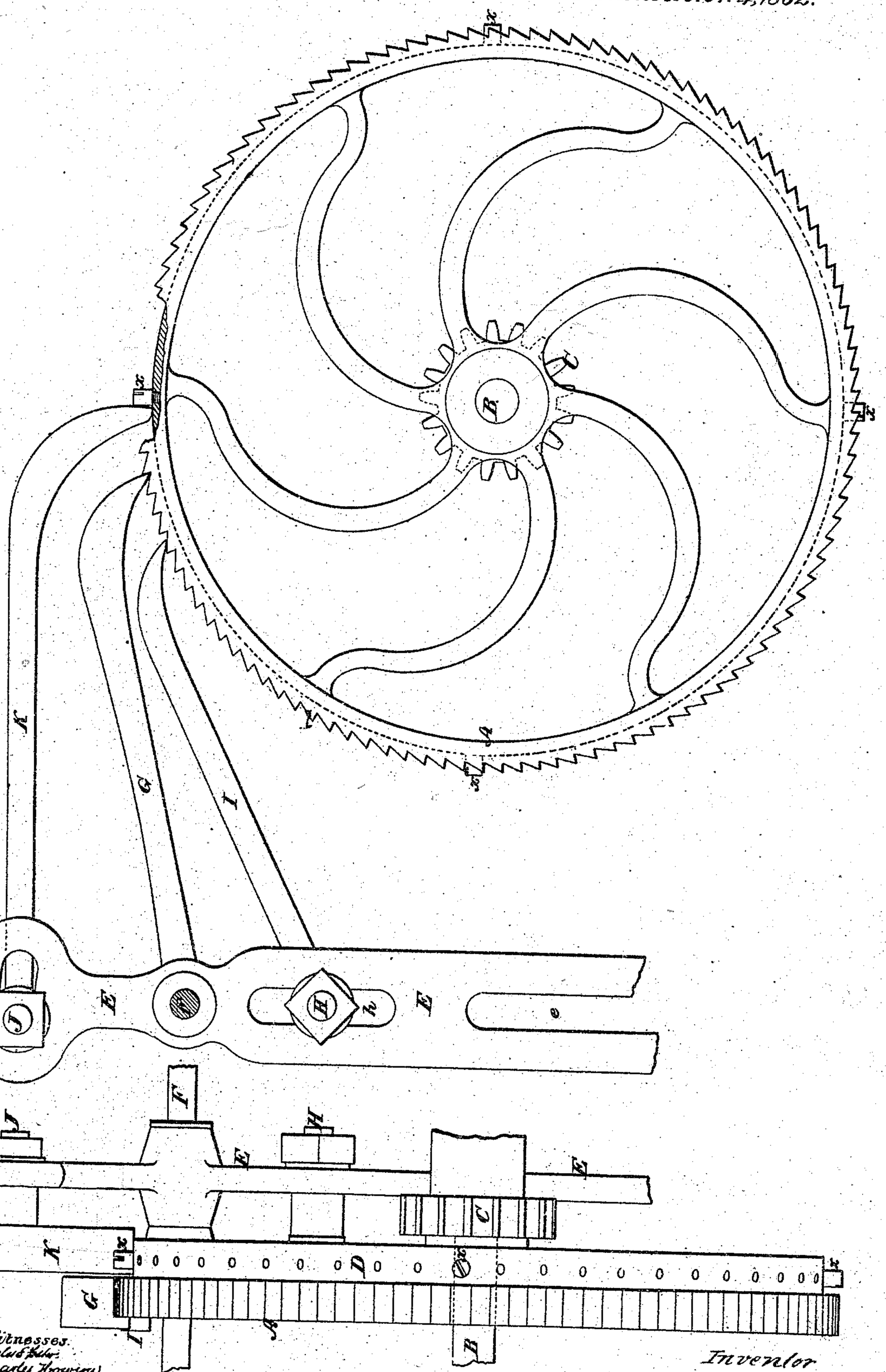
J. Whitaker.

Take-Up Motion.

No. 36,875. Patented Nov. 4, 1862.



Witnesses.
Charles Howson
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UNITED STATES PATENT OFFICE.

JAMES WHITAKER, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN THE TAKE-UP MOTION FOR POWER-LOOMS.

Specification forming part of Letters Patent No. **36,875**, dated November 4, 1862.

To all whom it may concern:

Be it known that I, JAMES WHITAKER, of Philadelphia, Pennsylvania, have invented a new and Improved Tape-Up Motion for Power-Looms; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in combining with the ratchet-wheel and pawls of a take-up motion for power-looms any convenient number of pins or their equivalents, acted upon by an additional pawl or its equivalent, substantially as set forth hereinafter, so that the amount of the take-up of the fabric may be readily altered at pleasure, and the number of threads to the inch of fabric may be increased or diminished without the necessity of resorting to the usual tedious plan of changing the train of gearing by which motion is communicated from the ratchet-wheel to the take-up roller.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a side view of my improved take-up motion for power-looms, and Fig. 2 an edge view.

