No. 795,345. PATENTED JULY 25, 1905.

A. DONT.

WEFT STOP MOTION FOR LOOMS.

APPLICATION FILED JUNE 15, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

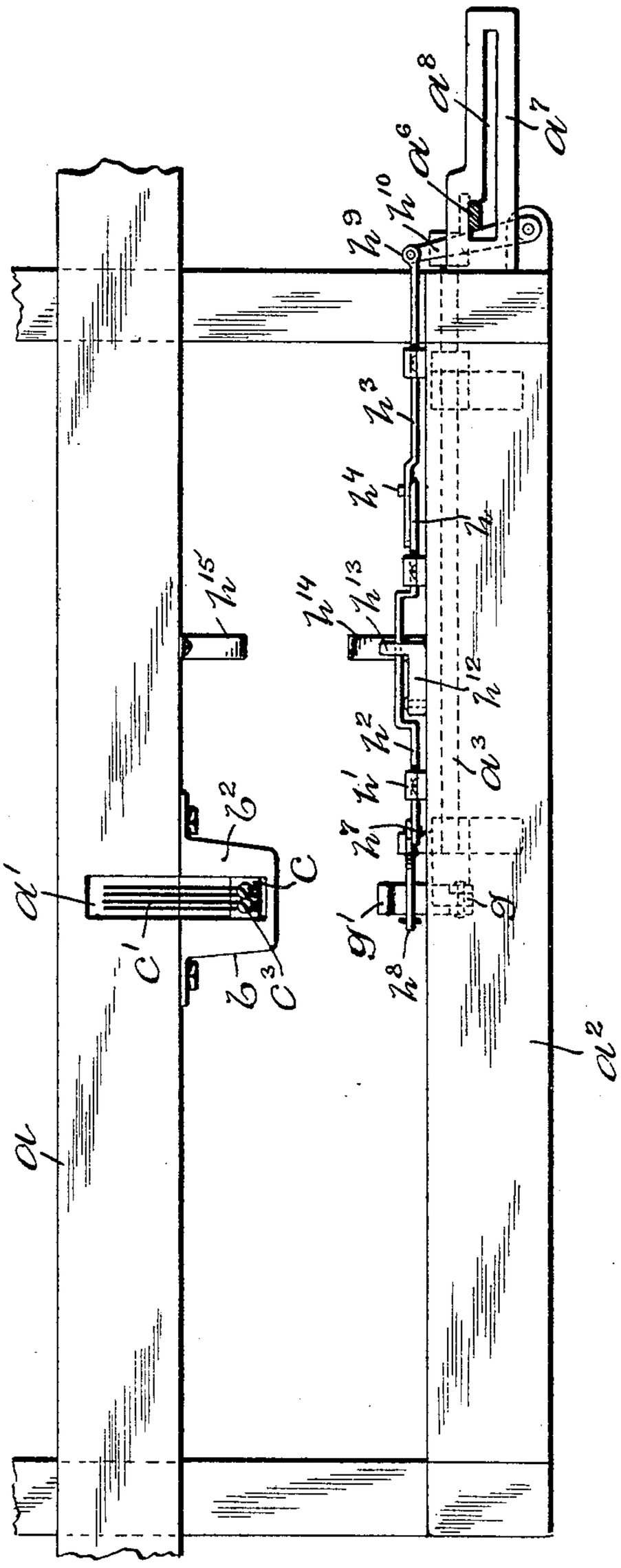
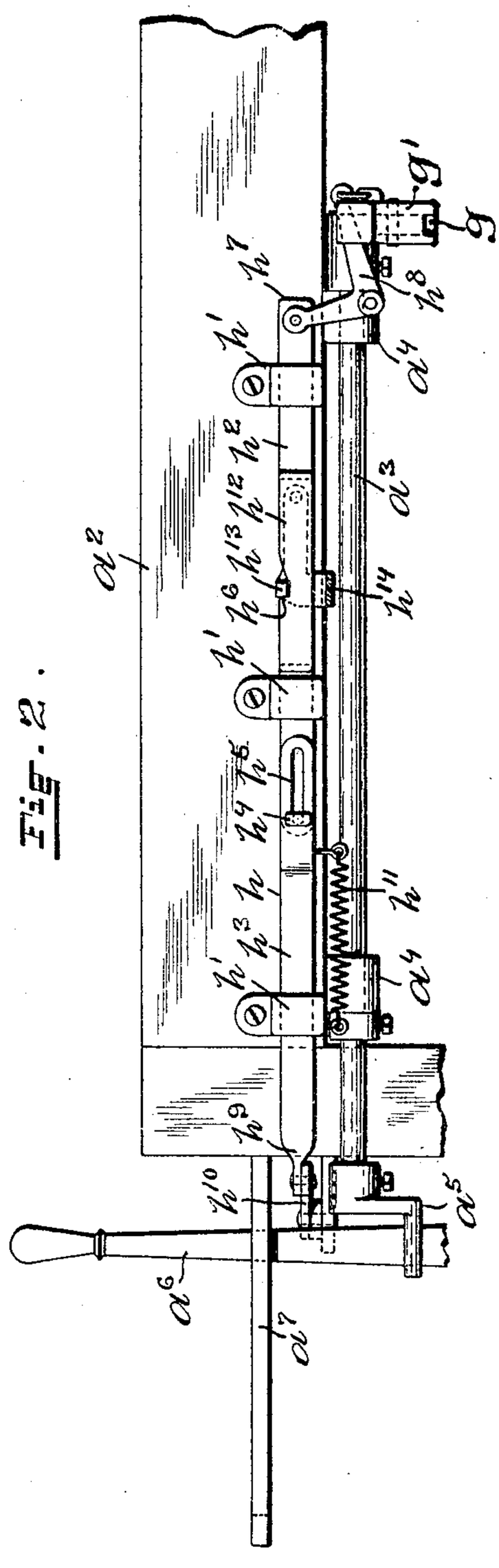


