

(No Model.)

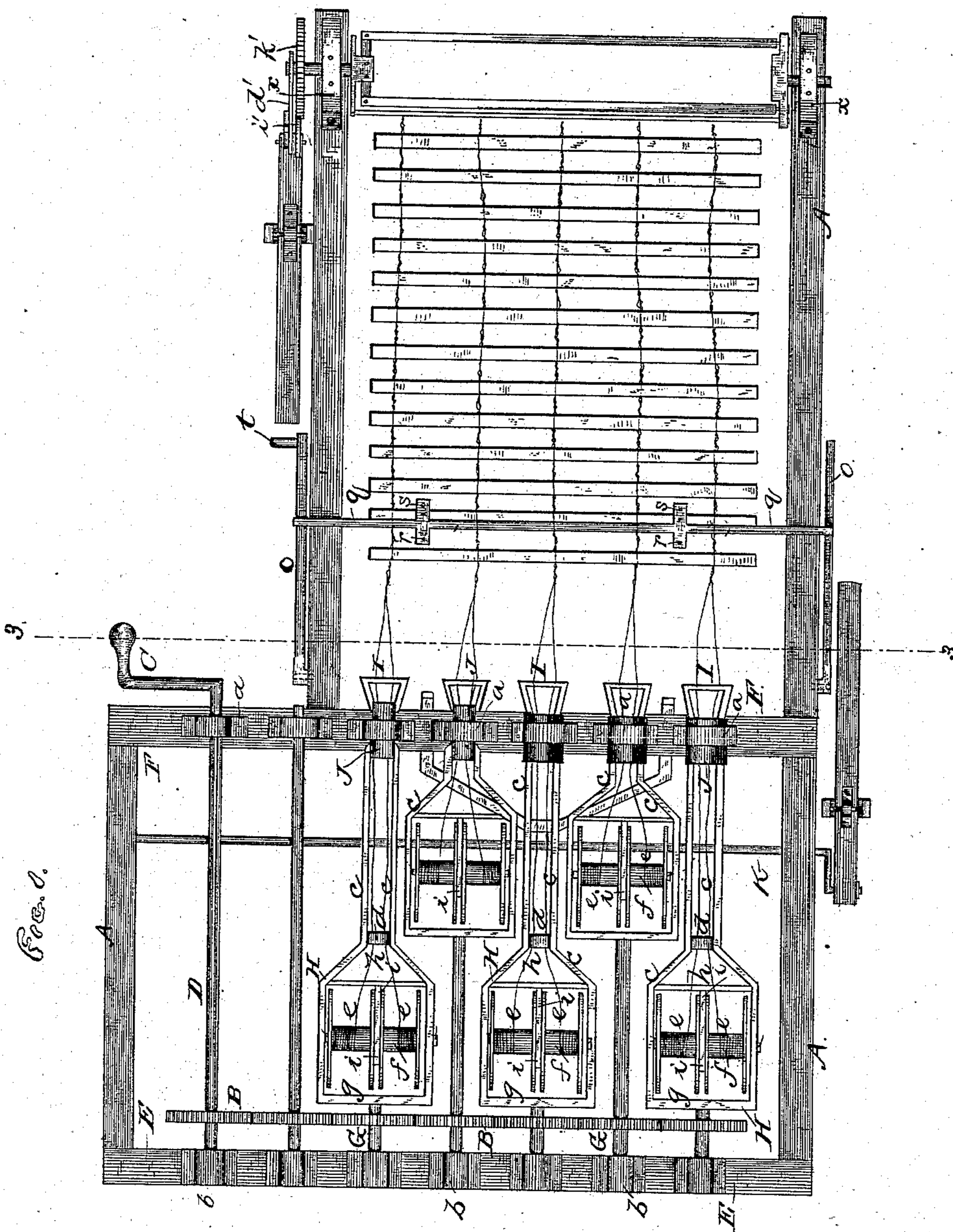
4 Sheets—Sheet 1.

W. VAN HORN.

MACHINE FOR MAKING WIRE AND SLAT FENCES.

No. 293,382.

Patented Feb. 12, 1884.



WITNESSES:
E. P. Hough.
C. G. Jones.

INVENTOR:
William Van Horn
By Chas. J. Cooh
attorney

(No Model.)

