

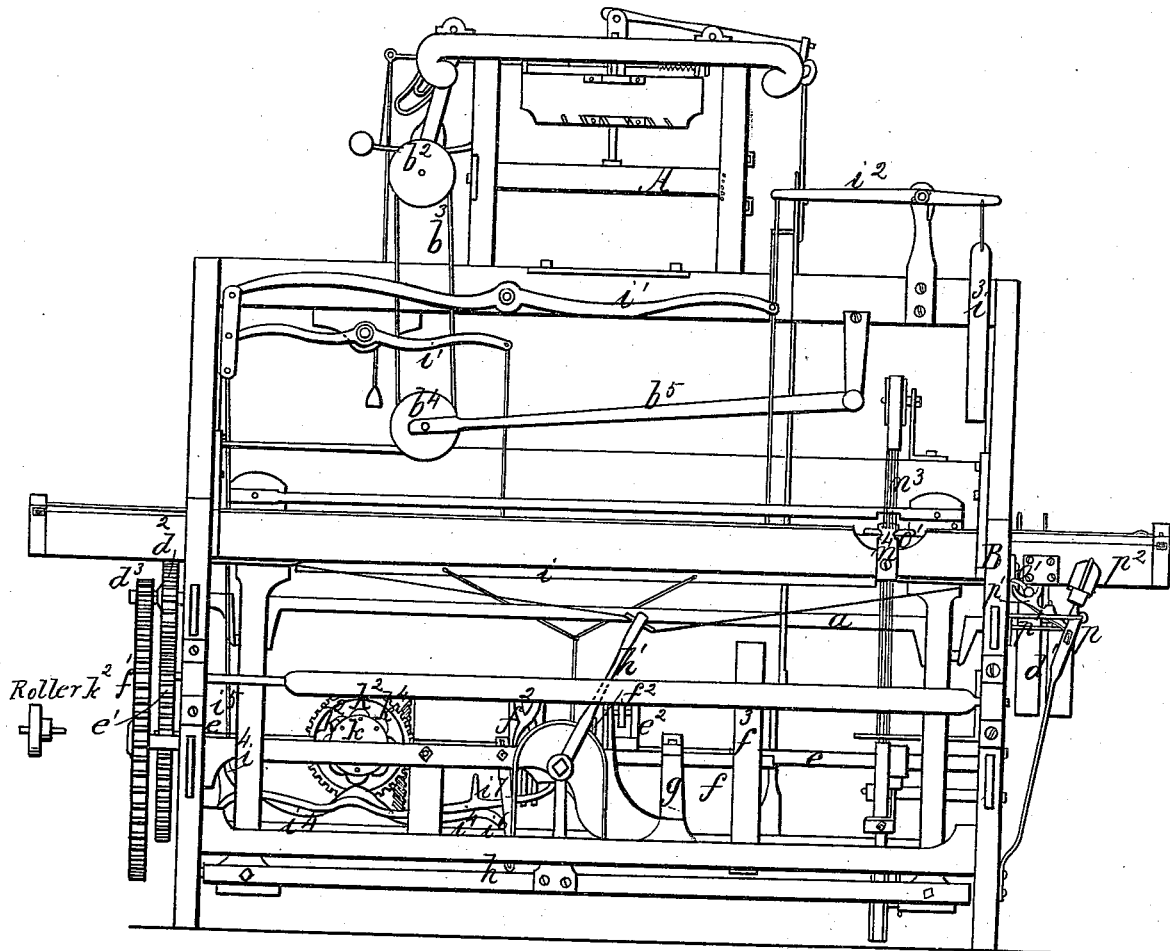
C. G. Gilroy.
Loom.

Sheet 1-8 Sheets.

N^o 3,047.

Patented Apr. 15, 1843.

Fig. 1.

