W. F. SERVICE.

PROCESS FOR RENOVATING CAR CUSHIONS.

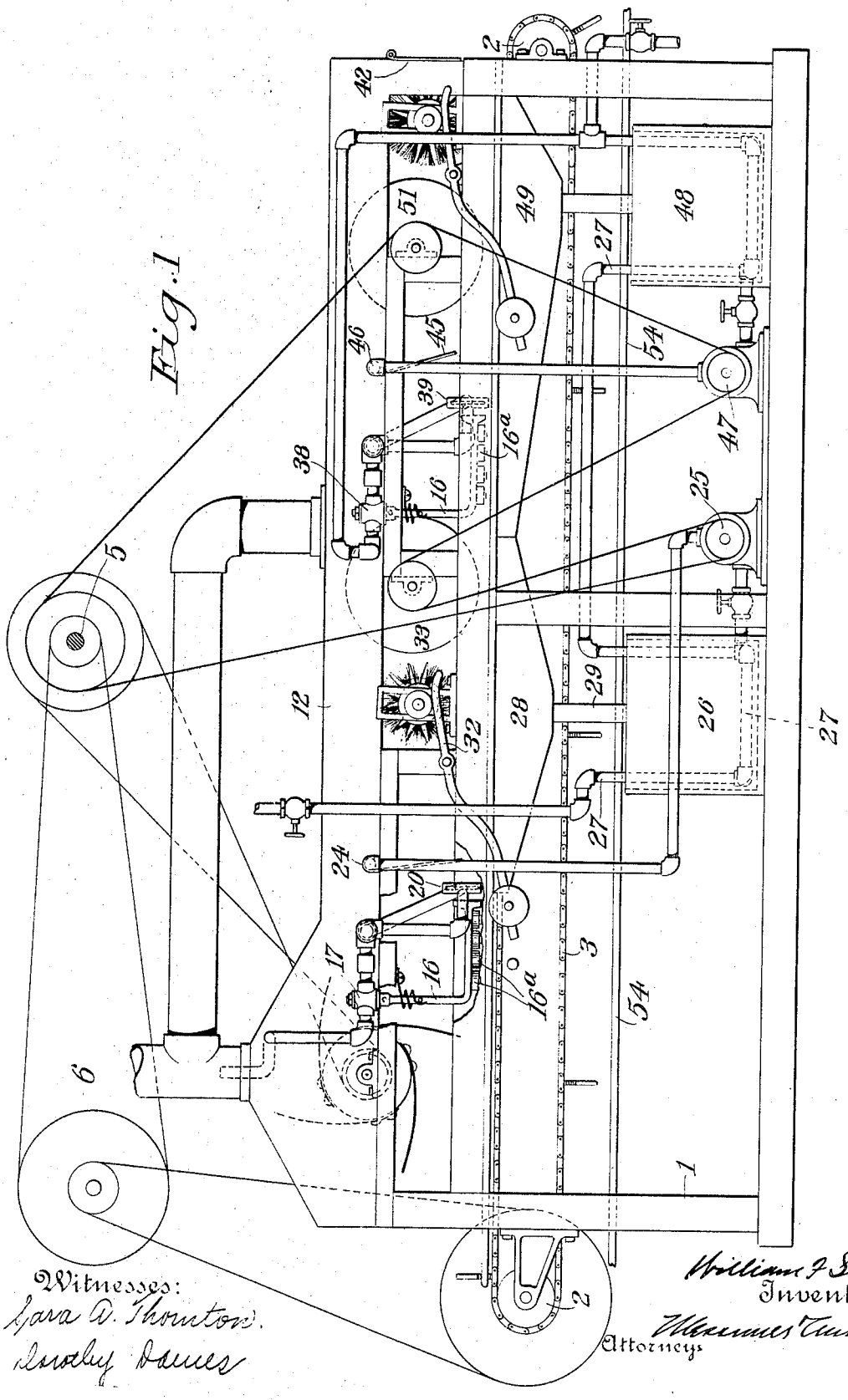
APPLICATION FILED JUNE 24, 1913.

1,219,595.

Patented Mar. 20, 1917.

