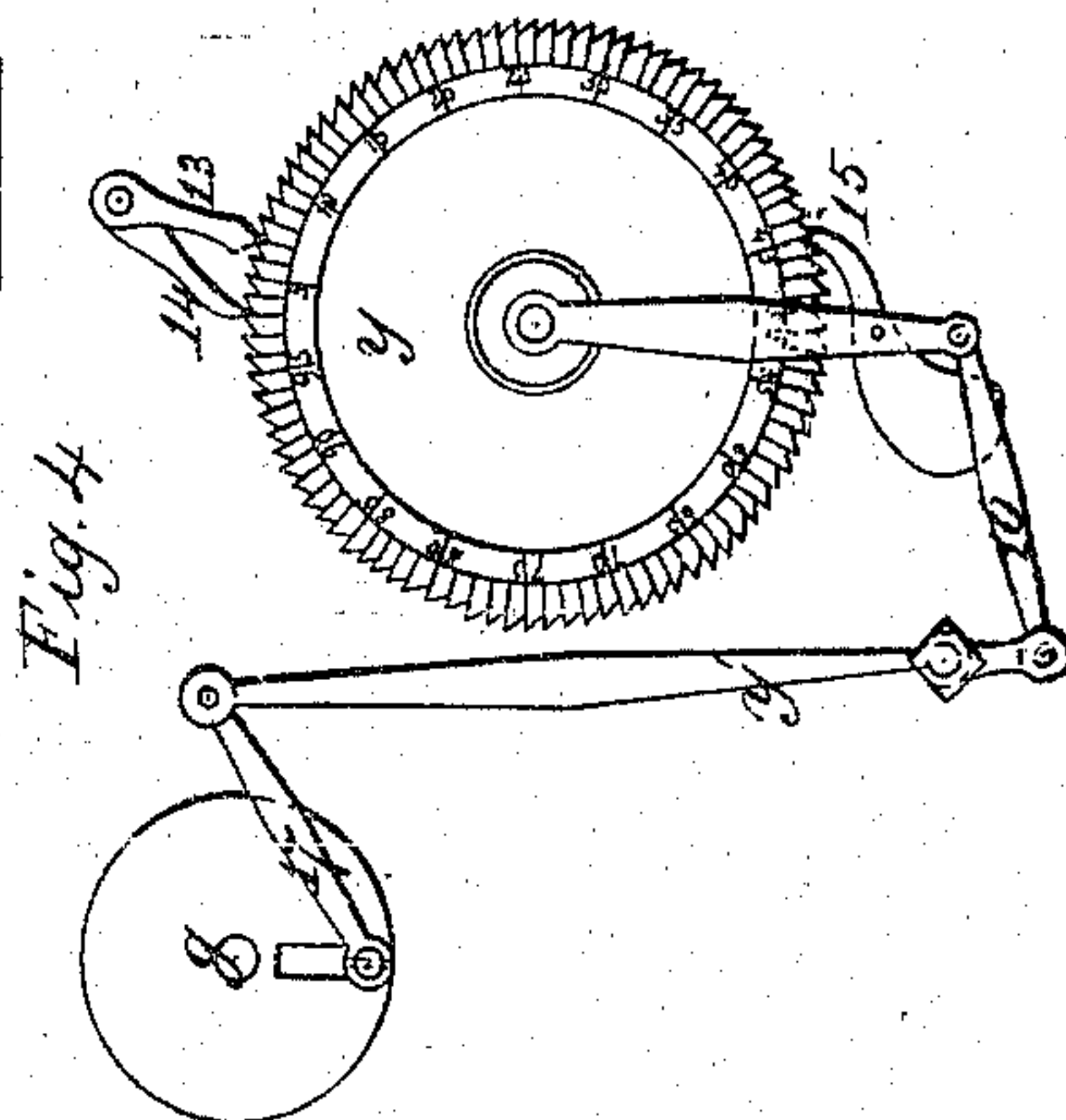
