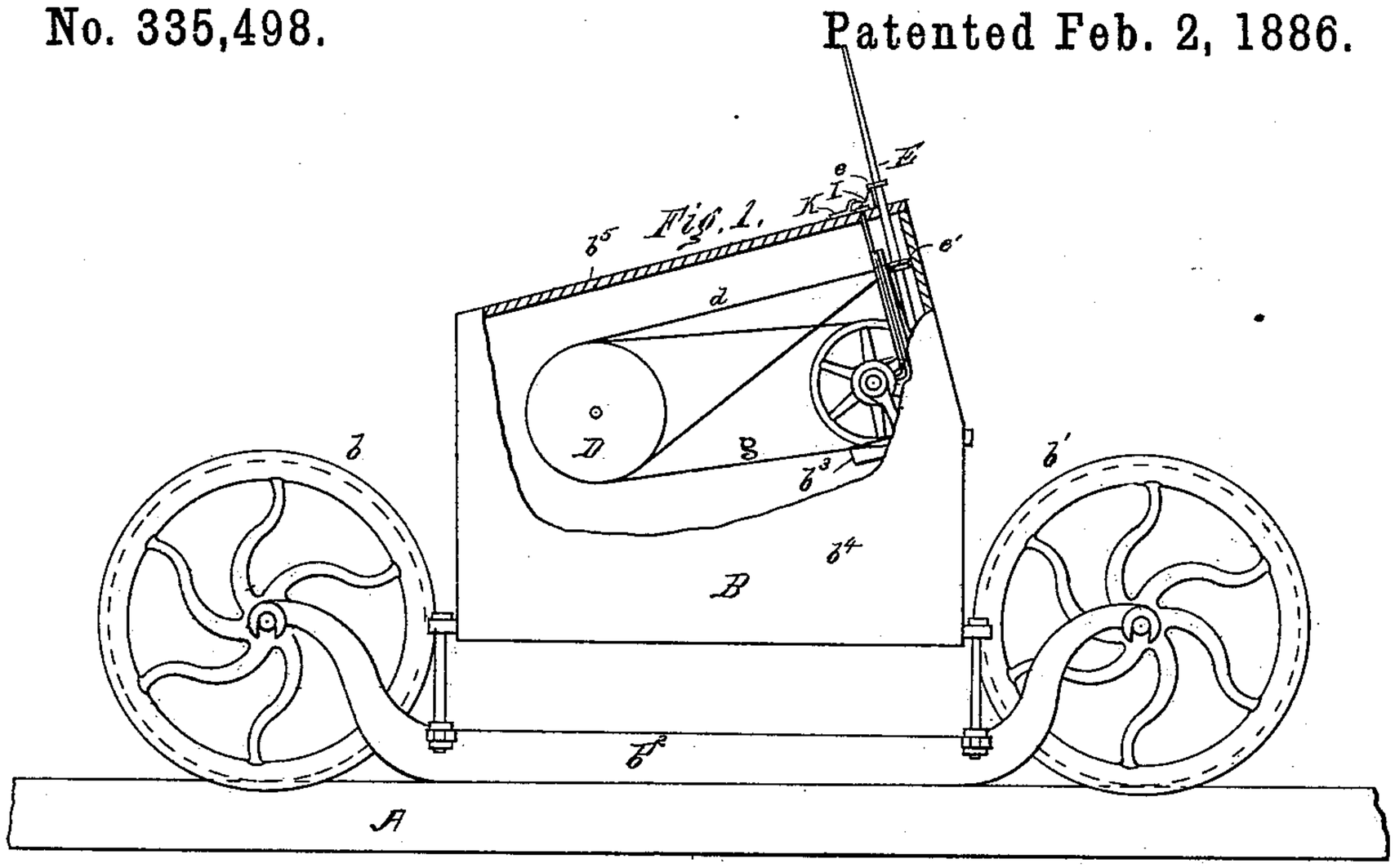
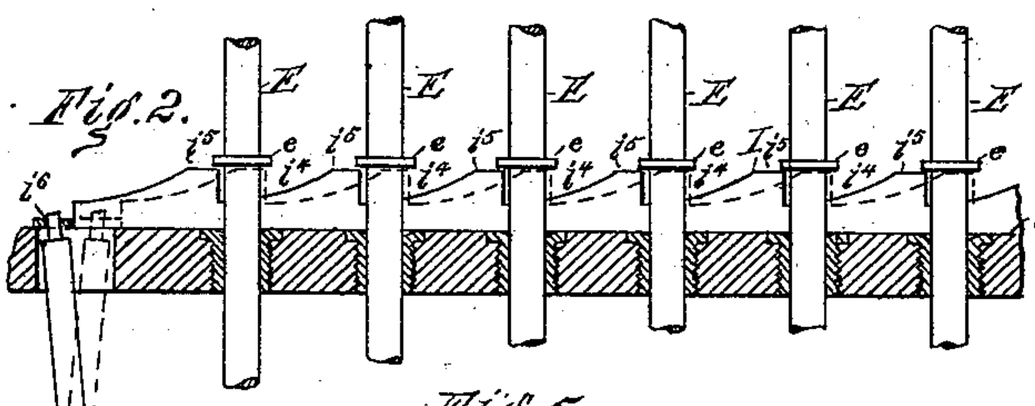
(No Model.)

