

Jan. 6, 1925.

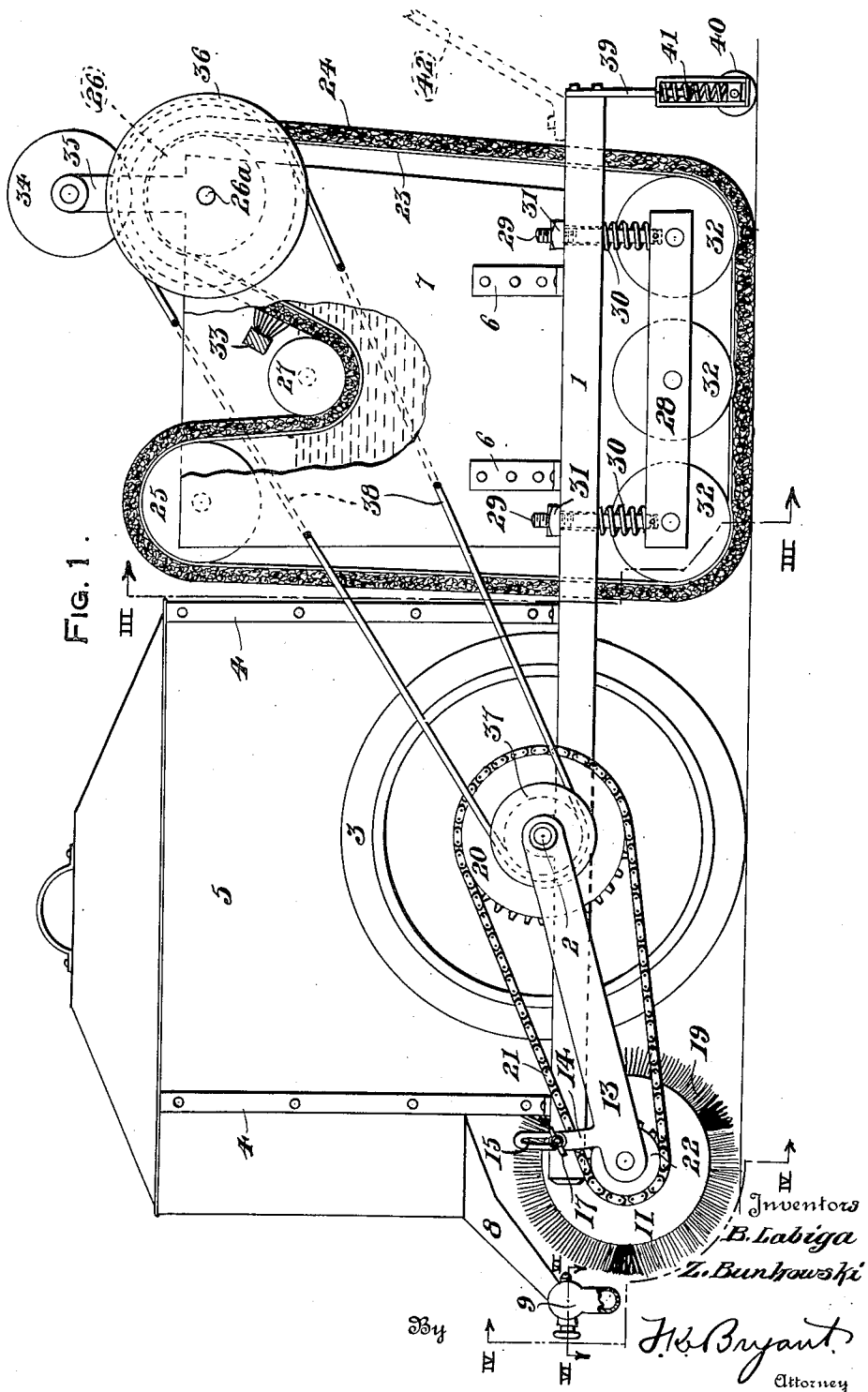
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B. LABIGÀ ET AL.

