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C. F. PERHAM.

SHEDDING MECHANISM FOR LOOMS.

APPLICATION FILED JUNE 14, 1900.

NO MODEL.

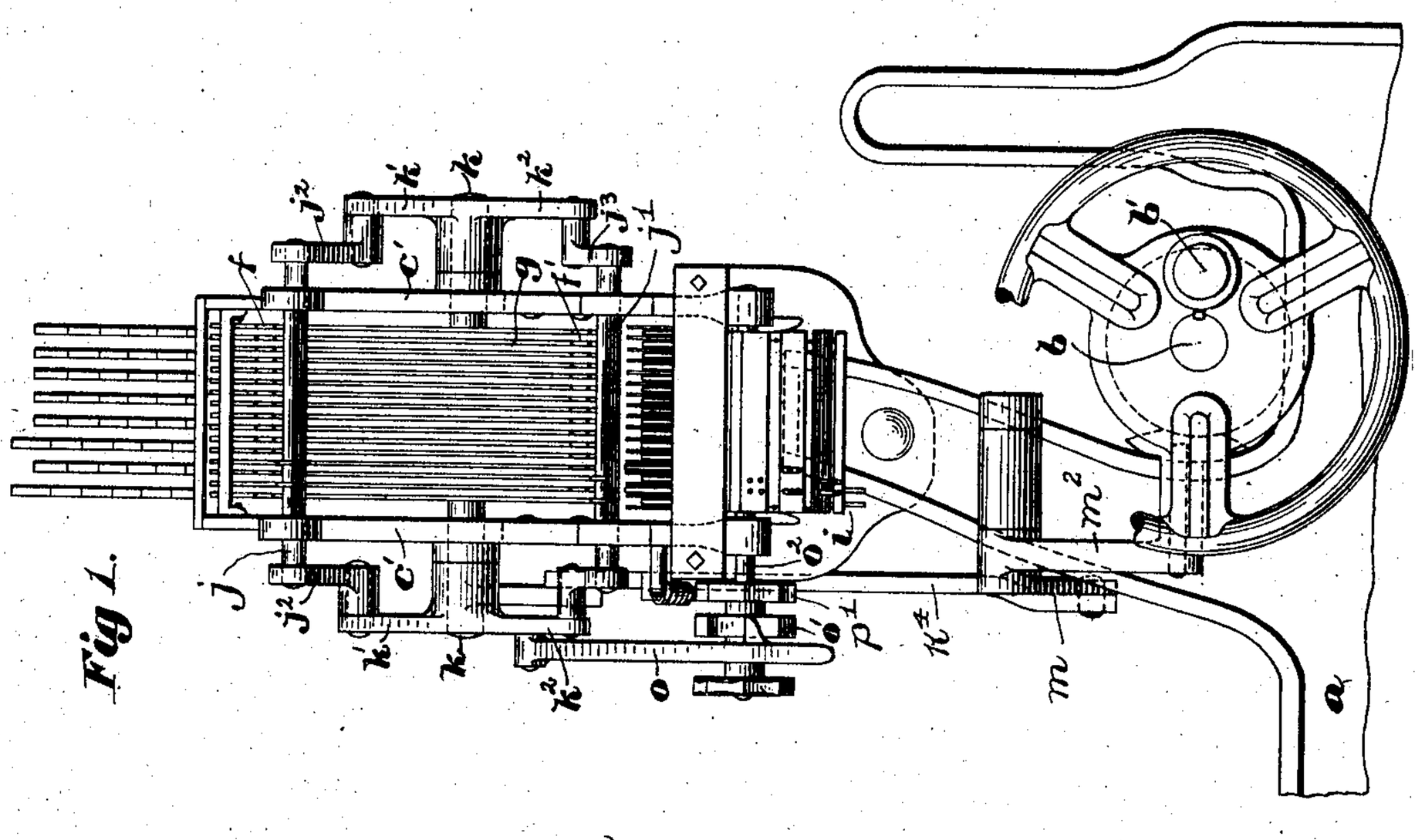

Fig 1.