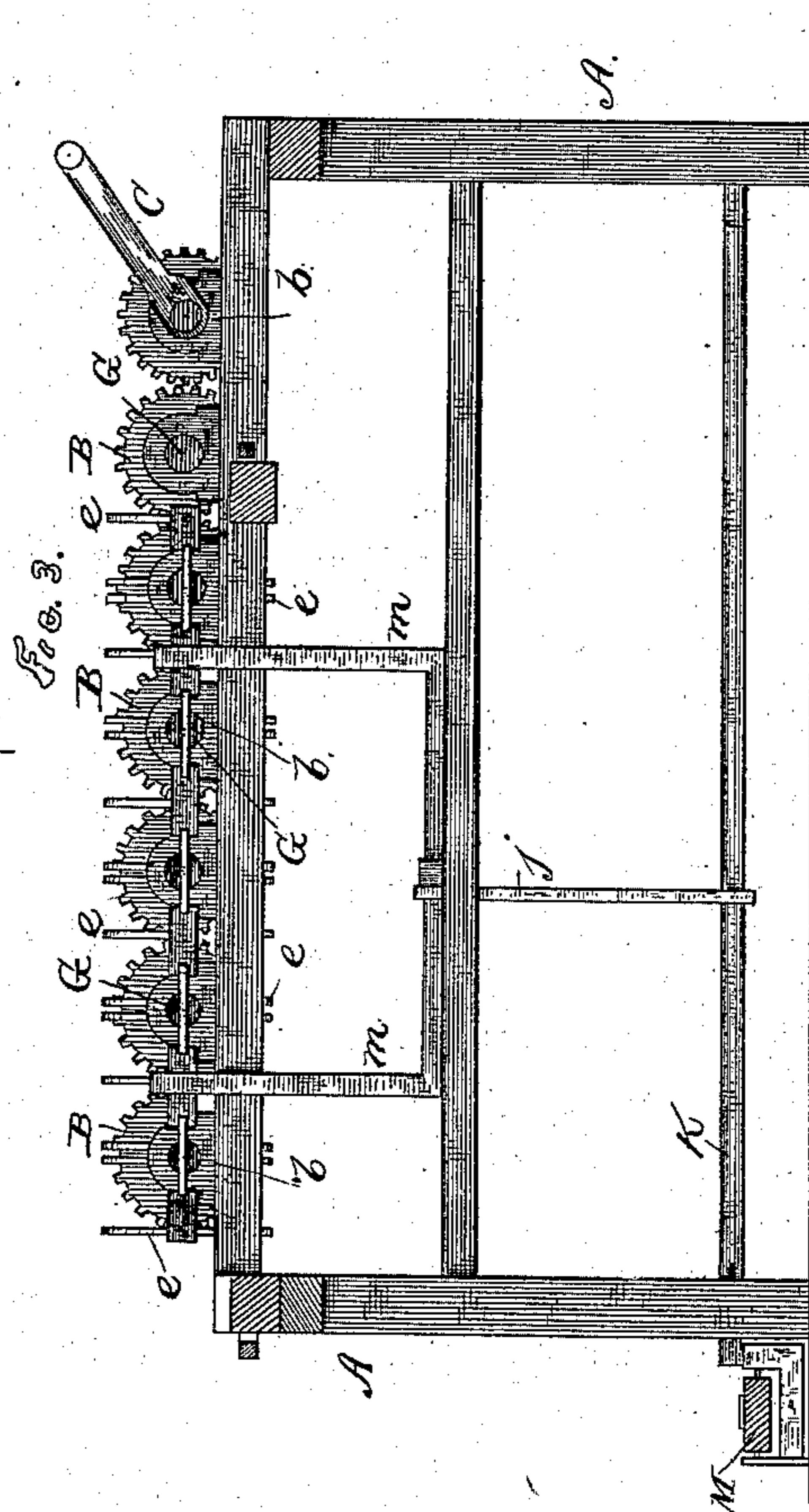
