

No. 865,264.

PATENTED SEPT. 3, 1907.

B. F. McGUINNESS.  
LOOM HARNESS EVENER MECHANISM.

APPLICATION FILED NOV. 20, 1905.

3 SHEETS—SHEET 1.

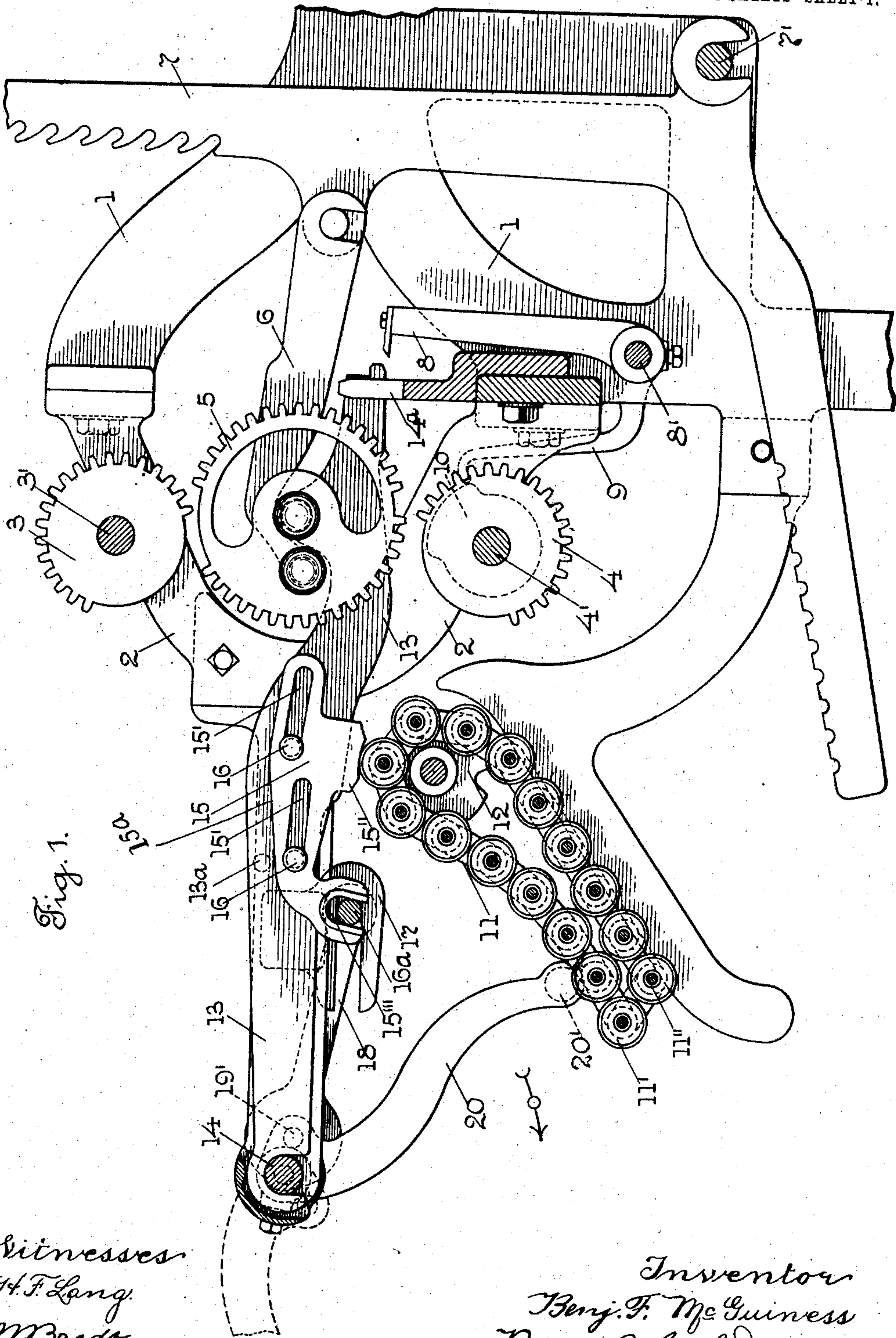


Fig. 1.