FLOOR SCRUBBING MACHINE

Filed June 14, 1922

3 Sheets-Sheet 1



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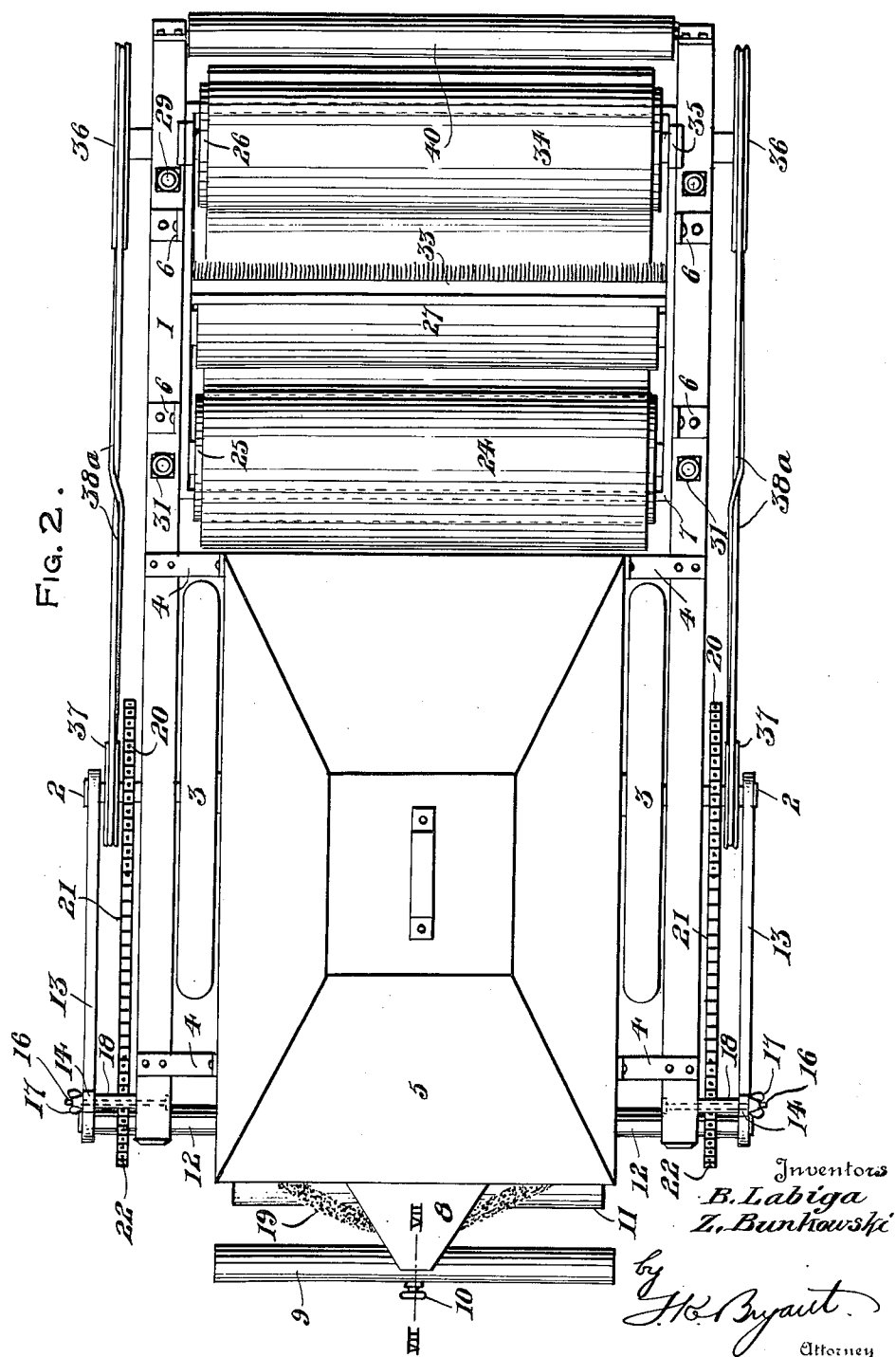
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FIG. 4.

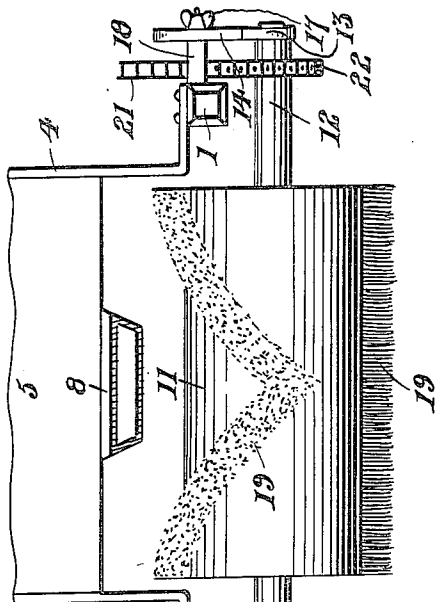


FIG. 3.

