

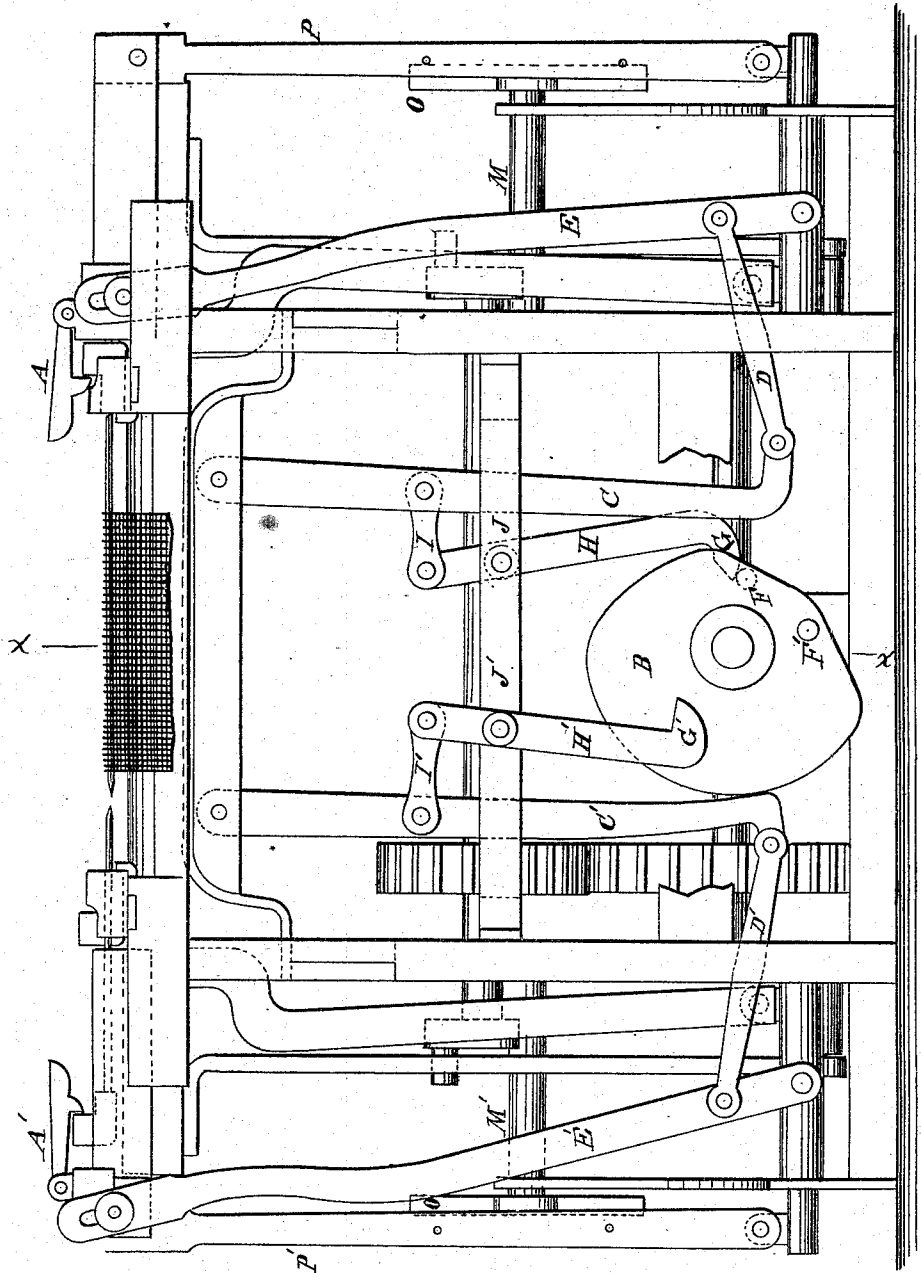
J. COCHRANE, Jr.

Looms for Weaving Pile-Fabrics.

No. 158,202.

Patented Dec. 29, 1874.

Fig. 1.



