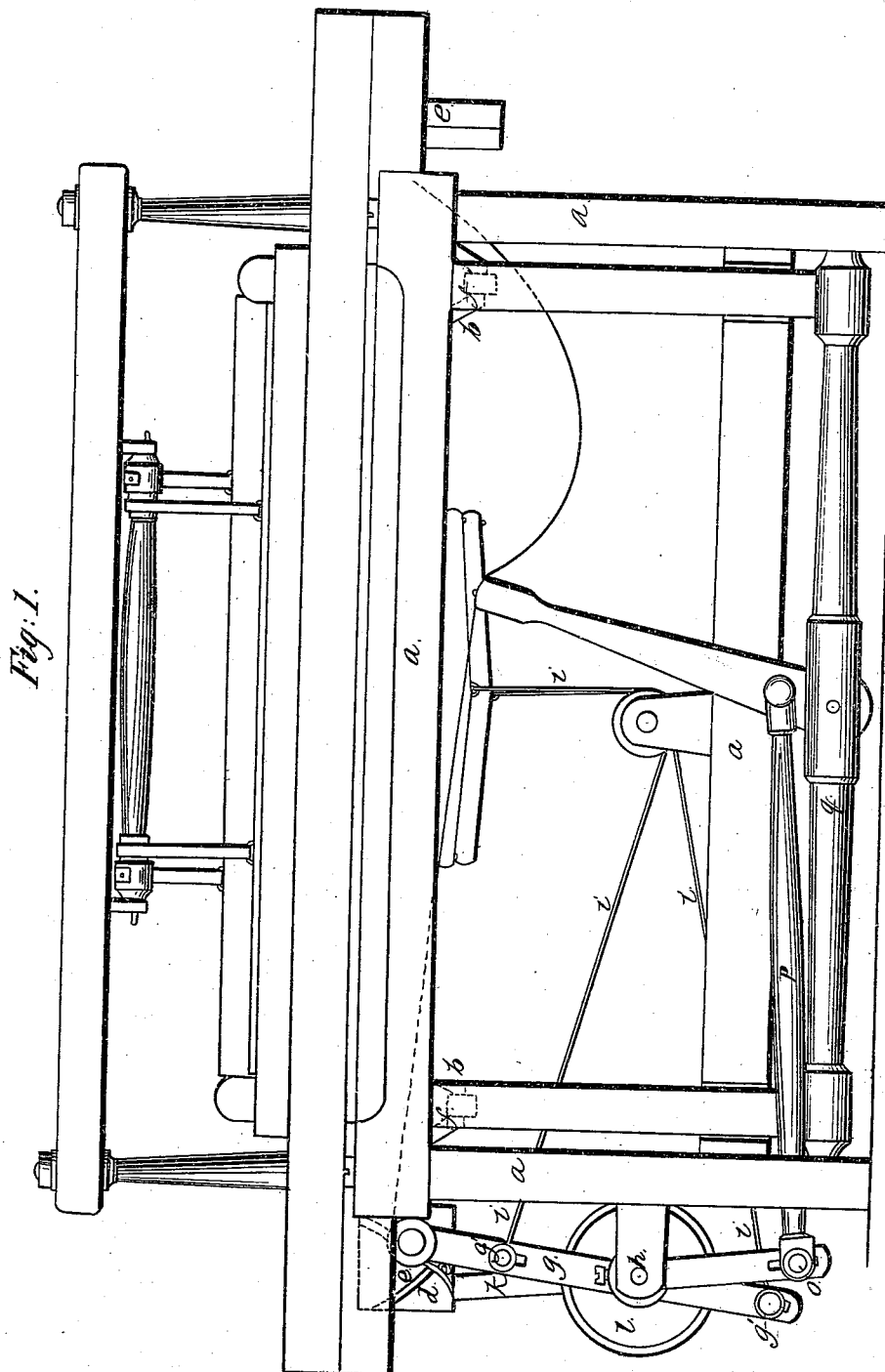
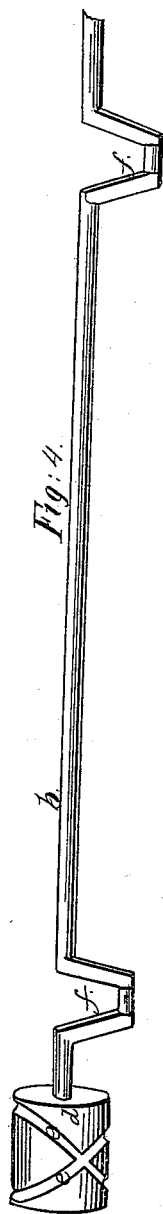


F. Downing. Loom.

Sheet 1-2. Sheets.