3 SHEETS—SHEET 1.

Fig. 1



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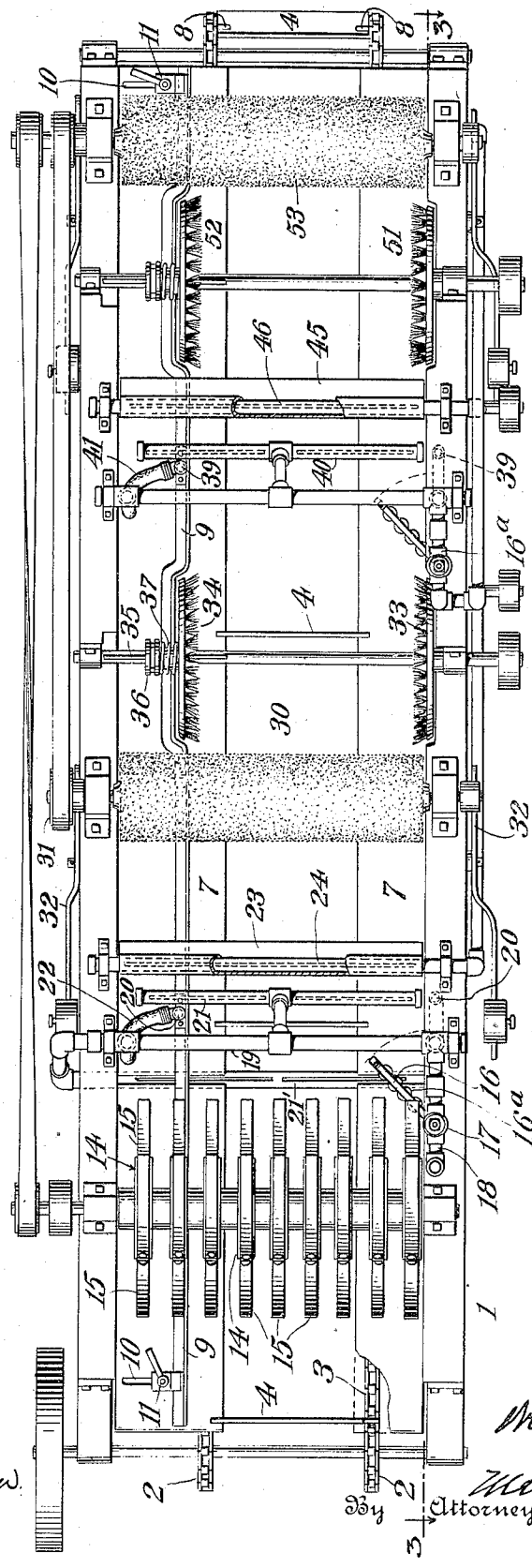
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3 SHEETS—SHEET 2.

