

E. SCHWESER.

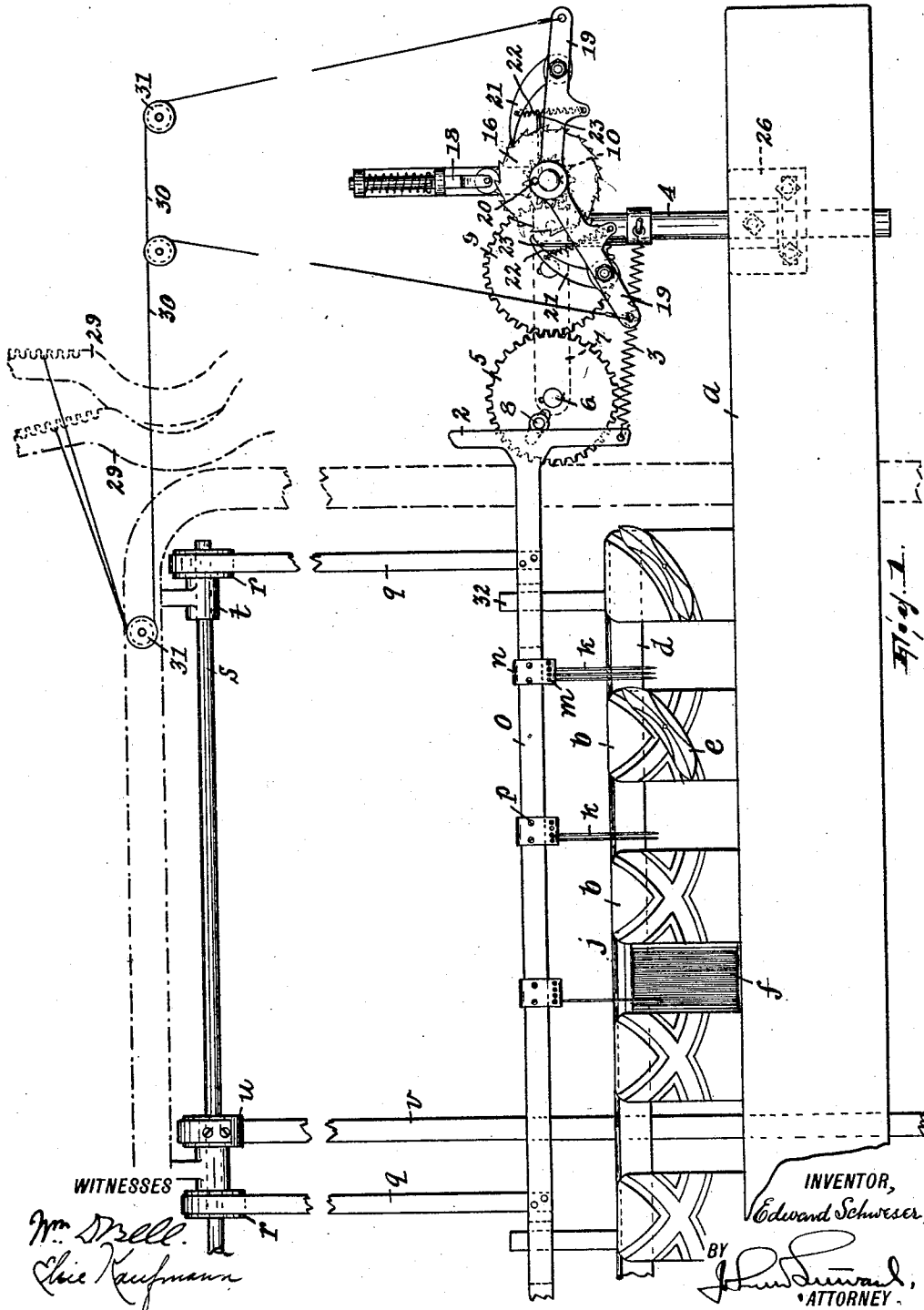
LOOM.

