H. F. GRAY.

DEVICE OR MACHINE FOR CLEANING DECORATED WALLS.

APPLICATION FILED JAN. 16, 1918.

1,334,240. Patented Mar. 16, 1920.

3 SHEETS—SHEET 1.

Fig. 1.

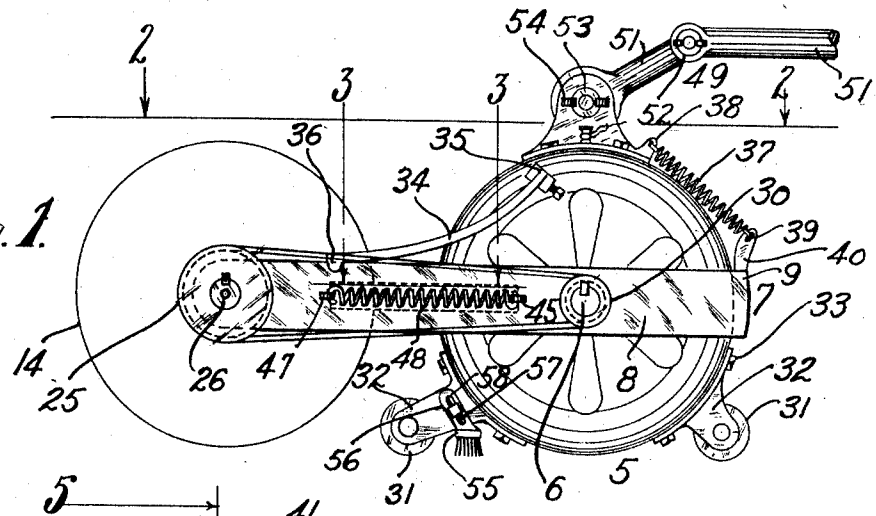

Fig. 2.

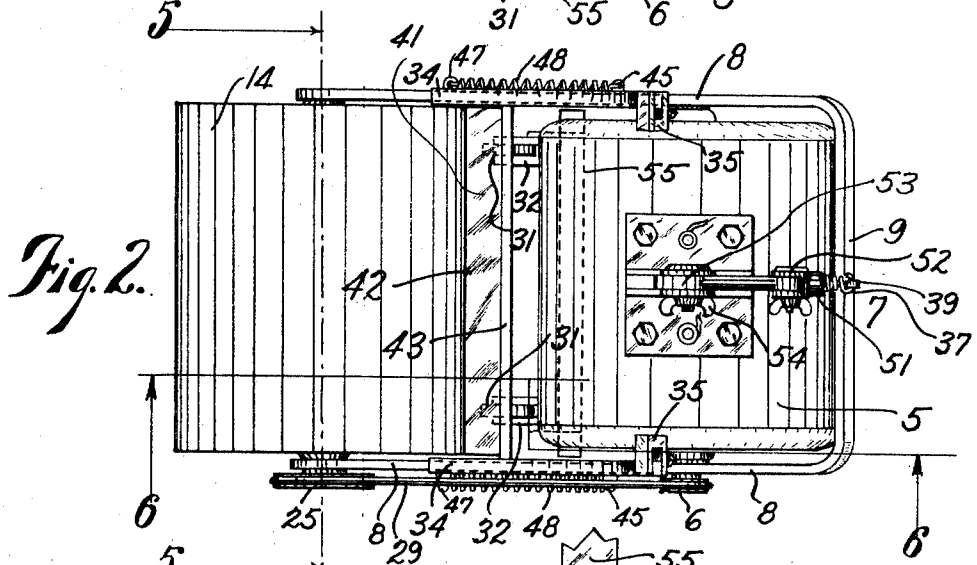

Fig. 3.

