June 7, 1932. A. S. KHANZADIAN 1,861,476

RUG CLEANING MACHINE

Filed April 17, 1929 2 Sheets-Sheet 1

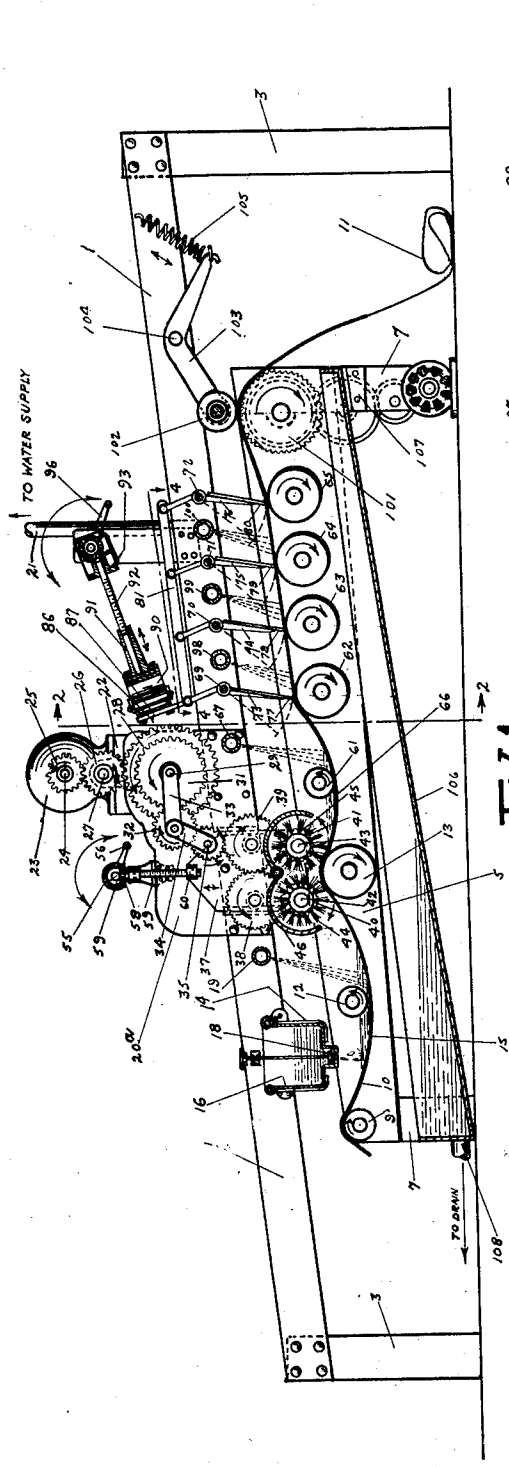


Fig. 1.