APPLICATION FILED SEPT. 25, 1912.

Patented June 24, 1913.

3 SHEETS-SHEET 1.

1,065,555.



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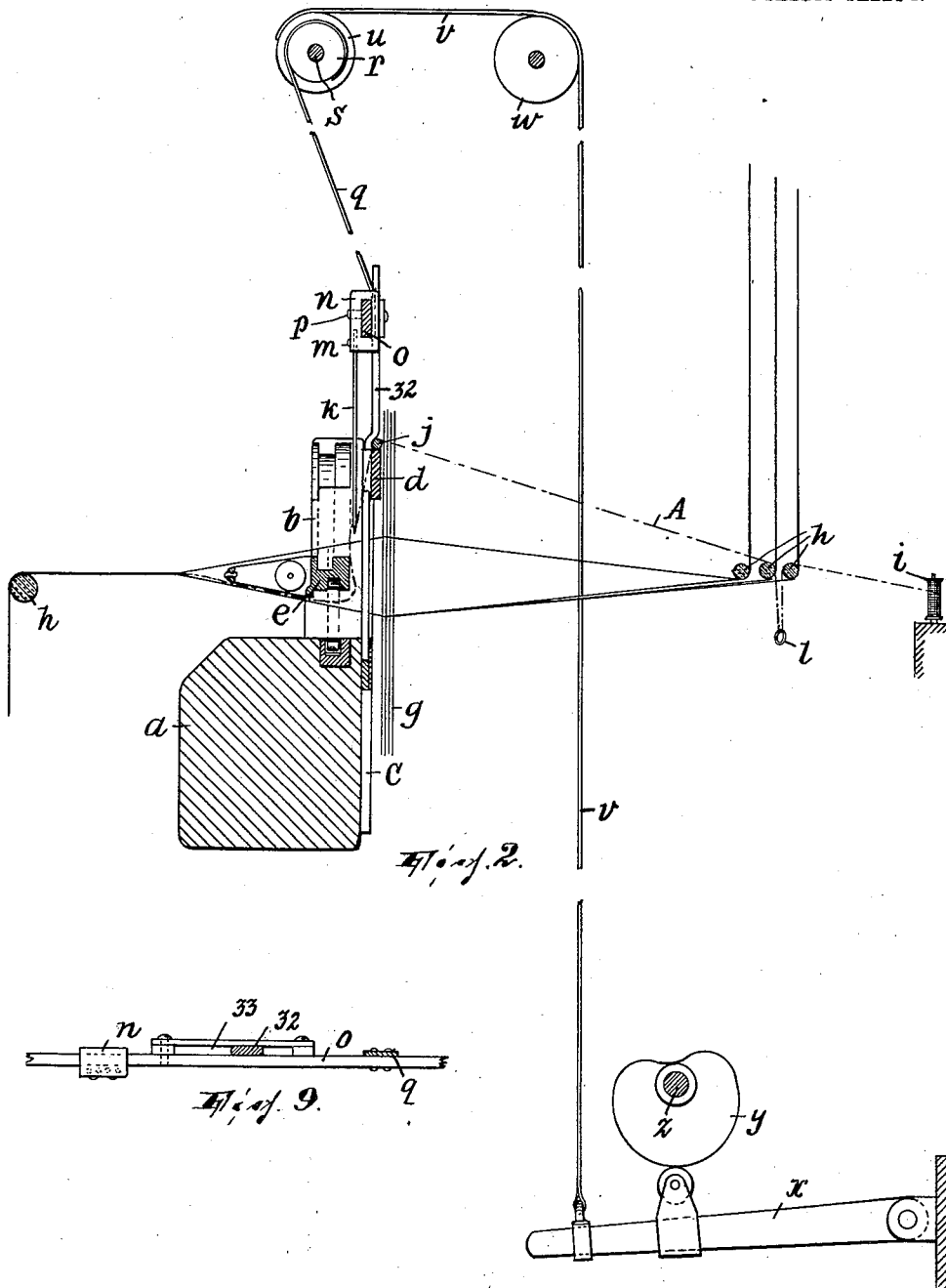
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3 SHEETS-SHEET 2.



