No. 752,285. PATENTED FEB. 16, 1904.

H. A. DAVIS.

INKING DEVICE.

APPLICATION FILED APR. 30, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

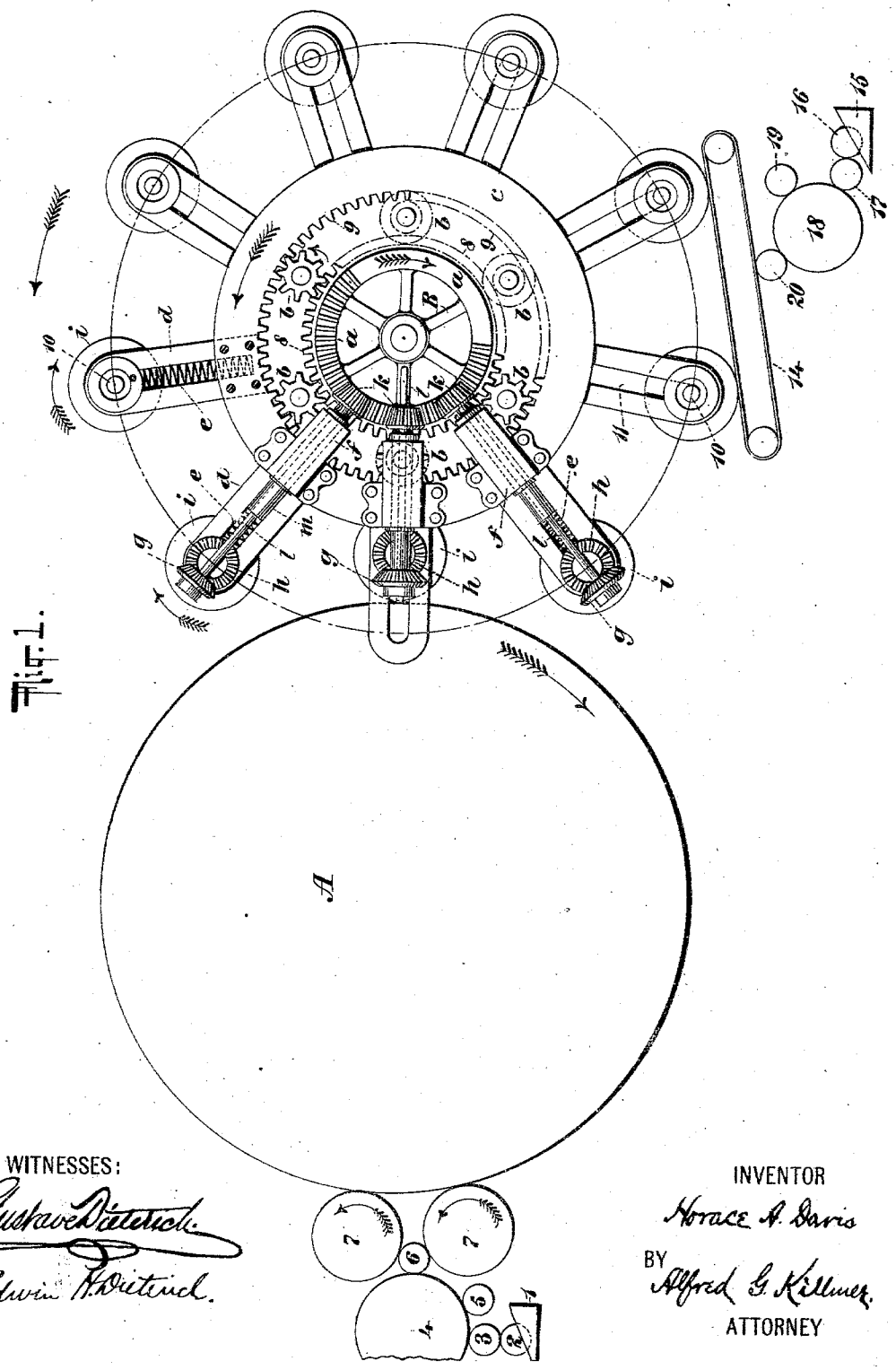


Fig. 1.

