2 Sheets—Sheet 1

J. O. KURTZMANN.

Bronzing-Machine.

No. 203,841. Patented May 21, 1878.

Fig: 2

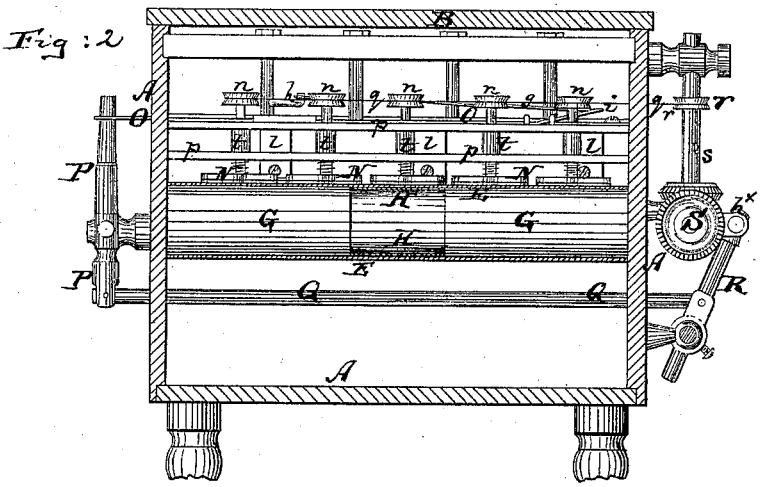
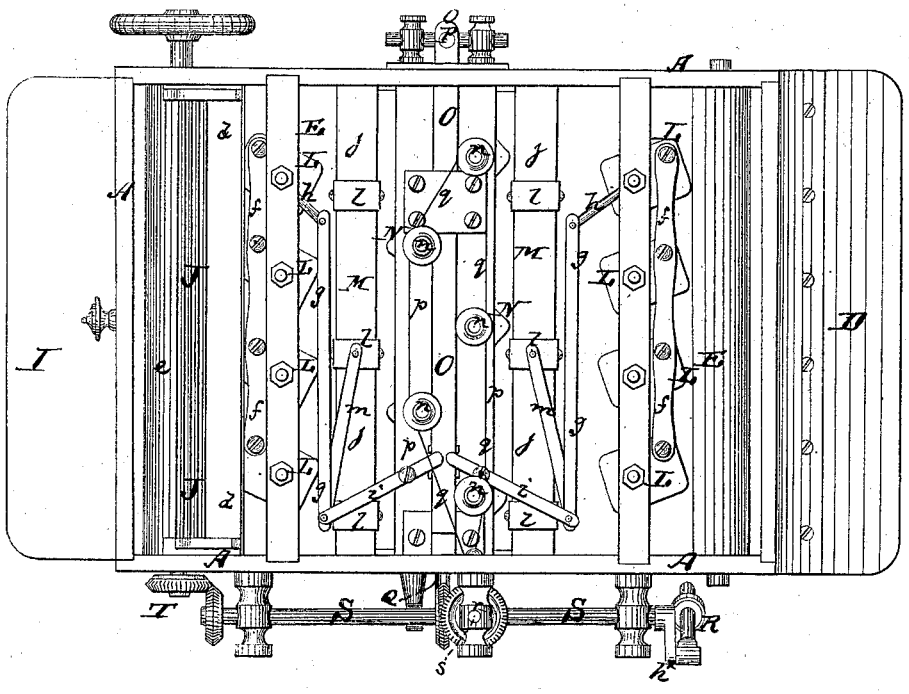


Fig: 1



Witnesses:

D. V. Briesen

John C. Trumbridge

Inventor:

John O. Kurtzmann

by his attorney

D. V. Briesen

2 Sheets—Sheet 2

J. O. KURTZMANN.

Bronzing-Machine.

No. 203,841. Patented May 21, 1878.

