(No Model.) 2 Sheets—Sheet 1.

J. KANE.

BLACKBOARD AND WIPING AND DUST COLLECTING APPARATUS.

No. 382,705. Patented May 15, 1888.

Fig. 1.

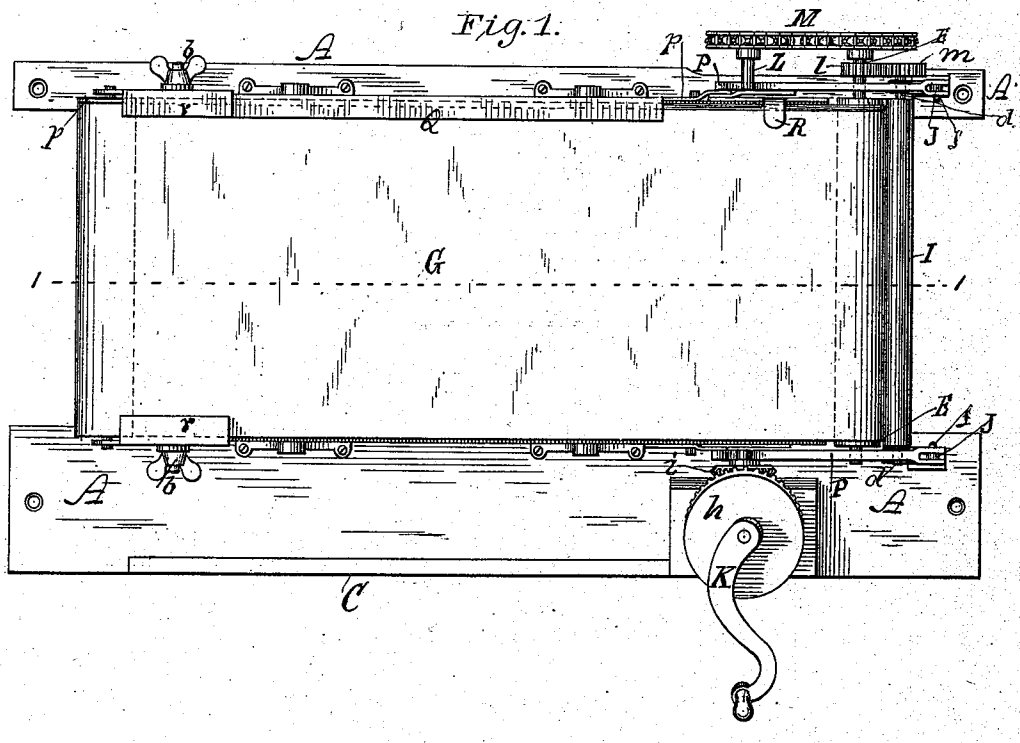
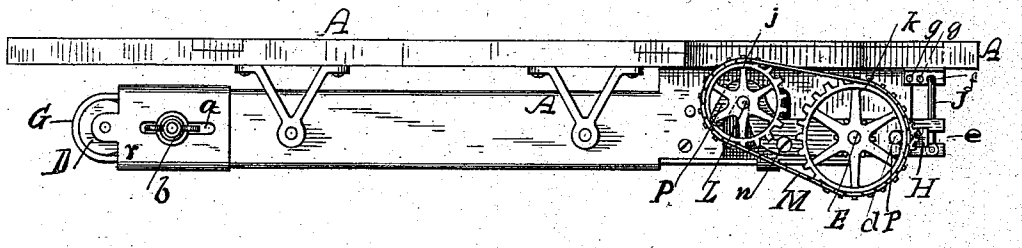


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

J. KANE.

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Fig. 3.