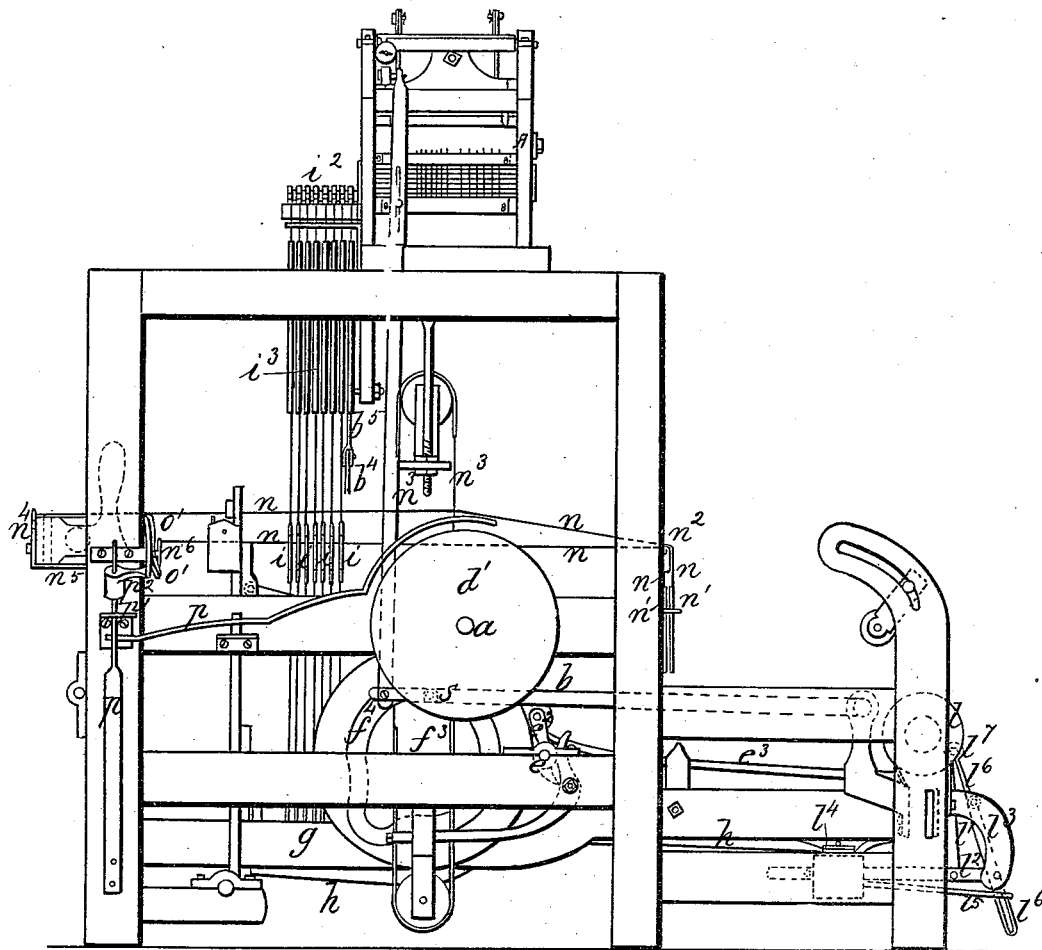


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Fig. 2.



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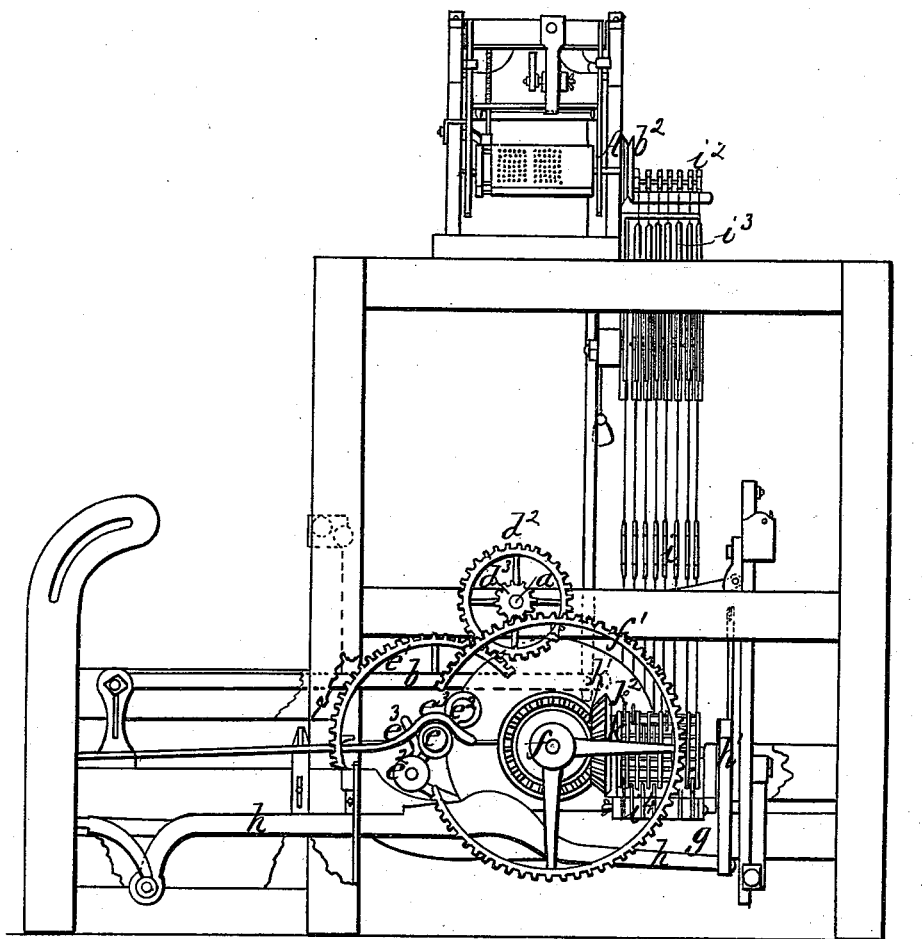
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Fig. 3.

