

No. 786,515.

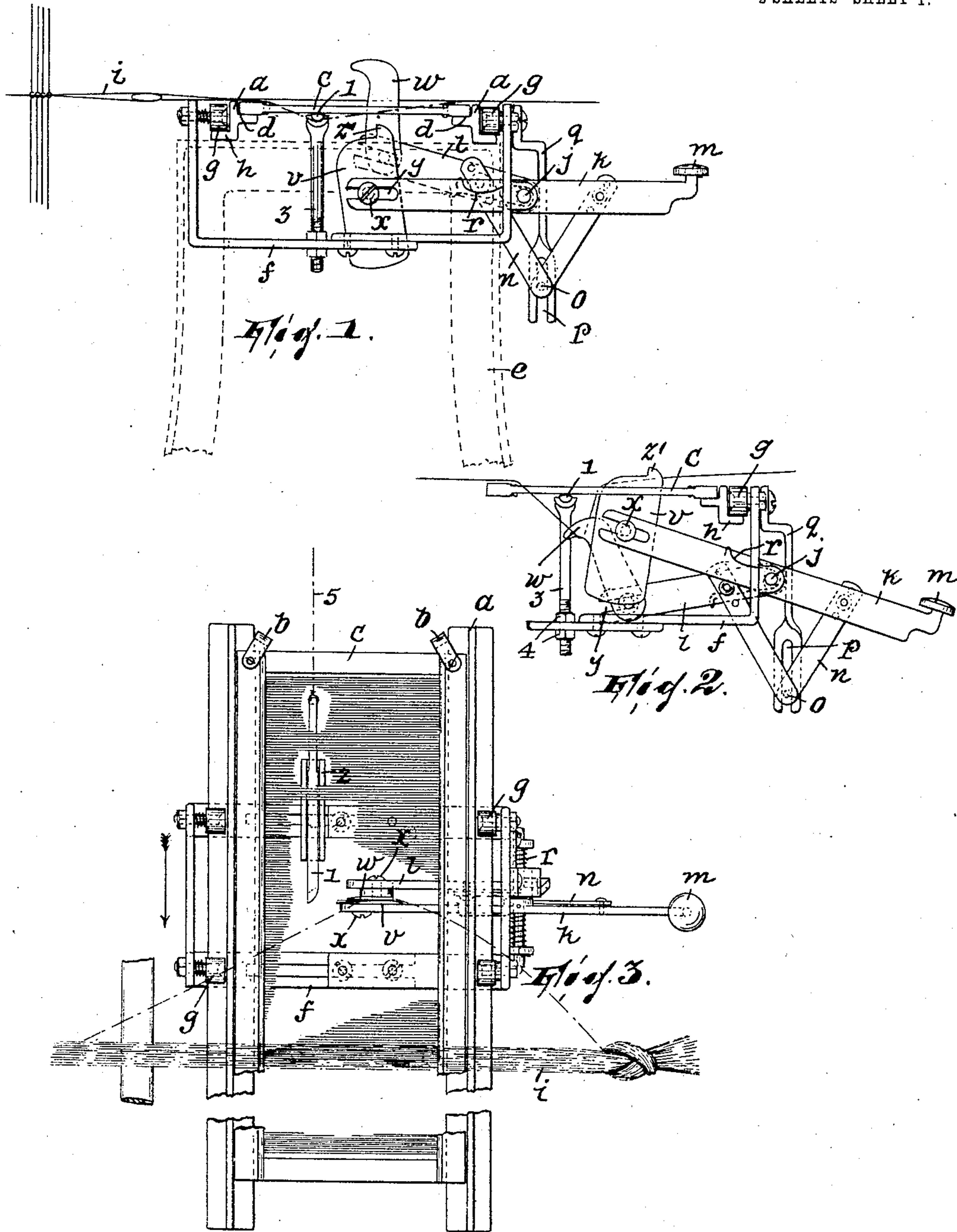
PATENTED APR. 4, 1905.