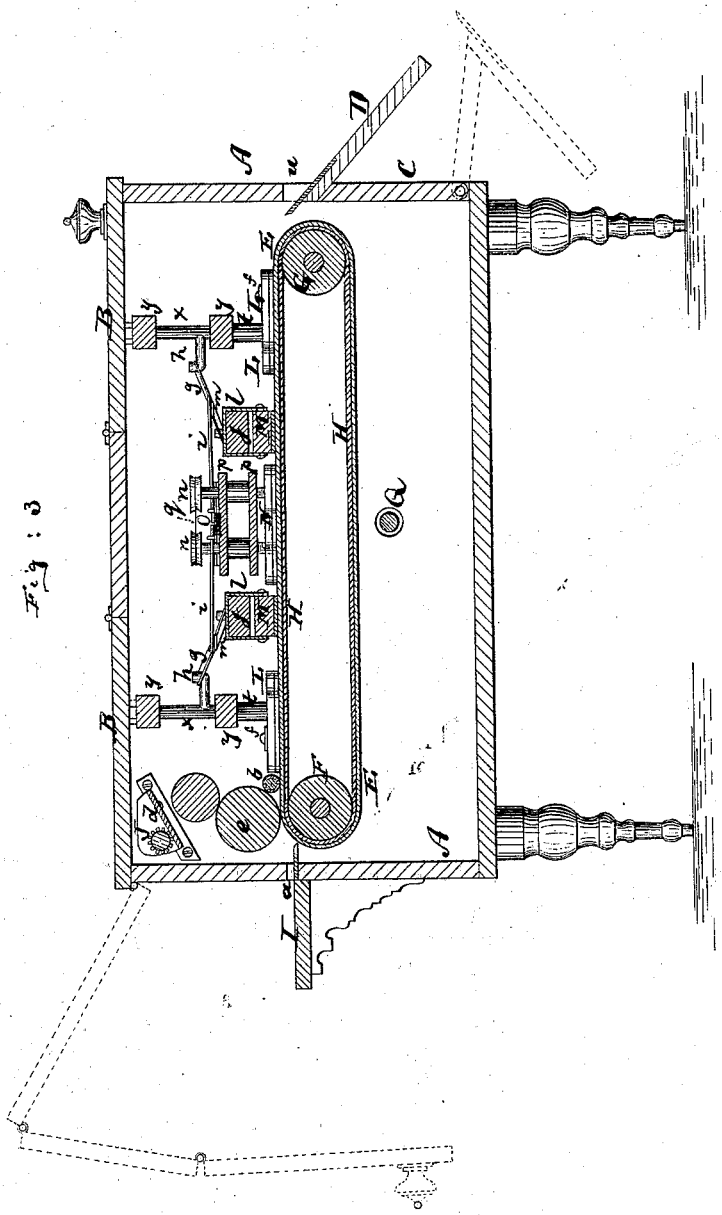


Fig. 3

Witnesses:

D. V. Briesen

John C. Tunbridge.

Inventor:

John O. Kurtzmann

by his attorney

A. V. Briesen

UNITED STATES PATENT OFFICE.

JOHN O. KURTZMANN, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF HIS RIGHT TO E. WELLS SACKETT, OF SAME PLACE.

IMPROVEMENT IN BRONZING-MACHINES.

Specification forming part of Letters Patent No. **203,841**, dated May 21, 1878; application filed March 12, 1878.

To all whom it may concern:

Be it known that I, JOHN O. KURTZMANN, of the city, county, and State of New York, have invented a new and Improved Bronzing-Machine, of which the following is a specification:

Figure 1 is a plan or top view of my improved bronzing-machine. Fig. 2 is a vertical transverse section, and Fig. 3 is a vertical longitudinal section, of the same.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to a new machine for applying powdered bronze to paper previously sized, and for causing the bronze-powder to adhere thereto in a proper manner.

The object of the machine is to provide a substitute for the human hand in the labor of rubbing the bronze into the sizing and onto the paper, and of polishing it while on the paper.

The invention consists, principally, in the employment of a series of rubbers, arranged to have different kinds of motions, such as reciprocating, vibrating, and rotating, in imitation of the motion which can be given to a polishing instrument by the human hand.

The invention also consists in the various details of improvement, such as the use of a special feed-apron, and other features hereinafter more definitely pointed out.

