May 17, 1927. 1,629,038

G. W. LEIGHTLITNER

PROCESS FOR CLEANING AND PRESSING PAPER MONEY

Original Filed June 17, 1925 2 Sheets-Sheet 1

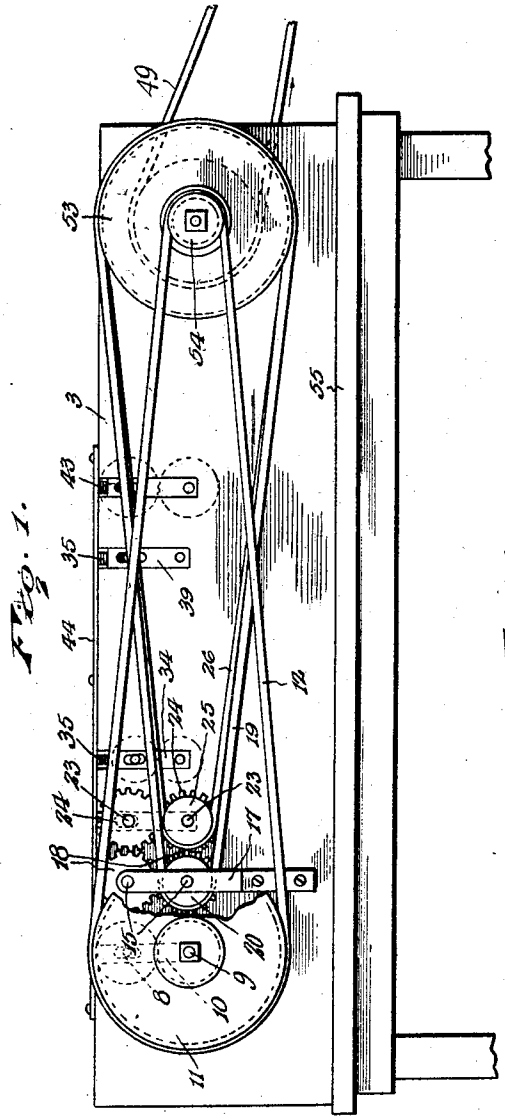


Fig. 1.

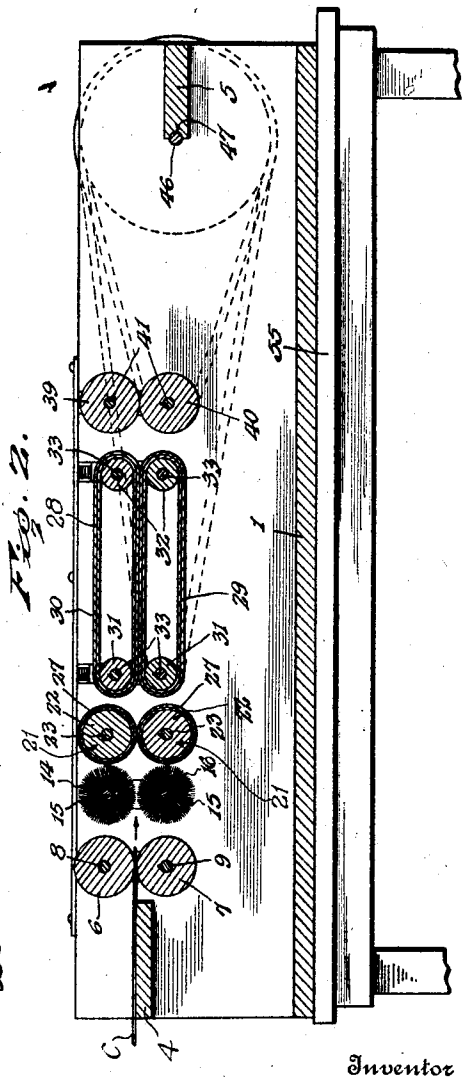


Fig. 2.

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Fig. 3.