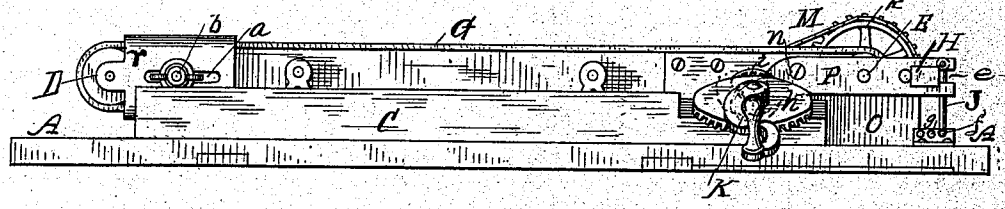
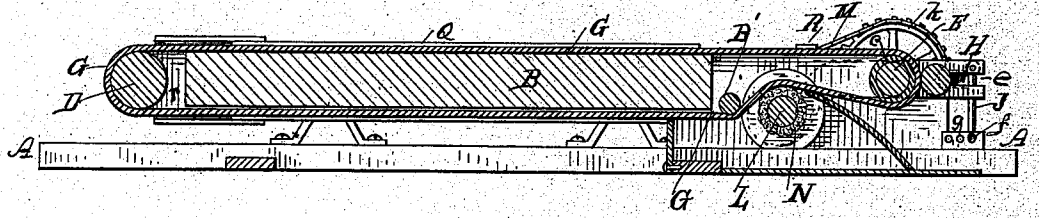


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN KANE, OF GREEN ISLE, MINNESOTA.

BLACKBOARD AND WIPING AND DUST-COLLECTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 382,705, dated May 15, 1888.

Application filed October 31, 1887. Serial No. 253,835. (No model.)

To all whom it may concern:

Be it known that I, JOHN KANE, a citizen of the United States, residing at Green Isle, in the county of Sibley and State of Minnesota, have invented an Improved Blackboard and Wiping and Dust-Collecting Apparatus connected therewith; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification.

My invention consists, first, in a movable blackboard; second, in a blackboard forming an endless movable belt and provided with a crank and roller for moving the same; third, in a wiper or wiping device for cleaning the surface of a movable blackboard or belt; fourth, in a dust-collecting and holding device in connection with the traveling blackboard or belt and wiper; fifth, in certain special features of construction in the apparatus.

In the accompanying drawings, Figure 1 represents a front view of a blackboard forming an endless movable belt, and of a wiper and dust-collector in connection therewith in accordance with my invention; Fig. 2, a top view of the same; Fig. 3, a bottom view thereof; Fig. 4, a horizontal longitudinal section of the same in a plane indicated by the line 1 1, Fig. 1.

Like letters designate corresponding parts in all of the figures.

Upon a suitable frame, A, which may be built upon the wall of the room or made separate and attachable to any wall, is mounted the back board or plane firm surfaced backing B. The separately-constructed frame and back board, as represented in the drawings, is preferred, and this may be of any desired length and of proper width. If too long for convenient transportation, the frame may be jointed for folding up in any known manner for other frames or structures. This frame comprises or may comprise a shelf or box, C, for holding chalk or crayons. At or near the two extremities of the frame are mounted two rollers, D E, as shown, or in any other equivalent manner. Upon these rollers is mounted an endless belt or apron, G, of canvas or any other suitable flexible material, which serves as the blackboard proper—that is, furnishes the writing-surface of the blackboard. For this purpose it has the proper finish for a surface to write with chalk or crayons upon, prepared in any way known to those skilled in the art. This endless belt or apron also is to have sufficient firmness and rigidity to keep its position and shape when it is properly stretched upon its rollers D E vertically edgewise, and not to sag down out of proper form and place, generally with the assistance of a hem or thickness at the upper edge. Its front or exposed portion is located closely in front of the back board, B, as shown in Fig. 4, so that the canvas belt may present a firm surface to the chalk by means of this backing. One of the carrying-rollers, as D, is mounted in suitable bearings, *r r*, which are adjustable longitudinally on the frame for tightening the canvas sufficiently upon the rollers. The means of adjusting the bearings is or may be by slots *a a* in the bearings and set-screws *b b*, passed through the slots and screwed into the frame, this being a suitable and well-known device for such a purpose. The other roller, as E, on which the endless belt is mounted, has its periphery covered with a thickness, *c*, of india-rubber, or any other material which furnishes a frictional surface sufficient to cause the belt to move as the said roller is turned around. In addition to this, I provide, when necessary or desirable, an outside counter-pressure roller, I, the bearings *d d* of which turn in bearings H H, which slide in slots *e e* in some parts of the frame, whereby the roller may be pressed against the carrying-roller E, so as to press the canvas or fabric of the belt between the two rollers with sufficient pressure to prevent the slipping of the belt as the carrying-roller is turned. Suitable springs are employed to press the roller I toward the roller E. I have shown two spring-levers, J J, or somewhat flexible and elastic rods, as shown, each pivoted at one end at one side of the slotted bearing, and the other end having a hook or projection, *f*, to take into one of a series of adjusting-holes, *g g*, in the frame, as shown in Figs. 2 and 3, or otherwise. The springs are suitably adjusted in tension by means of these holes, either one being adapted to receive the hook end of the spring.

