

F. O. DONAHUE.
MACHINE FOR CLEANING CAR CUSHIONS.

No. 458,949.

Patented Sept. 1, 1891.

Fig. 1.

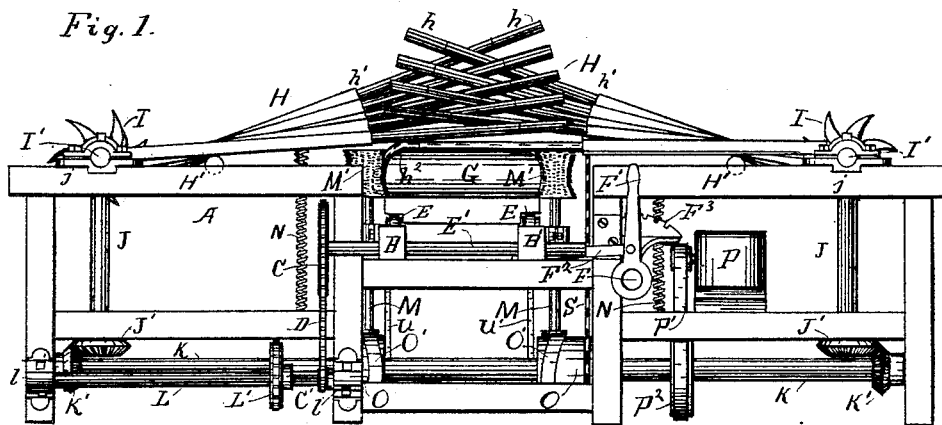
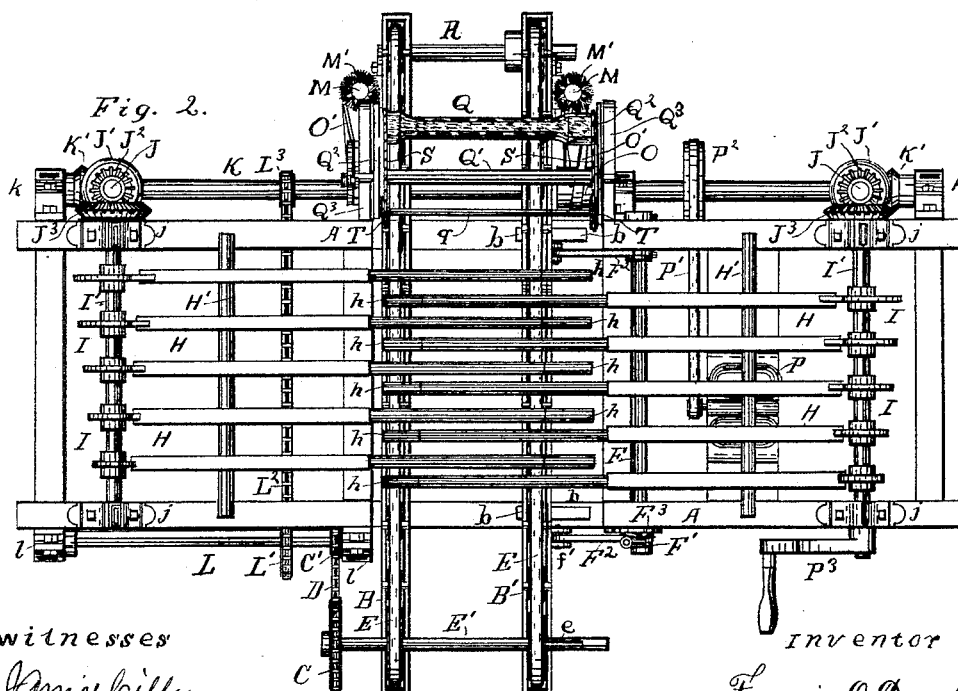


Fig. 2.