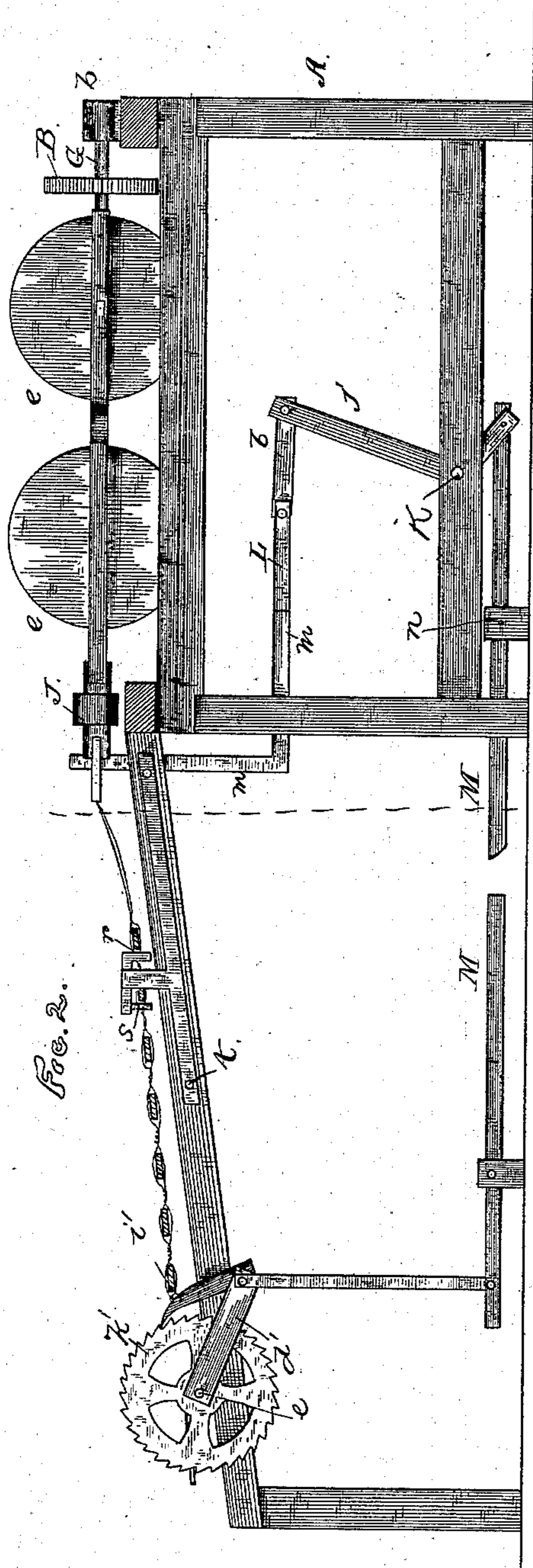
4 Sheets—Sheet 2.