J. PERNOT & C. HUMMEL.

REEDING MACHINE.

APPLICATION FILED JAN. 10, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

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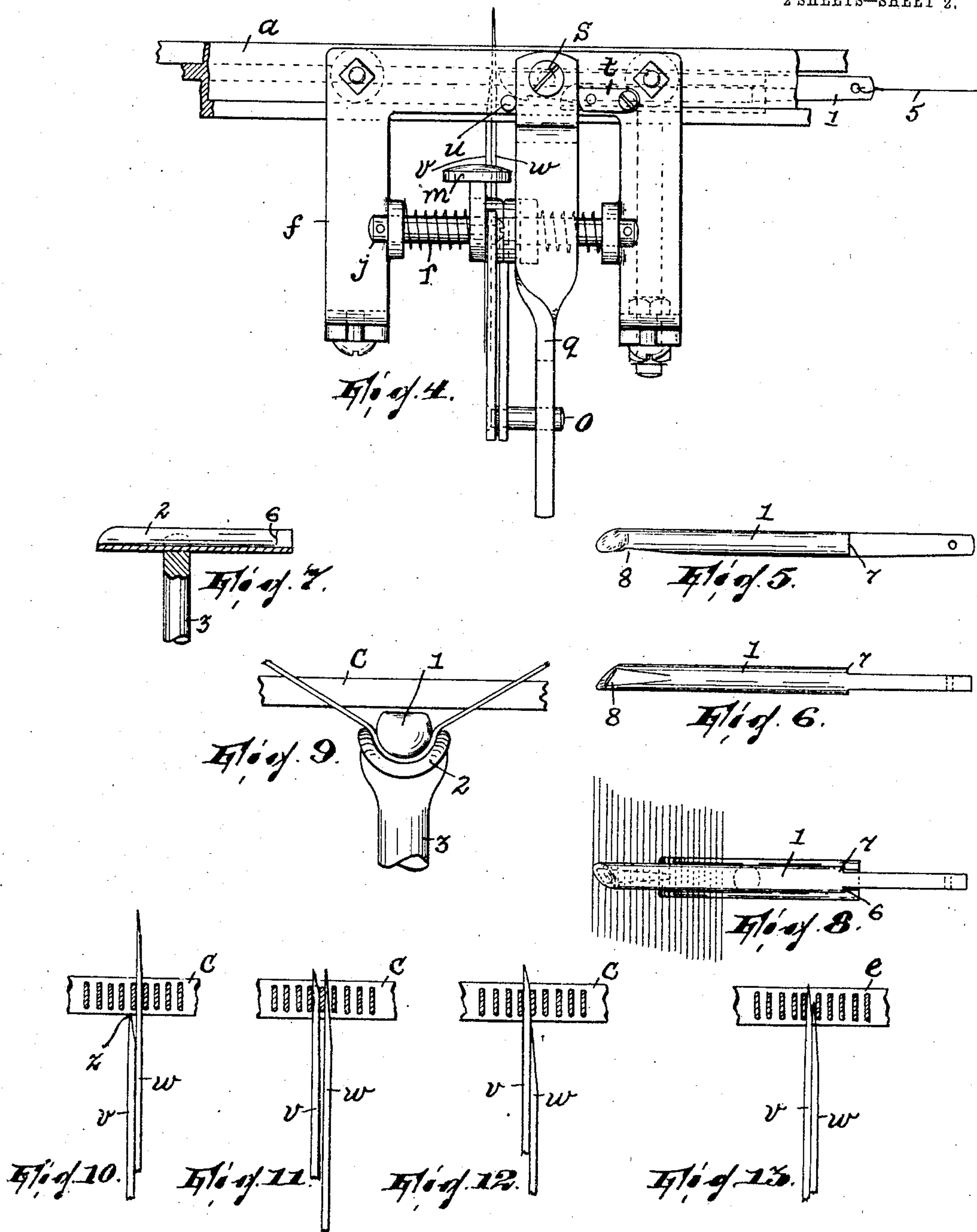
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JULES PERNOT AND CHARLES HUMMEL, OF PATERSON, NEW JERSEY.

REEDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 786,515, dated April 4, 1905.

Application filed January 10, 1905. Serial No. 240,412.

To all whom it may concern:

Be it known that we, JULES PERNOT and CHARLES HUMMEL, citizens of the United States, residing in Paterson, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Reeding-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

Our invention relates to the art of inserting warp-threads in the reeds of looms. This work, called "reeding" or "rereeding," is usually done by hand, requiring much dexterity and experience, and even with the best of skilled labor it is a slow and tedious process.

Our principal object is to provide a simple, easily-operated, and accurate mechanism for doing this work more expeditiously than it is done manually.

Our invention will be found fully illustrated in the accompanying drawings, wherein—

Figure 1 is a side view of the machine in operative position with relation to a warp and the reed through which it is to be drawn. Fig. 2 is a fragmentary view of what is shown in Fig. 1, the parts being in the act of drawing a warp-thread through the reed. Fig. 3 is a top plan view of what is seen in Fig. 1. Fig. 4 is an enlarged front view of what is shown in Fig. 1. Figs. 5 and 6 are side and underneath views, respectively, of a certain follower or thread-holder. Fig. 7 is a view, partly in section, of a carrier for said follower or thread-holder. Figs. 8 and 9, respectively, are a top plan and front view of said follower and its carrier assembled; and Figs. 10, 11, 12, and 13 are views illustrating different positions of a certain finder and hook with relation to the reed.

One of the essential features of our invention is a pair of oscillatory parts adapted to move in opposite directions past each other,

alternately projecting themselves up through the reed. These parts are arranged in a carriage, between which and the reed there is a lateral movement of the one with reference to the other, so as to intermittently position the same for the drawing of the threads through the reed between successive dents thereof. The mechanism comprising said parts is that which is essentially concerned in the work of both drawing through the threads and, with the dents of the reed as an index or guide and coöperative auxiliary, of positioning the reed and carriage for each successive operation.

Another essential feature of our invention is in combination a means for forcing the threads through the reed in loops or deflections instead of end for end and a follower or thread-holder which shall project itself through said loops or deflections and between the same and the reed as they are successively brought through the reed.

In the drawings, *a* designates two parallel rails, to which may be secured, as by clamps *b*, the reed *c*, the latter resting in grooves *d* in said rails, which may in turn rest on suitable supports *e*. (Shown in dotted outline in Fig. 1.)

f is a U-shaped carriage having antifriction-rollers *g*, which run on guideways *h* of the rails *a*, the top of the carriage being preferably low enough at all points so that it is substantially flush with the top of the reed *c*, and therefore does not interfere with the warp *i*. (See Fig. 1.) On a horizontal shaft *j* in this carriage are arranged levers *k* and *l*, the lever *k* being fulcrumed between its ends and having a finger-piece or button *m* at its outer end.

n is a toggle pivoted at one end to the lever *l* and at its other end (on the relatively opposite side of the fulcrum for said levers in shaft *j*) to the lever *k*. The pivoting-pin *o* at the joint between the members of this toggle is received by a slot *p* in an arm *q* on the carriage. Thus interconnected by the toggle, which is controlled by the arm *q* in the manner just described, the downward movement of the outer end of lever *k*, produced

by pressing on the button *m*, will cause lever *l* to move in the same direction. A spring *r*, coiled about the shaft *j* and having one end hooked over the inner end of lever *k* and its other end hooked under lever *l*, acts to normally keep the parts in the position shown in Fig. 1. The arm *q* is pivoted on a stud *s*, so that by throwing out of contact therewith a latch *t*, which normally holds it against a stop *u*, fixed while the machine is in operation, it may be moved to the right (see Fig. 4) to release the pin *o* from its slot and permit both levers *k* and *l* to turn on their fulcrum in the same direction for the purpose of adjusting the machine to the reed or removing it therefrom, as hereinafter described.

