

Patented May 22, 1917.

1,227,205.

Fig. 1.

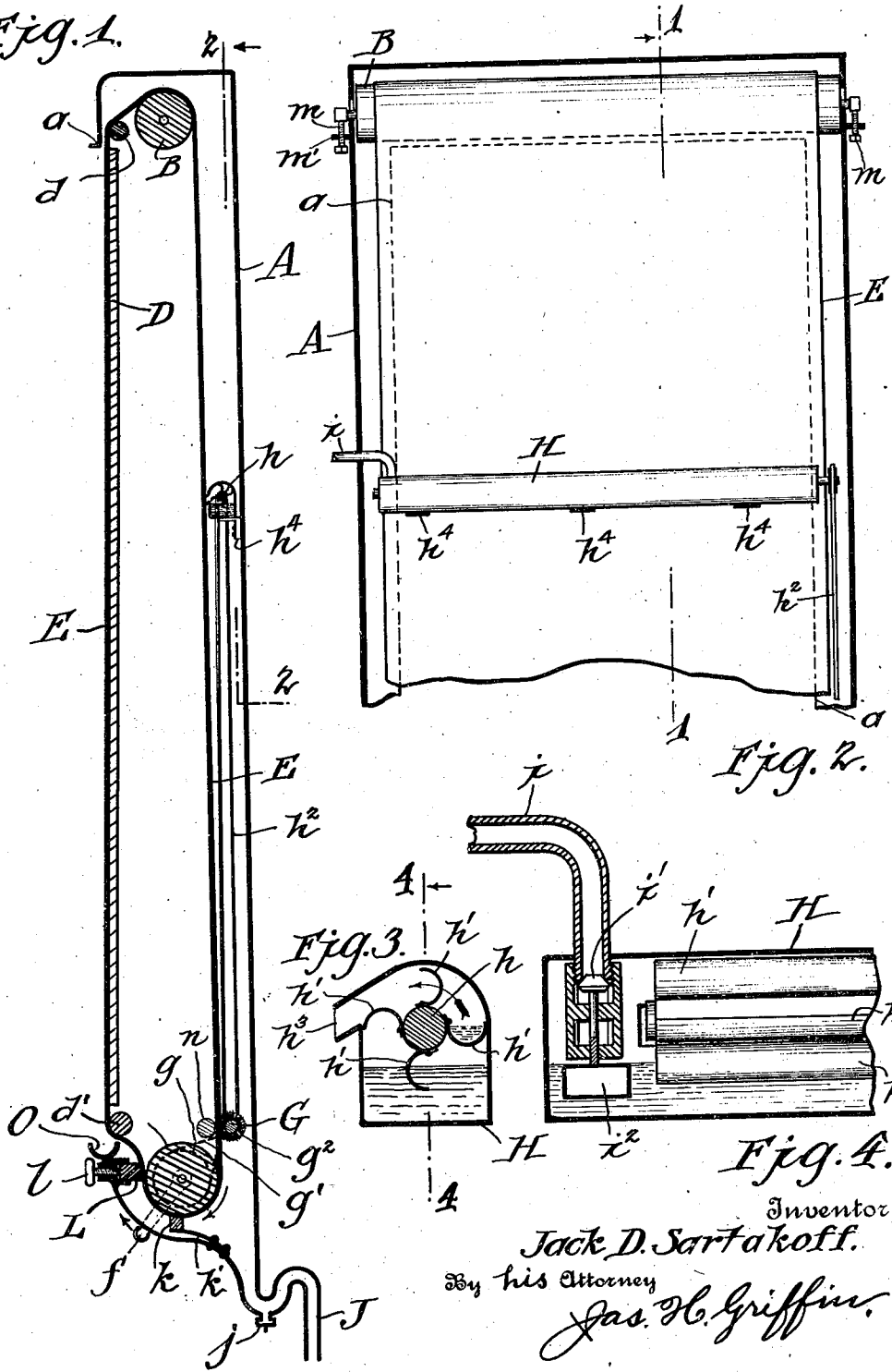


Fig. 2.

Fig. 3.

Fig. 4.

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SELF-CLEANING BLACKBOARD.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JACK D. SARTAKOFF, a citizen of Russia, residing in the city of New York, borough of Manhattan, county of New York, and State of New York, have invented a certain new and useful Self-Cleaning Blackboard, of which the following is a specification.

This invention is a self-cleaning blackboard, and relates, more particularly, to that class of blackboard wherein the writing is received upon an endless flexible web adapted to be shifted, from time to time, to present unused surfaces to the writer. Blackboards of this general character have long been employed, particularly for use by children in the home, and, like all other blackboards whereon chalk is used, they give off considerable chalk dust during the writing and subsequent cleaning operations, and particularly during the latter, when the writing is erased generally by a felt pad.

The object of the present invention is to provide an endless web blackboard adapted for general use, *i. e.*, in school rooms, railway stations, and the nursery, and as bulletin boards, the salient feature of the invention being the automatic cleaning and washing of the blackboard when the web is advanced. A further feature of the invention embodies the incorporation of means for effecting the disposition of the chalk dust removed from the blackboard during the cleaning operation.