W. VAN HORN.

MACHINE FOR MAKING WIRE AND SLAT FENCES.

No. 293,382.

Patented Feb. 12, 1884.



WITNESSES:

E. P. Hough.
C. C. Jones.

INVENTOR:

William Van Horn
By Chas. J. Gook
attorney.

(No Model.)

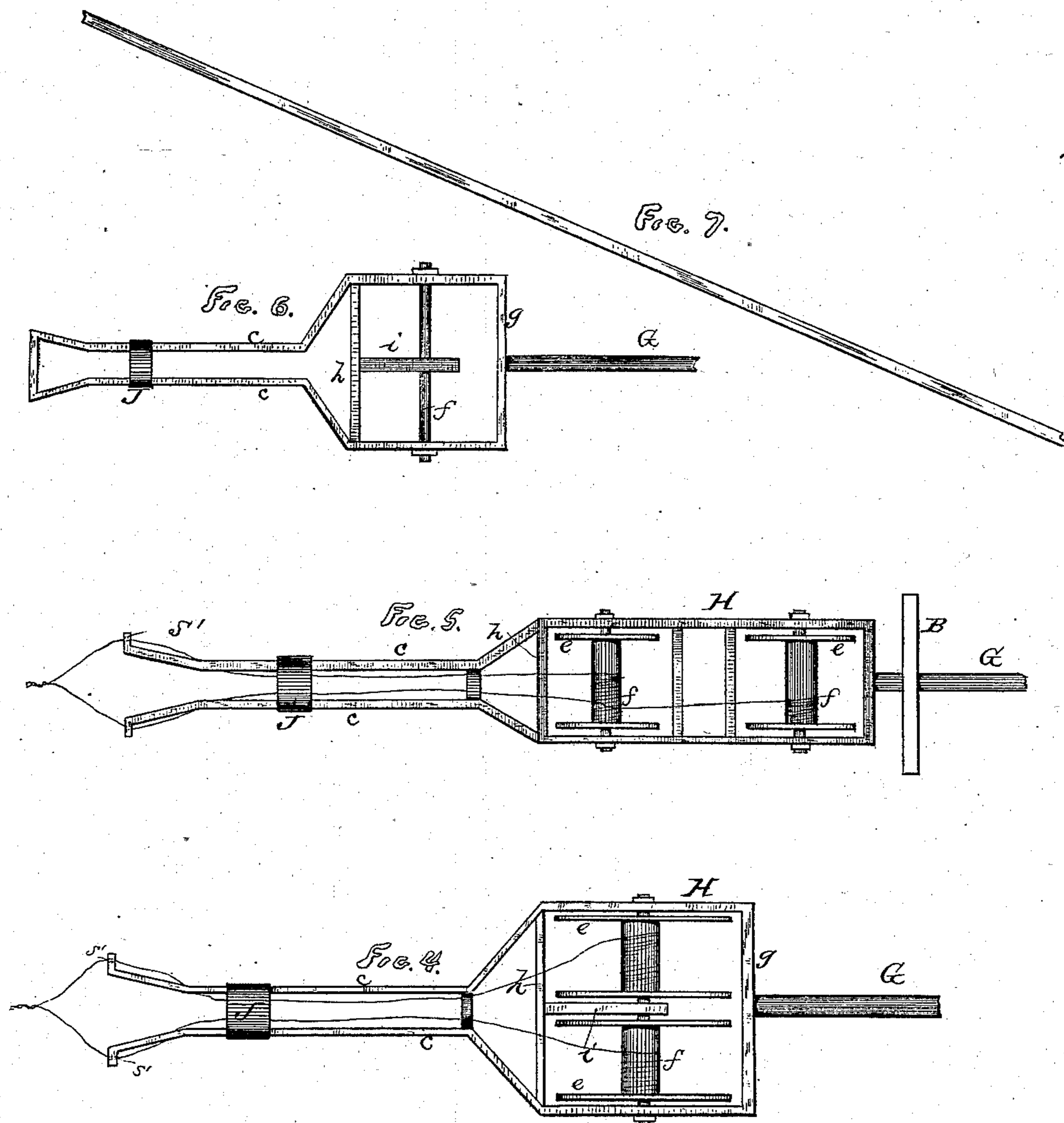
4 Sheets—Sheet 3.

W. VAN HORN.

MACHINE FOR MAKING WIRE AND SLAT FENCES.

No. 293,382.

Patented Feb. 12, 1884.



WITNESSES:

E. P. Hough

C. B. Jones

INVENTOR:

William Van Horn
By Chas J. Gooch
Attorney

(No Model.)

