

(No Model.)

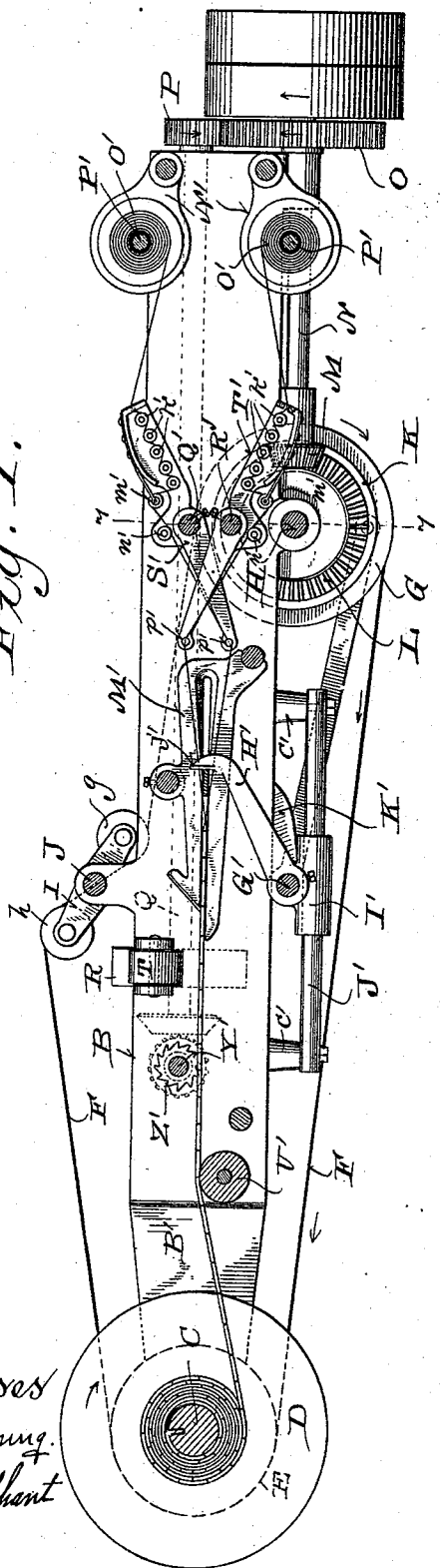
4 Sheets—Sheet 1.

C. E. PARKS & L. MOLLART.
SLAT AND WIRE FABRIC LOOM.

No. 517,058.

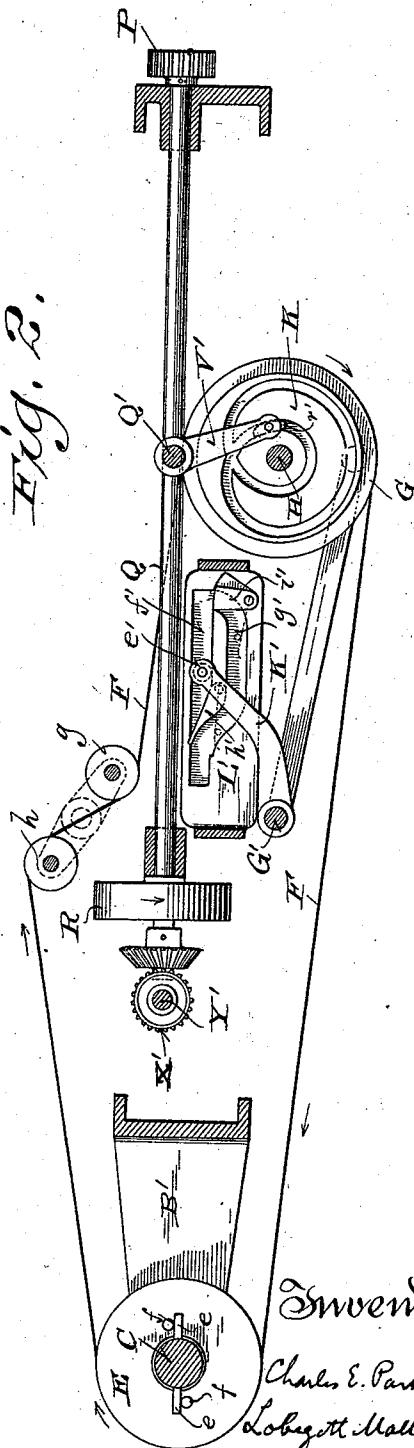
Patented Mar. 27, 1894.