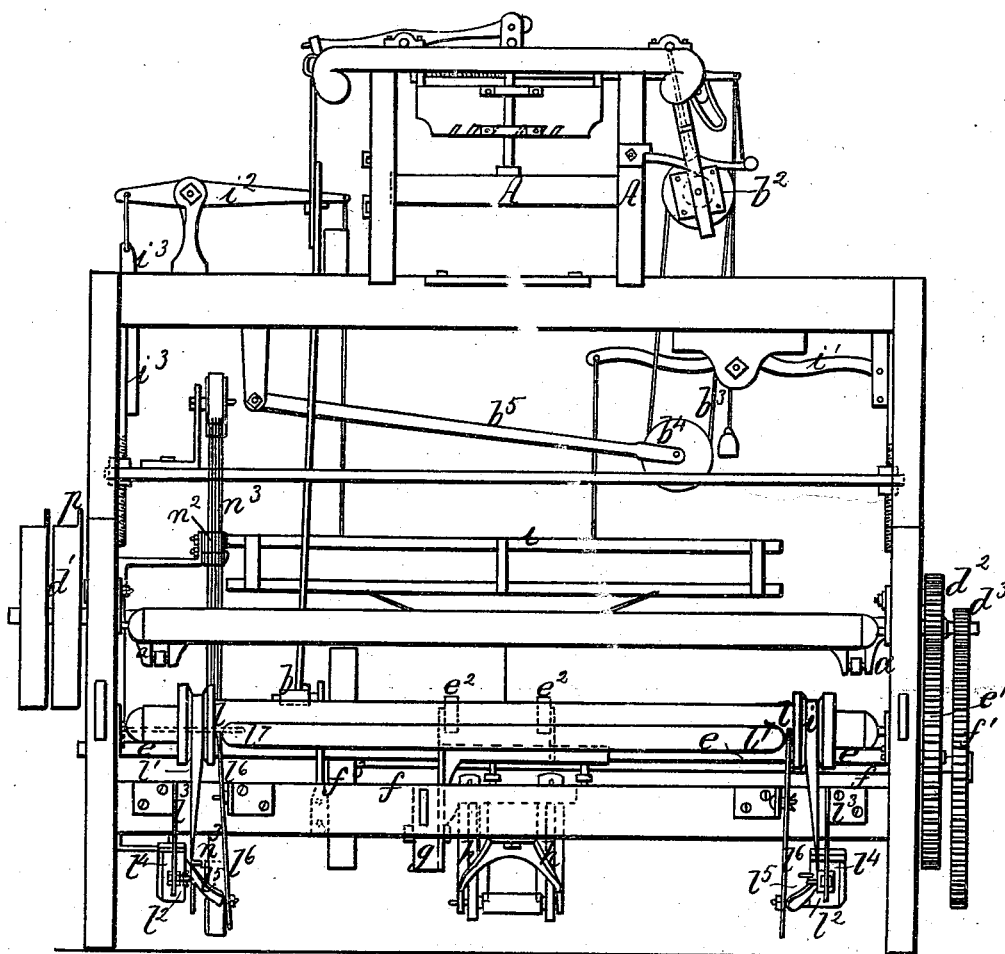


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Fig. 4.

