

No. 888,480.

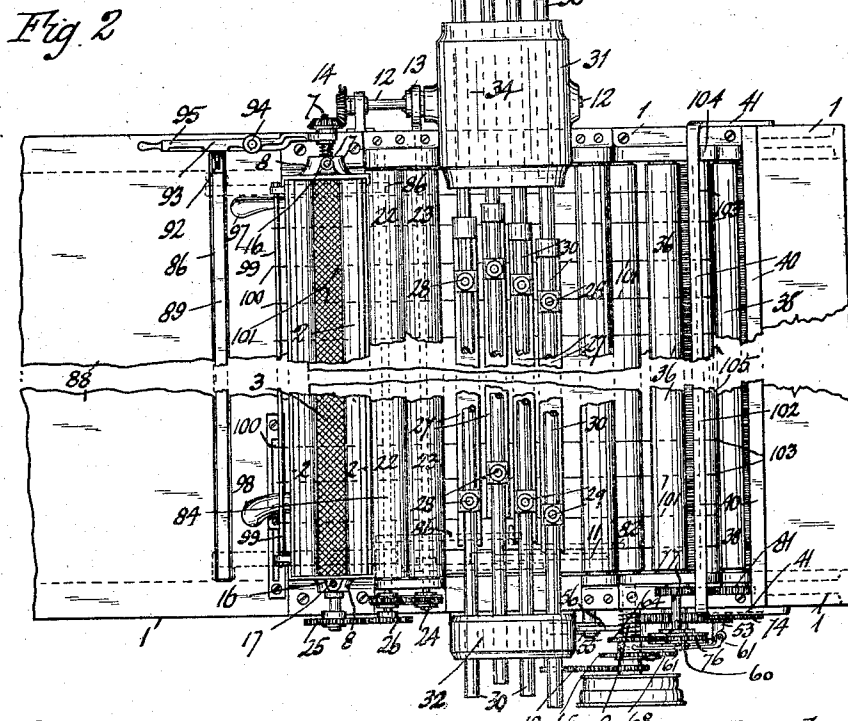
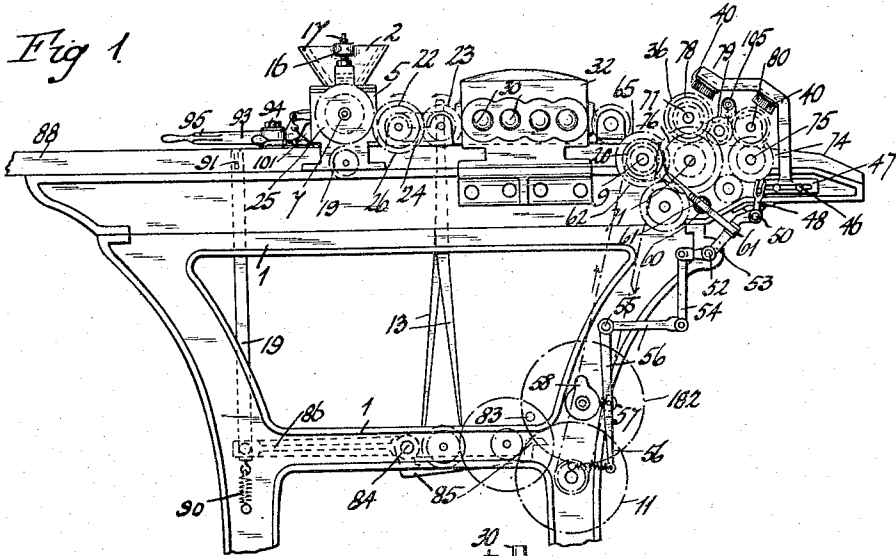
PATENTED MAY 26, 1908.

W. FRIESS & E. WEINGÄRTNER.

BRONZING MACHINE.

APPLICATION FILED OCT. 4, 1906.

4 SHEETS—SHEET 1.



Witnesses
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4 SHEETS—SHEET 2.