Fig. 2



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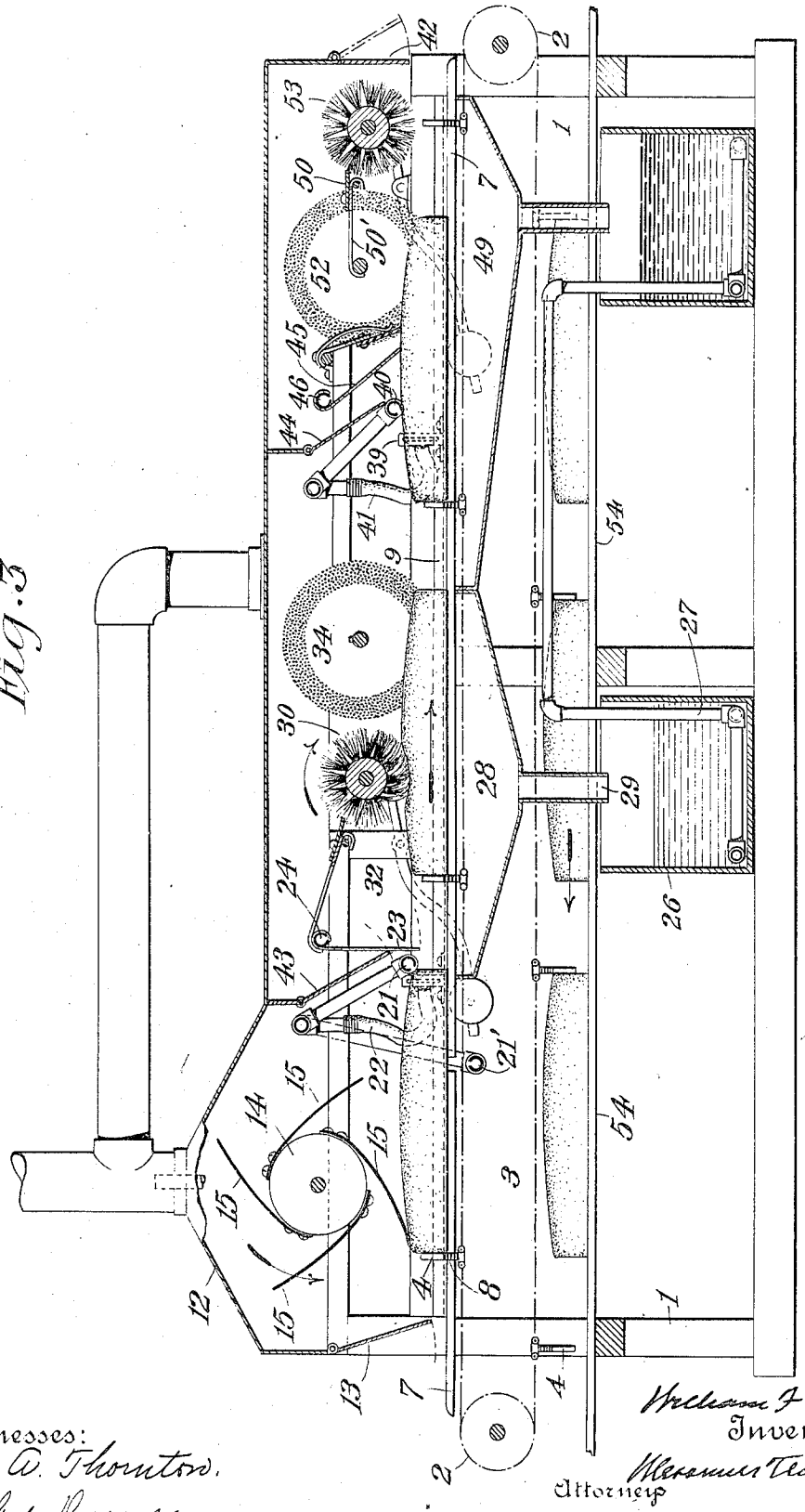
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3 SHEETS—SHEET 3.

Fig. 3



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PROCESS FOR RENOVATING CAR-CUSHIONS.

1,219,595. Specification of Letters Patent. Patented Mar. 20, 1917.

Application filed June 24, 1913. Serial No. 775,513.

To all whom it may concern:

Be it known that I, WILLIAM F. SERVICE, a citizen of the United States, and a resident of Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Processes for Renovating Car-Cushions, of which the following is a specification.

My invention relates to processes for renovating car cushions or the like, including dusting, renovating or scouring, and re-dyeing the cushions.

The primary object of my invention is to prepare an article, such as a railway cushion, and re-dye the same by a practically continuous process, which will cause the dye to be spread evenly and uniformly over the outer surface of the article without penetrating the interior thereof, and which will permit the dye to set speedily and adhere permanently, so that the article will be ready for practically immediate use.

The various other objects of the invention will be more fully set forth in the following description of one manner of carrying out my improved process, together with suitable apparatus for practising the same.

