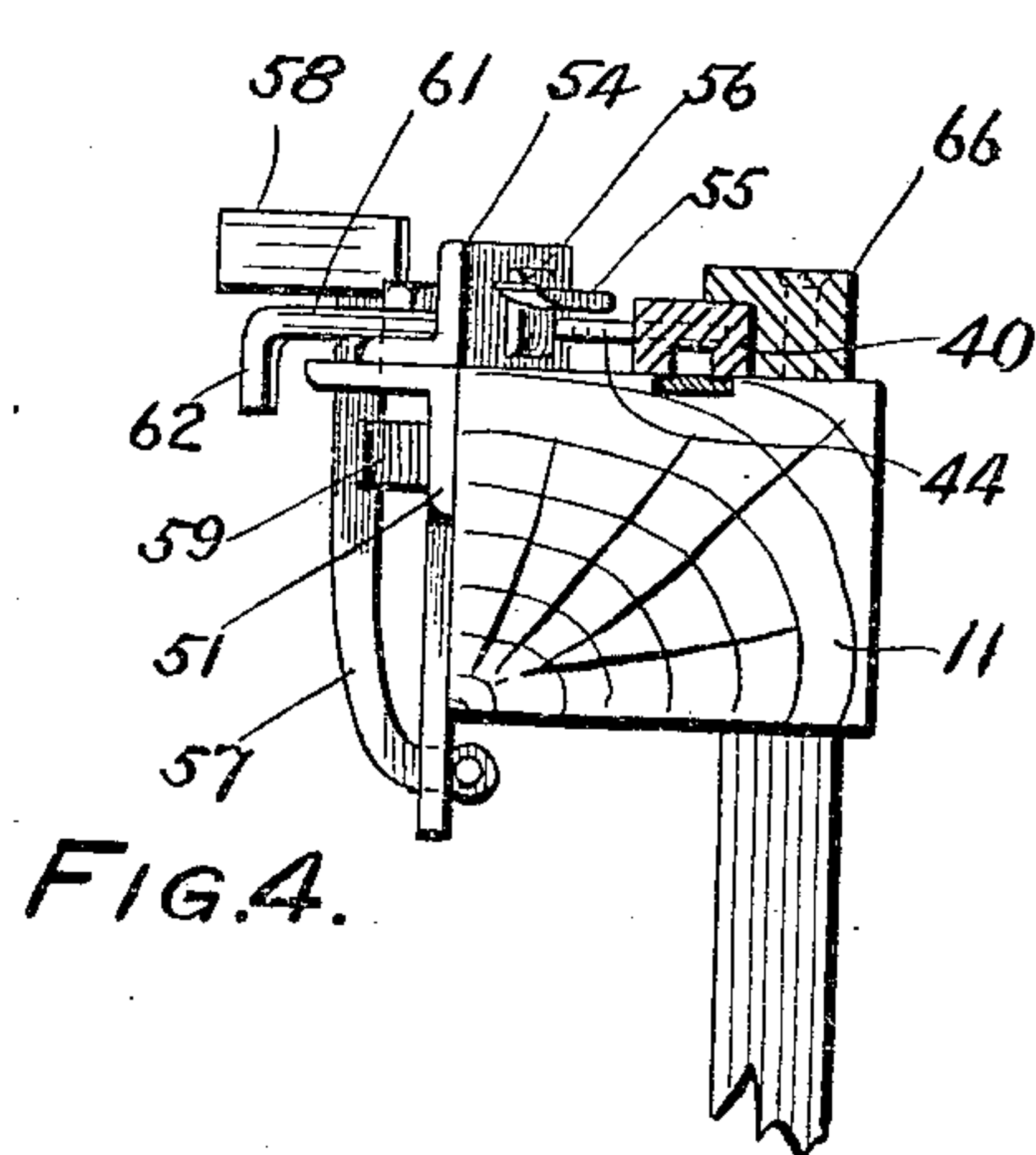