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

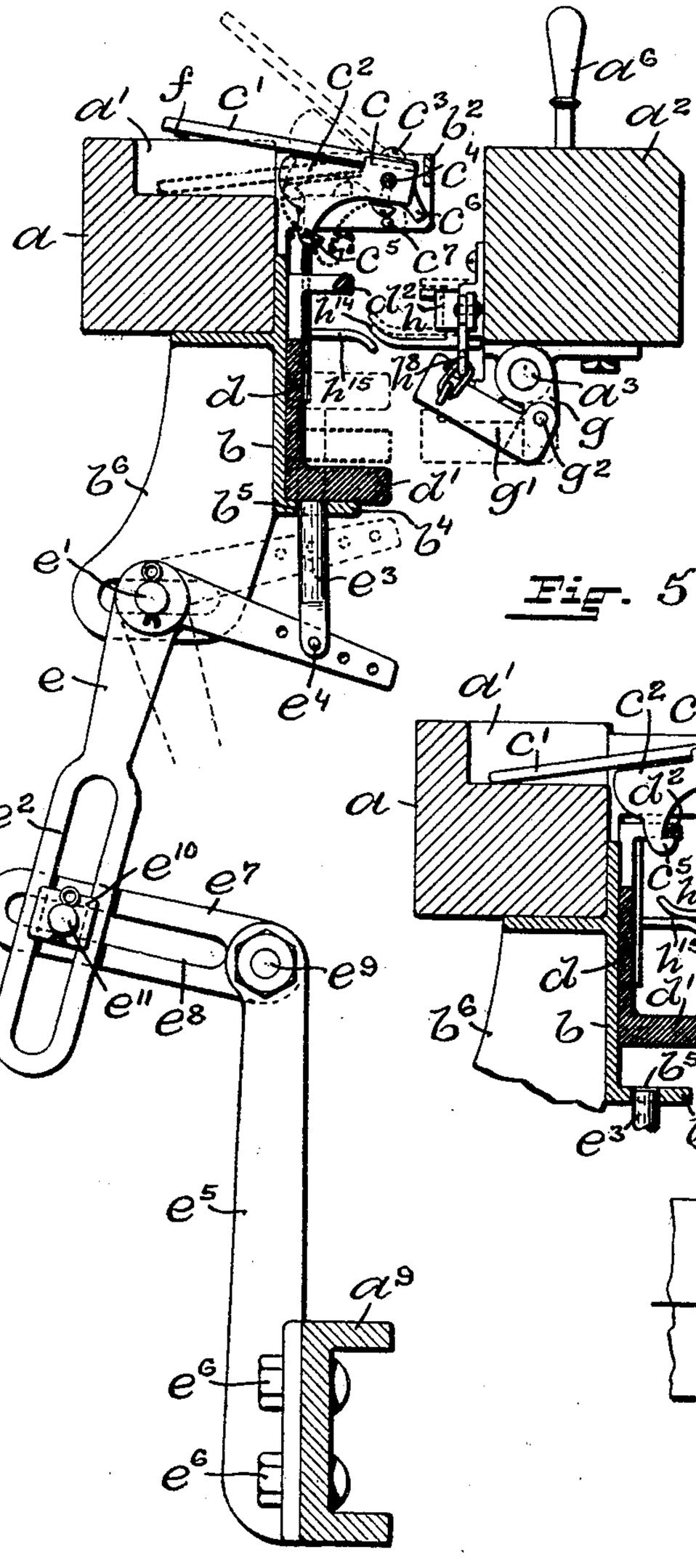