WITNESSES:

Gustave Dietrich.

Edwin F. Dietrich.

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NO MODEL. 2 SHEETS—SHEET 2.

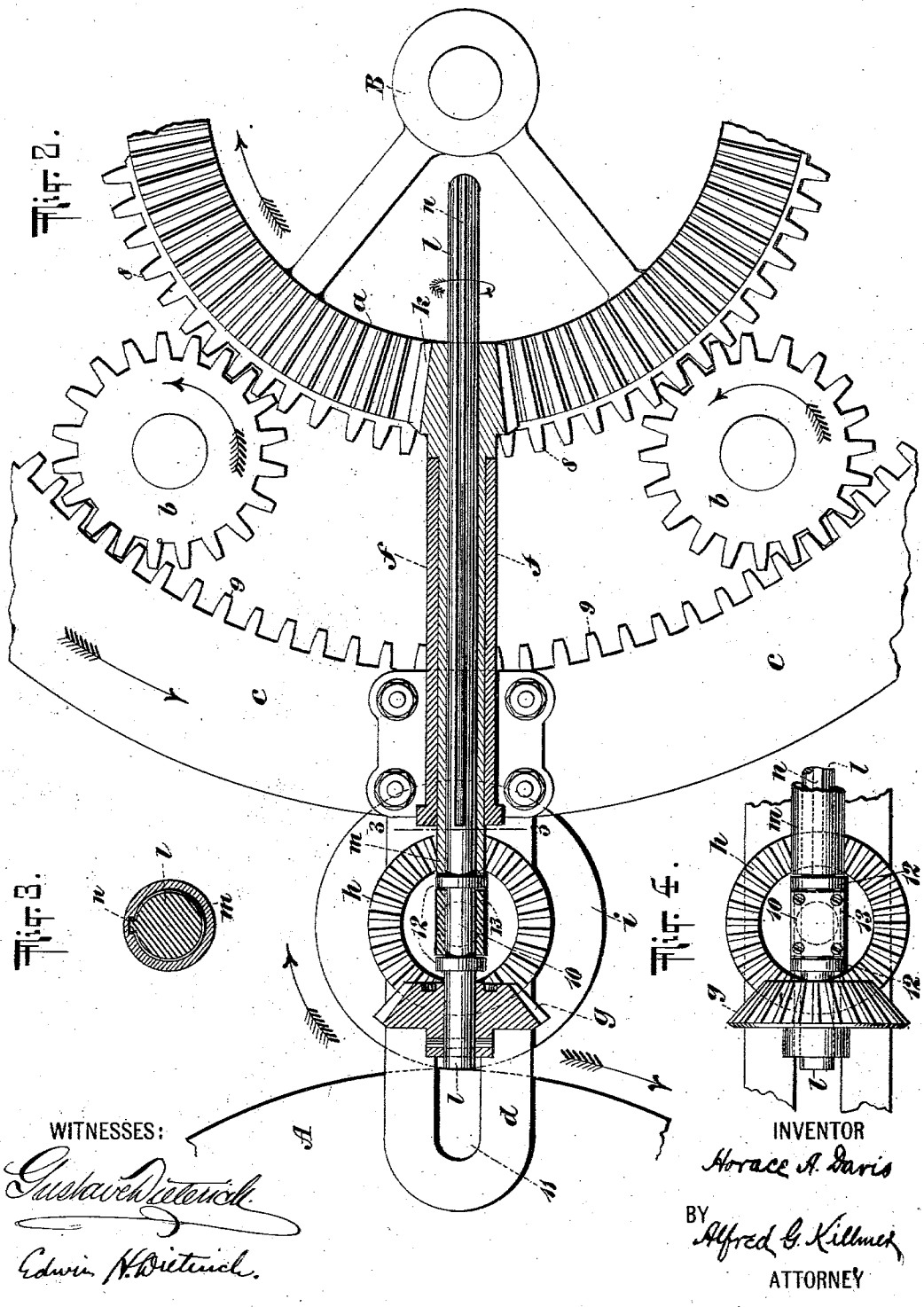


Fig. 2.

