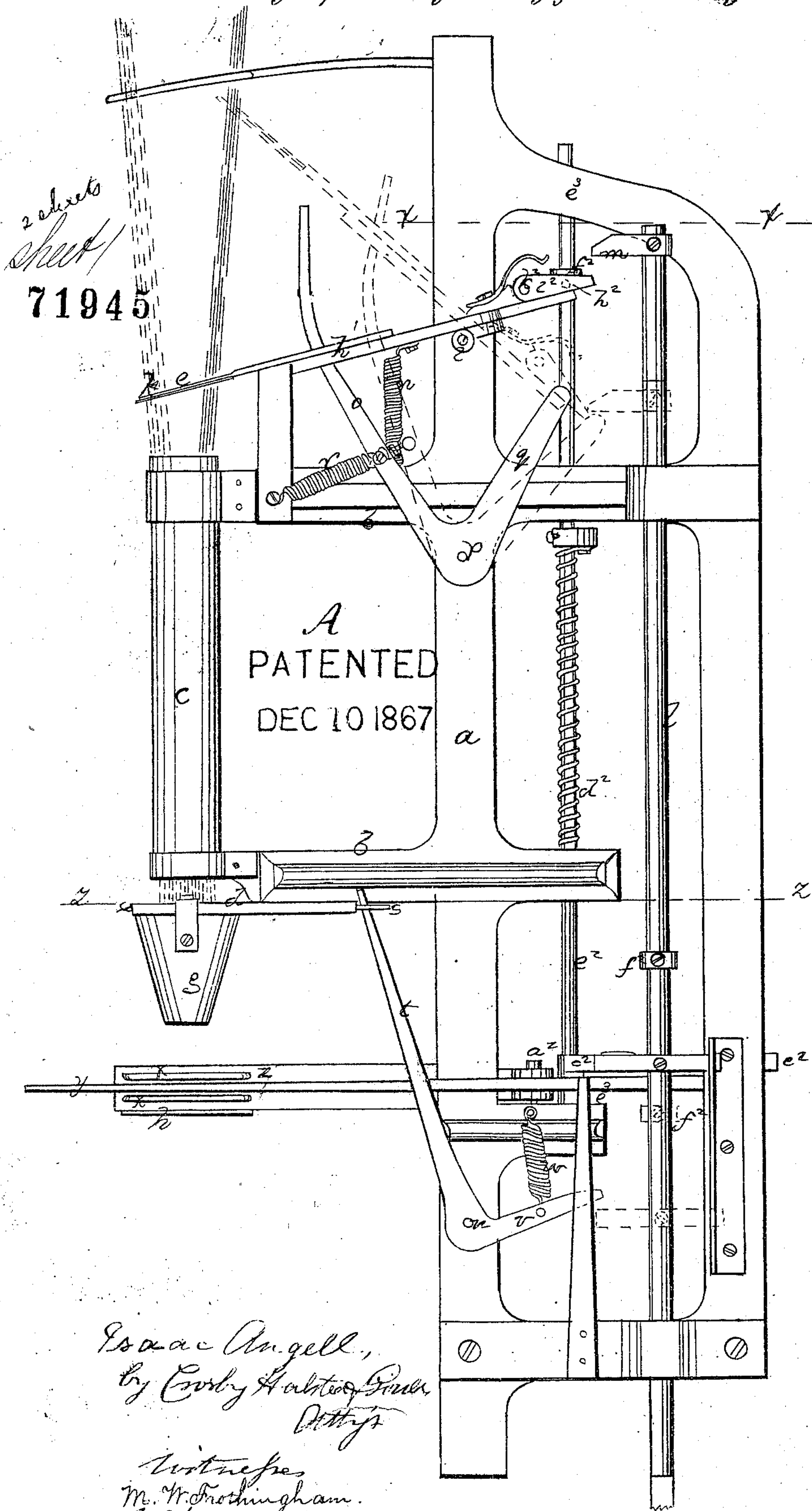


Isaac Angell's  
Mechanism for presenting "Filling" for Palm Leaf Looms.



