing it to lean again on the pin d^4. Thus when the loom is properly in operation the shipping-lever will not be disturbed; but if shuttle-threads should break or shuttles run empty, so that after two or three beats of the lay the reed O would no longer meet with resistance, then the said reed will no longer swing the rock-shaft e^3, and will therefore not move the arm e^4 and its pin d^4 farther away from the lay, and as a consequence the trigger c^4 will not be raised to raise the hook r^3. If the hook r^3 is not raised by the said trigger, the plate q^3 will on the backward or inward stroke of the lay strike the beak of said hook and pull the hook with it, so as to swing the lever t^3 and press its arm v^3 against the shipping-lever Z. By this pressure the said shipping-lever will be pushed out of the wide part of the slot in the plate w^3 and into line with the narrow part of said slot, whereupon its spring x^3 will throw it into the narrow part of the slot. This motion of the shipping-lever, as has already been demonstrated, will transfer the belt to the loose pulley y^3.

It follows that whenever the reed fails to meet with due resistance the hook r^3 is not raised and the motion of the loom therefore arrested.

In order to prevent the warp-beam N from being turned and warp unwound at any time when the lay makes a forward stroke, I connect said lay (see Fig. 2) by an elastic rod, g^4, with a brake, h^4, that partly embraces the beam N; hence the brake will be applied when the lay moves forward, but released when the lay moves inward or rearward. The rod g^4 is partly constructed in form of a spiral spring, as shown in Fig. 2, for the purpose of avoiding the use of a separate transverse spring.

The rock-shaft e^3, which is carried by the lay M, and which has the arm f^3, that bears against the back of the reed O, is also provided with a backwardly-projecting arm, i^4, carrying a friction-roller, j^4, as shown in Fig. 2. This roller j^4 at the backward or inward stroke of the lay is received on a spring, k^4, which is secured to the frame A. The effect of this attachment is to definitely crowd the reed forward against the receiving and retaining surface of the lay, so that the reed will be in proper position on the lay during the subsequent forward stroke of the lay.

The shuttle-box X, which is more clearly illustrated in Figs. 7, 8, and 9 of the drawings, has an adjustable top and face plate, l^4, to adapt it to shuttles of various sizes. This L-shaped plate l^4 has upwardly-projecting lugs m^4 m^4, that are connected by bolts n^4 with the rear wall, o^4, of the shuttle-box. Each of these bolts carries two nuts—one, p^4, on the front, and the other, q^4, at the back of the wall o^4. By means of these nuts the plate l^4 can be firmly held at a greater or less distance from the wall o^4 to admit wider or narrower shuttles. The bolts n^4 pass through upright slots in the wall o^4, so that they can be set to a greater or less height on said wall and hold the plate l^4 at a greater or less elevation for accommodating higher or lower shuttles.

The operation of the various parts of the loom having been fully described in connection with each subdivision of my invenion, it is believed that a repetition thereof will not add to the clearness of this specification. I may only state in this connection that the shaft L, when revolved, serves to move the blades I and J to thereby set the heddles E E according to the punctures of the card H, and thus to adjust the shed; that the same shaft L moves the lay M with greater or less force and with it the reed O; that the motion of the lay is utilized to wind the cloth upon the beam Q during the backward stroke of said lay and to apply a brake to the beam N during the forward stroke of the lay; that the shaft L, by turning the shaft Y, also furnishes the power for throwing the shuttles, and that the lay M

furnishes the power for unshipping the belt whenever the reed fails to meet with proper resistance during its outward movement.

I claim—

1. The combination of the levers D D, which carry the heddles of a loom, with the pivoted bars G G, having hooks *f* and *g*, transverse parallel blades I J, rods *p* and *t*, pin *r*, and cranks *q s*, connecting the parallel blades I J at one end, said blades being suitably pivoted at their opposite ends, frames *w* and *x*, rigidly attached to said blades, and means, substantially as described, for moving said blades, and thereby said frames, simultaneously in opposite directions, as specified.

2. The combination of the rod K and means, substantially as described, for moving it with the collars d^2 e^2, springs a^2 b^2, blade I, having eye *z*, bars G, having hooks *f*, and levers D, as specified.

3. The blade I, combined with the link *m*, bracket *n*, rod *p*, crank-pin *r*, having cranks *q* and *s*, rod *t*, blade J, link *o*, rollers *u*, and guide *v*, and with mechanism, substantially as described, for moving said blade I up and down, all arranged so that said blades I and J shall move simultaneously, but in opposite directions, as specified.

4. The combination of the driving-shaft L, having wrist-pin *y*, with the socket c^2, nuts f^2, adjustable rod *k*, blade I, and a yielding connection between said rod and blade, substantially as and for the purpose herein shown and described.

5. The combination of the shaft L, wrist-pin *y*, rod K, having collars d^2 e^2, connections between said wrist-pin and rod, springs a^2 b^2, eye *z*, blade I, frame *w*, blade J, frame *x*, levers D, pivoted bars G, having hooks *f g* and needles *i*, springs *k*, card H, prism *j*, and means, substantially as described, for communicating motion from the blade I to the blade J, as specified.

6. The combination of the rotary crank-shaft L with the rod i^2 and arm j^2, each having series of apertures, adjustable connecting-pin l^2, and pivoted lay M, all arranged to permit the violence of the motion of the lay to be regulated without changing the extent of its movement, substantially as herein shown and described.

7. The combination of the cloth-winding drum Q with the worm-wheel n^2, worm o^2, shaft R, flanged pulley S, loose crank-arm p^2, having pin r^2, slotted bar s^2, stem t^2, pad u^2, lug w^2, arm x^2, sleeve y^2, rod q^2, and lay M, having lug z^2, substantially as herein shown and described.

8. The combination of the lay M, reed O, rock-shaft e^3, having arms d^3 and f^3, upright torsional spring U, having hook-shaped arm c^3, lever T, lug z^2, sliding rod q^2, drum Q, and mechanism, substantially as described, for moving the winding-drum Q by means of the rod q^2, as specified.

9. The lay M, having perforated lug q^3, combined with the reed, pivoted hook r^3, lever t^3, shipping-lever Z, trigger c^4, rock-shaft e^3, arm f^3, arm e^4, having the pin d^4, and cord f^4, substantially as herein shown and described.

10. The combination of the lay M, movable reed O, rock-shaft e^3, having arms f^3, d^3, and e^4, pin d^4, spring U, shipper-lever Z, lever t^3, arm v^3, hook r^3, lug q^3, and arm c^3, trigger c^4, and cord f^4, for raising said hook and actuating the shipping-lever, as described, when the reed meets with resistance and for moving said hook r^3 lengthwise when the reed does not meet with resistance, as specified.

11. The combination of the lay M, rock-shaft e^3, arm f^3, and reed O with the arm i^4 on the rock-shaft e^3, and with the fixed spring k^4, for the purpose of throwing the reed forward when the lay moves backward, as specified.

12. The shuttle-box X, having vertically-slotted rear wall, o^4, in combination with the L-shaped plate l^4, having lugs m^4, and with the bolts n^4 and nuts p^4 and q^4, substantially as and for the purpose herein shown and described.

This specification signed by me this 12th day of March, 1886.

FRIEDRICH KESSELRING.

Witnesses:

GUSTAV SCHNEPPÉ,

AUGUST SCHLARBAUM.