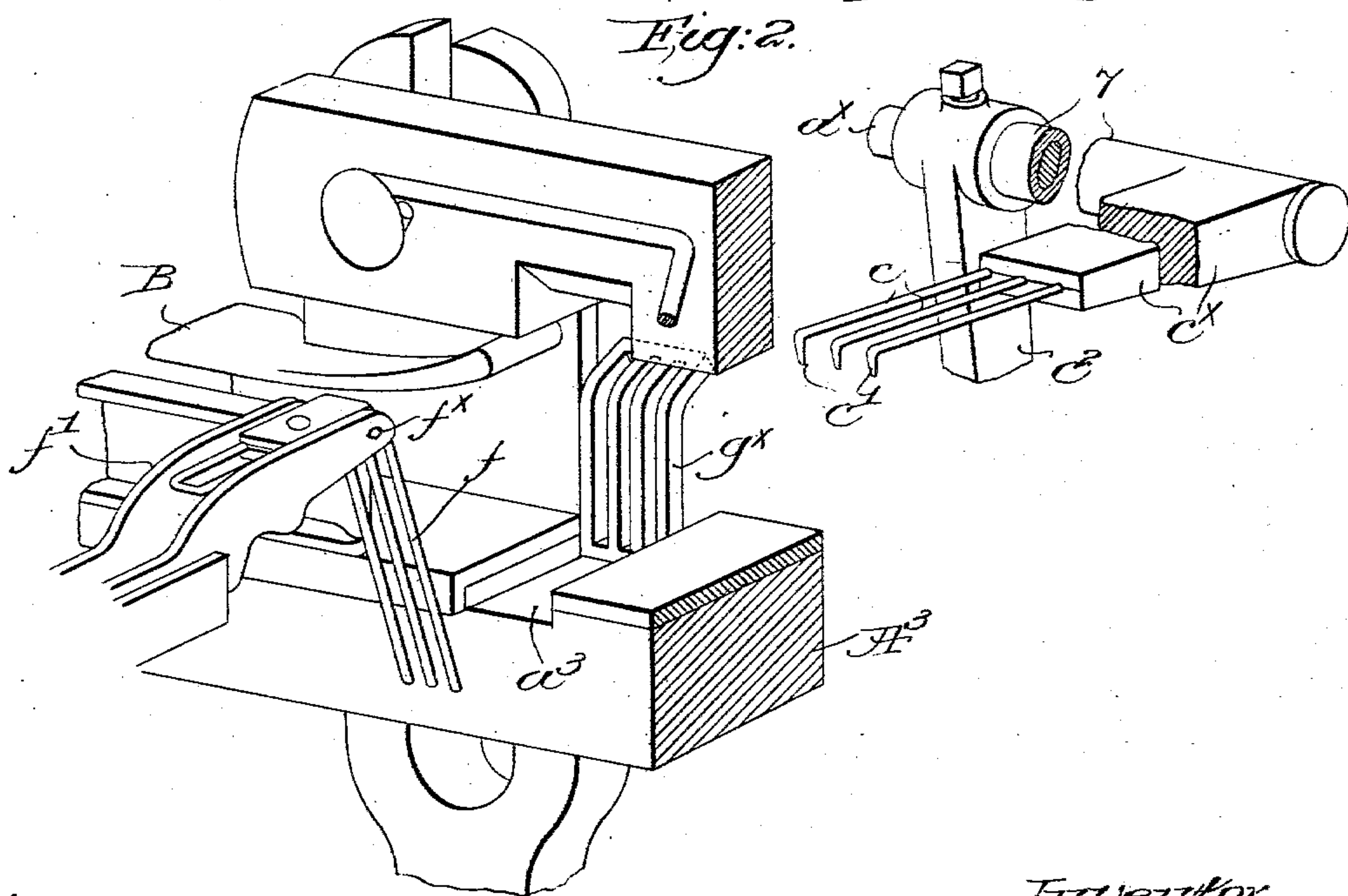