Fig. 4.

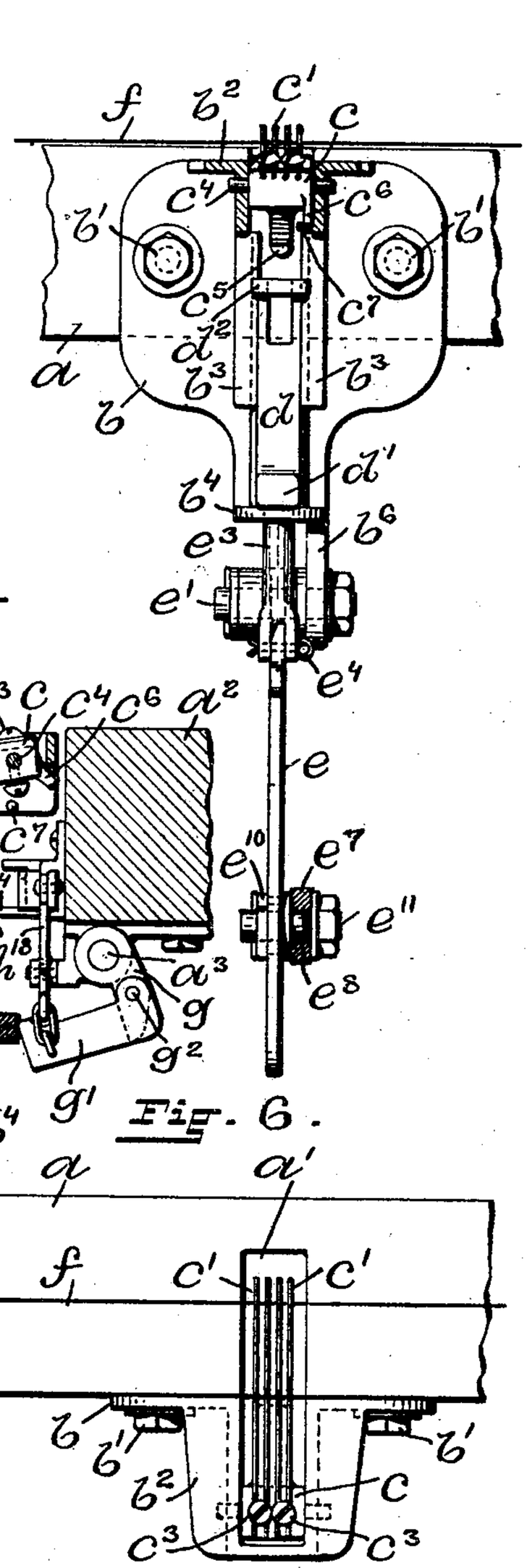

Fig. 5.

