(No Model.) 2 Sheets—Sheet 1.

W. E. HALLENBECK.

BRONZING MACHINE.

No. 306,605. Patented Oct. 14, 1884.

Fig. 1.

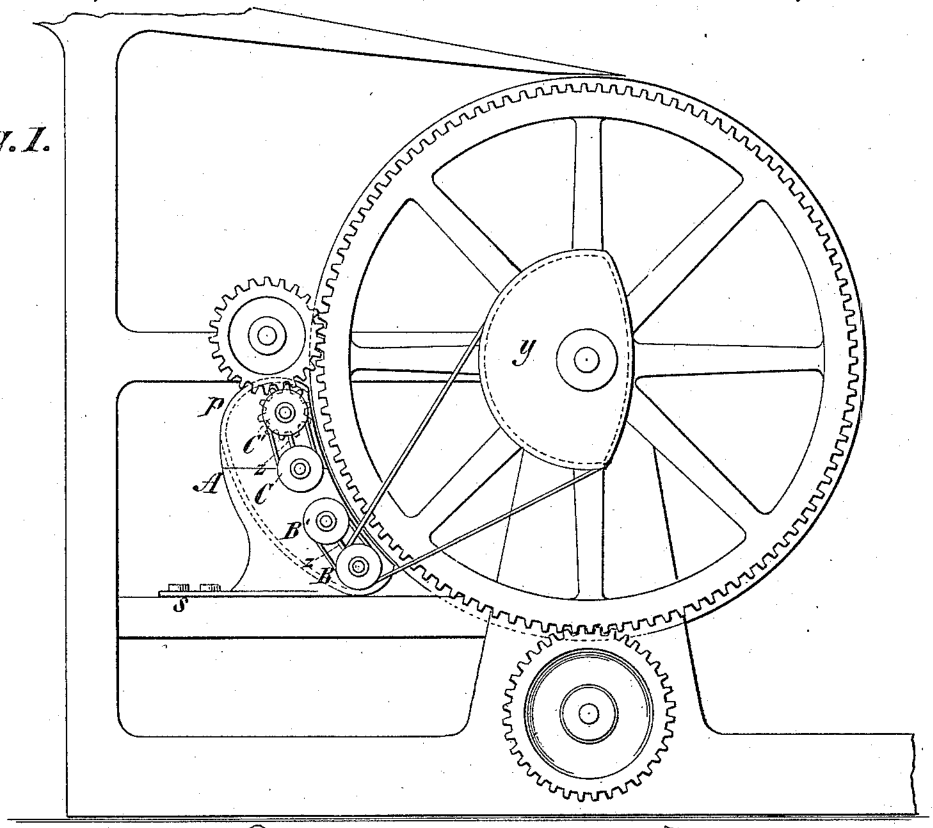


Fig. 2.

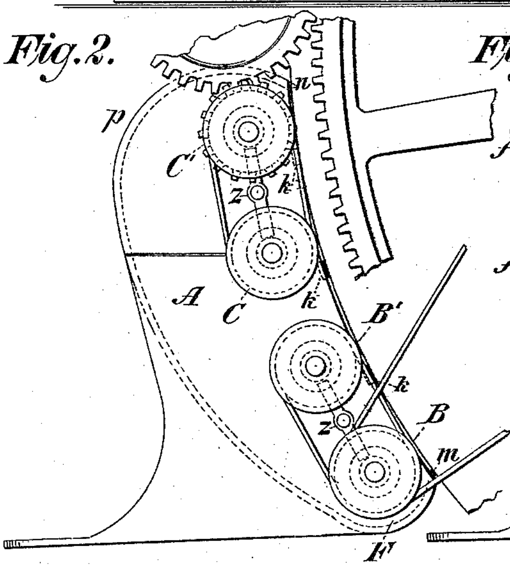
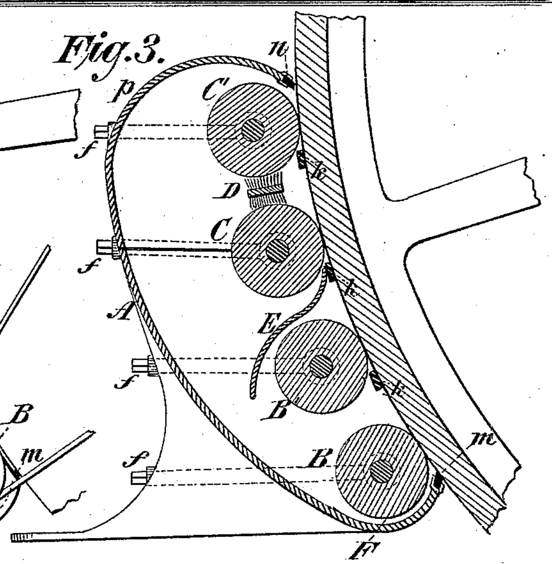


Fig. 3.



