

J. C. WILLIAMS & E. J. COTTER.  
LOOM.

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963,100.

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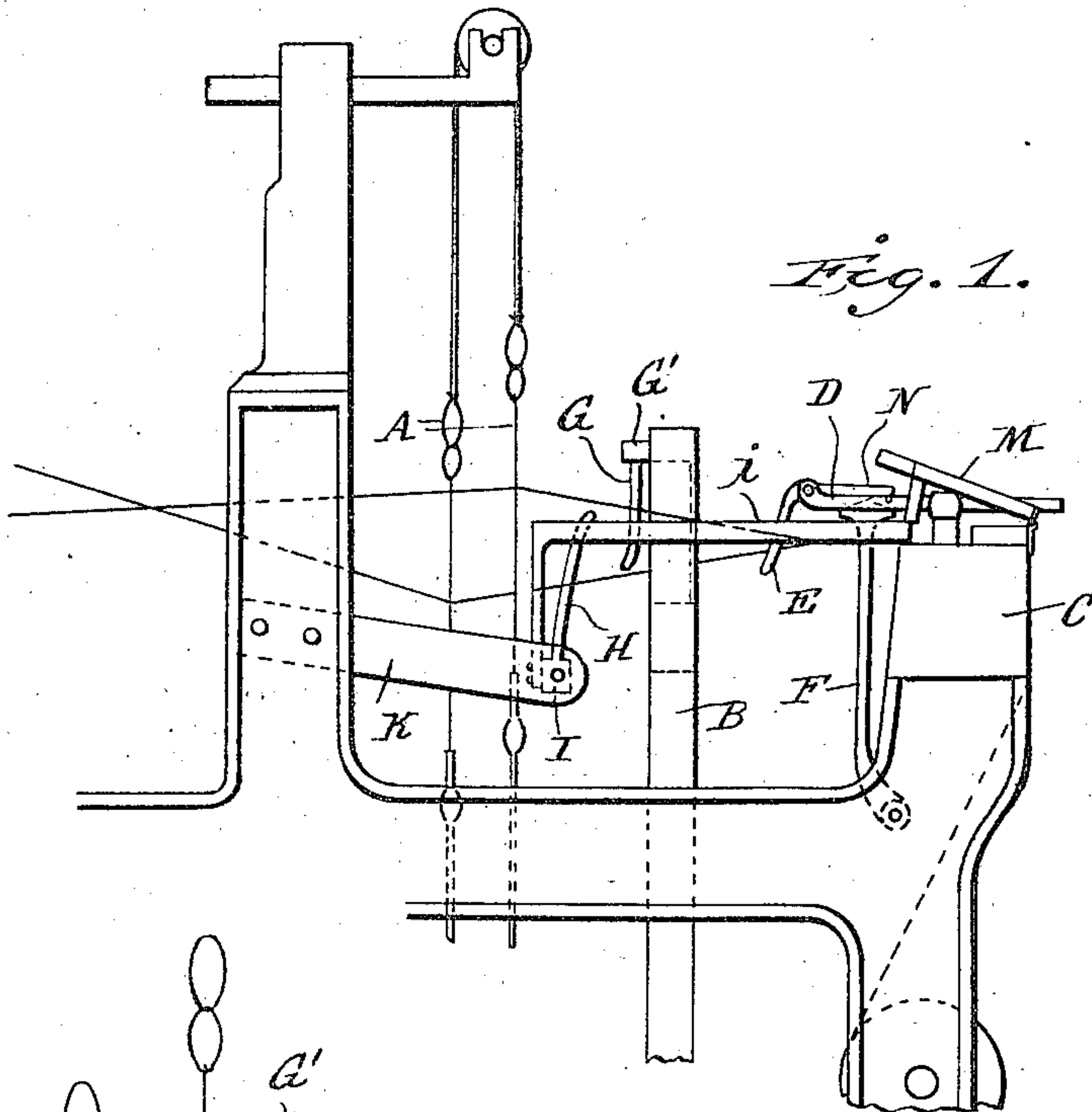


Fig. 1.