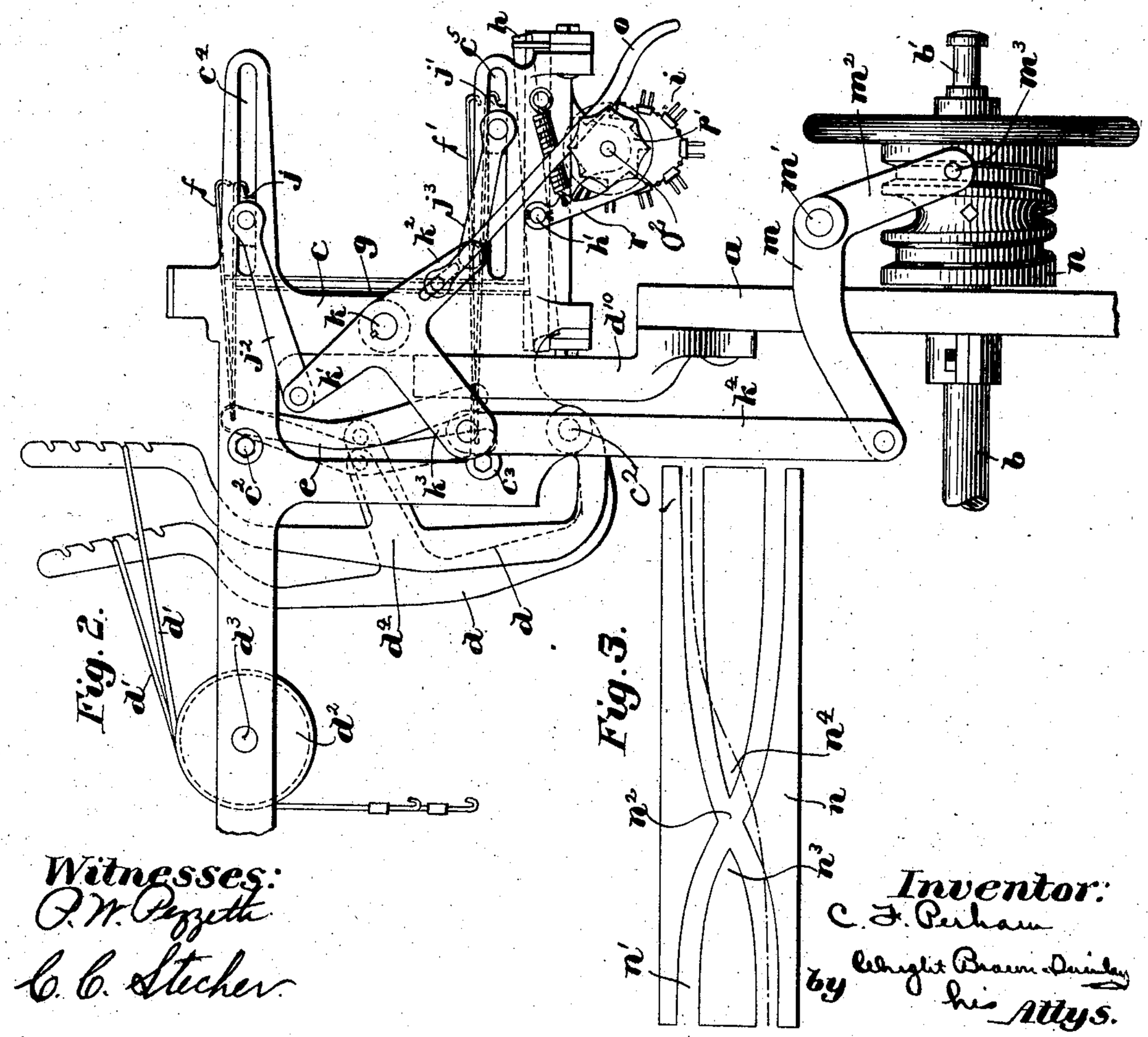

Fig. 2.

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES F. PERHAM, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO PERHAM-STICKNEY COMPANY, OF TEWKSBURY, MASSACHUSETTS, A CORPORATION OF MAINE.

SHEDDING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 768,144, dated August 23, 1904.

Application filed June 14, 1900. Serial No. 20,307. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FOSTER PERHAM, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Shedding Mechanism for Looms, of which the following is a specification.

This invention has relation to looms, and more particularly to mechanism employed for actuating the dobby by means of which the various harnesses are changed in weaving a pattern in cloth.

The object of the present invention is to provide a loom in which the dobby may be actuated directly from the crank-shaft, by means of which shaft power is imparted to the lay to reciprocate the same.

Referring to the drawings, which represent one embodiment of the invention, Figure 1 represents, in end elevation, a portion of the loom with the dobby mechanism thereon. Fig. 2 represents a partial front elevation of the same. Fig. 3 represents a diagram of the cam, by means of which the dobby mechanism is actuated.