Fig. 3

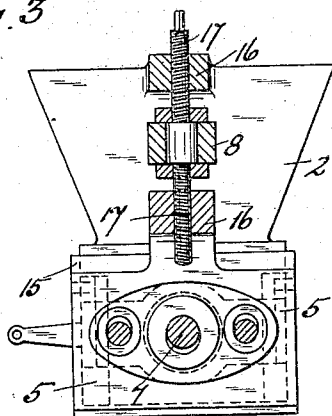


Fig. 4

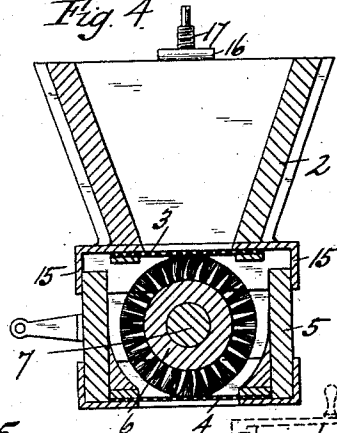


Fig. 5

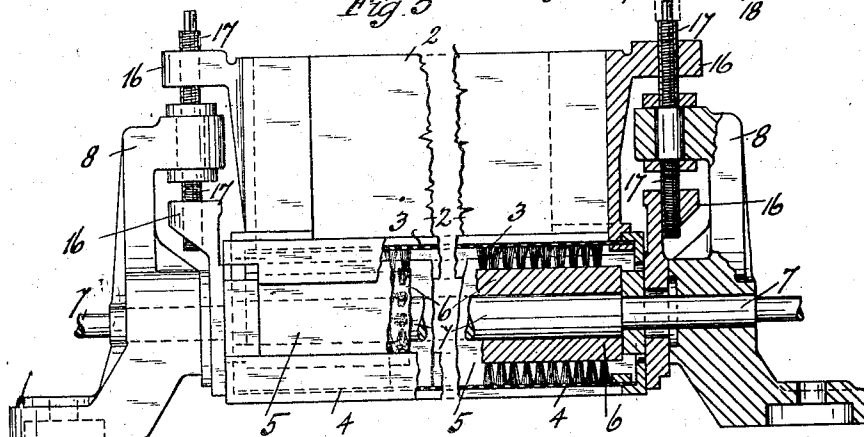


Fig. 9.

Fig. 10.

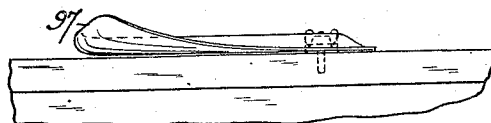
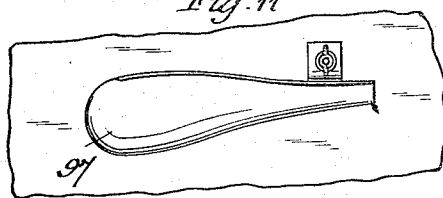


Fig. 11



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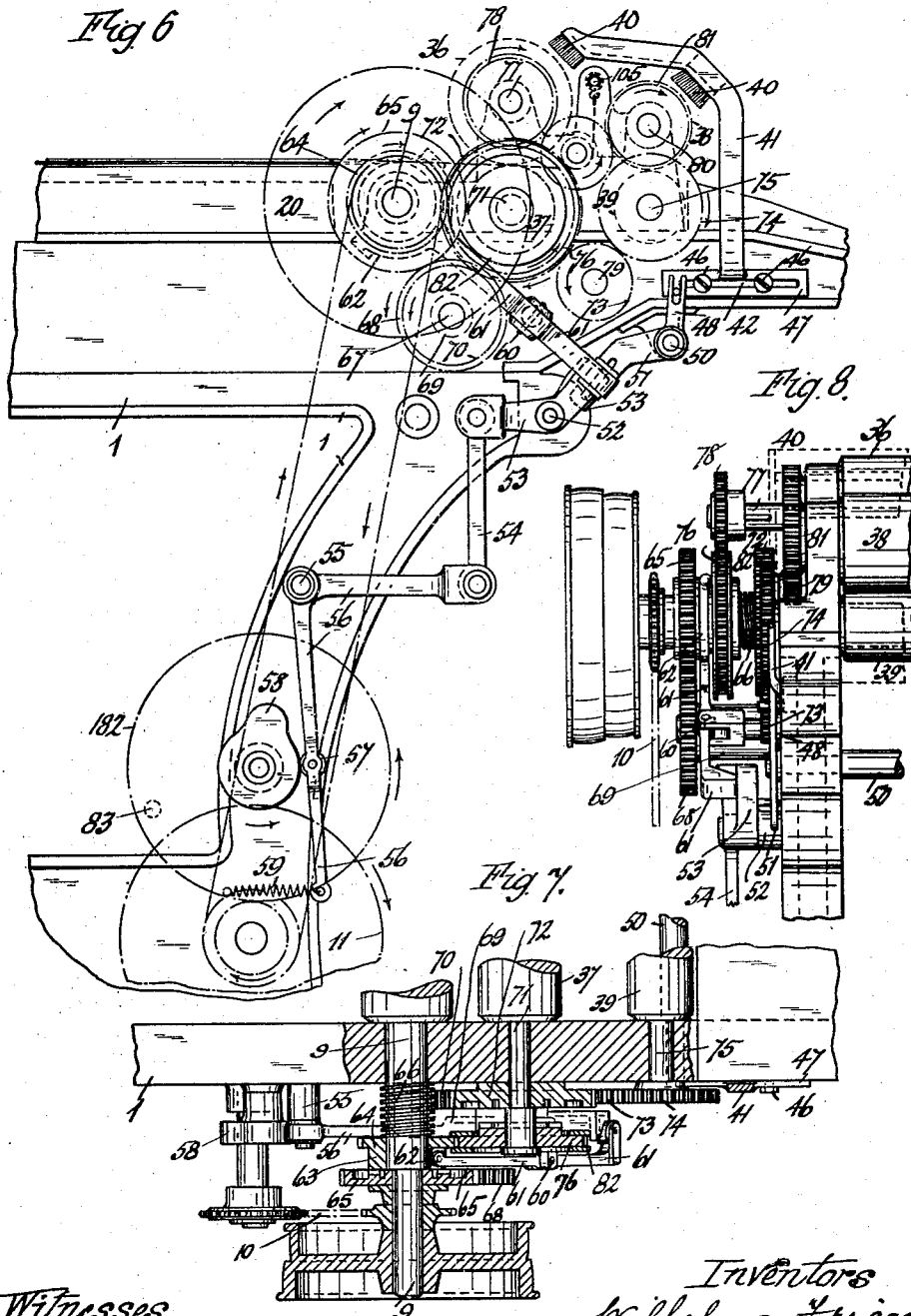
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 12