Fig. 1.



Witnesses
Geo. W. Young.
N. E. Cliphant

Fig. 2.



Inventors

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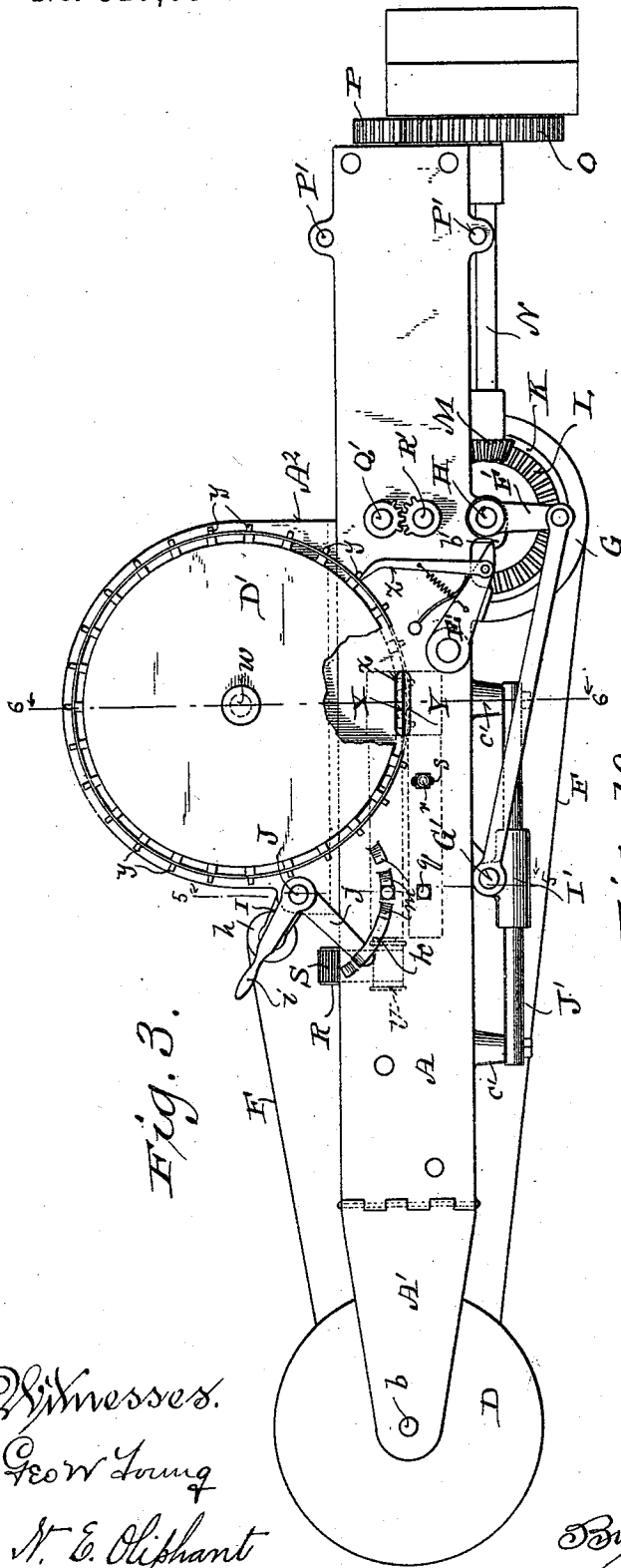


Fig. 3.