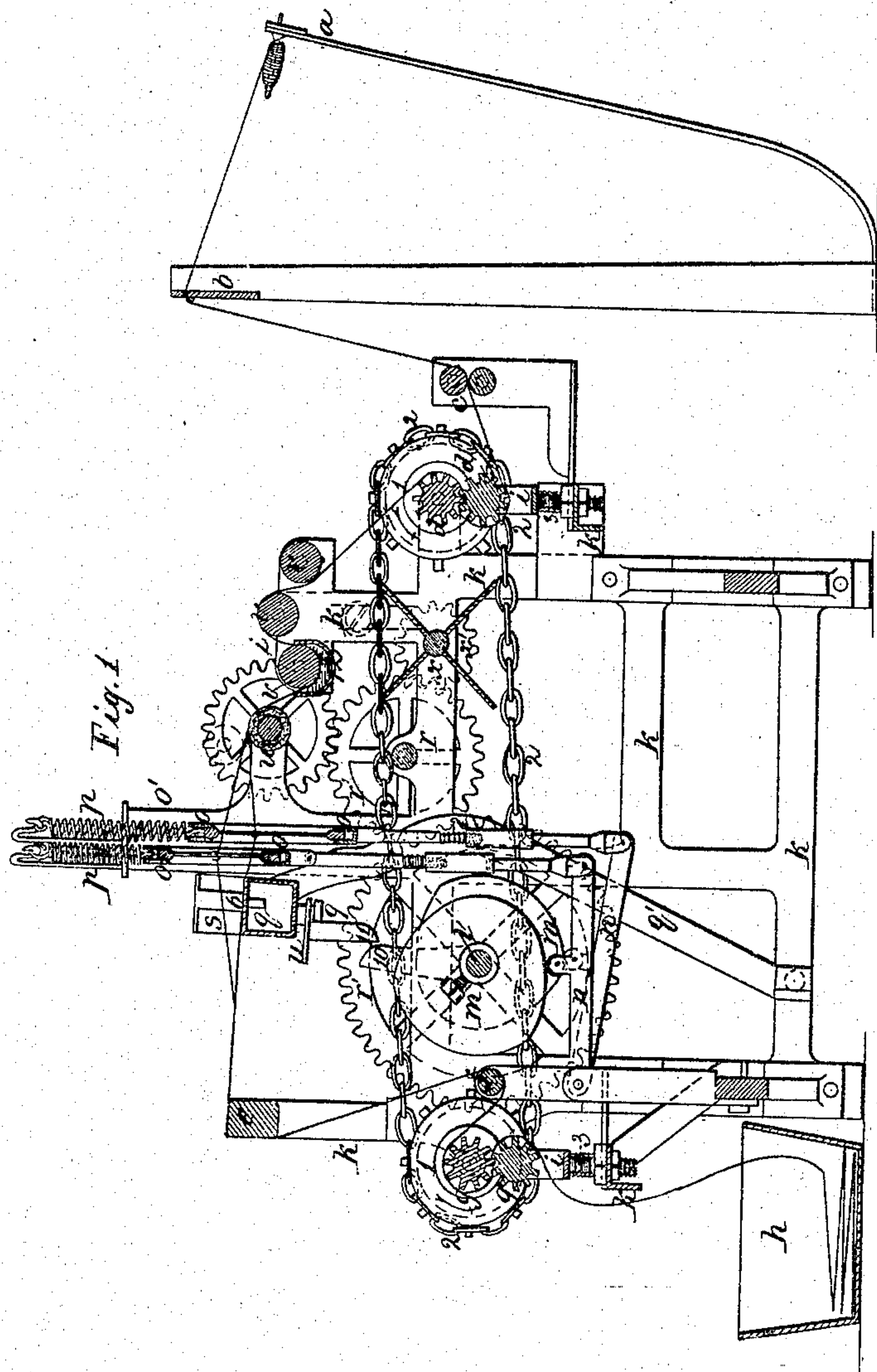