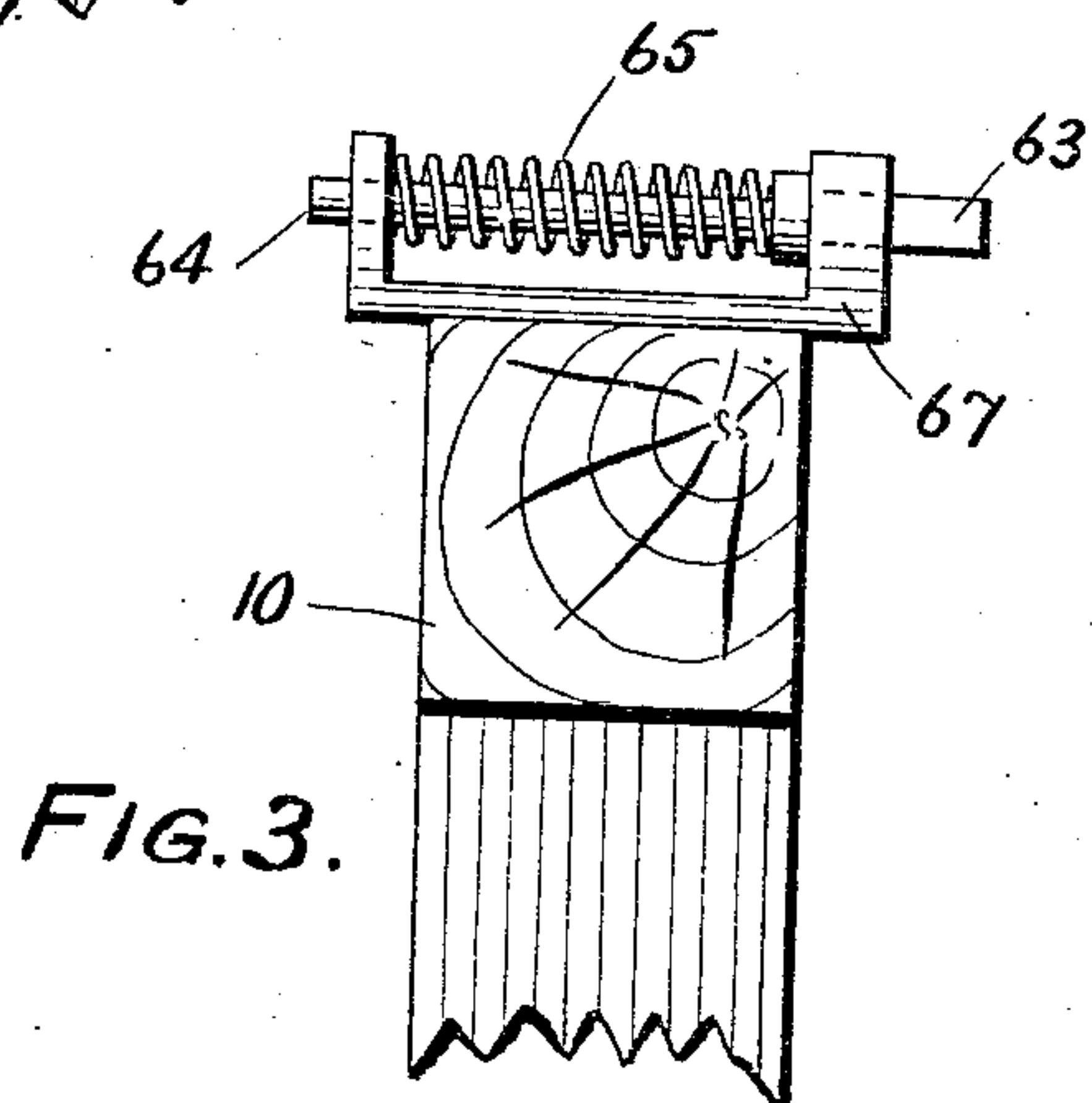
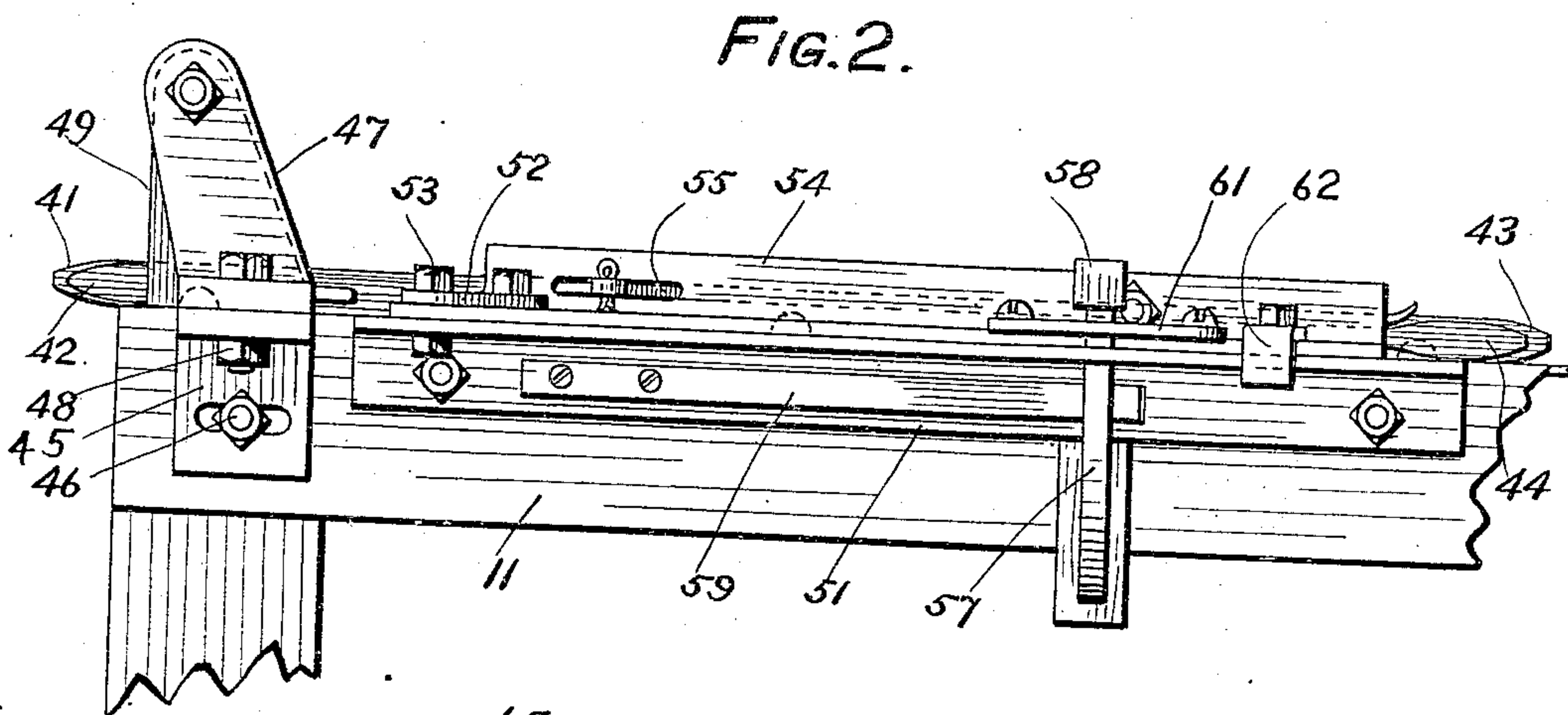