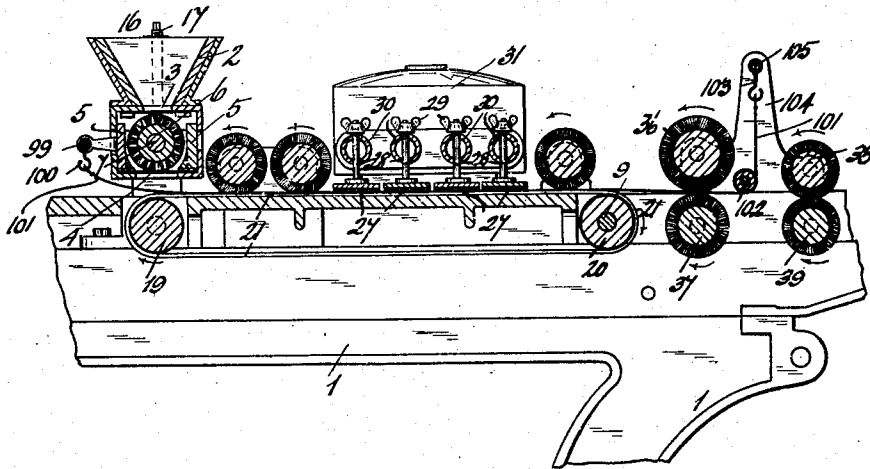


Fig. 13

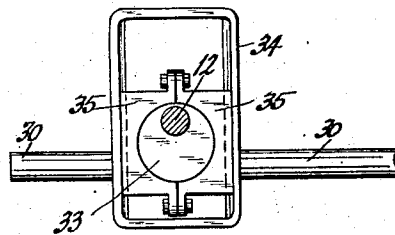
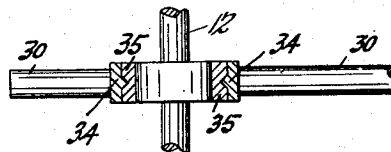


Fig. 14



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UNITED STATES PATENT OFFICE.

WILHELM FRIESS, OF LEIPZIG-LINDENAU, AND EDUARD WEINGÄRTNER, OF
LEIPZIG-PLAGWITZ, GERMANY.

BRONZING-MACHINE.

No. 888,480.

Specification of Letters Patent.

Patented May 26, 1908.

Application filed October 4, 1906. Serial No. 337,454.

To all whom it may concern:

Be it known that we, WILHELM FRIESS and EDUARD WEINGÄRTNER, subjects of the German Emperor, residing at Leipzig-Lindenau and Leipzig-Plagwitz, Germany, respectively, have invented certain new and useful Improvements in Bronzing-Machines, of which the following is a specification.