Isaac Angell,  
By Crosby H. Abbot, Esq.  
Attys

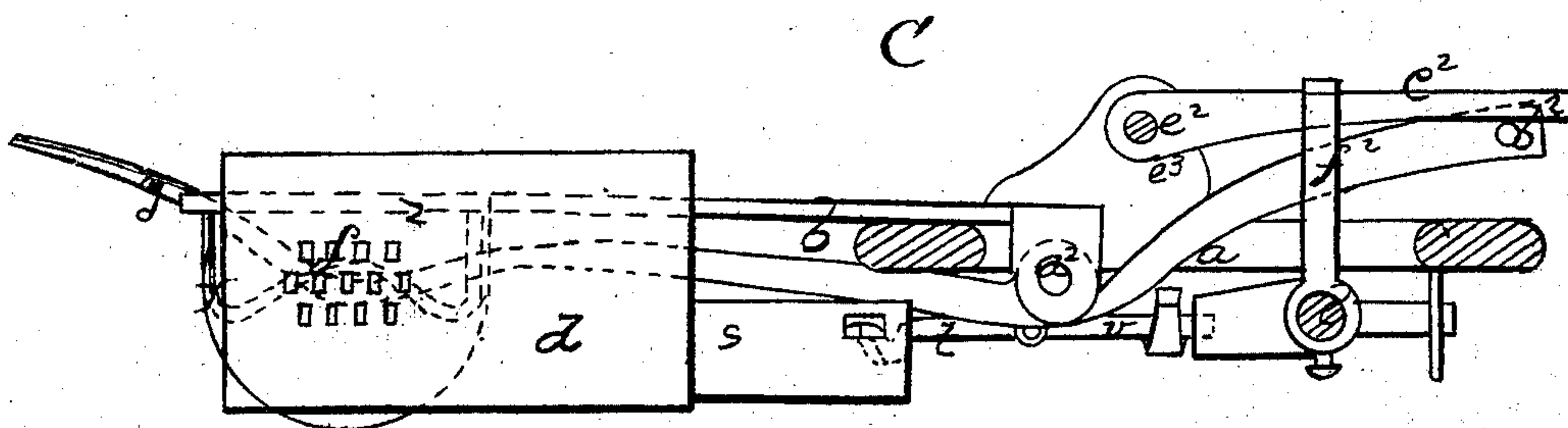
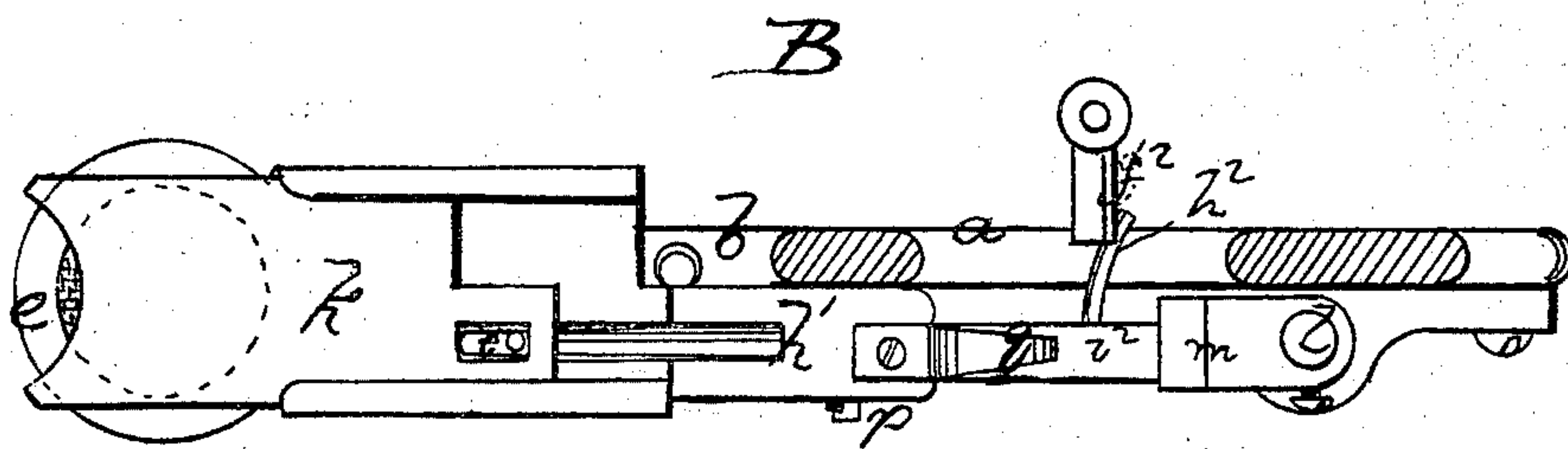
Witnesses  
M. W. Frothingham.  
C. Warren Brown.