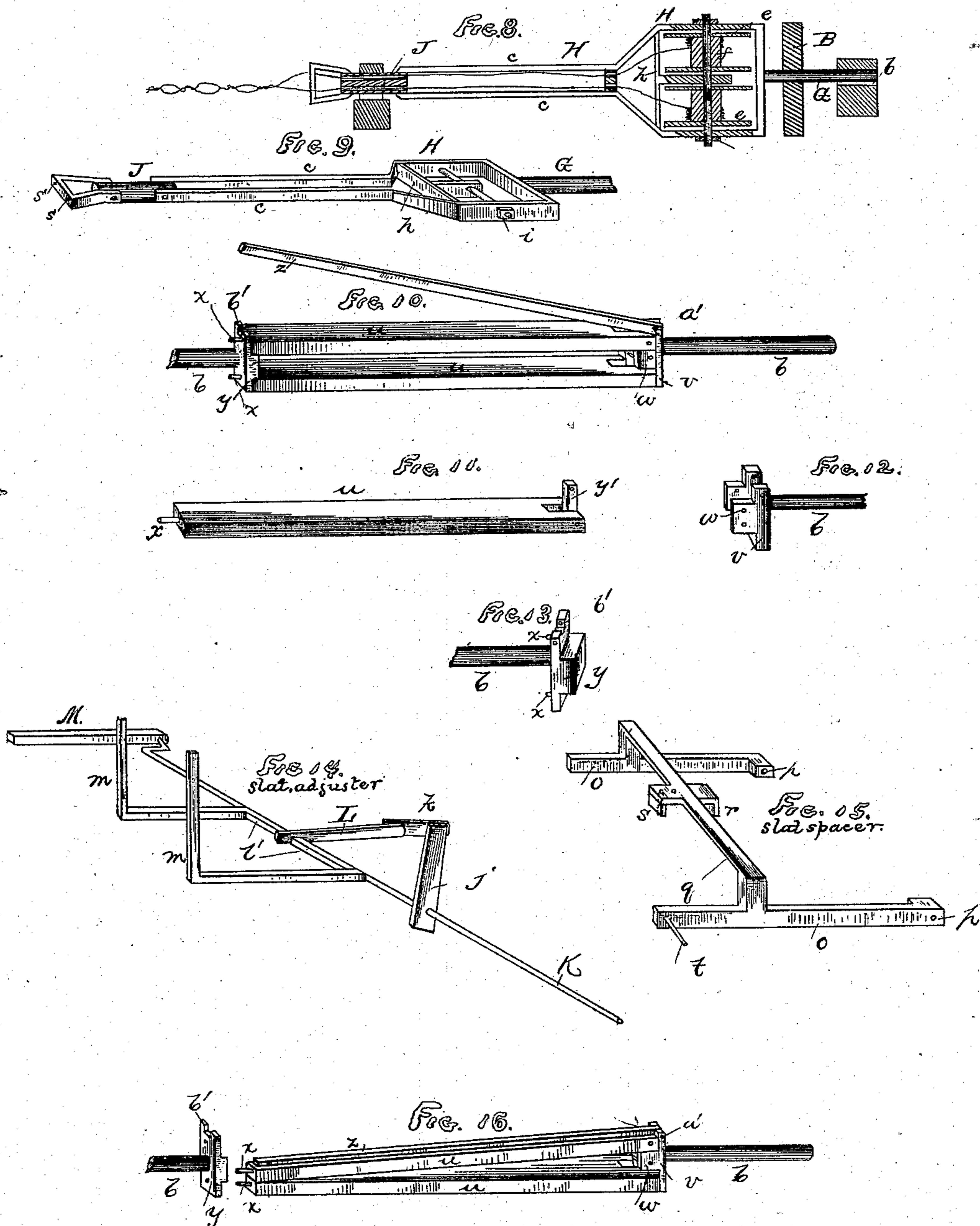
4 Sheets—Sheet 4.

W. VAN HORN.

MACHINE FOR MAKING WIRE AND SLAT FENCES.

No. 293,382.

Patented Feb. 12, 1884.



WITNESSES:

E. P. Hough
C. B. Jones

INVENTOR:

William Van Horn
By Chas. J. Gooch
attorney.

UNITED STATES PATENT OFFICE.

WILLIAM VAN HORN, OF PIQUA, OHIO.

MACHINE FOR MAKING WIRE-AND-SLAT FENCES.

SPECIFICATION forming part of Letters Patent No. 293,382, dated February 12, 1884.

Application filed July 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM VAN HORN, a citizen of the United States of America, residing at Piqua, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Machines for Manufacturing Fences, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My invention relates to improvements in machines for making picket-fences in which two strands of wire are twisted together between the pickets or slats, making one runner of wire for each two strands.

15 It especially relates to that class of fence-machines in which the runners of wire are continuously twisted together in one direction instead of alternately in opposite directions, as in most fence-machines is the case.

20 In the accompanying drawings, Figure 1 is a plan view of my invention. Fig. 2 is a side elevation with the shafts omitted, so as to give a better view of the twisting mechanism. Fig. 3 is a cross-sectional view taken on the line 3 3

25 of Fig. 1. Fig. 4 represents a plan view of one form of my twister-head and shaft and the spool-frame, with the spools arranged therein. Fig. 5 represents a similar plan view, but showing a slightly-modified arrangement of spools, and also showing the twisting mechanism.