A. Frey. Loom.

Sheet 1-2 Sheets.

N^o 32,245.

Patented May 7, 1861.



Witnesses
 Samuel W. Serrell
 Geo. Harold

Inventor.
 A. Frey

A. Frey.
Loom.

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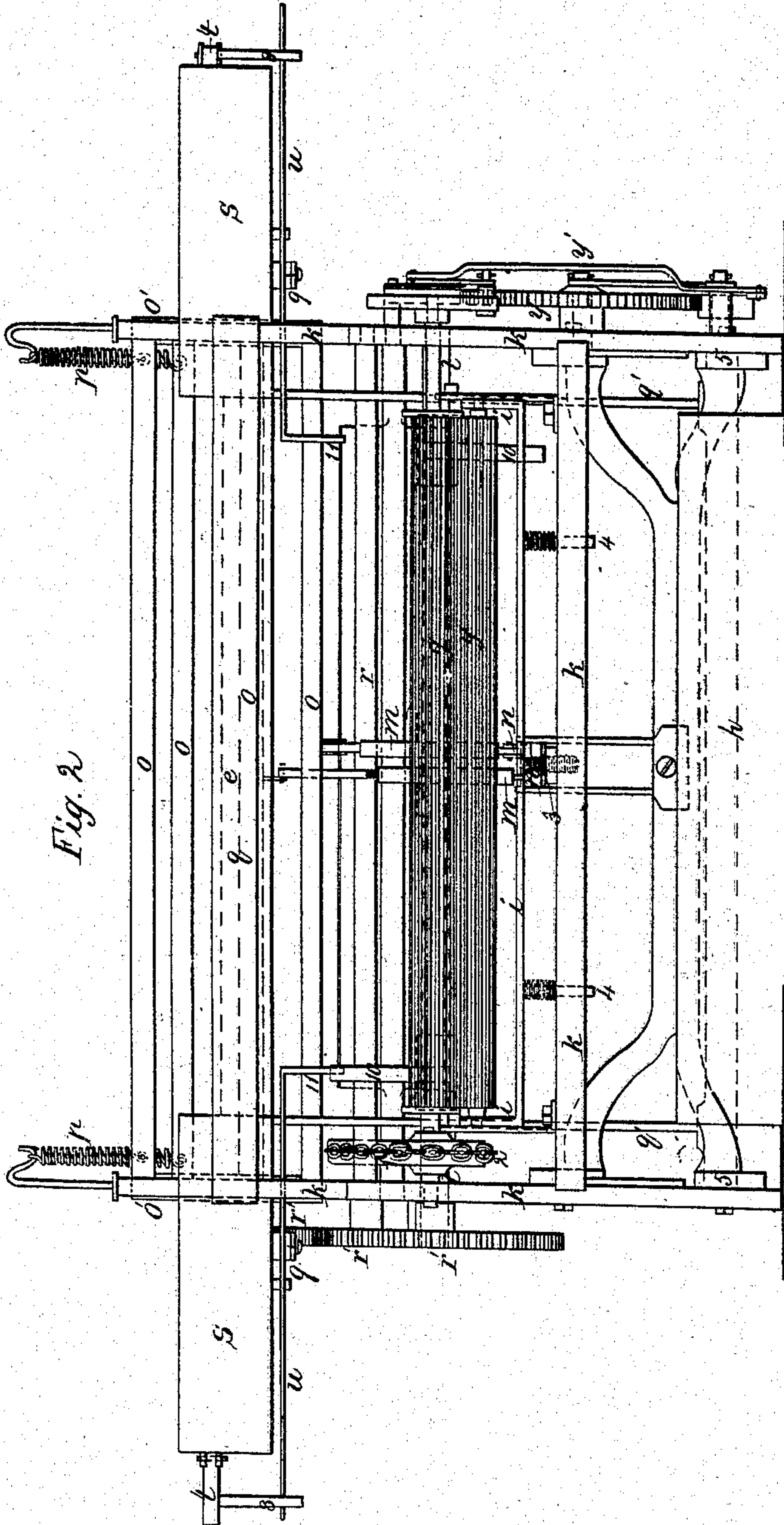