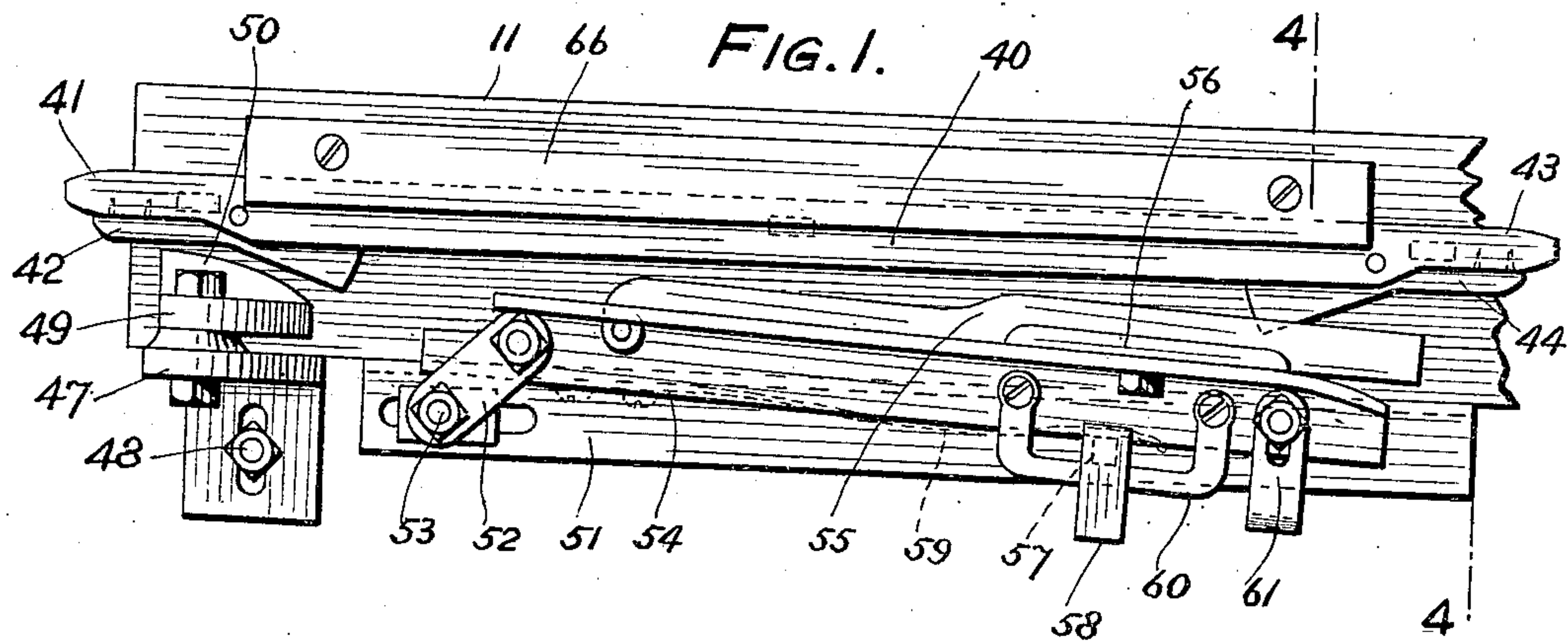


