

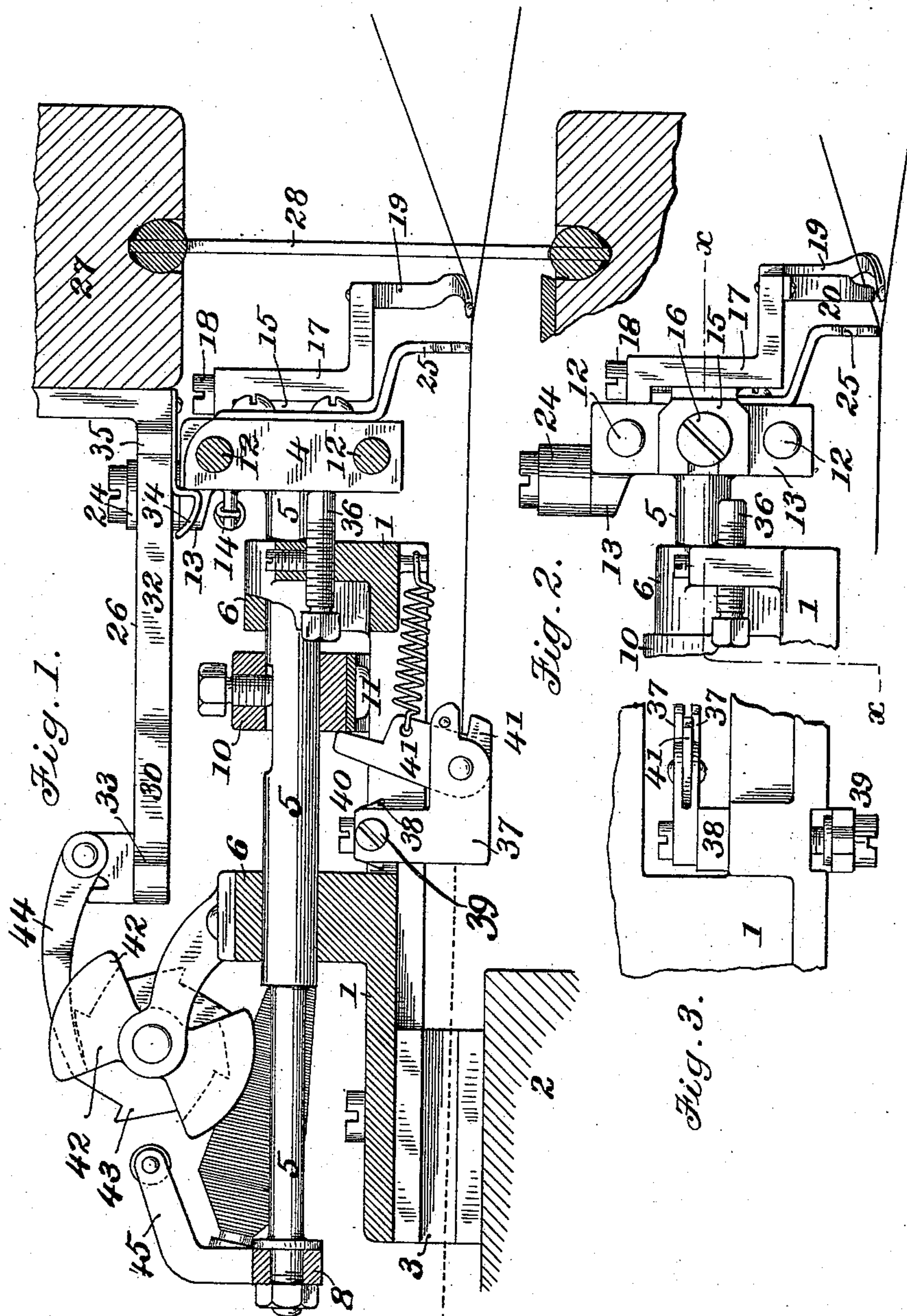
(No Model.)

4 Sheets—Sheet 1.

G. BROWNING.
APPARATUS FOR WEAVING SELVAGES.

No. 572,674.

Patented Dec. 8, 1896.



Attest:

W. A. Kott

W. H. Holmes

Inventor:

George Browning,

by Robert Burns Atty.