In the treatment of articles, such as car cushions and the like, my improved process consists in first renovating the surface of the article to receive the dye, and then immediately applying the dye thereto in such a manner that it will set quickly and adhere permanently. Preferably the article is first subjected to a cleaning operation, for the purpose of removing dust and other foreign matter which may adhere. The article is then subjected to the action of a renovating fluid, which is preferably heated and supplied in a relatively large quantity directly upon the particular surfaces to be treated, and is then immediately subjected to the action of scrubbing brushes, so that the renovating material will be spread evenly over the surface and then removed. Any of the renovating material which remains is then effectively removed by subjecting the treated surfaces to the action of a blast of steam which carries off the excess renovating solution, but also heats the surfaces to a relatively high temperature and prepares same to receive the dyeing material. The dye is likewise applied by being spread or forced directly upon the surfaces being treated, and the article is then subjected to the action of suitable means, such as spreaders and brushes, which spread the dye evenly over the proper surfaces and remove any surplus therefrom. The dye is applied while in a heated condition so that it will permeate the upper part of the surfaces being treated very rapidly and will set promptly, but the surplus is removed with sufficient rapidity to prevent the dye from penetrating into the interior of the article, such as a car cushion, thus injuring the springs or other material contained therein. As soon as all the surplus dye has been removed, the article is then dried in any suitable manner, preferably under ordinary atmospheric conditions, since the comparatively small amount of dye which has been absorbed by the material, will set speedily and adhere permanently, thus permitting the article to be used in a comparatively short space of time after treatment.

In the accompanying drawings I have shown one form of apparatus for use in performing my invention.

Figure 1 is a side elevation;

Fig. 2 is a plan view of the machine with the hood and belting removed;

Fig. 3 is a side elevation partly in section along the line 3—3 of Fig. 2.

The machine consists of a main frame 1, upon which most of the operating parts are mounted. At each end of this frame are mounted sprockets or pulleys 2, around which pass endless drives, consisting in this instance of the endless chains 3, 3. At intervals, cross bars or propellers 4, or other suitable devices, are connected to the conveyer for the purpose of pushing the cushions through the machine and preventing backward movement thereof from the pressure or friction of the brushes. The endless drive moves at a relatively low speed, and it may be driven from the main shaft or pulley 5 through the medium of the necessary speed reducing pulleys 6.

Projecting slightly over the chains on each side is a fixed apron 7, and the propellers have slots 8 at each end to permit them to pass over the upper surface of the aprons. On one of the aprons a guide 9 is provided, adjustable for different size cushions by means of the slots 10 in the apron and the lock nuts 11. This guide, which may conveniently be made of angle iron, passes throughout the length of the machine, and

at certain points carries devices for acting on the sides of the cushions. The construction and operation of the machine may be best explained by following a cushion through the machine.

These machines are usually used in car shops, and all of the cushions, both seats and backs, are usually run through the machine. The first operation is to adjust the side guide for the particular size of cushion to be operated on, and lock it in that position until cushions of a different size are encountered. The cushion is then thrown on to the projecting end of the aprons at the receiving end of the machine, and, if necessary, pushed in far enough to permit the rear end to be caught by one of the propellers. The cushions are placed in the machine the long way; that is to say, the forward and rear ends of the cushion in the machine are the sides of the cushion when it is in position for use in the car seat, and the sides of the cushion in position in the machine are the front and back of the cushion as it is placed in the car.

As the cushion enters the machine it first passes under a hood 12, which preferably extends over the entire machine. It is provided with a swinging entrance door 13 adapted to be lifted by the cushion and to swing back into position after the cushion has entirely entered the machine. Within the hood, and rotatably mounted above the plane of the surface of the cushion, is a drum 14, having attached thereto rows of straps 15. This drum is revolved at high speed, as by a belt from the main drive pulley 5. These straps serve to beat the upper surface of the cushion, and loosen the dirt therein. The straps strike not only the front and rear ends of the cushion, but the first and last rows in use fly around enough to beat the sides of the cushion as well.

