B. F. McGUINESS.

LOOM.

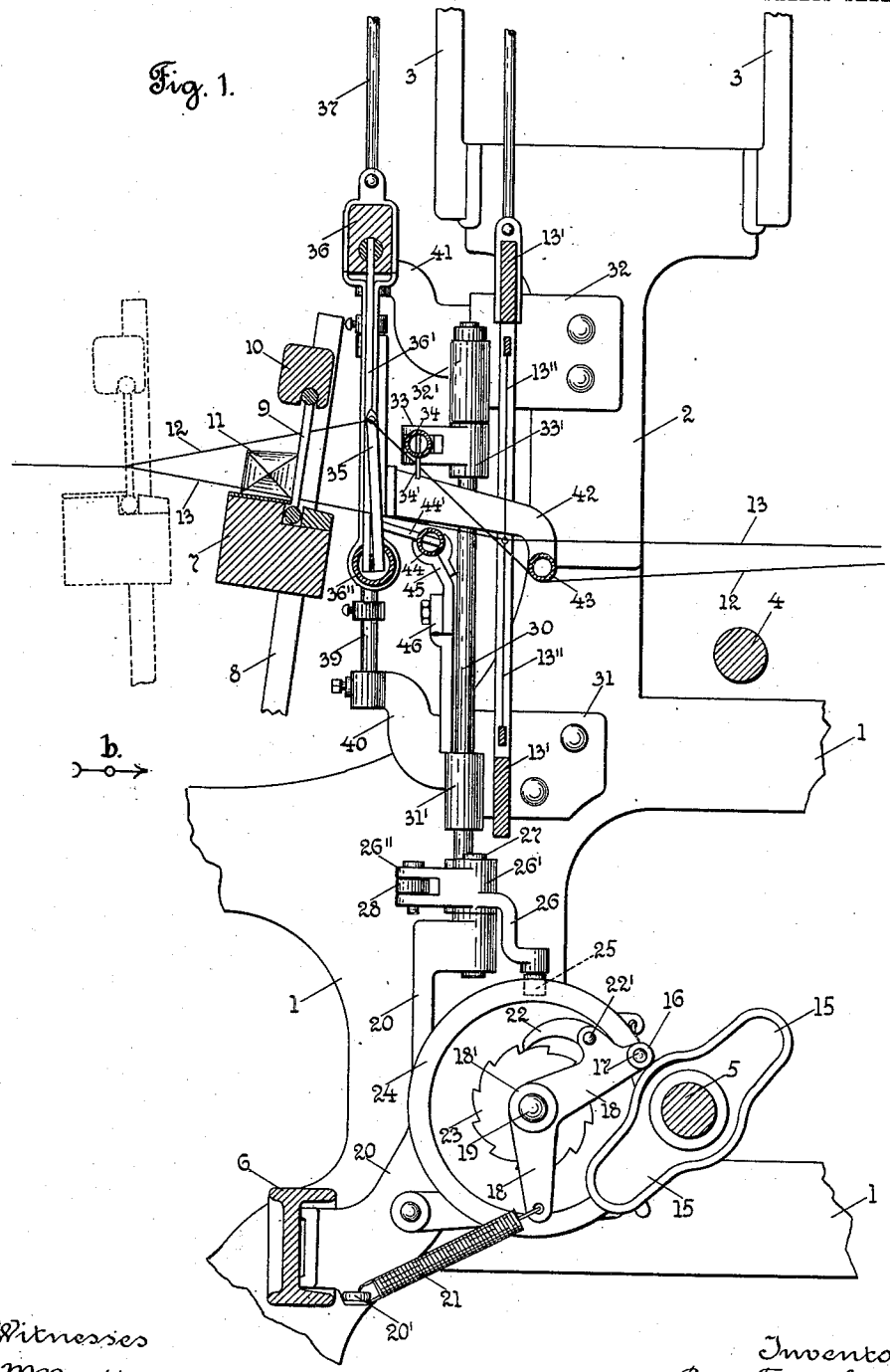
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1,068,799.