v is the finder, and *w* the hook. These are carried by the inner ends of the levers *k* and *l*, being adjustably secured thereto by thumb-screws *x*, arranged in slots *y* in said levers. The carriage in the adaptation shown moves from right to left, the operator holding a section of the warp (having a knot tied in its end, as shown in Fig. 3) in his left hand and picking off the extreme right-hand thread with his right hand and passing it over the hook *w*, which in the rest position of the machine is up, protruding through the reed from underneath. In order to secure the intermittent advance of the carriage to the left, the hook and finder are beveled each on the right side. In the adaptation shown the bevel on the hook is the one designed, by wiping against the dents of the reed, to do the principal part of the work of advancing the carriage. Hence it is a gradual bevel, which does not reach its relatively highest pitch until the hook has been elevated to the maximum height. The bevel on the finder is less acute, being only sufficient, inasmuch as the finder and hook are in contact with each other, so that the finder's extreme top edge at *z* just uncovers the reed-dent to the left of the hook when the parts are in the position shown in Figs. 1 and 10—i. e., where the highest part of its bevel has come into play to crowd the carriage the maximum distance to the left. If now lever *k* is pressed down upon, so as to raise the finder and depress the hook, the hook will draw the thread down through the reed and the finder will be raised up through the next opening in the reed. Since the hook crowds two dents into practical contact with each other, the finder's tip *z'* does not rise directly beside the hook, but a little out of lateral alinement therewith, where the space is wider. On withdrawing the pressure from button *m* and permitting the parts to assume the rest position under the action of spring *r* the hook *w*, because it is sharply beveled and lies snugly against the side of the finder, will project itself up through the opening last occupied by the finder as the same is receding from said opening.

The several steps in the cycle of operation above described will be readily understood on reference to Figs. 10 to 13.

1 is a follower or thread-holder, which is held up close against the under side of the reed in an elongated carrier *z*, having a stem 3, which is adjustably secured to the carriage *f* by nuts 4. The front end of this follower is beveled off on the side toward the hook (see Fig. 3) and is about in line with said hook, its rear end being toward the direction from which the machine moves. Being thus arranged, it acts to retain the loop or deflection of each thread which is passed around it each time the hook *w* is depressed. This is best shown in Figs. 8 and 9. As the machine advances the loops or deflections in the thread held by the follower pass between the same and its carrier, (see Fig. 9,) and after the follower has completely passed by they may be kept from even then being drawn up through the reed by a trailing cord 5, attached to the tail of the follower. In order that the follower may advance with its carrier, the latter, which is grooved to receive it, has a shoulder 6, against which abut shoulders 7 on the follower formed by reducing its rear end. To prevent the threads from accidentally becoming disengaged from the follower, its front under side may be formed with a notch 8. Upon releasing arm *q* from pin *o* the levers *k* and *l* can be moved about shaft *j* as a fulcrum to allow the finder and hook to be depressed out of engagement with the reed. The machine can then be moved freely on its guides in either direction. By moving it to the right the follower will release all the threads to the left of it, so that if a mistake has been made they can be withdrawn and rereeded. When the machine's work has been completed, it having traveled the whole width of the warp, the machine can be removed from the guides, the several knots in the groups of warps cut off, and the cord 5 made use of to finally draw the cut ends down through the reed, completing the work.