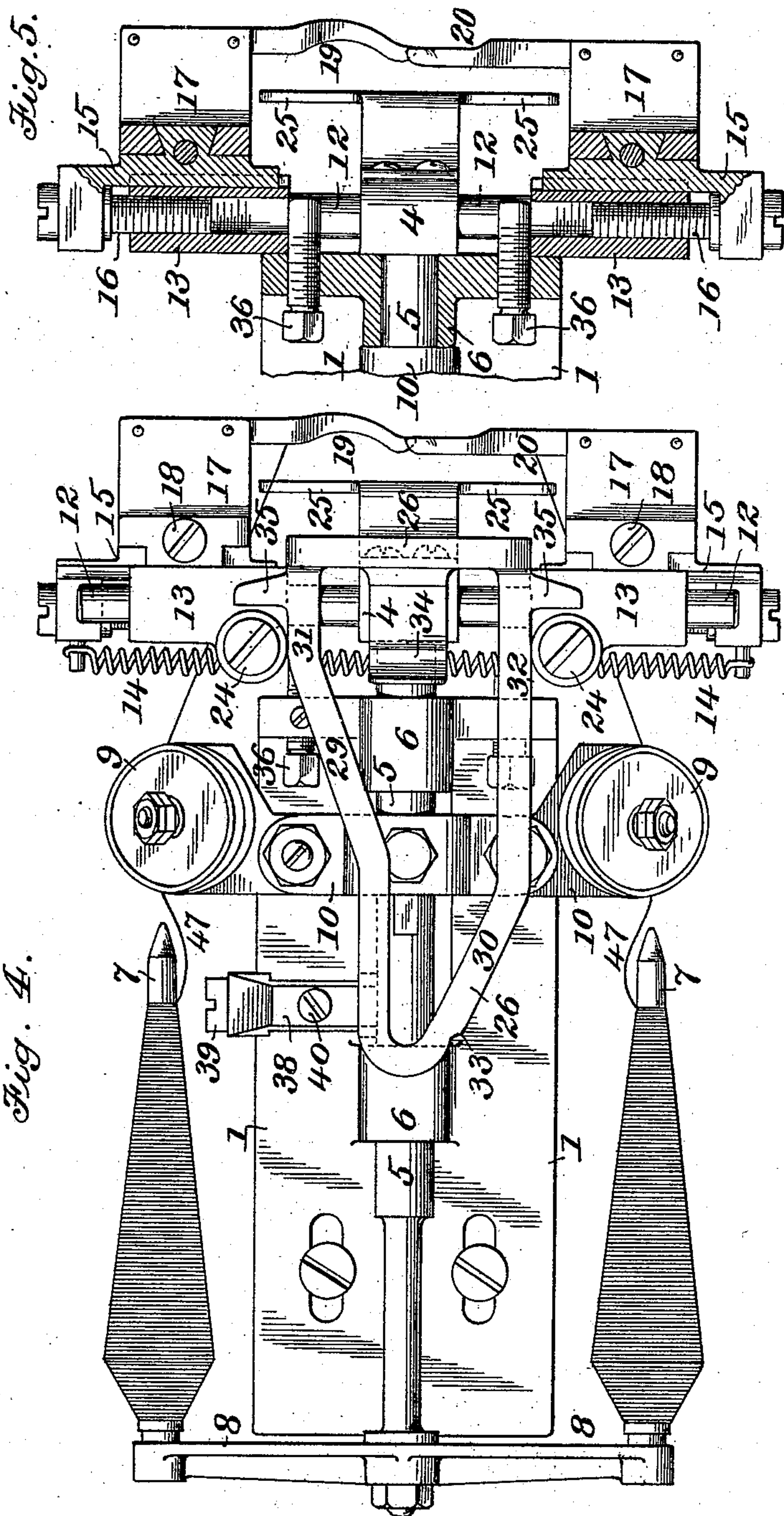
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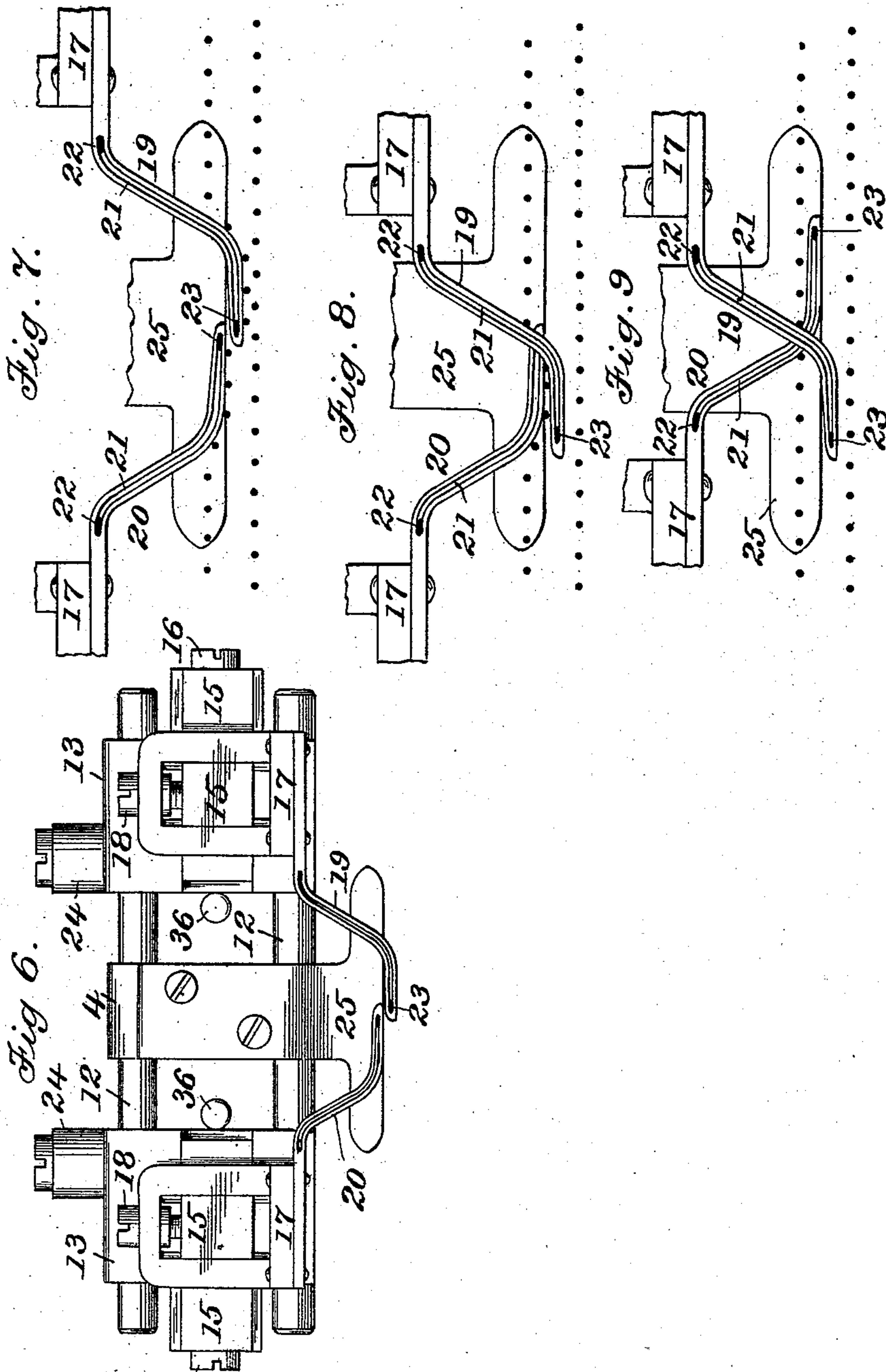
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G. BROWNING.
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Patented Dec. 8, 1896.