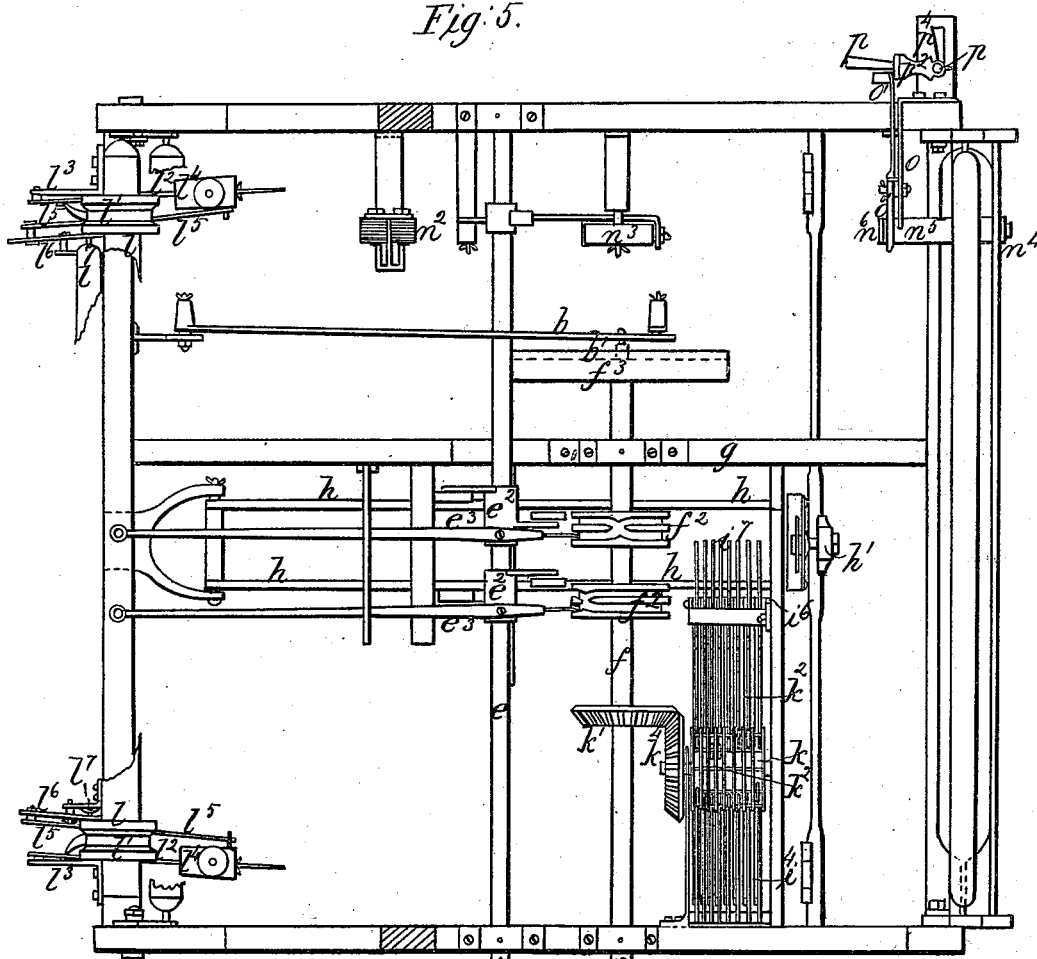


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Fig: 5.



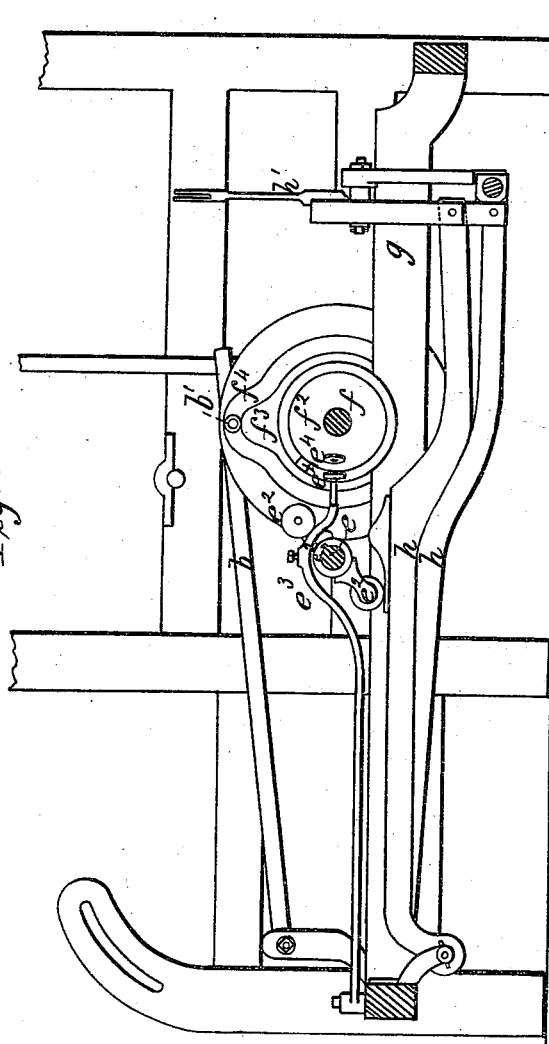
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Fig. 6.