witnesses

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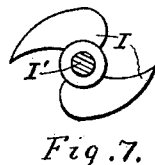
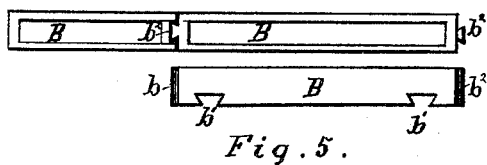
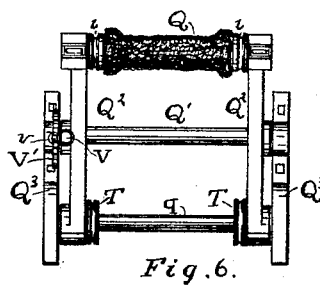
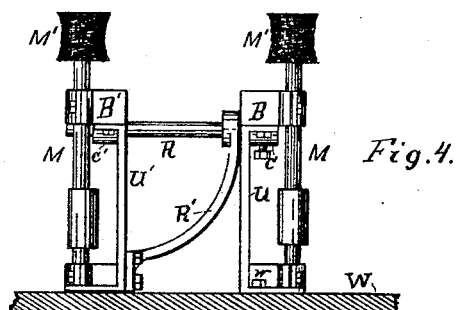
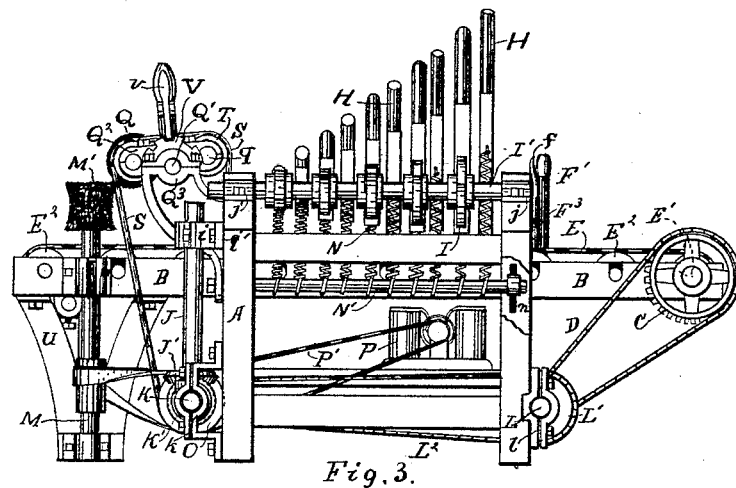
(No Model.)

3 Sheets—Sheet 2.

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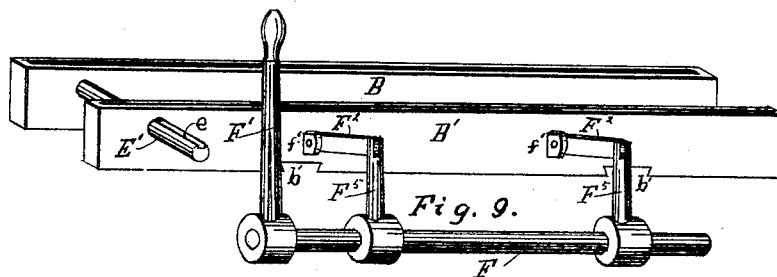
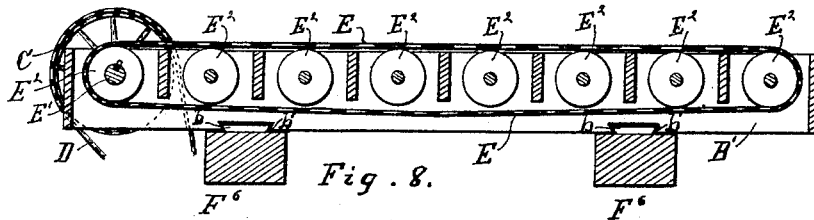
3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR CLEANING CAR-CUSHIONS.

SPECIFICATION forming part of Letters Patent No. 458,949, dated September 1, 1891.

Application filed November 5, 1890. Serial No. 370,431. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS O. DONAHUE, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented a new and useful Machine for Cleaning Car-Cushions, of which the following is a specification.

My invention relates to improvements in appliances for beating and brushing car-seat cushions; and its objects are: first, to facilitate the cleaning of car-cushions by passing them under and between beaters, brushes, &c.; second, to provide a machine for cleaning car-cushions that will conduct the cushions under and between the beaters and brushes with a strong positive motion, and, third, to provide a machine upon which the position of the carriers and brushes may be varied and adapted to clean cushions of different widths and thicknesses.

I attain these results by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my machine. Fig. 2 is a plan of the same. Fig. 3 is an end elevation, with the pinions J^2 and J^3 removed to show the construction of the support for the surface-brush. Fig. 4 shows my appliance for supporting the side brushes and their shafts. Fig. 5 shows the manner of connecting the cushion-support. Fig. 6 is a plan of the surface-brush and its frame. Fig. 7 is a plan of the cams. Fig. 8 is a sectional end view of the girts and side view of the support B' , showing the end of the dovetailed rib upon the girt, the dovetailed groove in the support, and the manner of applying the carrier belt and rollers; and Fig. 9 is a perspective of the supports and the adjusting-shaft, showing the manner of connecting them.

Similar letters refer to similar parts throughout the several views.

A is the frame that supports the machine.

B and B' are the cushion-supports.

C is a driving pulley or wheel for the cushion-conveyers.

C' is the pulley from which the pulley C is driven.

D is a belt or chain for driving the conveyers.

E E are belts for conveying the cushions.

E' is a shaft for driving the conveyer-belts.

F is a shaft, F' is a lever, F^2 is a link, and F^3 is a catch or stop for manipulating the adjustable cushion-support B' .