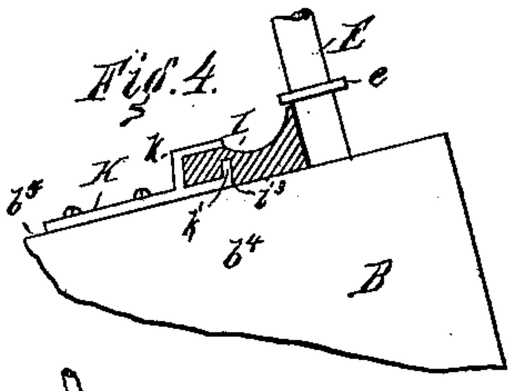
P. AUBIN.

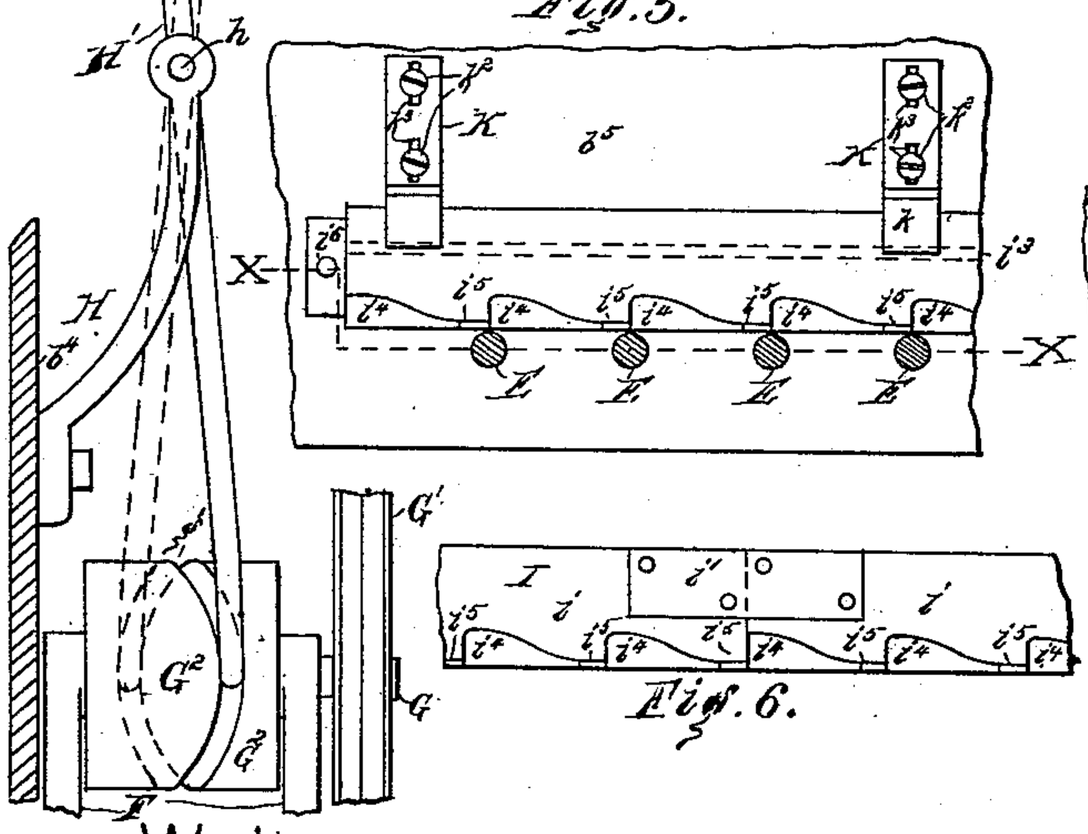
APPARATUS FOR CLEARING WASTE FROM THE SPINDLES OF SPINNING MULES.