As the front end of the cushion moves forward, it encounters a spring lever 16, which may be provided with anti-friction surfaces 16^a, and which is forced to one side, and gradually opens the valve 17 in the air pipe 18 that receives compressed air from a convenient source of supply. The opening of the air valve admits air to the pipe 19, extending across the machine and having four outlets. The outlet nearest the valve is a fixed vertical slotted pipe 20, which air-blasts the side of the cushion. The second outlet is a movable horizontal slotted pipe 21 adapted to be raised by the forward end of the cushion, and to air-blast the front and top of the cushion. The third outlet is a horizontal slotted pipe 21′, which blasts the bottom and back of the cushion, and which may be flexibly connected to the air pipe. The fourth outlet is a vertical slotted pipe 22 fixed on the side guide and flexibly connected to the air pipe 20, which air-blasts the side of the cushion adjacent thereto. By means of these four slotted pipes I secure an air-blast close to all of the surfaces of the cushion. As soon as the rear end of the cushion passes the lever controlling the valve, the spring automatically returns it to its normal position so as to close the valve. On account of the dust created by the beaters and the air-blasts, a suction fan or steam or air jet is preferably connected to the hood.

After the forward end of the cushion has passed the air-blasts; it encounters a depending spreader 23 hung from the fixed slotted pipe 24, which extends entirely across the machine. This pipe 24 leads from a circulating pump 25, the suction side of which is connected to the renovator tank 26. A steam line 27 passes through this renovator tank so as to keep the solution at the proper temperature. The circulating pump may be continuously driven from the main driving pulley 5, so that the solution is always flowing from the slot in the pipe 24. When the cushion is not in position to receive the solution, it merely drips into a pan 28, and through the outlet 29 thereof back to the tank. The spreader 23 aids in distributing the renovator solution over all parts of the surface of the cushion. Instead of keeping the solution flowing all of the time, I may provide a spring lever valve similar to the one in the air line to be operated by the cushion.

The cushion next encounters the scrubbing brush 30, which is revolved at a high speed, and which may be conveniently driven by a belt from a pulley 31 on the shaft of the beater drum, but it is desirable to drive the scrubbing brush so that the contacting surface of the brush will be moving in the opposite direction from the cushion. The bearings of this brush are mounted at one end of a counterweighted lever 32, so that in its normal position the brush is in the path of the cushion, and is raised by the cushion. By this construction, the brush first scrubs the end of the cushion, and then is raised so as to pass over the top surface, and finally to brush the rear end of the cushion.

Slightly in advance of the cylindrical scrubbing brush are two side disk brushes 33 and 34, mounted on a shaft which extends across the machine and which may be conveniently driven by a belt from the main drive pulley and preferably by the same belt which drives the circulating pumps. The side brush 33 is fixed on the shaft, but the side brush 34 is fixed to the side guide and mounted on the shaft by a key 35 and collar 36. A spring 37 between the brush and the collar serves to keep the brush in yielding contact with the side of the cushion.

As the cushion leaves the renovator

brushes, it operates a second spring lever controlled valve 38 to admit steam to the three slotted pipes 39, 40, and 41, similar in construction and arrangement to the corresponding air pipes 20, 21, and 22. This steam jet serves the double purpose of removing any of the renovator solution which there may be on the cushion, and at the same time keeping the cushion up to the desired temperature for treatment. At the rear end of the hood there may be provided a swinging exit door 42, similar to the entrance door already referred to. The hood may also be partitioned by other swinging doors 43 and 44.

After being subjected to the blast of steam the cushion encounters a depending spreader 45 swung from the slotted pipe 46 extending across the machine. This pipe leads from a second circulating pump 47, the suction pump of which is connected to the re-dyeing solution tank 48, which is also steam heated. A separate drip pan 49 serves to collect the excess dyeing solution and return it to the tank. The re-dyeing solution is further spread on the cushion, and the excess, if any, removed therefrom by means of the preferably yielding card 50 made of leather or other suitable material supported by a spring 50′ and the revolving side brushes 51 and 52, mounted respectively on the apron and on the side guide, and the revolving top brush 53. These brushes 51, 52 and 53 are similar in construction and mode of operation to the brushes 33, 34 and 30 used with the renovating solution.

In treating the back cushions of car seats and similar parts it is often necessary to renovate and dye both sides. In such instances the cushions are put through the machine twice. Accordingly a platform or table 54 is provided below the lower run of the chains, and an attendant at the delivery end takes the cushions that have been put through the machine for the first time and places them upon the platform. They are carried along this platform by the propellers secured to the chains until they reach the opposite end, where they are removed by the attendant at that end and put through the machine for the second time, but in a reversed position.