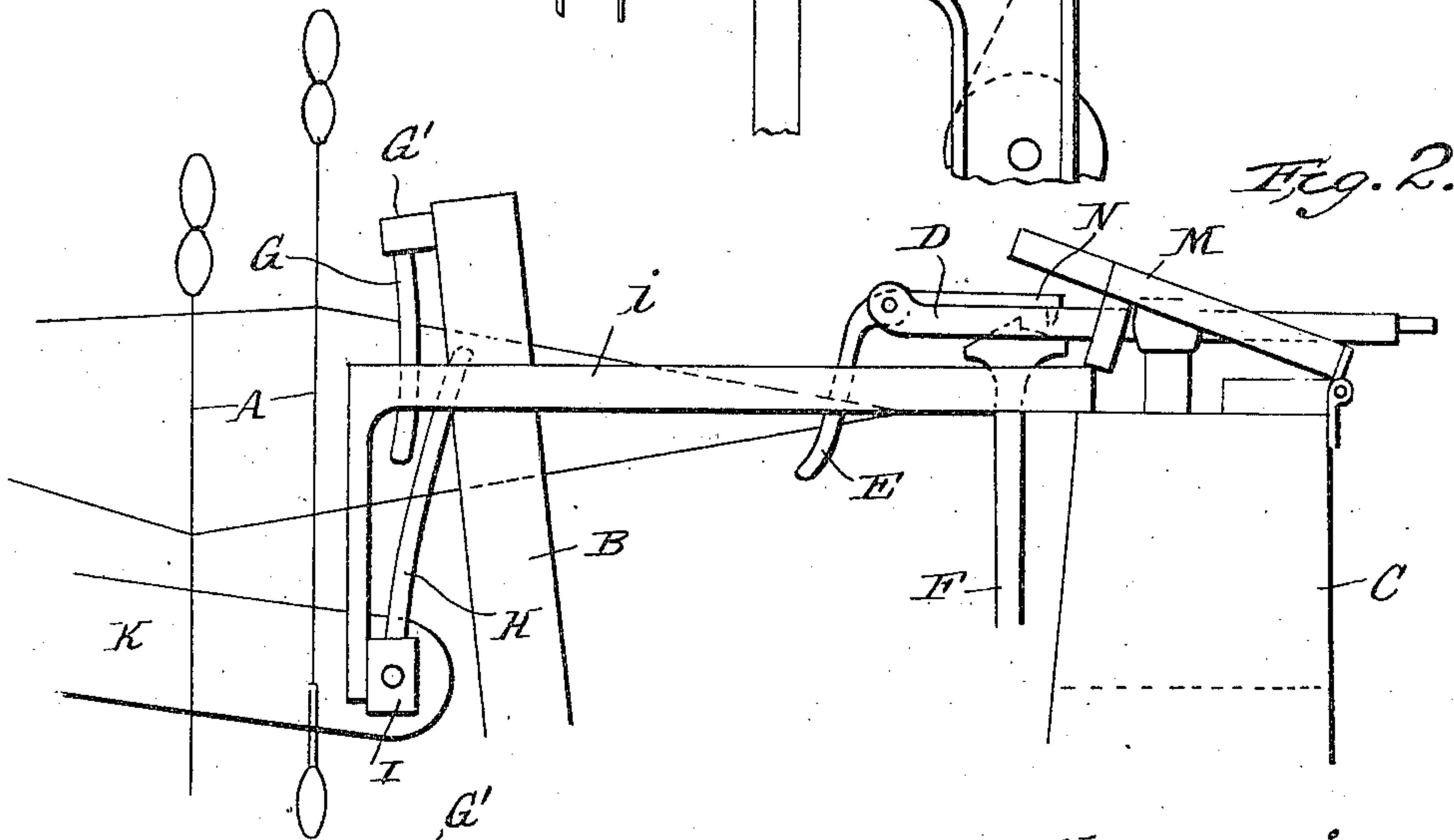


Fig. 2.