On the drawings, *a* indicates one of the side standards of the loom which is provided with bearings for the crank-shaft *b*, said shaft being provided with the cranks *b'*, which are connected with the lay. (Not shown.) The dobby comprises the frame *c*, which is secured to the bracket d^{10}, projecting upwardly from the side standard *a*. The frame consists of two sides *c' c'*, suitably connected together, and on a shaft c^2, extending between the sides, are pivoted a plurality of upwardly-projecting levers *d d*, each of which has a notched upper end connected by a cord *d'* with a harness-frame, (not shown,) said cords *d'* passing over pulleys d^2, journaled on a shaft d^3 in the frame *c*. Each lever *d* has a projecting arm d^4, on the end of which is centrally fulcrumed a lever *e*. When the levers *d* are in an inoperative position, the rear edges of the end of the levers *e* rest against fulcrum-rods c^2 c^3, which extend through the frame *c*. Pivoted to the ends of the levers *e* are drop-wires *f f'*, having hooked ends, the drop-wires *f'* being longer than those at *f* and being located in a lower plane. They are all held raised and in an inoperative position by tracker-rods *g*, whose lower ends rest upon tilting levers *h*, fulcrumed upon a shaft *h'*, extending from side to side of the frame *c*.

i indicates a pattern-chain, which is below the tilting levers *h* and by means of which the rear ends of said levers are depressed to permit the dropping of the tracker-rods *g* and the consequent dropping of the drop-wires into operative position. The pattern-chain is of the ordinary construction, and it receives a step-by-step movement from a pawl-and-ratchet mechanism, which I shall describe.

The sides *c'* of the frame *c* are slotted, as at c^4 c^5, to receive slides *j j'*, respectively, said slides having knife-edges adapted to engage the hooked ends of the drop-wires *f f'*. The ends of the slides project through the slots c^4 c^5, and they are connected by rods j^2 j^3 with two-armed levers placed upon a shaft *k*, extending through the sides of the frame *c*. The said two-armed levers are provided with the arms *k' k²*, to the ends of which the rods j^2 j^3 are connected, and one of them is provided with a long arm k^3, the end of which is connected by a link k^4 with the long arm *m* of an elbow-lever fulcrumed on a stud *m'*, supported by the frame *a* of the machine. The shorter arm m^2 of the elbow-lever is provided with a cam-piece m^3, extending into the groove in a cam *n*, keyed upon the crank-shaft *b*. The groove in the cam is shown in diagram in Fig. 3. It is in the form of a figure "8," so that at each double rotation of the cam the elbow-lever is moved first in one direction and then in the other.

Pivotally connected to the arm k^2 of one of the two-armed levers, which, as stated, are secured to the shaft *k*, is an elongated pawl *o*, which engages a ratchet-tooth *o'* on a shaft o^2, carrying the roller by which the pattern-chain is advanced, so that when the two-armed lever is rocked the ratchet is rotated with a step-by-step movement to feed the chain. A dead-

pawl r engages a toothed wheel p' on the shaft o^2 to position the chain after each movement thereof.

The operation of the mechanism is as follows: Assuming that the pattern-chain has moved forward one step and certain of the tilting levers have been raised to lower the tracker-rods g, and thereby permit the dropping of predetermined drop-wires $f\,f'$, then when the elbow-lever $m\,m^2$ is moved in one direction the shaft k is rocked to move the slides $j\,j'$ in opposite directions. The outgoing slide j in Fig. 2 engages the depressed drop-wires and swings the levers e, to which said wires are connected, about the cross-bar c^3 as a fulcrum, thereby actuating the levers d, which are connected to the levers e. On the next movement of the elbow-lever $m\,m^2$ the shaft k is rocked in the opposite direction to permit the lower slide j' to engage and move the drop-wires f' and actuate the proper lever d, the lever e then swinging about the cross-bar c^2 as a fulcrum.

The cam n, in which the cam-groove n' is formed, as previously described, is mounted directly upon the crank-shaft b, so that the dobby is operated without the employment of a supplemental or auxiliary shaft, as is ordinarily the case. The cam-groove n' intersects itself at n^2 and forms two angles $n^3\,n^4$, which I have termed, respectively, the "angle of approach" and the "angle of recession." The angle of approach is considerably greater or more abrupt than the angle of recession, whereby the shed is closed very rapidly, but is opened slowly. It is desirable that the opening motion should be comparatively slow and gradual, so as not to strain or injure the warp, while the closing motion should be rapid, especially as the strain upon the warp decreases therewith. The opening motion is several times in duration greater than the closing motion, thereby preventing the dancing of the heddle-frames and enabling the shed to be opened to the proper extent to permit the shuttle to be sent through it without requiring the excessive opening of the shed, as where an eccentric is employed.

Having thus explained the nature of the invention and explained a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made and all of the modes of its use, I declare that what I claim is—

1. In a loom, a dobby, a dobby-actuating lever fulcrumed on the loom, and a cam on the lay-operating crank-shaft for moving said lever, said cam having an endless intersecting groove, the said groove having at its intersection an angle of convergence greater than the angle of divergence.

2. In a loom, a dobby, actuating mechanism therefor including a rock-shaft, an elbow-lever fulcrumed on the loom and having one arm operatively connected to the said shaft, and a path-cam on the lay-operating crank-shaft for actuating the said elbow-lever, said cam having the portion which controls the shed-closing movement more abrupt than the portion which controls the shed-opening movement.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES F. PERHAM.

Witnesses:

M. B. MAY,

P. W. PEZZETTI.