

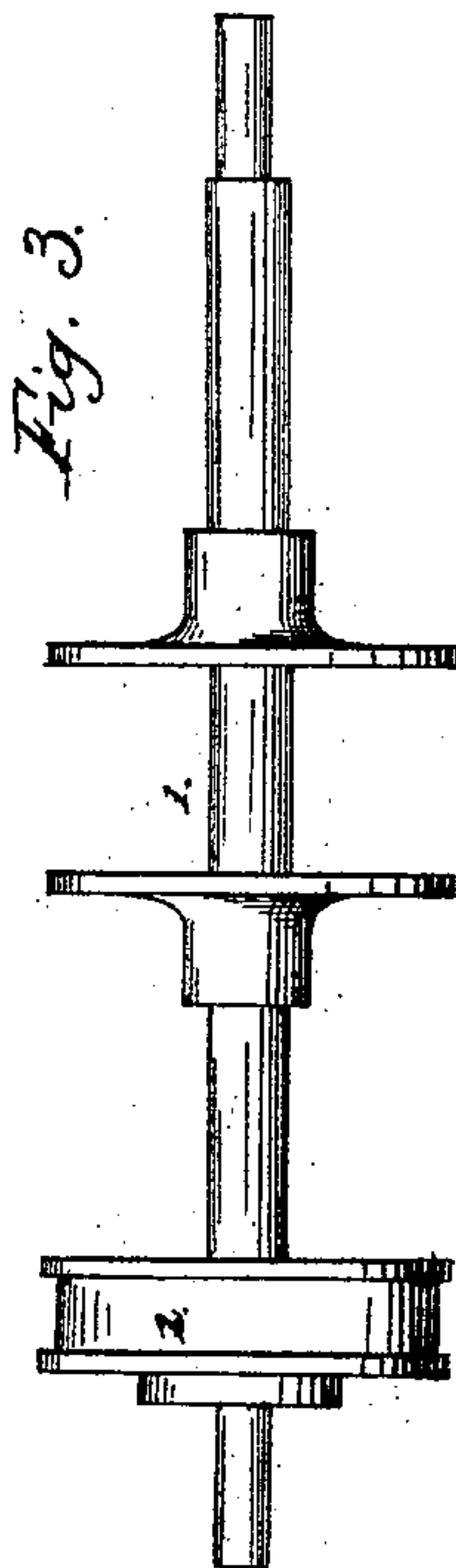
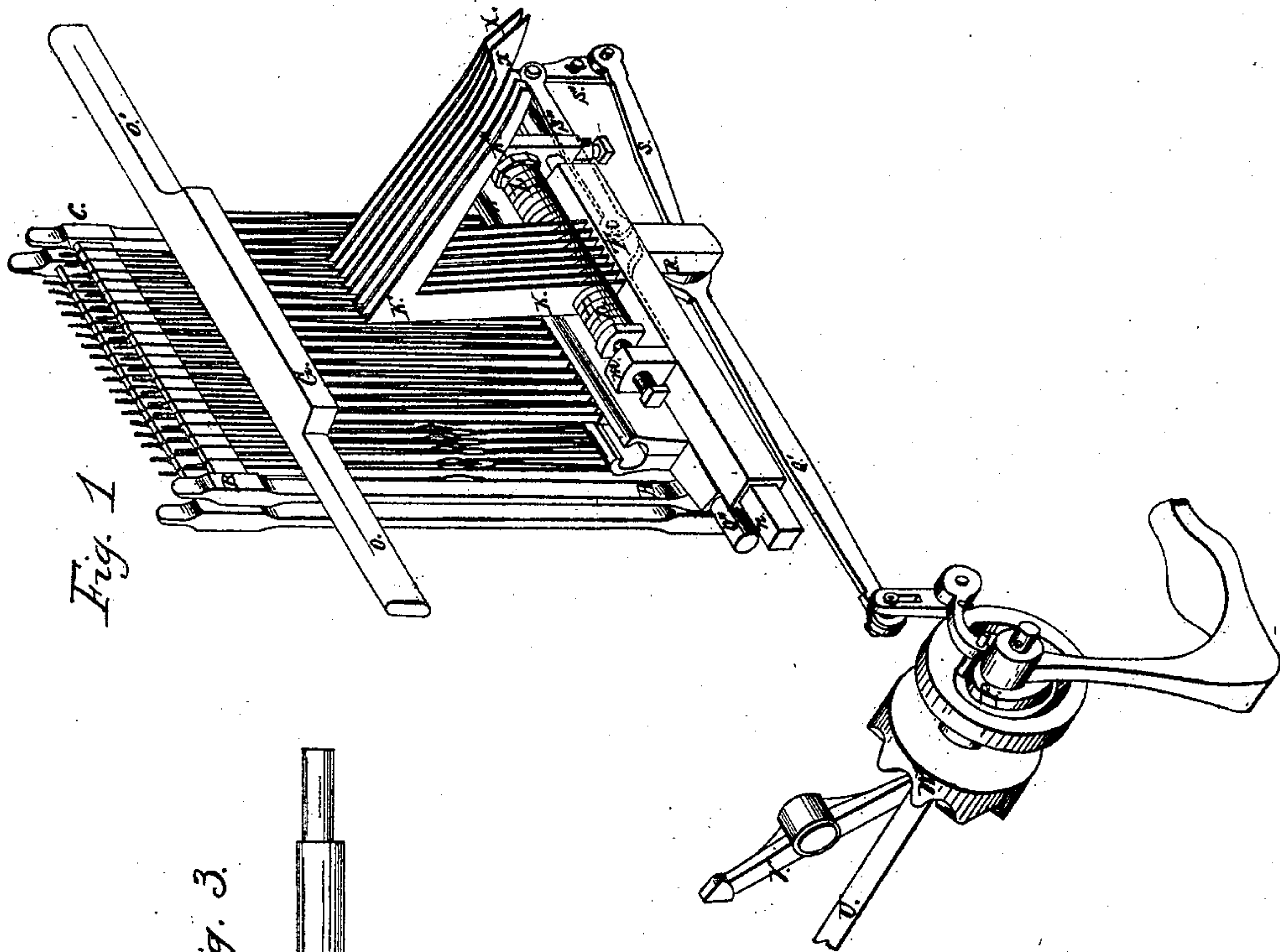
C. CROSSLEY.