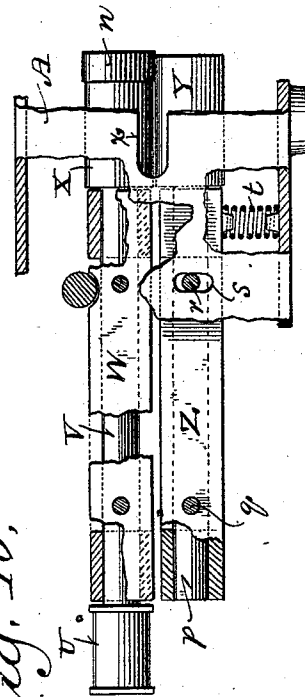


Fig. 10.

Witnesses.
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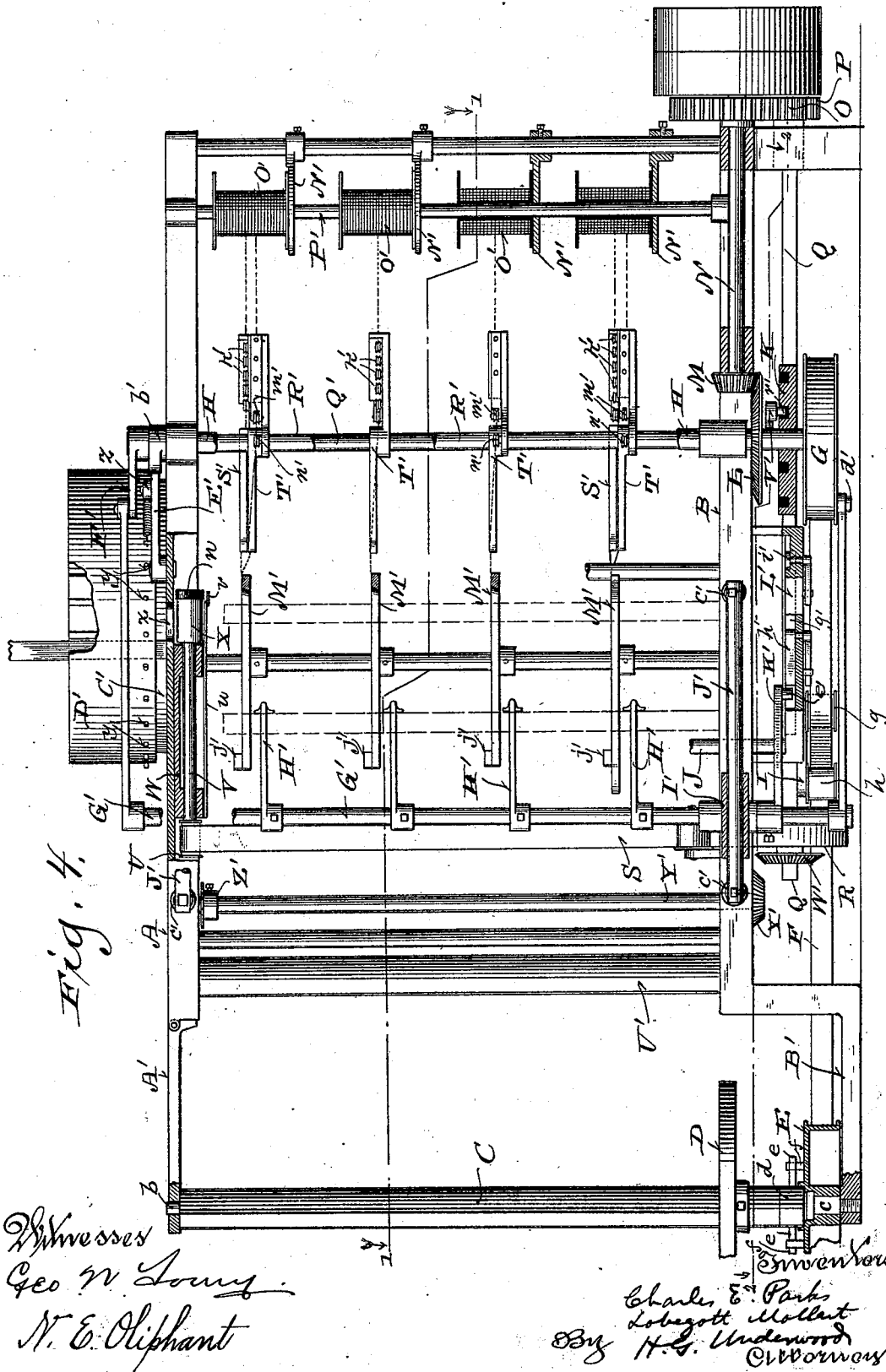
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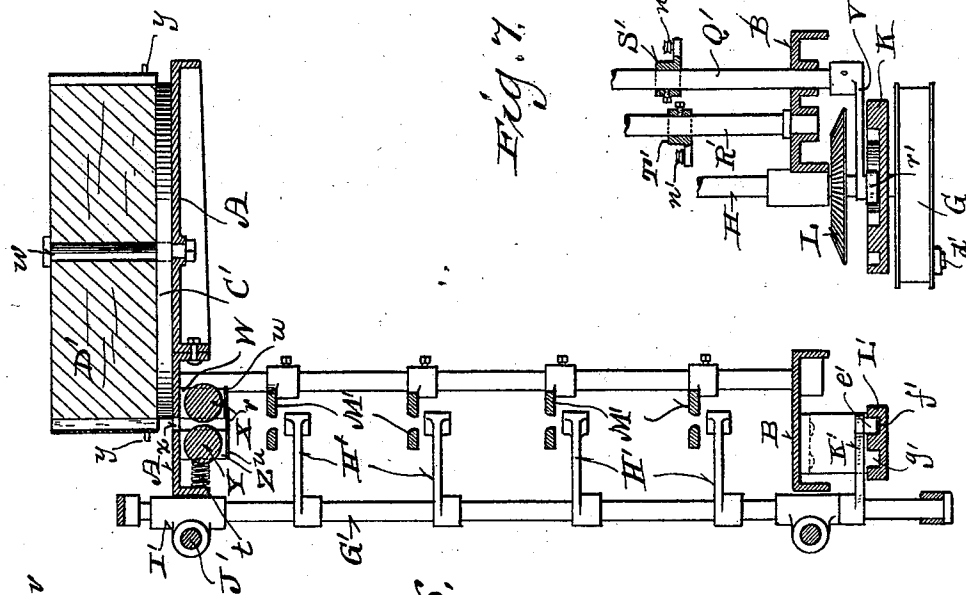


