(No Model.) 2 Sheets—Sheet 1.

H. W. CHURCH.

DUST TRUNK FOR COTTON CLEANING.

No. 453,992. Patented June 9, 1891.

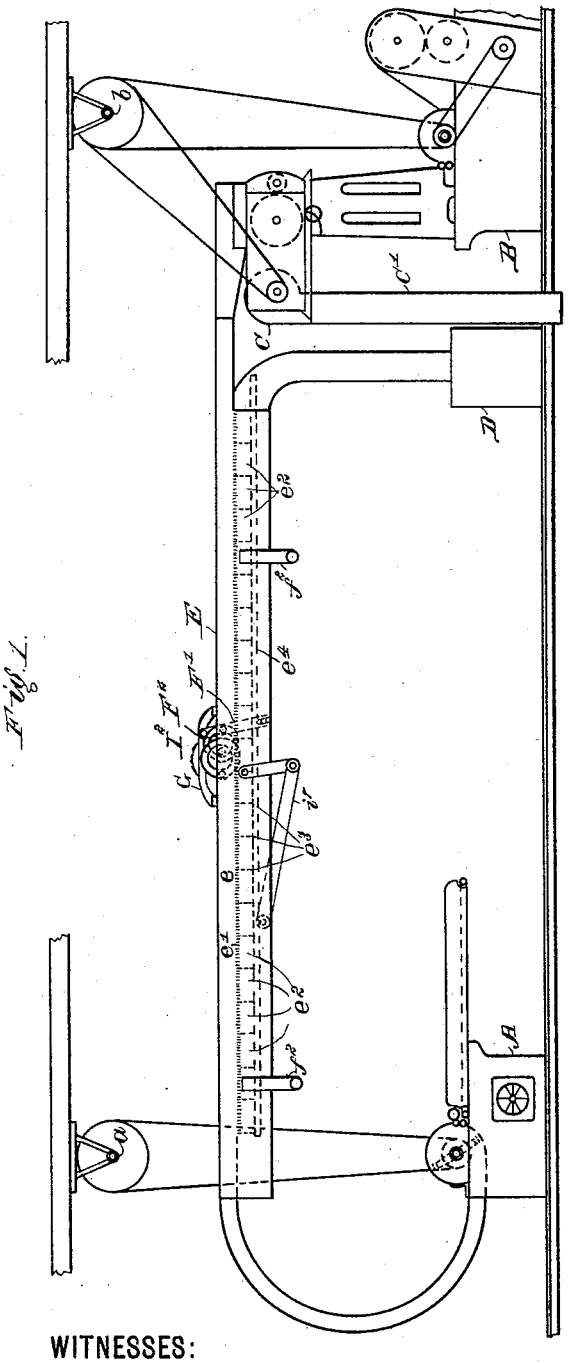

Fig. 1.

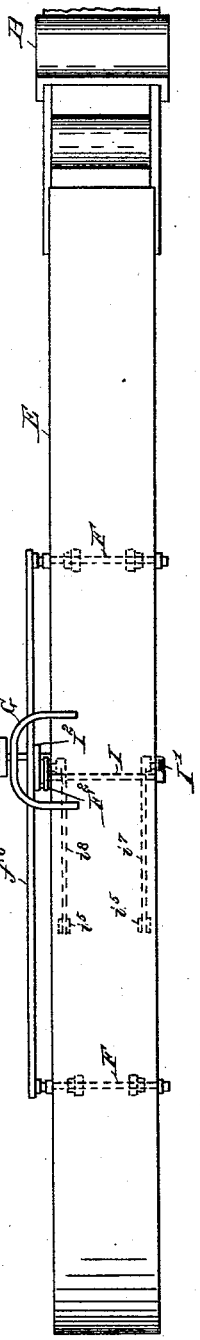

Fig. 2.

WITNESSES:

Mystic C. Beale.

Edmund L. Stone.

INVENTOR

Henry W. Church,

BY

Albert M. Moore,

ATTORNEY.

(No Model.) 2 Sheets—Sheet 2.

H. W. CHURCH.

DUST TRUNK FOR COTTON CLEANING.

No. 453,992. Patented June 9, 1891.