Features of the invention, other than those specified, as well as the advantages thereof, will appear from the hereinafter detailed description taken in conjunction with the accompanying drawing.

In the accompanying drawing I have illustrated one practical embodiment of the invention, but the construction therein shown is to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 is a vertical section through a blackboard construction embodying the present invention, said section being taken substantially in the plane of the line 1—1 of Fig. 2.

Fig. 2 is a section of substantially the upper half of the structure of Fig. 1, taken in the plane of the line 2—2 of Fig. 1.

Fig. 3 is an enlarged detail of a section of

certain liquid supply means shown in Fig. 1, and

Fig. 4 is a section on the line 4—4 of Fig. 3.

Referring to the drawing, A designates a casing provided at its front with an opening *a*. In the upper and lower portions of the casing, and extending transversely thereof, are rollers B and C, and within the casing, and immediately anterior of opening *a*, is a rigid plate D. An endless flexible web E, upon the surface of which the writing is accomplished, extends about rollers B and C and forward of plate D, direction rollers *d* and *d'* being provided at the upper and lower edges of said plate to obviate wearing of the web by said edges. The writing upon web E is accomplished through opening *a* and upon that portion of the web which rests against plate D, said plate serving as a rigid backing to preclude the web from yielding under the pressure of the chalk.

One of the trunnions on which the lower roll C is rotatably mounted is provided with a handle or crank *f*, to allow of the advancing of the web, and also fixed upon said trunnion is a pulley, gear, or sprocket wheel *g*, connected by a belt, gear, or sprocket chain, *g'*, to a shaft G, positioned rearward of the back reach of web E. Upon shaft G is fixed suitable cleaning means, shown in the drawing as a bristle brush *g*². Crank *f* is adapted to be turned in the direction of the arrow to rotate roller C in a clockwise direction, and the gearing or belt connection between said roller and brush *g*² is such as to reverse the direction of rotation, so that the brush will turn in a counter-clockwise direction. Thus, as the crank is turned to advance web E, brush or cleaner *g*² is actuated to scrub or otherwise erase from said web writing or other delineations which may have been previously written or otherwise formed upon said web.

It is found in practice that, after a very brief use of a blackboard, it becomes covered with very fine chalk dust, which renders the board gray rather than black, and makes the writing or other designations placed upon the face of the web smudgy and untidy. This gray effect cannot be ordinarily removed through the use of a brush or felt wiper, so that it has generally been

the practice, with blackboards of all kinds, to wash them with a wet sponge from time to time. The present invention, however, embodies means for automatically washing
 5 at least a portion of the web during each advance movement thereof. This means, shown in section in Fig. 1 and in elevation in Fig. 2, is best shown in Figs. 3 and 4, wherein Fig. 3 is an enlarged section of
 10 the showing of Fig. 1.

The washing means embodies an elongated tank or reservoir H, supported by angle-irons h^4 , longitudinally of which tank extends a shaft h , carrying a plurality of
 15 curved blades h' , so shaped as to form pockets. Shaft h is geared, belted, or otherwise operatively connected with shaft G, said connection being shown as a belt or sprocket
 20 h^2 , so that, when shaft G is actuated, shaft h is simultaneously rotated. Liquid, generally water, is supplied to reservoir H through a pipe i , the flow of liquid through
 25 said pipe into the reservoir being controlled by any suitable form of float-valve, here shown as embodying a valve i' adapted to be closed by a float i^2 when the liquid in the
 30 reservoir has attained a predetermined height. Any form of controlling means, however, may be employed, such, *e. g.*, as the float-valve generally used in conjunction with water-closet flush tanks, the showing
 here made being merely for illustrative purposes, only, and not exclusive.

The casing forming reservoir H is provided with an outlet spout or mouth h^3 ,
 35 which extends, as shown best in Fig. 1, to a position in intimate relation to the face of web E, so that, when crank f is actuated and shaft h rotated through the connections
 40 specified, the pocket plates h' will be successively charged with fluid from the reservoir and will deliver said fluid through outlet h^3 and directly upon the face of the web. Roller B is preferably made of slightly less
 45 diameter than roller C, so that the rear reach of web E against which the liquid is thrown is slightly inclined, whereby the liquid will impinge said surface and flow downwardly thereover in a thin film. The
 50 same result of inclining the rear reach of web E may be obtained, even if rollers B and C are of the same size, by positioning roller B farther forward of the casing, or roller C nearer to the rear thereof, during
 55 the manufacture of the device. Thus, the web is thoroughly wet by the time it comes into the zone of operation of the brush or cleaner, which operates with great efficiency upon the wet surface of the web in removing
 60 all stains, chalk dust, or other undesirable material, from said web.

The dust and dirt laden liquid, after leaving brush g^2 , is deposited within the base
 65 of the casing, which is so shaped as to drain at the rear thereof and cause the liquid to

flow through a trapped outlet J. The chalk or other heavy particles are caught in the trap, which may be cleaned, from time to time, by removing the cleaning cap j provided for this purpose.