Fig. 7.

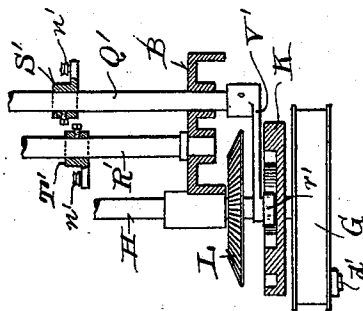


Fig. 9.

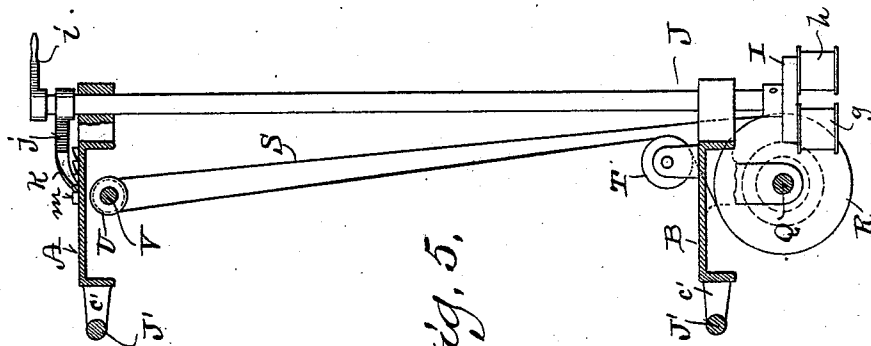


Fig. 5.