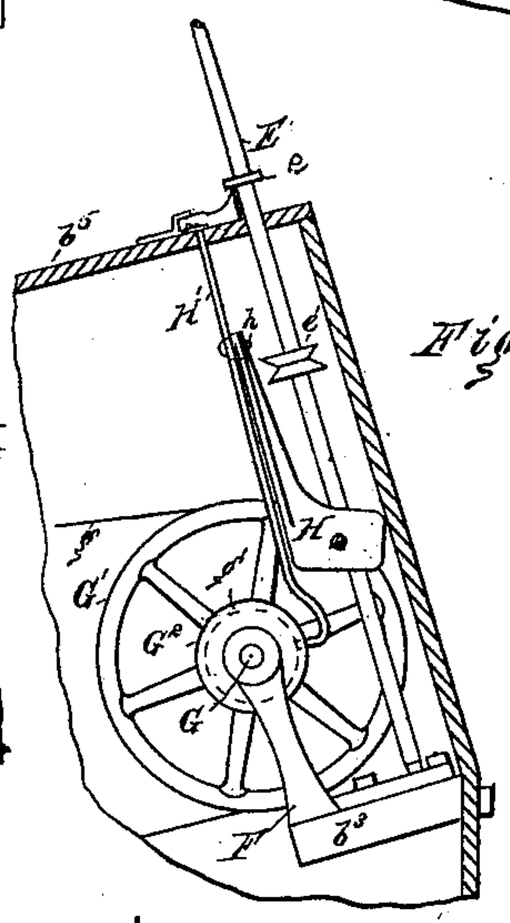
No. 335,498. Patented Feb. 2, 1886.











Witnesses—

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR CLEARING WASTE FROM THE SPINDLES OF SPINNING-MULES.

SPECIFICATION forming part of Letters Patent No. 335,498, dated February 2, 1886.

Application filed April 19, 1884. Serial No. 128,501. (No model.)

To all whom it may concern:

Be it known that I, PHILIP AUBIN, a subject of Victoria, Queen of the United Kingdom of Great Britain and Ireland, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Apparatus for Clearing Waste from the Spindles of Spinning-Mules, of which the following is a specification.

My invention relates to spinning-mules; and it consists in the devices hereinafter described and claimed for clearing the waste from the spindles of such mules after doffing.

In the accompanying drawings, Figure 1 is an elevation of the left side of a mule-carriage supplied with my invention and standing upon the track, (by "left side" meaning the side of the carriage at the left of the spinner, as he ordinarily stands between two mules and facing the one of them shown in the drawings;) Fig. 2, a section through the top board of the carriage on the line X X in Fig. 5, showing also the lever, cam, pulley, and their shaft and bracket; Fig. 3, a vertical section just within the side of the carriage; Fig. 4, a section of the clearer, showing in side elevation the guide-bracket for holding the same, also a portion of the side of the carriage and a portion of the spindle in side elevation; Fig. 5, a top view of a portion of the top board and parts supported thereon, with the spindles in cross-section; Fig. 6, a top view of the adjacent ends of two sections of the clearer, showing also a tie uniting them.