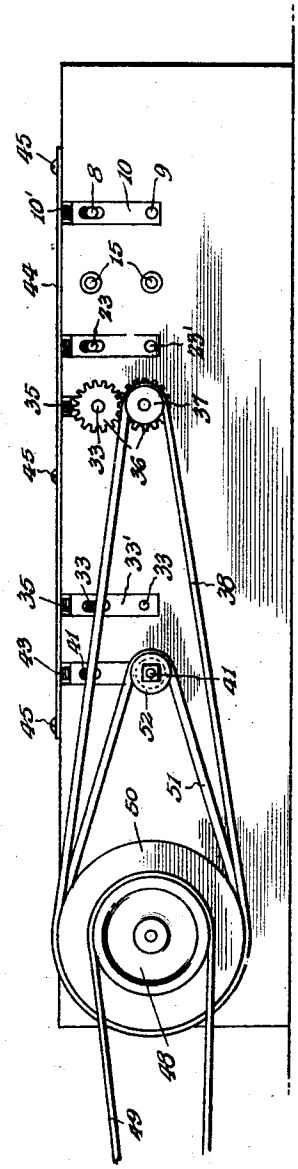
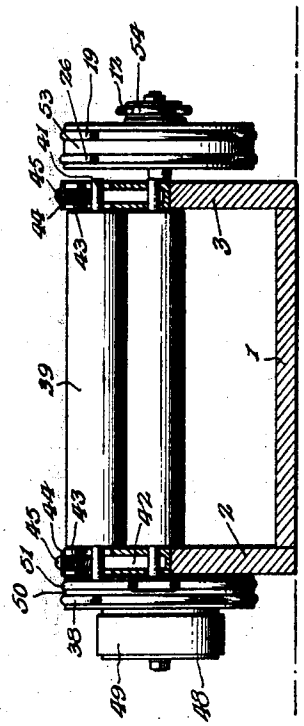


Fig. 4.



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UNITED STATES PATENT OFFICE.

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PROCESS FOR CLEANING AND PRESSING PAPER MONEY.

Original application filed June 17, 1925, Serial No. 37,760. Divided and this application filed April 23, 1926. Serial No. 104,205.

This invention relates to a method of cleaning and pressing paper money and is a division of my copending application, Serial No. 37,760, filed June 17, 1925, and resulting in Patent No. 1,586,905, issued June 1, 1926.

The method is primarily intended to be employed when renovating paper money but it will be obvious that the method may be employed when cleaning and pressing parchment, leather, and other flexible material.

One object of the invention is to provide a method by the use of which paper money or other flexible materials may be thoroughly cleaned without being subjected to excessive wear and delivered in a pressed condition.

Another object of the invention is to develop at method whereby a liquid cleaning agent and dirt dissolved thereby may be quickly removed and any remaining moisture absorbed while the paper money is being pressed.

A machine by means of which the improved method may be carried out is illustrated in the accompanying drawings, wherein

Figure 1 is a view showing the improved cleaning machine in side elevation;

Fig. 2 is a longitudinal sectional view through the machine;

Fig. 3 is a view in side elevation looking at the opposite side of the machine from that shown in Fig. 1;

Fig. 4 is a transverse sectional view through the machine.

The frame of this machine may be formed of wood, sheet metal or any other suitable material and is provided with a bottom 1 and side walls 2 and 3 which extend along the sides of the bottom and are secured thereto in any desired manner. Cross strips 4 and 5 extend between the end portions of the side walls, the strip 4 serving as a table across which the strips of currency to be cleaned will be fed and the cross strip 5 serving as means to brace the drive shaft of the machine and further serving as a table or platform upon which the cleaned currency may be placed if so desired.

The feeding rollers 6 and 7 are rotatably mounted between the side walls 2 and 3 and are located adjacent the inner edge of the platform or table 4 so that the currency C placed upon the platform 4 may be readily slid into position for engagement by the feeding rollers, as shown in Fig. 2. The rollers have their shafts 8 and 9 journaled in bearings 10 which are mounted in vertically extending slots formed in the side walls 2 and 3. The shaft of the roller 6 has its end portions engaged by compression springs 10′ so that the roller 6 will be urged into contacting relation with the roller 7 and thereby cause the currency to be firmly gripped between the rollers and fed forwardly when the rollers are rotated. The shaft 9 of the lower roller 7 extends outwardly beyond the side wall 3, as shown in Fig. 1, and carries a pulley wheel 11 about which passes a belt 12.

The scrubbing brushes 14 are of a conventional construction and each includes a shaft 15 from which extend the brushes 16. These brushes are rotatably mounted in bearings carried by the side walls and have their shafts extending outwardly beyond the side wall 3 of the frame. The outer ends of the shafts are rotatably supported by bearing bracket 17 and upon these shafts there is provided gear wheels 18 so that, when the shaft of the lower brush is rotated by means of a belt 19 which passes about a pulley wheel 20, rotary motion may be transmitted from the lower brush to the upper brush. From an inspection of Fig. 2, it will be seen that the brushes are of such diameter that their bristles will ordinarily meet and, therefore, the brushes which will be moistened with gasoline or any other suitable cleaning fluid will operate upon the upper and lower faces of the currency in a very effective manner and thoroughly scrub the same.