Fig. 8.



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UNITED STATES PATENT OFFICE.

CHARLES E. PARKS AND LOBEGOTT MOLLART, OF WATERTOWN, WISCONSIN;
SAID MOLLART ASSIGNOR TO SAID PARKS.

SLAT-AND-WIRE-FABRIC LOOM.

SPECIFICATION forming part of Letters Patent No. 517,058, dated March 27, 1894.

Application filed May 24, 1893. Serial No. 475,323. (No model.)

To all whom it may concern:

Be it known that we, CHARLES E. PARKS and LOBEGOTT MOLLART, citizens of the United States, and residents of Watertown, in the county of Jefferson, and in the State of Wisconsin, have invented certain new and useful Improvements in Looms for Weaving Slat-and-Wire Fabrics; and we do hereby declare that the following is a full, clear and exact description thereof.

Our invention has for its object to simplify and cheapen the production of slat-and-wire fabrics; and it consists in certain peculiarities of construction and combination of parts hereinafter described with reference to the accompanying drawings and subsequently claimed.

In the drawings: Figure 1 represents our loom in horizontal section taken on line 1—1 of Fig. 4; Fig. 2, a detail horizontal section on line 2—2 of Fig. 4; Fig. 3, a plan view of the loom; Fig. 4, an elevation of the same with parts broken away; Figs. 5 and 6 transverse sections respectively taken on lines 5—5 and 6—6 of Fig. 3; Fig. 7, a like view on line 7—7 of Fig. 1; Fig. 8, a detail view illustrating a wire-guide at the free end of a warp-spreader; Fig. 9, a plan view of a slat-guide, and Fig. 10, a detail plan view with parts broken away illustrating a slat-feeding mechanism.

The frame of our loom comprises a top-plate A and a base B joined by vertical rods arranged at suitable intervals. The top-plate A has a hinged extension A' provided at its free end with a bearing for a journal *b* at the upper end of a longitudinally slotted roller C, and adjustable on this roller is a disk D or other suitable supporting device for the slat and wire fabric wound on said roller in the manner hereinafter specified. The lower end of the roller is stepped upon the upper side of a pulley E loose on a stud *c* that is screwed into a right angle depending portion B' of the base B and a collar *d* on this lower end of said roller is provided with lateral lugs *e* opposing vertical lugs *f* on the pulley in such a manner that the rotation of this pulley imparts a corresponding movement to the aforesaid roller. The pulley E is driven

by a belt F that runs on another pulley G fast to a vertical shaft H having its bearings on the loom-frame, the tension of the belt being regulated by a suitable tightener. The tightener herein shown comprises rollers *g* and *h*, loose on studs projecting from a horizontal yoke I centrally secured to a vertical rod J that has bearings on the loom-frame, and fast on the upper end of this rod are arms *i* and *j*, the former serving as a hand-lever, and the other as a support for a pivotal detent *k* which latter engages a rack *m* on the top-plate of said loom-frame to hold said tightener in the position to which it may be adjusted. The tension on the belt is such that it will slip on the pulley E when the fabric wound on the roller C is tight, the wind of said fabric being necessarily intermittent.

Fast on the shaft H above specified is a disk K having its upper side provided with a peculiar form of cam-groove as best illustrated in Fig. 2, and a bevel-gear wheel L also fast on said shaft meshes with a corresponding pinion M upon a horizontal shaft N that has its bearings on the higher portion B of the loom-frame base and is provided with tight and loose pulleys for a drive-belt. A spur-wheel O also fast on the shaft N meshes with a corresponding pinion P on a counter-shaft Q having suitable bearings on the loom-base and provided with a pulley R for a vertical belt S that runs through a slot in said loom-base against an anti-friction roller T and drives another pulley U on another horizontal shaft V arranged in bearings depending from a yoke W fast to the under side of the top-plate A of the loom-frame. The shaft V carries a feed-roller X provided with a friction-collar *n* for impingement against another feed-roller Y having a shank *p* arranged to turn in a yoke Z that has a pivot-connection *q* with the under side of the top-plate A of the loom-frame and a lug *r* that engages a transverse slot *s* in said top-plate. By means of a spiral-spring *t* engaging lugs on the pivotal yoke Z and a depending flange of the top-plate the feed roller Y is kept normally in contact with the friction-disk on the other parallel feed-roller X as best illustrated by Fig. 10.

