(No Model.) 3 Sheets—Sheet 1.

G. NEWSUM.

BRONZING MACHINE.

No. 494,017. Patented Mar. 21, 1893.

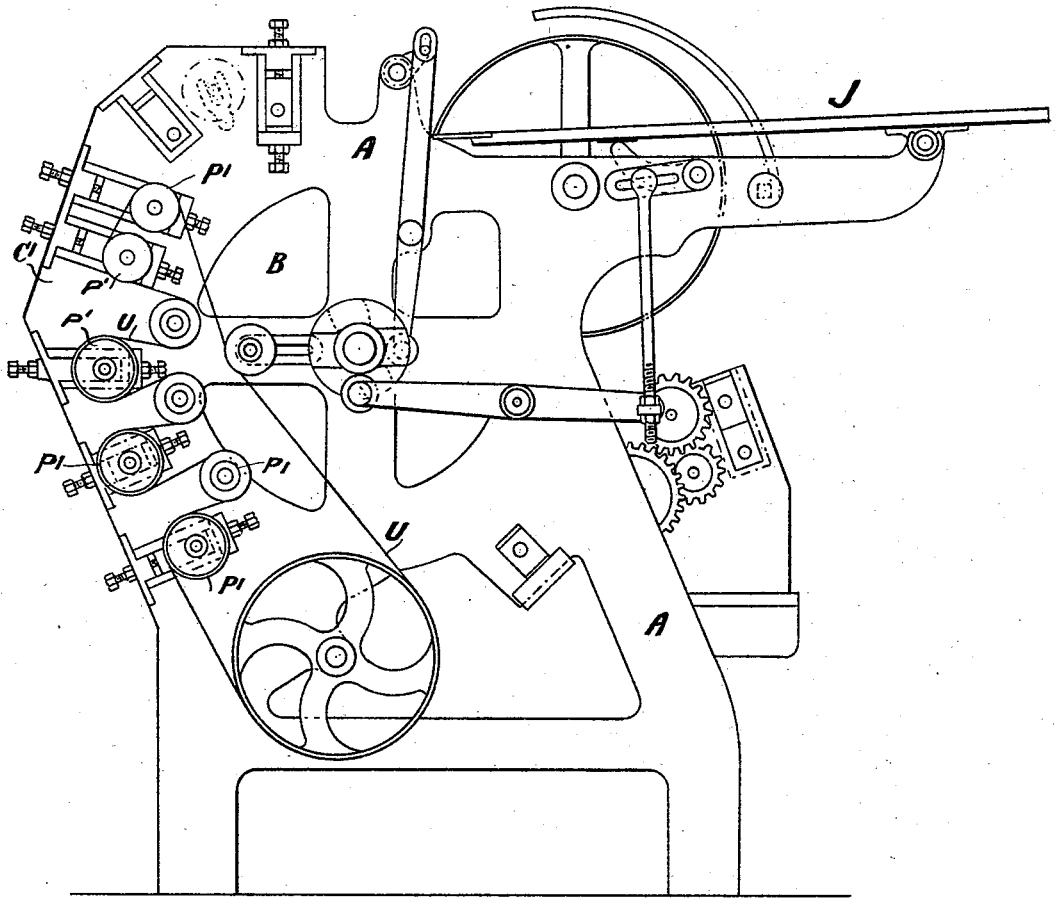

FIG. 1.

Witnesses:
E. B. Bolton
E. W. Sturtevant

Inventor:
George Newsum
By Richards & Co
his Attorneys.

(No Model.) 3 Sheets—Sheet 2.

G. NEWSUM.

BRONZING MACHINE.

No. 494,017. Patented Mar. 21, 1893.