WITNESSES

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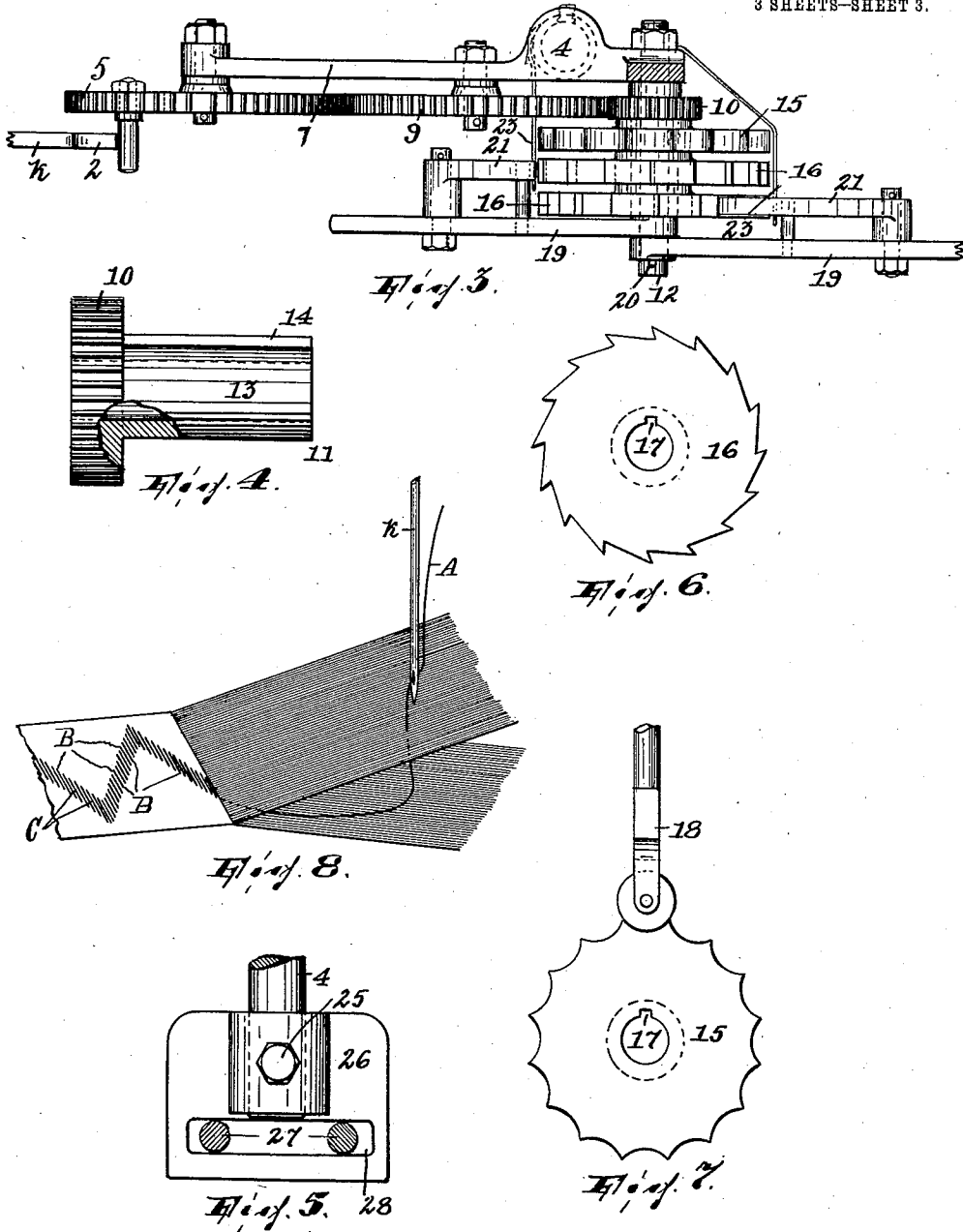
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UNITED STATES PATENT OFFICE

EDWARD SCHWESER, OF PATERSON, NEW JERSEY.