Bolted or otherwise suitably secured to the yokes W and Z beneath the same are parallel plates *u* one of which has an end thereof provided with a lateral extension *v* overlapping the other, although it would be no departure from our invention to substitute a single plate having a suitable slot therein. In either case we provide a guide that prevents slats, fed down between the adjacent rollers, from deviating out of the path of beaters hereinafter specified.

A lateral extension A² of the plate A is provided with a stud *w* that engages a base-disk C' and a drum D', the later being in frictional contact with the disk and provided with a series of peripheral passages at regular intervals, these passages being for the reception of slats that successively come into register with an opening *x* in said plate and drop down between the feed-rollers above specified. The feed-rollers being normally in frictional contact and under rotation, a slat caught between the same is quickly run down and one of these rollers has the yielding arrangement above specified to compensate for inequalities or varying thickness in slats.

At intervals on the periphery of the drum, corresponding to the passages therein, are lugs *y* whereby we virtually provide a ratchet that is engaged by a spring-controlled pawl *z* pivotally connected to a spring-controlled arm E' pivoted to the top-plate of the loom-frame. This pivot-arm has its free-end in the path of a cam *b'* on the vertical shaft H above specified and thus an intermittent rotary motion is imparted to the drum to bring the slat passages therein into successive register with the feed-opening in the top-plate of the loom-frame. The upper end of the shaft H is provided with a crank F' and this crank is linked to the upper end of a vertical rod G' on which we arrange a series of beater-arms H' preferably held in place by set-screws and consequently adjustable as to position. The rod G' is fast in cross-heads I' loose on guides J' secured to lateral projections *c'* on the top and base-plates of the loom-frame, and the lower end of said rod is linked to a wrist *d'* on the pulley G fast to the shaft H, this wrist being positioned in line with the outer end of the crank F' on said shaft.

An arm K' fast on the rod G' has a lug *e'* in engagement with a cam-groove in a horizontal plate L' suspended from the higher portion of the loom-base, the contour of this cam-groove being two straight parallel paths *f'* and *g'* the latter one of which has curved extremities joining the other. Pivotal spring-controlled gates *h'* and *i'* are arranged at the junctures of the paths embodied in the cam-groove, and these gates yield in one direction to the travel of the lug *e'* on the arm K' thereby permitting said lug to divert from one to the other of said paths at certain intervals, hence when the cross-heads travel in one direction, the beater arms are dropped from their working position to clear a slat fed to the

warp, but on the reverse travel of said cross-head said beater-arms are exerted against the (for the time being) last slat in the fabric. 70

Fast on one of the brace-rods of the loom-frame at suitable intervals are slotted plates M' that serve as slat and fabric guides, these guides being provided with spring-metal wings *j'* that bear against said fabric and tension the same against the action of the beater-arms. Fast to other brace-rods of the loom-frame are supports N' in the form of plates for wire-spools O' these supports being provided with suitable openings for engagement with spindles P' that engage suitable bearings on the top-plate and base of said loom-frame. 80

Shafts Q' and R', parallel to each other and the shaft H, have their bearings in the loom-frame and connect with each other by a tooth-gear as shown in Fig. 3. Adjustably secured to these shafts Q' and R', are spreaders S' and T', having flanged rear ends provided with eyes for the passage of wire drawn from the spools. Each spreader is provided with a series of parallel sheaves *k'* on fixed bearings, a spring-hung sheave *m'*, forward of the former sheaves on a plane outward therefrom and still another sheave *n'* having a fixed bearing forward of the one that is spring-hung. The wire from a spool is passed through the eye at the rear end of a relative spreader and then in and out against the several sheaves in the manner best illustrated in Fig. 1, after which it is carried through a guide *p'* in the form of a perforated pin drove into an opening in the grooved forward end of said spreader, this guide and grooved spreader-end being shown in detail by Fig. 8. 95

