2 Sheets--Sheet 1.

W. GREGORY.

Narrow-Ware Looms.

No. 151,385. Patented May 26, 1874.

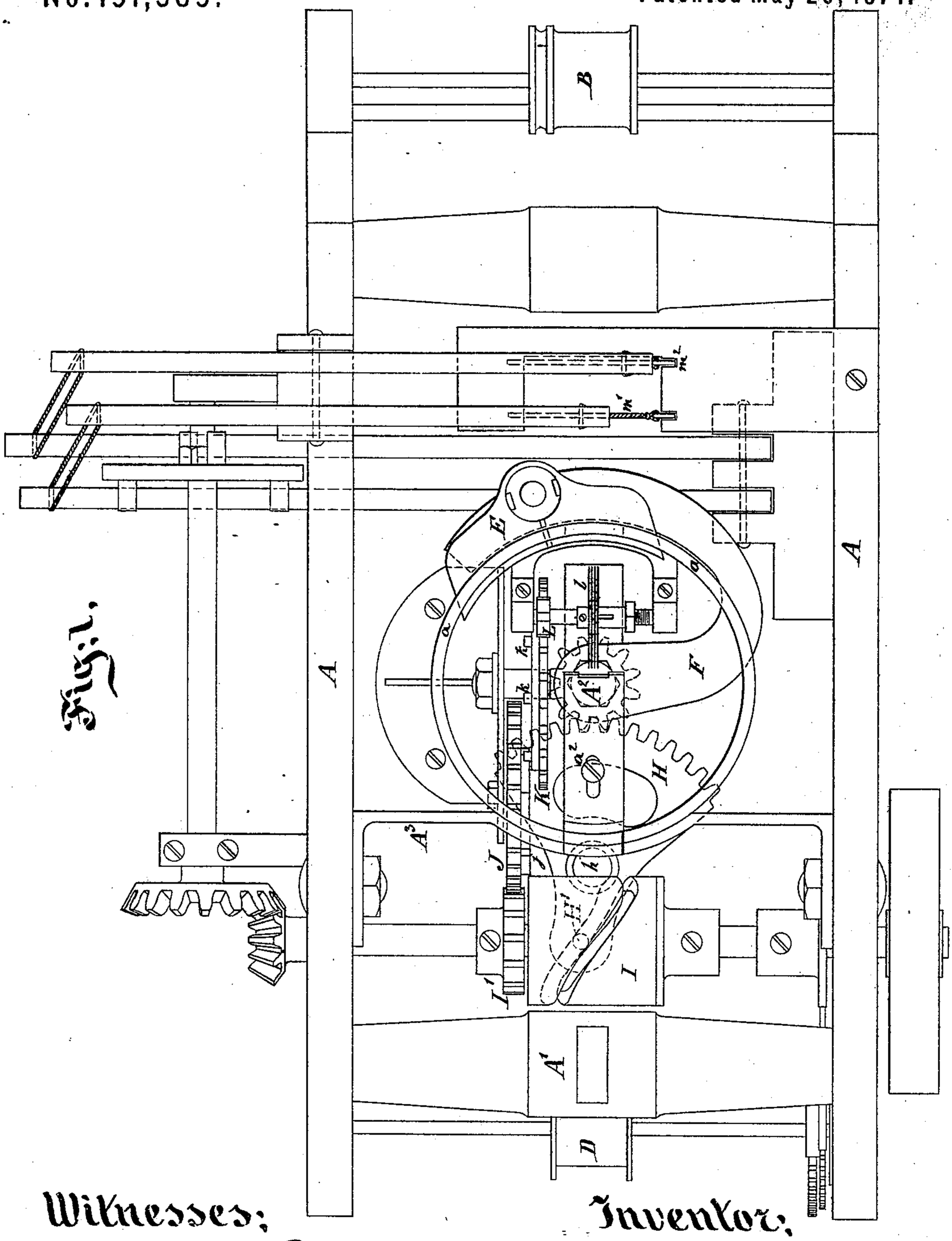

Fig. 1.

Witnesses:

Arnold Hermann.

W. C. Dey

Inventor:

William Gregory

by his attys T. D. Stetson

AM. PHOTO-LITHOGRAPHIC CO. N. Y. (OSBORNE'S PROCESS.)

