

No. 669,394.

Patented Mar. 5, 1901.

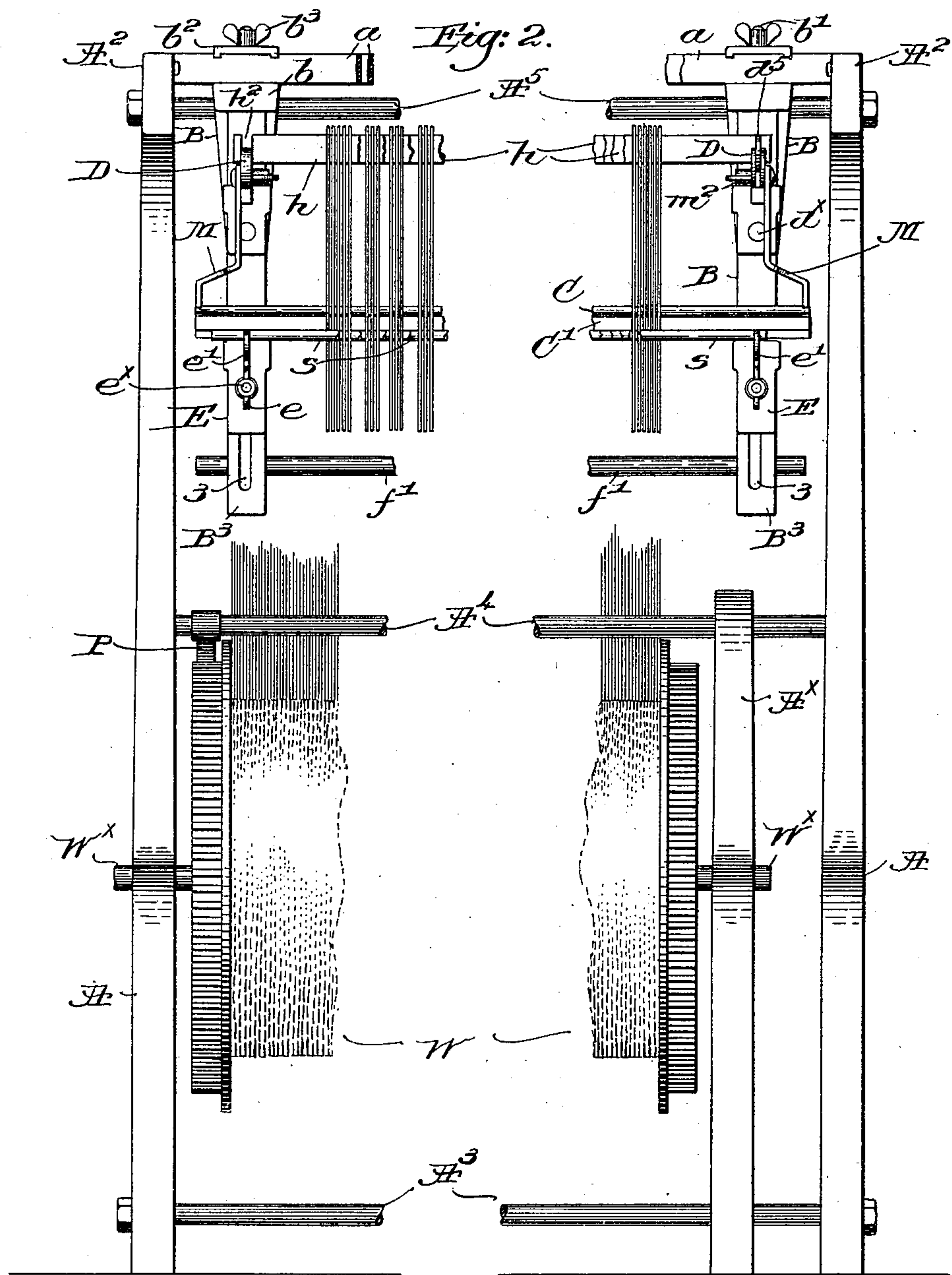
W. L. KEENE.

DRAWING-IN FRAME.

(Application filed Oct. 23, 1900.,

(No Model.)

3 Sheets—Sheet 2.



Witnesses,
Edward F. Allen.
Thomas J. Spummond.

In witness whereof,
William L. Keere,
by Bradley Gregory,
attys.