Attest:

W. A. Scott

W. H. Holmes

Inventor:

George Browning

by *Robert Burns* Att'y.

(No Model.)

4 Sheets—Sheet 4.

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Fig. 11.

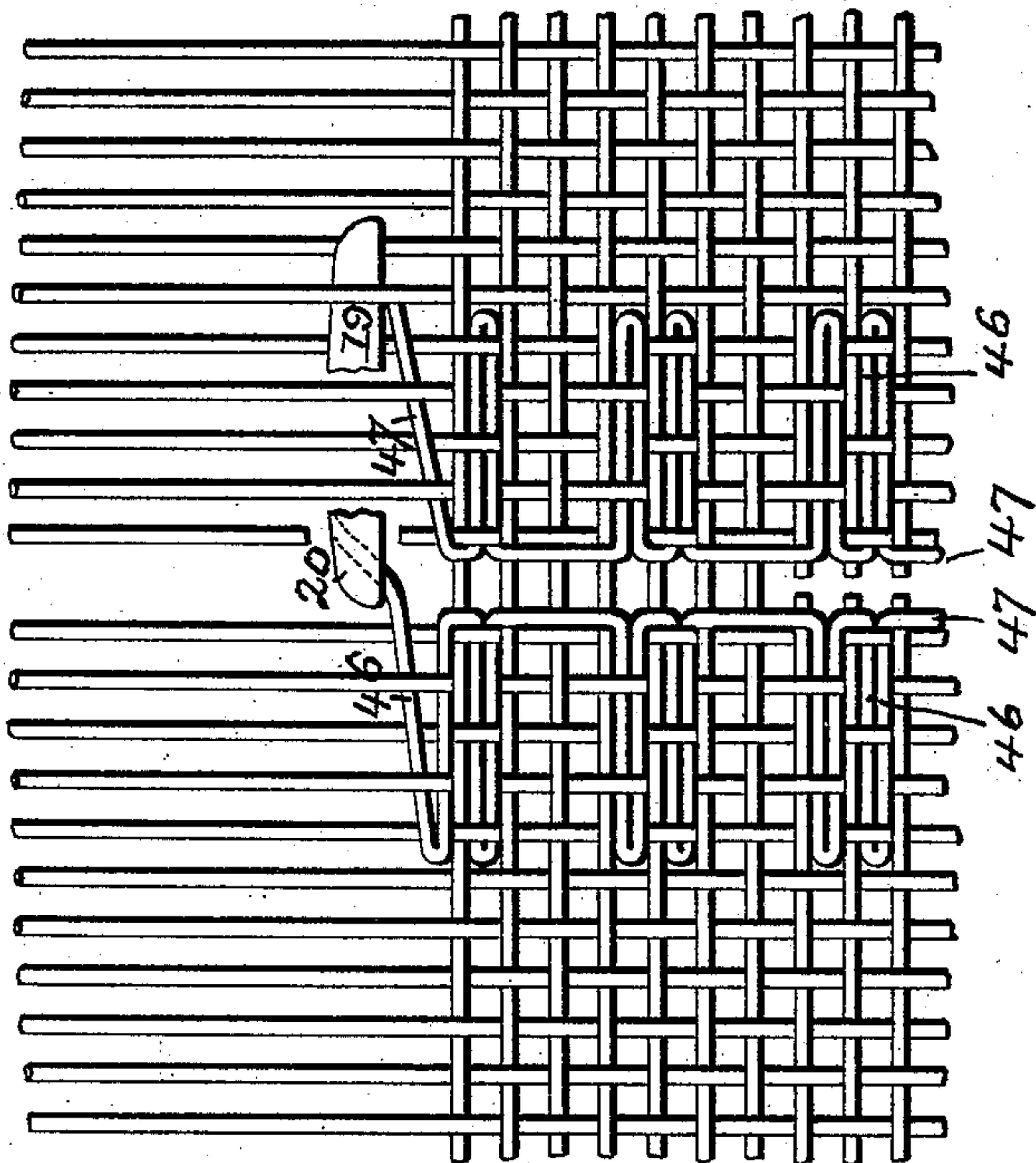
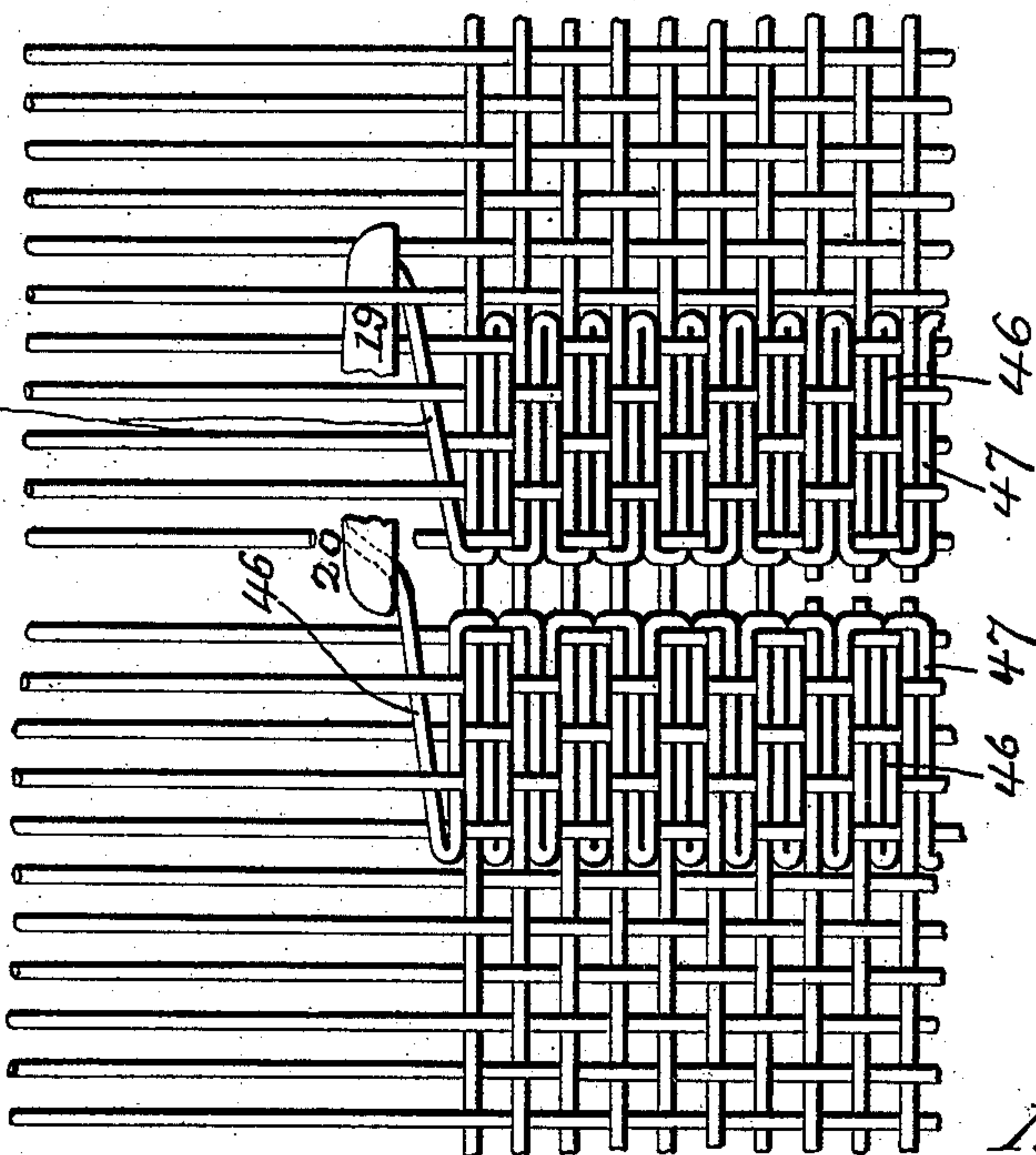