Patented July 29, 1913.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
M. Bredt
W. Haas.

Inventor
Benj. F. McGuiness.
By John C. Dewey
Attorney.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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3 SHEETS—SHEET 2.

Fig. 2.

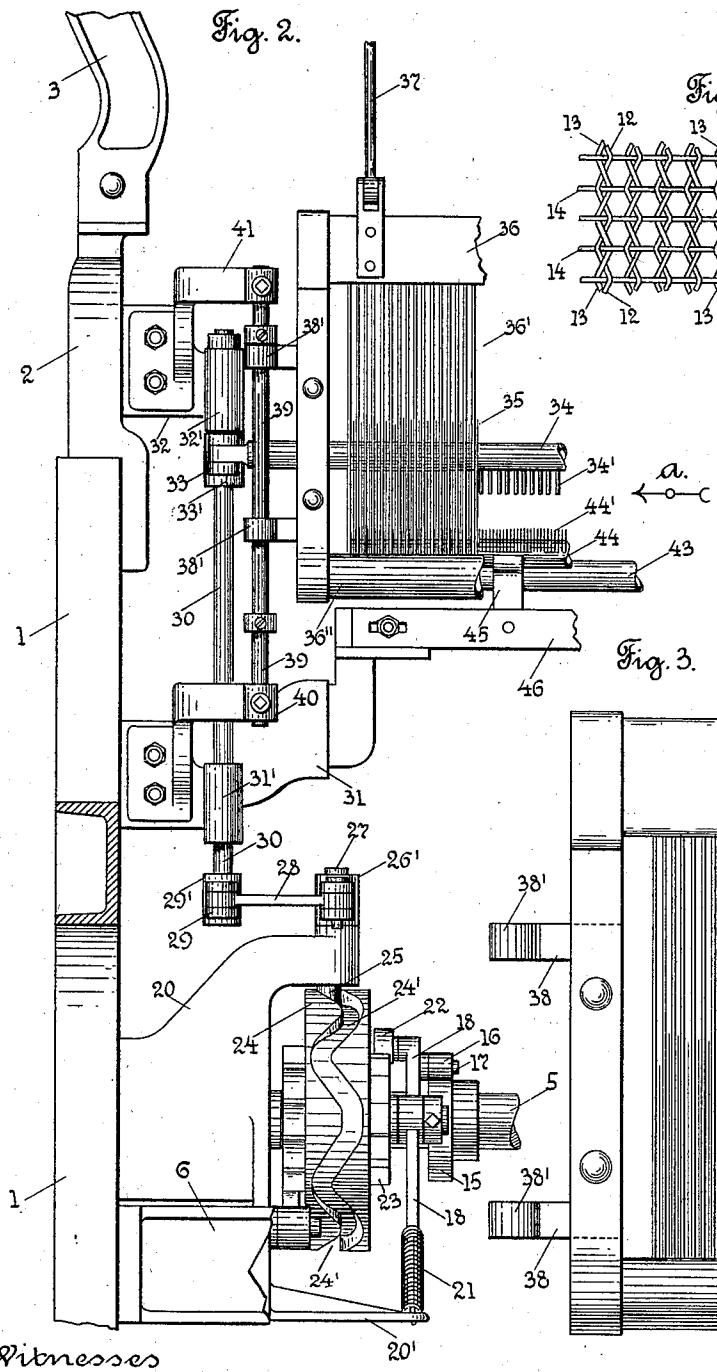


Fig. 5.

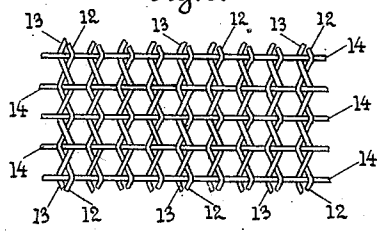
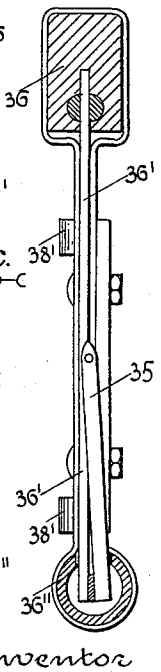


Fig. 3.