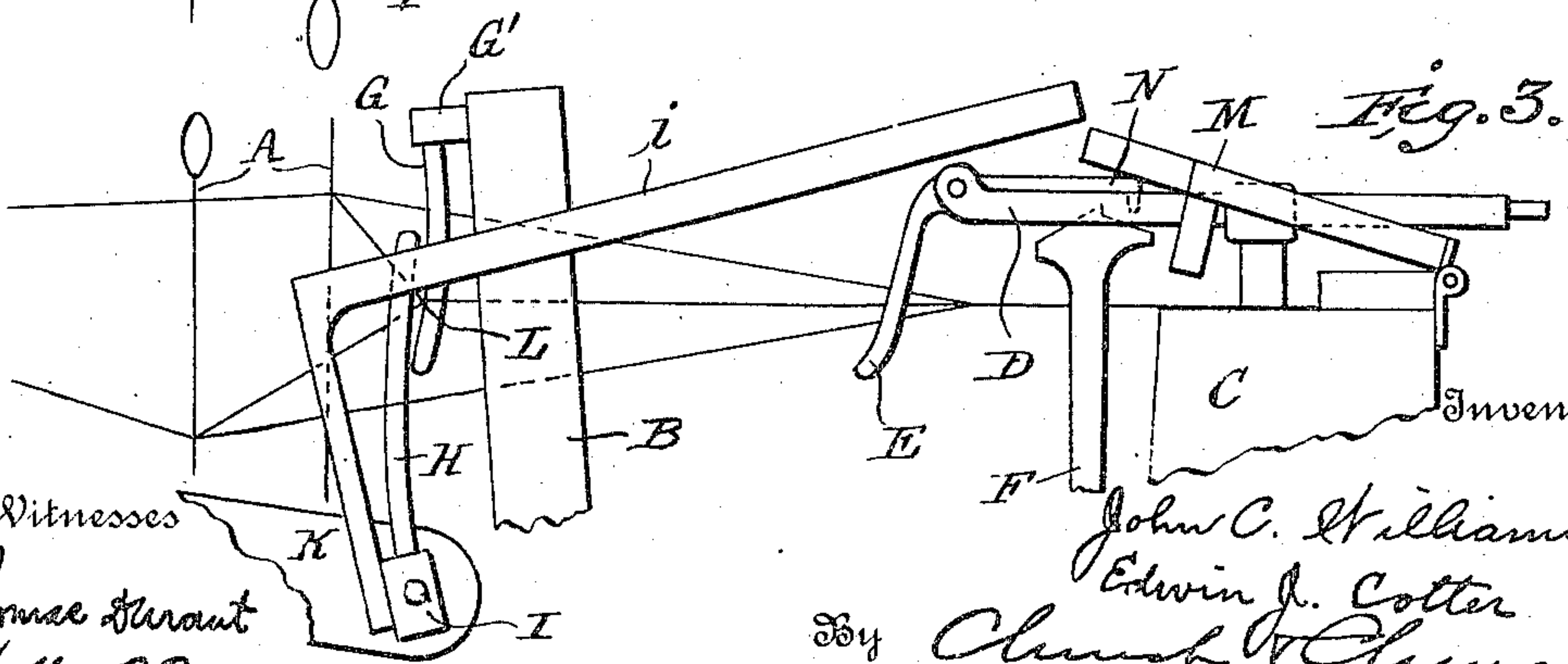


Fig. 3.

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# UNITED STATES PATENT OFFICE.

JOHN C. WILLIAMS AND EDWIN J. COTTER, OF AUGUSTA, GEORGIA.

LOOM.