Fig. 10.



Attest:

Wm. H. Holmes

Inventor:

George Browning.
by *Robert Burns*
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE BROWNING, OF HINSDALE, ILLINOIS, ASSIGNOR OF TWO-THIRDS
TO WILLIAM A. JOHNSON AND HARRY F. MAYDWELL, OF SAME PLACE.

APPARATUS FOR WEAVING SELVAGES.

SPECIFICATION forming part of Letters Patent No. 572,674, dated December 8, 1896.

Application filed March 9, 1896. Serial No. 582,481. (No model.) Patented in France April 11, 1896, No. 255,466; in Belgium April 11, 1896, No. 120,842, and in England April 11, 1896, No. 7,714.

To all whom it may concern:

Be it known that I, GEORGE BROWNING, a subject of the Queen of Great Britain, residing at Hinsdale, in the county of Du Page and State of Illinois, have invented certain new and useful Improvements in Apparatus for Weaving Selvages, (for which Letters Patent have been granted to George Browning, W. A. Johnson, and H. F. Maydwell in the following countries: France, No. 255,466, dated April 11, 1896; Belgium, No. 120,842, dated April 11, 1896, and Great Britain, No. 7,714, dated April 11, 1896;) and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The present invention relates more particularly to that branch of the weaving art in which the loom is adapted to weave two or more widths of cloth at one and the same operation and in which the inner selvages are formed at the same time or coincident with the progress of the weaving operation.

