(No Model.)

W. G. DAVIS.

BELLOWS.

No. 367,744. Patented Aug. 2, 1887.

Fig. 1.

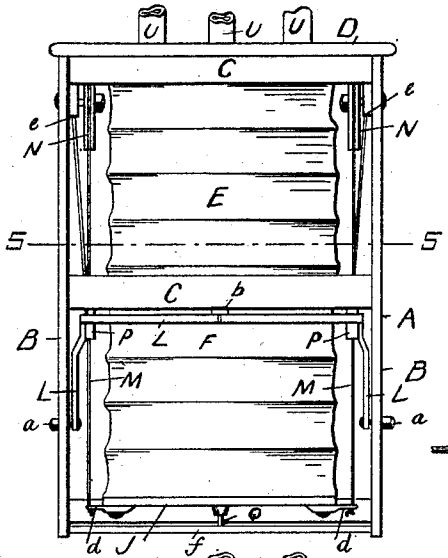


Fig. 2.

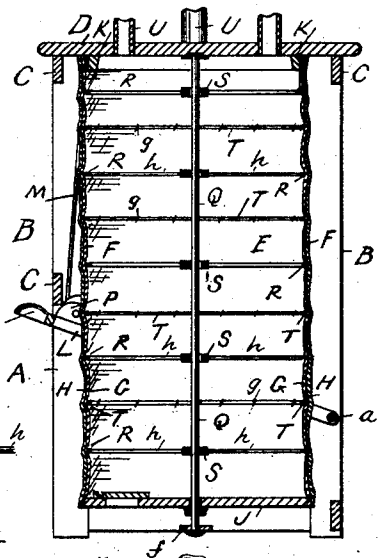


Fig. 7.

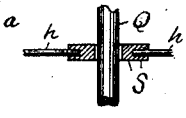


Fig. 6.

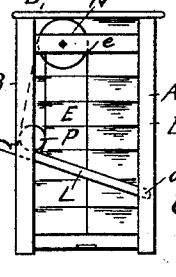


Fig. 3.

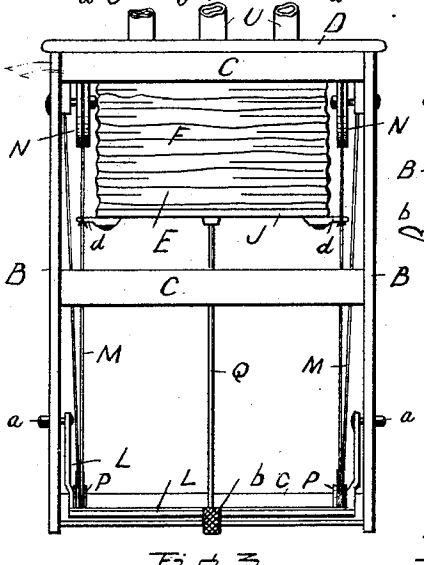


Fig. 4.

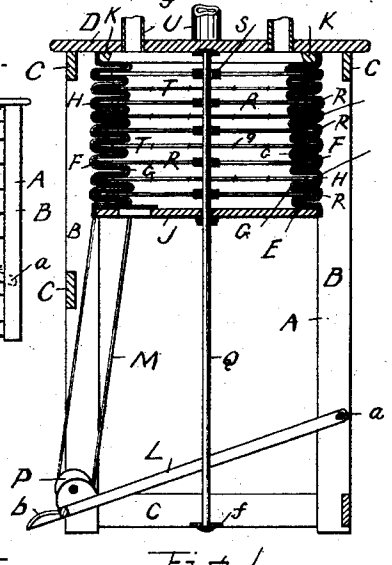
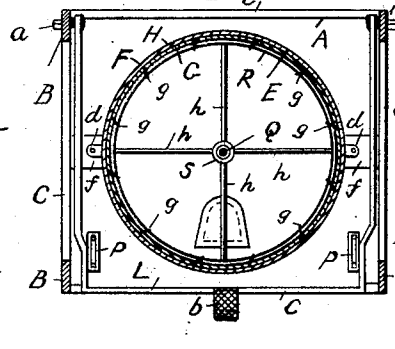


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILBUR G. DAVIS, OF CAMBRIDGE, MASSACHUSETTS.

BELLOWS.

SPECIFICATION forming part of Letters Patent No. 367,744, dated August 2, 1887.

Application filed November 15, 1886. Serial No. 218,968. (No model.)

To all whom it may concern:

Be it known that I, WILBUR G. DAVIS, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Bellows for Pneumatic Cash-Carriers, of which the following is a full, clear, and exact description.

This invention relates to improvements in the construction of bellows more particularly for use in pneumatic cash-carrier apparatus, and for that described and shown in the Letters Patent of the United States issued to me and W. M. Hinman, dated December 29, 1885, No. 333,379; and the invention consists in combination, with a bellows, of means for controlling and guiding it in its movements, all arranged for operation substantially as hereinafter fully described, reference being had to the accompanying sheet of drawings, in which is illustrated the present invention.