N^o 2,935.

Patented Jan. 27, 1843.

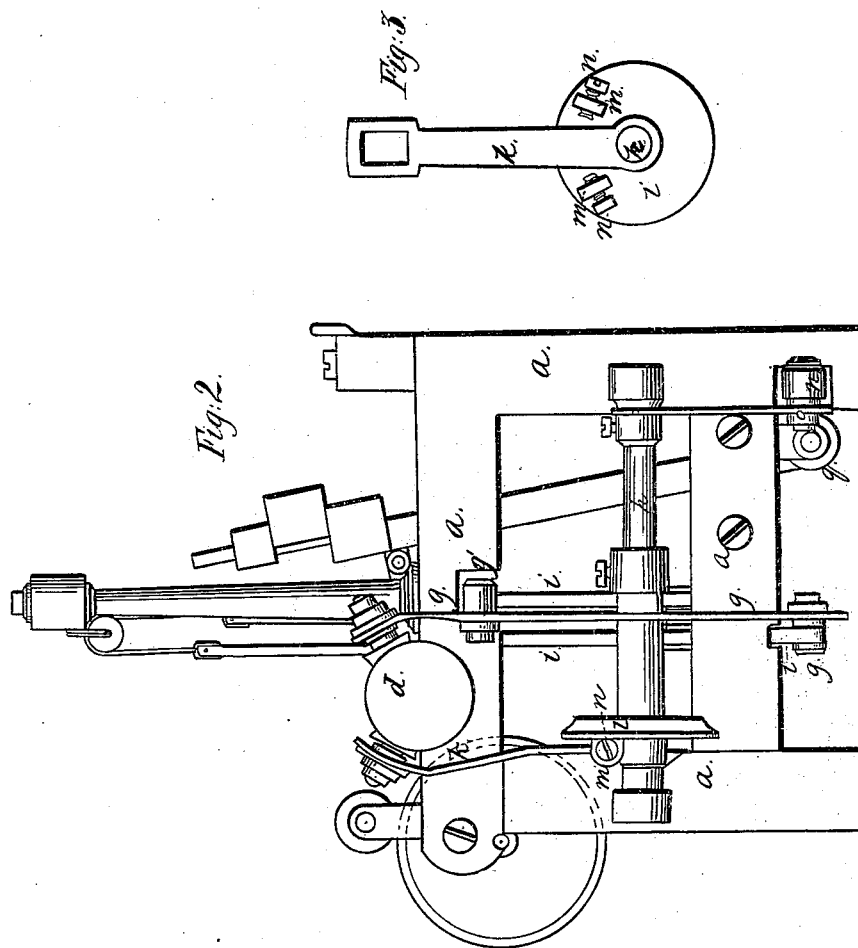


F. Downing. Loom.

Sheet 2-2 Sheets.

N^o 2,935.

Patented Jan. 27, 1843.



UNITED STATES PATENT OFFICE.

FREDERICK DOWNING, OF ENFIELD, MASSACHUSETTS.

POWER-LOOM FOR WEAVING PLAIN CLOTH.

Specification of Letters Patent No. 2,935, dated January 27, 1843.

To all whom it may concern:

Be it known that I, FREDERICK DOWNING, of Enfield, in the county of Hampshire and State of Massachusetts, have invented a new and useful Improvement in the Construction of Looms for Weaving Plain Cloth; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1, is a front elevation; Fig. 2, a side elevation; Fig. 3 disk (*l*) detached; Fig. 4, the crank shaft and cylinder cam detached.

The nature of my invention consists, in constructing the driving, or crank-shaft of the loom, with a cylinder-cam on it; a groove being made around the periphery of said cylinder to vibrate the heddles by means of an intervening lever and straps; and also to throw the shuttle, by its connection with the picker-staff, in the manner hereafter described, without the use of the ordinary gearing, cam-shaft, or treadles, as in the common loom.