G. S. COX.
HAIRCLOTH LOOM.
APPLICATION FILED NOV. 10, 1908.

931,683.

Patented Aug. 17, 1909.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE S. COX, OF EDGE HILL, PENNSYLVANIA, ASSIGNOR TO HIMSELF, AND WALTER S. COX, OF PHILADELPHIA, PENNSYLVANIA, TRADING AS GEORGE S. COX AND BROTHER.

HAIRCLOTH-LOOM.

No. 931,683.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Original application filed June 6, 1908, Serial No. 437,090. Divided and this application filed November 10, 1908. Serial No. 461,879.

To all whom it may concern:

Be it known that I, GEORGE S. COX, a citizen of the United States, residing at Edge Hill, county of Montgomery and State of Pennsylvania, have invented a new and useful Improvement in Haircloth-Looms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to looms, and particularly to that type of loom adapted to the manufacture of hair-cloth and similar goods, wherein the weft is prepared in separate strands or picks substantially equal in length or slightly longer than the width of the goods to be woven, and wherein a nipper or shuttle is provided having a pair of jaws at each end by means of which picks of hair are pulled from each side of the loom to the other side at each movement of the nipper or shuttle transversely of the warp-shed.

The invention is also applicable to that more common type of loom in which the nipper or shuttle is provided with a pair of jaws at one end only, which act to pull the hair through the warp-shed from one side only at each reciprocation of the nipper or shuttle.

In looms of this character, the shuttle is either a flying shuttle, which is carried through the warp-shed by momentum under the impact of a picker stick, as in the patent issued to me April 5, 1904, No. 756,334, or is a positive motion shuttle, which is carried through the warp-shed by a carrier under-running the shuttle race, as in my application filed June 6, 1908, Serial No. 437,090, of which this application is a division.

The object of my invention is to provide means for opening the jaws of a shuttle, and while more particularly applicable to a shuttle of the positive motion type, and especially to one actuated in the manner set forth in the said application, is also applicable to a shuttle of the flying type.

Certain of the loom parts and attachments are omitted from the drawings, as they are not necessary to illustrate the invention.

In the drawings: Figure 1 is a plan view of the shuttle, one of the shuttle boxes, and the jaw-actuating mechanism. Fig. 2 is a front elevation of the same. Fig. 3 is a side

elevation of the pusher mechanism for actuating the jaw-opening lever. Fig. 4 is partly a section on the line 4—4 of Fig. 1.