This invention relates to a machine for applying bronze-powder and the like to the surface of paper or the like.

One feature of the machine consists in the fact that the brush-roller used for applying the bronze-powder is located below the perforated bottom of the powder-box in a chamber the bottom of which is likewise perforated, the brushes being in contact with both perforated bottoms, and the said box and chamber being relatively adjustable so that the friction of the brushes can be increased or reduced in order to regulate the quantity of bronze-powder used and the thickness of the powder-layer applied to the surface of the paper traveling through the machine.

Another feature of the machine consists of a device by means of which plush-rollers used for polishing and cleaning the powdered surfaces are freed at uniform intervals from the powder adhering thereto, the paper-feed and supply of bronze-powder being interrupted during the cleansing of the said rollers.

Another feature of the machine consists of two adjustable, inclined plates of unequal lengths arranged on the feed-table to facilitate the adjustment of the paper and to prevent the bending of the corners of the sheet.

Another feature of the machine consists of a guiding device arranged in the path of the paper and consisting of several rows of threads adapted to cooperate with an endless conveyer-cloth to insure the smooth passage of the sheets and to prevent the production of creases and the like.

The invention is illustrated in the annexed drawing in which—

Figure 1 is a side-view and Fig. 2 a plan-view. Figs. 3 to 14 are detail-views.

The bronze-powder is sprinkled on the brush-roller, distributed on the latter by means of reciprocating pads or the like and smoothed or polished on the paper-sheets by means of rollers covered with plush or the like.

The hopper 2 through which the bronze-powder is fed to the machine is arranged on

the frame 1 and is provided with a sieve-bottom 3. Below the said hopper 2, and connected therewith, is a box or chamber 5 provided with a sieve-bottom 4. Between the sieves 3 and 4 is located a brush-roller or cylindrical brush 6 (Figs. 3 to 5) the axle 7 of which is mounted in bearings 8 screwed to the machine-frame, such axle being adapted to be revolved by means of the main driving-shaft 9, chain 10, toothed-wheel 11, belt 13, shaft 12 and bevel-gear 14 (Figs. 1 and 2). The hopper 2 is provided with a downwardly bent flange 15 which forms a guide for the upper part of the box 5. The latter and the hopper 2 are interconnected by means of adjusting screws 17 which are mounted in the bearings 8 and engage screw-threaded lugs 16 of the parts 2 and 5. The screws 17 are provided with right-hand and left-hand threads and are adapted to be rotated by means of cranks 18 for the purpose of moving the hopper and box towards each other or farther apart, the sieves 3 and 4 being thus adjusted with regard to the brush-roller 6. To allow of the relative adjustment of the box and hopper the end-walls of both are provided with apertures for the axle 7 of the brush-roller.

When the hopper and box occupy the positions shown in Fig. 4, the hopper being filled with bronze-powder and the machine started, the revolving brush 6 loosens the powder at the bottom of the hopper and causes said powder to fall through the sieve 3 on to the brush. The brush transfers the powder to the sieve 4 and rubs it through the latter in such a manner that a uniform layer of powder is applied to a sheet of paper traveling underneath the said sieve 4. Since the hopper and box are relatively adjustable the friction between the brush and sieves can be regulated for regulating the thickness of the layer of powder.

Below the bronze-feed device there is arranged an endless cloth 21 which travels over rollers 19 and 20 and extends through nearly the entire length of the machine. This cloth serves for conveying the sheets through the machine, and it is driven by means of the shaft 9.

At the side of the bronze-feed device there are arranged side-by-side two rollers 22 and 23 covered with soft material and making contact with the cloth 21. The rollers 22 and 23 are interconnected by means of a

chain 24 and are adapted to be driven by means of the shaft 7 and gear-wheels 25 and 26, the purpose of the said rollers being to exert elastic pressure on the bronze-powder applied to the paper. Behind the rollers 22 and 23 is arranged a device for distributing the bronze powder. This device comprises a plurality of flat strips 27 of suitable length and width, the under-surfaces of which are covered with soft material which is in contact with the cloth 21. The strips 27 are fixed to rods 30 by means of screws 28 and nuts 29, the rods 30 being supported by boxes 31 and 32 (Figs. 1 and 2) arranged at the sides of the machine and adapted to be horizontally reciprocated by means of cams 33 fixed to the shaft 12 (Figs. 13 and 14). For this purpose frames 34 containing slides 35 engaging the cams 33 are arranged between the rods 30 and serve to impart motion to the latter.