The objects of the present improvements are, first, to provide a simple and efficient mechanism for forming selvages upon woven fabrics by the introduction of a separate thread to tie or lock the warp and weft threads together and form a selvage at the edge of the cloth, and which separate or independent thread is formed into a series of succeeding loops, each of which is successively formed within the succeeding or alternately-succeeding sheds of the warp and in front of the weft-threads, so that as the reed beats up such loop will be beaten into the cloth along with the weft-thread; second, to provide, in connection with the above-mentioned selvage-forming mechanism, an automatically-operating shears for cutting away the weft-threads between the separate widths of cloth that are being woven on the loom; third, to provide, in connection with the before-mentioned selvage-forming mechanism, an automatically-operating auxiliary mechanism for holding the selvage-forming mechanism in successively dormant and active conditions

during a continued action of the loom parts, so that the selvage-loops will be formed in two successive loops in the cloth and then omitted from two successive picks of the regular weft.

I attain such objects by the construction and arrangement of parts illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional elevation of the present improved selvage-forming mechanism, the parts being shown in a partly-advanced position previous to casting the initial loop; Fig. 2, a side elevation of the forward portion of such mechanism, the parts being shown in a fully-advanced position and illustrating both the loop-forming needles within the shed and at the end of their forward stroke; Fig. 3, a detail bottom plan illustrating the shearing mechanism of the present invention; Fig. 4, a top plan of the mechanism in the position illustrated and described in connection with Fig. 1; Fig. 5, a horizontal section at line X X, Fig. 2, with the parts shown in their fully-retracted position after having formed the loops and retreated out of the way of the reed; Fig. 6, an end elevation of the forward portion of the mechanism, illustrating the loop-forming needles in the position described in connection with Figs. 1, 4, or 5; Figs. 7, 8, and 9, enlarged diagrammatic views illustrating the loop-forming needles in their various positions during the operation of forming the selvage-loops of the present invention; Fig. 10, an enlarged diagram of a piece of cloth formed with the present improved selvage. Fig. 11 is a similar view of a modified form of such selvage.

Similar numerals of reference indicate like parts in the several views.

In the apparatus shown in the accompanying drawings as illustrative of the present improvement in the art of weaving selvages a dual arrangement of the loop-forming needles is employed, so as to form selvages on the two inner and adjacent edges of the cloth, as it is woven in two widths. It is within the province of this part of the present invention to use two or more of such apparatus or mechanism, so as to enable the weaving of three

or more widths at one and the same time, as well as to construct such apparatus with but a single loop-forming mechanism, so as to form the selvage upon the outer edge of the cloth.

Referring to the drawings, 1 represents the supporting frame or base of the present selvage-forming mechanism, which is attached in a stationary manner to a suitable stationary portion of the loom, usually to the breast-beam 2, by means of a thin webbed bracket 3, as illustrated in Fig. 1.

4 is the head portion of the movable supporting-frame of the loop-forming mechanism, adapted to slide or reciprocate longitudinally in suitable guides upon the stationary frame or base 1. In the construction shown the head 4 is provided with a horizontal guide bar or rod 5, that slides in guide lugs or brackets 6 on the fixed base or frame 1.

7 are the cop-carrying spindles arranged at each side of the center of the mechanism upon a cross-bar 8, attached to the rear end of the guide bar or rod 5.

9 are the thread-tension disks, of any usual and suitable construction, arranged at each side of the center of the mechanism and in the path of the threads passing from the cops to the loop-forming needles, so as to engage therewith and keep the same under tension.

The tension-disks 9 will usually be carried on the cross-frame 10, which is adjustably secured to the horizontal guide bar or rod 5 of the movable carrying-frame and which on its under side is provided with laterally-arranged bearing projections 11, that ride upon the top surface of the main stationary base 1 to prevent any tendency to a tilting sidewise of the movable carrying-frame and its different attachments. By the adjustment of this cross-frame 10 upon the rod or bar 5 the amount of longitudinal movement of the carrying-frame is regulated to suit varying angles of the shed of the warp-threads or other similar contingencies that may arise in weaving different classes of goods.

12 are laterally-extending guide-slides secured to the centrally-arranged head 4 of the movable carrying-frame and projecting laterally therefrom in opposite directions to afford a support for the laterally-moving carriages of the loop-forming needles. Each of such carriages will consist of a sliding head 13, moving on the slides 12; springs 14, secured to such laterally-sliding heads 13 and to the central head 4, the tendency of which springs is to draw said heads 13 toward each other; laterally-adjustable slides 15, made adjustable on the heads 13 by means of suitable guides and adjusting-screws 16, and vertically-adjustable needle-carrying brackets 17, attached in a vertically-sliding manner to the laterally-adjustable slides 15 by means of suitable guides and adjusting-screws 18.

The above-described adjustable nature of the needle-carriages admits of a wide range of adjustment of the loop-forming needles,

so as to meet with the varying requirements that may arise in practical use.

19 and 20 are a pair of counterpart loop-forming needles or fingers secured, respectively, to the pair of counterpart brackets 17, and which needles in the present invention are of a downwardly-curved formation, with their points or eyes projecting toward each other, as shown in Figs. 4, 5, 6, 7, 8, and 9. Each needle is provided at its front edge with a groove 21 to receive and protect the thread, which groove extends from the shank-eye 22 to the point-eye 23 of the needle, as shown.

24 are upwardly-projecting posts on the sliding heads 13 of the right and left hand needle carriages, preferably in the form of friction-rolls, as shown, and which are adapted to be engaged by a suitable operating-cam during the operation of the mechanism, as hereinafter more fully described.