10 is the loom frame and 11 the lay.

41 and 43 represent the fixed jaws on the left and right hand ends respectively of the shuttle 40, and 42 and 44 represent the corresponding movable jaws. These movable jaws are of a well known construction, being pivoted between their ends and normally held closed by actuating springs (not shown) carried by the shuttle. The shuttle may be assumed to be moving to the left in the position shown in Figs. 1 and 2 and to have nearly reached the end of its movement just before the movable jaw 42 is opened to receive a strand of hair and just before the movable jaw 44 is opened to release the pick of hair that it has just pulled through the warp-shed.

The following means are provided to actuate the movable jaw 42. 45 is an angle-iron bracket slotted horizontally in its vertical wing to receive a bolt-and-nut 46, by means of which the bracket is secured to the lay and is also adjustable transversely of the loom. 47 is another angle-iron bracket whose horizontal wing is slotted to receive a bolt-and-nut 48, by means of which the bracket 47 is secured to the horizontal wing of bracket 45 and is also adjustable forwardly and backwardly. Pivotaly depending from the top of the vertical wing of bracket 47 is a swinging arm 49, having at its lower end an inwardly projecting jaw-opening cam 50. This cam normally bottoms on the lay and therefore cannot swing outwardly. The inclined edge of the cam faces inwardly and is in line of travel of the movable jaw 42. As the shuttle moves to the left beyond the position shown in Figs. 1 and 2, the movable jaw 42 strikes the cam 50 and overrides the same, the jaw in this movement opening to receive a strand of hair presented by the selector and then closing. On the reverse movement of the shuttle, the rear end of the jaw 42 strikes the cam 50 and moves the swinging arm 49 upwardly until it is cleared by the jaw, immediately after which the swinging arm drops back by gravity into its normal position.

The following means are provided to ac-

5 tuate the movable jaw 44. 51 is an angle-iron bracket secured to the front of the lay. 52 is an arm adjustably secured at one end on the slotted horizontal wing of bracket 51 by means of a bolt-and-nut 53. 54 is an inwardly-extending angle-iron guiding lever pivotally mounted on the other end of arm 52. 55 is a lever adjustably mounted near the outer end of lever 54 and extending inwardly along the inner side of the same. 56 is a jaw-actuating cam secured to lever 55. 57 is a lever pivoted on the front of the lay and extending upwardly from its pivot above the lay and in front of lever 54. 58 is a lug secured to the upper end of lever 57. 59 is a leaf spring secured to angle-iron 51 and normally holding lever 57 outwardly in the position shown in Figs. 1 and 4. 60 is a yoke secured to lever 54 and embracing lever 57. By means of this yoke, the lever 57 normally holds the lever 54 and its attached parts in the outer position as illustrated in Fig. 4. 61 is a stop secured to lever 54 and extending outwardly therefrom and having a flange 62 at its outer end adapted, by contact with angle-iron 51, to limit the inward movement of lever 54.

30 Secured to the loom frame is a bracket 67 (see Fig. 3) in which slides a pusher 63 having a shank 64 and a coil spring 65 surrounding the shank and confined between the head of the pusher and a flange on the bracket. The pusher 63 is in line of travel of the lug 58 as the lay nears the end of its forward swing. The effect of the engagement of the pusher by lug 58 is to move the latter against lever 54, forcing the latter in toward the shuttle. At this time, the rear end of the movable jaw 44 has arrived opposite the cam 56 and the latter, being pushed against that end of the jaw, opens it to release the pick of hair that it has just pulled through the warp - shed. At the same time the lever 55 overrides the jaw and, together with a flange on the shuttle-guide 66, holds the shuttle from upward movement. The levers 54 and 55 and cam 56 continue to move inwardly until stopped by the engagement of stop 61 with angle-iron 51. During the further travel of the lay, the lug 58, being held from further movement by abutting against the lever 54 (whose movement has been arrested by stop 61) forces back the pusher 63 against the spring 65. As the lay moves in the opposite direction, the pusher 63 recedes, and the spring 59 acts to return the jaw-opening contrivance to its normal position shown in Figs. 1 and 2.