The track A, carriage B, wheels b b', stand b^2, step-rail b^3, band-cylinder D, the spindles E, provided with stop-collars e, against which the cops are pushed down on the spindles, and with whirls e', the bands d, which pass around the cylinder D, and whirls e', to rotate the spindles, are all of the usual construction and operation. A forked stand or bracket, F, is secured to the step-rail of the carriage, and in this bracket is supported and turns the shaft G. On this shaft is secured the grooved pulley G′, which is rotated by a band, g, from the band-cylinder D. On the same shaft, in the fork of the bracket, is secured the cam or cylinder G^2, provided with a cam-groove, g'. There is a fulcrum-bracket, H, secured to the inside of the side b^4 of the carriage, to the top of which bracket is pivoted at h a lever, H′, so that said lever may swing in a plane parallel to the axis of the shaft G. The lower end of said lever enters the cam-groove g', and is thereby given an oscillating motion on its pivot when the cam G^2 is rotated. On the top of the carriage, in guide-brackets K, slides the clearer I, which is a straight strip of wood, (wood being used to secure lightness,) or, preferably, a number of strips, i, or sections placed end to end, and connected by ties i' or strips of metal screwed to their ends, as shown in Fig. 6. The clearer is made in short sections (each about thirty inches along) to avoid the effect of warping—that is, to divide the total amount of curvature caused by warping among the number of sections, in order that all parts of the clearer may be held in a straight line near to the spindles. A cross-section of the clearer is shown in Fig. 4, it being provided with a longitudinal groove, i^3. Guide-brackets K are secured on the top board, b^5, of the carriage—two brackets to each section of the clearer. The brackets K have each an arm, k, which reaches up over the top of the clearer for a short distance, and another arm, k', which reaches up into the groove i^3 in the under side of the clearer, to guide the latter. The brackets K are slotted, and cap-screws k^2 are passed through their slots k^3 into the top board, b^5, and hold said brackets in place on said top board. By loosening the screws k^2, the brackets and the clearer supported therein may be adjusted nearer to or farther from the spindles. The front side of the clearer is thicker than the rear side, and the top of the clearer from the front upper edge is hollowed out, to allow the faller-wire to descend below the collars of the spindles, as shown in Fig. 4. The upper front edge of the clearer is notched at intervals, the straight part i^5 between the notches i^4 being about as long as the diameter of the spindles at the top of the clearer, an interval and a notch together being as long as the distance from the center of one spindle to the center of the next spindle. The reason for notching the clearer is partly to lighten it, partly to allow the faller-wire to bring the yarn down to the collars e, and partly to allow the yarn in doff-

ing to be wound once or twice about the spindle below the collar, as is customary. The front side of the clearer I is parallel to the plane in which the axes of the spindles lie, and reaches up as near as possible to the collars *e* without touching them, and is covered with emery or powdered quartz glued thereto, the glue being first applied and the emery or quartz sprinkled thereon before the glue dries. The upper end of the lever H′ is reduced and projects up through a hole in a metallic plate secured to the outer end of the end section of the clearer, (said hole being large enough to allow said lever and the clearer to bend with reference to each other, or to change their inclination to each other, as said lever is oscillated,) so that when the band-cylinder revolves, revolving the pulley and cam and oscillating the lever, as above described, the clearer will have an endwise or reciprocating motion, being moved by the vibration of the upper end of said lever. Now, the clearer is set as closely as possible to the spindles without touching them, and will catch any waste that may be on any spindle, and carry it by that spindle and drop it on the top board, from which it may be removed in the usual manner. It will be understood that before the cops are doffed the faller-wire is held down longer than usual, causing the yarn to wind on the spindles below the collars. The cops are then removed from the spindles, breaking the yarn, and their places filled by cop-tubes. The faller then being allowed to have its customary motion, the counter-faller carries the yarn above the collars *e*, and new cops are built.

The object of the clearer is to wear or file away the waste yarn below the collars, which waste would otherwise accumulate in sufficient quantities to retard or stop the spindles.

I claim as my invention—

1. The combination, with the carriage and spindles of a mule, of the clearer having a roughened face, the grooved cam, the cam-shaft, the pulley secured thereto, the band-cylinder, the band connecting said cylinder and pulley, and the lever connecting said clearer and cam, as and for the purpose specified.

2. The combination, with the carriage and spindles of a mule, of the clearer having notches and a roughened face, the fulcrum-bracket secured to said carriage, the lever pivoted to said bracket, the upper end of said lever connected to said clearer, the cam provided with a groove to receive the lower end of said lever, the cam-shaft, the pulley secured thereto, the band-cylinder, and the band, as and for the purpose specified.

3. The clearer formed in sections united by ties, and having a groove to admit the faller-wire, and having notches and a roughened face, in combination with the carriage and spindles, and the band, the grooved cam, cam-shaft, the pulley secured thereto, the band connecting said cylinder and pulley, and the lever connecting said clearer and cam, whereby the clearer is given a reciprocating motion by the revolution of the band-cylinder, as and for the purpose specified.

PHILIP AUBIN.

Witnesses:
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