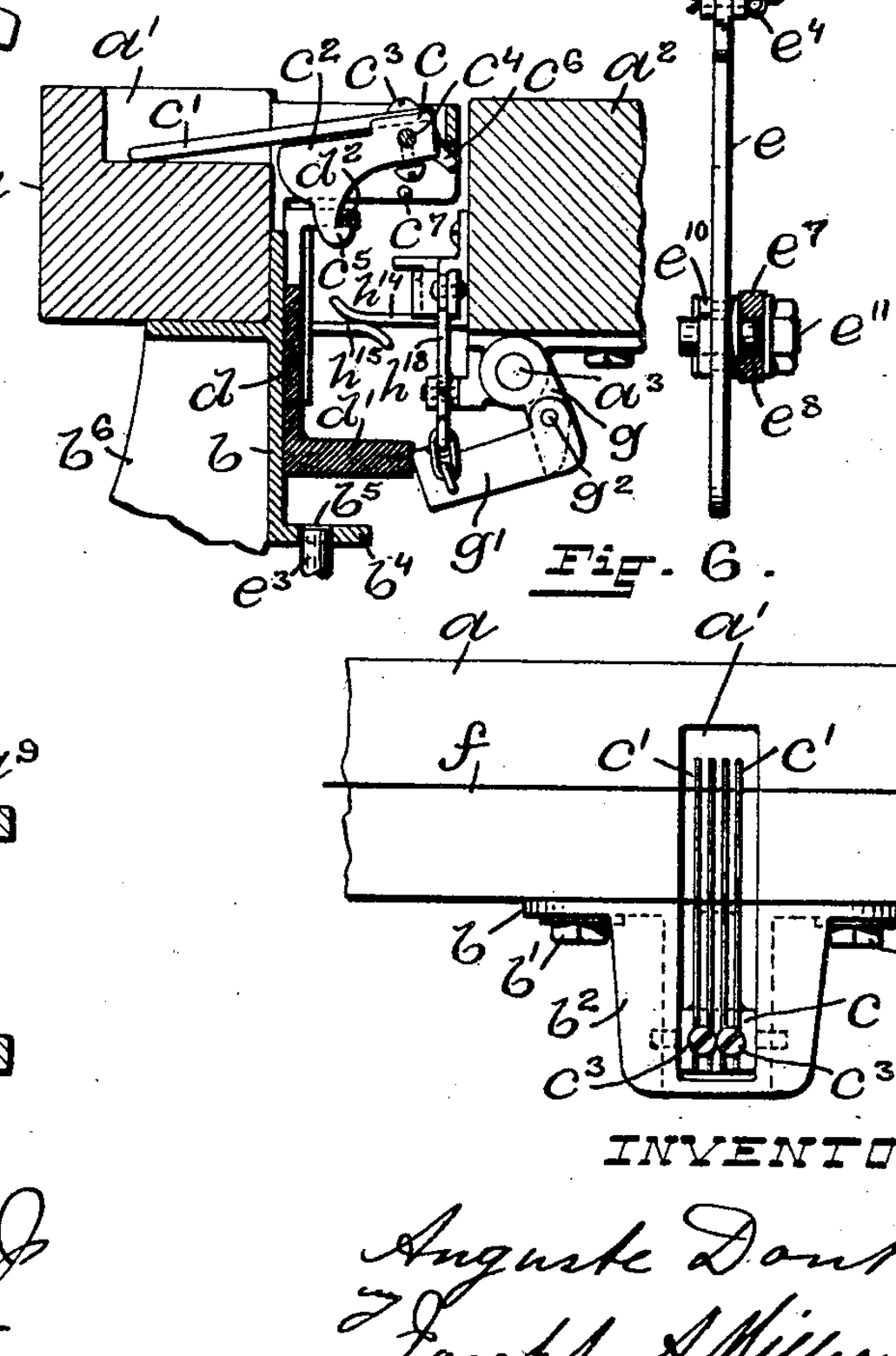

Fig. 6.

Fig. 7.

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WEFT STOP-MOTION FOR LOOMS.

No. 795,345. Specification of Letters Patent. Patented July 25, 1905.

Application filed June 15, 1904. Serial No. 212,693.

To all whom it may concern:

Be it known that I, AUGUSTE DONT, a subject of the King of Belgium, residing at Manville, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Weft Stop-Motions for Looms, of which the following is a specification.

This invention has reference to an improvement in looms, and more particularly to an improvement in weft stop-motions for looms, by which on the breaking of a weft-thread the loom is automatically stopped.

The object of my invention is to improve the construction of a weft stop-motion for looms, whereby the stop-motion is automatically held in an inoperative position on the first pick in starting the loom, is thrown automatically into its operative position for the second pick, and stops the loom automatically on the breaking of a weft-thread.