G is a cushion in position for being cleaned.

H H, &c., are the beaters.

I I, &c., are cams for operating the beaters.

I' I' are shafts that support and drive the cams.

J J are shafts, and J' J' , J^2 J^2 , J^3 J^3 , and K' are pinions that drive the cam-shafts J.

K is the main driving-shaft of the machine.

L is a counter-shaft.

L' and L^2 are pulleys or sprocket-wheels, and L^2 is a chain or belt for driving the counter-shaft.

M M are shafts for driving the side brushes.

M' M' are the side brushes.

N N, &c., are springs for use in operating the beaters.

O O are pulleys, and O' O' are belts for running the side brushes.

P is a power, P' is a belt, and P^2 is a pulley for driving the main shaft.

P^3 is a crank that may be used in lieu of a motor for driving the machine by hand.

Q is the surface-brush. Q' is the shaft or fulcrum that supports the surface-brush frame.

Q^2 is an adjustable frame for the surface-brush.

Q^3 Q^3 are arms that support the surface-brush frame.

R and R' are a shaft and brace or supports for steadying the side-brush frames or yoke U' .

S S are belts for running the surface-brush.

T T are idlers for the support of the belts S S.

U and U' are yokes that support the side-brush shafts.

V is a lever, V' is a catch or disk, and v is latch for adjusting the surface-brush frame.

W is a section of floor.

I construct a long frame A for the support of the machine, the center of which I make lower than the ends for the reception of cushion supports or ways B B' . One of these supports B is securely attached to the frame; but the other support B' is made adjustable by means of dovetailed ribs b b on the frame and corresponding grooves in the surface of

the support, a shaft F, a lever F', links F², and a catch F³, so that its distance from the support B may be varied to receive cushions of various widths. The shaft F is secured to the frame in anti-friction boxes, with the lever F' secured to one end and provided with a spring-latch *f*, arranged to engage with a stop or disk F³ to hold the support in the desired position, and the links F² are pivotally secured at one end to arms F⁵ upon the shaft F and at the other end to lugs *f'* on the support, and for the purpose of sliding the support upon the shaft E', I make a long key-seat *e* in the shaft and put a sliding key in the pulley that drives the carrier-belt.

For conveying the cushions through the machine under the beaters and past the brushes, I provide carriers E, of leather belting or its equivalent, which I support upon rollers E² and drive with the shaft E', which is provided with a sprocket-wheel or pulley C for the reception of the chain or belt D, and is driven from the small sprocket-wheel or pulley C', that is secured to the counter-shaft L, which in turn is secured to the frame in anti-friction boxes *l*, and is driven by means of a chain or belt L², passing from the small sprocket-wheel or pulley L³ on the main shaft around the large sprocket-wheel or pulley L' on the counter-shaft.

For beating the cushions to start the dust, I pivot a series of beaters H H, &c., to each of the shafts or rods H' H', one of which shafts I secure to the top of the frame near each end, in position so that the long or suspended end of the beaters will project over the surface of the cushion. I make this end of the beaters round for the purpose of averting the danger of cutting the cushions, and provide the extreme ends with flexible tips *h*, (for this purpose I find that short pieces of rubber hose are very available,) so that the force of the beaters, when they come in contact with the cushion will spring these tips around the corners of the cushions and beat the edges, as shown in Fig. 1 by *h*². The opposite ends of these beaters are made to project back of their fulcrum-bearings H', and are acted upon by cams I I, &c., that are attached to the shafts I' I', one of which is secured at each end of the frame and arranged to revolve in anti-friction boxes *j*. These cams are secured to the shafts in such positions that the beaters at each end of the frame will act alternately and but one at a time. The beaters are drawn forcibly toward the cushion by means of springs N, (shown in Figs. 1 and 3,) secured at their lower ends to adjustable shafts or rods N' and at their upper ends to the beaters. I make the shafts N' adjustable up and down, to adjust the tension of the springs, by means of slots *n* in the post for the reception of the bolts that secure them to the posts, as shown in Fig. 3, where I have cut away one of the end posts to show this feature on the center one.

The shafts I' I' are made to revolve by

means of bevel gear-wheels J³ J³, that are secured to one end of each shaft and arranged to mesh with corresponding gears J² J², that are supported upon and driven by vertical shafts J J, that are secured to the side of the frame in anti-friction boxes *i* *i*, &c., and provided at their lower ends with bevel-gears J' J', that are arranged to mesh with corresponding gear K' K' on the main shaft.

The main shaft K is secured to the frame in anti-friction boxes *k*, and is provided with the necessary pulleys, pinions, and spur-wheels to run the several parts of the machine, and it may be run by an electric motor P, belted to a pulley P² on the shaft by power transmitted from a detached motor; or it may be run by hand by the use of the crank P³, and transmits motion to the several parts of the machine by means of belts, pulleys, counter-shafts, gear, &c., as explained.