In practice the forward ends of the wires are secured to a substitute for the roller C until enough of the fabric has been woven to permit of its engagement with the slot in said roller when positioned as shown in Fig. 4, this engagement being clearly illustrated in Fig. 1. A roller U' is arranged intermediate of the roller C and guide-plates M' in such position as to prevent strain on these plates as said fabric is wound on said roller, the draw of the fabric being always from the same center. The spreaders S', T' are rocked at certain intervals by their respective shafts to cross the wires and thereby establish a shed for each slat. As herein shown the spreaders are so arranged that adjacent to the edges of the fabric the wires are double and cross each other on opposite sides of each slat while the intermediate wires are single and cross from one side of a slat to the opposite side of a succeeding slat. 100

The necessary rock of the spreader-shafts Q' and R', is governed by the time-mechanism consisting of the cam-grooved disk K and a crank V' on the former shaft having a pivotal shoe *r'* engaging the groove in said disk, this rock taking place each time a slat is beat up in its shed, and just prior to the instant the beater arms begin their movement out of 105

working position. The cam-groove is necessarily of such contour that after a rock of the spreaders they will remain stationary while a slat is being fed into the warp and beat up to place, and as shown in Fig. 2, said cam-groove is virtually two concentric half-circles joined by two segments of equal radius struck from different centers eccentric to that of the half-circles and crossing each other in line with the latter center. As a result of this cam-contour the crank V' is only actuated when the eccentric segments travel against the pivotal shoe r' , and remains stationary when this shoe is in either of the concentric half circles.

Adjustable on the forward end of the counter-shaft Q is a bevel pinion W' adapted to be brought into mesh with a corresponding gear-wheel X' fast on an arbor Y' that has its bearings on the loom-frame and carries an adjustable saw Z' , the latter being brought into use when it is necessary or desirable to split a web of fabric coincident with its production. When this splitting operation takes place we prefer to arrange spreaders and wires in such a manner that the latter are double and cross each other on opposite sides of the slats adjacent to the inner edge of each strip of fabric.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a loom for weaving slat-and-wire fabric, the combination of a pulley-controlled fabric winding-device, a drive-belt for the pulley, a rod loose in bearings on the loom-frame, a yoke fast on the rod, rollers loose on the yoke against opposite sides of the belt, an arm also fast on said rod, a detent pivoted to the arm, a rack on said loom-frame engaging the detent, and a hand-lever connected to the aforesaid rod, substantially as set forth.

2. In a loom for weaving slat-and-wire fabric, the combination of a driven shaft having fixed bearings, a feed roller carried by the shaft and provided with a friction collar another feed-roller parallel to the first, and a pivotal spring-controlled yoke having bearings for the shank of the second feed-roller, substantially as set forth.

3. In a loom for weaving slat-and-wire fabric, the combination of a drive-shaft, a counter-shaft in gear therewith, another shaft that is arranged in fixed bearings and has belt-and-pulley connection with the counter-shaft and carries a feed roller; and a yielding feed-roller parallel to the one aforesaid, substantially as set forth.

4. In a loom for weaving slat-and-wire fabric, the combination of an intermittently rotative drum provided with peripheral passages that come into successive register with an opening in the loom-frame, and feed-rollers adjacent to said opening, substantially as set forth.

5. In a loom for weaving slat-and-wire fabric, the combination of an intermittently ro-

tative drum provided with peripheral passages that come into successive register with an opening in the loom-frame, feed-rollers adjacent to said opening, and a slat-guide succeeding the rollers, substantially as set forth.

6. In a loom for weaving slat-and-wire fabric, the combination of a slat-feed drum provided with a series of peripheral passages and a corresponding series of peripheral lugs, and a cam actuated spring-controlled pawl-mechanism working in conjunction with the drum-lugs, substantially as set forth.