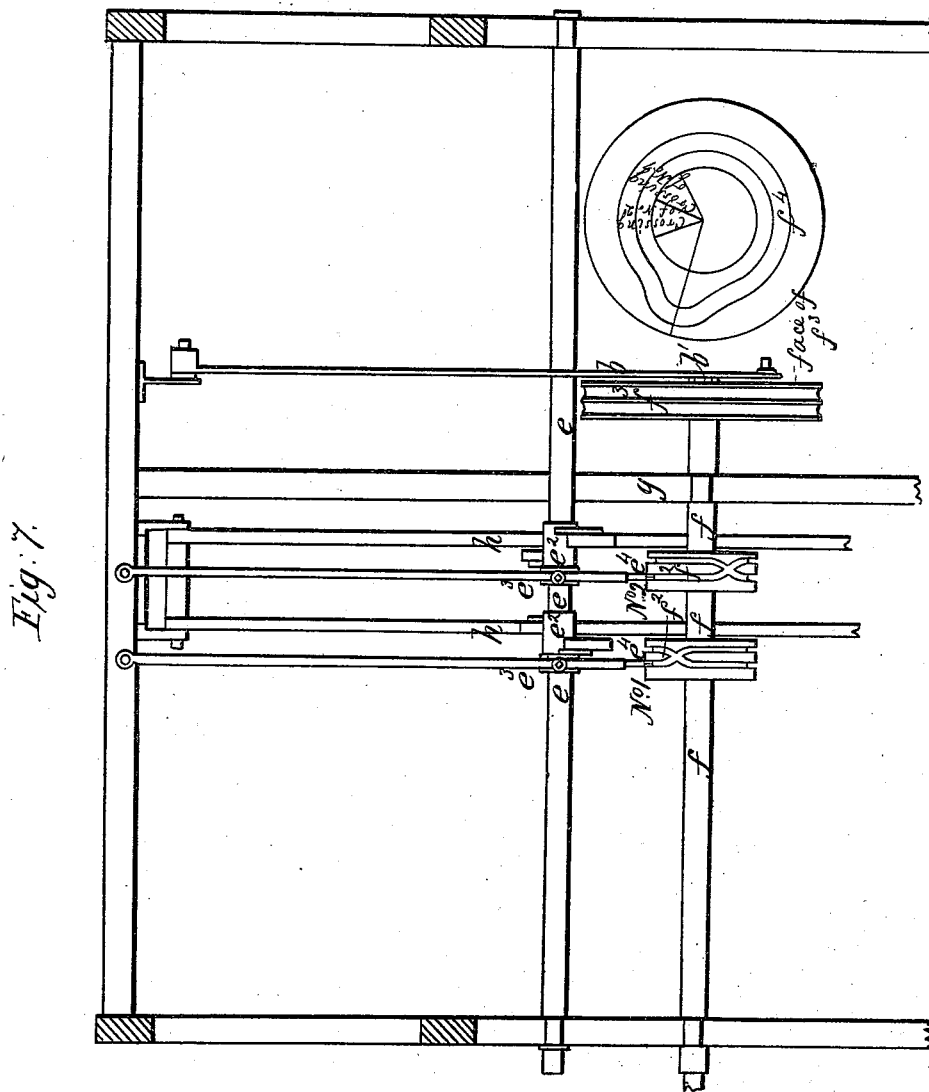


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Patented Apr. 15, 1843.