30 Fig. 6 represents a plan view of the twister-head, shaft, and spool-frame with the twister-head closed. Fig. 7 represents a blank or piece of flat metal from which the twister-head and spool-frame are bent or formed in one

35 integral piece. Fig. 8 is a longitudinal sectional view of another form of the twisting mechanism, a side view of which is seen in Fig. 2. Fig. 9 is a perspective view of another

40 form of twister-head and shaft and spool-frame. Fig. 10 represents a perspective view of an improved reel. Figs. 11, 12, and 13 are detail views, in perspective, of the reel. Fig. 14 is a perspective view of the slat or picket ad-

45 juster. Fig. 15 shows a perspective view of the slat-spacer. Fig. 16 is a perspective view of the reel collapsed.

My machine consists of the following essential elements: a series of twist-ers, at the rear end of which are the spool-frames, which are made integral with the twist-ers, said frames having forwardly-extending arms, which serve

as wire-guards and a hollow shaft for guiding the wires and forming a bearing for said arms and the twister-heads. To the rear end of these spool-frames are attached short shafts, on which are mounted gears which operate to twist or rotate both the spool-frames and wire-twisters, a device for adjusting the slats, a device for spacing the slats, and a device for reeling the fence into convenient-sized bundles for handling and permitting of the ready withdrawal of said bundles when desired, all as hereinafter described and claimed.

In the accompanying drawings, A represents any convenient frame for supporting, and on which the operative parts of the machine are mounted. Power is communicated to the gear-wheels B and from thence to the operative parts from any suitable source. In the drawings I have represented said gears as operated by means of a hand-crank, C, and shafts D, which latter are shown as journaled in bearings *a* in the cross-bars E and F of the framing, and having one of said gears mounted on the inner ends thereof or in any convenient position, and said gears as engaging the others of the train, so as to transmit their motion thereto; but any other desired means for imparting rotary motion to said gears may be employed, as found convenient.

G represents shafts mounted at one end in suitable bearings, *b*, in the frame, and each having mounted thereon one of the train of gears, B, and having its opposite end connected with or attached to the rear of one of the combined spool-frames and wire-twisters, to be presently described. As the shaft or shafts D are rotated, the gears B rotate and transmit the desired rotary motion to the spool-frames and twister-heads, and thus twist the wires projecting from said twister-heads. These gears may, by causing the shaft or shafts D to turn correspondingly, be turned continuously in one direction, thereby turning the wire-twister heads continuously in one direction, and consequently giving the wire runners a continuous twist in one direction; but motion in a reverse direction can at any time be imparted to the said shafts by correspondingly turning the crank C, by which means the wire may be twisted alternately in opposite directions whenever desired.

H represents the spool-frame, which, ac-

according to my invention, is formed integrally with the twister-head I. This combined spool-frame and twister-head is formed out of a single piece of metal, either by casting or by bending or shaping the same into a rectangular or nearly rectangular shape at or about its central portion, within which the spool or spools are mounted, and then continuing or extending the remaining portion of said metal forwardly in the form of arms *c*, which serve as wire-guards, and then finally bending the outer ends into rectangular form, so as to form the twister-head, substantially as shown at I.

J represents a hollow tube or shaft journaled in bearings in the cross-bar F, for guiding the wires to the twister-head, which have suitable holes in their front ends, through which the wires pass to the slats. This tube or shaft J embraces the twister-head I and arms *c* in the manner shown, and it may be either cast integrally with the twister and spool-frame or formed separately therefrom and attached to the twister in any suitable manner, and the gears B may, if desired, be mounted upon said tubes or shafts J in advance of the spool-frames.

In the drawings I have shown a slight modification, in which the spool-frame and wire-guarding arms are formed integrally; but the twister-head is formed separately therefrom. In this form of construction the wire-guiding hollow tube or shaft J is inserted between the outer ends of the arms *c*, and secured thereto, and the inner ends of the twister-head are attached to the opposite end of said tube or shaft J.

g represents the rear cross-piece of the spool-holder, and to which the twister-shaft G is connected.

h represents a cross-bar secured to the front of the spool-frame for the purpose of keeping the wire, as it is paid from the spool or spools mounted within said spool-frame, from spreading and reeling off the spools too readily, which it would do in the absence of such an arrangement, unless the spools were provided with a tension device.

e represents the spools, which are mounted within the spool-frame in vertical position upon a removable spindle, *f*.

i represents a cross-bar extending rearwardly from the cross-bar *h* and within the spool-frame, for the purpose of supporting the spindle, where one is used for two spools, during the temporary removal of either spool, as hereinafter explained.