The frame (*a*) of my loom, is formed similar to that of any ordinary power-loom for weaving plain cloth, now in use. The crank shaft (*b*) is in the usual position, and has the fast and loose pulleys (*c*) on one end, outside the bearing; on the opposite end of the shaft, a cylinder (*d*) is fastened, with two spiral grooves (*e*) crossing each other; they extend around, about one half the circumference of the cylinder, and from end to end; these are connected by other grooves, running around the other half of the circumference of the cylinder, parallel to the ends. The crank-shaft has also two cranks (*f*), either made inside the bearings, as shown in the drawing, or outside, in the usual way.

In the groove of the cylinder, above named, two slides are fitted on opposite sides; the one on the front side, is attached to the end of the lever (*g*), which has its fulcrum near its center, on a shaft (*h*), and turning loosely thereon; near each end of the lever (*g*) a slot is made, in which studs (*g*) are so fastened as to be adjustable; to these studs are affixed the straps (*i*), which extend from thence, around pulleys attached to a cross brace under the heddles, and up to the heddles; one strap being attached to

each; it will be readily seen, that by this arrangement, the heddles are moved steadily, without any shock, as the lever (*g*) is vibrated; (they are suspended above in the usual way). The slide in the groove (*e*), on the opposite side of the cylinder to that before described, is connected so as to be adjustable, with the upper end of a lever (*k*), which also has its fulcrum on the shaft (*h*), and turns freely on it; this shaft is on the outside of the loom-frame, parallel with its side, and below the cylinder; being at right angles to the crank-shaft.

Near the lever (*k*) is a disk (*l*), firmly fixed on the shaft; from the face of this disk two gages (*m*) project, one on each side of the lever (*k*); these gages have regulating screws (*n*) in them, to regulate the distance the shaft (*h*) shall be turned by the vibration of the lever (*k*); from near the front end of the shaft (*h*), an arm extends downward, in the end of which a slot is cut, for receiving an adjustable wrist (*o*); to this wrist, one end of a connecting-rod (*p*) is attached, to connect it with the picker-staff; the fulcrum of which is in the center of the rocker (*q*) of the lay; the top being connected with the pickers by a strap in the usual way. By this combination it will be seen, that, as the cylinder-cam revolves, and vibrates the lever (*k*) from one side to the other, it comes in contact with one of the regulating screws on the disk, and, by turning the shaft gives a quick motion to the pickers, sufficient to throw the shuttle; the regulating screws serve to give a greater or less motion to the picker-staff, as may be found desirable.

It will be obvious, from the above description of the construction of the machine, that it is capable of being made narrower from front to back, and will occupy less space in the factory than the old construction; and, as the cam which operates the heddles and shuttles, is on the shaft that operates the latter, the motion will be equable and steady; there being no gearing, treddles, or cam-shaft, to back-lash; and, as the heddles are connected with tight straps above and below, all the tremulous motion in the harness is prevented, when the loom is in ever so rapid operation; it is therefore capable of being made to run more rapidly than those with gear, and cam-shaft, embracing economy of construction, with the advan-

tages of consuming less power, and acquiring greater speed, than has ever before been attained.

Having thus fully described my invention, 5 and set forth its points of novelty, I would have it understood that I do not intend to confine myself to the exact arrangement of the parts as above described; as they can be variously modified; by placing the cylinder cam (*d*) inside the frame; and also 10 changing the position of the levers; two cams can be used on the crank-shaft, one for throwing the shuttle, and another for moving the harness; but

15 What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the cylinder-cam

(*d*), on the crank-shaft, and lever (*g*), connected by strap with both the lower shafts of the harness, so as to dispense with the 20 cam-shaft; constructed and arranged, in the manner, and for the purposes, substantially as herein set forth.

2. I also claim the lever (*h*) in combination with the cam on the driving, or crank-shaft by which it is operated; and in combination therewith the gages (*m*), shaft (*h*) 25 and its connections with the picker staff, all for giving motion to the shuttle as above described.

FREDERICK DOWNING.

Witnesses:

LEVI HOGE,

J. J. GREENOUGH.