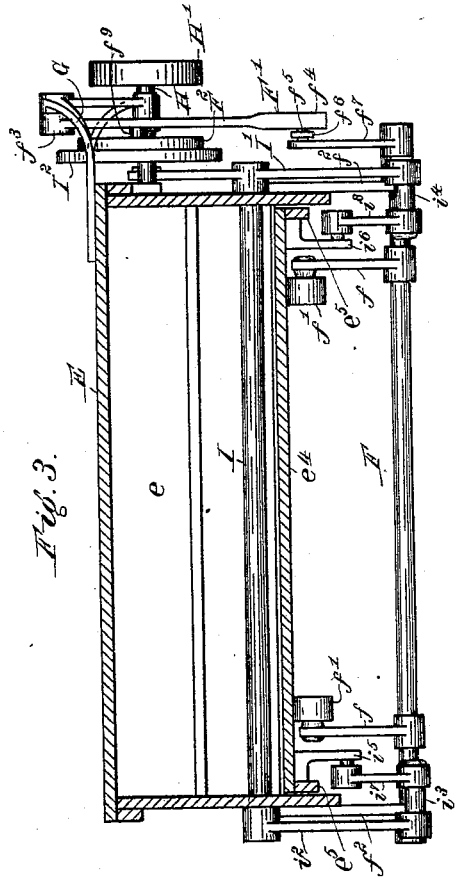

Fig. 3.

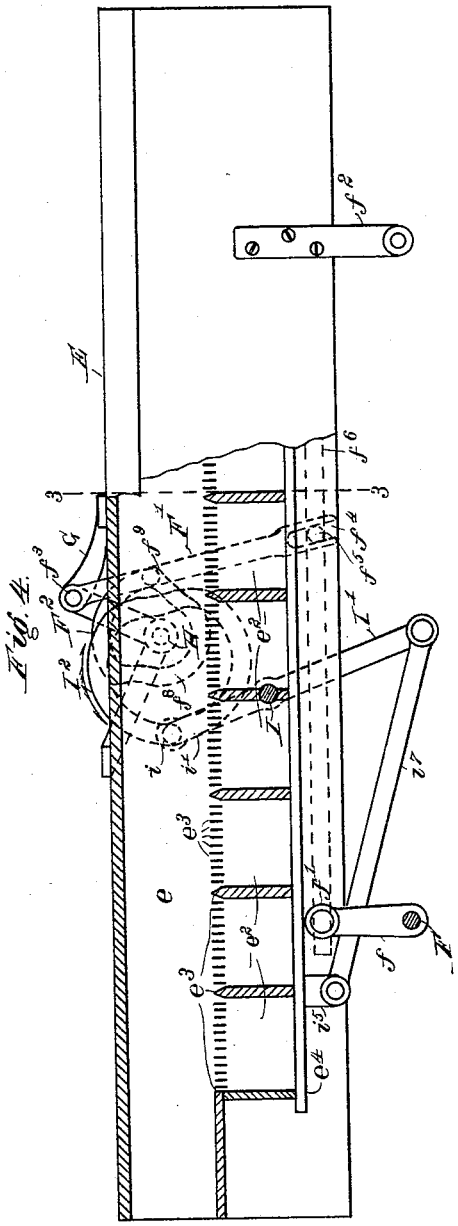

Fig. 4.

WITNESSES:
Myrtie E. Beals.
Edmund G. Home

INVENTOR
Henry W. Church,
BY
Albert M. Moore,
ATTORNEY.

UNITED STATES PATENT OFFICE.

HENRY W. CHURCH, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE KITSON MACHINE COMPANY, OF SAME PLACE.

DUST-TRUNK FOR COTTON-CLEANING.

SPECIFICATION forming part of Letters Patent No. 453,992, dated June 9, 1891.

Application filed March 7, 1891. Serial No. 384,123. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. CHURCH, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Dust-Trunks for Cotton-Cleaning, of which the following is a specification.

My invention relates to dust-trunks for cotton-cleaning. Dust-trunks for cotton-cleaning are commonly constructed with a fiber-passage connecting an opener to another opener or to a lapper, and through this passage the cotton fibers are sucked from one machine to the machine next in operation, the heavier impurities mixed with the fibers being thereby shaken therefrom and falling through a grating, which forms the bottom of a portion of the fiber-passage, into dust-pockets arranged immediately below said grating. These dust-pockets, as occasion requires, are commonly emptied by removing the bottoms of the pockets, each pocket usually having a separate removable bottom on which the contents of the pocket rest. These bottoms after being removed and cleaned are replaced. There are usually a large number of such pockets in a single trunk and considerable time is required to empty them all. The machines connected by the trunk are usually stopped while the pockets are being emptied to prevent the air from being drawn upward through the pockets, thus interfering with the passage of the fibers and carrying with it the contents of the dust-pockets through the grating and again mixing them with the fibers. While the pockets are being emptied in this manner considerable dust escapes into the room containing the dust-trunk, some of which dust gets back into the cotton on the opener and lapper if these are in the same room with said trunk.