2 Sheets—Sheet 1.

Loom.

No. 24,378.

Patented June 14, 1859.



Witnesses.  
James Reed  
Andrew Young

Inventor  
Charles Crossley

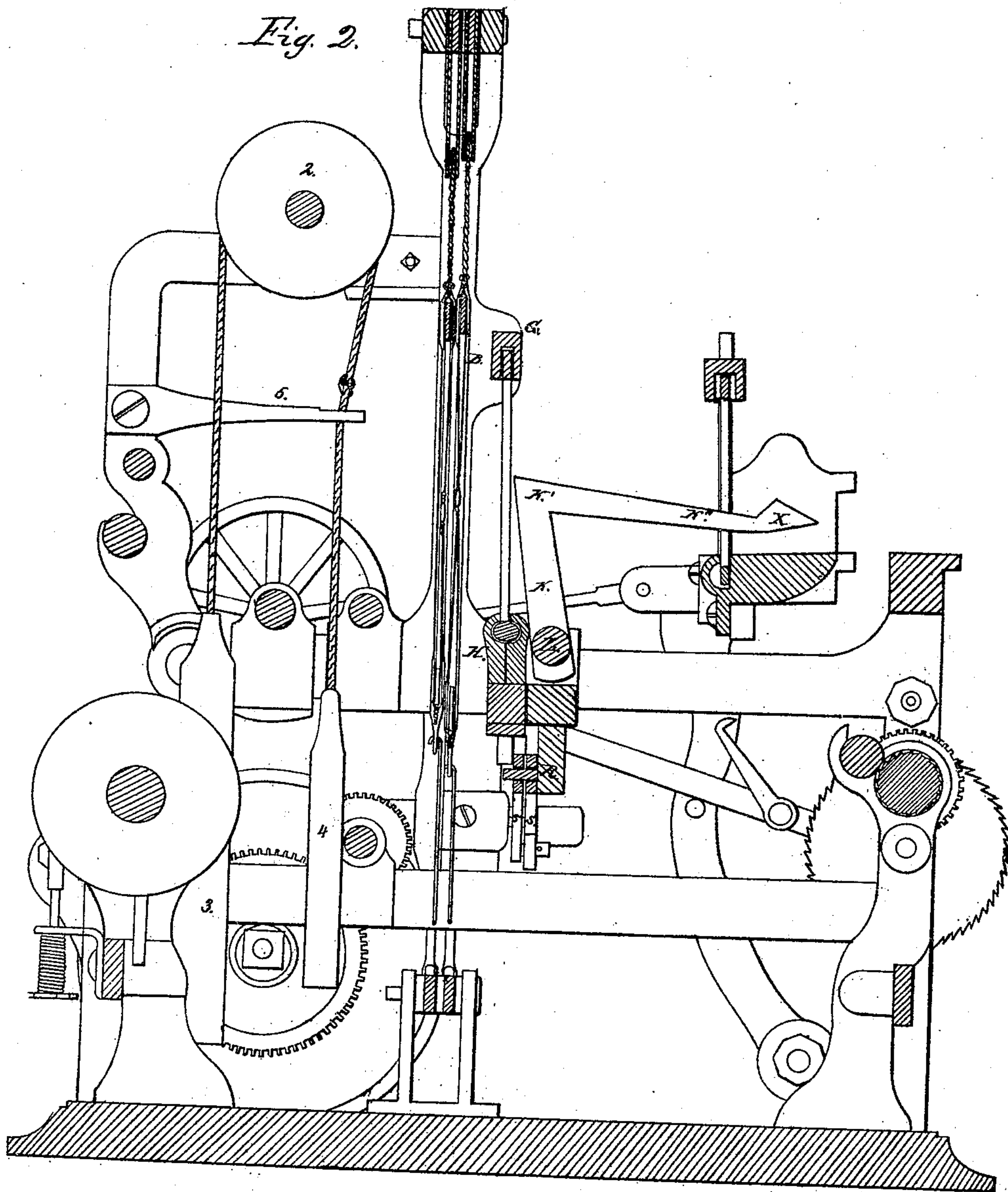
C. CROSSLEY.

2 Sheets—Sheet 2.

Loom.

No. 24,378.

Patented June 14, 1859.



*Witnesses.*  
*James Reed*  
*Andrew Johnson*

*Inventor.*  
*Charles Crossley*



# UNITED STATES PATENT OFFICE.

CHAS. CROSSLEY, OF ELLINGTON, CONNECTICUT.

## LOOM.

Specification of Letters Patent No. 24,378, dated June 14, 1859.

*To all whom it may concern:*

Be it known that I, CHARLES CROSSLEY, of Ellington, in the State of Connecticut, have invented a new and useful Improvement in Looms for Weaving Tufted Carpets and other Tufted and Pile Fabrics; and I do hereby declare the following to be a full and exact description of the same, reference being had to the annexed drawing, making a part of this specification, in which—

Figure 1 represents a perspective view of my improvement as applied to a loom. Fig. 2 represents a side view, showing the position of the threads. Fig. 3 represents a front view, showing the vibrating reed detached.

My improvement consists in the application to a Brussels carpet loom of a peculiar combination and arrangement of devices, intermediate between the lay and the harness or heddles, the object of which is to throw up the worsted or tuft-forming thread to the right and left alternately, over and above the cotton warp threads. Heretofore fabrics of this kind have been produced by forcing the woolen warp-threads over wires, which were drawn out after the tuft was formed. In those cases the tuft was formed transversely across the fabric, while, by my improvement, the tuft is formed in the direction of the length of the fabric.

In the annexed drawings, A, B, C, D, represents the ordinary harness or heddle frame. I interpose between the lay, and the heddles, A, B, C, D, a reed, G, H, which vibrates to the right and left across the loom for about the one-eighth of an inch each way. In front of this vibrating reed G, H, are placed a series of knee-shaped steel-pieces, K, K', K'', of which there are eight shown in the drawing. These knee-shaped steel pieces are attached to a rod, L, L'. This rod, L, L', is supported on adjustable screws at *m* and *m'*, in a small vibrating frame. This frame has a vibrating or sliding journal, *n*, *n'*, at each extremity, which fits into a socket, in the main frame, so as to permit the series of knee-pieces, K, K', K'', to be vibrated to the right or left, as the operation of the machine requires. In like manner the vibrating reed, G, H, is supported by vibrating journals, working in bearings above at *o*, *o'*, and below at *o''*, *o'''*. The reed G, H, and the knee-pieces, K, K',