Fig. 4.



Witnesses

W. Bredt.

W. Haas.

Inventor

Benj. F. McGuiness

By John C. Dewey.

Attorney.

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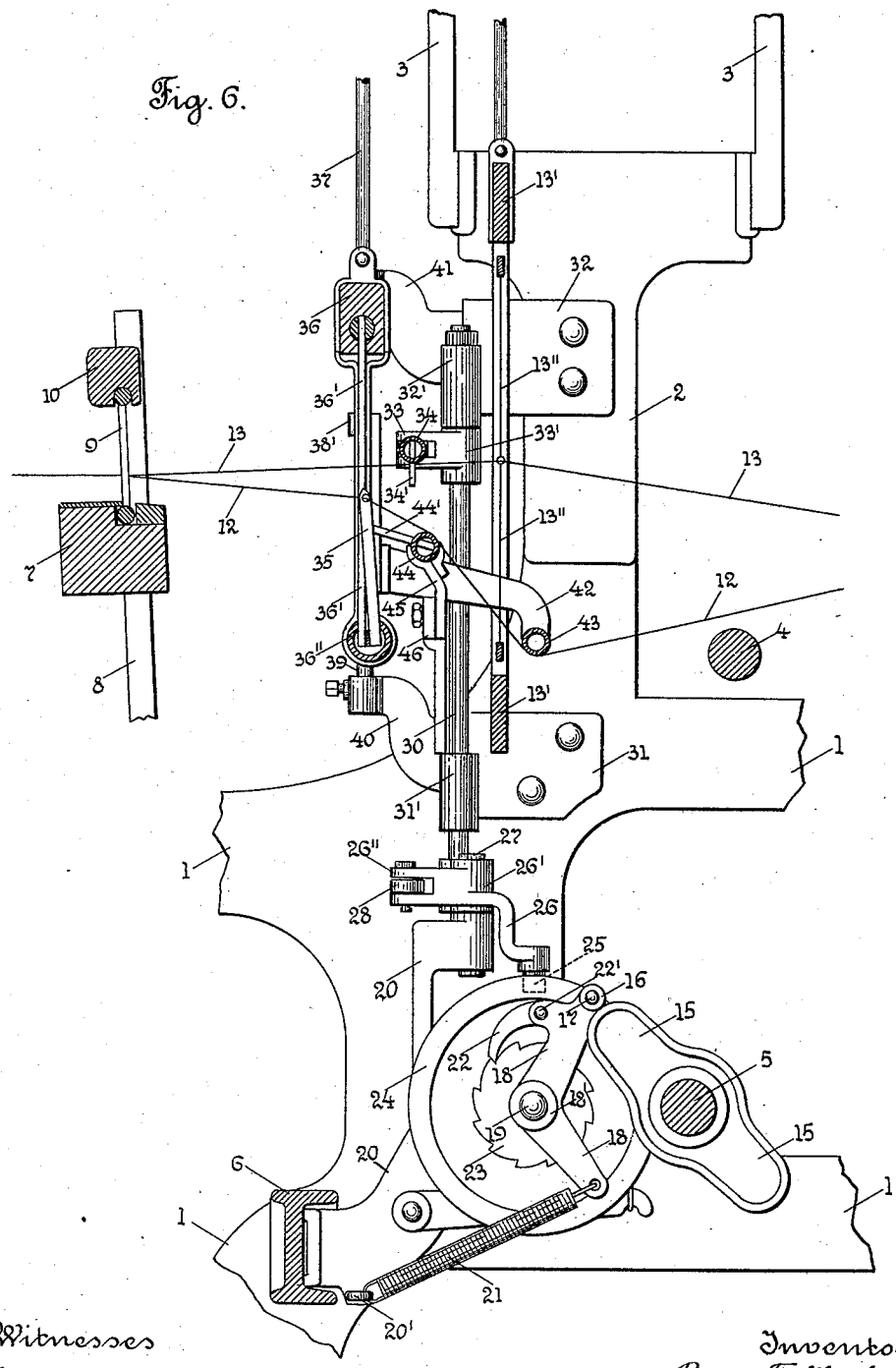
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3 SHEETS—SHEET 3.