In the drawings I have shown five twister-heads with five spool-frames. Two of these spool-frames are shown as placed in front of the other three, so as to give ample room for the spool-frames to revolve without coming in contact with each other; but said spool-frames and spools may be placed side by side in continuous line, if desired, in which case the arms *c* will be of equal length. At the point where the arms *c* spread apart in the three rear spool-frames, when a portion of the spool-frames are arranged in rear of the re-

mainder, I place the wire-guides *d*. The wire-guides are not needed in the front frames, as the distance from the spools to the twister-journals and wire-guiding shafts J is much shorter; but where the spool-frames are arranged side by side, and the guides *d* are not needed, and when the gears B are mounted in advance of the spool-frames, such gears will have holes therein, through which the wires pass to the twister-heads.

In the drawings I have shown two spools, *e*, placed upon one removable spindle, *f*, and when it is desired to remove a spool from the spool-frame H, I turn said frame H so that the spindle *f* stands vertically; then I remove the nut at the upper or lower end of the spindle, according to whether I wish to remove the upper or lower spool, and then draw the spindle from within the spool, after which the spool is easily taken from within the frame.

It is not essential to this construction of spool-frame that both spools shall be placed upon the same spindle, as a separate spindle may be used for each spool, if desired, and one spool be placed in front of the other with a cross-bar between them, similar to the cross-bars *g* and *h*, and also two wires may be wound upon one spool, instead of using a separate spool for each wire, providing the wires are wound evenly, so as to be paid off from the spools uniformly.

The central supporting bar or arm, *i*, is not absolutely essential to this construction of a spool-frame, but assists to hold the spool-spindle steady when removing a spool. The wires are passed directly from the spools *e* to and through the shafts J and through holes *s'* in the twister-heads I. These holes *s'* are shown in Fig. 9. As there are no pinions or gear-wheels needed on these wire-guiding shafts or tubes J, they may be made very small—about one and a half inch in diameter—with holes through them about one-half inch in diameter. The wires will be sufficiently spread apart by the holes *s'* in the twister-head I. This manner of constructing the wire-guiding and twister-journaling shafts and twister-heads allows but a small amount of surface for friction in the journaling, thereby making a light-running machine.

In Fig. 14 is shown a perspective view of a slat-adjuster, the operation of which I will now describe. K is a rock-shaft, journaled in bearings in the main frame, as shown in Figs. 1, 2, and 3. Rigidly keyed to this shaft K is an arm, *j*. L represents an arm hinged at one end by a short connecting-bar, *k*, to the upper end of the arm *l*, and fastened at its opposite end to the cross-bar *l'*, to which is attached the slat-pushers *m*. To one end of the rock-shaft K is attached a treadle, M. When a picket or slat has been fed in between the wires, the operator places his foot upon the treadle M, which, being fulcrumed at *n*, causes a rocking motion to be given to the shaft K. This rocking motion of the shaft K causes a forward movement of the arms *j'*, which, by

their connections, impart a forward movement to the arms *m*. This forward movement of the slat-pusher arms *m* brings them in contact with the last picket fed in between the wires, and shoves it away from the twister-head I and forward against the last twist of the wires, where it is held securely while the wires are being twisted behind the slat. The rock-shaft K is now caused to rock back to its first position by simply raising the outer end of the treadle M, which may be done in various ways. For instance, a spring may be placed so as to raise the outer end, or a handle may be employed by which it may be lifted by the hand, or a weight may be attached to a string run over a pulley with one end of the string attached to the end of the treadle.

Fig. 15 shows a perspective view of the slat-spacer. The arms *o o* are hinged to the main frame at *p* from the cross-bar *q*. Lugs *r* and *s* extend downward, *r* being stationary and *s* being removable. When the spacer is allowed to drop down upon the fence, as shown in Fig. 1, the lugs *s* will be in front of one slat, while the lugs *r* will be in front of the last slat, which last slat is forced against said lugs *r* previous to making the twist in the wire in the rear of the slat. When it is desired to reel the fence back, take hold of the slat-spacer handle *t* and lift it until the lugs come from between the slats, when the fence may be wound back onto the reel. When the last slat is between the lugs *r* and *s*, drop the slat-spacer so that the pin *s* will be in front of the last slat and the lugs *r* will be in the rear of it. The further reeling of the fence will bring the last slat taut against the lugs *s*. A new slat may now be fed in and pushed down taut against the pins *r*, thus securing a uniform distance between the slats. The lug *s* is made removable and adjustable to different holes, so as to enable one to make fence with slats nearer together or farther apart, as desired.