The belt-moving roller E is caused to revolve for moving the endless belt along by any suit-

able mechanism. I have shown a gearing by which the roller is made to revolve by means of a crank or winch, K, situated in a suitable place on the frame of the blackboard and turned by hand. On the shaft of the crank is a gear-wheel, *h*, gearing into a pinion, *i*, on a shaft, L, and on this shaft, preferably at the other end, is a sprocket-wheel, *j*, around which a belt-chain, M, travels, as also around another sprocket-wheel, *k*, on the shaft or extended bearing of the said driving-roller E. In order to cause the counter-roller I to turn in unison with the roller E, two pinions, *l m*, of equal size, are mounted on the respective shafts or extended bearings of the two rollers. The gear-wheel and pinion *h* and *i* are preferably bevel gear-wheels of such degree of bevel that the shaft of the crank may incline somewhat from a horizontal position and allow the gear-wheel *h* to incline downwardly backward, as shown in Fig. 3, so that the crank may rest as far backward as possible when it is in its lowest position, and thus be out of the way of persons using the blackboard.

In connection with this movable blackboard or blackboard-belt I employ a wiper, so that as the belt is caused to move along by rotating the driving-roller E its surface may be cleanly wiped. For this purpose I prefer to make use of a revolving wiper, N, its revolving motion being in the opposite direction to that of the belt, against which it rubs. To effect this result, the wiper is mounted on the shaft L, above specified as gearing with the crank-shaft, and, this shaft being located back of the endless belt where the said endless belt travels behind the back board, B, or counter-roller B′, the desired direction of motion is thereby obtained. The surface of the wiper should be of sheep's or lamb's pelt or sheep's or lamb's wool or equivalent fibrous or soft substance, and it is caused to press elastically against the surface of the endless belt. This wiper or eraser is located in a close chamber, so that the chalk-dust is closely confined therein while the belt is being wiped, and afterward, as the dust accumulates in the chamber, it is from time to time withdrawn therefrom through an outlet covered by a removable door or slide, O, Fig. 3. Provision is or may be made for getting access to the wiper and removal of the same for repair or renewal of its covering in any suitable manner. The means shown is as follows: The bearings P P of the wiper are of hook form and pivoted at *n n*, Figs. 2 and 3, to the frame. These bearings also carry the rollers E and I. By unhooking the springs J J the outer ends of the bearings P P are swung forward, at the same time unhooking the journals of the wiper from the bearings. To furnish sufficient room for the removable of the wiper, one side is or may be removable.

In order to keep the upper edge of the endless belt close to the back board and prevent its stretching and inclining forward out of proper position, it is best to have its upper edge, hem, or border, *p*, run behind a lip or flange, Q, at the upper edge of the back board. This lip or flange may be of sheet metal and holds under the hem. The belt where it bends outward in swinging the bearings P P forward is held in place at the upper edge by an overlapping spring-plate, R.

I do not confine my invention to the exact special construction herein set forth.

I claim as my invention—

1. The combination of a movable blackboard and automatically-rotating wiper, for the purpose herein set forth.

2. The combination of a movable endless belt blackboard or blackboard-surface and an automatically-rotating wiper, for the purpose herein specified.

3. A movable blackboard and a wiper therefor located in a close chamber, the said chamber being provided with a covered discharge-opening for the accumulated chalk-dust.

4. The combination of a movable endless belt blackboard, a revolving wiper, a turning handle or crank for driving the said rollers, belt, and wiper located in an oblique position, and gearing connecting the said handle, wiper, and endless belt, substantially as herein specified.

5. The pivoted hook-bearings P P, in combination with the revolving wiper N and the revolving rollers E I, substantially as and for the purpose herein specified.

6. In combination with the endless belt blackboard and fixed back board, the lip or flange Q and spring-plate R, whereby the upper edge of the endless belt is held straight and in position, substantially as and for the purpose herein specified.

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

JOHN KANE.

Witnesses:
LOUIS FEESER, Jr.,
S. G. L. ROBERTS.