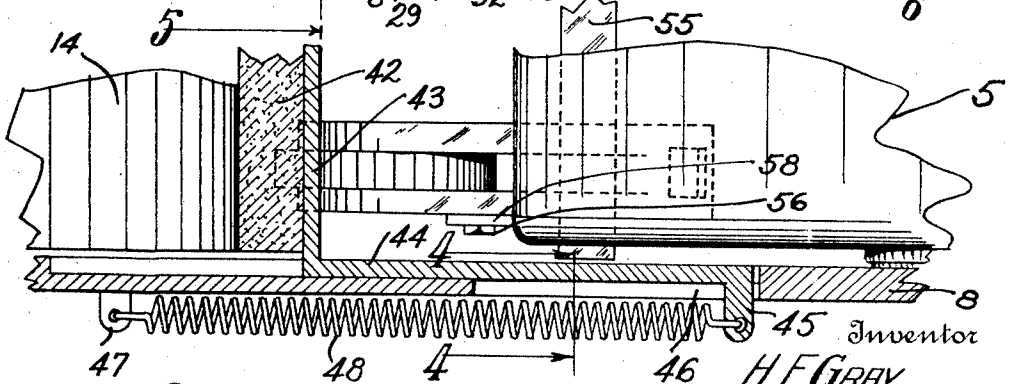

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Fig. 5.

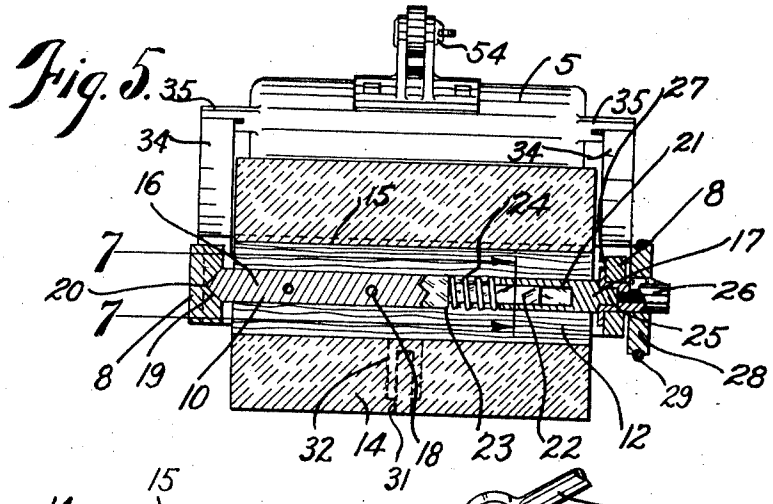
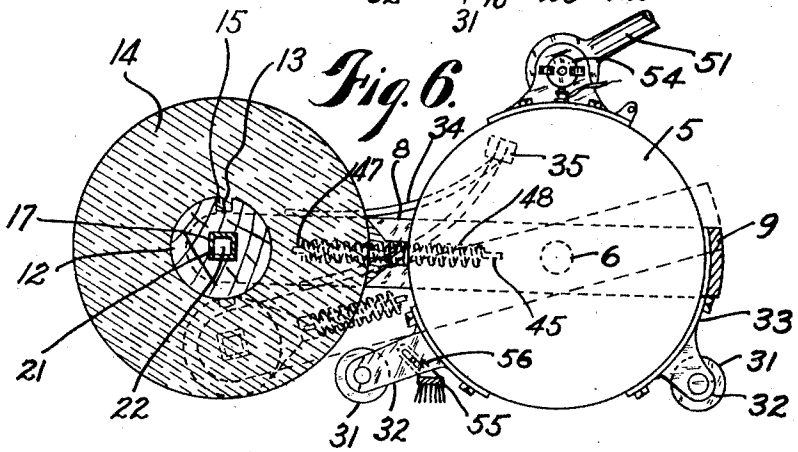


Fig. 6.



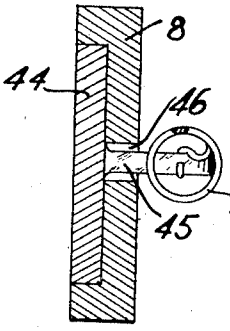


Fig. 4.