My invention consists in the peculiar and novel construction of a weft stop-motion for looms, said stop-motion having a frame secured centrally to the lay, a weft-fork pivotally secured to the frame in a position to enter a recess in the top of the lay, a slide in vertical ways in the frame having a striker and a yoke adapted to engage with a hook on the weft-fork, means for reciprocating the slide, a two-part sliding bar with sliding connections held in supports secured to the back of the breast-beam, a bell-crank lever connecting the inner end of the bar with a striker-arm pivotally connected with the knock-off shaft of the loom, a catch pivotally secured to the breast-beam adapted to engage with a notch in the bar, a cam-arm on the lay adapted to engage with the catch, a coiled spring connecting the outer part of the bar to the breast-beam, an arm pivotally secured to the outer end of the bar and to the end frame of the loom in a position to engage with the shipper-lever, and other details of construction, as will be more fully set forth hereinafter.

Figure 1 is a plan view of the breast-beam and lay of a loom provided with my improved weft stop-motion. Fig. 2 is an enlarged vertical view of that part of the stop-motion secured to the back of the breast-beam. Fig. 3 is a vertical transverse sectional view through the breast-beam, lay, and stop-motion with the lay in nearly its forward position, showing the operative parts of the stop-motion on the lay in their normal position in full lines, in the position they would assume with the lay back in light broken lines, the position they would assume on the breaking of the weft-thread to stop the loom in heavy dotted lines, the raised position of the striker-arm on the knock-off shaft in starting the loom in full lines, and the operative position it would assume after the first pick in broken lines. Fig. 4 is a vertical face view of that part of the stop-motion secured to the lay. Fig. 5 is a detail sectional view similar to Fig. 3, showing the position the parts of the stop-motion would assume on the breaking of a weft-thread to stop the loom; and Fig. 6 is a detail plan view of the weft-fork and its connections with the lay of the loom.

In the drawings the essential elements of a loom with which my improved weft stop-motion coöperates are shown. These consist of the lay a, in the top of which is the central recess a', the breast-beam a^2, the knock-off shaft a^3, supported in the bearings a^4 a^4 on the under side of the breast-beam, the operating-arm a^5 on the outer end of the knock-off shaft, the shipper-lever a^6, the bracket a^7, having the notched slot a^8 for the shipper-lever, and the front cross-rail a^9.

In applying my improved weft stop-motion to a loom the frame b is secured to the face of the lay a by the bolts b' b', as shown in Fig. 4. This frame b has the outwardly-extending open top b^2, the vertical ways b^3 b^3, the bottom b^4, in which is the hole b^5, and the downwardly-extending arm b^6.

The weft-fork c consists of a series of parallel wires c' c', secured at one end to the weighted arm c^2 by the screws c^3 c^3. The arm c^2 is pivotally secured at its front end in the open top b^2 of the frame b by the pin c^4 in a position to bring the wires c' c' of the weft-fork over the recess a' in the lay. On the arm c^2 is the downwardly-extending hook c^5 and the finger c^6, adapted to engage with the pin c^7 on the frame b to limit the upward movement of the weft-fork.

The slide d has a vertical movement in the ways b^3 b^3 and is constructed to have an L-shaped lower end forming the striker d' and a yoke-shaped upper end forming the cross-bar d^2, which engages with the hook c^5 on the weft-fork when the weft-thread breaks and holds the striker d' in its operative position, as shown in heavy dotted lines in Fig. 3.

The bell-crank lever e is pivotally secured to the lower end of the arm b^6 by the bolt e' and has the slot e^2 in its lower end. The plunger e^3 is pivotally secured at its lower

end to the upper arm of the bell-crank lever by the pin e^4 and is supported at its upper end in the hole b^5 in the bottom of the frame b under the slide d. The arm e^5 is rigidly secured to the cross-rail a^9 by the bolts e^6 e^6 and has the arm e^7, in which is the slot e^8, adjustably secured to its upper end by the bolt e^9. The slide e^{10} in the slot e^2 of the bell-crank lever e is adjustably secured to the arm e^7 by the bolt e^{11} through the slot e^8, as shown in Figs. 3 and 4.

The weft-thread f passes over the recess a' in the lay and holds the weft-fork c in its normal or inoperative position on the forward beat of the lay, as shown in full lines in Figs. 3 and 6.