963,100.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that we, JOHN C. WILLIAMS and EDWIN J. COTTER, citizens of the United States, residing at Augusta, county of Richmond, and State of Georgia, have invented certain new and useful Improvements in Looms; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to looms, and has for its object the provision of improved mechanism whereby an entanglement occurring between the harness and lay will operate to stop the loom. Entanglements of the character mentioned result in the formation of floats in the woven goods and constitute a serious defect such as at once reduces the goods to seconds and, hence, it is of great importance to detect and cure such entanglements before their effect becomes manifest in the goods being woven.

The invention consists in providing a pair of coöperating combs or feelers which project through the warp threads in the shed, one being mounted on the lay of the loom and the other being mounted on the frame in proximity to the harness. One comb is adapted to be moved or rocked by entanglements occurring between the two combs and when moved or rocked operates to stop the loom.

The invention further consists in certain novel details of construction and combinations and arrangements of parts, all as will now be described and pointed out particularly in the appended claims.

Referring to the accompanying drawings—Figure 1 is a side elevation showing portions of an ordinary power loom with the present improvements applied thereto; Fig. 2 is a diagrammatic elevation of the two combs or feelers, together with the operative parts directly associated therewith and showing the movement of said combs past each other when no entanglement is present, and Fig. 3 is a similar view showing the operation when an entanglement is present.

Like letters of reference in the several figures indicate the same parts.

The loom adopted for illustration of the

present invention is of the ordinary power loom type and embodies harness A for forming the shed of warped threads, a lay B adapted to carry the reeds for beating up the weft and a breast-beam C over which the woven material is drawn to the usual cloth beam. The loom illustrated is one which is adapted for the application of the well-known weft stop mechanism invented by James Bullough and patented in England in 1841; that is to say, on the breast-beam there is mounted in a movable support or box, such as that indicated at D, a weft fork or filler fork E, the rear hook end of which is adapted to fall by its own weight and when down to be caught by another hook formed in the segmental head piece of a vibrating lever F and to be, by said lever, drawn backwardly, together with its supporting box D, and through the well-known intermediate connections release the knock-off rod and shift the belt from the fast to the loose pulley. The forward depending end of the weft or filler fork projects in position to intersect the weft-thread, which thread when present is caught between the weft fork and the grid or coöperating fork on the lay, whereby, in the normal operation of the loom, at each stroke of the lay to beat up a weft thread, the weft or filler fork is moved out of position to engage with the vibrating lever and the loom continues in operation.

The mechanism so far described is of well-known construction and is very generally used in some one of its many possible modifications.

In accordance with the present invention, the lay is provided on the side next the harness with a comb or series of depending feelers G. This comb will, for convenience, be termed the lay comb and it may be made with its teeth rigid with the lay, each tooth being preferably thin, so as to pass between the warp threads and of sufficient width to insure rigidity. At the lower ends the teeth may be curved rearwardly so as to avoid any tendency of the entanglement to slip off below them and the said teeth may be individually or collectively mounted rigidly at their upper ends on the lay or on a suitable bar G', which latter is mounted on the lay.

The coöperating comb which, for conven-



ience, we shall term the trip comb, is indicated by the letter H and is preferably provided with upwardly projecting teeth held at the lower ends in a rock bar I pivotally mounted in rigid brackets K supported from the frame in any suitable manner. This trip comb is preferably located immediately in front of the harness heddles and the teeth project upwardly and forwardly, or in a position inclined toward the lay. The relative arrangement of the two combs should be such that on the rearward movement of the lay the teeth of one comb will pass between the teeth of the other comb, as illustrated in Fig. 2, but should an entanglement occur between the harness and lay, as illustrated for instance at L in Fig. 3, the lay comb striking said entanglement will push the same along in front of it and, as the entanglement will prevent the teeth of the combs passing each other, the trip comb will be moved rearwardly.