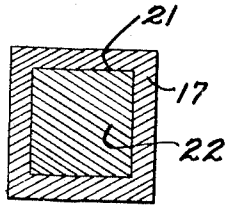


Fig. 7.

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3 SHEETS—SHEET 3.

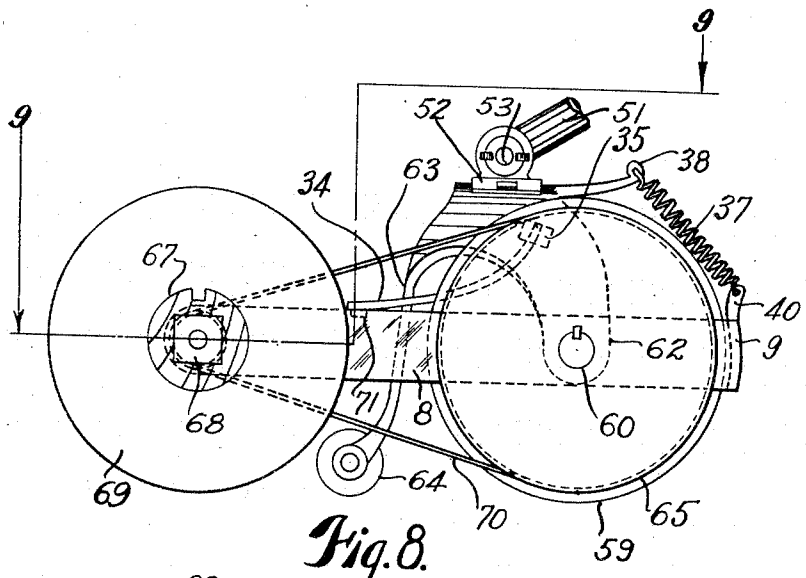

Fig. 8.

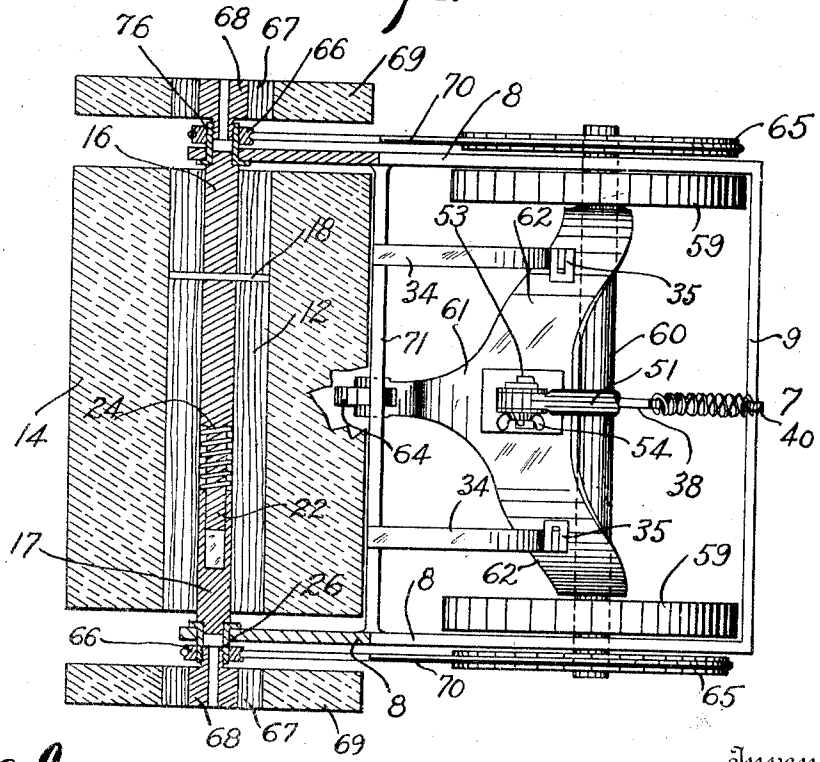

Fig. 9.