In the accompanying drawings, the letter A represents the case of the bronzing-machine, the same being a box of rectangular or other suitable form, constructed with a sectional and jointed cover, B, which can be folded open, to uncover either a part or the whole of the box, as indicated by dotted lines in Fig. 3, and which, when shut down, will prevent the escape of the bronze-powder from the box. The box is also provided, at or near one end, with a folding door, C, which, when let down, as shown by dotted lines in Fig. 3, gives access to the lower part of the box, to permit the removal of matter that has settled at the bottom. This folding door or gate C also carries an inclined discharge-table, D, on which the paper, properly bronzed, is delivered by the machine. Within the box A is an endless apron, E, hung over two rollers, F G, that are placed transversely through the box. These rollers are arranged near the respective ends of the box, and the apron E is as wide as the inner side of the box, so that the bronzing applied to the paper, which is fed by said apron, will have no favorable opportunity of leaving the apron and dropping into the lower part of the box.

In order to prevent the apron E from playing laterally on the rollers F G, which would be very objectionable in a machine of this kind, I attach it to a belt, H, which passes around the rollers F G, and is sunk in grooves of said rollers, as indicated in Fig. 2. Being thus sunk in grooves, the belt H is incapable of lateral vibration on the rollers; and being secured to said belt, either by means of glutinous substances or by mechanical means, the apron E is likewise incapable of moving laterally within the box, and yet the apron is properly supported on the two rollers F and G, while they revolve.

At one end of the box A, which I have termed the "front end," and which is the end opposite to that which carries the discharge-table D, is a projecting supply-table, I, upon which the paper to be bronzed is placed to be fed to the machine, said paper having been first provided with the proper sizing for causing the bronze to adhere at the desired places. From the table I the paper is passed into the box A through a narrow slit, *a*, (shown in Fig. 3,) and reaches the upper surface of the endless apron E. It is fed along by this apron, and is held in contact therewith, by one or more suitable rollers, *b*, which are placed upon the apron, as indicated in Fig. 3. The said figure shows one of said rollers *b*; but several may be used, if desired, and distributed at proper intervals along the apron, all being placed crosswise onto the same. Every such roller *b* is made of metal or other substance, and is covered, at certain intervals, with rubber rings, which I propose to distribute so that they will not be in the way of any part of the paper which is to be actually bronzed, and so that, therefore, the pressing surface of the roller *b* will be out of the way

of the bronzing to be performed, and yet sufficiently capable of holding the paper down onto the feeding-apron E.

The bronze-powder to be distributed is supplied by means of a grooved roller, J, which is hung over an inclined plate, *d*, placed, near the front end of the box, within said box, as shown in Fig. 3.

Rotary motion is imparted to this roller J by suitable mechanism, (not shown,) so that it will take up in its groove some of the bronze which is contained on the inclined plate *d* between said plate and said roller J.

The roller J drops the powdered bronze from its grooves at proper intervals of time, according to the rapidity of rotation, and constitutes thus a definite and readily-controllable feed mechanism. The powder thus dropped from the roller J is deposited upon the surface of another roller, *e*, which rests upon the front end of the endless apron E, and upon which another roller may bear, if desired, for distributing the bronze-powder properly over the surface of said roller *e*.

The second roller, which may be used as stated, is indicated in Fig. 3.

The roller *e* applies the bronze-powder to the sized paper that passes under it, and causes the sizing of the paper to take up the requisite quantity of powder.

The next function of the machine is to properly rub the bronze thus applied into the sizing, and also to properly polish the bronzed surface of the paper. For this purpose I have devised a series of rubbers, L L, M M, and N N, (shown in Figs. 1, 2, and 3,) the rubbers L L being made to oscillate, the rubbers M M to reciprocate, and the rubbers N N to rotate over the surface of the bronzed paper as the same is fed along on the apron E.

Now, although I have represented these rubbers in a certain specific relation to one another, I desire it to be definitely understood that this relation may be materially varied. Thus, I have shown the rubbers M M to be next between the rubbers L L, while the rotary rubbers N N are between the rubbers M M, as shown in Fig. 3; but this arrangement, as already mentioned, need not be adhered to.

The oscillating rubbers L L are plates of wood or other suitable material, covered on the lower face with velvet or equivalent soft substance, for rubbing the bronze-powder properly into the paper and for polishing it. Each of these rubbers L are attached to a vertical stem, *x*, which extends upward through cross-pieces *y* that are secured in the box A, as shown in the drawing.