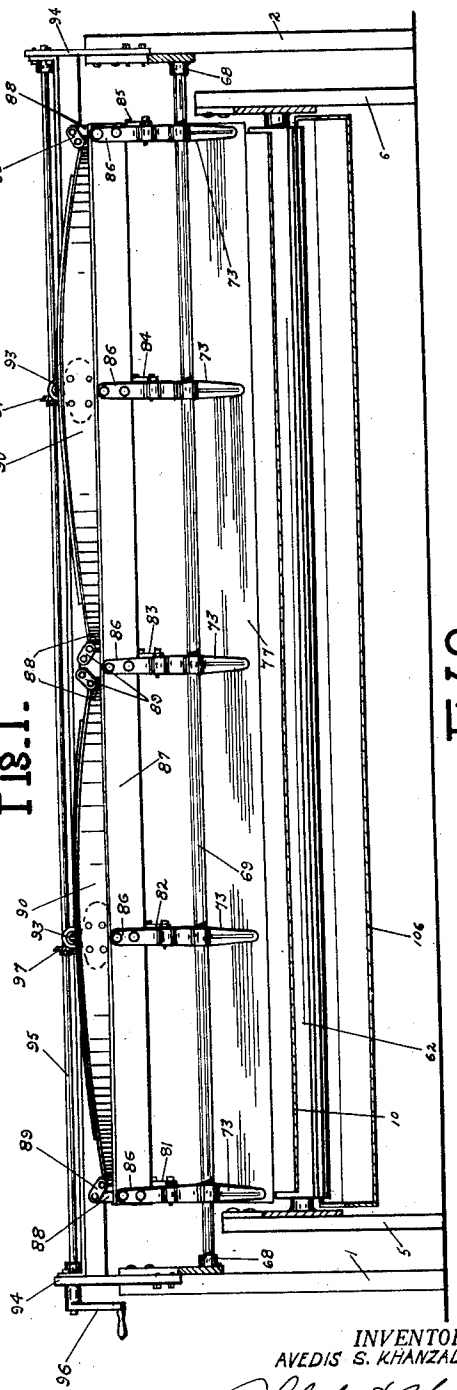


Fig. 2.

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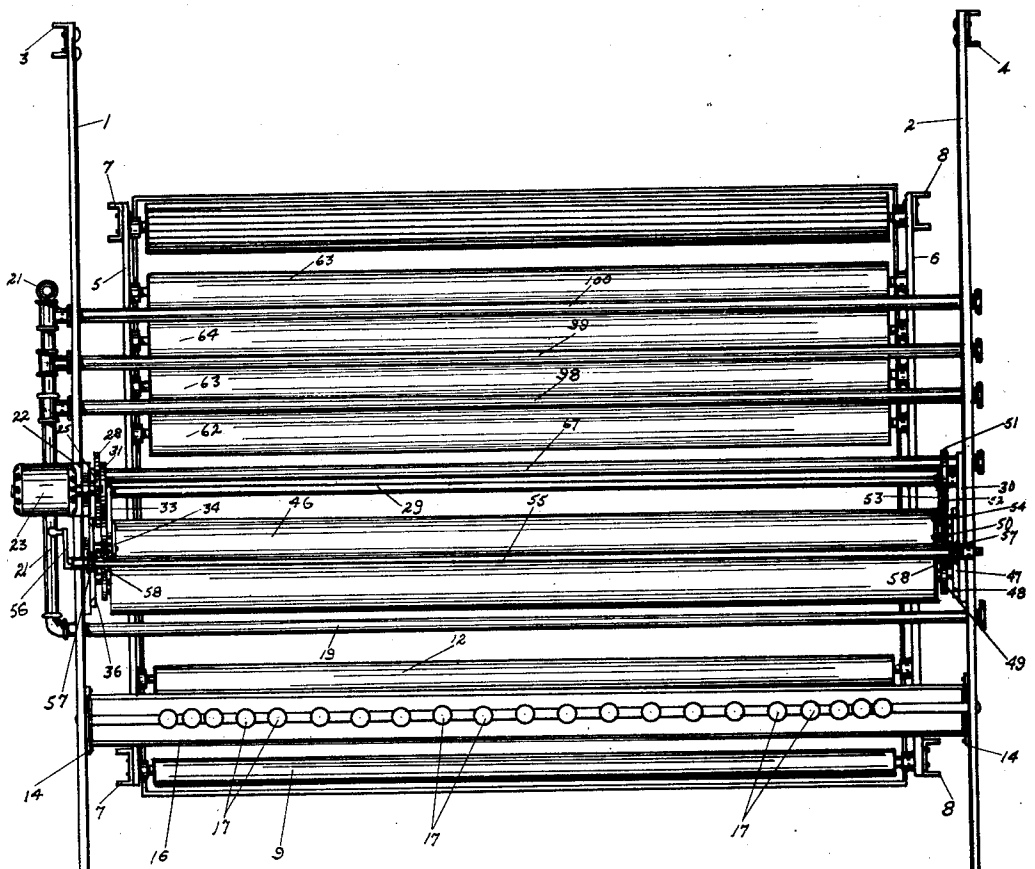


Fig. 3.