On the inner end of the knock-off shaft a^3 is secured the downwardly-extending arm g, to which the heavy striker-arm g' is pivotally secured at its inner end by the pin g^2. The arm g extends below the pin g^2 to limit the downward movement of the striker-arm and holds the arm in its operative position, as shown in broken lines in Fig. 3. To hold the striker-arm g' in its upward or inoperative position on the first pick of the loom, I secure the two-part sliding bar h to the back of the breast-beam a^2 by the supports h' h'. The parts h^2 and h^3 of the bar have overlapping ends forming a sliding connection, which consists of a stud h^4 in the end of the part h^2 working through a slot h^5 in the end of the part h^3. A notch h^6 is cut in the top of the part h^2, and the inner end h^7 is connected to the striker-arm g' by the bell-crank lever h^8, pivotally secured to the bearing a^4. The outer end h^9 of the bar is pivotally secured to the arm h^{10}, which in turn is pivotally secured to a bracket on the end of the loom, bringing the arm h^{10} in a position for the shipper-lever a^6 to engage with it, as shown in Fig. 1. A coiled spring h^{11} is secured to the part h^3 of the bar and to the breast-beam a^2, the tension of the coiled spring holding the arm h^{10} against the shipper-lever a^6. The latch h^{12} is pivotally secured to the breast-beam a^2 back of the sliding bar and has the finger h^{13}, shaped to engage with the notch h^6 in the sliding bar, and the outwardly-extending cam-arm h^{14}, as shown in Figs. 2 and 5. On the face of the lay a is secured the cam-arm h^{15} in a position to engage with the cam-arm h^{14} on the latch in the forward beat of the lay and raises the finger h^{13} on the latch out of the notch h^6 in the sliding bar h, as shown in Fig. 2.

In the operation of my improved weft stop-motion the loom is started in the usual way by moving the shipper-lever a^6 into the notch in the slot a^8 in the bracket a^7. The parts of the stop-motion on the back of the breast-beam are now in the position as shown in Fig. 2, with the striker-arm g' in the raised or inoperative position. In the forward and backward beats of the lay the bell-crank lever e gives through the plunger e^3 a vertical reciprocating movement to the slide d. In the upward movement of the slide d on the backward beat of the lay the cross-bar d^2 engages with the arm c^2 and raises the weft-fork c into the position as shown in light broken lines in Fig. 3. The wires c' of the weft-fork pass through the lower warp-threads and the shuttle goes under the wires of the weft-fork. The weft-thread f holds the weft-fork c in its inoperative position, with the hook c^5 out of engagement with the cross-bar d^2 on the slide d, as shown in Figs. 3 and 6. On the first pick or forward beat of the lay the cam-arm h^5 on the lay engages with the cam-arm h^{14} on the latch h^{12} and raises the latch and finger h^{13} on the latch out of the notch h^6 in the part h^2 of the sliding bar h. The heavy striker-arm g' now drops by its own weight into its operative position, as shown in broken lines in Fig. 3, and through the bell-crank lever h^8 moves the part h^2 of the sliding bar h to the right, and with it the stud h^4 toward the right-hand end of the slot h^5, looking at Fig. 2. On the breaking of a weft-thread the weft-fork c drops into the recess a' in the lay, and the hook c^5, catching on the cross-bar d^2 of the slide d, holds the striker d' in its operative position, as shown in heavy dotted lines in Fig. 3. On the forward beat of the lay the striker d' strikes the end of the striker-arm g' on the knock-off shaft a^3 and partly rotates the knock-off shaft and operating-arm a^5, which, engaging with the shipper-lever a^6, knocks the shipper-lever out of the notch in the slot a^8 in the bracket a^7 and stops the loom in the usual way. The extreme downward movement of the striker-arm g' in stopping the loom moves the part h^2 of the sliding bar h to the right and brings the stud h^4 into the right-hand end of the slot h^5. The arm h^{10} is now out of engagement with the shipper-lever, allowing the coiled spring h^{11} to contract and move the sliding bar h to the left to raise the striker-arm g' into its inoperative position through the bell-crank lever h^8. The finger h^{13} on the latch h^{12} now catches into the notch h^6 in the sliding bar and holds the bar. In starting the loom the shipper-lever a^6 engages with the arm h^{10} and moves the part h^3 of the sliding bar to the right into the position as shown in Fig. 2. This moves the slot h^5 to the right of the stud h^4 for the next automatic operative movement of the stop-motion.