LOOM.

1,065,555.

Specification of Letters Patent.

Patented June 24, 1913.

Application filed September 25, 1912. Serial No. 722,194.

To all whom it may concern:

Be it known that I, EDWARD SCHWESER, a subject of the Emperor of Germany, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Looms, of which the following is a specification.

This invention relates to looms, and it consists in a novel means for incorporating in the fabric a figure or pattern existing wholly independently of any scheme of relation of the warp and weft threads of the fabric. According to that embodiment of the invention which is herein shown and described for the purpose of illustration the figure or pattern thread or threads are intermittently shifted through the warp from one side to the other of the weaving plane and back again, the filling thread as it is passed through the shed which is caused to be formed while the pattern threads are in the shifted position being laid across the latter so that it will serve in the finished fabric to bind in the pattern threads, and said pattern threads are also from time to time moved in one direction or the other laterally of the warp so that the shifting of the pattern threads through the warp may take place in different points therein, leaving the pattern threads between the binding points laid over or upon the face of the fabric.

In the accompanying drawings, wherein the invention will be found fully illustrated, Figure 1 is a front elevation of sufficient of a narrow-ware loom provided with the improved means to illustrate the invention; Fig. 2 is a vertical sectional view of what is shown in Fig. 1 and of the warp; Fig. 3 is a plan view on a somewhat larger scale of the mechanism whereby the pattern threads are caused to move laterally; Fig. 4 is a plan, partly broken away, of the member 11 of said mechanism; Fig. 5 is a rear elevation of a part of the means for supporting said mechanism; Figs. 6 and 7 are elevations of certain parts associated with the member 11; Fig. 8 is a perspective view illustrating the manner in which the pattern is worked out in the fabric; and, Fig. 9 is a detail, illustrating the means for guiding the rail *o* carrying the needles.

It will be of course understood that, whereas a narrow-ware loom is herein shown and described for the purpose of

illustration, the invention is applicable to broad-ware looms.

The batten structure, including the batten proper *a* and shuttle blocks *b*, the means for securing the blocks to the batten structure including the uprights *c* and bracing-strip *d*, shuttles *e*, reeds *f*, harness *g*, and the instrumentalities *h h* for supporting the warp and woven fabric are or may be all the same as in any loom of the kind illustrated. It will be understood that the weaving, so far as the warp and weft threads are concerned, proceeds in the usual manner, the harness, batten, warp and fabric and shuttles being operated and controlled by the usual means, which it is unnecessary to show, in full.

The pattern threads are supplied from spools *i* suitably supported at the back of the loom. These, designated *A*, extend over the bars back of the batten affording a part of the instrumentalities *h* for supporting the warp and fabric and then over a round rod *j* secured upon the top of the bracing-strip *d*, to the fabric, as shown in Fig. 2. Between the fabric and rod *j* they extend through the needles *k* serving as the means for shifting them through the warps and imparting the lateral movements thereto. To keep each thread at the proper tension a ring *l* may be strung thereon in a loop of the thread between two of the bars *h*, the weight of such ring and the degree of resistance to rotation of spool *i*, which is fairly freely revoluble, being such that the thread *A* is kept fairly taut between the needle and the spool and yet nicely responds to the influences operating to draw it from the spool.