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UNITED STATES PATENT OFFICE.

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DEVICE OR MACHINE FOR CLEANING DECORATED WALLS.

1,334,240. Specification of Letters Patent. Patented Mar. 16, 1920.

Application filed January 16, 1918. Serial No. 212,137.

To all whom it may concern:

Be it known that I, HALLA F. GRAY, citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Devices or Machines for Cleaning Decorated Walls; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to a device or machine for cleaning decorated walls, being well adapted for cleaning walls of this character either papered or painted. The device has been constructed with special reference to cleaning papered walls, since this work requires rather delicate treatment, due to the fact that the dirt must be removed without injuring the paper which in many instances is of delicate shade and texture. It is, however, equally well adapted for cleaning painted walls, but as before indicated, this work does not require the same care in manipulation that is required where the walls are paper decorated.

Heretofore the difficulty of providing a machine adapted to do this work has been well recognized owing to the fact that the use of any kind of a dry powder will not do the work, since a certain degree of moisture is required in order to remove the soil from the decorated wall, and powdered material when in a moist condition is very difficult to handle or feed evenly and with sufficient accuracy to use in connection with a machine equipped with a rotary cleaning member. Hence, I have conceived the idea of using a rotary holder upon which is mounted a composition roll of such character that it will gradually wear away during the cleaning operation, thus giving all the advantages of the use of the moistened composition by hand, which so far as I know is the usual method employed in cleaning decorated walls. The hand process, however is very slow and tedious. By using a rotary member carrying a composition roll which gradually disintegrates during the cleaning operation, most excellent results may be obtained. A rubberized product properly vulcanized will give good results and afford ample economy.

Hence, my present improvement includes a roller equipped to receive a roll of suitable composition for wall cleaning purposes, the roller being operated from a motor forming a part of the machine, the entire structure being portable and of such weight that it may be easily moved over the surface of the wall to be cleaned. In the event that the composition roll is of such character that it will not normally wear away or gradually disintegrate with the required freedom during the cleaning operation, and in the event that there should be a tendency for the dirt or soil taken from the wall to become embedded in the surface of the roll, I have made provision for using an abrading member which is spring held in engagement with the surface of the roll and serves to gradually wear away the material of the roll in order to overcome the aforesaid difficulty.

Having briefly outlined my improvement, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof. In this drawing:

Figure 1 is a side elevation of my improved machine.

Fig. 2 is a top plan view of the same.

Fig. 3 is a section taken on the line 3—3, Fig. 1, looking downwardly or viewed in the direction of the arrows, the parts being shown, however, on a much larger scale.

Fig. 4 is a section taken on the line 4—4, Fig. 3, the parts being shown on a still larger scale.

Fig. 5 is a cross section of the machine taken on the line 5—5 Fig. 2, looking toward the right.

Fig. 6 is a section taken on the line 6—6, Fig. 2.

Fig. 7 is a cross section taken on the line 7—7, Fig. 5, the parts being shown on a much larger scale.

Fig. 8 is a side elevation of my improved machine showing a modified form of construction.

Fig. 9 is a section taken on the line 9—9, Fig. 8, looking downwardly

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate an electric motor which may get its current supply from a house circuit through the medium of a plug having a sufficient length of conductors to make it practicable to manipulate the machine over a considerable wall area with-