71. 945-

2 sheets Sheet 2

Isaac Angell's  
Mechanism for presenting 'Filling' for Palm Leaf Looms.

Patented Dec 10. 1867





# United States Patent Office.

ISAAC ANGELL, OF MALDEN, MASSACHUSETTS.

*Letters Patent No. 71,945, dated December 10, 1867.*

## IMPROVEMENT IN MECHANISM FOR PRESENTING PALM-LEAF TO LOOMS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, ISAAC ANGELL, of Malden, in the county of Middlesex; and State of Massachusetts, have invented an Improvement in Presenting Palm-Leaf and similar Weft in Looms; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practise it.

In the manufacture of palm-leaf loom-woven goods, the practice is to introduce each piece of weft by hand, or rather for the attendant to present the entering end of each piece at a point where it will be seized by the nippers, to be by them carried into the web, or through the shed. This, of course, requires the entire attention of an operative at each loom. This manner of introducing the weft is also common in hair-cloth looms; but a mechanism has been devised by which an instrument is made (automatically) to enter a compressed bunch of hair-weft, and to seize and draw out therefrom a single piece of hair at a time for each stroke or beat up of the lay, said piece being then taken and carried into the web by the nippers. In weaving palm-leaf, however, this is impracticable, because each palm-leaf filling-piece is rectangular in section, and not round, and has to be carried and held flatwise in the web, whereas the hair, being round, has only to be seized and carried into the web, without regard to any cross-sectional form. My object has been to devise a mechanism by which the end of each piece of palm-leaf filling shall be so projected from the mass of filling-strips that it will be properly presented in position to be seized by the nippers or other carrying-device, and carried flatwise into the web.

The invention has nothing to do with a device for entering a bunch of filling, and there selecting or seizing a strip, but only has for its object an automatic presentation of each strip, both in position to be seized by the nippers, and in such position, with relation to the position it is to occupy in the woven goods, that it will be carried flatwise into the web.

My invention, therefore, may be said to consist, primarily, in a mechanism (to be attached to or to form part of a loom) which shall automatically present pieces of palm-leaf, or analogous filling, singly and successively, in position for the end of each to be so grasped that each piece shall be carried flatwise into the web or shed. The drawings represent a mechanism embodying my invention.

A shows a side elevation of the same.

B, a sectional plan on the line *x x*.

C, a sectional plan on the line *z z*.

*a* denotes a stationary framework, to be fixed to or forming part of the frame of the loom. Upon arms *b b*, projecting from this frame, is supported a stationary vertical weft, containing tube *c*, a considerable quantity or number of strips of weft of uniform length being dropped loosely into this tube, their lower ends resting on a horizontal plate, *d*, and their upper ends extending through a ring, *e*.