The swabbers 21 are mounted in the frame adjacent the scrubbers and each includes a cylindrical body or roller 22 provided with an axially disposed shaft 23 which extends beyond the roller 22 so that its extended ends may be journaled in bearings 23′ carried by the side walls of the frame. Gears 24 are carried by the end portions of the shafts 23 which extend outwardly beyond the side wall 3 of the frame and the shaft of the lower swabbing roller carries a pulley wheel 25 engaged by a belt 26. It will thus be seen that rotary movement can be transmitted to the lower swabbing roller and through the medium of the gears 24 the rotary movement also transmitted to the upper swabbing roller. These rollers are to remove the cleaning fluid and dirt which

has been loosened or dissolved thereby and, therefore, each of the rollers is provided with a facing 27 formed of fabric which will readily absorb moisture. By having the rollers each covered by a facing formed from a wound strip of absorbent fabric, the facing strips may be easily removed and new ones put in place when necessary.

After the strip of currency has been scrubbed and swabbed, it is then desired to press it so that it will be smooth and delivered in good condition for use. There has, therefore, been provided upper and lower pressers which are indicated in general by the numerals 28 and 29. Each of these pressers includes an endless belt 30 which is formed from a strip of absorbent fabric trained about rollers 31 and 32. The strips from which the pressing belts are made will be of such length that they may be trained about the rollers 31 and 32 several times and thereby provide belts having a plurality of layers of material. Therefore, the belts will be given sufficient body to very effectively press the strips of currency passed between them and in addition will be permitted to readily absorb any moisture which has not been taken up by the swabbing rollers. The rollers 31 and 32 are provided with axially extending shafts 33 which extend beyond the ends of the rollers and are journaled in bearings 34 which are mounted in slots or pockets formed in the side walls of the frame. Compression springs 35 are provided to bear against the shafts of the upper rollers so that these upper rollers and the belt trained about the same will be urged downwardly and pressure provided so that the adjacent flights of the two belts will be kept in close contact with each other and a very good pressing action applied to the currency as it passes between the belts. The shafts of the rollers 31 are extended outwardly beyond the side wall 2 of the frame and carry gears or pinions 36 which intermesh, as shown in Fig. 3, so that rotary motion may be transmitted from the shaft of the lower roller 31 to the upper roller. It should be further noted that the shaft of the lower roller extends outwardly beyond the shaft of the upper roller and carries a pulley wheel 37 about which is trained a belt 38.

The discharge rollers 39 and 40 which in addition to discharging the currency may also serve as supplementary pressers, are rotatably mounted between the side walls of the frame in slightly spaced relation to the pressing belts 28 and 29 and each is provided with an axially disposed shaft 41 which extends beyond the ends of the rollers. The shafts of these discharge rollers are rotatably mounted in bearings 42 carried in slots or pockets formed in the side walls of the frame and the extended ends of the shaft of the upper roller are engaged by springs 43 so that the upper roller will be urged downwardly and kept in close contacting engagement with the lower roller. Strips 44 are secured along the upper edge faces of the side walls 2 and 3 by screws or other suitable fasteners 45 and extend across the upper ends of the slots or pockets in which the bearings of the various rollers are mounted so that the springs which engage the shafts of the upper rollers will be held under compression and the springs, therefore, caused to apply the desired pressure to the upper shafts and urge the upper rollers downwardly into close contacting engagement with the lower rollers. When it is desired to remove the rollers or brushes for any reason, it is simply necessary to remove the fastener screws 45 so that the strips 44 will be released and the upper rollers can be easily lifted out of place or the upper and lower rollers together with the bearings removed as a unit.