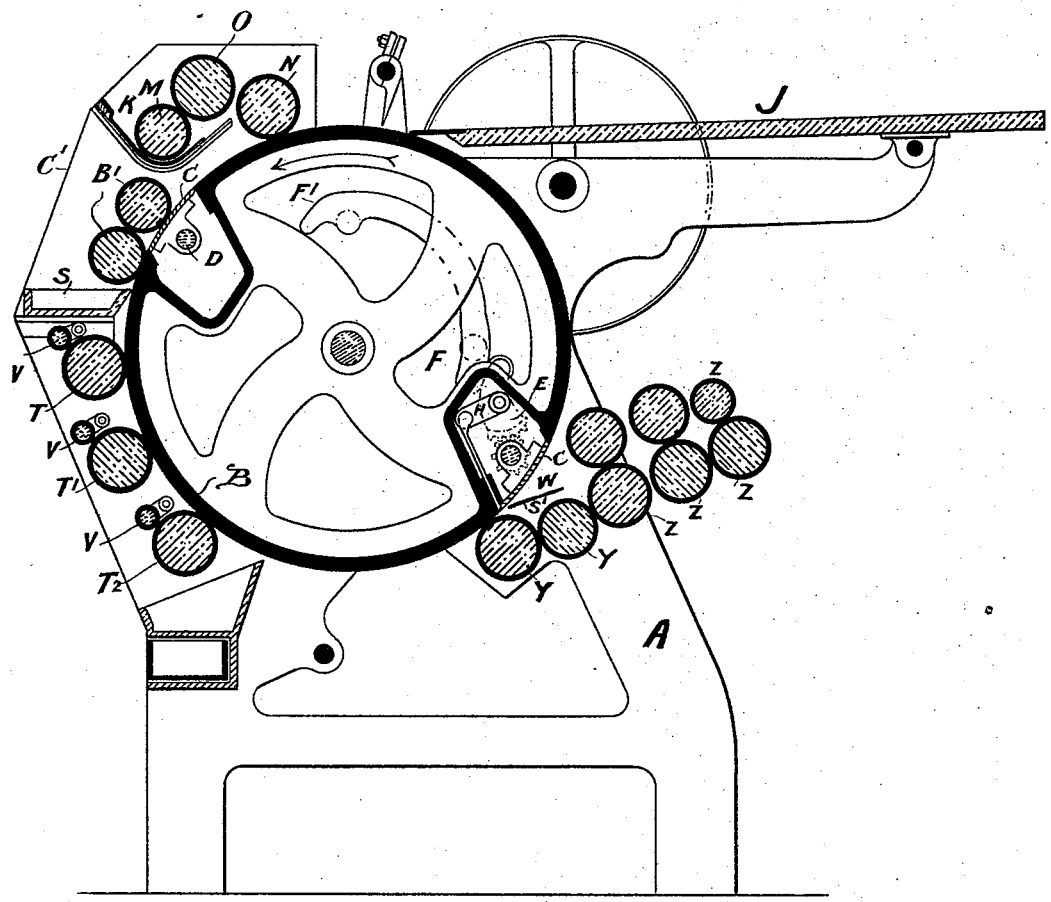

FIG. 2.

Witnesses:
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(No Model.) 3 Sheets—Sheet 3.

G. NEWSUM.

BRONZING MACHINE.

No. 494,017. Patented Mar. 21, 1893.

FIG. 6.

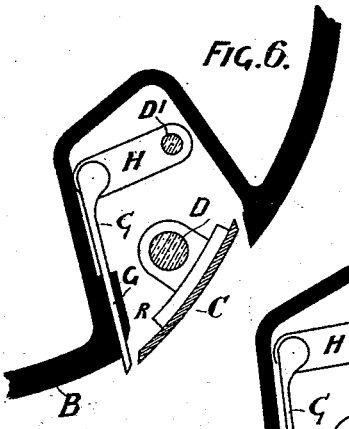
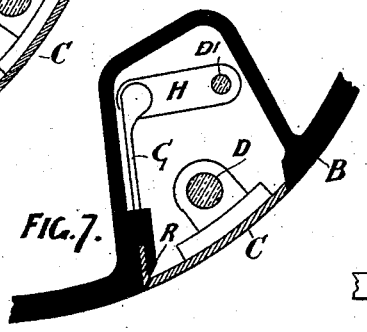


FIG. 7.



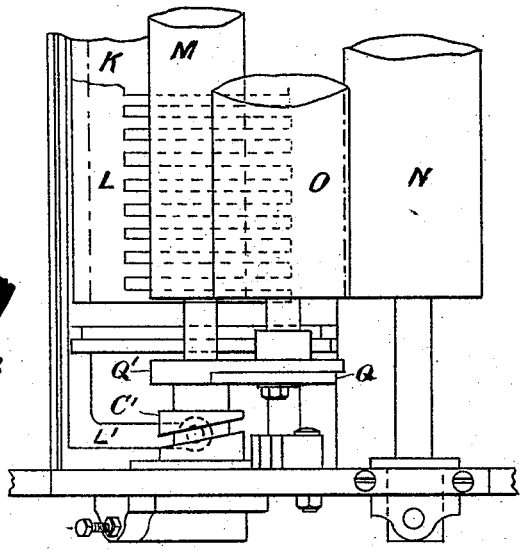


FIG. 3.