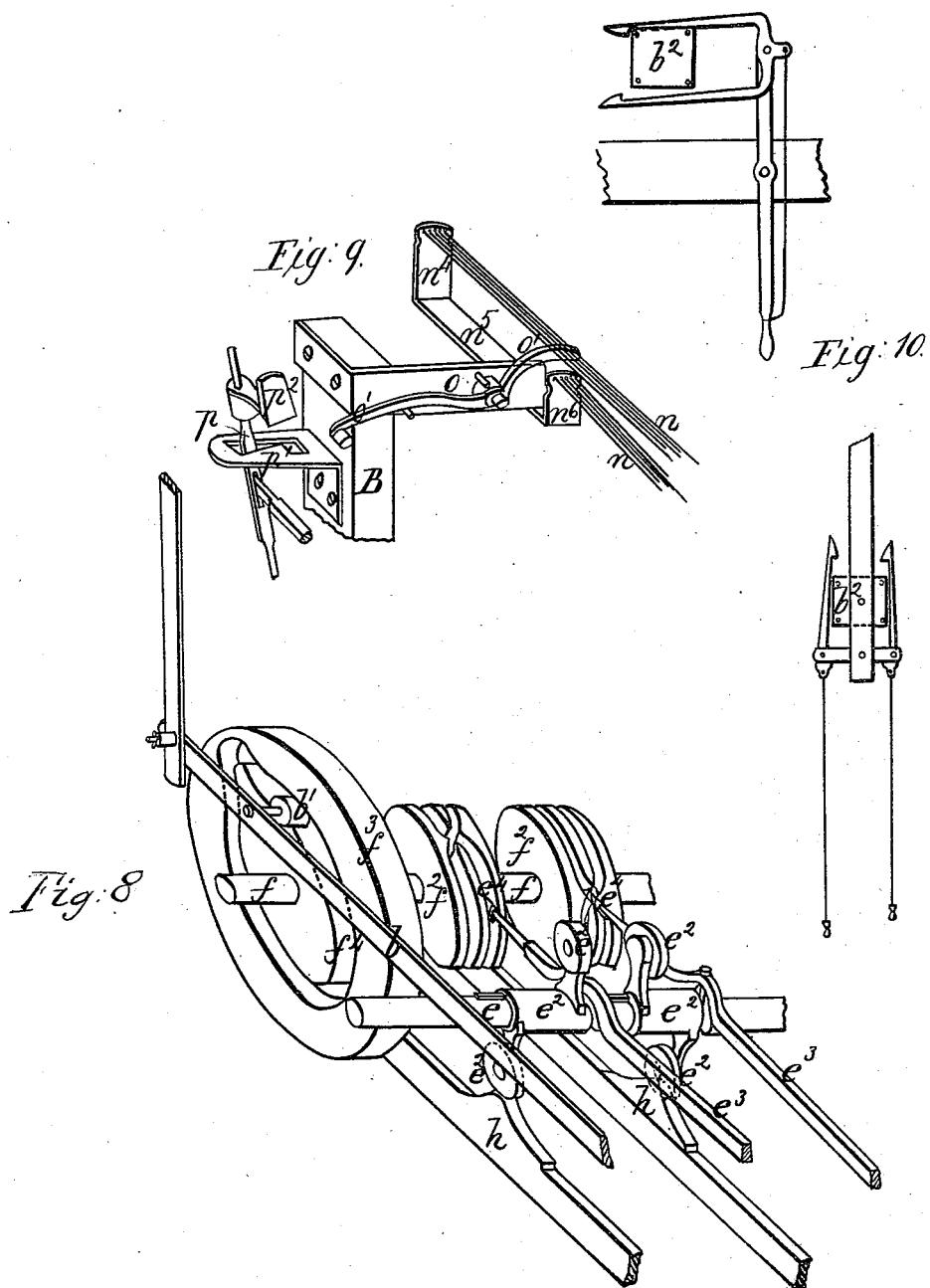
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Loom.

N^o 3,047.

Patented Apr. 15, 1843.



UNITED STATES PATENT OFFICE.

C. G. GILROY, OF NEW YORK, N. Y.

LOOM FOR WEAVING FIGURED FABRICS.

Specification of Letters Patent No. 3,047, dated April 15, 1843.

To all whom it may concern:

Be it known that I, CLINTON GRAY GILROY, of the city, county, and State of New York, have invented several new and useful Improvements in Looms for Weaving Figured Cloth; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which make a part of this specification.

Figure 1, is a front elevation; Fig. 2, right hand side elevation; Fig. 3, left hand side elevation; Fig. 4, back elevation; Fig. 5, plan of loom; Fig. 6, vertical section of parts enlarged; Fig. 7, plan of shifting cams; Fig. 8, perspective of shifting cams; Fig. 9, perspective of stop motion.

The frame of my loom is constructed like those in common use; the jacquard A being placed above, upon it. On the cylinder of the jacquard there is a grooved pulley (b^2), over which an endless cord (b^3) passes, down to a similar pulley (b^4) below it; this pulley may be suspended on the end of a horizontal lever (b^5) which has its fulcrum attached to the frame, as shown in Fig. 1, or the pulley may be attached to a slide which moves up and down in guides fastened to the frame; the cord is for turning the jacquard cylinder when the wrong card is presented, without climbing up to the machine for that purpose, or hooks taking hold of the pins in the jacquard cylinder may be substituted having a handle project down so as to be reached by the hand as shown in Fig. 10, which I deem only a modification of the plan above described. The inflexible connecting rod of the jacquard descends below the crank shaft (a), and its lower end is connected with the forward end of a horizontal lever (b) that extends back, and is jointed to the back part of the frame of the loom; there is a stud projecting from this lever, behind the point of its junction with the vertical lever, on which is a friction roller (b'), that plays in a groove, on the face of a wheel (f^3), more particularly described hereafter.

The driving, or crank shaft, is furnished with a fast and loose pulley (d') in the usual way; its cranks, by which the lathe is worked, are inside the frame, and on the end opposite the pulleys there are two pinions affixed; the inner one (d^2) is half the diameter of a spur wheel (e'), on the second or cam-shaft (e); the outer one (d^3) is one ninth the diameter of the wheel (f')

into which it works; this wheel being on the third, or jacquard shaft (f), which is placed forward of the cam-shaft (e), and on a level with it; the third shaft does not extend from side to side of the loom, but terminates a little beyond a brace (g) which extends from front to back of the loom-frame, near the center; and which supports one of the journals of the jacquard shaft.