WITNESSES:

Gustave Dieterich

Fredk Haertwohl

INVENTOR

Wm E Hallenbeck

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

W. E. HALLENBECK.

BRONZING MACHINE.

No. 306,605. Patented Oct. 14, 1884.

Fig. 4.

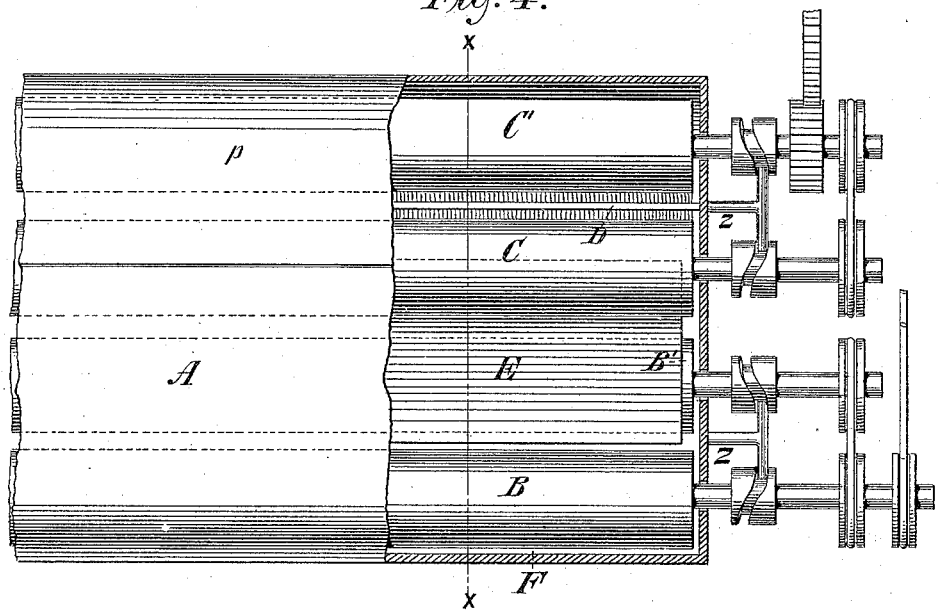
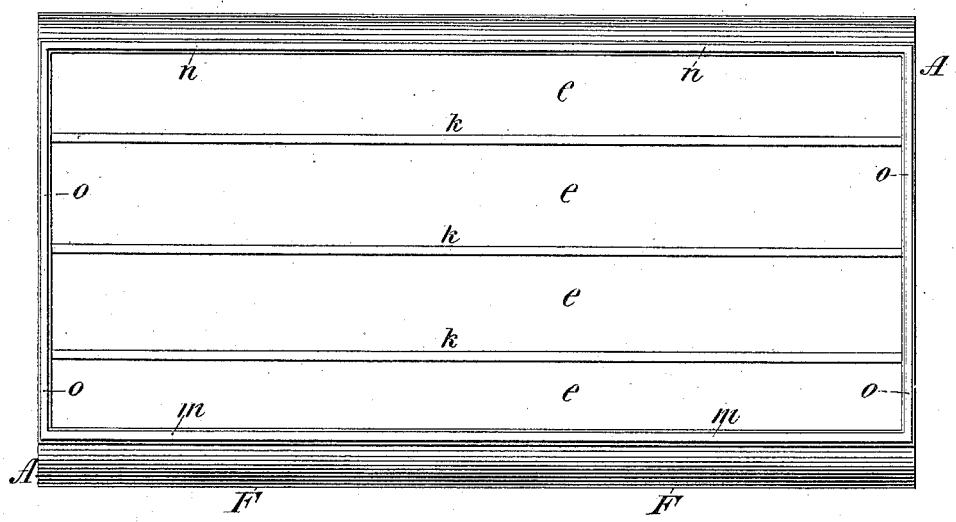


Fig. 5.



WITNESSES:

Gustave Dieterich

Fred'k Huetwohl

Wm E Hallenbeck INVENTOR

UNITED STATES PATENT OFFICE.

WILLIAM E. HALLENBECK, OF JERSEY CITY, NEW JERSEY.

BRONZING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 306,605, dated October 14, 1884.

Application filed March 10, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. HALLENBECK, of the city of Jersey City, county of Hudson, and State of New Jersey, have invented an Improved Bronzing Attachment to Cylinder Printing-Presses; and I do declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a bronzing attachment to cylinder printing-presses which can be readily attached to and detached from any cylinder printing-press, thus obviating the necessity of complicated bronzing-machines.