Fig. 2

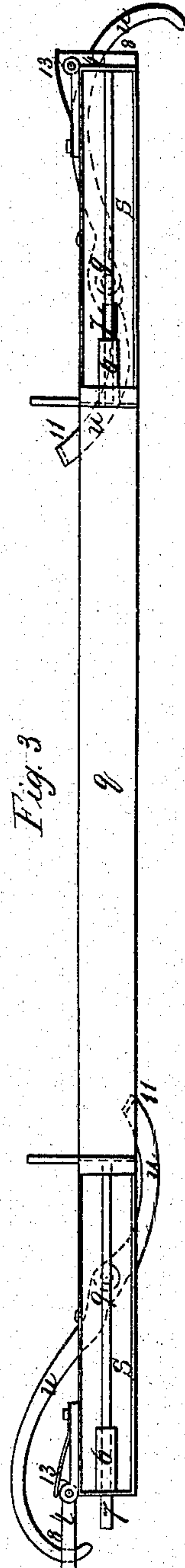


Fig. 3

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UNITED STATES PATENT OFFICE.

ALEXANDER FREY, OF NEW YORK, N. Y.

LOOM.

Specification forming part of Letters Patent No. 32,245, dated May 7, 1861; Reissued January 20, 1863, No. 1,387.

To all whom it may concern:

Be it known that I, ALEXANDER FREY, of the city and State of New York, have invented and made a certain new and useful Improvement in Looms; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1, is a vertical longitudinal section. Fig. 2, is a front elevation. Fig. 3, is a plan of the lay and Fig. 4, is an elevation of the measuring apparatus.

Similar marks of reference denote the same parts.

In looms it is usual to wind the warp upon the beam, and from that the warp passes in mass through the loom; if any thread breaks it has to be stretched sufficiently for tying.

The nature of my said invention consists in an arrangement of spool or bobbin carriers and thread guides, whereby the warp is led from spools or bobbins into and through the loom; and for the purpose of regulating the let off and take up motions, I provide corrugated rollers at the front and rear of the loom connected together so as to move in exact uniformity and the warp and woven cloth are passed around and between these rollers in such a manner as to insure the proper grip on the material and the consequent uniformity in the weaving operation. I also make use of a peculiar device for driving the shuttle.

In the drawing *a*, is a plate perforated with any desired number of ranges of holes, to receive spindles or carriers for bobbins or spools containing the threads of which the warp is to be composed. These threads pass through one or more ranges of holes in the guide plate *b*, thence between the pair of rollers *c*, at which point all the threads composing the warp come to their correct position relatively to each other and occupy a nearly horizontal plane; the warp thence passes below the lower roller of the corrugated pair of let off rollers *d*, *d*, thence up and between these rollers *d*, and through the loom as hereafter indicated and the woven cloth passing over the breast beam *e*, descends beneath a guide roller *f*, over the upper roller of the pair of corrugated take up rollers *g*, *g*, thence between the same,

and passes out below said take up rollers into the box or receptacle *h*. The pairs of corrugated let off, and take up rollers *d*, *d*, and *g*, *g*, are constructed similarly to each other, the upper rollers being set in rigid bearings to their journals, and provided with chain wheels 1, 1, and an endless chain 2, by the aid of which a uniform movement to the respective pairs of rollers is insured, so that as the weaving progresses and the lay knocks the filling up to a certain position each blow, the warp is drawn along a corresponding amount, the let off rollers are thereby turned, and also the take up rollers moved correspondingly, so that the warp and cloth are kept at the proper tension and the uniformity in the weaving is insured. The lower roller of each pair (*d d* and *g g*) is mounted in yielding bearings formed upon the cross bar or yoke *i*, in the center of which is a screw and nut 3, by which said cross bar is attached to a cross piece of the frame (*k*) and also adjusted to press the corrugated rollers to each other more or less; 4, 4, are studs from this yoke *i*, passing into holes in the cross piece of the frame *k*, by which the yoke and lower roller are guided, and springs around these studs 4 4, aid in pressing the lower roller to the upper one. These corrugated rollers may be covered with cloth to insure their firmer hold upon the yarn and cloth respectively.