25 is a transversely-extending gage or cloth-positioning plate attached to the centrally-arranged head 4 of the carrying-frame and adapted to press upon the cloth, so as to maintain the same, as well as the sheds of the warp-threads, in proper position with relation to the loop-forming needles.

26 is the operating cam plate or bracket of the present mechanism, secured to the cap 27 of the reed 28 of the loom. Such cam is formed with inclined operating edges or faces 29 and 30 and straight holding edges 31 and 32, which in the present construction are arranged as follows: the incline 30 fully in advance of the incline 29 and the straight holding-faces 31 and 32 immediately in the rear of the respective inclines, the arrangement being such that one of the laterally-moving loop-forming needles will have first fully entered the shed of the warp-threads to cast a loop before the other needle begins to enter such shed to cast or form its loop.

33 is a shoulder near the point of the cam, which initially abuts against one of the posts 24 and acts to move the sliding carrying-frame back against its stops 36 before beginning to operate the needle-carriages.

34 is a spring-dog on the cam-plate 26, that is adapted to engage back of the top edge of the head 4 of the main carrying-frame, so that in the movement of the cam away from the mechanism the present mechanism will be carried forward until its stop-frame 10 comes against the forward guide-bracket 6 on the main stationary frame 1.

35 are lateral projections on the cam-plate 26, that are adapted to engage against the projecting posts 24 of the needle-carriages, so as to force said needle-carriages, &c., backward in order that the loop-forming needles, &c., will not be in the way of the reed in beating the weft-thread and the selvage-loops of the present invention into the cloth.

36 are adjustable stop-screws projecting forward from the main stationary frame 1, and which in the present construction have a two-fold function, to wit: to initially stop

the backward movement of the sliding frame, needle-carriages, &c., until the needle-carriages have been moved laterally apart, and then to allow the full backward movement of such needle-carriages, &c.

The shearing mechanism of the present invention consists of a pair of stationary blades 37, secured in a laterally-adjustable manner to the stationary base 1 of the mechanism by means of a slide 38 and adjusting and holding screws 39 and 40, and a movable spring-blade 41, arranged between the two stationary blades, with its shank projecting up into the path of the movable carrying-frame, preferably the cross head or frame 10, so as to be operated at each backward movement of the loop-forming mechanism.

The cutting edges of the shears will be arranged on a plane with the cloth, and as so arranged will nip out the exposed portions of the weft-threads that extend from width to width of the cloth that is being woven.

The mechanism so far described is adapted to form selvage-loops from the separate threads employed in the present invention for insertion along with each individual weft-thread. Where from reasons, such, for instance, as the requirement of a separate selvage-thread of some bulk or where a very close pick of cloth is being woven, it is desirable to employ a fewer number of such selvage-loops in a given length of cloth, the change can be readily effected by the use, in connection with the loop-forming mechanism heretofore described, of an auxiliary automatic mechanism for rendering the action of such loop-forming mechanism dormant during two strokes of the reed, then active during the two succeeding strokes of the reed, and so on during the continued operation of the loom to produce the selvage illustrated in Fig. 11 of the drawings.

In the construction illustrated in Fig. 1 of the drawings 42 is a two-pointed cam turning in bearings on the fixed frame 1, its carrying-shaft being provided with an eight-tooth ratchet-wheel 43.

44 is a dog or pawl carried by the cam 26 of the reed-cap 27 and adapted to impart a step-by-step rotation to the ratchet-wheel 43 and the two-pointed cam 42.

45 is a forwardly-projecting finger on the carrying-frame of the needle-carriages, that is adapted to bear against the surface of the cam 42, preferably by means of a friction-roller, as shown.

The construction is such that it will require two strokes of the reed-cap 27 to move the raised part of the cam 42 away from the projecting finger 45, so that the same will be allowed to play toward the sunken part of said cam, and in like manner it will require two strokes of the reed-cap to move the sunken part of the cam away from the finger 45 and bring the other raised portion of the cam in contact with such finger, and so on continuously.

With the above construction the loop-forming mechanism is active while the finger 45 is in line with the sunken part of the cam and dormant when said finger is in line with the raised part of the cam, in which dormant condition it is held at its backward position and the needle-carriages held apart by resting against the sides of the stops 36.

While in the drawings the loop-forming mechanism is shown attached to the breast-beam of the loom, it is within the province of the present invention to support the same in any other usual manner, such, for instance, as an auxiliary transverse beam arranged in a fixed position immediately above the breast-beam, so that the cloth will pass between said auxiliary beam and the regular breast-beam. Such means of support are common in the present type of apparatus and will be used where it is desired to weave inner selvages without cutting the different widths apart until after the same have been printed or otherwise treated.

The operation of the present selvage-weaving mechanism is as follows: As the reed moves away, after having beat up the last weft-thread, the spring-dog 34 on the cam-plate 26 of the reed-cap, being in engagement with the head 4 of the carrying-frame, acts to draw the same forward until the adjustable stop 10 comes in contact with the forward guide-bracket 6 of the stationary frame to prevent further forward movement of the movable frame and the needle-carriages, &c., arranged thereon. At this point the spring-dog 34 leaves its engagement. With the needle-carriage in above-described forward position the loop-forming needles 19 and 20 will rest upon the upper warp-threads in manner indicated in Fig. 7, with the needle 19 depressing the same to a greater degree than the needle 20, so that such needle 19 will enter the shed first. With the continued movement of the cam-plate 26 away from the present mechanism the inclined face 29 thereof permits the needle-carriage, and with it the needle 19, to move inwardly in a lateral direction, drawing off enough thread from the cop and through the tension 9 to form the selvage-loop, and such needle 19 will thus enter the shed, as indicated in Fig. 8. During such movement of the needle 19 the needle 20 is held at its outer or dormant position by the straight holding-surface of the cam 26 bearing against the post of the needle-carriage.