After leaving brush g^2 , the web is freed
 70 of superfluous water by means of a wiper k , which is yieldably maintained in contact with said web by any suitable means, such as one or more leaf-springs k' . Wiper k
 75 removes substantially all of the liquid and entrained chalk dust from the web and also assists in the depositing thereof within the base of the casing. If desired, an additional wiper or drier L, positioned a little
 80 farther along the path of travel of the web, may be provided to further free the web of moisture. The drier or wiper L may be either spring-pressed or manually adjustable by one or more thumb-screws l , as
 85 shown, and is preferably removable to allow of the cleaning thereof when desired.

As web E is generally made from some suitable fabric, which is apt to stretch
 90 through continued use, means is preferably provided to allow of the tightening of said web, so that the same may be maintained taut at all times. Any desired form of
 95 means for accomplishing this result will suffice, but I have shown in Fig. 2 one form as illustrative. The structure there shown consists in mounting the trunnions of roller
 100 B for vertical sliding movement in slots in the ends of the casing, and associating with said trunnions adjusting screws m , threaded through lugs m' , projecting laterally from
 105 the wall of the casing. By manipulating the screws m , roller B may be raised or lowered, as the tension of the web may require. If desired, springs may be positioned between
 110 the ends of the adjusting screws and the trunnions, or may be used in lieu of the screws for maintaining the web taut by spring pressure. Moreover, to resist the
 115 pressure of the brush or cleaner g^2 against the web, said web is backed up at this point by a rotatable pressure roll n , whereby undue strain upon the web by the brush or cleaner is precluded.

In the preferred embodiment of the in-
 115 vention illustrated, casing A is shown as formed from sheet metal, and this is the structure preferably employed, although a wooden casing may be used if desired. In
 120 any event, it is desirable that a suitable shelf or channel O be arranged along the lower edge of opening a , to allow of the positioning of chalk or other articles within
 125 ready access of the writer. Shelf or channel O also catches the chalk dust which falls from the face of the blackboard during the writing operation, so that such dust is not
 130 allowed to fall upon the floor, and may be readily removed from the channel, when desired. Casing A may be mounted in any

suitable way, either by directly securing the same to a wall, or mounting it upon standards, as occasion may require.

It will be apparent from the foregoing description that the structure is extremely simple, easy to operate, and, in its normal operation, washes and cleans the blackboard every time crank *f* is actuated to advance the web. This is, of course, true when the crank is actuated in a clockwise direction, as hereinbefore explained. It will be apparent that it would be disadvantageous to allow of the actuation of the crank in a counter-clockwise direction, and, for this reason, suitable means, not shown, is provided to limit the movement of the crank to one direction only. This means may partake of the form of a pawl and ratchet, or any other suitable arrangement, such as is well known and generally adapted to preclude reverse rotation of a moving part.

The casing is substantially dust-proof and, accordingly, the chalk dust and dirt removed from the board during the cleaning and washing operations are not free to circulate in the surrounding atmosphere, with the well known, deleterious results. All of said dust and dirt is confined within the trap by the washing fluid. If desired, an antiseptic solution may be introduced into the water used during the washing operation, to render the device sanitary in every respect.

The foregoing description and showing in the drawing deal with the invention in its preferred form. It will be manifest, however, that various modifications may be made, within reasonable limits, in adapting the invention to the various environments of which it is susceptible. It will, therefore, be understood that the showing made is for the purposes of illustration, only, the invention being as broadly novel as is commensurate with the appended claims.

Having thus fully described the invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a device of the class described, a movable blackboard, means operable upon the movement of the blackboard for automatically cleaning the surface thereof, and

means simultaneously operable to wet the surface of the blackboard to be cleaned. 55

2. In a device of the class described, a movable blackboard, means for washing the blackboard, and means for cleaning the same, said washing and cleaning means being automatically operable upon the movement of the blackboard. 60

3. In a device of the class described, the combination of a movable blackboard, means operable upon the movement of the blackboard for washing the same, and a rotating cleaner also operable upon the movement of the blackboard for rubbing said blackboard while wet. 65

4. In a device of the class described, the combination of an endless web blackboard, means for advancing the blackboard, and means operable by the blackboard actuating means for washing and rubbing the blackboard. 70

5. In a device of the class described, the combination of an endless web blackboard, means for advancing the same, a rotatable cleaner engaging with the blackboard, means for dispensing a liquid upon the face of said blackboard, and connections between the blackboard advancing means, the rotary cleaner, and the liquid dispensing means, for simultaneously causing the blackboard to be wet and the cleaner to rotate when the blackboard is advanced. 75

6. In a device of the class described, a movable blackboard, means for washing the blackboard, means for rubbing the same while wet, and means for subsequently removing superfluous liquid from the blackboard. 80

7. In a device of the class described, a movable blackboard, means for imparting movement to said blackboard, and means for automatically washing said blackboard when the same is moved. 85

8. In a device of the class described, a blackboard embodying an endless flexible web, means for advancing the web, and means actuated by the web advancing means for washing a portion of the web during the advancing operation. 90

In testimony whereof I have signed my name to this specification.

JACK D. SARTAKOFF.