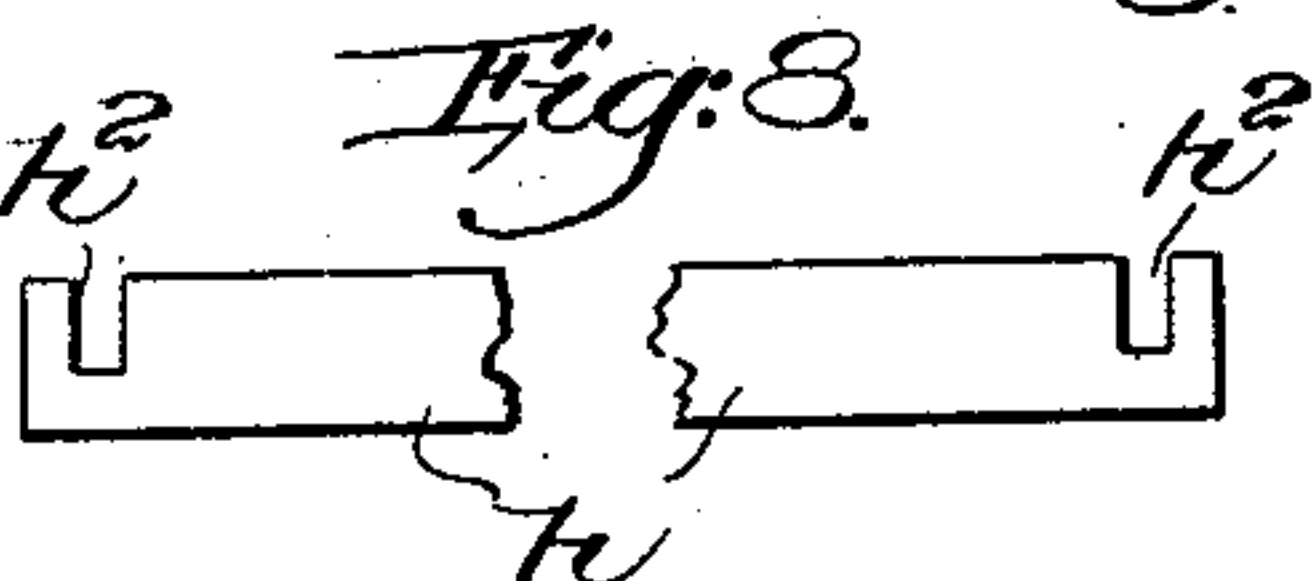
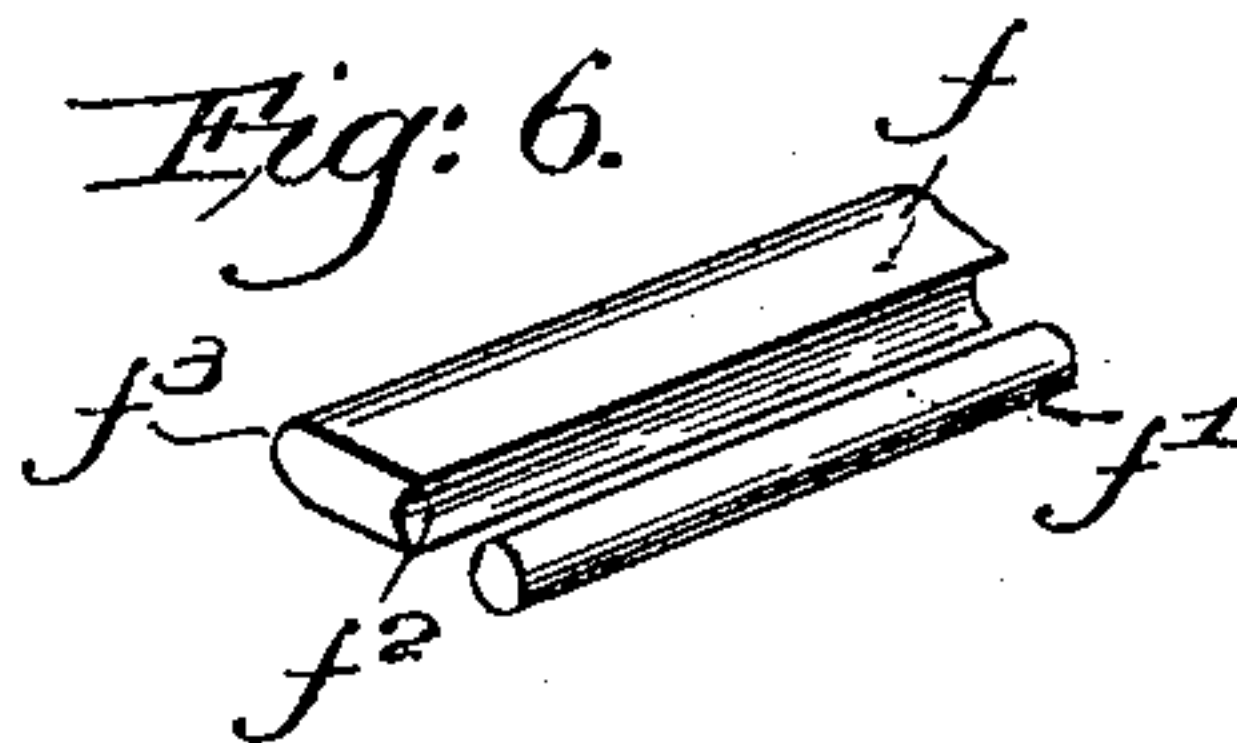