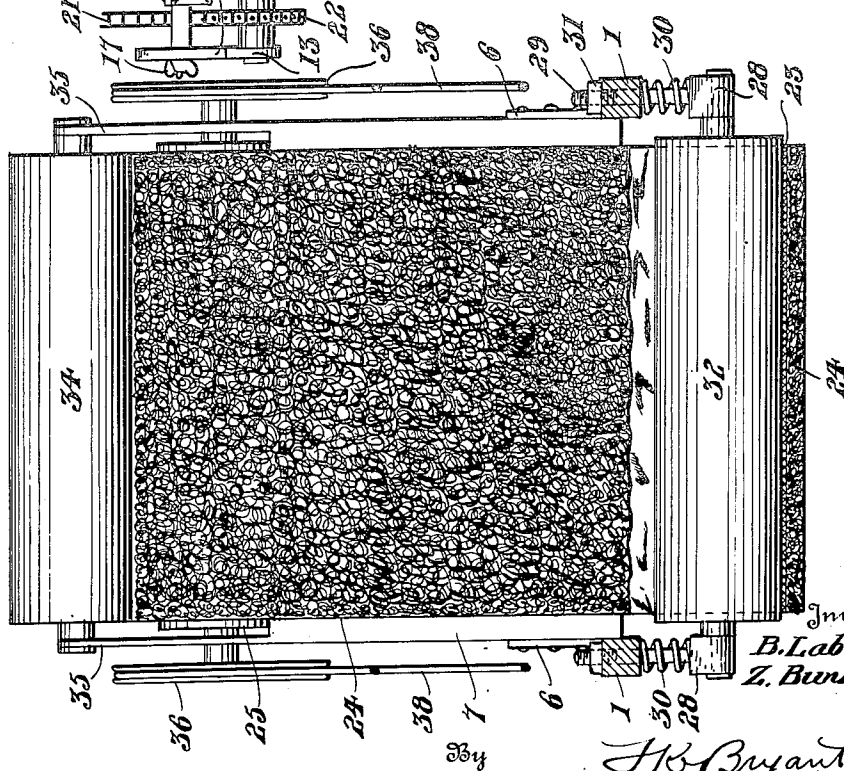


FIG. 6.

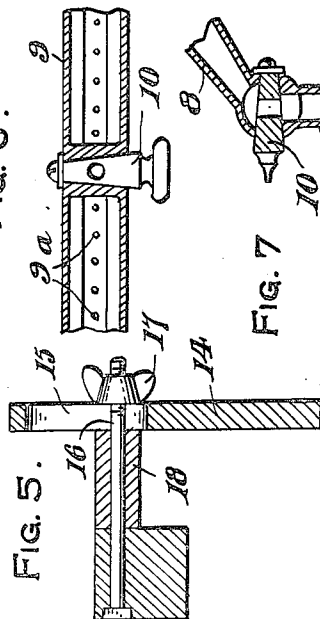
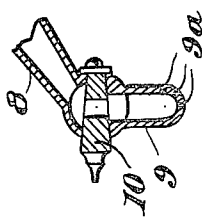


FIG. 7.



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UNITED STATES PATENT OFFICE.

BOLESŁAW LABIGA AND ZYGMUNT BUNKOWSKI, OF STEUBENVILLE, OHIO.

FLOOR-SCRUBBING MACHINE.

Application filed June 14, 1922. Serial No. 568,239.

To all whom it may concern:

Be it known that we, BOLESŁAW LABIGA and ZYGMUNT BUNKOWSKI, citizens of Poland, residing at Steubenville, in the county of Jefferson and State of Ohio, have invented certain new and useful Improvements in Floor-Scrubbing Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in floor scrubbing machines and embodies in the construction thereof, a forwardly positioned water spray device with a rotary brush disposed rearwardly of the spray, and a floor mopping and drying apparatus positioned rearwardly of the brush.

The primary object of the invention resides in the provision of a floor scrubbing machine wherein a machine frame supporting a tank containing soapy water or other detergent fluid has a valve controlled spray device associated therewith for spraying the cleaning fluid upon the floor forwardly of a rotatably mounted scrubbing brush that is driven from supporting wheels for the machine frame, the brush being supported upon adjustably mounted arms for varying the position thereof relative to the floor.