The plate *d* has extending through it a series of oblong or rectangular-shaped holes, *f*, the long sides of which are parallel to each other, and to the line of warp or to the warp-threads, these holes being similar in shape to the shape of the weft-pieces in cross-section, and being somewhat larger than the weft at the top of the plate, and tapering towards the bottom thereof, so that the end of a piece of weft presented endwise against the top of the plate may slip easily into the top of the hole, and may slide down through the same. These holes lead down into a frusto-conical tube, *g*, open at bottom, and below said tube is a horizontal plate or table, *h*, against which the end of the piece of filling to be carried into the shed is to rest in position, properly presented (sectionally) to be seized by the nippers, which introduce the filling-piece into the shed before each beat up of the lay. (The position of the end part of the piece when so presented is denoted by dotted red lines at A, the edge being turned towards the observer.)

The ring *e* extends from an arm, *h*<sup>1</sup>, and in connection therewith has a reciprocating vertical or tilting movement imparted to it, the arm swinging on a pin, *i*, projecting from the frame *a*. On top of the ring *e*, and over the arm *h*<sup>1</sup>, a slide, *k*, traverses, this slide, when pressed outwards, pinching the weft-pieces against the front inner surface of the ring, or between the said surface and the recessed end of the slide. When so pinched, if the arm and ring are thrown up, the weft-pieces are carried up with them, and when considerably elevated the slide is drawn back, releasing the weft, which drops by gravity against the slotted plate *d*, so that if any weft-end comes exactly opposite an opening in said plate, it will drop down through the same. Just before or just after the weft so drops, the ring *e* is released, and also drops; and after both have dropped, the slide *k* is again thrown out, to again clamp the weft in its ring. These movements are effected as follows: On one side of the frame *a* is a vertical reciprocating slide-rod, *l*, moved from the driving-shaft of the loom in any suitable manner. At the upper end of the rod, a tappet, *m*, is fixed. This tappet, as the rod *l* is depressed, strikes a rear extension from the ring-arm *h*<sup>1</sup>, and throwing down this extension, elevates the opposite end of the arm and the ring *e*, carrying the weft upwards until the tappet *m* passes by such extension, and thereby releases the



ring, which descends by the action of a spring,  $n$ . The clamp-slide  $k$  has one arm,  $o$ , of a bent lever, extending through it, said lever being hung upon a pin,  $p$ , projecting from the frame, and having its other arm,  $q$ , extending rearwards, as seen at A. Just before the ring-arm is released from the tappet  $m$ , the tappet strikes the lever-arm  $q$ , depressing it, and drawing back the other lever-arm  $o$ , which draws back the slide and lets free the weft. The tappet continues its movement, and passing by both the ring-arm extension and the lever-arm, the ring is drawn down by the spring  $n$ , and the slide is thrown down by a spring,  $r$ , and again clamps the weft.

As several pieces of weft may present themselves through the holes of the plate  $d$  at any descent of the weft, and as only one piece is wanted at a time for the grasp of the nippers, a mechanism is introduced by which all the strips but one, when more than one are presented, are carried back by the next ascent of the clamp-ring. This mechanism is as follows: Running under and against the plate  $d$  is a slide,  $s$ , the rear end of which is connected to a bent lever,  $t$ , hung on a pin,  $u$ , and having an arm,  $v$ , which projects into the path of a tappet on the rod  $l$ , so that at every descent of the rod, the tappet, striking the lever, draws back the slide  $s$ . When the tappet rises, a spring,  $w$ , throws forward the slide. Now, if a piece of weft has dropped through the plate  $d$ , the forward end of the slide strikes this piece, and holds it, while all the rest are drawn up by the clamp-ring. If several pieces are through the plate, the rearmost one is held, and all the rest are raised; and to prevent the plate from holding two pieces in line, the holes are all arranged out of line, (transversely,) as seen at C, so that the slide can only bring up against one piece.