K'', vibrate in opposite directions, thus, as the reed, G, H, vibrates to the left, the knee-pieces, or tuft formers, K, K', K'', vibrate to the right. This alternate vibration of the reed and of the knee-pieces is effected by the arrangement of the revolving cam-piece, P, against the arm Q, the effect of which is to vibrate the arm Q', which is attached to the frame, *m*, *m'*, of the knee-pieces, at R, and is also connected with the vibrating reed G, H, at T, by means of the rod S, the reversing lever S', and the rod S''. The cam shaft U is revolved at the proper intervals by means of the revolving arm V, on the main shaft. This revolving arm V is geared into the toothed wheel W, so that every revolution of the arm V moves the wheel W through the space of two teeth. The cam P is of such a form that three picks are cast by the shuttle of weft, during which the cam P has no effect on the vibrating reed G, H, or knee pieces, K, K', K'', and the filling is operated on just as though they were not on the machine; then the vibrating reed is alternated to the right, and the knee pieces, K, K', K'', to the left for one pick of the shuttle, then the vibrating reed and knee-pieces are restored to the center of the reed in the lay, and remain there during three picks, then the vibrating reed is vibrated to the left, and the knee-pieces, K, K', K'', to the right for one pick of the shuttle.

The operation and effect of this arrangement of mechanism, as applied to the loom is as follows: The first, second, and third picks of the shuttle are made while the vibrating reed, G, H, and the tuft formers, K, K', K'', are central, or in the middle of the slits of the reed in the lay while the fourth movement is made, or fourth pick of the shuttle is made while the vibrating reed, G, H, is moved to the left, and the tuft formers, K, K', K'', to the right; so as to cause the woolen, or tufting thread, to be thrown over the lift of the tuft formers, and the tufting thread is then depressed by the heddle, and the next throw of the shuttle binds it in that position. The 5th, 6th, and 7th throws of the shuttle are made while the reed G, H, and the knee pieces K, K', K'', are central in the slits of the lay, and are made for the purpose of forming the back of the fabric, and securing the tufts together. While the eighth movement, or pick, is made, the reed, G, H, and the vibrating knees are vibrated in the contrary direction



to that for the fourth pick, that is to say, the reed G, H, is moved to the right, and the tuft formers, K, K', K'', are moved to the left, thus throwing the tufting threads to the right over the tuft formers. As the cloth progresses, it slides off the tuft formers, K, K', K'', or in case of its being made into velvet, the tufts are cut as they slide off. Thus it will be seen that by the combined operation of the vibrating reed G, H, the tuft formers, K, K', K'', working in conjunction with the ordinary heddles and lay, a tufted fabric is produced, suitable for Brussels tapestry, or for velvet, &c.

In order to let off the woolen or tufting warp thread properly from its warp beam, 1, I attach to the shaft of the warp-beam a pulley 2, of sufficient face to admit of a cord passing several times around it. A weight, 3, is attached to one end of this cord, and a lighter weight, 4, is attached to the other end of the cord. The latter end of the cord passes through an arm 5, with a hole or slot in it. This part of the cord is knotted at such a point that when the tufting warp is required to be let off, the knot rests on the

arm 5. As the warp is being drawn off from the beam, it causes the knot in the cord to descend and rest on the arm. The knot resting on the arm relieves the weight 4 from its tension on the cord, and slackens up the coil on the pulley 2. The heavy weight 3 then takes up that slack, and thus maintains the proper tension on the tufting warp.

My improvements are applicable to the manufacture of tufted fabrics, either cut or uncut, or of any material.

Having thus described my improvements, what I claim as my invention, and desire to secure by Letters Patent, is,

1. The combination of the series of vibrating tuft formers, K, K', K'', and the vibrating reed, G, H, arranged and operating substantially as above described.

2. The combination of the weights 3 and 4, the knotted cord, and slotted arm 5, for the purpose of controlling the let off of the tufting yarn beam, as above described.

CHARLES CROSSLEY.

Witnesses:

BENEZET H. BILL,  
E. F. WILSON.