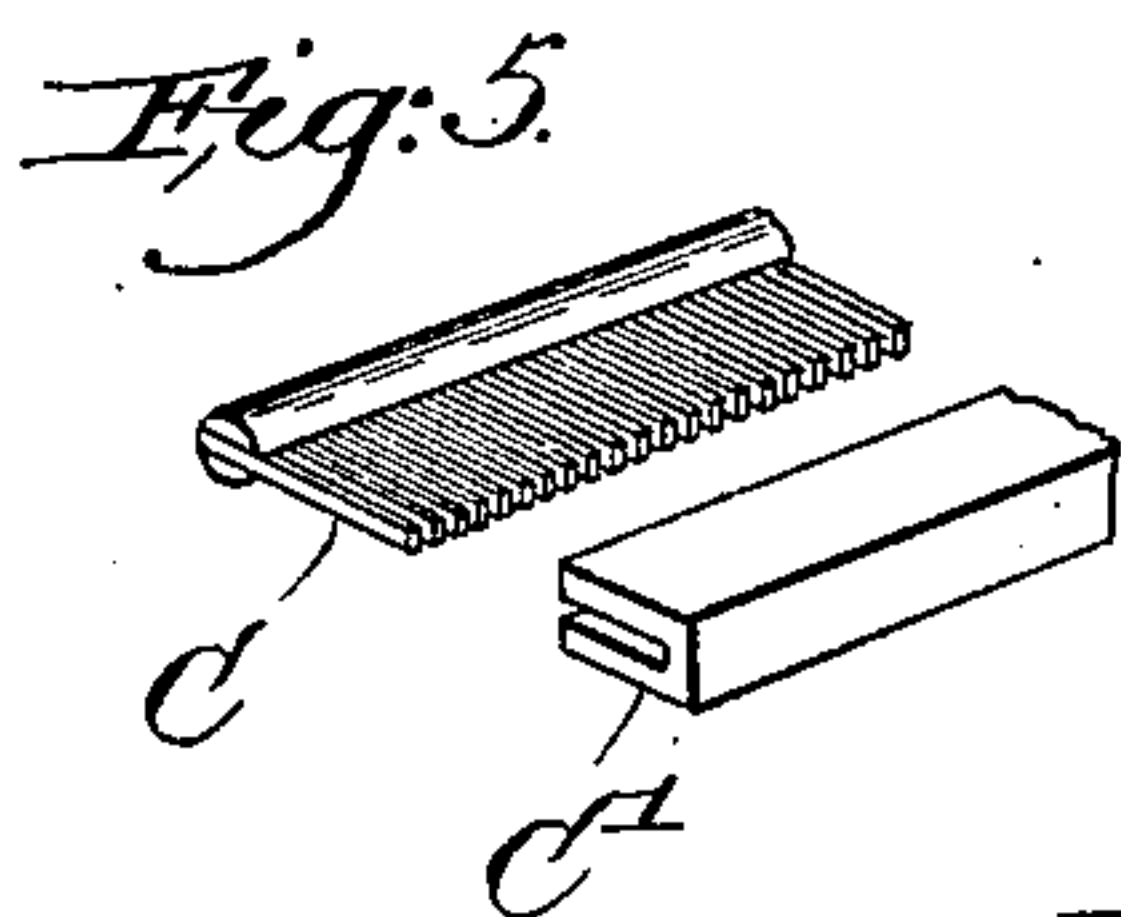
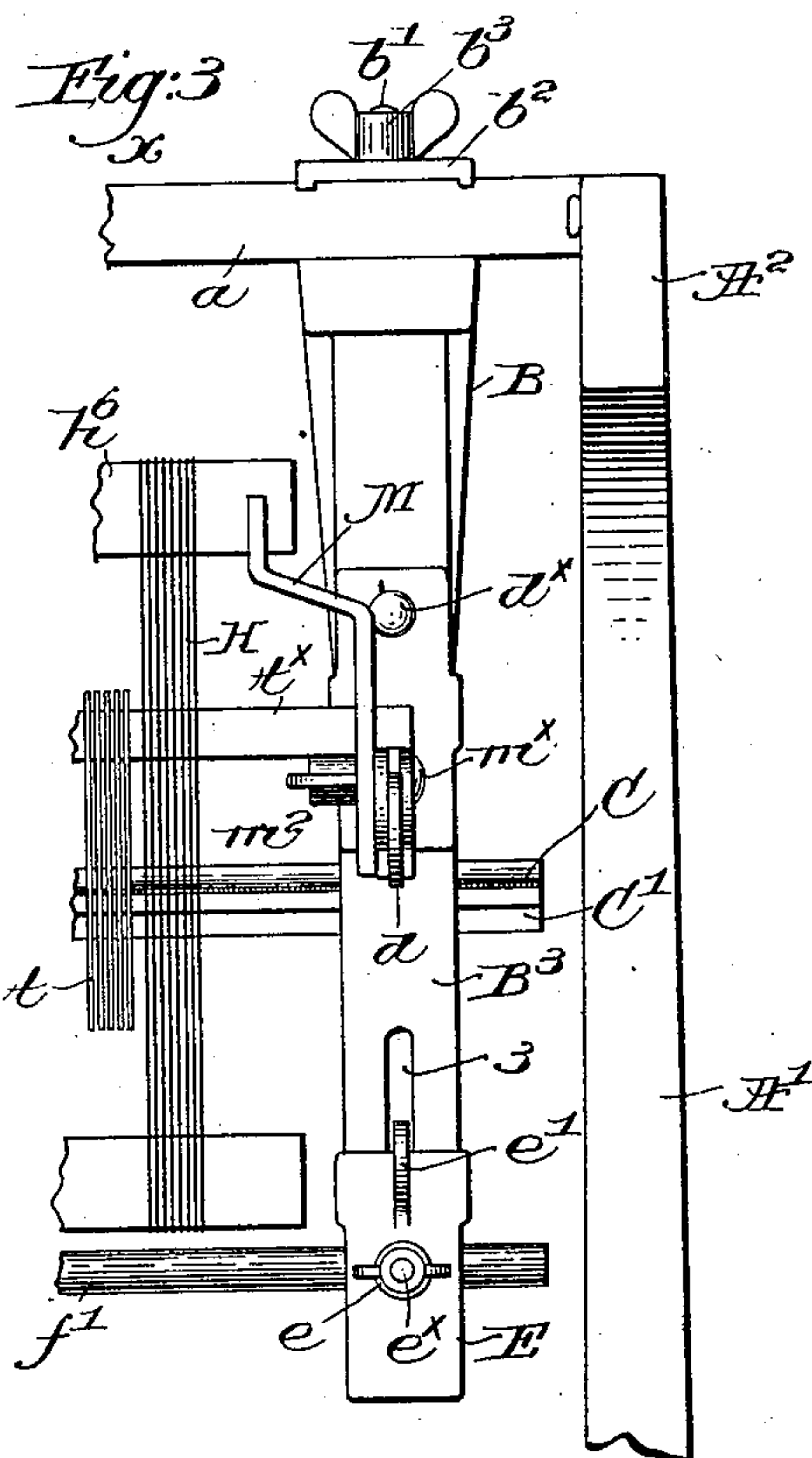