The surface-brush Q is supported upon an adjustable frame Q² *q*, which in turn is pivoted to the arms Q³ by means of the shaft Q', to one end of which I attach a lever V, which is provided with a spring-latch *v*, arranged to interlock with the notched disk V', which is in turn secured to the arms Q³. This frame, lever, catch, and disk are applied for the purpose of adjusting the position of the brush to correspond with the thickness of the cushions to be cleaned and to hold it in the desired position. This brush is made to revolve by the use of one or more belts S S, that are driven by the pulleys O on the main shaft, and pass over idlers T T on the girt or rod *g* at the back end of the adjustable frame and over pulleys *t t* upon the ends of the brush, so that if the position of the brush is changed the position of the idlers T T on the other end of the frame will be changed to correspond with the movement of the brush and retain a uniform tension upon the belts, regardless of the position of the frame. I attach side brushes M' M' upon shafts M M, supported in yokes U and U', attached to the cushion-supports B and B'. The yoke U, that is attached to the fixed support B may be secured solidly to the floor or foundation, if desired; but the yoke U' must be left free to move with the support B', and for the purpose of strengthening it I attach a shaft R rigidly to the support B and pass it through the movable support B', with a close-fitting but easily-adjusted joint, and extend a brace attached to the yoke near the lower end to the opposite end of the shaft and arranged to slide freely thereon in such a manner that the support may be easily adjusted without danger of twisting the support and throwing the shaft U' out of line. The shafts M M, that support the brushes M' M', are run by quarter-wind belts O' O' from the pulleys O O on the main shaft.

To prevent the beaters H H, &c., from being drawn down too far when the cushions are not under them, I form shoulders *i*³ (see Fig. 7) near the hubs on the cams I in posi-

tion to catch the back ends of the beaters when they have escaped from the cams and stop them.

To clean cushions upon this machine, I place them successively upon the carriers at E E' when the machine is in motion and they will be carried under the beaters, by which the dust will be loosened, and under and between the brushes, which revolve to meet the cushions and thoroughly sweep the dust from them.

I do not desire to restrict myself narrowly to the particular construction herein specified, as the construction of the machine may be considerably varied without changing its results; but,

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

1. The combination, in a cushion-cleaning machine, of a supporting-frame, a main shaft for transmitting motion to its several parts, vertical counter-shafts and gear for driving the cam-shafts, cams, beaters pivoted to shafts upon the frame in position to be raised by the cams and to operate upon the upper surface of the cushions, flexible ends to the beaters, springs attached at one end to the beaters and at the other ends to the frame by means of adjustable rods, adjustable rods or anchors for the beaters, conveyers, one stationary and one adjustable to the width of the cushions, and a surface-brush and adjustable frame therefor, substantially as specified.

2. The combination, in a cushion-cleaning machine, of a frame, shafts, counter-shafts, pulleys, sprocket-wheels, chains, belts, and pinions, with conveyers, dovetailed ribs, shaft, lever, arms, links, a catch, and a long key-seat and sliding wheel upon the conveyer-

shaft for adjusting the conveyers sidewise, beaters pivoted to the frame and having flexible tips, cams, springs, a surface-brush supported in an adjustable frame, a lever and a catch for adjusting the frame, side brushes secured to the conveyer-supports and adjustable therewith, and a supporting-shaft and brace, substantially as and for the purposes set forth.

3. The combination, in a cushion-cleaning machine, of a frame, with a main shaft having pulleys, sprocket-wheel, and bevel-gear, vertical shafts having bevel-gear driven by the main shaft and bevel-gear to drive the cam-shafts, cam-shafts, cams having arms and stop-shoulders, beaters pivoted to a rod upon the frame, flexible tips for the beaters, springs, adjustable rods for anchoring the springs to the frame, a counter-shaft, a sprocket-wheel and chain for driving the counter-shaft, a conveyer-shaft, sprocket-wheels and chains for driving the conveyer-shaft, a long key-seat and sliding conveyer-wheel on one end of the shaft and a solid conveyer-wheel on the other end, a rigid and an adjustable conveyer-support, guideways on the frame for the adjustable support, a shaft, a lever, a latch, a notched disk, arms and links for manipulating the adjustable support, idlers and belts for conveying the cushions, a surface-brush, an adjustable frame pivoted to arms on the main frame, a lever, a spring-catch, and a notched disk, idlers, and belts, side brushes attached to vertical shafts supported in yokes attached to the supports, belts, and a crank, substantially as specified.

Signed this 29th day of October, 1890.

FRANCIS O. DONAHUE.

In presence of—

GEORGE H. WHITE,
ITHIEL J. CILLEY.