Obviously, many different arrangements of mechanism adapted to be actuated by the movement of the trip comb may be provided for arresting or stopping the movement of the loom and, in the accompanying drawings, we have shown one stop controlling mechanism for this purpose.

The rock bar I at one end is provided with a lever or arm *i* which, at its forward end, is adapted to normally rest under and support a pivoted drop M, said drop being mounted on the breast-beam C and adapted when released by the lever or arm *i* to drop upon and hold depressed the hook N of the lay or filler fork, whereby the engagement of said fork with the vibrating lever will be insured.

An entanglement will, with the above arrangement, operate as shown in Fig. 3 to elevate the arm *i*, thereby releasing the drop and the latter falling upon the weft or filler fork will cause said fork and vibrating levers to engage and arrest the loom at the next forward movement of the lay.

While we have described a particular arrangement of two combs between which the entanglement is trapped, it is obvious that, while such arrangement is desirable, it is not essential, inasmuch as the invention contemplates and embraces broadly the employment of two combs for trapping the entanglement between them, one of said combs being movable with the lay and the other held in proper position for coöperation therewith and connections whereby one of said combs is given an abnormal movement by a trapped entanglement and through such movement stop mechanism is controlled for arresting the operation of the loom and, hence, we do not wish to be limited to any specific arrangement or construction of the combs themselves or the stop mechanism actuated thereby.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent of the United States is—

1. In a loom, the combination with the lay and shed forming mechanism, of a trip comb interposed in the shed space with mechanism operated thereby for controlling a loom stop mechanism and a second comb movable with the lay interposed in the shed space between which comb and said trip comb an entanglement will be trapped during the rearward movement of the lay and the trip comb operated by said entanglement.

2. In a loom, the combination with the shed forming mechanism and oscillatory lay, of a pair of combs one mounted in proximity to the shed forming mechanism and the other mounted on the lay whereby on the rearward movement thereof an entanglement in the shed will be trapped between said combs, and a stop control mechanism operatively connected with one of said combs.

3. In a loom, the combination with the shed forming mechanism and oscillatory lay, of a comb mounted on the lay and having its teeth arranged vertically, of a second comb mounted in proximity to the shed forming mechanism and having its teeth arranged vertically in position to pass between the teeth of the comb on the lay during the rearward movement of the lay, whereby an entanglement in the shed will be trapped between said combs, a pivotal support for one of said combs, and stop control mechanism operated by the pivotal movement of said comb.

4. In a loom, the combination with the harness for forming the shed, the oscillatory lay and breast-beam, of a stop motion control mechanism mounted on the breast-beam, a lay comb mounted on the lay and projecting into the shed space, a coöperating comb arranged in opposition to said lay comb in proximity to the harness, one of said combs being mounted on a pivotal support, and operating mechanism interposed between said pivotal support and the stop motion control mechanism on the breast-beam.

5. In a loom, the combination with the shed forming harness and oscillatory lay, of a comb mounted in fixed position on the lay and projecting into the shed space, a second comb mounted on a pivotal support and projecting into the shed space in position to intersect the comb on the lay during the rearward movement of the lay, and a stop motion control mechanism actuated by said last mentioned comb.

6. In a loom, the combination with the shed forming harness and oscillatory lay, of a bar mounted in fixed position on the lay, comb teeth carried by said bar and project-



ing into the shed space, a rock bar mounted in fixed bearings in proximity to the harness, comb teeth mounted on said rock bar and projecting into the shed space in position to intersect and pass between the teeth on the lay comb, an arm on said rock bar and a stop motion control mechanism actuated by said arm.

7. In a loom, the combination with the shed forming harness, oscillatory lay and breast beam, of a weft fork carried by said beam and adapted to actuate a stop motion,

a lay comb mounted on the lay and projecting into the shed space, a trip comb mounted in fixed bearings in position to permit the teeth on the lay comb to pass between its own teeth, a drop controlling the weft fork and an operating arm for said drop actuated by the trip comb.

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