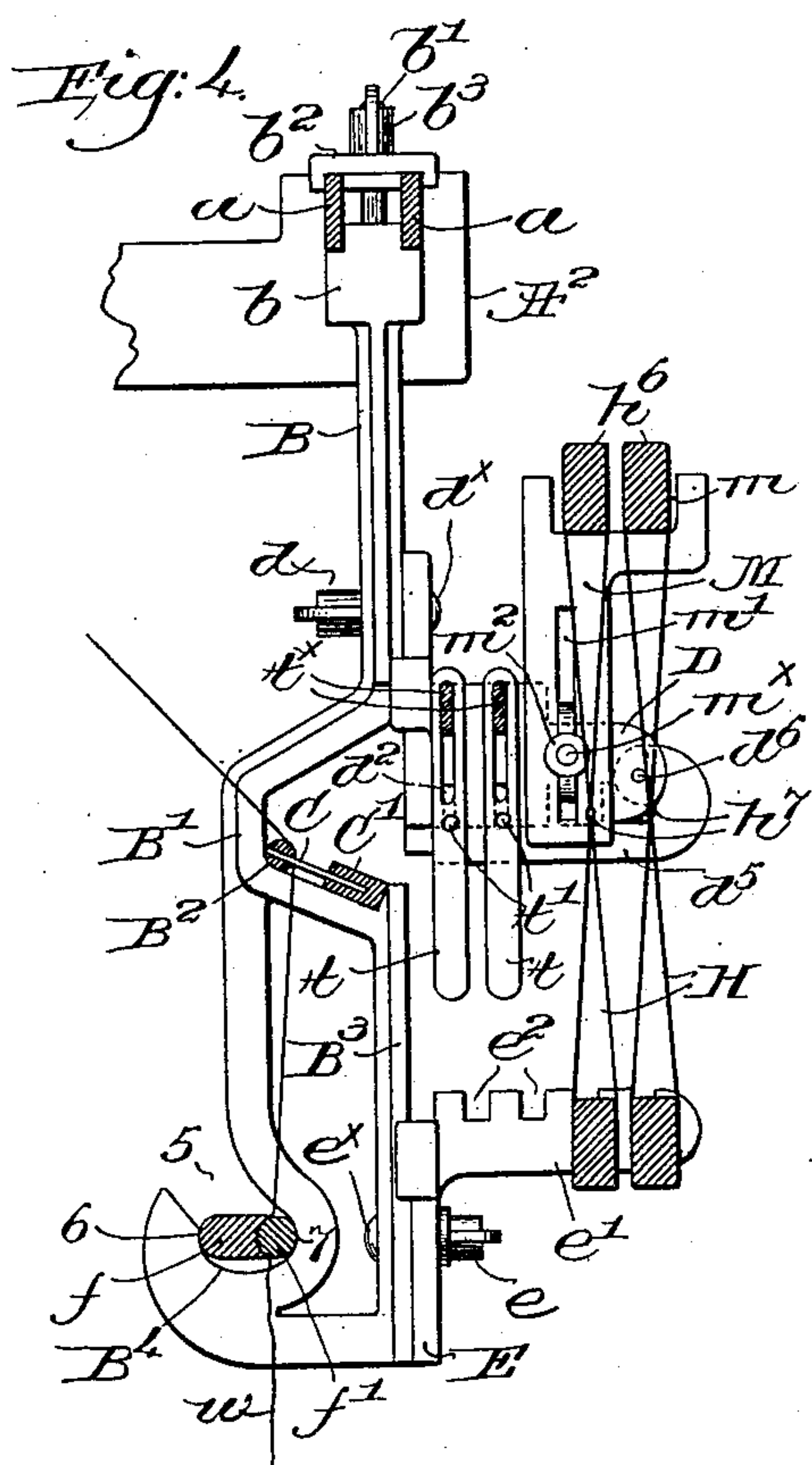
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Witnesses,
Edward H. Allen.
Thomas J. Grummond.