At the rear of the machine are mounted the plush-rollers 36, 37, 38 and 39 which are driven by means of suitable gear-wheels for the purpose of polishing and cleansing the bronze-coated sheets of paper. Above each of the upper rollers 36 and 38 there is arranged a brush 40 equal in length to the roller and fixed to bars 47 provided with slots 42 which engage pins 46 at the sides of the machine frame. The bars 47 are engaged by levers 48 fixed to a shaft 50 mounted in bearings 49. A downwardly directed lever 51 fixed to the shaft 50 is connected to a bell-crank lever 53 pivoted at 52, the lever 53 being connected by a link 54 to a bell-crank lever 56 pivoted at 55. The downwardly directed arm of the lever 56 is provided with a roller 57 which rests upon a slowly revolving cam-disk 58, against which it is held by a spring 59. In the position of rest the shaft 50 is so adjusted that the bars 47 connected thereto by the levers 48 are withdrawn, the brushes 40 being by this means removed from the plush-rollers 36 and 38. When, however, the lever 56 is rotated about its pivot by the action of the cam-disk 58, the levers 51 and 53 slightly rotate the shaft 50 so that the bars 47 are thrust forwards by the levers 48, and the brushes 40 are thus placed against the rollers 36 and 38 in order to remove the bronze powder adhering to the latter.

At 60 a double-armed lever 61 is fulcrumed in the frame, said lever being adapted to co-operate with the lever 51 which rotates the shaft 50, so that when the brushes 40 are lowered on to the plush-rollers 36 and 38 the lever 61 is rocked. The lower end 62 of the lever 61 is bifurcated and engages the hub of a gear-wheel 64 loosely mounted on the shaft 9 (Figs. 1, 6, 7 and 8) so that the rocking of the lever 61 causes the gear-wheel 64 to be displaced. The said gear-wheel is adapted to co-operate by means of a clutch

with a toothed-wheel 65 fixed to the shaft 9 and is normally held in engagement with the wheel 65 by a spring 66 wound on the shaft. The gear-wheel 65 meshes with a pinion 68 loosely mounted on a gudgeon 67 and provided with a long hub or sleeve 69, at the rear end of which a pinion 70 is provided. The pinion 70 meshes with a gear-wheel 72 fixed to the axle 71 of the lower polishing roller 37, and the rotary movement imparted to the latter by the pinion 70 is transmitted to the lower polishing roller 39 by means of a gear-wheel 73 and a pinion 74 fixed to the axle 75 of the said roller. The toothed wheel 64 meshes with a toothed wheel 76 fixed to the axle 71, and the toothed wheel 76 meshes with a toothed wheel 78 which is slidable on the axle 77 of the upper roller 36, the wheel 78 being adapted to drive the said axle 77 by means of a feather working in a slot. When the gear-wheel 64 is in engagement with the gear-wheel 65 and the machine is working the upper roller 36 is driven and transmits its movement to the axle 80 of the upper roller 38 by means of gear-wheels 79 and 81, so that the said roller 38 is revolved in the same direction as the front roller 36.

To the circumference of the toothed wheel 76 are fixed lateral rings 82 which engage the toothed wheels 64 and 78 (Figs. 7 and 8) so that when the wheel 64 is displaced the wheels 76 and 78 are also displaced. When the wheels 64, 76 and 78 are moved inwards by the lever 61 the brushes 40 are moved against the rollers 36 and 38 and the clutch connecting the wheels 64 and 65 is disengaged. Immediately afterwards the wheel 76 is brought into engagement with the toothed wheel 72 on the axle 71, by means of clutch teeth with which the adjacent sides of the said wheels 72 and 76 are provided. Since the wheel 72 is driven by the wheels 65, 68 and 70 and the wheels 76 and 78 are now revolved in the opposite direction, owing to the engagement of the wheels 72 and 76, the two upper rollers 36 and 38 are now also revolved in the opposite direction, and the elastic covers of the upper and lower polishing rollers 36 and 38 are by this means roughed and at the same time freed from bronze powder, there being at this stage no paper between the said rollers, as will be explained hereinafter.