Fig. 3.

Fig. 4.

WITNESSES:

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No. 752,285. Patented February 16, 1904.

UNITED STATES PATENT OFFICE.

HORACE A. DAVIS, OF NEW YORK, N. Y.

INKING DEVICE.

SPECIFICATION forming part of Letters Patent No. 752,285, dated February 16, 1904.

Application filed April 30, 1902. Serial No. 105,375. (No model.)

To all whom it may concern:

Be it known that I, HORACE A. DAVIS, a citizen of the United States, residing in the city of New York, county of Richmond, and State of New York, have invented a new and useful Inking Device, of which the following a specification.

My invention relates to an improvement in inking devices for cylinder printing-presses. Its object is to provide for inking the type on form-cylinders of cylinder printing-presses continuously in each direction.

Referring to the accompanying drawings, in which like reference characters refer to like parts of the device, Figure 1 is a diagrammatic view of the machine. Fig. 2 is a detail view, partly sectional, of the arm actuating the inking-roller. Fig. 3 is a cross-section on the line 3 3 of Fig. 2. Fig. 4 is a detail view of the journals of the inking-roller and the actuating-arm thereof.

Referring to the drawings in detail, A is a form-cylinder revolving in the direction of the arrow.

1 is an ink-fountain from which ink is taken by the fountain-roller 2 and carried by the ductor-roller 3 to the ink-cylinder 4, whereon it is distributed by the distributing-roller 5 and thence carried by the vibrating roller 6 to the inking-rollers 7, revolving in the direction of the arrows, by which it is spread upon the form on the form-cylinder A, all as customary in cylinder-presses.

B is a gear-wheel provided with the exterior teeth 8, meshing with the small intermediate gear-wheels *b*, whose teeth in turn mesh with the interior teeth 9 of the large wheel *c*. From the wheel *c* project a series of slotted arms *d*, each carrying an inking-roller *i*, journaled at 10. The inking-rollers *i* are revolved about their own axes by the miter-gear *g h*, actuated by the arms *l*, journaled at 13, and the sleeves *m*, journaled at *f* and provided at their inner ends with the bevel-gear *k*, meshing with the teeth *a* on the face of the wheel *b*. The direction of the revolution of each of these revoluble parts is indicated by the arrows, respectively.

The inking-rollers *i* are pressed out to the ends of the arms *d* by the springs *e*, against the pressure of which they are forced down into the slots 11 as they ride over the circumference of the form-cylinder A. The arms *d* are provided with the collars 12 on each side of the journals 13, which are rigidly connected with the journals 10 of the inking-rollers *i*, and therefore carry the arms *l* inward and outward with the inward and outward motion of the inking-rollers *i* in the slots 11, keeping the miter-gear *g h* always in mesh and revolving the inking-rollers *i* continuously. The arms *l* are also provided with the splines *n*, playing in the sleeves *m* and rotating the arms *l*. The wheel *c* is driven at a rate of speed greater than that of the form-cylinder A, so that the rollers *i* would if actuated by friction only revolve about their own axes in a direction opposite to that of the form-cylinder A and at a speed substantially equal to the difference between the speed of the wheel *c* and that of the form-cylinder A. Such a rate of speed of the wheel *c* also causes several of the rollers *i* in succession to pass over a given arc of the form-cylinder before it revolves beyond their orbit, thereby securing a better inking. For the same reason it is desirable to place the inking-rollers *i* as close together as is permitted by their inward and outward motion as they ride over the form-cylinder. The gear actuating the rollers *i* about their own axes is adjusted to give them the same rate of speed that they would have if driven only by friction with the form-cylinder A.