On the cam shaft (e), are two double cams (e^2) more clearly shown in Figs. 6, 7 and 8, which have a lateral motion, as hereafter described; the two arms of each of the cams (e^2) project radially from opposite sides of the shaft, and are so placed with reference to each other, that when one is acting on the treadle (h) the other revolves without striking it; the hub which joins the two arms, is connected with the shaft by a feather and groove, so that it can slide sideways, and put either of the arms in contact with the treadle (h); there are two of these treadles which are attached to the common picker staff (h') in the usual way; these treadles are depressed alternately by the cams, for eight shots of the shuttle; the cams are then made to slide sideways, and miss one shot; the other arms of the cams are then brought into contact with the treadles, and eight shots more are thrown; at every ninth beat of the lathe, the shuttle remains in the box, for a purpose hereinafter described. On the jacquard shaft (which revolves once for every nine beats of the lathe) there are two wheels (f^2) affixed opposite to the double cams (e^2); which wheels have two parallel grooves in their periphery near each edge, around eight ninths of their circumference; from which point are oblique grooves crossing over to the other side, and forming an X at their junction; these grooves guide the ends of two levers (e^3) which project backward over the cams (e^2) to the back of the loom-frame where they are attached; the forward end, which is in the groove, has a follower, or oval button (e^4) on it, which is made to turn and follow the groove as required; around the hubs of the cams (e^2) under the levers (e^3) a groove is turned; into which a pin from the lever projects; the apparatus so arranged, will perform the operation required. One of the wheels (f^2) is placed with its oblique groove one ninth of the circumference of the wheel behind the other, so that first one of the cams (e^2) will be shifted, and then the other, the

change takes place just before the acting arm would strike the treadle, which brings the other arm on the same cam in contact with the treadle, at the next semi-revolution; and thus prevents the loom from losing more than one pick, for every change of the pattern of the jacquard.

The jacquard shaft also carries a wheel (f^3) on its inner end, in the face of which a concentric groove (f^4) is cut, eight ninths of its circumference; the other ninth, the groove curves outward, so as to form a cam, which will act on the connecting rod of the jacquard, as above described; and, while the shuttle misses one shot, the pattern has time to change, when the loom is in the most rapid motion.

The "front harness mounting," (so called, in contradistinction to the jacquard or back harness mounting) consists, in the drawings of eight leaves; which are intended for an eight leaved twill or satin ground; the leaves (i), of this mounting, are connected above, with double top or lifting coupleurs (i') the outer ends of which are connected by a shackle; the opposite end of each of the long coupleurs, is connected with a counter-balance lever (i^2) of the first order, which has a weight (i^3) attached to it, for counterpoising the harness; the shackles on the coupleurs above named, are connected with a set of lifting marches (i^4) near the bottom of the frame, by rods (i^5); these marches are parallel with the jacquard shaft, and have their fulcrums near the center, at (i^6), between these marches there is another set (i^7) called "sinking marches," the fulcrums of which are at the side of the frame, the opposite ends being connected with the leaves of the harness below. Over the center of the lifting and sinking marches a cylinder (k) is placed; the journals of which are on a level with, and at right angles to the jacquard shaft (f), they are geared together by bevel wheels (k'), and make the same number of revolutions; the cylinder has eight grooves or divisions turned in its periphery, each of which is wide enough to extend across two of the marches (a raising and a sinking one) the projections left on the cylinder occupy the space between the second and third, fourth and fifth, &c., throughout the series, in the cylinder, are inserted eight wires, near the periphery, and parallel with its axis; these wires pass through each of the projections between the grooves; and serve for axes for small rollers (k^2), which are just half the thickness of the grooves above named, and have a hub projecting from one side to fill the groove, and keep them in place, two rollers thus constructed are placed beside each other in the two first grooves and a wire is passed through them, their hubs being toward each other; consequently, when the cylinder is

turned so that these rollers come in contact with the projections on the marches directly under the cylinder; one depresses the first raising march in the series, the other the second sinking march; if the hubs of the rollers were placed the other way the first sinking, and second raising march, would be acted on, the first raising, and first sinking march being placed under the first roller, and so on; the next wire has the two rollers in the sixth and seventh groove; the others are placed in proper order for an eight leaf satin; and need no further illustration; the rollers can be turned on either side, so as to act on either of the marches under it at pleasure, so as to form different kinds of twills.

I wish to have it understood that although in the foregoing description and drawings, eight leaves of harness, and eight shots of weft are mentioned, my machine is not confined to that number; the jacquard shaft may turn once to eleven beats of the lathe, or once to five, &c., which will give ten, or four shots of weft to the card, and ten, or four leaves will be used in the front mounting, as the case may require.