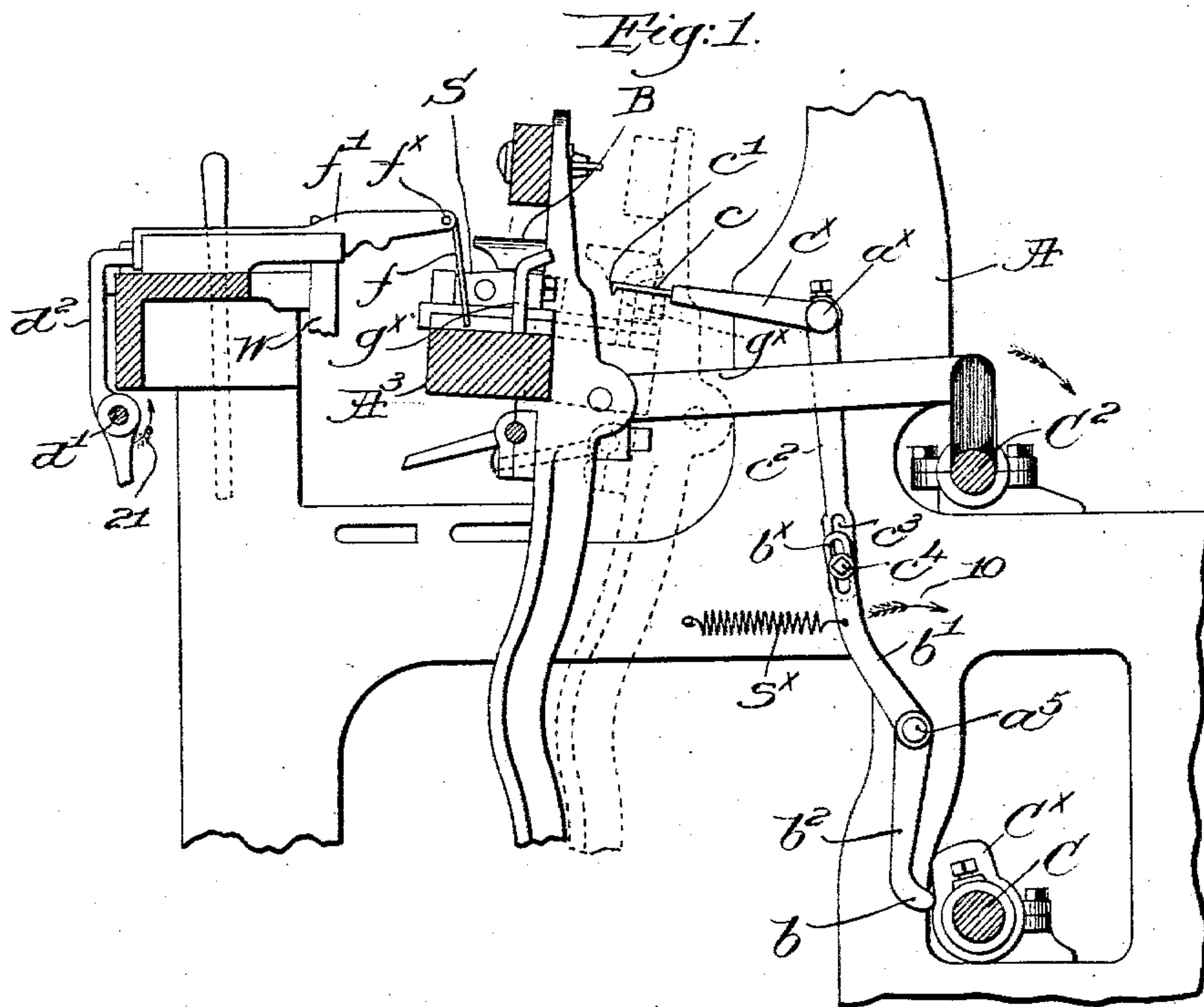