Inventor,
William L. Keene,
by Bradley & Gregory
attys.

UNITED STATES PATENT OFFICE.

WILLIAM L. KEENE, OF WATERTVILLE, MAINE, ASSIGNOR TO DRAPER COMPANY, OF PORTLAND, MAINE, AND HOPEDALE, MASSACHUSETTS.

DRAWING-IN FRAME.

SPECIFICATION forming part of Letters Patent No. 669,394, dated March 5, 1901.

Application filed October 23, 1900. Serial No. 34,084. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. KEENE, a citizen of the United States, residing at Waterville, in the county of Kennebec and State of Maine, have invented an Improvement in Drawing-In Frames, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

10 This invention relates to drawing-in apparatus in which the warp-beam is suitably mounted while the operator draws in the warp-threads through the eyes of the harnesses in accordance with a specified order of arrangement; and my invention has for its object the improvement of such apparatus in several particulars whereby the work is facilitated and simplified, the apparatus being adapted for drawing-in ordinary cotton-harnesses, harnesses having metallic detector-heddles, or a combination of harnesses and detectors for warp-stop-motion mechanism.

25 The various novel features of my invention will be hereinafter described, and particularly pointed out in the following claims.

Figure 1 is a left-hand side elevation of a drawing-in frame embodying one form of my invention. Fig. 2 is a front elevation, centrally broken out to save space, of the apparatus illustrated in Fig. 1, four harnesses with metal detector-heddles being shown in position for drawing in. Fig. 3 is an enlarged detail of the upper right-hand portion of the apparatus, showing its use with cotton-harnesses and stop-motion detectors. Fig. 4 is a transverse sectional detail on the line $x-x$, Fig. 3, looking toward the right. Fig. 5 is an enlarged perspective detail of the two parts of the slasher-comb separated. Fig. 6 is a similar view of the two-part friction-clip for the warp ends. Fig. 7 is a front elevation, broken out, of one of the guide-rods; and Fig. 8 is a similar view of one of the supporting-bars on which the metal detectors or detector-heddles are strung.

45 The main frame is composed, essentially, of sides A, having upturned extensions A', terminating in overhanging arms A², connected rigidly by cross braces or girths A³ A⁴ A⁵, the latter forming a guide at the top of the frame over which the warp-threads w pass from the

warp-beam W, the journals W^x of which are mounted in suitable bearings A⁶, one of which is in one of the sides, the other bearing being formed in an upright standard A^x, forming a part of the main frame and held in place by the braces A³ A⁴, the latter brace having mounted upon it a detent-pawl P to engage one of the gears on the warp-beam to hold the latter from rotation during the drawing-in process.

When a beam is ready to be drawn in, the threads are passed through a slasher-comb, as is well known, a section of the slasher-comb being shown in Fig. 5, the comb proper, C, being detachable from a cap C', which is adapted to receive the free ends of the comb retaining the threads in place, and after the latter have been drawn in the comb is separated, as shown in Fig. 5, to remove it from the warps. I have herein shown the overhanging arms A² as connected at their ends by two parallel cross-bars a , set on edge and somewhat separated to form a guide for depending hangers B, the head b of each hanger (see Fig. 4) being shouldered to receive the lower edges of the guide members a , and a threaded stud b' is upwardly extended from each hanger through a clamp member b^2 , which straddles the members a , and a suitable clamping-nut b^3 is screwed upon the stud above the clamp b^2 .

It will be obvious that each hanger may be moved laterally upon the guide when the nut b^3 is loosened, and the hanger can be firmly held in laterally-adjusted position by tightening the set-nut, this lateral adjustment enabling me to set the hangers at such a distance apart as will conform to the length of the supporting-bar of the harness or series of detectors, as the case may be.

Each hanger B is shown as having a reentrant portion B', in which is formed an inclined seat B² for the slasher-comb, as clearly shown in Fig. 4, and below the seat the hanger is provided with an upright bearing portion B³, having in its lower end preferably a vertical slot 3, (see Figs. 2 and 3,) for a purpose to be described, and back of such bearing and at its lower end the hanger is provided with a curved seat B⁴ for a purpose to be described.

A support (shown as a horizontally - extended arm D) is secured to each hanger above the slasher-comb seat by means of a pivot-stud d^x , which passes through the hanger and has mounted upon its inner end a clamping-nut d .

Referring to Fig. 1, the support D is shown as provided with two slots d' in one edge and with similar slots, as d^2 , in its other edge, four of the slots d^2 being shown in Fig. 1. A slide E is mounted on the upright bearing portion B^3 of each hanger and held in vertically-adjusted position by means of a clamp-nut e on a threaded stud e^x , which passes through the vertical slot 3 in the hanger and the slide E, each slide having a horizontally - extended arm e' , having its upper edge notched, as at e^2 .

Supposing now that it is desired to draw in a set of harnesses having metallic detector-heddles—such, for instance, as shown in United States Patent No. 536,969, dated April 2, 1895—then the supports D will be set by means of the clamp-screw d in the position shown in Figs. 1 and 2, with the notches d^2 uppermost, and the supporting-bars h , one of which is shown separately in Fig. 8, will be taken out of the harness-frames, with their detector-heddles h^x thereon, and laid in the slots d^2 , as shown in Figs. 1 and 2, so that the heddles h^x depend from the bars h , substantially in the manner they depend when in the harness-frame, the warp-eyes h' coming substantially opposite to the warp-threads just above the slasher-comb and in convenient position for the operative to pass the drawing-in hook through the warp-eye to engage a thread and draw it in through the said eye, the loosely-held detectors permitting a slight side twist or slant of each one as the operative inserts the hook through the eye in usual manner.