A mechanism, arranged as follows, may be used to "knock off" the weft-lifting mechanism when a piece of weft is through the plate  $d$ :

Just above the table or plate  $h$  are two stationary stop-wires,  $x$ , and between these a finger,  $y$ , plays horizontally. When no weft-piece is down upon the plate, this finger plays back between the stop-wires, to the vertical wall  $z$ . When a piece of weft is down against the plate  $h$ , it stands just in front of the stop-wires, and the finger  $y$ , in playing back, comes against the weft-piece, and is thereby held from going back.

This finger is hung on a pin,  $a^2$ , and its rear end bears a pin,  $b^2$ , against which an arm,  $c^2$ , is pressed, by the action of a spring,  $d^2$ , the arm projecting from a vertical rod or shaft,  $e^2$ , around which this spring passes, this rod turning in suitable bearings,  $e^3$ . The stress of the spring tends to keep the finger  $y$  pressed up towards the stop-wires  $x$ , and each time the tappet-rod descends, an inclined tappet,  $f^2$ , strikes the rear end of the finger  $y$ , and presses its front end outward, so that if a weft-piece then descends, it will come between the finger and the stop-wires. When the tappet-rod then ascends, this weft-piece holds the finger out from the wall  $z$ , and the pin  $b^2$  holds the arm  $c^2$  back, keeping the shaft or rod  $e^2$  turned. This rod bears near its upper end an arm,  $g^2$ , one face of which is inclined, and is in the path of movement of a pin,  $h^2$ , projecting from a toe,  $i^2$ , on the rear extension of the clamp-ring arm. This toe swings up on a pin,  $k^2$ , and when the pin  $b^2$  holds the arm  $c^2$  back, the pin  $h^2$  strikes the incline  $g^2$ , and holds the toe up, so that when the tappet-rod next moves up and down, the tappet  $m$  will pass by the toe  $i^2$ , and no movement will be communicated to the clamp-ring until the weft has been seized and drawn off by the nippers, the finger  $y$ , moving back against the wall  $z$ , causing the incline  $g^2$  to be thrown out of the path of the toe-pin  $h^2$ , the toe then dropping, and being again in position to be struck by the tappet  $m$ , to cause the elevation and dropping of the weft upon the plate  $d$ .

The mechanism is preferably to be so connected with the loom-mechanism that the tappet  $m$  will cause the elevation and dropping of the weft several times for each beat of the lay, so that if no weft-piece drops through the plate  $d$  at the first descent, the weft will repeatedly drop until a weft-piece does protrude, when the descent will be immediately stopped by the knocking-off mechanism.

By this arrangement, it will readily be seen that each piece of weft is automatically presented, in proper position to be automatically taken by the nippers, and that one operative can thereby attend quite a number of looms, it being only necessary (so far as attention to the weft is concerned) to keep the tube of each loom supplied with a sufficient quantity of weft.

It will be obvious that the specific construction and arrangement of the mechanism may be materially modified without departing from the spirit of my invention, as above set forth.

In one modification which I have devised, I dispense with the short tube  $g$  and the mechanism beneath it, and place a stop-plate just below the perforated plate  $d$ , so that the end of each piece of weft, upon passing through, is arrested by the stop-plate, and I then bring the nipper-jaws up to the weft, above the plate  $d$ , to there seize the weft, the arrest of the slide  $s$  by the first protruded slip (to allow all the other weft-pieces to be raised) being then made to "knock off" the weft-operating mechanism.

I claim—

For employment, in connection with a loom for weaving with palm-leaf or similar weft, a mechanism, substantially as set forth, which automatically presents in succession the entering ends of single pieces of weft, in such position, with relation to the cross-sectional form of each, that each piece will be carried into the shed or web flatwise.

Also, the mechanism for effecting the elevation and release of the weft, substantially as described.

Also, the plate  $d$ , with its rectangular perforations, and the gate or slide for clamping a single piece of weft projecting through the plate, substantially as shown and described.

Also, a mechanism, substantially as set forth, for "knocking off" the weft-raising mechanism when a piece of weft is presented.

Witnesses:

J. B. CROSBY,  
FRANCIS GOULD.

ISAAC ANGELL.