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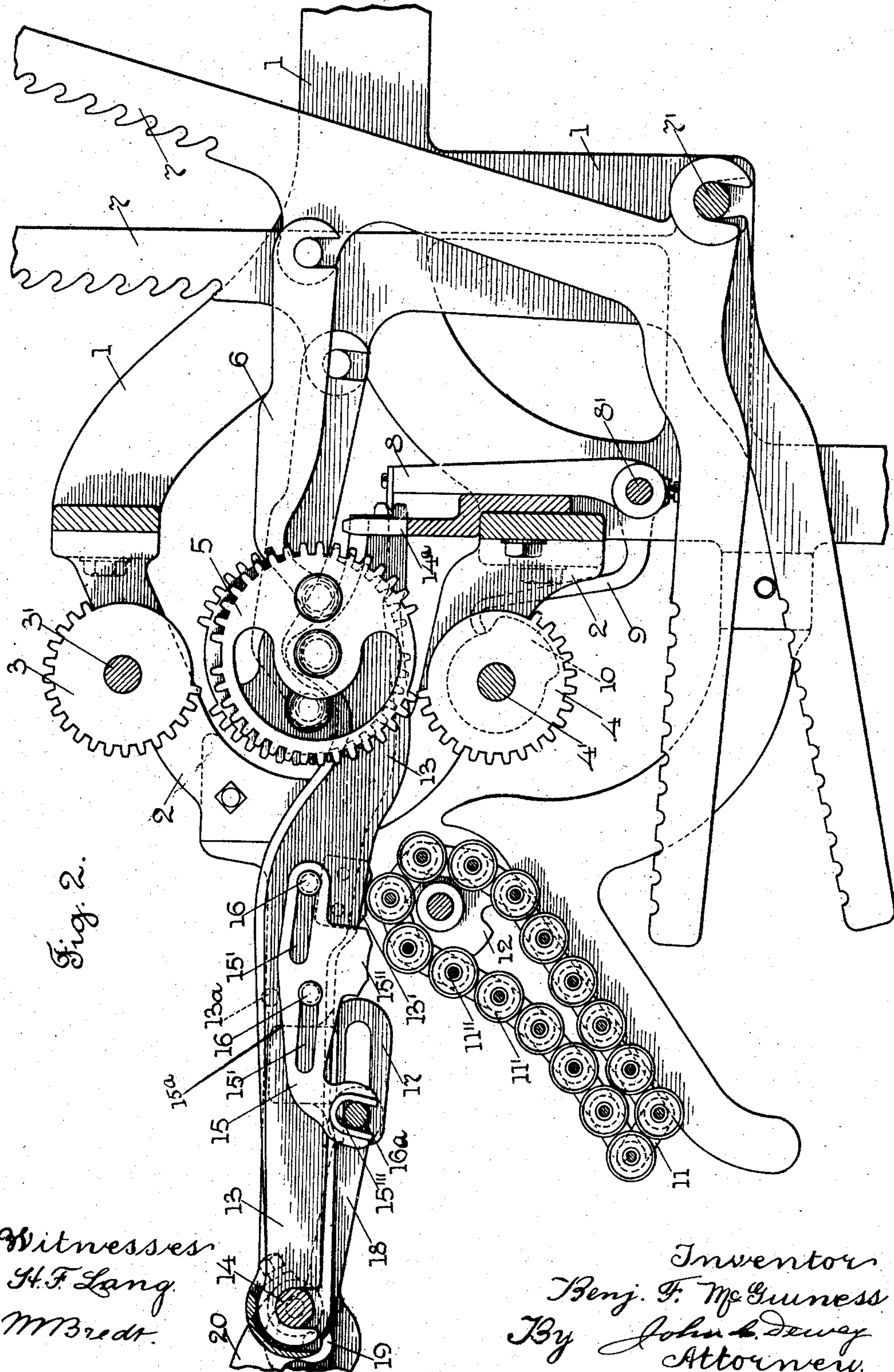


Fig. 2.