As intimated, there may be one or more pattern threads for each fabric. The needle or needles *k* therefor are secured side by side by screws *m* in a block *n* mounted on a horizontal rail *o* to which it may be secured by the screws *p*. This rail is secured to the lower ends of straps *q* which extend around and are secured to pulleys *r* on a shaft *s* journaled in brackets *t* on the loom frame. Secured to the periphery of another pulley *u* on this shaft is a strap *v* which extends over a pulley *w* and has its other end attached to a lever *x* which bears against the periphery of the cam *y* on a shaft *z* suitably driven from some going part of the loom. In the rotation of the cam it will be obvious that the rail *o* and the needles will be re-

ciproccated vertically. The rail *o* is shifted
 back and forth laterally by means now to be
 described: At one end it has a vertically
 elongated head 2. By a spring 3 connecting
 5 said head with the post portion of a bracket
 4 the rail is normally pulled to the right in
 Fig. 1. Movement thereof to the left is
 caused by the rotating pinion 5, journaled
 on a stud 6 in the horizontal head 7 of said
 10 bracket, said pinion having an eccentric
 radially adjustable stud 8 against which the
 head 2 of the rail is held by spring 3. Meshing with pinion 5 is a transmission
 15 pinion 9, also journaled in head 7, and
 meshing with pinion 9 is the pinion portion
 10 of the member 11 shown in Fig. 4, the
 same being journaled on a stud 12 project-
 ing forwardly from the bracket 4 and hav-
 ing a forwardly extending sleeve 13 pro-
 20 vided with a key 14. On the sleeve portion
 13 of member 11 are arranged a stop-wheel
 15 having a faceted periphery and two
 ratchets 16 having their teeth reversely cut,
 the stop-wheel and ratchets having interior
 25 grooves 17 which receive the key 14 so that
 each of the parts 15 and 16 turns with mem-
 ber 11. A spring-pressed dog 18 bears
 against the periphery of the stop-wheel,
 serving to hold the group of parts 11, 15
 30 and 16 at any point to which it may be re-
 latively moved.

Oppositely projecting levers 19 are ful-
 crumed on the stud 12, being retained there-
 on by the pin 20, and these levers carry
 35 pawls 21 respectively engageable with the
 ratchet wheels toward which they are nor-
 mally drawn by the springs 22. During the
 downward movement of each lever its pawl
 comes against a fixed stop 23 (each stop
 40 being conveniently afforded by a stout wire
 or rod suitably bent into shape and secured
 to the bracket 4) which disengages it from
 its ratchet. The post of the bracket 4 is
 vertically adjustably secured by a set screw
 45 25 in a bracket 26 secured by the bolts 27
 to the back of the batten, 28 being a slot in
 the bracket 26 receiving the bolts and al-
 lowing lateral adjustment of said bracket
 and the mechanism it carries. The levers 19
 50 are connected with levers 29 or other oper-
 ating elements of a jacquard, dobby or simi-
 lar mechanism though the medium of the
 flexible connections 30 extending around the
 pulleys 31.

55 It will be observed that due to the flexi-
 bility of the connections *q* and 30 the up
 and down and lateral movements of the rail
o may be effected notwithstanding the for-
 ward and backward movements of the bat-
 60 ten. To confine the rail to a single plane of
 movement the batten structure preferably
 includes fixed upright guides 32 secured to
 the back of the batten, the same being re-
 ceived in longitudinal slots 33 suitably pro-
 65 vided in the structure of the rail.

Operation: As stated, the weaving, so far
 as the warp and weft are concerned, pro-
 ceeds in the usual manner. From time to
 time (in the present instance on each pick
 of the loom, due to the cam *y* making one
 70 complete revolution for each pick of the
 loom and to the form thereof illustrated),
 the rail *o* moves downwardly and upwardly,
 thrusting its needles though the warp and
 thus shifting the thread A from above, or
 75 one side of the weaving plane, to below, or
 the other side of said weaving plane, and
 back again. During each such movement of
 the rail *o* a shed is formed. While the part
 of the thread between any needle and the
 80 fabric stands shifted to the lower side of
 the weaving plane the shuttle is thrown
 through the shed to lay the filling therein,
 such filling thus crossing over said part of
 the thread. On the closing of the shed, and
 85 the beating-up of the filling as the fell of
 the fabric, the thread A will thus be left
 bound by the filling in the fabric, as indi-
 cated at the points B in Fig. 8. Occasion-
 ally, as one or the other of the levers 29
 90 is called, the rail *o* is shifted laterally, thus
 bringing the needles to new points of en-
 tering the warp; this shifting movement is
 of course so timed as to occur when the
 needles are clear of the warps. In conse-
 95 quence, and after the thread A of any needle
 has been again bound in the fabric in the
 way already described, the part of the
 thread between the two binding points will
 be left "floating" over the face of the fab-
 100 ric, as indicated at C in Fig. 8.