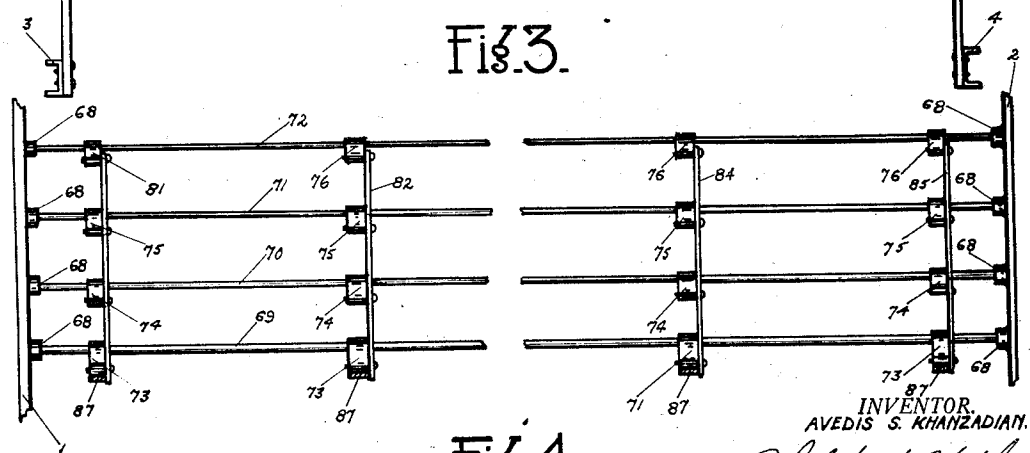


Fig. 4.

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1,861,476

UNITED STATES PATENT OFFICE

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RUG CLEANING MACHINE

Application filed April 17, 1929. Serial No. 355,696.

My invention pertains to a rug cleaning machine and particularly to an apparatus through which a rug is adapted to be passed and while passing therethrough is thoroughly scrubbed, rinsed and the surplus water removed therefrom.

The principal object of my invention is to provide a machine of this character wherein the rug is first thoroughly soaked with soap and water or other suitable cleaning materials, then scrubbed and then alternately rinsed and scraped a plurality of times.

Another object lies in the provision of a novel adjustable scrubbing brush.

A still further object lies in the provision of a novel type of scraping and rinsing mechanism.

A still further object lies in the provision of means whereby a rug wider than the machine may be first washed along one edge and then along the opposite edge without interference from the working parts of the machine.

Other objects and advantages in details of construction and operation will be apparent as the description proceeds, reference being had to the figures of the drawings wherein like reference numerals indicate like parts.

In the drawings:—

Figure 1 is a side view partly in section and with one side of the apparatus removed for clearness.

Figure 2 is a cross sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a top plan view of the machine with certain parts removed for clearness.

Figure 4 is a detail plan view of the scraper element taken on the line 4—4 of Figure 1.

Two outside rails 1 and 2 are supported at their ends by means of the posts 3 and 4. These rails slope downwardly toward the front of the machine as shown in Figure 1. Mounted between the rails 1 and 2 and below the same are a second pair of rails 5 and 6 supported at their ends by the posts 7 and 8. These four rails comprise the supporting structure for the mechanism to be described.

Extending across between the inner rails 5 and 6, there is a series of rollers over which the carpet passes and two guide rollers above the carpet arranged as follows. Adjacent the front end of the machine is a roller 9 suitably journaled in bearings mounted on said rails. It is over this roller, which is free to rotate, that the rug to be cleaned, such as indicated at 10, is first fed. There is preferably provided a leader strip 11 of canvas or the like which may be suitably attached to one end of the rug for drawing the latter over the roller 9 and through the cleaning mechanism to be described.

Spaced somewhat back of the roller 9 is located a second roller 12 also journaled on the rails 5 and 6 and extending between the same, under which the rug 10 is adapted to pass. Spaced still further back and extending between the rails 5 and 6 is a third roller 13 larger than the rollers 9 and 12, over which the rug 10 is led. It will be observed with reference to Figure 1 that with this arrangement of the rollers just described, in connection with the rug 10, that is, with the rug passing under the roller 12 and over the rollers 9 and 13, there is produced a depression or pocket in the rug between the rollers 9 and 13. Suitably suspended as by brackets 14 secured to the outer rails 1 and 2 and extending across between them directly above the pocket 15 thus formed in the rug, is a trough or receptacle 16 provided in its bottom with openings 17 controlled by valves 18. This receptacle 16 is adapted to contain a soap solution or other cleaning material which may be fed through the openings 17 into the pocket 15 of the rug. The amount of cleaning material thus fed under the rug is of course regulated by the valves 18.