out changing the socket connection. Upon the shaft 6 of this motor is trunnioned or journaled a frame 7 which is U-shaped and consists of two parallel side members 8 and a rear, transverse member 9. The openings in the side members 8 to receive the trunnions or projections of the motor shaft, are located considerably nearer the rear extremities of these arms than their opposite extremities, the latter being pivotally connected with a shaft 10 carrying a roller 12, preferably composed of wood and grooved, as shown at 13, to receive a cleaning roll 14 which is preferably composed of some suitable composition and adapted for cleaning decorated walls but still of such hardness or consistency that it will remain intact when rotated in contact with the surface to be cleaned. Consequently, it must be understood that the invention is not limited to any particular material or cleaning compound. As shown in the drawing, the inner bore of the composition roll is provided with tongue 15 adapted to fit into a corresponding groove 13 of the roller 12. The shaft 10 of the roller is composed of two parts 16 and 17, the part 16 being secured to the roll 12 by suitable fastening devices 18, the outer extremity of this member being cone-shaped, as shown at 19, to fit a socket 20 of counterpart shape formed in one of the side members 8 of the frame 7. The entire shaft 10 is polygonal in shape, preferably square, to fit a corresponding perforation in the roller 12. The part 17 of the shaft is provided with a socket 21 adapted to receive a reduced stem 22 with which the part 16 is provided, the stem and socket being preferably square in cross section. Between the shoulder 23 formed on the part 16 and the adjacent extremity of the part 17, is located a spiral spring 24 which gives sufficient endwise compression or adjustment to make it practicable to press the part 17 of the shaft inwardly toward the part 16, a sufficient distance to permit the insertion of the square reduced end 25 in a socket formed in a stub shaft 26 which is inserted in an opening formed in one of the side members 8 of the frame 7, this stub shaft being interiorly flanged, as shown at 27, to hold it in place, while a pulley 28 is keyed to the shaft member beyond the frame part 8, this pulley being connected by means of a belt 29 with a pulley 30 fast on the shaft of the motor. It should be explained that the speed of an ordinary motor will be greater than can be advantageously employed in connection with the composition roll. Consequently, suitable speed reducing means should be employed, though I intend to use a slow speed motor. As shown in the drawing, the pulley 30 on the motor shaft is considerably smaller than the pulley 25 on the stub shaft 26. Consequently, the normal speed of the motor will be considerably reduced as transmitted to the composition roll. However, this construction simply indicates the fact that I recognize the necessity for suitable speed reducing mechanism which may be of any desired character or construction that mechanical skill or ingenuity may suggest or dictate.

As illustrated in the drawing, the motor frame is equipped with wheels 31 which are journaled in lugs 32, with which the motor frame is provided, these lugs being secured by means of suitable fastening devices 33. Hence, the wheels or casters 31 of the motor will provide in coöperation with the composition roll 14 a suitable support for the machine as it is moved over the surface of the wall or area to be cleaned.

As illustrated in the drawing, I provide two leaf springs 34 which are secured to the motor frame at one extremity, as shown at 35, and whose opposite extremities slidably engage the respective side members 8 of the frame, as shown at 36. These springs place an inward tension upon the portions of the frame members 8 forward of the motor shaft, whereby the composition roll 14 is caused to engage the surface to be cleaned with sufficient frictional contact for cleaning purposes. The springs 34 are so arranged that the stress exerted thereby upon the composition roll is in the direction of the surface to be cleaned. When, however, the machine is employed on ceilings where it would really be inverted from the position illustrated in Fig. 1, for instance, under which condition there would be a tendency for the composition roll 14 and its connections to move away from the surface to be cleaned by virtue of their weight, it may be necessary or at least advisable to employ an auxiliary spring 37 which is connected with the stationary part of the motor frame, as shown at 38, and whose opposite extremity is connected as shown at 39 with a projection 40 with which the transverse part 9 of the frame 7 is provided, the spring 37 being normally under tension, whereby it acts to force the composition roll 14 against the surface to be cleaned. This may be necessary on ceilings, as heretofore indicated, and it may be employed if desired at all times in case any difficulty should be experienced in getting enough strength in the leaf springs 34 to perform the required function.