Ink is fed to the inking-rollers *i* by the inking-belt 14, which is supplied from the ink-fountain 15 by the fountain-roller 16, ductor-roller 17, ink-cylinder 18, distributing-roller 19, and ductor-roller 20.

The operation of the device is as follows: The form (not shown) having been secured to the form-cylinder A is revolved with it in the direction of the arrow on A. It meets the inking-rollers 7, revolving in the same direction and at the same rate of speed. The inking-rollers 7, the fountain, ductor, and distributing rollers 2, 3, and 5, and the ink-cylinder 4, connecting the same with the ink-fountain 1, may be actuated by gear (not shown) or by friction. The vibrating roller 6 is ac-

tuated by gear (not shown) in the usual way. The gear-wheel B is revolved at a high rate of speed in the direction of its arrow and through the medium of the small wheels *b* causes the large wheel *c* to revolve in the direction of its arrow at a rate of speed greater than that of the form-cylinder A. The series of inking-rollers *i* are thus brought in turn into contact with the form-cylinder A and as they ride over its circumference are forced back into the slots 11 of their respective arms *d*. The form-cylinder A is provided with a resilient rim or buffer (not shown) to engage the inking-rollers *i* as they approach the cylinder and prevent any hammering or jarring of the form or rollers. The inking-rollers *i* are revolved about their own axes in the direction of their arrows opposite to that of the form-cylinder A by the bevel-gear *k*, meshing with the teeth *a* on the wheel B, and transmitting its motion through the sleeves *m*, the splined arms *l*, and the miter-gear *g h*. The rate of revolution of the inking-rollers *i* about their own axes is the same as would be imparted to them by frictional contact with the form-cylinder A, so as to cause the ink to be spread upon the form without blurring the type or scraping the rollers. As the inking-rollers *i* leave the form-cylinder they are pressed out again by the springs *e* to the ends of the arms *d* and receive a fresh supply of ink from the inking-belt 14, which is fed from its ink-fountain 15 by the set of rollers and ink-cylinders 16, 17, 18, 19, and 20, actuated by gear (not shown) or by friction. The form after being inked as above described comes in contact with the web carried over impression-cylinders (not shown) in the usual manner and prints.

My invention is not limited to the precise form of gear here shown to actuate the inking-rollers *i*, as they may be actuated by friction or by a chain or other well-known mechanical devices.

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

1. A cylinder printing-press in which the type on the form-cylinders is inked by one set of inking-rollers revolving about their own axes in a direction the same as the direction in which the form-cylinders revolve and by another set of inking-rollers revolving about their own axes in a direction opposite thereto.

2. In a cylinder printing-press, a set of inking-rollers inking the type on the form-cylinder while revolving about their own axes in a direction opposite to the direction in which the form-cylinder revolves.

3. A cylinder printing-press in which the type on the form-cylinders is continuously inked in the direction in which the form-cylinders revolve to print and also in the direction opposite thereto.

4. Means for continuously inking the type on the form-cylinders of a printing-press in both directions, consisting of one set of inking-rollers revolving about their own axes in the same direction and at the same speed as the form-cylinder and another set of inking-rollers carried on a wheel revolving in the same direction as the form-cylinder and at a greater speed, such rollers revolving about their own axes in a direction opposite to the direction in which the form-cylinders revolve.

5. In a cylinder printing-press, a series of inking-rollers adapted to be brought successively into contact with the form-cylinders and to ride over a portion of the circumference thereof while revolving about their own axes in a direction opposite to the direction in which the form-cylinders revolve.

6. In a cylinder printing-press, inking-rollers adapted to ride over a portion of the circumference of the form-cylinder in the direction in which the form-cylinder is revolving, while revolving upon their own axes in the direction opposite thereto.

7. In a cylinder printing-press, a series of inking-rollers carried on arms moving in the same direction as that in which the form-cylinder revolves, said inking-rollers at the same time revolving about their own axes in a direction opposite to the direction of the form-cylinder.