To prevent the loss of time and decreased production and the escape of dust above described are the objects of my invention.

In the accompanying drawings, on two sheets, Figure 1 is a side elevation of an opener, a lapper, their driving-belts and pulleys, a dust-trunk connecting said opener and lapper and provided with my improvement, a dust-bin, an exhaust-trunk, a fan-case, parts of my improvement, the grating and dust-pockets being shown by dotted lines; Fig. 2, a plan of the dust-trunk and my improvement and said lapper, parts of my improvement being shown by dotted lines; Fig. 3, a vertical transverse section on the line 3 3 in Fig. 4; Fig. 4, a side elevation of a part of the dust-trunk provided with my improvement and a longitudinal vertical section of other parts of said trunk.

A is an opener, B a lapper, C an exhaust-fan, C′ an exhaust-trunk, and D a dust-bin, these parts being of the usual construction and operation.

The dust-trunk E is provided with a fiber-passage *e*, through which the fibers of cotton pass from the opener to the lapper in the usual manner, a grating *e′* forming the bottom of the greater portion of the horizontal part of said fiber-passage. The dust-trunk E is also provided with dust-pockets e^2, formed by a series of transverse divisions or division-boards e^3 in the usual manner, except that instead of the pockets e^2 being provided with separate bottoms I use a single bottom e^4 common to all of said pockets. The bottom e^4 is stiffened at its side edges by ribs e^5, secured to the under side of the same, and is fitted between the sides of the dust-trunk, which for a distance greater than the length of said bottom reach below the lowest position of said bottom. During part of the time the pockets are closed and the bottom e^4 is held against the lower edges of the division-boards by the vertical position of arms *f*, carrying anti-friction-rolls *f′*, which press against the under side of said bottom, a pair of said arms *f* being rigidly secured to each of two or more rock-shafts F, turning in hangers f^2, secured to the sides of the dust-trunk E. The rocking of said rock-shafts allows the bottom e^4 to fall away from the division-boards e^3, and is accomplished by the swinging of a forked lever F′, pivoted at its upper end at f^3 to a bracket G, secured to the dust-trunk, the lower end of said lever being provided with a fork f^4, which engages a horizontal stud f^5, projecting from a horizontal rod f^6, pivoted to the upper ends of arms f^7, one such arm being rigidly secured to each rock-shaft F. The lever F′ is swung by a grooved

cam F^2, the groove f^8 of which receives a horizontal stud f^9, projecting from said lever.

The cam F^2 has a uniform rotation, (in either direction, as shown by the adjacent arrow,) being rigidly secured to the shaft H, which has the driving-pulley H', said shaft and pulley being driven from the shaft *a*, which drives the opener A, or from the shaft *b*, which drives the lapper B, or from any other convenient shaft. Another rock-shaft I passes transversely through the dust-trunk above the bottom of the dust-pockets and below the grating, and has rigidly secured to it, on the same side of the dust-trunk with the lever F', a lever I', the upper end of which is provided with a horizontal stud *i*, which enters the cam-groove *i'* of the cam I^2, secured to the shaft H, and by the rotation of said cam is given a reciprocating motion, thereby rocking said shaft I. The lower arm of the lever I' and a parallel arm i^2 of the same length on the opposite side of the dust-trunk, and also secured to the shaft I, reach below the dust-trunk, and are provided at their lower ends with horizontal inwardly-extending studs i^3 i^4, to which and to brackets i^5 i^6, secured to the bottom e^4, are pivoted opposite ends of links i^7 i^8, so that the rocking of the shaft I gives to the bottom a reciprocating longitudinal motion.