It will be noted that the lateral shifting
 increments of the needle-carrying structure
 vary as the stud 8 changes from either of
 the dead-center positions relatively to said
 105 structure to either of the two positions half-
 way between them. By therefore employ-
 ing a rotary member, such as 5, provided
 with an eccentric stud, as 8, with which the
 needle-carrying structure is held opera-
 110 tively engaged, and by providing means to
 rotatably shift said member back and forth
 arbitrary distances in each direction, not
 only is an almost endless variety of designs
 possible but the character of the designs
 115 rendered widely variable, each design more-
 over being capable of being worked out
 with far less number of jacquard cards (for
 effecting the lateral movements of the said
 structure) than would be required in the
 120 use of the jacquard machine in the usual
 way.

It will be understood that when one of the
 elements 29 is "called" it effects the raising
 of the corresponding lever 19 and through
 125 the pawl attached thereto and the corre-
 sponding ratchet 16 rotates the train of pin-
 ions in one direction; further, that on the re-
 ceeding movement of an element 29 the cor-
 responding lever 19 falls, bringing its pawl
 130

21 against the stop 23 out of obstructing relation to the corresponding ratchet.

It will be obvious that a substantially unlimited variety of designs, patterns or figures may be incorporated in the fabric in this way, depending on the timing of the lateral and vertical movements of the rail *a*, the number of needles employed for each piece of goods being woven, the variety of colors of the pattern threads, and other obvious conditions.

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

1. In a loom, the combination of instrumentalities for supporting the warp and fabric, means to intermittently shift a pattern-thread through the warp from one side to the other of the weaving plane and then return the same including a pattern-thread-needle-carrying structure movable up and down and also laterally, means for forming a shed in the warp on the shifting of the pattern-thread therethrough, means for projecting the filling through the shed and across the path of return of the shifted pattern-thread, a batten-including support, and mechanism for imparting lateral movements in opposite directions to said structure including a rotary motion-imparting member journaled in the support and having an eccentric stud and said structure being held engaged with the stud, and means to rotatably shift said member back and forth arbitrary distances in each direction, substantially as described.

2. In a loom, the combination of instrumentalities for supporting the warp and fabric and forming sheds in the warp, a batten structure including spaced shuttle blocks, a reed arranged between the blocks, a shuttle guided in and by the blocks in a constant path forward of and spaced from the reed, a vertical pattern-thread needle arranged in

a vertical plane extending through the space between the reed and the shuttle path, said batten structure including rigid vertical guides arranged relatively rearward of said plane, a horizontal rail arranged vertically opposite said space, having said needle rigidly attached thereto, provided with longitudinal slots receiving said guides and being confined by the latter to a single vertical plane of movement, means to move the rail up and down, and means to move the rail laterally from time to time, substantially as described.

3. In a loom, the combination of instrumentalities for supporting the warp and fabric and forming sheds in the warp, a batten structure, a reed carried by and a shuttle guided in said structure, a horizontal rail guided by said structure for movement laterally and vertically in an upright plane and having a vertical head, an upright pattern-thread needle carried by said rail, an upright post secured to said structure and having a head, a rotary member journaled in the post head and having an eccentric stud, a spring connecting the rail and said post and holding the former against said stud, means to rotate said member including another rotary member journaled in the post head and having two reversely cut sets of teeth, levers fulcrumed in the post head, pawls respectively engaging said sets of teeth of the last-named rotary member and carried by said levers, means for alternately actuating said levers, and means for moving said rail vertically, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD SCHWESER.

Witnesses:

JOHN STEWARD,
WM. D. BELL.