The invention further embodies in a floor scrubbing machine of the type above set forth, the provision of a fluid receptacle supported upon the rear end of the machine frame with a roller guided endless belt of absorbent material such as sponge, felt or rubber with a straight section of the belt presented for rubbing contact with the floor with one of the guide pulleys or rolls for the belt positioned within the tank for directing the belt through a cleansing fluid such as clear warm water for cleaning the belt during the operation of the machine.

With the above general objects in view and others that will appear as the nature of the invention is better understood, the same consists of the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings, wherein like reference characters designate corresponding parts throughout the several views,

Figure 1 is a side elevational view, partly broken away of a floor scrubbing machine constructed in accordance with the present invention showing the forwardly positioned cleaning fluid spraying device, the rotatably

mounted scrubbing brush, the driving means therefor and the endless belt of absorbent material for mopping or drying the floor and the tank of cleaning fluid for the mopping belt,

Figure 2 is a top plan view of the machine showing the operating belt and chains for the movable parts thereof, the operating belt being illustrated as caused to effect a reverse movement of the endless mopping belt,

Figure 3 is a vertical cross sectional view taken on line III—III of Fig. 1 showing the resilient mounting for the guide rollers for the absorbing belt adjacent the floor line,

Figure 4 is a detail sectional view taken on line IV—IV of Fig. 1 showing the V-shaped brush elements upon the brush roller,

Figure 5 is a detail sectional view showing the adjustable mounting for the side arms supporting the brush roller,

Figure 6 is a detail sectional view taken on line VI—VI of Fig. 1 showing the perforated spray pipe and the controlling valve therefor, and

Figure 7 is a detail sectional view taken on line VII—VII of Fig. 2.

Referring more in detail to the accompanying drawings, and particularly to Figs. 1 and 2 there is illustrated a floor scrubbing machine embodying a frame composed of side bars 1 that are connected by a forwardly positioned axle 2 that supports the floor engaging wheels 3. Angle brackets 4 carried by the side rails or bars 1 adjacent the forward end of the machine frame support a receptacle 5 containing soapy water or another detergent fluid. The rear end of the side bars 1 are braced through the medium of angle brackets 6 carried by said side bars and supporting a receptacle 7 containing warm water or another cleaning fluid for a mopping belt associated therewith.

A forwardly positioned spray device is associated with the receptacle 5 and includes a discharge spout 8 communicating with a transversely disposed spray pipe 9 carried by the forward end thereof, the spray pipe 9 having discharge orifices 9^a provided therein while a controlling valve 10 disposed in the spray pipe 9 regulates the discharge of cleaning fluid therefrom, as will at once be obvious from an inspection of Figs. 6 and 7.

A rotatably mounted scrubbing brush is disposed adjacent the forward ends of the side bars 1, and rearwardly of the spray pipe 9, the brush embodying a roller or drum

11 carried by a shaft 12 that is journaled at its ends in the forward ends of bracket arms 13, the rear ends of the bracket arms being rotatably supported upon the axle 2, as clearly shown in Figs. 1 and 2. To regulate the position of the brush drum 11 relative to the floor line, attention being particularly called to Figs. 1 and 5, it will be noted that the forward end of the bracket arms 13, each carry an angle leg 14 slotted adjacent the upper end thereof as at 15 through which a bolt 16 carried by the forward ends of the adjacent side bar 1 extends with a thumb nut 17 threaded upon the outer end of said bolt for clamping the bracket arm and brush drum associated therewith in the desired position, a spacing collar 18 being mounted upon the bolt intermediate the side bar 1 and the arm extensions 14 to properly position the forward ends of the bracket arms. The brush devices associated with the drum 11 and indicated by the reference numeral 19 are of V-shaped formation as illustrated in Figs. 2 and 4.

The operating mechanism for the brush drum 11 includes a sprocket wheel 20 secured to each end of the axle 2 adjacent the outer side of each side bar 1, a sprocket chain 21 passing over said sprocket wheel 20, and also traversing a sprocket wheel 22 fixed to the shaft 12 supporting the drum 11 as clearly illustrated.