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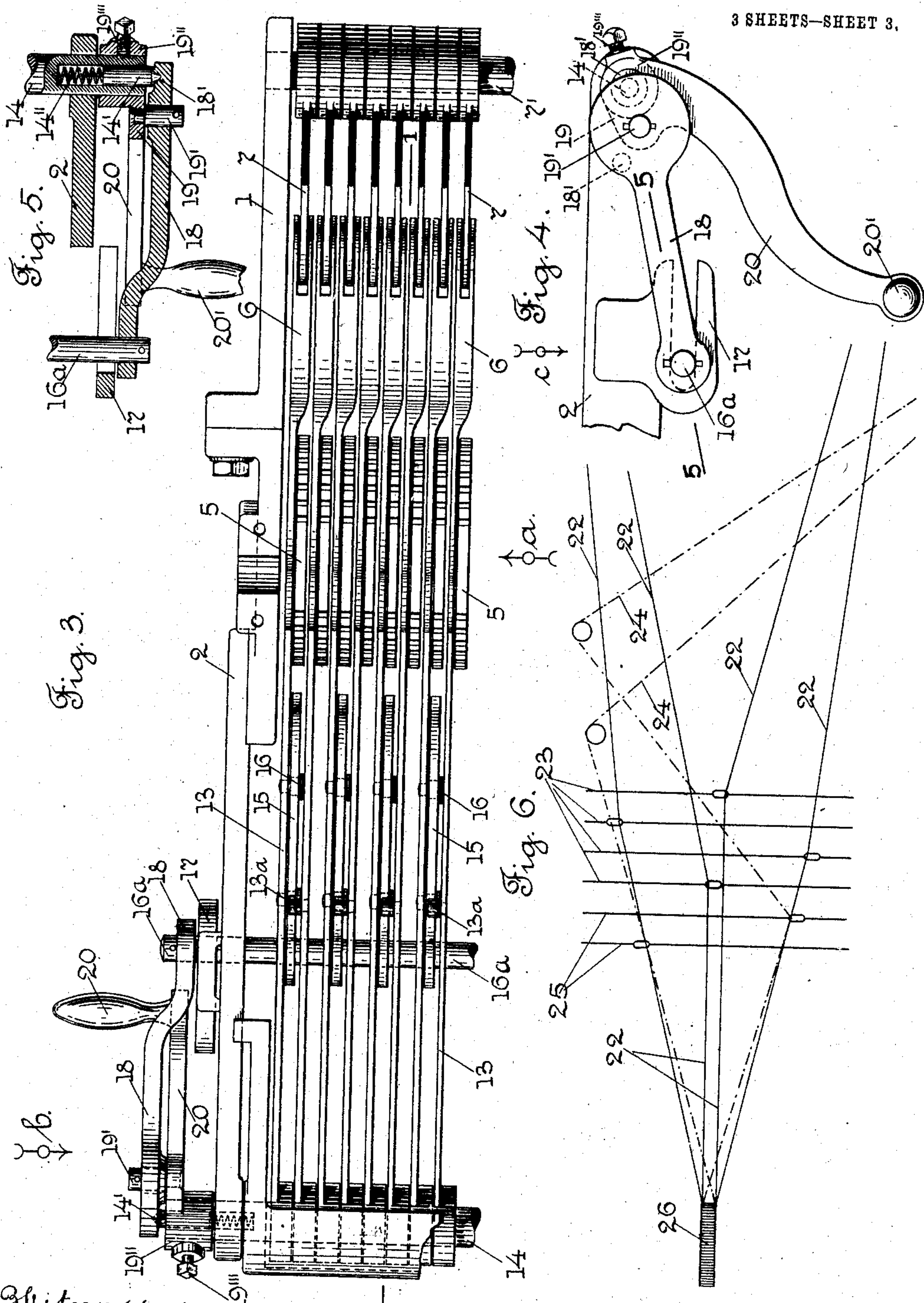
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# UNITED STATES PATENT OFFICE.

BENJAMIN F. McGUINNESS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

## LOOM HARNESS-EVENER MECHANISM.

No. 865,264.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed November 20, 1905. Serial No. 288,147.

*To all whom it may concern:*

Be it known that I, BENJAMIN F. McGUINNESS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Loom Harness-Evener Mechanism, of which the following is a specification.

My invention relates to looms, and to that class of looms for weaving velvets, plushes, etc., as a double pile fabric, which is cut apart through the pile, to form two pile fabrics with pile on one face thereof, and my invention particularly relates to a harness evener mechanism, to be combined with the harness motion in the class of looms referred to.

In looms of the class referred to, the jacks are arranged in pairs, and there is a pair of jacks for each harness, and when one jack of a pair is in one extreme position, and the other jack of the same pair is in the opposite extreme position, the harness connected with said jacks is in its central position, to form the lower plane of warps for the upper shed, or the upper plane of warps for the lower shed. When the two jacks of a pair are both in their inner position, the harness connected with them will be in its lowest position, to form the lower plane of the lower shed, and when the two jacks of a pair are both in their outer position, the harness connected with them will be in its highest position, to form the upper plane of the upper shed. In turning back the harness motion, for picking out, or for any other purpose, it is desirable to bring all the harnesses which are not in their central position, to their central position, so that the warps will all be brought to their central position.