l, is the main shaft of the loom supported by bearings in the frame (*k*) as usual, and rotated by competent power. *m*, *m*, are cams upon this shaft *l*, acting on the foot-levers *n*, *n*, and giving motion to the heddle frames *o*, *o*. These heddle frames *o*, *o*, are fitted in slides *o'*, *o'*, upon and rising above the main frame (*k*) and *p*, *p*, are springs to draw the heddle frames upward and keep the foot-levers *n*, *n*, to the cams *m*, *m*. By fitting these heddle frames *o*, *o*, so as to move in slides as shown, the heddles, which are to be inserted in these frames in any usual manner, are caused to move in exactly the correct position and are not subject to the vibration endwise as now usual.

q, is the lay with its supports *q'*, (attached at 5,) and driven in any usual manner either by cams on the shaft *l*, or by cranks on the secondary shaft *r*. These shafts *l*, and *r*, are connected by the gear wheels *r'*. The lay is to be provided with reeds as usual, and *s*, *s*, are the shuttle boxes at the ends of

the lay; 6, 6, are the shuttle drivers sliding on a rod as usual except that each shuttle driver is provided with a stud 7, that projects through a hole in the end of the box when the shuttle is thrown into the box and carries the driver to the end thereof. This projecting stud is acted upon by the swinging driver *t*, from which a pendent stud 8, descends to be taken by the lever *u*, beneath the lay. This lever is on a fulcrum 9, and is provided with an arm 11, that is acted upon by the cam 10, on the shaft *l*. There being a device like the foregoing at each end of the lay, and two of the cams 10, at opposite points on the shaft, and the shaft *l*, revolving once to two vibrations of the lay the shuttle is thrown from the alternate boxes as follows: As the lay approaches the termination of its backward movement the cam 10, strikes the arm 11, of the lever *u*, that causes the other end of the said lever to move the swinging driver *t*, suddenly and powerfully which taking the stud 7 projects the shuttle driver and shuttle, giving the necessary momentum to the shuttle, which carrying the driver before it as it goes into the other box causes the stud 7 to throw back the swinging driver *t*, ready to be acted upon by its lever *u*, to send the shuttle back as before.

13 is a steadying spring to each swinging driver *t*.

The sizing apparatus which I employ is applied to the warps after passing from the rollers *d*, *d*. In the drawing *v*, *v*, are guide rollers and *v'*, is a roller in the size trough 12, and *w*, is a roller over which the warps pass to the heddles; this roller *w* should be covered with cloth to wipe off any surplus size, and a brush may be applied above the warps to revolve and finish the same. The dotted circle represents the posi-

tion where said brush may be located; *x* is a fan or blower which is revolved by the gear wheel *x'* and acts to impel a current of air through the warps for drying the same.

The amount of cloth made upon the loom is registered by the wheel *y*, upon which are ratchet teeth acted on by the pawl 15, that is moved by the link 16 to the lever *y'*, said lever receiving motion from the link 17 to a crank pin on the axis of the roller *g*, and 13 is a stop pawl and 14 is an index. The roller *g* is of such a circumference that the wheel *y*, will indicate correctly the number of yards passing through said rollers *g* *g*.

It will be seen that the plate *a*, should stand at an inclination in order that the warps may lead off freely to the holes in *b*, and this plate *a*, may either be rigid or slightly yielding as desired and be attached to the floor in any convenient manner.

What I claim and desire to secure by Letters Patent is—

1. The combination of the plate *a*, carrying the bobbins or spools, with the guide plate *b*, and rollers *c*, applied to a loom in the manner and for the purposes specified.

2. The corrugated let off and take up rollers (*d* *d* and *g* *g*) connected together by the chain 2, or its equivalent and causing the warps and cloth to progress regularly through the loom as the weaving is performed, as specified.

3. The arrangement of the drivers *t*, and levers *u*, acted upon by the cams 10, in the manner and for the purposes set forth.

In witness whereof I have hereunto set my signature this fifth day of January 1861.

A. FREY.

Witnesses:

LEMUEL W. SEWELL,
THOS. GEO. HAROLD.