Fig. 6.



Witnesses
M. Bredt.
W. Haas

Inventor
Benj. F. McGuiness.
By John C. Dewey
Attorney.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

BENJAMIN F. McGUINESS, OF SAUNDERSVILLE, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

LOOM.

1,068,799. Specification of Letters Patent. Patented July 29, 1913.

Application filed November 23, 1911. Serial No. 661,910.

To all whom it may concern:

Be it known that I, BENJAMIN F. McGUINESS, a citizen of the United States, residing at Saundersville, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Looms, of which the following is a specification.

My invention relates to looms, and more particularly to that class of looms used for weaving gauze, or Marquisette-weave, so-termed, or similar fabrics, wherein a leno weave is employed.

The object of my invention is to improve upon the construction of looms of the class referred to, and more particularly of the mechanism for producing the type of weave referred to.

My invention consists in certain novel features of construction of my improvements as will be hereinafter fully described.

I have shown in the drawings a detached portion of a loom of the class referred to, with my improvements applied thereto, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is a vertical cross section through some parts of a loom of the class referred to, and of my improvements combined therewith, looking in the direction of arrow *a*, Fig. 2. Fig. 2 is a front elevation of some of the parts shown in Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 3 shows, on an enlarged scale, the needle reed, shown in Fig. 2, detached. Fig. 4 is a section, on line 4, 4, Fig. 3, looking in the direction of arrow *c*, same figure. Fig. 5 shows a detached section of the woven gauze fabric. Fig. 6 corresponds to Fig. 1, but shows some of the parts shown in Fig. 1, in their opposite position.

In the accompanying drawings, 1 is the loom side or end frame, 2 is the arch stand, and 3 the arches thereon.

4 is the crank shaft, and 5 the bottom shaft.

6 is a transverse girt mounted on the loom sides, 7 is the lay beam carried on the lay sword 8, and 9 is the reed, 10 the hand rail, and 11 the shuttle.

12 and 13 are the warp threads, which, with the filling 14, shown in Fig. 5, form the gauze weave shown in Fig. 5.

On the bottom shaft 5 is in this instance mounted a cam 15, which is adapted to engage a roll 16 mounted on a stud 17 on the end of a cam lever 18, which has its hub 18′ pivotally mounted on a stud 19 on a stand 20, see Fig. 2, which is secured to the loom side 1, and the transverse girt 6.

A downwardly extending arm on the lever 18, has attached thereto one end of a helically coiled contraction spring 21; the other end of the spring 21 is connected to a projection 20′ on the stand 20, see Fig. 2. The spring 21 acts to yieldingly hold the roll 16 in engagement with the cam 15. The revolution of the cam 15 causes the lever 18 to have an up and down movement, and causes a pawl 22, which is pivotally mounted on a stud 22′ on said lever 18, to engage and rotate the ratchet wheel 23 one tooth at every pick. The ratchet wheel 23 is in this instance made integral with the cam disk 24, which has a cam groove 24′ on its periphery, see Fig. 2. A roll 25 on an arm 26, see Fig. 1, extends into the cam groove 24′, and causes a rocking or reciprocating movement to be communicated to the arm 26, when the cam 24 is rotated. The arm 26 has its hub 26′ mounted on a stud 27, secured in the upper end of the stand 20, and said arm 26 has a second arm 26″ thereon, which is pivotally connected to one end of a link 28, see Fig. 2. The other end of the link 28 is pivotally connected to an arm 29, which has its hub 29″ secured on the lower end of an upright shaft 30, which is loosely mounted in bosses 31′, and 32′ on stands 31 and 32 secured to the loom side. The upper part of the shaft 30 has mounted thereon the hub 33′ of an arm 33, which has pivotally connected thereto one end of a transversely extending oscillating comb 34, which consists in this instance of a rod or pipe provided with downwardly extending teeth or dents 34′, see Fig. 2. The comb 34 is adapted to receive the warp threads 13, when the harness 13′, which carries the warp threads 13 in the heddles 13″, has been moved upwardly to its highest position, as shown in Fig. 6. In this position, the warp threads 13 are above the warp threads 12, which warp threads 12 in this instance are carried by upright needles 35 of the needle harness 36. The needle harness 36 has the upright dents 36′ which are secured at their upper ends to the transverse cross bar 36 on the upper edge