No. 745,473.

PATENTED DEC. 1, 1903.

B. F. S. AUSTIN.  
FORK GRID CLEARER FOR LOOMS.  
APPLICATION FILED OCT. 1, 1903.

NO MODEL.



Witnesses,  
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# UNITED STATES PATENT OFFICE.

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## FORK-GRID CLEARER FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 745,473, dated December 1, 1903.

Application filed October 1, 1903. Serial No. 175,252. (No model.)

*To all whom it may concern:*

Be it known that I, BINGHAM F. S. AUSTIN, a citizen of the United States, and a resident of Gastonia, county of Gaston, State of North Carolina, have invented an Improvement in Fork-Grid Clearers for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object the production of means to prevent the accumulation of lint, waste, or other obstruction in the openings of the filling-fork grid or rack of a loom in order that the fork may have a free and unobstructed passage through the grid when the filling fails either by breakage or complete exhaustion thereof in the shuttle. If at such time the grid-openings are clogged or obstructed with lint, waste, &c., the fork may be improperly tilted and several empty picks may be made by the loom after failure should have been detected and the loom stopped or a fresh supply of filling inserted in the shuttle, according to the type of loom. These picks, bare of filling, make thin or open places in and consequently reduce the grade of the cloth.

By my present invention the grid is effectually cleared of lint or waste or a loose filling end should the same obstruct its openings, so that upon filling failure its prompt detection by the filling-fork is insured.

The various novel features of my invention will be described hereinafter in the subjoined specification, and particularly pointed out in the following claims.

Figure 1 is a transverse sectional view of a sufficient portion of a loom to be understood, with one embodiment of my invention applied thereto, the lay being shown in full lines at top center and the grid-clearer just about to operate, the shuttle being just about to be picked from the left-hand shuttle-box; and Fig. 2 is a perspective view, enlarged, of the mouth of the shuttle-box, the adjacent grid, the filling-fork, and grid-clearer all viewed from the front of the loom.

Referring to the drawings, the lay  $A^3$ ,

shuttle-box B, grid or rack  $g^x$ , adjacent the inner end or mouth of the shuttle-box, and at the back of the transverse recess  $a^3$  in the raceway of the lay, the filling-fork  $f$ , fulcrumed at  $f^x$  on the slide  $f'$ , the rock-shaft  $d'$  and upturned arm  $d^2$ , fast thereon, and in the path of the slide, to be swung outward when the slide is moved outward by or through the weft-hammer W, may be and are all substantially of well-known construction.

The turning of rock-shaft  $d'$  in the direction of arrow 21, Fig. 1, by the outward swing of the arm  $d^2$  may be arranged to effect the operation of a loom-stopping instrumentality or a filling-replenishing mechanism—such, for instance, as shown in United States Patent No. 529,940.

Should the openings of the grid become clogged or obstructed by lint or waste, the fork will be tilted on the detecting pick even if the filling be broken or exhausted in the shuttle, and the proper instrumentality will not be promptly actuated to effect a change in the operation of the loom. To prevent this delay in the detecting action of the fork, I have devised a grid-clearer, herein shown as a series of rake-like teeth  $c$ , set into the end of an arm  $c^x$ , having an elongated sleeve-hub 7, Fig. 2, mounted to rock on a stud  $a^x$ , projecting inward from the loom side A back of the lay, the teeth being opposite the grid-openings and having downturned tips  $c'$ . The arm and teeth are so positioned and of such length that just before the lay reaches back center the teeth will pass through the grid from the back, as shown in Fig. 1, where in the dotted lines show the position of the lay at back center. In order to fully clear the grid, the clearer is then rocked on the stud  $a^x$ , so that the teeth  $c$  traverse the grid, openings from their upper to their lower ends before the lay in its forward beat passes beyond the clearer. To this end a depending arm  $c^2$  is secured to the sleeve-hub 7 and is provided with a longitudinal slot  $c^3$  in its lower end, Fig. 1, to loosely receive a stud or pin  $c^4$ , adjustably held in a slot  $b^x$  in the upper end of a vibrator  $b' b^2$ , fulcrumed on a stud  $a^5$  on the loom side.



The lower end of the arm  $b^2$  of the vibrator is shaped to constitute a cam-follower  $b$ , which coöperates with a tappet-cam  $C^x$  on the loom cam-shaft  $C$ , the latter making one revolution for every two picks of the loom or for every two revolutions of the crank-shaft  $C^2$ .