60 It will be understood that the mechanism for actuating the movable jaws 42 and 44 is duplicated on the right-hand side of the loom, and that, at that side of the loom, the mechanism corresponding to that described as actuating the jaw 42 actuates the jaw 44,

and the mechanism corresponding to that described as actuating the jaw 44 actuates the jaw 42.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

1. In a loom, the combination with the lay, the shuttle, a movable jaw on the end of the shuttle, means to reciprocate the shuttle across the lay, a pendent arm normally bottoming on the lay and capable of swinging inwardly only, and a cam on the arm facing inwardly and in line of travel of said movable jaw, of an angle iron on which said arm is pivotally supported, a second angle iron, means by which the first angle iron is supported by and transversely adjustable on the second angle iron, and means by which the second angle iron is supported by and longitudinally adjustable on the lay.

2. In a loom, the combination with the loom frame, the lay, means to reciprocate the lay, and the shuttle having a movable jaw at the end, of a jaw opening contrivance attached to the lay and movable to open said jaw, and means on the frame adapted, as the lay beats forward, to actuate said contrivance and move it to open said jaw.

3. In a loom, the combination with the loom frame, the lay, means to reciprocate the lay, and the shuttle having a movable jaw at the end, of jaw opening mechanism adapted to open said jaw as the lay beats forward, a stop limiting the inward movement of said jaw opening mechanism, and means permitting said jaw opening mechanism to yield outwardly in the continuing forward movement of the lay.

4. In a loom, the combination with the loom frame, the lay, means to reciprocate the same, and the shuttle having a movable jaw at the end, of a jaw opening contrivance movable to open said jaw, and a spring pressed pusher on the frame adapted, as the lay beats forward, to engage said contrivance and move it inwardly to open said jaw, and then, as the lay continues its movement to be pushed by the contrivance against the pressure of its spring.

5. In a loom, the combination with the loom frame, the lay, means to reciprocate the same, and the shuttle having a movable jaw at the end, of a jaw opening contrivance movable to open said jaw, a pusher on the frame adapted, as the lay beats forward, to engage said contrivance and move it to open said jaw, a stop limiting the inward movement of said contrivance, and means permitting the pusher to yield when further inward movement of said contrivance is prevented by said stop.

6. In a loom, the combination with the loom frame, the lay, means to reciprocate the same, and the shuttle having a movable jaw at the end, of a jaw opening contrivance

movable to open said jaw, a spring pressed
pusher on the frame adapted, as the lay
beats forward, to engage said contrivance
and move it inwardly to open said jaw, and
5 a stop on said contrivance adapted to limit
its inward movement.

7. In a loom, the combination with the
loom frame, the lay, means to reciprocate
the same, and the shuttle having a movable
10 jaw at the end, of a pivoted lever on the lay,
a lug thereon, jaw opening devices adapted
to be actuated by said lever, and a pusher
on the frame adapted, as the lay beats for-
ward, to engage said lug, thereby actuating
15 the jaw opening devices.

8. In a loom, the combination with the
loom frame, the lay, means to reciprocate
the same, and the shuttle having a movable
jaw at the end, of a lever pivoted on the lay,
20 a spring normally holding said lever away
from the shuttle-race, jaw opening devices
connected to said lever, a pusher on the
frame adapted, as the lay beats forward, to
engage said lever and thereby actuate the
25 jaw-opening devices, and a stop limiting the

stated movement of the jaw-opening con-
trivance.

9. In a loom, the combination with the
loom frame, the lay, means to reciprocate
the same, and the shuttle having a movable 30
jaw at the end, of a horizontally extending
lever pivoted on the lay, a jaw opening cam
carried by said lever, a yoke on said lever,
a vertically extending lever pivoted at its
lower end and extending between the hori- 35
zontal lever and yoke, a spring normally
holding said lever out, a lug on the upper
end of the vertical lever, a spring pressed
pusher on the frame adapted, as the lay beats
forward, to engage said lug and thereby 40
actuate the horizontal lever and its cam to
open said jaw, and a stop limiting the in-
ward movement of said levers.

In testimony of which invention I have
hereunto set my hand at Philadelphia on 45
this 4th day of November, 1908.

GEORGE S. COX.

Witnesses:

ALBERT C. BRAND,
M. M. HAMILTON.