Fig. 10 is an improved reel, the construction and operation of which I will now describe. In Figs. 11, 12, and 13 are shown detail views of this same reel. *u u* are wooden supporting-arms hinged at one end to the frame *v*, between the ears *w*, and at the other end they are supported by the short bearing-pins *x*, placed in holes in the end piece or frame, *y*. *z* is a key hinged at one end to the frame *v* at *a'*. The other end is to be placed in the notch *b'* of the end piece or frame, *y*, and pinned down, as shown in Fig. 1. By this means the loose ends of the wires are clamped fast to the supporting-arms *u*, as shown in Fig. 1. When sufficient fencing has been made and wound upon the reel, the reel can be readily removed from the center of the bundle that has been wound upon it, and the bundle rolled out of the machine. This removal is accomplished as follows: Remove pins *c'* from the straps *x*, retaining the shaft *b*. Then remove the arm *d'* from the end of the short shaft or journal. Then take hold of the short shaft or journal *f'* and pull the frame *y* from

the ends of the arms *u*, when the arms *u* will drop together, the key *z* having previously been released from the parts *y*. *y'* is hinged at one end in the slot in the end of *u*, and at the other end between the ears *w* of the frame *v*, so that the arms *u* will drop close together after the frame *y* has been removed, thereby lessening the space they occupy, when, by taking hold of the shafts *e'*, they are easily removed without loosening them from the frame *v*. It will be observed that there is no central shaft the whole length of the reel, as it would prevent the arms *u* from dropping close together, and it is not necessary in this construction of a reel. When it is desired to wind the fence upon the reel, the operator treads upon the treadle M. This causes the pawl *i'* to operate upon the ratchet-wheel *k'*, causing it to turn the reel.

Having thus described my invention, what I claim is—

1. A fence-machine having a spool-frame having forwardly-extending wire-guarding arms, and a wire-twisting head formed integrally out of a single piece of metal, and a hollow shaft or sleeve connected with said arms for the purpose of guiding the wires to the twister-head, substantially as set forth.

2. In a fence-machine, a combined spool-frame and twister-head, consisting of a spool-holder having a rear cross-piece and side arms, said side arms being extended inwardly and forwardly to form wire-guarding arms, and having their outer ends perforated to receive the wires and formed into a twister-head, substantially as set forth.

3. In a fence-machine, a combined spool-frame and twister-head, consisting of a spool-holder having a rear cross-piece and side arms, said side arms being extended inwardly and forwardly to form wire-guarding arms, and having their outer ends perforated to receive the wires and formed into a twister-head, and provided with a hollow shaft or tube for guiding the wires to the twister-head and forming a bearing for the wire-guarding arms and twister-head, substantially as set forth.

4. The spool-frame H, having vertically-extending rear cross-bar, *g*, side bars and wire-guarding arms, *c*, formed integrally, and a front cross-bar, *h*, having a rearwardly-extending arm, *i*, for supporting the spool-spindle during the removal of a spool, substantially as set forth.

5. The slat-spacer herein described, consisting of the arms *o*, hinged or pivoted at their rear ends to the main frame of the machine, and having a suitable handle at their front end, a cross-bar having a downwardly-extending rigid pin, and a removable and adjustable lug for the purpose of adjusting or changing the spacing of the slats, as desired.

6. The reel herein described, consisting of an end piece or frame, *y*, having a short shaft or journal, *f'*, extending outwardly therefrom, and a notch, *b b'*, in its upper edge, an end block, *v*, having a shaft or journal, *e'*, extend-

ing outwardly therefrom, and having ears w , longitudinal arms u , hinged at one end between the ears w , supported at their opposite ends within the block y by pins x , and a key, 5 z , having hinge-connection at one end with the end block, v , its opposite end engaging the notch b' , substantially as and for the purpose set forth.

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

WILLIAM VAN HORN.

Witnesses:

ANGUS C. CAMPBELL,
PEARL I. HEDGES.