Figure 1 is a view in front elevation of a bellows constructed and arranged for operation in a suitable supporting-frame in accordance with this invention. Fig. 2 is a central vertical cross-section from front to rear. Fig. 3 is a front view similar to Fig. 1, but with the bellows closed. Fig. 4 is a section similar to Fig. 2, but with the bellows closed. Fig. 5 is a cross-section on line 5 5, Fig. 1. Fig. 6 is a side view reduced in size, and Fig. 7 is a detail sectional view.

In the drawings, A represents a frame-work consisting of side uprights, B, connected at the front and rear by cross-bars C, and a top, D, all made of wood or of any suitable material.

E is the bellows located within the frame, circular in cross-section and composed of the flexible sides F, made of two thicknesses of material, the inner one, G, being of stout cotton cloth, and the outer one, H, of india-rubber cloth, the two being secured at their lower ends to the edge of a circular bottom board, J, and at their upper ends to a ring or shoulder, K, of the top board, D, by glue, tacks, &c., or in any suitable manner, and so that the joints will be air-tight.

L is a treadle pivoted on each side upright, B, at *a*, and extending toward the front, where it is operated at *b*.

M are cords or strings, one each side of the bellows, each connected by one end to an ear-piece, *d*, on the bottom board, J, of the bellows and extending upward and over pulleys N on the uprights and then around pulleys P on the treadle, and secured by their other ends to the upper part of the frame at *e*.

Q is a vertical rod or wire secured by one end to the board D and extending down therefrom through the center of the bellows and loosely through its bottom board, J, and secured by its lower end to a horizontal metal cross-bar, *f*, of the frame.

Attached preferably at regular intervals to the inside of the cloth portion G of the bellows, between its top and bottom, is a series of rings, R, of wire or of any suitable material, which are secured in place to the cloth by a string or thread, *g*, passing around each ring at intervals and through the cloth. Each of these rings has radial bars *h* extending toward the center, their inner ends being secured in sockets *l* in a flat ring or sleeve, S, encircling the central rod, Q, and adapted to freely slide up and down thereon. Between these rings R is another series of rings, T, without cross-bars, alternating with the rings R, and secured in the same manner by a string, *g*, to the cloth G.

In the operation of the bellows its bottom board, J, is raised through the downward movement of the treadle compressing the sides vertically and closing the bellows, as shown in Figs. 3 and 4, the bellows being opened by the board falling by its gravity as the treadle is allowed to rise for another operation of the bellows, and in such movements, by the rings R and T, secured to the flexible sides of the bellows, and the rings R, arranged to slide up and down on the central rod, Q, the sides of the bellows in its closing and opening movements are effectually and practically controlled and guided and kept in place, so that they will have regular folds when compressed and will not bulge unevenly outwardly or double up, as they otherwise would, and thus interfere with the free and practical operation of the bellows.

U represents, respectively, the ends of the pneumatic tubes through which the carriers, &c., are transmitted, as connected to the bel-

lows, the tubes communicating with the bellows and having suitable valves, &c., for closing and opening such communication, substantially as shown in said patent, or in any suitable manner, but needing no particular description or illustration herein, as it is no part of the present invention.

The rings can be made of any suitable material and in any suitable manner, and connected to the central rod for proper operation thereon, as desired; also, they can be attached to the bellows' sides in any suitable manner; also, the bellows' sides can be made of only one thickness or more, as desired, and of any suitable flexible sheet material; also, the invention can be applied to other forms or shapes of bellows, and the bellows can be used for other purposes than the one herein particularly described.

The controlling and guiding a bellows from the center, as herein described, is very convenient and simple, and is especially advantageous for a bellows for the particular purpose herein described.

Having thus described my invention, what I claim is—

1. The combination, with a bellows provided with a central guiding-rod, Q, permanently secured at each end to a suitable support, and the bellows-bottom adapted to slide up and down thereon, of rings R, secured to the flexible sides of the bellows at desired points between the two ends of the bellows and connected to and arranged to slide up and down on said rod, for the purpose specified.

2. The combination, with a bellows provided with a central guiding-rod, Q, permanently secured at each end, and the bellows-bottom adapted to slide up and down thereon, of rings R, secured to the flexible sides of the bellows at desired points between the two ends of the bellows and connected to and arranged to slide up and down on said rod, and rings T, secured to the flexible sides of the bellows between the rings R, for the purpose specified.

3. The combination, with a bellows provided with a central guiding-rod, Q, permanently secured at each end, and the bellows-bottom adapted to slide up and down thereon, of rings R, secured to the flexible sides of the bellows at desired points between the ends of the bellows and connected to said rod by radial bars *h*, and ring or sleeve S, arranged to slide up and down on said rod, for the purpose specified.

4. The combination, with a bellows provided with a central guiding-rod, Q, permanently secured at each end, and the bellows-bottom adapted to slide up and down thereon, of a treadle pivoted to frames supporting the bellows on each side of the bellows and projecting to the front and connected to the bottom board of said bellows, for operation thereof.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILBUR G. DAVIS.

Witnesses:
EDWIN W. BROWN,
PERCY BRYANT.