In Figs. 1 and 2 four sets of detector-heddles are shown in position for drawing in, and in order to separate the lower ends of the series of heddles and to further facilitate the manipulation thereof during drawing in a series of separator-rods s are mounted in the notches e^2 of the arms e' between the series of heddles, as best shown in Fig. 1, the separator-rods s preferably being notched at one end, as at s' , (see Fig. 7,) to engage one of the arms e to prevent accidental longitudinal movement of the rods, which would tend to dislodge them from the arms.

The operation of drawing in is performed in usual manner, the operative drawing in through the different heddles in accordance with a certain order.

It will be obvious that instead of drawing in four harnesses two harnesses could be drawn in or three or, in fact, a greater number could be drawn in by simply lengthening the supports D and providing a greater number of the slots d^2 in their upper edges.

The supporting-bars h for the heddles are usually made as shown in Fig. 8, with a notch

h^2 in each end to enable them to be locked into the harness-frame, and I utilize this construction to lock the bars in position in the drawing-in frame.

A locking-arm d^5 is pivoted at d^6 on one of the supports D and is adapted to swing upward and rearwardly into the notch h^2 at that end of the heddle-supporting bar to prevent longitudinal movement of the said bars during drawing in, one of such locking devices being sufficient to retain the supporting-bars in place.

If the harness-frames are wide, then the hangers B are laterally adjusted, as has been described, to bring the supports D into proper position to receive the cross-bars h , and if the harness-frames are narrow then the hangers are brought closer together in accordance therewith, so that whether the harness be wide or narrow the drawing-in frame herein shown is equally convenient.

Some detector-heddles are longer than others, and by the vertical adjustment of the slides E, I am enabled to locate the separators s at the most convenient point for properly separating the lower ends of the banks or series of heddles while the warps are being drawn in.

When the warp-beam is mounted in the drawing-in frame the warp ends hang below the slasher-comb, and various means have been heretofore employed for temporarily holding the ends until the particular threads have been drawn into the harnesses, as otherwise the drawing in of one thread usually results in lifting up with it a number of other threads, tending to form tangles or knots, and I have devised a warp-end clamp or holder which engages the warp ends below the slasher-comb and holds them in place, yet without preventing the drawing in of the threads one by one as the work progresses.

The clamp or holder is herein shown as composed of two parts $f f'$, the latter preferably a cylindrical rod adapted to fit into a concave longitudinal groove f^2 in one edge of the bar-like member f , the opposite longitudinal edge of the latter being round, as at f^3 . The warp ends are passed between the members $f f'$, and the latter are brought together, thus pressing the threads into the concave groove f^2 , and in this position the clamp is set into the seat B^4 , which, as shown in Figs. 1 and 4, is curved to correspond to the curvature of the external longitudinal edges of the clamp when the latter is in operative position. The clamp is passed into the seat through the opening or throat 5 and then given a partial turn to wedge it more or less tightly between the opposing walls 6 and 7 of the seat, the degree of pressure exerted on the warps by the two members of the clamp being determined by the tightness with which the clamp is set into its seat.

Of course the pressure upon the warp-threads must not be great enough to inter-

ferre with the ready withdrawal of the warp ends as the several threads are drawn into the harnesses, the clamp offering sufficient frictional resistance for the required purpose.

5 Not only does the clamp act in the manner described, but it also serves to keep the warp ends spread out in a thin sheet substantially as they pass through the comb.

10 The drawing-in frame is equally adapted for drawing in cotton-harnesses alone or cotton-harnesses to be used in connection with drop-detectors for stop-motion mechanism—such, for instance, as shown in United States Patent No. 639,182, dated December 12, 1899.

15 To provide for cotton-harnesses, I have mounted on each of the arms D a yoke-arm M, having at its free end a seat m to receive the cross-bars or supports, as h^6 , of cotton-harnesses H, Figs. 3 and 4, the harnesses depending from the yoke-arms, which latter are pivotally connected to the supports D by threaded pivot-studs m^x , which pass through longitudinal slots m' in the yoke-arms and are provided at their inner ends with clamp-nuts m^2 , the slots m' enabling me to adjust the yoke-arms vertically to bring the warp-eyes h^7 of the cotton-harnesses into proper position for drawing in, and also to be in alignment with the warp-eyes of drop-detectors if such are used.

It will be noted by reference to Figs. 1 and 2 that the yoke-arms are turned down out of the way, and this is effected by reversing the position of the supports D.

35 In Figs 1 and 2 the supports are shown in position with the notches d^2 uppermost; but when drawing in for cotton-harnesses the clamp-nuts d are loosened and the supports D are just reversed and brought into the position shown in Figs. 3 and 4, with the notches d' uppermost for a purpose to be described.