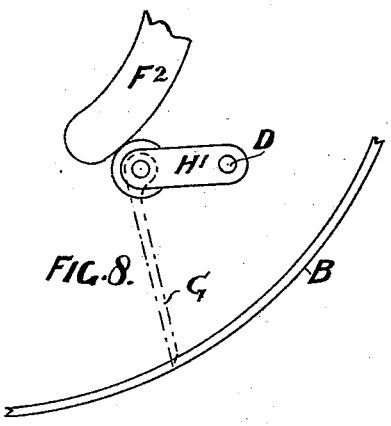


FIG. 8.

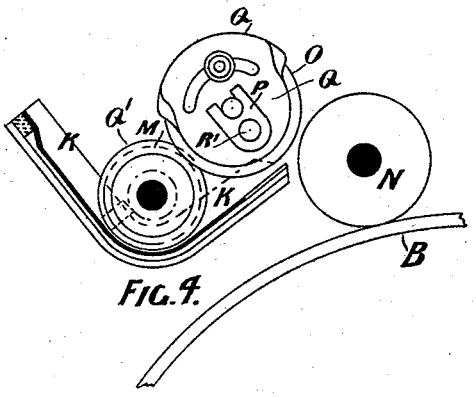


FIG. 4.

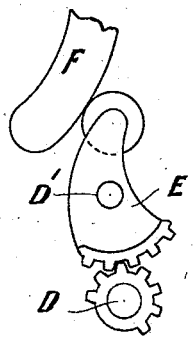


FIG. 5.

Witnesses:
C. F. Bolton
E. K. Stoutevant.

Inventor:
George Newsum
By Richards & Co
his Attorneys

UNITED STATES PATENT OFFICE.

GEORGE NEWSUM, OF LEEDS, ENGLAND.

BRONZING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 494,017, dated March 21, 1893.

Application filed July 27, 1892. Serial No. 441,379. (No model.) Patented in England October 1, 1891, No. 16,678.

To all whom it may concern:

Be it known that I, GEORGE NEWSUM, a subject of the Queen of Great Britain and Ireland, residing at Leeds, in the county of York, England, have invented certain Improvements in Bronzing-Machines, (for which I have obtained Letters Patent in England No. 16,678, dated October 1, 1891,) of which the following is a specification.

This invention relates to certain improvements in apparatus for applying bronze and other powder to the surface of paper and the like, and has for its object, the construction of the apparatus in such a manner that, the paper or the like is conducted through the machine with little liability of being creased or otherwise damaged; also to combine with the cylinder of the apparatus a compound arrangement of grippers and tongues so constructed that, the former will effectually hold the sheet during a certain portion of the revolution of the cylinder, and on the liberation of the sheet, for the grippers to open and the tongues to force the edge of the sheet some distance from the circumference of the cylinder, into such a position, that it is readily and automatically conducted in the direction so as to pass between rollers for the purpose of "dusting off" both sides of the paper or the like and the automatic delivery of the sheet.

In the accompanying drawings Figure 1. represents a side elevation of my improved apparatus. Fig. 2. is a section of the same. Fig. 3. a plan of a portion of the bronze box and rollers drawn to a larger scale. Fig. 4. is a cross section through the same. Fig. 5. a view of the quadrant and pinion. Fig. 6. a detailed sectional view through a portion of the cylinder showing a plate gripper open and the tongues protruding. Fig. 7. another sectional view through a portion of the cylinder, and Fig. 8. a view of a portion of the cylinder and a lever for operating the tongues.

On suitable framework A. I mount a rotating cylinder B. provided with one or more plate grippers C. each mounted on a shaft D. supported by the ends of cylinder B. Each plate gripper C. is operated by a quadrant E. mounted free on a shaft D'. by one end of the said quadrant coming in contact with a cam plate F. fixed to the framework A. which keeps the plate gripper open so long as the end of the quadrant E. is in contact therewith. The opposite end of the quadrant E. is provided with wheel teeth which gear into a pinion secured on the before mentioned shaft D so that on the operation of the quadrant E. in the manner described, when the quadrant is liberated, the pinion and plate gripper C. are actuated likewise.

In conjunction with each plate gripper C. is a series of tongues G. attached to levers H secured to the shaft D'. which passes through the cylinder and is thereby supported. To the opposite end of the shaft to that on which the quadrant E. is loosely mounted, is secured a lever H'. which, on coming in contact with a cam plate F^2 fixed to the framework A. at the opposite side of the machine to cam plate F. causes tongues G. to protrude beyond the circumference of the cylinder at the same time the plate gripper C. is opening, thus forcing the liberated edge of the sheet some distance from the circumference of the cylinder to facilitate the removal therefrom in the manner as hereinafter described.