The object of my invention is to provide a mechanism of simple construction and operation, and adapted to be applied to harness motions of the ordinary construction and operation, used on the class of looms referred to, which mechanism acts as a harness evener, and by means of which mechanism, one jack of each pair of jacks is moved to its extreme inner or outer position, and the other jack of the pair is moved to its extreme inner or outer position to bring all the harnesses to their central position, and all the warp threads forming the sheds into one central plane.

In my improvements, I provide every alternate vibrator lever of the Knowles harness motion, with a movable run thereon, having an incline or cam surface thereon, and provide means for moving said run, to carry it into an operative position over the pattern chain, or into an inoperative position away from the pattern chain. I also provide the other vibrator levers, or those which are not provided with a movable run, with a stud or pin extending in a horizontal plane, and in a position to be engaged by, or disengaged from the

incline or cam surface on the movable run on the adjoining vibrator lever.

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 harness motion of the Knowles type, so-termed, which is of well known construction and operation, and fully shown and described in Reissue Letters Patent, No. 7,784, with my improvements applied thereto.

Referring to the drawings:—Figure 1 is a sectional elevation through the harness motion, taken at a point indicated by line 1, 1, Fig. 3, looking in the direction of arrow *a*, same figure, showing my harness evener mechanism in its normal position; the broken lines show the crank operating handle in its opposite position. Figure 2 corresponds to Fig. 1, but shows my harness evener mechanism in its operative position. Figure 3 is a plan view of the parts shown in Fig. 1. Figure 4 is an end view of the parts shown at the left in Fig. 3, looking in the direction of arrow *b*, same figure. Figure 5 is a section, on line 5, 5, Fig. 4, looking in the direction of arrow *c*, same figure, and, Fig. 6 is a diagrammatic view, showing by full lines the ordinary harness shed formation in the class of looms referred to, and by broken lines the pile shed formation.

In the accompanying drawings, 1 is the loom arch, 2 the stand secured thereto for supporting the several parts of the harness operating motion. The harness operating motion is of the well known Knowles type, shown and described in Reissue Letters Patent, No. 7,784, above referred to, and comprises the upper cylinder gear 3 fast on the cylinder gear shaft 3', the lower cylinder gear 4 fast on the lower cylinder gear shaft 4', the vibrator gears 5, intermediate the cylinder gears 3 and 4, and the vibrator connectors 6, connecting a vibrator gear 5 and a harness lever or jack 7, which is of the ordinary angular shape, and pivotally mounted on a transverse rod 7'.

A locking knife 8 fast on a rock shaft 8', is operated through an arm 9 engaging a cam 10 on the shaft 4' of the lower cylinder gear 4, shown by broken lines in the drawings. The pattern chain 11 is supported on the rotary pattern chain cylinder 12, and is made up of rolls 11', and tubes not shown, mounted on bars 11'', in the ordinary way.

The vibrator levers 13 carry the vibrator gears 5, pivotally mounted thereon at their inner ends, in the ordinary way, and said vibrator levers 13 are pivotally mounted at their outer ends on a transverse rod 14. The inner ends of the vibrator levers 13 are guided by the transverse comb 14<sup>a</sup>, and in their lowest position are supported by said comb.

All of the above mentioned parts may be of the



usual and well known construction in the class of looms referred to.

I will now describe my improvements.

On every other vibrator lever 13 is secured a stationary engaging surface or foot 13', which extends directly over and in the path of the pattern indicating surfaces on the pattern chain 11, in the usual way, see Fig. 2. Also on the same vibrator levers 13 is a stationary projection or pin 13<sup>a</sup>, which extends out from one side of the vibrator lever in a horizontal plane. On each of the other vibrator levers 13 is supported a movable slide or run 15, which in this instance extends upon one side of the vibrator lever, and is attached thereto by means of two headed-rivets or studs 16, which extend through elongated slots or openings 15' in the run 15. The run 15 has a foot or engaging surface 13'' thereon, corresponding to the stationary engaging surface or foot 13' on the other vibrator levers.