of the harness, and at their lower end to the transverse pipe 36'' on the lower edge of the harness.

An up and down movement is communicated to the needle harness 36, in the usual way, by a cam and lever, not shown, through connector rod 37. The needle harness 36 is properly guided at each end, in this instance by lugs 38 having bosses 38' thereon, which slide loosely on the vertically extending rod 39, see Fig. 2. The rod 39 is secured in bosses 40' and 41', on stands 40 and 41.

The needle harness 36 carries arms or brackets 42, to the downwardly extending ends of which is secured a transverse pipe 43, see Figs. 1 and 6, to guide and hold the warp threads 12 in their lowered position, and below the warp threads 13, and apply tension to the warp threads 12.

A guide comb 44 is in this instance provided, which is adapted to hold the upright needles 35 in their upright position, to facilitate the downward movement of the warp threads 13 on one or the other side of said needles 35. The guide comb 44 consists of thin dents 44', which are secured in this instance to a transverse pipe, which is secured on stands 45, see Fig. 1, secured to the transverse bar 46, see Fig. 2.

The operation of the mechanism above described will be readily understood by those skilled in the art, and briefly is as follows:— When the lay is in its forward position, as shown in Fig. 6, the needle harness 36, and the needles 35, with the warp threads 12, are lowered; the harness 13' is raised, and the warp threads 13 are carried to their highest position, and enter between the dents of the oscillating comb 34, which, through the reciprocating motion communicated thereto, is adapted to carry the warp threads 13 to the other side of the needles 35. When the lay is at its front center, the needles 35 begin to rise upon one side of the warp threads 13, and with the upward movement of the needles 35 the harness 13' begins its descent, carrying downwardly the warp threads 13 to their lowered position, as shown in Fig. 1. The shuttle is now thrown, to carry the filling 14 through the shed, formed in the warp by the harness and the needles, and the continued movement of the harness and the needles will produce the gauze weave, shown in Fig. 5.

It will be understood that the details of construction of my improvements may be varied if desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In looms for weaving gauze, or similar fabric, the combination with the needle harness, of arms or brackets connected to and movable with said needle harness, and carrying a transverse rod or bar extending rearwardly of the harness, to guide and hold one set of warp threads below the other set of warp threads.

2. In looms for weaving gauze, or similar fabric, the combination with the needle harness, of arms or brackets connected to and movable with said needle harness, and carrying a transverse rod or bar extending rearwardly of the harness, to guide and hold one set of warp threads below the other set of warp threads, and apply tension thereto.

3. In looms for weaving gauze or similar fabrics, the combination with the needle harness, carrying a series of upright needles, and arms or brackets connected to and movable with said needle harness, and carrying a transverse rod or bar extending rearwardly of the harness, to guide and hold one set of warp threads below the other set of warp threads, of a guide comb, secured upon a stationary part of the loom, and acting to hold said needles in their upright position, for the purpose stated.

4. In a loom for weaving gauze, or similar fabric, the combination with the needle harness, of an oscillating comb to receive one set of warp threads, and carry them above the other set of warp threads, and means for oscillating said comb, said means comprising a cam, intermediate connections to said oscillating comb, and a ratchet and pawl drive for said cam, and means independent of the lay for operating said ratchet and pawl drive.

BENJ. F. McGUINESS.

Witnesses:
J. C. Dewey,
M. Haas.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."