A is a ratchet-wheel hung loosely to a pin, B, which is secured to the frame-work of the loom.

To the hub of the wheel A is secured a pinion, *c*, the teeth of which are arranged to gear into those of a wheel secured to the spindle of the usual take-up roller of the loom.

On the inside of the rim of the ratchet-wheel is a flange, D, the circumference of which is represented by the red line, Fig. 1, and this flange is pierced for the reception of a number of detachable pins, *x*.

E is a lever hung loosely to a pin, F, secured to the frame of the loom and to the same pin, F, is hung the pawl G, the point of which is adapted to the teeth of the ratchet-wheel.

To the pin H, which is rendered adjustable in a slot, *h*, in the lever E, is hung a pawl, I, the end of which is also adapted to the teeth of the ratchet-wheel.

To another pin, J, which can be adjusted in a horizontal slot in the upper end of the lever E, is hung a third pawl, K, the end of which is arranged to act on whatever pins may be inserted in the holes of the flange D. A vibrating motion is communicated to the lever E on the fulcrum-pin F by means of a rod, one end of which is jointed to a pin which is rendered adjustable in the slot *e*, the other end of the rod being connected to or acted on by any moving part of the loom which may be found most applicable for the purpose.

In order that my improved take-up motion may be thoroughly understood, it will be well to refer to such as are in ordinary use on power-looms. The ordinary take-up motion consists of a ratchet-wheel, A, its pinion C gearing into a cog-wheel on the take-up roller, a vibrating lever, E, and the two pawls G and I, the former of which, being hung to the fulcrum, acts only as a retaining-pawl, while the lower pawl, I, serves, by acting on the teeth of the ratchet-wheel, to impart to the same an intermittent rotary motion and consequently to take up the fabric as it is woven. Let us suppose the vibrations of the lever E to be such that the pawl I can move the wheel A to the extent of one tooth only at each vibration, and that this movement of the wheel takes up one inch of the fabric during the time in which the weft-thread has been thrown across the warp fifty times, the fabric thus having fifty threads to the inch. If a change as regards the number of threads to the inch is required—for instance, a change of from fifty to twenty-five threads per inch—this change may be readily effected by imparting to the lever E such a motion that for every vibration of the said lever the wheel A will move to the extent of two teeth; but if a change of from fifty to forty threads per inch of the fabric is required, no alteration in the movement of the lever can effect this change. It can only be produced by altering the gearing, composed of the pinion *c* and the wheel into which that pinion gears. This is the usual mode of making the desired alteration, and one which is a source of much delay and annoyance, especially in weaving certain classes of fabrics in which changes in its strength and density are required.

My invention has been designed with the view of obviating the necessity of this repeated change of the gearing, and of readily increasing or diminishing the number of threads to the inch required in the fabric. In the present instance there are one hundred and thirty-four teeth in the wheel A, and just half that

number—sixty-seven--of holes in the flange D for the receptions of pins *x*. Now, supposing that the take-up motion is so arranged that the loom is in the act of weaving a fabric having sixty-seven threads to the inch, and that it requires a movement of the wheel A to the extent of two teeth to take up the fabric, so that it may have this number of threads to the inch, no pins *x* would be required in this case, the rod which actuates lever E being simply so adjusted that the pawl I will move the wheel the required distance; but supposing sixty-six threads to the inch are required in the fabric, then two pins *x* are inserted into one of the holes of the flange D. The pawl K, acting on these pins, will move the wheel A to the extent of one tooth in excess of the movement imparted to it by the pawl I, and their excess of movement will take up so much more of the fabric that the latter will have the desired number (sixty-six) of threads to the inch. It might be imagined that this excess of movement taking place at two points only in the revolution of the wheel would have the effect of producing a flaw in the fabric, but this is not the case, as practical experiment has proved.

In weaving, the beating up of a weft-thread is not effected by one blow of the reed, the thread not finding its proper position in the warp until it has received a succession of blows, transferred through successive threads; hence the sudden excess of take-up, although it may make a temporary inequality in the fabric at the moment this excess of movement takes place, the subsequent regularity of the take-up and the successive blows which the weft-threads receive cause this inequality to disappear.

It will be understood that by the insertion of two more pins *x* in the flange D the fabric will have sixty-five threads to the inch, and if a pin be inserted in every hole of the flange D, the number of threads to the inch will be thirty-three and one-half, the same as would be produced by causing the pawl I to move the wheel A to the extent of three teeth for every vibration of the lever.

It will be seen without further description that by the simple insertion or withdrawal of the pins, an operation causing but little delay, the amount of take-up of the cloth may be readily adjusted so that the number of threads to the inch may be altered at pleasure.

I claim as my invention and desire to secure by Letters Patent—

In combination with the ratchet-wheel and pawls of a take-up motion for power-looms, any convenient number of detachable pins, *x*, or their equivalents, acted upon by an additional pawl or its equivalent, substantially as set forth, for the purpose specified.

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

JAMES WHITAKER.

Witnesses:
HENRY HOWSON,
JAMES MCCAHEN.