7. In a loom for weaving slat-and-wire fabric, the combination of a slat-feed drum provided with a series of peripheral passages and a corresponding series of peripheral lugs, a spring-and-lever controlled pawl working in conjunction with the drum-lugs, and a rotary cam for actuating the pawl-lever, substantially as set forth.

8. In a loom for weaving slat-and-wire fabric, the combination of reciprocative cross-heads, a rod loose in the cross-heads, a series of beater-arms fast on the rod, a driven crank, and a link connecting said rod and crank, substantially as set forth.

9. In a loom for weaving slat-and-wire fabric, the combination of reciprocative cross-heads, a rod loose in the same, a series of beater-arms fast on the rod, two straight parallel paths one of which has its extremities joining the other, pivotal spring-controlled gates at the junctures of the paths, another arm fast to said rod, and a projection on the latter arm having a travel in said paths, substantially as set forth.

10. In a loom for weaving slat-and-wire fabric, the frame having one side thereof provided with a feed-opening for slats, a stay-rod, and a series of slotted plates arranged at intervals on the rod, the slots in these plates being permanently in line with said feed-opening, substantially as set forth.

11. In a loom for weaving slat-and-wire fabric, a stay-rod, a series of slotted plates secured thereto, and a spring-metal wing on each of these plates, the plates serving as slat and fabric guides and their wings as tension devices for said fabric, substantially as set forth.

12. In a loom for weaving slat-and-wire fabric, the combination of frame stay-rods, perforated plates fast thereon, spools arranged on the plates, and spindles that extend through the plate-perforations and spools, substantially as set forth.

13. In a loom for weaving slat-and-wire fabric, the combination of a pair of parallel shafts connected by tooth gear, combined wire guides and spreaders fast on the shafts, and suitable mechanism for rocking the shafts at predetermined intervals, substantially as set forth.

14. In a loom for weaving slat-and-wire fabric, the combination, of parallel shafts connected by toothed gear, combined wire guides and spreaders fast on the shafts, an arm fast to one of said shafts, a pivotal shoe on the

arm, and a rotary disk having a cam groove engaging the shoe, this cam-groove being in the form of two concentric half-circles joined by two segments of equal radius struck from
 5 different centers eccentric to that of the half circles and crossing each other in line with the latter center, substantially as set forth.

15. In a loom for weaving slat-and-wire fabric, a series of rocking wire-spreaders, each of
 10 which has a flanged rear end provided with an eye for the passage of wire drawn from a spool, a series of parallel sheaves on fixed bearings, a succeeding spring-hung sheave, another sheave having a fixed bearing forward of the one that is spring-hung, and a
 15 wire-guide in the form of a perforated device at the forward extremity of said spreader, substantially as set forth.

16. In a loom for weaving slat-and-wire fabric, the combination of an automatic slat-feed, slat and fabric guides in line with the
 20 feed, reciprocative and rocking beaters, rocking wire-spreaders operating conjointly with the beaters, and an automatic take-up for the fabric, substantially as set forth.

17. In a loom for weaving slat-and-wire fab-

ric, the combination of an automatic slat-feed, slat and fabric guides in line with the feed, reciprocative and rocking beaters, rocking wire-spreaders operating conjointly with
 30 the beaters, a splitting device for the fabric, and an automatic take-up for said fabric, substantially as set forth.

18. In a loom for weaving slat-and-wire fabric, the combination of an intermittently ro-
 35 tative drum having peripheral passages that come into successive register with an opening in the loom frame, a feed mechanism succeeding the opening, slat and fabric guides in line with the feed, reciprocative and rocking-beat-
 40 ers, wire-spreaders operating conjointly with the beaters, and an automatic take-up for the fabric, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands, at Watertown, in
 45 the county of Jefferson and State of Wisconsin, in the presence of two witnesses.

CHARLES E. PARKS.
 LOBEGOTT MOLLART.

Witnesses:

E. J. BRANDT,
 F. W. GAMM.