In order to discontinue the powder-feed and to prevent the insertion of fresh paper-sheets into the machine during the cleansing of the polishing rollers the following arrangement is provided. The toothed wheel 182 which drives the cam-disk 58 is provided with a pin 83 (Figs. 1 and 6) in the path of which is located one end of a lever fixed to a shaft 84 (Fig. 1). To the latter are fixed arms 86, each of which engages a vertical rod 91 on which a downward pull is exerted by a spring 90 and the upper end of which is con-

connected to a cross-bar 89 normally resting in a slot 87 in the feed-table 88. When the lever 56 is operated by the cam-disk 58 the lever 85 is depressed by the pin 83, so that the shaft 84 is rotated and the bar 89 lifted against the pull of the springs 90. The said bar thus projects above the plane of the feed-table 88 and prevents the insertion of fresh sheets of paper. At one side of the bar 89 a roller 92 is so arranged (Figs. 1 and 2) that when the bar is lifted from the groove 87 the said roller rolls on the face 93 of a lever 95 which is fulcrumed at 94 and is connected to a bevel wheel slidable on the axle 7 of the brush-cylinder 6. By this means the said bevel-wheel is displaced, so that the brush-cylinder ceases to be driven and the feed of bronze-powder is discontinued. When the bar 89 is lowered the lever 95 is moved back to its previous position by a helical spring 96 wound on the axle 7, and the bevel-wheel connected to the said lever is thus caused to mesh with the bevel-wheel fixed to the shaft 12, so that the feed of bronze-powder recommences.

On the feed-table 88 two adjustable plates 97 and 98 (Figs. 9 to 11) of unequal length are arranged on the right hand and left hand sides respectively, between the bar 89 and the conveyer cloth 21, the front parts of the said plates being so bent that the sheets are smoothly guided into the machine without danger of being creased or crumpled.

To the box 5 containing the brush-cylinder 6 there are fixed two bearings which support a cross-bar 99. To the latter are fixed, at regular intervals, a suitable number of hooks 100, to which are connected threads 101 provided with loops. The said threads extend practically over the entire length of the path traversed by the paper between the conveyer-cloth 21, bronze-feed device, rollers 22 and 23, strips 27, and polishing rollers 36 and 37, and pass over a shaft 102 located between the rollers 36 and 38. Loops at the rear ends of the threads are engaged by hooks 103 fixed to a cross-bar 105 supported by bearings 104 (Fig. 12). The threads guide the paper smoothly through the machine and prevent creasing or crumpling of the sheets during their passage between the rollers.

What we claim as our invention and desire to secure by Letters Patent of the United States is:—

1. In a bronzing machine the combination of an endless cloth adapted to feed a sheet of

material through the machine a feed hopper, an adjustable brush cylinder adapted to receive bronze powder from said hopper and apply same to the surface of said sheet, rotatable plush rollers adapted to polish the bronze surface, brushes adapted to cleanse at intervals the bronze powder from said plush rollers, means for interrupting the feed of bronze powder during the cleansing of said rollers, and means for reversing the direction of rotation of said rollers during such cleansing operation substantially as described.

2. In a bronzing machine the combination of a feed table a conveyer cloth adapted to feed a sheet of material through the machine a feed hopper located over said conveyer cloth an adjustable brush cylinder adapted to receive bronze powder from said hopper and apply same to the surface of said sheet and adjustable plates of various lengths located in advance of said conveyer cloth at each side of the latter, said plates being shaped to guide the sheets smoothly to said conveyer cloth substantially as described.

3. In a bronzing machine the combination with a feed table, an endless conveyer cloth adapted to feed a sheet of material through the machine, a feed hopper located above said conveyer cloth, a perforated bottom for said hopper, a box located below the latter, a revoluble brush cylinder mounted within said box between the perforated bottoms aforesaid, and adapted to apply bronze powder to the surface of said sheet means for relatively adjusting said box and hopper, revoluble rollers adapted to exert elastic pressure on the bronze powder fed to said sheet, means for distributing the powder on the latter, plush rollers for polishing the bronzed surface, brushes for cleansing the bronze powder from said plush rollers at intervals, means for interrupting the feed of bronze powder during the cleansing of said rollers, means for reversing the direction of rotation of the plush rollers during such cleansing operation, adjustable plates for guiding the sheets of material to the conveyer cloth aforesaid, and a series of threads coöperating with said cloth to guide the sheets through the machine substantially as described.

In witness whereof we have signed this specification in the presence of two witnesses.

WILHELM FRIESS.

EDUARD WEINGÄRTNER.

Witnesses:

MORITZ SPREER,
RUDOLPH FRICKE.