WITNESSES:

Geo W. Chipman
Thomas L. Connolly

INVENTOR:

John Cochrane Jr

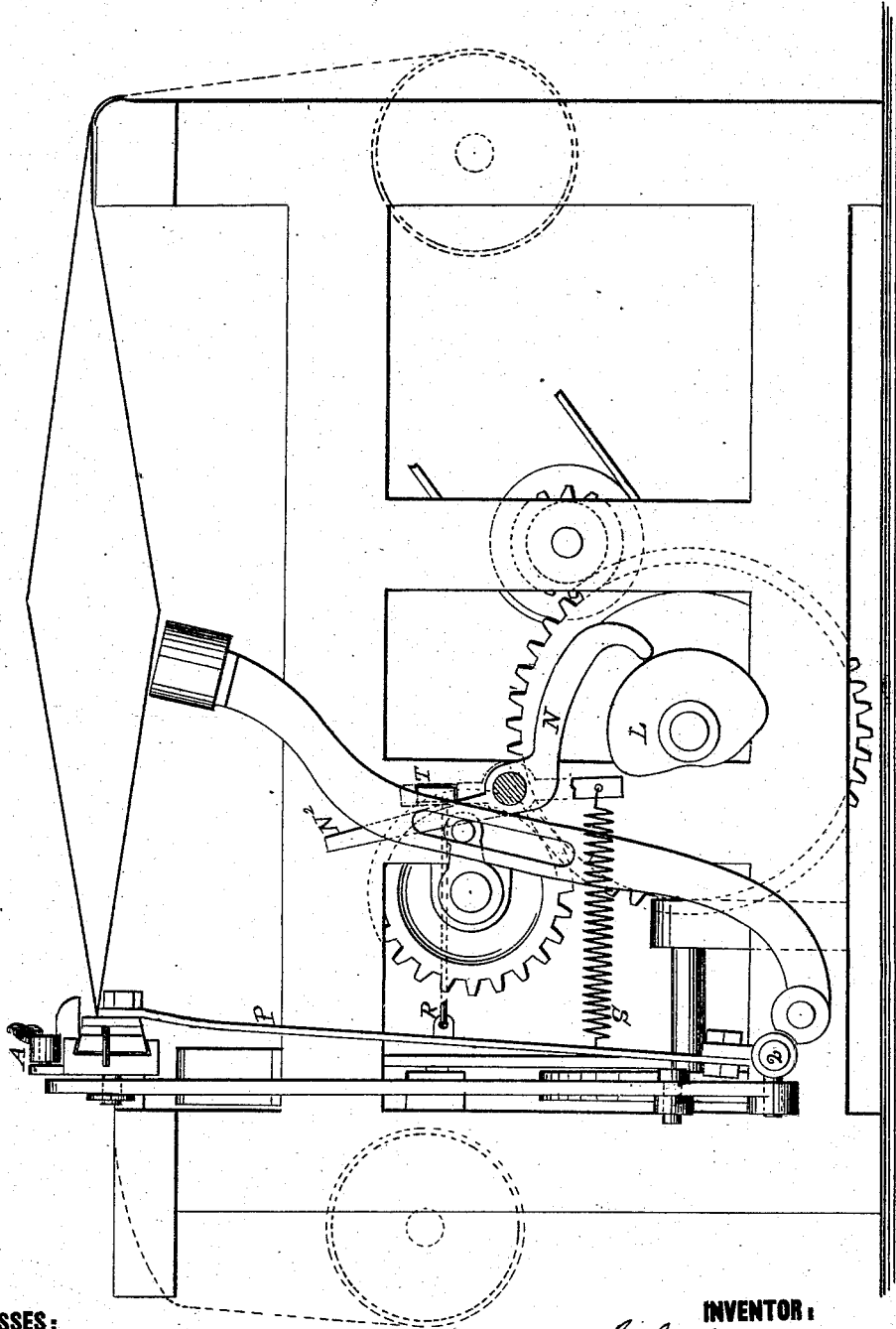
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Fig. 2.