In the ordinary form of pick and pick-looms there being no weft-thread present on the first beat up of the lay of the loom the weft-fork would act through its connections with the knock-off to stop the loom, whereas with my device on the first beat of the lay the loom is not knocked off, but the cam-arm h^{15}, carried by the lay, comes in contact with the cam-arm h^{14}, lifting the same, causing the striker-arm g' to drop into operative position, so that if the weft is missing on the second beat of the loom the weft-fork will act to hold

the striker d' in position to come in contact with the striker-arm g' and through the operation of the same cause the knock-off to act to stop the loom.

By the use of my improved weft stop-motion for looms the loom is started by the shipper-lever in the usual way and continues to run from the first pick or beat of the lay without necessitating the holding of the shipper-lever by the operator until after the first pick of the loom, and the stop-motion having its weft-fork in the center of the lay stops the loom on the failure of the shuttle to lay the weft-thread or on the breaking of the weft-thread at either end of the loom more quickly than has heretofore been done.

It is evident that the construction of the parts of my improved weft stop-motion could be changed without materially affecting the spirit of my invention.

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

1. In a weft stop-motion for looms, mechanism adapted to automatically hold the stop-motion in an inoperative position on the first pick of the loom and to automatically throw the stop-motion into its operative position for the second pick of the loom, as described.

2. The combination with a loom of a weft stop-motion having a frame on which are vertical ways on the lay of the loom, a weft-fork having a downwardly-extending hook pivotally secured in the frame, a slide in the vertical ways having a cross-bar and an L-shaped end forming a striker, means for reciprocating the slide, a two-part sliding bar having a notch and sliding connections held in supports on the breast-beam, the striker-arm, the knock-off shaft, an arm on the knock-off shaft to which said striker-arm is pivotally secured, a bell-crank lever connecting the inner end of the sliding bar with the heavy striker-arm pivotally secured to an arm on the knock-off shaft of the loom, a catch on the breast-beam having a cam-arm and a finger adapted to catch in the notch in the sliding bar, a cam-arm on the lay adapted to engage the cam-arm on the catch, a coiled spring secured to the sliding bar and to the breast-beam of the loom, and an arm pivotally secured to the outer end of the sliding bar and to the loom side in a position to engage with the shipper-lever of the loom, as described.

3. The combination with a lay having a central cavity, a breast-beam, a knock-off shaft, a shipper-lever, and a front cross-rail of a loom, of a weft stop-motion consisting of a frame having vertical ways, an outwardly-extending open top, and a bottom in which is a hole, a weft-fork having a downwardly-extending hook pivotally secured in the open top of the lay, means for limiting the upward movement of the weft-fork, a slide in the vertical ways having a cross-bar and an L-shaped end forming a striker, a plunger in the hole in the bottom of the frame, means for securing the frame to the lay, means for operating the plunger to give a reciprocating movement to the slide, an arm on the knock-off shaft, a striker-arm pivotally secured to the arm on the knock-off shaft, means for limiting the downward movement of the striker-arm, a two-part sliding bar having a notch and sliding connections consisting of a stud on one part working through a slot in the other part of the bar, means for holding the bar on the back of the breast-beam, a bell-crank lever connecting the inner end of the sliding bar with the striker-arm, a catch having a cam-arm and a finger adapted to catch in the notch in the sliding bar, a cam-arm on the lay adapted to engage with the cam-arm on the catch, a coiled spring secured to the outer part of the sliding bar and to the breast-beam, and an arm pivotally secured to the outer end of the sliding bar and to the loom side in a position to engage with the shipper-lever, as described.

4. In combination with the lay of a loom, a weft stop-motion supported thereon and comprising a frame b, a weft-fork c, a slide d, a plunger e^3, a bell-crank lever e, the arm e^7, the arm e^5, means for supporting the arm e^5 and a cam-arm h^{15} of the breast-beam, a knock-off shaft supported on the breast-beam, an arm g supported on the knock-off shaft, a striker-arm g' pivotally secured to the arm g, a two-part sliding bar h supported on the breast-beam, a bell-crank lever h^8, connection between the bell-crank lever h^8 and the striker-arm g', the arm h^{10}, a coiled spring h^{11}, a latch h^{12}, and a cam-arm h^{14} connected with the latch h^{12}, substantially as described.

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

AUGUSTE DONT.

Witnesses:
ADA E. HAGERTY,
J. A. MILLER, Jr.