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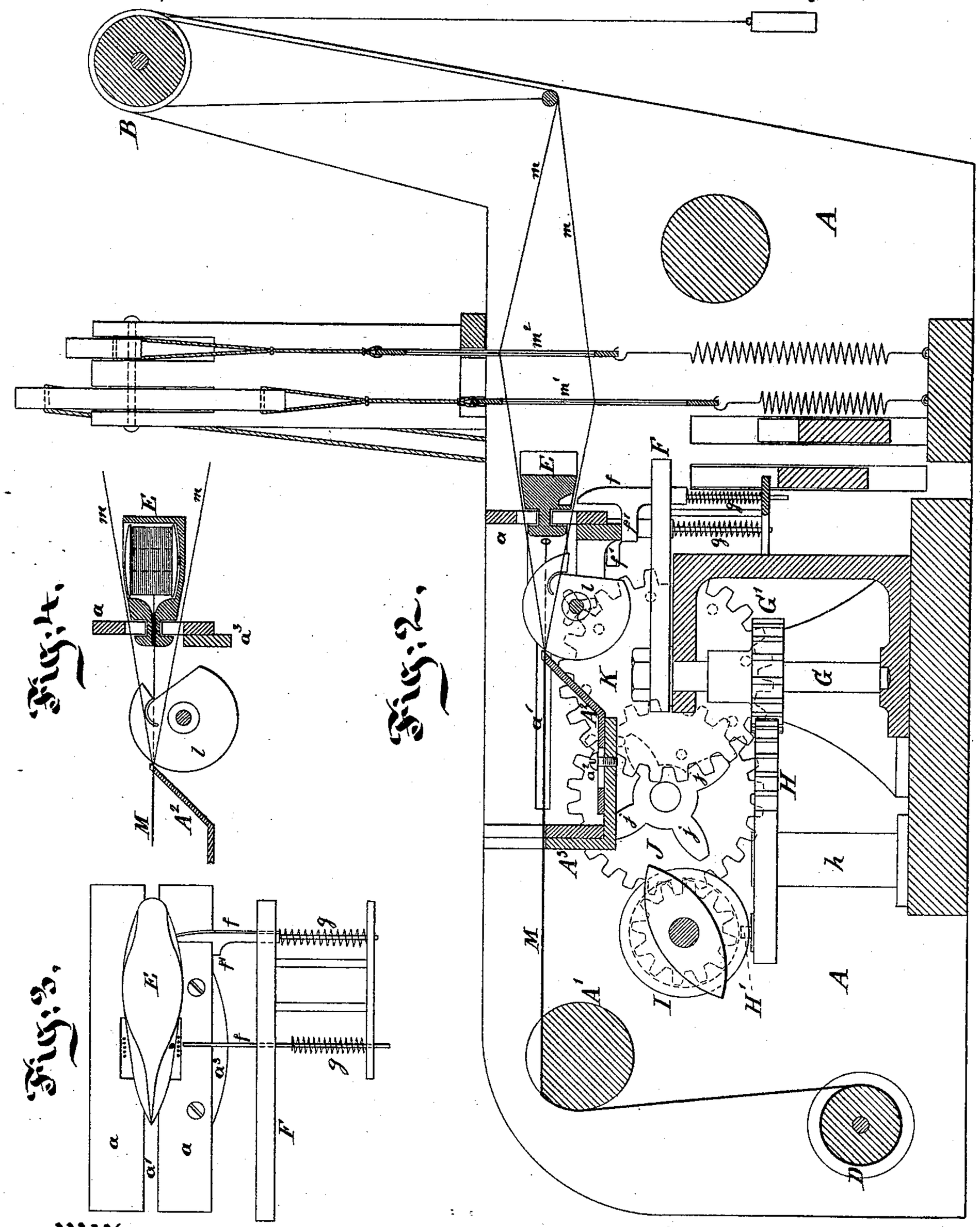

Witnesses:

Arnold Hörmann.

W. C. Dey

Inventor:

W. Gregory

by his attorney F. L. Stetson

A.H. PHOTO-LITHOGRAPHIC Co. N. Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

WILLIAM GREGORY, OF PATERSON, NEW JERSEY.

IMPROVEMENT IN NARROW-WARE LOOMS.

Specification forming part of Letters Patent No. **151,385**, dated May 26, 1874; application filed April 21, 1874.

To all whom it may concern:

Be it known that I, WILLIAM GREGORY, of Paterson, Passaic county, in the State of New Jersey, have invented certain Improvements relating to Looms for Narrow Goods, of which the following is a specification:

I traverse the shuttle in the arc of a circle, thereby causing the filling-thread to move forward or toward the weaving line considerably beyond the path of the shuttle, and there engage with a rotating instead of reciprocating device, which serves as a reed to drive the weft home to its place. The rotating reed rotates always in the same direction, but with a period of rest to allow the weft to enter. The motion of the shuttle is backward and forward in its circular path. I prefer to work the mechanism in single sections—or, in other words, to weave only one piece of tape or other narrow ware in each machine, and have so represented it.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a plan view, and Fig. 2 is a vertical section, of the loom. These drawings represent the novel parts, with so much of the ordinary parts as is necessary to understand their relation thereto. Fig. 3 is an elevation of the shuttle and its circular way or track, with the carrying means detached from the other portions of the mechanism. Fig. 4 is a central vertical section through a portion of the same.

Similar letters of reference indicate like parts in all the figures.