Where a relatively hard composition roll is employed, as kneaded rubber or soft rubber of such consistency that there would be a tendency for the dirt to move from the cleaned surface to penetrate the rubber and remain therein, I may employ an abrading element 41 which consists of a block of abrasive material 42 which is mounted upon a transverse plate 43 whose opposite extremities merge into rearwardly extending arms 44 provided with ears 45 which project

through slots 46 formed in the members 8 of the frame 7. The outer extremities of these ears 45 are connected with ears 47 secured to the forward portion of the members 8, by means of spiral springs 48 which are under tension to force the abrasive material against the curved surface of the composition roller in the rear, the springs 48 being of such range as to maintain the abrasive substance under tension and in contact with the composition roller until the latter is completely worn away by use. In this event the frame 7 and the roller 12 will assume the position shown by dotted lines in Fig. 6 with the abrasive material of the element 41 in contact with the surface of the roller 12, the composition roll being entirely removed.

This machine is adapted to be manipulated through the medium of a handle 49 which as shown in the drawing consists of two members 50 and 51 jointed at 52, the opposite extremity of the member 51 being connected with the frame of the motor, as shown at 53, both of these joints being adjustable for the purpose of changing the angle of the handle as may be found necessary or convenient. Each joint has a wing nut 54 as an element which when tightened makes a stiff or rigid joint, but which when loosened allows pivotal adjustment.

From the foregoing description, the use and operation of my improved machine for cleaning decorated walls or other like surfaces will be readily understood. Assuming that the construction is assembled, as illustrated in Figs. 1, 2, 5 and 6, the machine is moved over the surface to be cleaned in such a manner that the compositon roll 14 acts upon the said surface with the necessary pressure to completely remove the soil or dirt thereon, thus giving the decorated wall, for instance, the appearance of new work, the composition roll being rotated through the instrumentality of the motor with the required speed for the purpose, the debris or dirt combined with the particles of the roll which are worn away during the operation being removed from the surface through the medium of a brush 55, which is mounted upon a stationary part of the machine in such a manner as to engage the surface over the area acted on by the roll 14. As shown in the drawing, this brush is adjustably mounted upon lugs 32 of the motor, one lug on each side, and adjustably secured in place by fastening devices 56 which pass through slots 57 formed in arms 58 of the brush head. In the event the brush becomes worn, it may be necessary to adjust it, or under some conditions it may be necessary to adjust the brush to cause it to engage the cleaned surface with more or less pressure.

In Figs. 8 and 9 of the drawing, I have illustrated a form of construction in which the roller 12 and the composition roll mounted thereon are actuated from traction wheels 59 which are fast on an axle 60, the latter being connected with stub shafts 26 of the roller 12, by belts 70 which connect pulleys 65 fast on the shaft 60 with small pulleys 66 fast on the stub axles 26. The shaft 60 is journaled in a main frame or body member 61 which is a tripod construction having two arms 62 extending downwardly and perforated to receive the shaft 60, while another arm 63 extends downwardly and carries a wheel 64 at its lower extremity. This wheel 64 together with the two traction wheels 59 form the support for the machine when in use. The handle is connected with the top of the main frame or body member in substantially the same manner as it is connected with the motor frame in the other form of construction.

Again, in the form of construction shown in Figs. 8 and 9, I have shown two stub axles 76, each being formed hollow and interiorly threaded to receive the reduced threaded end of a metal hub 68 upon which is mounted and made fast an auxiliary wood roller 67 which carries an auxiliary composition roll 69 which is secured to the auxiliary roller in any suitable manner. These auxiliary composition rolls 69 are utilized in getting into the corners of a room when cleaning decorated walls. The threaded connection of the hubs 68 with the hollow stub axles 76 is such that when the auxiliary rollers and their rolls are actuated during the operation of the machine, there will be a tendency to tighten the hubs in place rather than unscrew them, but it must be understood, however, that any other suitable means for connecting the auxiliary hubs with the stub axles 76 may be employed, since the invention is not limited to details of construction in connection with this or any other feature, except as defined by the appended claims.