The sheets are fed from the board J. in the usual manner and secured by a plate gripper C. which closes upon the sheet and some soft material such as india rubber R. inserted in recesses formed in the cylinder, or attached to the plate gripper C. thereby holding the sheet secure immediately the end of quadrant E. leaves the cam plate F at F'. thus by these means securing the sheet which is carried in the direction of the arrow round with the rotating cylinder B. the distance required for bronzing and dusting.

The bronze or other powder with which the prepared paper or the like is to be coated, is deposited in the trough K. in which may be placed a grooved bar L. having an arm L' at one end engaging with the groove of a circular cam C'. mounted on one of the roller shafts, so that, on the rotation of the said cam, the grooved bar L. is caused to reciprocate in the trough and thereby agitate the bronze powder, so that it may be collected by the rotating roller M. or any other well known and suitable mechanical motion may be utilized by which the contents of the trough K may be agitated.

The rollers M and N. are by preference driven by spur gearing, the latter at the same surface speed as the cylinder B. the gearing

engaging with a spur wheel mounted on the cylinder shaft. The roller M. rotates in the bronze deposited in trough K. thereby collecting same on its circumference which is transferred by the roller O. to the bronzing roller N. in the following manner:—The roller O. is supported at each end by a bracket P. each mounted on a stud R'. in such manner that the brackets P. are allowed to oscillate when the roller is operated by a cam Q. secured on the roller axle and arranged with a portion of its circumference farther from the center of the axle than the remainder of the cam. The roller O. is driven by friction, first by contact with the roller M. from the circumference of which the bronze powder is collected and is transferred to the bronzing roller N. on the extended portion of the circumference of the cam Q. coming in contact with the disk Q'. secured on the axle or shaft of roller M. by which means the roller O. is raised clear of roller M. and brought into contact with the circumference of roller N. thus transferring the bronze or other powder thereto. The paper or the like fed to the cylinder B. on passing under the roller N. receives the bronze powder; the surplus bronze being removed from the paper or the like, on the sheet passing under the rotating rollers B'. which are covered with soft material such as lamb's skin or circular brushes may be utilized by which the bronzed parts are burnished and the surplus powder removed which is deposited in the trough S. The paper or the like continuing its course with the cylinder B. passes under the rotating brushes or soft covered rollers T. T' and T^2. driven by a belt U. passing over pulleys P'. of such varying diameters that each roller in advance rotates quicker than the other, so that the last roller T^2. rotates quicker than T'. and T. and the latter quicker than the burnishing rollers B'. which also rotate quicker than the bronzing roller N. thus by these means, the bronzed portion is polished and the surplus powder removed from one side of the sheet, the paper or the like is passed through the apparatus in a straight and stretched condition and removed therefrom in the manner as hereinafter described. The rollers T T' and T^2. are each provided with a small roller or bar V. placed in contact with the soft pile covering of the said rollers or brushes, so that by the agitation of the pile or bristles, the bronze is removed therefrom. On the paper arriving at the point W. the quadrant E. will come in contact with the fixed cam plate F and thereby operate a plate gripper C. thus liberating the sheet, which, as the cylinder B. rotates, continues to travel, falling on to the rotating rollers Y. Y. somewhat as shown by the line S'. by which it is conducted between the soft covered rotating rollers Z. Z. Z. which again dust the sheet, this time on both sides, the said rollers being driven by a belt or spur gearing, so that the last pair rotates quicker than the first, thus keeping the paper stretched during the operation of "dusting off" both sides.

The rollers M to T are inclosed within a suitable casing C' so that the bronze or other powder is retained within the machine and prevented flying as is the case with machines as at present constructed.

What I claim as my invention is—

1. The combination of the rollers M N and O. with the cam Q cam plate Q.' and the rotating cylinder B. arranged substantially as shown and as hereinbefore described.

2. The combination of the rotating cylinder B. having suitable grippers for holding the paper or the like bronzing and brushing rollers and the receiving rollers Y, Y, with the rollers Z arranged substantially in the manner as shown and as hereinbefore set forth.

3. In combination with the cylinder B having gripping devices the bronzing roller N and the means for applying bronze thereto, the brushing rollers B', the collecting trough S beneath the same, the brushing rollers beneath the trough, the receiving rollers Y and the rollers Z, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE NEWSUM.

Witnesses:
JNO. GILL,
E. THACKRAY.