With the needle 19 at its full stroke within the shed, as shown in Fig. 8, the upper warp-threads are allowed to return to their normal position, as indicated in said Fig. 8, so that the needle 20 will be capable of entering the shed in the further operation of the mechanism. With a further movement of the cam-plate 26 away from the present mechanism the inclined face 30 thereof permits the needle-carriage, and with it the needle 20, to move inwardly in a lateral direction, drawing off

enough thread from the cop and through the tension 9 to form the selvage-loop, and such needle 20 will thus enter the shed, as indicated in Fig. 9. The loop-forming mechanism now lies dormant during the interval that the weft-thread is being placed in the shed by the shuttle, after which the reed returns, bringing the operating cam-plate 26 into an operative position. During such movement of the reed the shed is being shut by the loom-healds. The cam-plate 26 by means of its shoulder 33 on its point now pushes back the needle-carriage, &c., against the stops 36 and brings the loop-forming needles 19 and 20 nearer to the apex of the shed. With a continued movement of the cam-plate 26 toward the present mechanism the inclined face 30 thereof presses the needle-carriage of the needle 20 laterally outward to bring the needle 20 out of the shed and leaving the selvage-forming loop 46 of the independent thread 47 within the shed, as illustrated in Fig. 10. With a further movement of the cam-plate 26 toward the present mechanism the inclined face 29 thereof presses the needle-carriage of the needle 19 laterally outward to bring the needle 19 out of the shed and leaving the selvage-forming loop within the shed in manner similar to that above described. The loom-healds have now fully crossed over to form the succeeding shed and confine the selvage-loops of the present invention and the weft-thread within the previous shed. The outer lateral movement of the needle-carriages just described brings the same clear of the stops 36, so that with a further movement of the reed toward the present mechanism, the lateral projections 35 on the cam-plate 26 engage against the posts 24 of the needle-carriages to push the same fully back and out of the way of the reed while the same is beating up the weft-thread and the selvage-loops that have just been formed. With the engagement of the lateral projections 35 with the posts 24 the spring-dog 34 reengages with the head 4 of the main carrying-frame, so that the mechanism will be ready for the next cycle of operations.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a needle-carriage, means for giving the same a lineal lateral and longitudinal reciprocation, a loop-forming needle attached to said carriage and carrying separate thread, and means whereby the separate thread is supported and delivered to the needle substantially as set forth.

2. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a needle-carriage, means for giving the same a lateral and longitudinal reciprocation, the same consisting of a cam-plate 26, secured to the reed-cap of the loom, a loop-forming needle attached

to said carriage and carrying a separate thread and means whereby the separate thread is supported and delivered to the needle, substantially as set forth.

3. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a pair of needle-carriages, means for giving the same a lateral and longitudinal reciprocation, a pair of loop-forming needles attached to said carriages and carrying separate threads, one of such needles being adapted to operate in advance of the other, and means whereby the separate threads are supported and delivered to the needles, substantially as set forth.

4. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a pair of needle-carriages, means for giving the same a lateral and longitudinal reciprocation, the same consisting of a cam-plate 26, secured to reed-cap and provided with inclined operating-faces one of which is set in advance of the other, a pair of loop-forming needles attached to said carriage and carrying separate threads, one of such needles being adapted to operate in advance of the other, and means whereby the separate threads are supported and delivered to the needles, substantially as set forth.

5. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a pair of needle-carriages, means for giving the same a lateral and longitudinal reciprocation, a pair of loop-forming needles attached to said carriages and carrying separate threads, one of such needles being adapted to operate in advance of the other, means whereby the separate threads are supported and delivered to the needles, and a centrally-arranged shears actuated by the longitudinal movement of said carriages to nip the weft-threads, substantially as set forth.

6. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a pair of needle-carriages, means for giving the same a lateral and longitudinal reciprocation, a pair of loop-forming needles attached to said carriages and carrying separate threads, one of such needles being adapted to operate in advance of the other, means whereby the separate threads are supported and delivered to the needles, and a centrally-arranged shears actuated by the longitudinal movement of said carriages to nip the weft-threads, such shears being made laterally adjustable on the bed of the mechanism, substantially as set forth.

7. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a pair of needle-carriages, means for giving the same a lateral and longitudinal reciprocation, a pair of loop-forming needles attached to said carriages and carrying separate threads, one of

such needles being adapted to operate in advance of the other, means whereby the separate threads are supported and delivered to the needles, and a centrally-arranged shears 5 actuated by the longitudinal movement of said carriages to nip the weft-threads, such shears consisting of a pair of outer stationary blades, and a central moving blade, substantially as set forth.

10 8. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a pair of needle-carriages, means for giving the same a lateral and longitudinal reciprocation, a pair of 15 loop-forming needles attached to said carriages and carrying separate threads, one of such needles being adapted to operate in advance of the other, means whereby the separate threads are supported and delivered to 20 the needles, and a cam having an intermittent movement and adapted to engage and hold the needle-carriages in a dormant condition at regular intervals, substantially as set forth.