In using the form of construction shown in Figs. 8 and 9 it will be understood that as the machine is moved over the wall the traction wheels 59 will be rotated, and this rotary action transmitted to the roller 12, the auxiliary rollers 67, together with the main composition roll 14 and the two auxiliary composition rolls 69 in case two of these auxiliary rolls should be employed.

The auxiliary rolls 67 are readily detachable by unscrewing the hubs 68 from the stub axles 26 as will be readily understood.

Having thus described my invention, what I claim is:

1. A disintegrating composition roll of substantial length for cleaning decorated walls and like surfaces, said roll being adapted to wear away gradually and circumferentially when rotated in contact with the surface to be cleaned.

2. A device for cleaning decorated walls and the like, comprising a frame adapted to be moved over the surface to be cleaned, a disintegrating roll of substantial length rotatably mounted thereon, arranged to engage the said surface and adapted to wear away gradually and circumferentially during the cleaning act, and means for imparting rotary movement to the roll.

3. A device for cleaning decorated walls and the like, comprising a frame adapted to be moved over the surface to be cleaned, a cylindrical roll of substantial length rotatably mounted thereon, arranged to engage the said surface and adapted to wear away gradually and circumferentially during the cleaning act, a motor mounted to move with the frame, and an operative connection between the roll and the motor.

4. A device for cleaning decorated walls and the like, comprising a portable frame, a cylindrical roll of substantial length rotatably mounted on the frame and having its axis parallel with the surface to be cleaned, the roll being arranged to engage said surface throughout its entire length, and of such composition that it will wear away gradually and circumferentially during the cleaning act.

5. A device for cleaning decorated walls and the like, comprising a portable frame, a cylindrical cleaning roll of substantial length rotatably mounted on the frame and so arranged that its axis is parallel with the surface to be cleaned when the device is in use, the roll being of such composition that it will wear away gradually and circumferentially during the cleaning act, and a motor connected in operative relation with the roll and movable with the frame.

6. A portable machine for cleaning decorated walls and the like comprising a frame, a disintegrating roll of substantial length rotatably mounted thereon and adapted to wear away gradually and circumferentially during the cleaning act, means acting on the roll to place it under stress in the direction of the surface to be cleaned and means connected in operative relation with the roll for actuating the latter.

7. A portable machine for cleaning decorated walls and the like comprising a frame, a disintegrating roll of substantial length journaled thereon and adapted to wear away gradually and circumferentially during the cleaning act, means for imparting rotary movement to the roll and an abrading device mounted on the frame and engaging the roll.

8. A portable machine for cleaning decorated walls and the like comprising a frame, a disintegrating roll of substantial length journaled thereon and adapted to wear away gradually and circumferentially during the cleaning act, means for imparting rotary movement to the roll, and an abrading device mounted on the frame, engaging the roll and under stress to maintain such engagement as the roll wears away.

9. A device for cleaning decorated walls and the like comprising a frame adapted to be moved over the surface to be cleaned, a disintegrating roll of substantial length rotatably mounted thereon arranged to engage the said surface and adapted to wear away gradually and circumferentially during the cleaning act, a coöperating auxiliary disintegrating roll member coaxially mounted at the end of the main roll, and means for imparting rotary movement of the main roll and its auxiliary member.

10. A device for cleaning decorated walls and the like comprising a frame adapted to be moved over the surface to be cleaned, a disintegrating roll of substantial length rotatably mounted thereon, arranged to engage the said surface and adapted to wear away gradually and circumferentially during the cleaning act, coöperating auxiliary disintegrating roll members coaxially mounted at the respective ends of the main roll, and means for imparting rotary movement to the main roll and its auxiliary members.

In testimony whereof I affix my signature.

HALLA F. GRAY.