40 When drawing in with cotton-harnesses, it is unnecessary to use the separators s , and the slides E are lowered, as shown in Figs. 3 and 4, out of the way, the rods s being dispensed with.

It is usual to arrange the detectors in two banks or series for convenience when such detectors are used with plain harnesses, and in order to draw in the threads through the detectors, as well as the harnesses, the supporting-bars, as t^x , on which the detectors t are strung, are supported endwise in the slots d' of the members D, as clearly shown in Figs. 3 and 4, the detectors then depending between the slasher-comb and the harnesses H, with the warp-eyes t' of the detectors substantially in the horizontal plane of the heddle-eyes h^7 . By means of the vertical adjustment of the yoke-arms the heddle-eyes are adjusted relatively to the eyes of the detectors.

65 From the foregoing description it will be manifest that the drawing-in frame herein shown and described is conveniently adapted for various kinds of work and the operation of drawing in is greatly facilitated by the convenient arrangement and construction of

the novel parts of the apparatus, so that irrespective of the particular form of harness the drawing in can be readily performed, and the frame is particularly adapted for drawing in when some kind of warp-stop-motion mechanism is employed.

70 Having shown one practical embodiment of my invention, the same is not restricted thereto, as various modifications or changes may be devised by those skilled in the art without departing from the spirit and scope of my invention.

80 Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In apparatus of the class described, the main frame, laterally-adjustable hangers depending therefrom, supports extended horizontally from the hangers, to sustain in upright position harnesses or detectors to be drawn in, the slasher-comb, and means to support the ends of the slasher-comb back of the harnesses or detectors.

90 2. In apparatus of the class described, a frame having overhanging arms, a transverse guide connecting them, laterally-adjustable hangers depending from said guide, a support mounted on each hanger and adapted to sustain cotton-harnesses and drop-detectors in position for drawing in, or harnesses having detector-heddles, a friction-clamp for the warp ends, mounted on the hangers, and seats for the slasher-comb above the clamp.

100 3. In apparatus of the class described, a frame having overhanging arms, a transverse guide connecting them, laterally-adjustable hangers depending from said guide, a horizontally-extended, notched support mounted on each hanger, to sustain the cross-bars of series of detectors or detector-heddles, and a locking device to retain such cross-bars in position on the supports.

110 4. In apparatus of the class described, a main frame, hangers depending therefrom, a reversible, horizontally-extended support mounted on each, said supports having their upper and lower edges notched, an adjustable yoke-arm carried by each support, and a warp-end-holding device supported on the lower portions of the hangers.

115 5. In apparatus of the class described, a main frame, hangers depending therefrom, a reversible, horizontally-extended support mounted on each, said supports having their upper and lower edges notched, an adjustable yoke-arm carried by each support, vertically-adjustable stands on the hangers, below the supports, transverse separator-rods adapted to be mounted on the stands, and seats for the slasher-comb, the reversible supports when in one position serving to sustain a series of detector-heddles during drawing in, and in its other position holding one or more series of drop-detectors, the yoke-arms at such time sustaining the corresponding harnesses.

125 6. In apparatus of the class described, a main frame, hangers depending therefrom,

a horizontally - extended support on each hanger, to sustain the cross-bars of series of stop-motion detectors, a vertically-adjustable yoke-arm on each support, to sustain the corresponding harnesses during drawing in, the vertical adjustment of the latter bringing the heddle - eyes to the height of the detector warp-eyes, and seats for the slasher-comb back of the detector-supports.

7. In apparatus of the class described, a main frame, hangers depending therefrom, a horizontally - extended support on each hanger, to sustain the cross-bars of series of stop-motion detectors, a vertically-adjustable yoke-arm on each support, to sustain the corresponding harnesses during drawing in, the vertical adjustment of the latter bringing the heddle-eyes to the height of the detector warp-eyes, seats for the slasher-comb, and a friction-clamp for the warp ends, mounted on the hangers below the slasher-comb seats.

8. In apparatus of the class described, supporting means for a set of detector-heddles during drawing in, means to support a set of cotton-harnesses and their coöperating stop-motion detectors, means to vertically adjust the supporting means for cotton-harnesses and bring the heddle-eyes thereof into alignment with the warp-eyes of the detectors, and a friction-clamp for the warp ends.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM L. KEENE.

Witnesses:

LILLIAN M. SMALL,
HERMAN E. DAVIDSON.