A spring  $s^x$  is attached at one end to the vibrator-arm  $b'$ , Fig. 1, and fixed at its other end, as to the loom-frame, to maintain the follower  $b$  in contact with the actuating-cam  $C^x$ .

In adjusting the mechanism the cam  $C^x$  is so set that the follower  $b$  will be on the low circular part of the cam, and the clearer-teeth  $c$  maintained raised when the lay is approaching top center, with the shuttle in the box  $B$  adjacent the grid, as shown in full lines, Fig. 1, so that when the shuttle is thrown from that box the clearer will be raised and out of its way, the shuttle being thrown when the lay reaches or has just passed top center. The traversing or clearing stroke of the clearer is thus effected on the non-detecting alternate picks just after the shuttle is thrown from the shuttle-box adjacent the grid, so as to avoid any possibility of interference with the filling when laid across the lay in front of the grid on the intervening or detecting picks.

Viewing Fig. 1, it may be supposed that the shuttle has been thrown from the box  $B$  before the lay reaches dotted-line position at back center, and during the movement of the lay from top to back center the high part of the cam  $C^x$  acts upon the follower  $b$  and swings the vibrator-arm  $b'$  in the direction of arrow 10. This causes the arm  $c^x$  to swing down and the clearer-teeth traverse the grid-openings in a downward direction, clearing such openings of any obstruction which may be present.

Should the filling break and leave a trailing end in front of the grid on the shot from left to right, the clearer will engage such trailing end and pull it back through the grid as the lay beats up, with the shuttle in the right-hand box.

The follower  $b$  quickly drops onto the low or circular part of cam  $C^x$  shortly after the lay passes back center, and the clearer-teeth  $c$  will be raised above the shuttle-path and maintained in such position when on the following pick the shuttle is thrown or shot toward the box  $B$ . Consequently the shuttle-path is clear as it passes the grid into the box  $B$ , and the clearer remains raised as the lay beats up, the filling-fork then feeling for the filling to detect presence or absence thereof. The position of the parts in Fig. 1 can then be assumed to be represented as the lay is moving back after the detecting action of the filling-fork, and the shuttle  $S$  is about to be thrown from box  $B$ , the cycle having been completed.

The length of the traversing stroke of the clearer is regulated by adjustment of the pin or stud  $c^1$  in the slot  $b^x$ , a longer stroke being secured by moving the pin upward and a shorter stroke by moving it downward in said slot.

My invention is not restricted to the precise construction and arrangement shown and described, as the same may be modified or rearranged in different particulars by those skilled in the art without departing from the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a loom, a lay, a fork-grid thereon, a filling-fork, and means to automatically clear the grid of lint or waste and provide a free passage for the tines of the filling-fork through the said grid upon failure of the filling.

2. In a loom, a lay, a fork-grid thereon, a coöperating filling-fork, and means operative on alternate picks to clear the grid-openings of lint or waste.

3. In a loom, a lay, a fork-grid thereon, a coöperating filling-fork, and means to enter at the upper end and pass out at the lower end of the grid-openings at predetermined intervals, to clear the same of lint or other obstruction.

4. In a loom, a lay, a fork-grid thereon, a coöperating filling-fork, and a rake-like clearer to pass through and lengthwise of the grid-openings on alternate picks and clear the same of lint or waste.

5. In a loom, a lay, a fork-grid thereon, a coöperating filling-fork, a grid-clearer fulcrumed back of the lay and adapted to pass through the grid on the backward beat of the lay, and means to rock said clearer to traverse the grid-openings longitudinally on alternate picks.

6. In a loom, a lay, a fork-grid thereon, a coöperating filling-fork, a rake-like clearer fulcrumed back of the lay and adapted to pass through the grid on the backward beat of the lay, and means to move the clearer to traverse the grid from the upper to the lower ends of the openings therein while the lay moves substantially from top to back center.

7. In a loom, a lay provided with a shuttle-box and a grid adjacent the mouth thereof, a filling-fork, a grid-clearer, and means to automatically operate the same to enter and clear the openings of the grid on the pick when the shuttle is shot from said shuttle-box.

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

BINGHAM F. S. AUSTIN.

Witnesses:

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WM. H. LEWIS.