Also mounted between the outer rails 1 and 2 directly back of the soap receptacle 16 is a water pipe 19 extending between the rails 1 and 2 and overlying the pocket 15. This water pipe 19 has connection at one end with a water supply pipe 21 which may be connected to any suitable source of supply and through which water is continuously pumped when the machine is in operation. The water pipe 19 is provided at its lower periphery

with openings through which the water may flow into the pocket 15 of the rug. This pocket formation serves to retain a considerable amount of water on the rug at this point, the water of course mixing with the soap or other cleaning material. Obviously therefore, at this point, the rug is thoroughly soaked with a cleaning solution.

As the rug passes upwardly and over the roller 13, a bend is naturally formed by the roller 13 serving to open up or spread the nap of the rug at this point. This is where the scrubbing action takes place and the mechanism therefor will now be described.

Suitably secured to the rail 1 is a supporting plate 20, the upper end of which is provided with a shelf 22 upon which is mounted an electric motor 23 or other suitable source of power. Mounted on the armature shaft 24 of the motor is a gear 25 meshing with a gear 26 which is mounted at a stub shaft 27 suitably journaled on the shelf 22. This gear 26 meshes with a relatively large gear 28 mounted on a shaft 29 which shaft extends across the machine between the supporting plate 20^a and a similar supporting plate 30 mounted on the rail 2. Also mounted on the shaft 29 directly adjacent the gear 28 is a gear 31 meshing with a relatively small gear 32 journaled centrally on an arm 33 pivoted at one end on the shaft 29. The opposite end of this arm 33 has an extension 34 turned downwardly and has journaled at its lower end a relatively small gear 35.

Mounted for vertical sliding movement on the supporting plate 20, as by means of a dove tail connection indicated at 36 in Figure 3, is an adjusting plate 37 upon which are journaled intermeshing gears 38 and 39, the latter gear 39 meshing with the gear 35. Also journaled on the adjusting plate 37 are the gears 40 and 41, the former meshing with the gear 38 and the latter with the gear 39. These gears 40 and 41 are secured upon shafts 42 and 43 extending across the machine from the adjusting plate 37. Also secured to these shafts 42 and 43 are brushes 44 and 45 extending across the machine. A splash guard 46 is secured at one end to the adjusting plate 37 directly above the brushes 44 and 45 and extends across the machine thereof.

Mounted upon the supporting plate 30 on the rail directly opposite the supporting plate 20 on the rail 1, is a second adjusting plate 47 likewise vertically slidable on the dove tail grooves 48 on the supporting plate 30. This adjusting plate 47 has journaled thereon meshing gears 49 and 50 corresponding to the gears 38 and 39 on the opposite adjusting plate 37. The brush shafts 42 and 43 are likewise provided at this side of the machine with gears (not shown), identical with the gears 40 and 41 on the opposite side, said shafts 42 and 43 of course being journaled in the adjusting plate 47. The shaft 29 also carries adjacent the supporting plate 30, a gear 51 meshing with a gear 52 journaled on an arm 53 identical with the arm 33 on the opposite side of the machine. This arm 53 carries at its lower end a gear 54 similar to the gear 35, which meshes with the gear 50. The details of this gearing arrangement on the supporting plate 30 and adjusting plate 47 have not been shown in detail inasmuch as they are duplicate parts of the structure shown in Figure 1. Suffice it to say that operation of the motor 23 results in driving the shaft 29 through the gears 25, 26 and 28, and consequently through the medium of the gears 31 and 51 and the intermediate gearing, drives the brushes 44 and 45 in opposite directions at relatively high speed.

It will be noted that the brushes 44 and 45 act upon the rug at the point where it is bent upwardly and where the scrubbing operation is most effective, while the rug is still soaked with the cleaning solution.

Means are provided for raising or lowering the adjusting plates 37 and 47 carrying the brushes 44 and 45 and their attendant parts. This means comprises a shaft 55 extending across the machine and provided at one end with a crank 56. Mounted upon each end of the shaft 55 are bevelled gears 57 meshing with similar gears 58 mounted on the upper ends of screw threaded shafts 59 engaging at their lower ends with threaded bosses 60 carried at the upper ends of the adjusting plates 37 and 47. Therefore upon rotation of the crank 56, the screw shafts 59 will be rotated and acting upon the bosses 60 will raise or lower the adjusting plates 37 and 47 and consequently the brushes 44 and 45. Thus the scrubbing brushes may be raised to permit the insertion of a rug between them and the roller 13 and likewise the pressure of the brushes on the rug during the scrubbing operation is adjustable.