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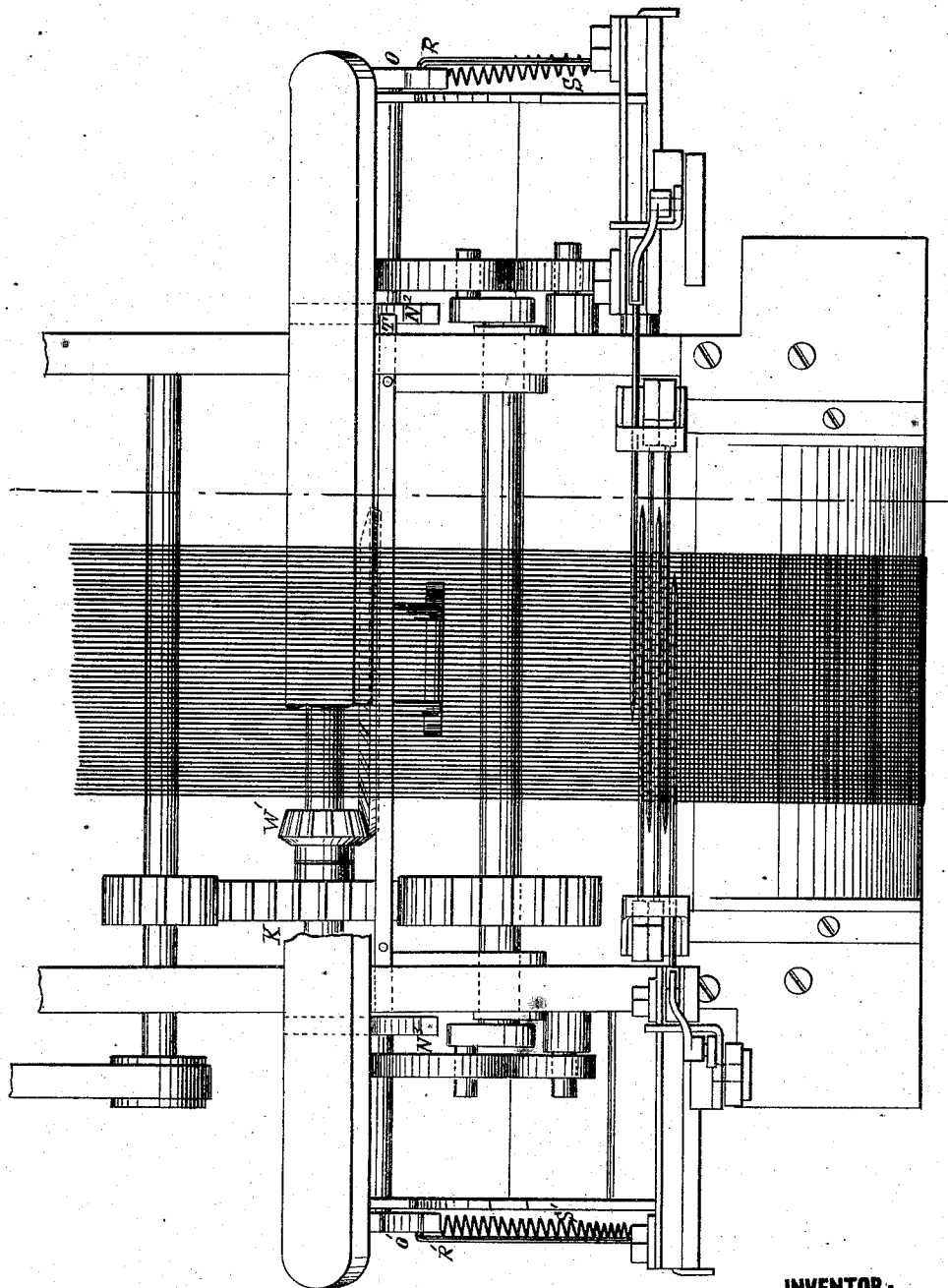
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Fig. 3.



WITNESSES:

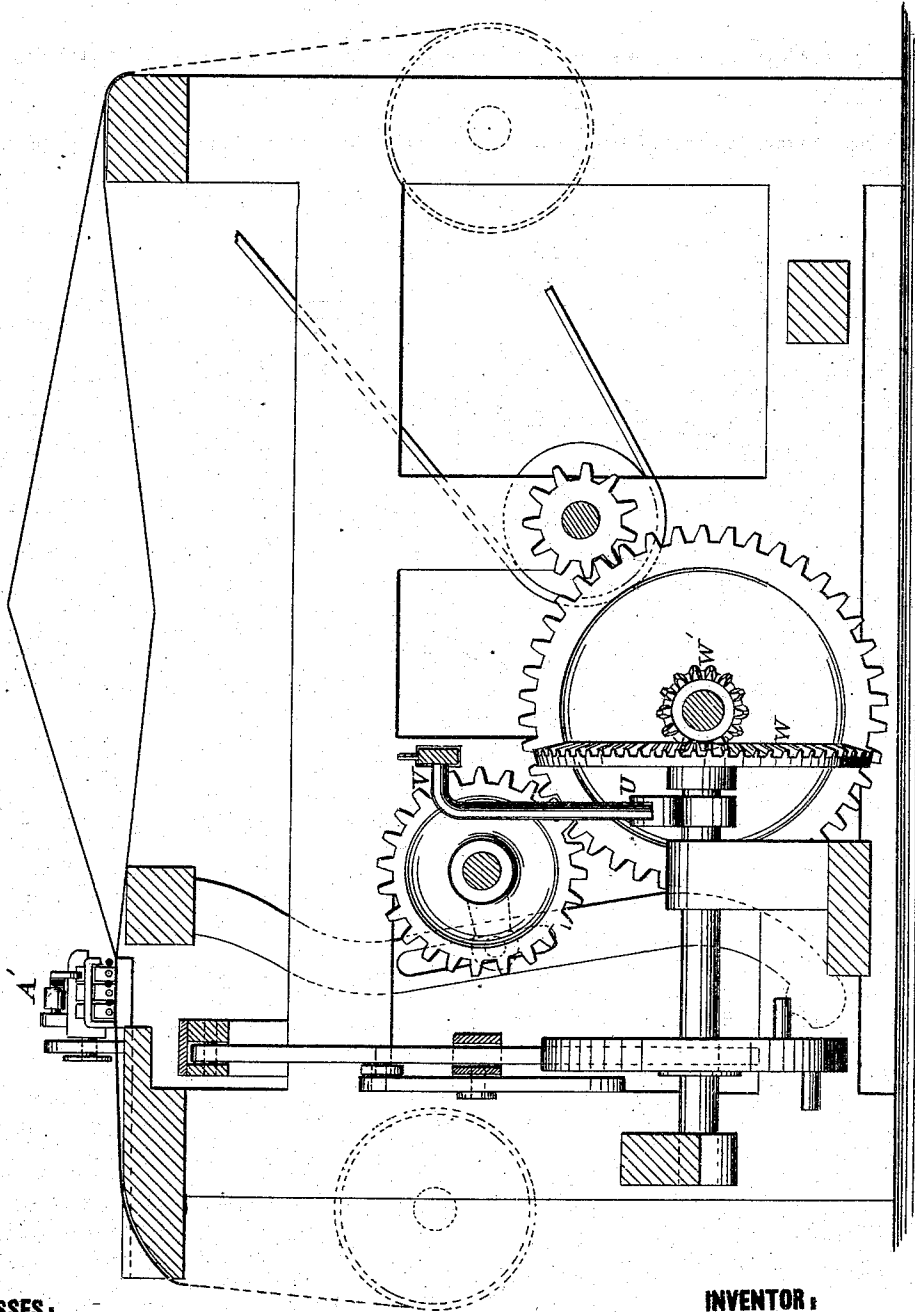
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Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN COCHRANE, JR., OF MALDEN, MASSACHUSETTS.

IMPROVEMENT IN LOOMS FOR WEAVING PILE FABRICS.

Specification forming part of Letters Patent No. **158,202**, dated December 29, 1874; application filed December 18, 1874.

CASE B.

To all whom it may concern:

Be it known that I, JOHN COCHRANE, JR., of Malden, in the State of Massachusetts, have invented certain new and useful Improvements in Looms for Weaving Pile Fabrics, of which the following is a description, reference being had to the drawings accompanying and forming a part of the same.