8. In a cylinder printing-press, a series of inking-rollers carried on arms and adapted to be brought successively into contact with the form-cylinder and to pass over a portion of its circumference, in the same direction as that in which the form-cylinder revolves, and at a greater rate of speed, while revolving about their own axes in a direction opposite thereto.

9. A device for inking the type on form-cylinders of a printing-press consisting of a series of inking-rollers adapted to be brought successively into contact with the form-cylinders and to ride over a portion of the circumference thereof while revolving in a direction opposite to the direction in which the form-cylinder revolves, with means for inking said rollers and for actuating the same.

10. A device for inking the type on the form-cylinders of a printing-press consisting of a wheel provided with arms carrying inking-rollers adapted to be brought successively into contact with the form-cylinder and to revolve in a direction opposite to the direction in which the form-cylinder revolves, with means for inking said rollers, and for actuating the same.

11. In a cylinder printing-press, a wheel provided with slotted arms carrying inking-rollers adapted to revolve about their own axes in a direction opposite to the direction in which the form-cylinder revolves, a spring adapted to press said rollers out to the ends of said slotted arms except when said rollers are passing over the circumference of the form-cylinder, and means for inking said rollers and for actuating the same.

12. In an inking device for cylinder printing-presses, a gear-wheel adapted to actuate a wheel provided with arms carrying inking-rollers and at the same time to actuate said inking-rollers about their own axes in a direction opposite to the direction in which the form-cylinder revolves.

13. In an inking device for cylinder printing-presses, a gear-wheel provided with one set of teeth adapted to actuate at a greater rate of speed than that of the form-cylinder a wheel provided with arms carrying inking-rollers, and another set of teeth adapted by suitable gear to rotate said rollers in a direction opposite to the direction in which the form-cylinder revolves and at a rate of speed equal to the difference between the speed of such armed wheel and the form-cylinder.

14. In an inking device for cylinder printing-presses, a gear-wheel adapted to actuate a wheel provided with slotted arms carrying inking-rollers and at the same time to actuate said inking-rollers about their own axes in a direction opposite to the direction in which the form-cylinder revolves, with means for allowing said inking-rollers to ride over a portion of the circumference of said form-cylinder, and for inking said rollers.

15. In a cylinder printing-press, the combination of a form-cylinder, a set of inking-rollers adapted to ink the type thereon in the same direction as that in which the form-cylinder revolves and revolving about their own axes at the same speed as the form-cylinder, a second set of inking-rollers adapted to ink said type while revolving about their own axes in the direction opposite to that in which the form-cylinder revolves, slotted arms carrying said second set of inking-rollers, springs within the slots thereof, and means for inking each of said sets of inking-rollers and for actuating the same.

16. In a cylinder printing-press, the form-cylinder A, the inking-roller 7, the slotted arms *d* on the wheel *c*, carrying the inking-rollers *i*, the springs *e*, with means for inking said rollers and for actuating the revoluble parts, the rollers 7 and the wheel *c* being adapted to revolve about their own axes in the same direction as the form-cylinder A, and the rollers *i* being adapted to revolve about their own axes in a direction opposite thereto, substantially as shown and described.

17. In a cylinder printing-press, the form-cylinder A, the inking-rollers 7, the gear-wheel B, provided with the teeth 9, the intermediate gear-wheels *b* actuating the wheel *c* provided with the slotted arms *d* carrying the inking-rollers *i*, the springs *e*, the teeth *a* on the gear-wheel B, the bevel-gear *k*, the sleeves *m*, the splined arms *l*, the miter-gear *g*, *h*, and the inking-belt 14, the rollers 7 and the wheel *c* being adapted to revolve about their own axes in the same direction as the form-cylinder A, and the rollers *i* being adapted to revolve about their own axes in a direction opposite thereto, substantially as shown and described.

Signed at New York city this 28th day of April, 1902.

HORACE A. DAVIS.

In presence of—
ALFRED G. KILLMER,
JENNIE E. VAN HEUSEN.