Figure 1 shows my improved bronzing device as applied to a cylinder printing-press. Fig. 2 shows an enlarged side view of the attachment. Fig. 3 shows a central vertical section of the attachment in the plane of the line *x x*, Fig. 4. Fig. 4 shows a rear view of the bronzing attachment, partly broken away, showing the interior construction. Fig. 5 shows a front view of the case A, showing also rubber strips and openings.

Like letters of reference, wherever they occur, indicate corresponding parts in all the figures.

My attachment consists of case A, bronzing and distributing rollers B B′, cleaning or brushing rollers C C′, comb D, for preventing the accumulation of the bronze-powder in the hair of the brush-rollers, apron E, trough or feed F, into which is placed the bronze, and forks *z z*, controlling the vibratory movement.

m is a flexible rubber lip, extending the length of the bottom edge of the attachment, touching the cylinder of the printing-press; *n*, flexible rubber lip extending the length of the top edge of the attachment, same side.

o o are strips of flexible rubber on each end of the attachment, same side.

k k k k are flexible rubber strips at bottom of openings, also on same side of the attachment.

The flexible rubber lips and strips indicated by letters *m*, *n*, *o o*, and *k k k k* are tightly fastened to the attachment, as shown in Fig. 3, and when the attachment is adjusted to the printing-press they bear evenly and lightly against the cylinder, thus preventing the escape of the bronze.

p is top of attachment, which can be removed.

f f f f are set-screws and springs for adjusting at will the rollers to the cylinder of the printing-press.

e e e e are openings running the length of the attachment, and through which project the bronzing, distributing, and brushing rollers sufficient to touch the printed sheet on the cylinder of the printing-press.

y is a cam-pulley, driving the bronzing-roller only when desired.

Mode of operation: The preparation for printing the paper is the same as with other work. When ready to be used, the bronzing and distributing rollers B B′ and the cleaning-rollers C C′ are placed in their proper positions, and the attachment is then adjusted to the delivery end of the printing-press, against the cylinder, and firmly bolted to the ledges *s s*, as shown in drawings, Fig. 1. The rollers can be delicately adjusted to the cylinder by means of set-screws and springs *f f f f*. The bronze is placed in the feed or trough F. The paper is fed upon the press and is carried around the cylinder, as in ordinary printing. Immediately upon leaving the printing-form on the bed of the press, it passes between the cylinder and the attachment, (instead of being delivered upon the fly,) and, while passing, the bronze is applied by bronzing-roller B. By means of an elastic band on cam-pulley *y* the bronzing-roller B can be regulated to run only when the surface requiring bronzing is passing. That the distribution may be thorough and complete, the roller B′ is also used, being driven by band from pulley on roller B. Each roller is driven to turn in an opposite direction to that of the cylinder of the printing-press. Immediately upon the bronze being applied and distributed, and while passing, the paper is brushed and cleaned by brush-rollers C C′, roller C′ being driven by suitable gearing and roller C by band from pulley on roller C′. These rollers are also driven to turn in an opposite direction to that of the cylinder of the printing-press. By means of the vibratory movement governed by forks *z z*, the bronze is applied to and distributed upon the paper in an even and thorough manner, completely covering the heaviest and densest surface. The

brush-rollers being also governed by the vibratory movement, the paper is perfectly cleaned. Immediately after passing the cleaning-rollers, the sheet is delivered to the fly in the usual manner; hence it will be seen that by means of my attachment thus applied to and operated by the printing-press I accomplish in one operation both the printing and bronzing, saving thereby one separate handling of the sheets and the employment and expense of the operating machinery of the usual bronzing-machine, as the printing-press is thus made to perform part of the work (as well as the saving of once handling the sheets) of the usual bronzing-machine. The escape of bronze is prevented by means of strips of flexible rubber attached to bottom and top edges and at bottom edge of each opening, and on each end of the bronzing side of the attachment lightly and evenly touching the cylinder of the press. The surplus bronze brushed from the paper and that combed from the cleaning-rollers C C′ by comb D falls upon apron E, and is carried trough or down to feed F.

I am aware that bronzing-machines are made in which bronzing, distributing, polishing, and brushing rollers are employed, suitably incased and operated in combination with various other mechanism, which altogether constitute bronzing-machines, but not connected directly with a printing-press—as, for instance, in the cases of L. Poirier, No. 194,261; B. G. George, No. 90,521; E. F. Benton, No. 122,216, and others. Therefore I do not claim, broadly, a bronzing-machine consisting of bronzing, distributing, and brushing rollers irrespective of the method of the combination of such parts, and the method of employing and operating the same; but

What I do claim as new and useful, and desire to secure by Letters Patent, is—

In connection with cylinder printing-presses, the bronzing attachment consisting of bronzing and distributing rollers B B′, cleaning or brush rollers C C′, and cam *y*, substantially in the manner and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand.

WILLIAM E. HALLENBECK.

Witnesses:
HARRY C. HALLENBECK,
CHARLES F. RAMSDELL.