The several rubbers L L of each row (there being two rows shown in Fig. 1) are connected with each other by a rod, *f*, which rod is connected to each of said rubbers in that row; and as oscillating motion is imparted to one of the rubbers in that row by a rod, *g*, connecting with a crank, *h*, that projects from one stem, *x*, all the rubbers of that row are equally oscillated. This being the arrangement of each of the two rows shown in Fig. 1, it is only necessary to show and explain how the rods *g* are caused to vibrate the rubbers. For this purpose a reciprocating bar, O, extends crosswise through the center or other part of the box, and receives its reciprocating motion by a lever, P, (shown in Fig. 2,) said lever connecting, by a rod, Q, with a vibrating lever, R, that connects with a crank, $h^{\times}$, of a rotating shaft, S, to which rotary motion is imparted by the driving-shaft T of the machine. The bar O, being reciprocated, connects, by two levers, *i i*, with the two rods *g g*, as shown in Fig. 1, and thus oscillates the rubbers L L.

The reciprocating rubbers M M are also plates or bars covered with velvet, and are suspended from stationary cross-bars *j* that are secured in the box A, and are also in two rows, as shown in Fig. 1, the rubbers in each row being either connected one with the other, or each row being made as one continuous rubber.

The rubbers M M, instead of having vertical stems, like the rubbers L, are joined to clasps *l*, that embrace the cross-bars *j*, as shown in Fig. 3, and a rod, *m*, joins each of the levers *i* to one of said clasps *l*, as shown in Fig. 1, so that the vibration of the levers *i* will cause the clasps *l* to be reciprocated, and thus also the rubbers with which said clasps connect.

The rotary rubbers N N are likewise plates covered with velvet on the lower faces, and are provided with upwardly-projecting stems *n*, that have their bearings in cross-bars *p*, that are secured in the box A. The upper ends of these stems *n* have rollers, properly grooved, for receiving a belt or cord, *q*, which passes around all the rollers of the stems *n*, and also around a driving-roller, *r*, (see Fig. 2,) hung on a shaft, *s*, which is rotated by suitable gearing in connection with the shaft S. Thus all the rubbers N N are rotated.

Suitable rubber or other springs *t* are applied to the stems of the rubbers L L and N N to press these rubbers with suitable force upon the surface of the paper to be bronzed; but in lieu of these springs suitable weights may be used; or the rubbers may be made sufficiently heavy to apply the requisite pressure without the use of the springs.

The clasps *l* should be made larger than the rods *j*, on which they move, so as also to give some up-and-down play to the reciprocating rubbers M.

The paper, bronzed by the mechanism stated, is delivered upon the table D, which it reaches through a narrow slit, *u*. All the bronze which may settle in the lower part of the box A may be removed by swinging open the door C.

Suitable brushes may be applied against the face of the apron E to prevent bronze from adhering thereto, and to always keep it clean, so that the paper cannot become soiled.

The frames carrying the several rubbers are

preferably made removable, so that the rubbers may be conveniently cleaned to permit their use for different colors of bronzes.

I claim—

1. In a bronzing-machine, the endless apron E, attached to the endless belt H, which enters the grooves of the rollers F G, substantially as and for the purpose specified.

2. The combination of the oscillating rubbers L with the reciprocating rubbers M and feed-apron E, in a bronzing-machine, substantially as and for the purpose specified.

3. The combination of the oscillating rubbers L with the rotary rubbers N and feed-apron E, in a bronzing-machine, substantially as and for the purpose specified.

4. The combination of the reciprocating rubbers M and rotary rubbers N and feed-apron E, in a bronzing-machine, substantially as and for the purpose specified.

5. The combination of the reciprocating rubbers M, rotary rubbers N, and oscillating rubbers L with the feed-apron E, in a bronzing-machine, substantially as and for the purpose specified.

6. The combination of the spring *t* with the stem *x* and rubber L of a bronzing-machine, substantially as and for the purpose specified.

7. The combination of the reciprocating rod O with the levers *i i*, rods *m m* and *g g*, and with the reciprocating rubbers M M and oscillating rubbers L L, substantially as and for the purpose specified.

8. The combination of the roller *b*, which carries rubber rings at certain distances apart, with the feed-apron E, for use in a bronzing-machine, substantially as specified.

J. O. KURTZMANN.

Witnesses:
F. v. BRIESEN,
J. C. TUNBRIDGE.