That portion of the loom for weaving pile fabrics technically termed the "wire motion" has been heretofore arranged at one side of the shed, so that the operation of withdrawing the wires from the cloth, and of inserting them in the shed, takes place at different intervals—that is to say, while the hook is withdrawing a wire no wire can be inserted except it, and no other wire withdrawn until such hook returns to withdraw it, thus causing an interval of time to elapse until a withdrawn wire is brought forward from the line of the cloth to the point at which it is necessary to insert it in the shed, and during which interval no other wire can be withdrawn. The speed, therefore, of the loom is restricted to the extent of the time lost in this interval—namely, until the withdrawn wire is inserted in the shed and the hook has returned to withdraw another wire from the fabric which is being woven. I effect, by my invention, a saving of the time lost by the hook in its traverse movement with the wire to the shed, and its insertion therein, by, in that interval, withdrawing another wire from the line of the cloth on the opposite side of the shed and bringing it forward for insertion at its proper place, and, while it is being inserted, by having another wire withdrawn by the other portion of the wire motion, and ready to be brought forward, and, in its turn, inserted in its proper place in the shed, thus permitting of an increase of the speed of the loom and a consequent gain in the weaving of the fabric. The principle of my improvement to effect this end consists in the arrangement of a wire motion at opposite sides of the shed, so that while one wire is being withdrawn on one side of the shed another wire is being inserted on the other side of the shed, and so on during the working of the loom in the

weaving of the fabric, the two operations being thus conducted simultaneously instead of at intervals, as heretofore.

In the drawings serving to illustrate the way in which my invention may be carried out, Figure 1 is a front view of a loom containing my improvements. Fig. 2 is a side view. Fig. 3 is a plan view. Fig. 4 is a vertical longitudinal central section taken on the line *xx* of Fig. 1.

The specific mechanism, technically termed the wire motion, for withdrawing and inserting the wires on opposite sides of the shed is constructed as heretofore, and is arranged on the loom so that one wire motion shall be at *A* on one side of the shed and the other at *A'* on the other side of the shed. Motion is imparted to them so as to permit of one withdrawing, while the other inserts a wire, by means of a cam, *B*, or other equivalent intermediate mechanism, which alternately pushes in opposite directions, the levers *C C'* having their fulcrums above said cam. To the end of each of such levers is attached a short arm, *DD'*, connecting with the vertical levers *E E'*, carrying in and out the withdrawing and inserting mechanism *A A'*. In order to push the wires into the shed there is upon the opposite walls of this cam two pins, *F F'*, which operate upon the toes *G G'* of two levers, *H H'*, which are again connected in turn to the levers *C C'* by short links *I I'*, their fulcrums *J J'* being on a cross-piece attached immediately above the cam. At every half revolution of the cam-shaft these pins engage the toes of these short levers alternately, thus causing the wire drawing and inserting mechanism to alternately insert a wire in the shed; and while one wire motion is inserting a wire the other wire motion, by reason of the position of the face of the cam and its operation on the levers *C C'* alternately, is withdrawing a wire. Lateral motion is also given to these wire motions alternately in this way, viz: Attached to the counter-shaft *K* are two cams, *L L'*. There are also two spindles, *M M'*, at opposite sides of the loom, each spindle having at one end a curved arm (seen at *N N'*) operating on the face of the cams *L L'*; and

at the other end, outside the bearing, an arm, O O', which connects at its upper portion with the upright frame P P' of the wire motion, the frame reciprocating on bearings Q Q', by a short link, R R', and at its lower end by springs S S', also connecting with the upright reciprocating frame P P', and serving to draw forward the frame containing the wire motion when the larger part of the cam is turned away from the curved arm above referred to in order to get the wire in its right position to be pushed into the shed. While the curved arm is on the face of the cam, which is varying in diameter, the wire is being alternately withdrawn and inserted on the respective sides of the loom; and while the respective wire motions are withdrawing a wire, such wire motion is held in a fixed position by the bolt T T' being shot out, so as to retain the arms N² N³ alternately from falling forward until after a wire has been withdrawn. The motion of this bolt is effected by the cam U operating on a bifurcated arm, V, attached to the bolt T T', such cam being operated through

bevel-gear W W', connecting it with and giving it motion through the counter-shaft K.

By this invention I am enabled to give a little more time to the operation of withdrawing the wire, which is an advantage, and still almost double the work of any of the former wire motions in a given period of time.

I do not limit myself to the particular wire motion described, nor to the particular form of intermediate mechanism for actuating such wire motion in order to produce the effect and results above referred to.

I claim—

A wire motion connected by intermediate mechanism, substantially as described, arranged and operated on opposite sides of the loom, so that the wires are inserted and withdrawn from opposite sides of the loom simultaneously.

JOHN COCHRANE, JR.

Witnesses:

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GEO. W. CHIPMAN.