The drive shaft 46 extends between the side walls of the frame and is journaled in bearings provided in the side walls. Between the side walls the drive shaft fits into a pocket 47 formed in the inner edge face of the platform 5, as shown in Fig. 2. It will, therefore, be seen that this drive shaft will be well supported and braced. The drive shaft extends outwardly beyond both of the side walls of the frame and at one end is provided with a pulley 48 about which is trained a belt 49. This belt 49 will lead from a motor or other suitable source of energy. Between the pulley 48 and the side wall 2 of the frame, there has been provided a large pulley or drum 50 which is rigid upon the drive shaft and provided with grooves forming seats to receive the belts 38 and 51. The belt 38, as previously stated, is trained about the pulley wheel 37 carried by the shaft of the lower roller 31 and the belt 51 is trained about a pulley 52 carried by the shaft of the lower discharge roller 40. These pulley wheels 37 and 52 are very small in comparison to the pulley or drum 50 and, therefore, the discharge or injecting rollers and the drive rollers of the pressing belts will be rotated at a high rate of speed in comparison to the speed at which the drive shaft 46 rotates. The end portion of the drive shaft which extends beyond the side wall 3 of the frame carries a large pulley wheel or drum 53 which is of the same diameter as the drum 50 and beyond this drum 50 there is mounted a small pulley wheel 54. The pulley wheels 53 and 54 are both rigidly secured upon the drive shaft, the pulley wheel 53 being engaged by the belts 19 and 26 which transmit rotary movement to the scrubbing brushes and swabbing rollers and the pulley 54 being engaged by

the belt 12 which transmits rotary movement to the feeding rollers. The pulley wheels carried by the scrubbing brushes and swabbing rollers are of the same size as those engaged by the belts 38 and 51 so that the brushes and swabbing rollers are rotated very rapidly but the pulley 11 is a great deal larger and, in fact, is of approximately the same size as the drums 50 and 53. Therefore, the feed rollers will be rotated very slowly so that the bill or other strip of flexible material to be cleaned will be fed very slowly through the machine and the scrubbers and swabbers therefore permitted to operate in a very effective manner upon the bill as it slowly advances between the brushes and swabbing rollers. It should be further noted that since the brushes and swabbing rollers rotate a great deal faster than the feed rollers they will exert a pulling action upon the bill and thereby serve to remove any wrinkles which may have been formed in the bill.

When the cleaner is in use, it is mounted upon a suitable support which may be the table or bench 55 shown in Figs. 1 and 2 or it may be provided with supporting means constituting part of the frame. The drive shaft is preferably rotated by means of a drive belt 49 engaged with a pulley 48. As the drive shaft rotates, rotary movement is transmitted to the various rollers and to the brushes as previously set forth. The currency to be cleaned is placed upon the table or shelf 4 and is fed longitudinally towards the feed rollers. When a strip of currency has been moved across the table 4 a sufficient distance, one end of it will be gripped between the feed rollers and moved forwardly between them until its extended forward end portion is engaged between the scrubbing brushes. These brushes which will be moistened with gasoline or any desired cleaning fluid operate against the upper and lower faces of the bill and as the bill moves forwardly very slowly they will very thoroughly scrub the strip of currency from opposite faces. After the strip of currency has been acted upon by the scrubbing brushes, it passes between the swabbing rollers and as these rollers rotate they will serve to mop up the cleaning fluid and remove the loosened and dissolved dirt from the two faces of the currency. They will also serve very effectively to smooth out any wrinkles which may remain in the strip. After the currency is acted upon by the swabbing means, it is advanced into position for passing between the adjacent flights of the pressing belts. These belts move slowly and as they are formed of absorbent fabric they will serve to absorb any moisture which has not been entirely removed by the swabbing rollers. It will thus be seen that, when the currency passes out of engagement with the pressing belts, it will be practically dry and since it is held flat while passing between the belts it will be delivered from the belts in a very smooth condition. The delivery rollers 39 and 40 will now engage the strip of currency and cause it to be deposited upon the bottom of the frame between the delivery rollers and shelf 5. After a sufficient number have accumulated in this end portion of the frame, they can be removed and either stacked upon the table or platform 5 or placed in any other desired receptacle. If it is found that one end portion of a strip of currency has not been thoroughly cleaned due to the fact that the strips of currency will move at a greater rate of speed when released from the feed rollers, it is merely necessary to again pass the currency through the machine with the soiled end placed for first engagement by the feed rollers.

Having thus described the invention, I claim:

1. A method of cleaning flexible material consisting of applying cleaning fluid to the material and scrubbing the same while moistened, swabbing the scrubbed material, and finally drying and pressing the scrubbed and swabbed material.

2. A method of cleaning flexible material consisting of applying cleaning fluid to the material and scrubbing the same while moistened, swabbing the scrubbed material, smoothing the material and absorbing moisture therefrom, and finally pressing the scrubbed and swabbed material.

In testimony whereof I affix my signature.

GEORGE W. LEIGHTLITNER. [L. S.]