An endless belt embodying a fabric backing 23, and working face 24 of absorbent material, such as sponge, rubber or felt is associated with the tank 7 and passes over the drums 25 and 26 journaled adjacent the forward and rearward upper edges of the receptacle 7, while a drum 27 journaled within the receptacle below the water line therein, as indicated in Fig. 1 has the belt passed therebeneath to cause the belt in its endless travel to be immersed in the fluid within said tank. As shown more clearly in Figs. 1 and 3, side bars 28 carry perpendicularly projecting screw bolts 29 adjacent each end thereof that pass upwardly through openings in the adjacent side bars 1, a coil spring 30 surrounding each bolt between the bar 28 and side bar 1 with an adjusting nut 31 controlling the tension thereof. Three alined rollers 32 are journaled in the side bars 28 as shown in Fig. 1 for engagement with the fabric lining 23 of the endless belt to cause the same to travel in a line parallel with the floor, the tensioned screw bolts 29 holding the bolt into frictional engagement with the floor. As shown in Figs. 1 and 2, a brush 33 extends between the side walls of the tank 7 with the bristles of the brush engaging the working surface 24 of the belt for removing dirt and other refuse clinging thereto that is removed from the floor. As shown more clearly in Figs. 1 and 2, a roller 34 is journaled in perpendicular brackets 35 carried

by the rear upper edges of the tank 7 and is disposed above the roller 26 for engagement with the endless belt passing over the roller 26 to squeeze therefrom excess moisture and cause the same to flow into the tank 7.

The operating mechanism for the endless belt embodies a pulley 36 fixed to the shaft 26^a supporting the roller 26, while a pulley 37 is fixed to the axle 2, a belt 38 passing over the pulleys 36 and 37 for transmitting rotary motion from the axle 2, to the roller shaft 26^a. As shown in Fig. 1, each rear end of the side bars 1 carries a hanger 39 bifurcated at its lower end for receiving a block upon each end of a floor roller 40, each block being tensioned by the spring 41 for providing a rear bearing for the rear end of the machine frame in addition to the spaced lower section of the endless belt engaged by the alined rollers 32. A handle frame 42 is secured to the rear end of the machine frame for operating the same.

From the above detail description of the device, it is believed that the construction and operation thereof will be readily apparent, it being noted that the cleansing fluid contained in the tank 5 is delivered through the spout 8 to the spray pipe 9, the discharge from the pipe being controlled by the valve 10. During the forward movement of the machine, the floor wheels 3 rotate the axle 1 and through the chain and sprocket mechanism above described, rotary motion is transmitted to the brush drum 11, the brush thoroughly scrubbing the surface of the floor. Simultaneously with this movement, the endless belt associated with the rearwardly positioned tank 7 in passing over the guide rollers above described has a portion thereof alined with the floor and guided by the roller 32 as clearly shown in Fig. 1, the working surface 24 of the belt being of sponge, rubber or other absorbent material for gathering excess moisture from the floor as well as all dirt. The endless belt being driven by the pulley and belt connection with the axle 2, the belt passes upwardly at the rear side of the tank 7 and over the drum or roller 26, to be engaged by the roller 34 for removing excess moisture therefrom, the belt then being directed by the pulley 27 into a cleansing fluid in the tank 7 to be engaged by the brush 33 for removing excess dirt therefrom and also partially saturating the belt for presenting a substantially clean surface for engagement with the floor. If desired, the belt 38 may be crossed as at 38^a, as shown in Fig. 2, which will cause the reverse travel of the endless belt 24 for causing the excess moisture to be squeezed from the belt surface 24 before being presented for engagement with the floor.

While there is herein shown and described the preferred embodiment of the present in-

vention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

5 What is claimed as new is:—

1. In a machine of the class described, a supporting frame, a tank supported on the frame, tensioned rollers depending from the frame, a series of guide rollers supported on the tank with one of the guide rollers im-
10 mersed in liquid in the tank, an endless mop passing over the tensioned and guide rollers, the mounting for the tensioned rollers in-
15 cluding bars in which the rollers are jour-
naled, bolts connected to the bars and slid-
ably extending upwardly through the sup-
porting frame and coil springs surrounding
the bolts between the bars and frame.

2. In a machine of the class described, a
20 supporting frame, floor engaging wheels ad-

jacent the front end of the frame, tensioned floor engaging rollers carried by the rear end of the frame, a tank supported on the frame, tensioned rollers depending from the frame, a series of guide rollers supported on
25 the tank with one of the guide rollers im-
mersed in liquid in the tank, an endless mop passing over the tensioned and guide rollers, a squeezing roller associated with one of the guide rollers, the mounting for the tensioned
30 rollers including bars in which the rollers
are journaled, bolts connected to the bars and slidably extending upwardly through the supporting frame, and coil springs sur-
35 rounding the bolts between the bars and frame.

In testimony whereof we affix our signatures.

BOLESŁAW LABIGA.
ZYGMUNT BUNKOWSKI.