The upper surface or edge of the run 15 is inclined, or has a cam surface 15<sup>a</sup> thereon and is adapted to extend under the pin 13<sup>a</sup> on the contiguous vibrator lever 13, and to engage said pin or stud 13<sup>a</sup>, as shown in Fig. 2, when the movable run 15 is moved outwardly, and to be moved out of engagement with said stud or pin 13<sup>a</sup>, as shown in Fig. 1, when the movable run 15 is moved inwardly. The outer end of the movable run 15 has in this instance an open end slot 15''' therein, to receive a rod 16<sup>a</sup>, which extends transversely through the harness motion, and is loosely supported at each end to have a movement in a horizontal plane in a slotted bracket 17, secured to the side bars of the frame. Each end of the rod 16<sup>a</sup>, (only one end is shown in the drawing), is connected by a link 18 with a stud 19' on a crank arm 19, the hub 19'' of which is secured by a set screw 19''' on the rocking transverse rod 14. The crank 19 has in this instance an operating handle bar 20 thereon, provided with the handle portion 20'.

In order to lock or hold the transverse rod 16 and the movable runs 15 in their outer or inner position, I in this instance provide a pin 14' extending loosely in an opening in the end of the transverse rod 14; said pin is moved outwardly by a spring 14'' inclosed within the inner end of said opening; the outer end of the pin 14' is preferably pointed, or of bevel shape and adapted to extend into recesses 18' in the link 18, when said link is in its inner or outer position.

In Fig. 6 is shown a diagrammatic view of the shed formation in the class of looms referred to, for weaving a double pile fabric. In said Fig. 6, 22 are the four sets of warp threads, for forming the two sheds, and there are four harnesses 23 for the four sets of warp threads 22, one harness for each set of warp threads. 24 are the two sets of pile warp threads, and there are two harnesses 25 for the two sets of pile warp threads 24, one harness for each set of pile warp threads. 26 shows the double pile fabric. When my harness evener is operated to move the harness jacks, and bring all the harnesses to their central position, the upper set of warp threads 22 and the lower set of warp threads 22 will be moved into substantially the same horizontal plane as the two middle sets of warp threads 22, shown in Fig. 6.

The operation of my improvements will be readily understood by those skilled in the art, from the above

description in connection with the drawings. When the loom is operating normally the crank handle 20 is in its lowest position, shown in Figs. 1, 3, and 4, and the transverse rod 16<sup>a</sup> is in its inward position, and the run 15 is also in its inward position, to bring the engaging surface or foot thereon over the pattern surface. When the run 15 is in its inward position, the engaging surface or foot 15'' thereon extends over the pattern surface and acts as an engaging surface or run for the vibrator lever 13, in the same way as the stationary engaging surface 13'. When it is desired to even the harnesses, or to bring them all to their central position, for picking out or for any other purpose, the crank handle 20 is moved up in the direction indicated by the arrow in Fig. 1, from its lower position to its highest position, indicated by broken lines in Fig. 1. The movement of the crank handle 20 and the rotation of the crank 19, through the connector 18 and transverse rod 16, moves the runs 15 on the vibrator levers 13, from the position shown in Fig. 1, to the position shown in Fig. 2, and carries the runs away from the pattern surfaces, allowing the vibrator levers on which the runs are supported to drop down at their inner ends, and rest upon the comb 14'. The outward movement of the runs 15 causes the upper inclined edge thereof to engage the pins 13<sup>a</sup> on the contiguous vibrator levers, and raises all of said vibrator levers which are in their lower position, thus evening all of the harnesses, or moving them all to the same central plane, to bring all of the warp threads into substantially one plane.

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 a harness motion, a pattern surface, vibrator levers extending over said pattern surface, and a harness evener mechanism, comprising a movable run, having an incline or cam surface thereon attached to every alternate vibrator lever, and adapted to engage with and be disengaged from a pin or projection on a contiguous vibrator lever, and said pin or projection and means for moving the run, to cause it to be moved into its operative position over the pattern surface, and out of engagement with said pin or projection, or to be moved into its inoperative position, and into engagement with said pin or projection.

2. A harness evener mechanism for a harness motion having vibrator levers, said mechanism comprising a longitudinally moving slide or run attached to alternate vibrator levers, and adapted to be moved into an operative position over the pattern surface, and to be moved into an inoperative position away from the pattern surface, and said pattern surface and means for moving said movable run, and a pin or projection on a contiguous vibrator lever, extending into the path of, and adapted to be engaged by said movable run, and be disengaged therefrom.

3. In a harness motion, the combination with every alternate vibrator lever, of a movable run mounted thereon, adapted to be moved into a position over the pattern surface, and into a position away from the pattern surface, and said pattern surface and means for moving said run, and a pin or projection on each of the other vibrator levers, said pin extending in the path of and adapted to be engaged by, and disengaged from said run, for the purpose stated.

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Witnesses:

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