An inspection of Fig. 4 shows that the upper portion of the cam-groove f^8 through an angular distance of about one hundred and fifty degrees is concentric with its center of motion, the lower portion of said cam-groove gradually approaching the center of the cam, so that the bottom is held against the lower edges of the division-boards a little less than half the time, and during the remainder of the time is being lowered away from or raised into contact with said division-boards. In said Fig. 4 the bottom is represented as having just been raised into such contact and the stud *i* is in the part of the cam-groove *i'* farthest from the center of the cam I^2, so that the bottom is now nearer the lapper than at any other time. From the point occupied by the stud *i* in Fig. 4 the lower part of the cam-groove *i'* for an angular distance of about one hundred and eighty degrees approaches the center, and then recedes from the center back to the starting-point. Hence about a half a revolution of the two cams in either direction (shown by the adjacent arrow) will cause the bottom to move to the left in Fig. 4 a little more than the distance from one division-board to the next, keeping the bottom meantime in contact with the lower edges of the division-boards, and thereby in effect scraping the dust and fibers along on said bottom, and will then lower said bottom away from the pockets and then move the same to the right, carrying the contents of each pocket under the pocket next in advance, or to the right, and then raise the bottom against the division-boards, so that the contents of any pocket will by successive steps be scraped along on the bottom board and off from the end thereof into the dust-passage *d*, leading from the dust-trunk to the dust-bin D, above mentioned, or to any convenient place for depositing the dust. As the rotation of the cams above described is continuous, only a small amount of dust accumulates in the pockets, and the bottoms of the pockets are closed when the dust is scraped from the end of the division-board.

I claim as my invention—

1. The combination of the dust-trunk provided with a grating, with a fiber-passage arranged above said grating, with dust-pockets arranged below said grating, and with division-boards separating said pockets from each other, and with a bottom common to all of said pockets arranged between the sides of said dust-trunk, means, substantially as described, of giving to said bottom a longitudinal reciprocating motion, and means, substantially as described, of lowering said bottom away from said division-boards immediately before the forward motion of the same and of afterward raising the same and holding the same against said division-boards during the backward motion of the same to carry dust and refuse caught by said pockets from pocket to pocket along on said bottom and off from the end thereof, as and for the purpose specified.

2. The combination of the dust-trunk provided with a grating, with a fiber-passage arranged above said grating, with dust-pockets arranged below said grating, with division-boards separating said pockets from each other, and with a bottom adapted to have a longitudinal reciprocating motion between the sides of said dust-trunk and common to all of said pockets, two or more rock-shafts supported below said dust-trunk and provided with arms, a rod connecting said arms and provided with a lateral stud, a lever pivoted at its upper end and provided at its lower end with a fork to engage said stud, and provided also with a stud, a cam provided with a groove which receives said last-named stud, said rock-shafts being provided with other arms arranged below the bottom of said dust-trunk and of a suitable length to hold said bottom against said division-boards when said last-named arms are in a vertical position, but allowing said bottom to fall away from said division-boards when said shafts are rocked, and means, substantially as described, of giving to said bottom a longitudinal reciprocating motion, as and for the purpose specified.

3. The combination of the dust-trunk provided with a grating, with a fiber-passage arranged above said grating, with dust-pockets arranged below said grating, with division-boards separating said pockets from each other, and with a bottom adapted to have a longitudinal reciprocating motion and common to all of said pockets, two or more rock-shafts supported below said dust-trunk and

provided with arms, a rod connecting said arms and provided with a lateral stud, a lever pivoted at its upper end and provided at its lower end with a fork to engage said stud, and provided also with a stud, a cam provided with a groove to receive said last-named stud, said rock-shafts being provided with other arms arranged below the bottom of said dust-trunk and of a suitable length to hold said bottom against said division-boards when said arms are in a vertical position, but allowing said bottom to fall away from said boards when said shafts are rocked, another rock-shaft extending through said trunk transversely above said bottom, a lever rigidly secured to said last-named shaft and extending below said dust-trunk and having at its upper end a lateral stud, another cam having a cam-groove to receive said last-named stud, an arm secured to said last-named rock-shaft at its opposite end and parallel with and of equal length with the lower arm of said last-named lever, brackets secured to the under side of said bottom, and connecting-rods pivoted to said brackets and to the lower ends of said last-named arm and lever, and means, substantially as described, for imparting to said cams a continuous motion, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 2d day of December, A. D. 1890.

HENRY W. CHURCH.

Witnesses:

ALBERT M. MOORE,

MYRTIE C. BEALS.