Heretofore it has been customary to clean, renovate and re-dye car cushions and similar articles as separate and independent operations, each operation being performed manually to a large extent. Consequently the cushion or other article became soaked with the several solutions to the injury of the covering thereof, and the ultimate destruction of the springs and other material within the cushion. Also the dye was applied while the cushion was cold so that it did not set rapidly and under the methods employed an excess of the dye solution remained in the cushion, thus making its use impossible except after a considerable period of time. By my improved process and apparatus these several operations may be performed successively with great rapidity so that neither the renovating solution nor the dye solution penetrates below the surface of the cushion or other article being treated, and so that the heating of the cushion which may be accomplished in part by the use of a heated renovating liquid, is utilized to cause the dye to set more speedily and uniformly than is possible when the dye is applied to a surface that is cold. Since the several solutions are not permitted to penetrate to any considerable depth below the surface, the article can be used almost immediately after treatment without requiring a long period to dry. It will be obvious, of course, that various changes within the skill of the mechanic may be made in the details of the particular form of apparatus shown and described herein without departing from the spirit of my invention, provided the means set forth in the following claims be employed.

Having described my invention, what I claim is:

1. The process of re-dyeing articles, consisting in preparing the article to receive the dye solution, applying said solution to the surface of the article while both the article and the solution are in a heated condition and promptly removing any surplus dye solution from the surface so that the dye will not penetrate to the interior of the article.

2. The process of re-dyeing articles, consisting in scrubbing the article with a heated renovating solution, maintaining the article in a heated condition, spreading a heated dye solution uniformly over the surface of the article, said scrubbing and spreading of the dye solution being practically a continuous operation and rapidly removing any surplus solution before it has had an opportunity of penetrating for any material distance below the surface of the article.

3. The process of re-dyeing articles, consisting in scrubbing the article with a renovating solution, heating the surface of the article by means of steam directed thereto and applying a heated dye solution to the heated surface of the article and promptly removing any surplus dye solution from the surface so that the dye will not penetrate to the interior of the article.

4. A process of re-dyeing articles, which consists in subjecting the surfaces to be dyed to the action of a heated cleaning liquid to cleanse and heat the same, then subjecting said surfaces to the action of a moderate heat to maintain the temperature of said surfaces and then applying a dye to said sur-

faces and immediately removing the surplus dyeing material therefrom, and then permitting said surfaces to be dried.

5. A process of re-dyeing articles, which consists in heating the surfaces to be dyed with a cleansing liquid, removing such liquid, and then applying dyeing material to said surfaces in a flowing stream and immediately removing any surplus of such material which does not adhere to said surfaces.

6. A process of re-dyeing articles, which consists in subjecting portions thereof to the action of a stream of cleansing liquid so as to cleanse the outer surface, then scrubbing such surfaces to remove such liquid and prevent same from penetrating below the surface, then subjecting said surfaces to a steam blast to remove any remaining portion of the liquid and to heat said surfaces to a temperature at or above the temperature of the dyeing material, and then supplying dyeing material to said surfaces and then removing any surplus of the dyeing material which does not set immediately.

7. The process of re-dyeing articles, which consists in first applying a cleansing liquid at approximately the boiling point to heat and cleanse the surfaces to be treated, then removing said liquid and then subjecting the same to a heated dyeing material and immediately removing any surplus material which does not set upon being applied to said surfaces.

8. The process of re-dyeing articles, which consists in scrubbing the surfaces to be dyed with a heated renovating solution, then subjecting said surfaces to a jet of steam, then subjecting said surfaces to a dyeing solution and then removing the excess of said solution from said surfaces.

9. The process of renovating the surfaces of articles capable of absorbing fluids which process consists in applying a renovating fluid in a relatively large quantity directly upon the surface to be treated, spreading the fluid over the surface and subjecting the treated surface to a blowing action to carry off the excess of renovating fluid before it has had time to penetrate below the surface of the article.

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

WILLIAM F. SERVICE.

Witnesses:
DOROTHY DAMES,
OLIVE B. KING.