A is the fixed frame-work, represented as formed with closed sides and with stout connecting cross-pieces at the bottom, and at several points above, with two posts standing nearly upright to support the yarn-beam and the levers for the harness. It will be understood that the frames may, in practice, be made of cast-iron open-work, and ornamental. Certain parts of the fixed work will be designated by other marks, A^1 A^2, &c., when necessary. One of the most important of the fixed parts is the circular guide rail or way for the shuttle. I will designate this *a*. B is the yarn-beam, provided with an ordinary appliance for inducing friction. The warp-yarns *m* drawn therefrom pass under a roller or rod, and are operated by the harness in two sets, m^1 m^2, which are alternately raised and depressed by the action of the harness to open the shed for the passage of the shuttle. The cloth woven is marked M, and after passing over the cross-brace A^1 is wound on the cloth-beam D by the action of a suitable take-up. (Represented in plan in Fig. 1.) The line where the several yarns of filling are successively applied, and which I term "the weaving line," is on or close to the edge of a cross-piece, A^2, which is slightly recessed to receive it, and is adjustable on the arms of the cross-piece A^3 by means of the screw a^2. The piece A^2 performs the important function of supporting the yarns and the woven cloth against the friction caused by the rotating motion of the reed. The way or guide for the shuttle is formed in the shape of a hollow cylinder bolted by one side upon the stout cross-piece A^3, firmly mounted in the loom. The shuttle E traverses in a slot, a^1, which extends nearly around. The shuttle is reciprocated backward and forward in this slot, carrying a bobbin and delivering the yarn therefrom as required. The bobbin is equipped with a long coiled spring, (not represented,) which takes back a portion of the yarn at certain periods. I traverse the shuttle E through the shed by a positive motion by providing two pins, *f*, actuated by springs *g*, which are capable of sliding vertically in the curved arm F, which is mounted on the shaft G and alternately turned partially around to the right and to the left by suitable gearing. A long bearing is provided in the arm F by mounting a portion thereof at a lower level and connecting it by a stout brace, as shown in Figs. 2 and 3. The effect is simply to support the vertical pins or slides *f* and compel them to be carried, with the swinging arm, first nearly around to the right, and then nearly around to the left. These pins, when they are allowed to be pressed upward by the action of their respective springs *g*, enter corresponding holes in the lower side of the shuttle. The two pins, *f*, are mounted at a considerable distance apart, so that the hole for one is nearly at the right hand end of the shuttle, and the hole

for the other at the left-hand end. In passing the warps the pins are depressed by the action of the fixed cam a^3, which is bolted within the bottom of the circular way a, and acts successively on the arms f' of the pins or vertical slides f. By reason of the pins being at a considerable distance apart, the forward one, after being depressed to pass the yarns, rises again, and engages in its proper hole in the shuttle before its mate commences to be depressed. So there is always one of the pins f engaged with the shuttle, compelling the shuttle to move with a motion coincident with that of the swinging arm F. The gear for the shaft G consists of a plain spur-wheel, G′, mounted thereon. Into this meshes a geared segment, H, free to turn on the post h, and having a pin, H′, which is received in an oblique groove in the rotating drum I, which receives a constant rotary motion from a belt. (Not represented.) A gear-wheel, I′, on the side of the drum I engages with another gear-wheel, J, of greater size. The latter has, therefore, a continuous but slower revolution. It is constructed with four stout leaves, j, on its inner face, which act successively upon pins k on the adjacent face of the gear-wheel K, which latter receives from the leaves or lobes j an intermittent motion always in the same direction. This wheel K gears with a small pinion, L, on the shaft, which carries certain peculiarly-formed disks or thin plates l of hard brass or other suitable material, which I term a rotating reed. This rotating reed performs very important functions. Its thin plates or disks stand between the yarns in the same manner as the corresponding parts of the ordinary vibrating reed, and they perform the same functions, but in a novel manner. During the resting period they stand in the position shown in Fig. 4, and are formed with an open mouth adapted to receive the yarn or weft. The yarn, on entering, may pass deeply into the curved aperture represented, being drawn therein by the movement of the shuttle far around in its curved track. When the rotating reed commences to revolve it moves the yarn still nearer to the weaving lines, and, after disengaging it from the curved recess, throws it, by the action of the oblique portion of its surface, quite out to the periphery of the disk, which corresponds with the weaving line. In other words, the rotating reed stands still to receive the yarn, and receives it deeply in. Then, on being turned, it delivers the yarn, and forces it home with an effect similar to that of a vibrating reed, but without any jarring action. My peculiar reed in front of the path of the shuttle or nearer the weaving line, instead of behind it or farther from the weaving line, allows the employment of a shuttle of great size, so that a large bobbin may be carried, and yarn supplied for a long period.

I operate the yarn-beam by take-up gearing, (shown partially in Fig. 1,) and operated by a double cam on the main shaft. (Shown in Fig. 2.)

It will be observed that the main part of my shuttle travels on the exterior of the circular way a, which construction enables me to employ a very large shuttle and bobbin, passing perfectly free through the warp. It will further be observed that the pins f f', which carry the shuttle through the shed, are held up by springs, and are positively and certainly depressed by the action of the cam a^3. It is thus kept clear from the warp under all possible conditions.

I claim as my invention—

1. The rotating reed l, adapted to serve between the warp-yarns, and to receive and drive home the filling, as herein specified.

2. The turning reed l, in combination with the shuttle E, traversed in a circular path, as herein specified.

In testimony whereof I have hereunto set my hand this 15th day of April, 1874, in the presence of two subscribing witnesses.

WILLIAM GREGORY.

Witnesses:

GEORGE KRAINK,

GABRIEL LEE.