Performed as above described, the process of inserting the threads between the dents of the reeds is characterized by the carrying of the threads through in loops or deflections, neither end of any thread being carried through the reed until all of the threads, or of a group of them, have been in this manner introduced. In the hand operation and with machines heretofore patented the threads were introduced so that their ends successively took up positions on the side of the reed opposite to that from which they were entered. The threads being first purposely arranged free end for end from each other, the pulling of their ends through the reed had the advantage that in the continued manipulation they were not likely to be withdrawn accidentally; but it had the disadvan-

tage that, requiring the end-for-end freedom of the threads, if on account of a mistake in the reeding the work had to be pulled out and rereeded in whole or part, the proper successive arrangement of the threads was disturbed in the handling. By our process we have the advantage that the reeding can be accomplished with the thread ends tied or otherwise secured in proper succession, so that if withdrawing is necessary the succession is not disturbed, and yet the threads are held against accidental withdrawal from the reed after once being inserted. This process we will make the subject of a separate application.

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

1. The combination of a carriage and a mechanism, arranged therein, for drawing threads through a reed and effecting a relative lateral movement between said reed and carriage comprising coöperative oscillatory parts movable past each other in reverse directions, one of said parts being a dent-space finder and the other the thread-drawing-in device, proper, substantially as described.

2. The combination of a carriage and a mechanism, arranged therein, for drawing threads through a reed and effecting a relative lateral movement between said reed and carriage comprising coöperative oscillatory parts movable past each other in reverse directions, one of said parts being a dent-space finder and the other the thread-drawing-in device, proper, and one of said parts having an inclined cam-surface on one side thereof adapted to wipe against the dents of the reed, substantially as described.

3. The combination of a carriage and a mechanism, arranged therein for drawing threads through a reed and effecting a relative lateral movement between said reed and carriage comprising coöperative oscillatory parts arranged substantially side by side and movable past each other in reverse directions, one of said parts being a dent-space finder and the other the thread-drawing-in device, proper, and one of said parts having an inclined cam-surface on one side thereof adapted to wipe against the dents of the reed, substantially as described.

4. The combination of a carriage and a mechanism, arranged therein, for drawing threads through a reed and effecting a relative lateral movement between said reed and carriage comprising coöperative oscillatory parts arranged substantially side by side and movable past each other in reverse directions, one of said parts being a dent-space

finder and the other the thread-drawing-in device, proper, both of said parts having an inclined cam-surface on one side thereof adapted to wipe against the dents of the reed, substantially as described.

5. The combination of a carriage and a mechanism arranged therein, for drawing threads through a reed and effecting a relative lateral movement between said reed and carriage comprising coöperative fulcrumed parts, one of said parts being a dent-space finder and the other the thread-drawing-in device, proper, a two-part toggle connecting said fulcrumed parts on relatively opposite sides of their fulcrums and means for guiding the articulating portion of said toggle rectilinearly, substantially as described.

6. The combination of a carriage and a mechanism arranged therein, for drawing threads through a reed and effecting a relative lateral movement between said reed and carriage comprising coöperative fulcrumed parts, one of said parts being a dent-space finder and the other the thread-drawing-in device, proper, a two-part toggle connecting said fulcrumed parts on relatively opposite sides of their fulcrums and detachable means for guiding the articulating portion of said toggle rectilinearly, substantially as described.

7. The combination of a carriage, a means, arranged therein, for drawing threads through a reed in a succession of loops or deflections, and a means for holding said threads from accidental withdrawal from the reed also arranged in said carriage, substantially as described.

8. The combination of a carriage, a means, arranged therein, for drawing threads through a reed in a succession of loops or deflections, and a follower or thread-holder arranged in said carriage longitudinally with reference to the reed when operatively assembled with said carriage, substantially as described.

9. The combination of a carriage, a means, arranged therein, for drawing threads through a reed in a succession of loops or deflections, a follower or thread-holder arranged in said carriage longitudinally with reference to the reed when operatively assembled with said carriage and a substantially horizontal rest for said follower, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands this 5th day of January, 1905.

JULES PERNOT.
CHARLES HUMMEL.

Witnesses:

JOHN W. STEWARD,
WM. D. BELL.