The warp roller (l) is surrounded at its ends by friction straps (l') each of these descends to a horizontal lever (l^2) the fulcrum of which is supported outside the frame by a projecting iron (l^3); on the other end of the lever; the friction weight (l^6) is suspended, to which a connecting rod (l^5) is attached, that connects it with an upright lever (l^6); this lever is made with a slot in its lower end, to regulate the distance from the fulcrum of the lever, at which the connecting rod (l^5) is attached; this fulcrum is about one-third its length from the top; the upper ends of the levers (l^6) support the journals of a small roller (l^7), which bears against the warp on the roller (l). When the weaving commences, and this roller is full, the roller (l^7) is very far from its center, and the weight (l^6) is near the end of the lever (l^2); as the size of the warp roller decreases, the roller (l^7) approaches nearer the center of it, and the weight is moved up toward the friction strap (l') thus gradually decreasing the friction on the warp roller, and regulating the tension of the warp if the extremity of the lever (l^4) is a little elevated, the jar of the loom will cause it to slip back, otherwise a spring may be made for drawing it back.

My improvement in the motion to stop the loom when the thread breaks, or when the weft thread on the shuttle bobbin becomes exhausted, is as follows: There is a series of cords (n), attached to weights (n'), and passing over pulleys (n^2), through a front and back harness (n^3), under the cumber board, the harness being worked by the cam shaft; all, as described in a patent

granted to me, in the name of Jeremiah Wilbur, of New York, on the 12th day of March, 1842, which patent is antedated to correspond with one of my English patents, issued to Moses Pool, of the Patent Office, London, dated Nov. 12, 1839. The cords (n) after passing over the shutter-race, instead of being all tied to one iron on the breast beam, as in that patent; are (as shown in Fig. 9,) half of them, or those passing through the mails in the back harness (n^3), are affixed to an iron (n^4) that projects up in front of the breast beam; this iron extends down to the bottom edge of the breast beam to which it is attached, and then turns at right angles under it at (n^5) reaching backward, out beyond the front upright B of the frame, the end terminating in a vertical piece (n^6) that is a little shorter than the part (n^4) first named. To the top of this, the ends of the cords that go through the front mails of the harness (n^3) are attached. On the side of the front upright B, there is a piece of iron (o) screwed, that extends inward to the iron just described, which is attached to the breast beam; on the back side of the iron (o) next the lathe, a pin projects, forming a fulcrum for a lever (o'); this lever curves up from the fulcrum slightly, and then projects under the upper cords (n) which are attached to the front end of the iron (n^4); the other side of the fulcrum the lever (o') extends out beyond the upright B, and curves down, its end bearing a knob; the spring shipper (p) and its catch (p') are attached to the upright B, and are of the usual construction; on the handle is a projecting piece (p^2), that reaches back beyond the upright—the drawing, Fig. 9, shows the shipper spring off the catch (p'), and consequently, the loom stop D, when it is to be put in motion the shipper is pushed up toward the upright, and is confined by the catch (p'); the shuttle at each shot, passes between the upper and under cords (n), and when it enters the box, it leaves the weft thread across them; the lower cords are then raised, and the upper ones are depressed; till they meet, and are prevented from going

farther by the thread of weft; but if there is no thread across the cords, they pass each other, and the upper ones are brought down low enough to depress the end of the lever (o') which is under them; this elevates the knob on the other end, and brings it between the lathe and the projection (p^2) on the shipper, and throws it off, thus causing the loom to stop. This apparatus I have found much more certain in its operation than the modification heretofore patented by me.

The above described parts can be used with a cylinder loom instead of a jacquard by simply substituting the one for the other.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the jacquard or third shaft, with the crank shaft and cam shaft; the jacquard shaft, and cam shaft being driven by separate pinions on the crank shaft; in the manner and for the purpose herein specified.

2. I claim the combination of the double sliding cams (e^2), one to each treadle; which cams slide independently of each other; and in combination therewith, the two double grooved wheels (f^2) on the jacquard shaft, constructed and arranged substantially in the manner and for the purpose herein set forth.

3. I claim the combination of the cylinder (k) with the cam wheel working the jacquard, for acting on the marches of the front harness in the manner above specified.

4. I claim the apparatus for decreasing the tension of the friction strap on the warp roller as the warp unwinds, that is to say, the combination of roller (l') levers (l'') and connecting rods (l^3) with the weight, in the manner described.

5. I claim the improvement in the stop motion as above specified, viz: the combination of the iron (n^4 , n^5 , n^6) on the breast beam, the cords (n) and lever (o'); constructed and arranged as herein made known.

C. G. GILROY.

Witnesses:

JAMES SUMMERS,
J. J. GREENOUGH.