Spaced slightly to the rear of roller 13 and extending across between the rails 5 and 6, is another roller 61 beneath which the rug 10 is carried after leaving the scrubbing brushes. The rug is then carried upwardly to pass over the top of a series of rollers 62, 63, 64 and 65 for a purpose to be described. It will be noted that in carrying the rug under the roller 61 and up over the adjacent roller 62, a second pocket 66 is formed in the rug just after leaving the scrubbing brushes. Above this pocket and extending across between the rails 1 and 2 is a water pipe 67 connected at one end with the water pipe 21 and provided at its lower periphery with openings to permit the water to flow downwardly onto the rug 10 at the pocket 66 whereby the rug is rinsed at this point just after having been scrubbed with the cleaning solution.

Journaled in the bearings 68 on the rails 1 and 2 and extending across the machine between such rails directly above the rollers

62, 63, 64 and 65 are shafts 69, 70, 71 and 72. Secured to these shafts at spaced intervals across the machine are the rocker arms 73, 74, 75 and 76 respectively, there being a plurality of such arms on each shaft. These rocker arms extend both above and below the shafts and secured to the lower extending portions thereof are the scrapers 77, 78, 79 and 80, the lower ends of which are adapted to engage with the rug 10 as it passes over each of the rollers 62, 63, 64 and 65. The upper extending ends of the arms 73, 74, 75 and 76 are connected by means of links 81, 82, 83, 84 and 85, extending at right angles to the rocker arms and scrapers and serving to connect all of them.

Means are provided for adjusting the rocker arms on their pivots whereby to vary the amount of pressure of the scrapers against the rug. This means will now be described. The front rocker arms 73 are provided with an additional upper extension 86 to which is secured a rigid strip 87 extending across the machine the length of the scrapers. This strip is provided at spaced points with upstanding ears 88 to which are pivoted spring shackles 89 secured to which are the leaf springs 90 through which a resilient pressure may be exerted upon the strip 87 and consequently upon the scrapers. Suitably secured centrally of the springs 90 and projecting outwardly therefrom and at right angles thereto are the threaded bosses 91 adapted to receive the threaded shafts 92. The opposite ends of these shafts 92 are provided with bevelled gears 93. Mounted upon the rails 1 and 2 are upstanding brackets 94 providing bearings for a shaft 95 extending across the machine between the rails 1 and 2 and provided at one end with the crank 96. Secured to the shaft 95 in position to mesh with the bevelled gears 93, are bevelled gears 97 whereby upon rotation of the shaft 95, the threaded shafts 92 will be rotated causing the threaded bosses 91 to ride forwardly or rearwardly on such shafts and correspondingly increase or reduce the tension or pressure of the scrapers on the rug. The springs 90 afford a cushion for such pressure so as to take care of any roughness or unevenness which might be pressed against the scrapers by the rug.

Mounted upon the rails 1 and 2 and extending across the machine between such rails, directly ahead of the scrapers 74, 75 and 76 are water pipes 98, 99 and 100 respectively. These pipes are connected at one end with the water supply pipe 21 and are provided at their lower periphery with openings to permit fresh rinse water to be directed downwardly onto the rug 10 directly ahead of the scrapers. It will thus be seen that I have provided four distinct rinsing and scraping operations after the rug leaves the scrubbing brushes.

After leaving the last scraper 76 and roller 65, the rug 10 passes over an enlarged roller 101 journaled at either end in suitable bearings mounted on the rails 5 and 6. The periphery of this roller 101 is corrugated so as to provide a gripping surface for the rug and directly above this roller 101 is mounted a second roller 102 journaled on the free ends of a pair of crank arms 103 pivoted to the rails 1 and 2 as at 104 and the rear end of such crank arms being normally pulled upwardly by the tension of coil springs 105 anchored at one end to the rails 1 and 2 and at their opposite ends to the crank arms 103. Pressure is therefore exerted on the upper surface of the rug 10 as it passes over the corrugated roller 101 whereby upon rotation of such roller 101, the rug will be drawn through the machine and past the soaping, scrubbing, rinsing and scraping elements just described.