25 9. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a stationary supporting-frame, a longitudinally-moving carrying-frame, a pair of laterally-moving 30 needle-carriages mounted thereon, stops 36, on the main frame, a pair of loop-forming needles upon said carriages, cop-carrying spindles 7 on said carrying-frame and a cam-plate 26 on the reed-cap for operating the 35 mechanism, substantially as set forth.

10. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a stationary supporting-frame, a longitudinally-moving 40 carrying-frame, an adjustable stop 10, on said frame, a pair of laterally-moving needle-carriages mounted on said frame, stops 36 on the main frame, a pair of loop-forming needles upon said carriages, cop-carrying spindles 7 45 on said carrying-frame and a cam-plate 26, on the reed-cap for operating the mechanism, substantially as set forth.

11. In a selvage-weaving mechanism, in which a separate thread is employed to form 50 the selvage, the combination of a stationary supporting-frame, a longitudinally-moving carrying-frame, a pair of laterally-moving needle-carriages mounted thereon, each consisting of a sliding head 13, laterally-adjust- 55 able slide 15, and vertically-adjustable bracket 17, a pair of loop-forming needles secured to said brackets, stops 36, on the main frame, cop-carrying spindles 7 on said carrying-frame and a cam-plate 26 on the reed-cap 60 for operating the mechanism, substantially as set forth.

12. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a stationary 65 supporting-frame, a longitudinally-moving carrying-frame, a pair of laterally-moving needle-carriages mounted thereon, stops 36,

on the main frame, a pair of loop-forming needles upon said carriages, each needle being of a downwardly-curved formation and provided with eyes 22 and 23, and a thread-protecting groove 21 at front, cop-carrying spindles 7 on said carrying-frame and a cam-plate 26, on the reed-cap for operating the mechanism, substantially as set forth. 70 75

13. In a selvage-weaving mechanism, in which a separate thread is employed to form the selvage, the combination of a stationary supporting-frame, a longitudinally-moving 80 carrying-frame, a pair of laterally-moving needle-carriages mounted thereon, stops 36 on the main frame, a pair of loop-forming needles upon said carriages, cop-carrying spindles 7 on said carrying-frame and a cam-plate 26, on the reed-cap for operating the 85 mechanism, the same being formed with inclined faces 29 and 30, and straight faces 31 and 32, substantially as set forth.

14. In a selvage-weaving mechanism, in which a separate thread is employed to form 90 the selvage, the combination of a stationary supporting-frame, a longitudinally-moving carrying-frame, a pair of laterally-moving needle-carriages mounted thereon, stops 36, on the main frame, a pair of loop-forming 95 needles upon said carriages, cop-carrying spindles 7 on said carrying-frame and a cam-plate 26 on the reed-cap for operating the mechanism, the same being formed with a 100 shoulder 33 near its point that is adapted to engage one of the posts 24, to push the needle-carriage backward against the stops 36, substantially as set forth.

15. In a selvage-weaving mechanism, in which a separate thread is employed to form 105 the selvage, the combination of a stationary supporting-frame, a longitudinally-moving carrying-frame, a pair of laterally-moving needle-carriages mounted thereon stops 36 on 110 the main frame, a pair of loop-forming needles upon said carriages, cop-carrying spindles 7 on said carrying-frame and a cam-plate 26 on the reed-cap for operating the mechanism, the same being formed, with a pair of lateral lugs 115 35 that are adapted to force the needle-carriages backward out of the way of the loom-reed, substantially as set forth.

16. In a selvage-weaving mechanism, in which a separate thread is employed to form 120 the selvage, the combination of a stationary supporting-frame, a longitudinally-moving carrying-frame, an adjustable stop 10, on said frame, a pair of laterally-moving needle-carriages mounted on said frame, stops 36, on 125 the main frame, a pair of loop-forming needles upon said carriages, cop-carrying spindles 7 on said carrying-frame, a cam-plate 26 on the reed for operating the mechanism, and a spring-dog 34 attached to the cam that is adapted to engage and draw the needle-carriages into their forward position, substan- 130 tially as set forth.

17. In a selvage-weaving mechanism, in which a separate thread is employed to form

the selvage, the combination of a needle-carriage, means for giving the same a lateral and longitudinal reciprocation, a loop-forming needle attached to said carriage and carrying
5 a separate thread, a cloth-positioning plate 25, and means whereby the separate thread is supported and delivered to the needle, substantially as set forth.

18. In a selvage-weaving mechanism, in
10 which a separate thread is employed to form the selvage, the combination of a pair of needle-carriages, means for giving the same a lateral and longitudinal reciprocation, a pair of loop-forming needles attached to said car-
15 riages and carrying separate threads, one of such needles being adapted to operate in advance of the other, a cloth-positioning plate 25, and means whereby the separate threads are supported and delivered to the needles,
20 substantially as set forth.

19. In a selvage-weaving mechanism, in

which a separate thread is employed to form the selvage, the combination of a pair of needle-carriages, means for giving the same a lateral and longitudinal reciprocation, the same
25 consisting of a cam-plate 26, secured to the reed-cap and provided with inclined operating-faces, one of which is set in advance of the other, a cloth-positioning plate 25, a pair of loop-forming needles attached to said car-
30 riages and carrying separate threads, one of such needles being adapted to operate in advance of the other, and means whereby the separate threads are supported and delivered to the needles, substantially as set forth. 35

In testimony whereof witness my hand this 7th day of March, 1896.

GEORGE BROWNING.

In presence of—
ROBERT BURNS,
H. A. NOTT.