The roller 101 may be driven by any suitable source of power either from the motor 23 or by a separate motor provided for that purpose.

Positioned directly under the machine between the rails 5 and 6 is an inclined catch basin 106, the upper rear end of which may be supported by brackets 107 on the posts 7 and 8 and the lower front of which rests upon the floor or other supporting surface and is provided with a drain pipe 108. This catch basin may therefore be readily removed for cleaning, etc. Obviously, the water or other solution used in cleaning the rug drains either through the rug or off the edge thereof into the catch basin 106.

The operation of my invention is as follows:—The crank 56 is first rotated to raise the adjusting plates 37 and 47 carrying the brushes above the roller 13. The crank 96 is also rotated to rock the scrapers 77, 78, 79 and 80 forwardly to the positions shown in dotted lines in Figure 1 where they are out of contact with the rollers 62, 63, 64 and 65. The leader strip 11 is then threaded through the machine over the roller 101 over rollers 65, 64, 63 and 62, under roller 61, over the roller 13, under the roller 12 and over the roller 9. The rug 10 is then attached in any suitable manner to the end of the leader strip 11 and the leader strip pulled back through the machine until the rug 10 lies under the soap container 16. The cranks 56 and 96 are now again rotated to lower the brushes to brushing position and the scrapers to scraping position. The valves 18 in the soap container are adjusted to permit the desired flow of soap or other cleaning material onto the rug and the water turned on. The motor 23 is started, as is the driving roller 101 whereupon the rug starts to move very slowly through the machine. As before described, the rug 10 is first thoroughly soaked with water and cleaning solution at the pocket 15 and passes beneath the brushes 44 and 45 where the rug is vigorously scrubbed as it

bends upwardly over the roller 13. Leaving the brushes, the rug passes under the roller 61 where it is rinsed with clean water from the pipe 67 and then upwardly over the roller 62 where the scraper 77 engages it and wrings the water therefrom. A second rinsing by water from the pipe 98 now occurs and a second scraping by the scraper 78. The rug is rinsed and scraped twice more as it passes over the rollers 64 and 65 and then over the driving roller 101 after which it may be dried in any suitable manner.

Obviously, changes may be made in details of construction and arrangement of parts without departing from the spirit and scope of my invention. I do not limit myself, therefore, to the exact form herein shown and described other than by the appended claims.

I claim:

1. A rug cleaning machine comprising a series of rollers, means for moving a rug over said rollers, rotatable brushes on said machine for scrubbing said rug, certain of said rollers being spaced apart, guide rollers under which said rug is positioned to form a pair of pockets in said rug, means for feeding a cleaning solution into one of said pockets and rinse water in the other of said pockets, said brushes acting on said rug between said pockets.

2. A rug cleaning machine comprising a series of rollers, means for moving a rug over said rollers, certain of said rollers being spaced apart, guide rollers under which said rug is positioned to form a pair of pockets in said rug, means for feeding a cleaning solution to one of said pockets and rinse water to the other of said pockets, a pair of brushes adjustably engaged with said rug between said pockets for scrubbing the rug and a series of scraper elements engageable with said rug for removing the water therefrom.

3. A rug cleaning machine comprising a series of rollers, means for moving a rug over said rollers, certain of said rollers being spaced apart, guide rollers under which said rug is positioned to form a pair of pockets in said rug, means for feeding a cleaning solution to one of said pockets and rinse water to the other of said pockets, a pair of brushes adjustably engaged with said rug between said pockets for scrubbing the rug and a series of scraper elements engageable with said rug for removing the water therefrom, said scrapers being resiliently and adjustably mounted for engagement with said rug.

4. A rug cleaning machine comprising a series of rollers, means for moving a rug over said rollers, certain of said rollers being spaced apart, guide rollers under which said rug is positioned to form a pair of pockets in said rug, means for feeding a cleaning solution to one of said pockets and rinse water to the other of said pockets, a pair of brushes adjustably engaged with said rug between said pockets for scrubbing the rug and a series of scraper elements engageable with said rug for removing the water therefrom, said scrapers being resiliently and adjustably mounted for engagement with said rug, and means for feeding rinse water to said rug just ahead of each of said scrapers.

In testimony whereof, I affix my signature.

AVEDIS SARKIS KHANZADIAN.