

H. B. COOLEY.
 INK DISTRIBUTING MECHANISM FOR PRINTING MACHINES.
 APPLICATION FILED JAN. 25, 1910. RENEWED MAR. 30, 1911.

1,008,015.

Patented Nov. 7, 1911.

3 SHEETS-SHEET 1.

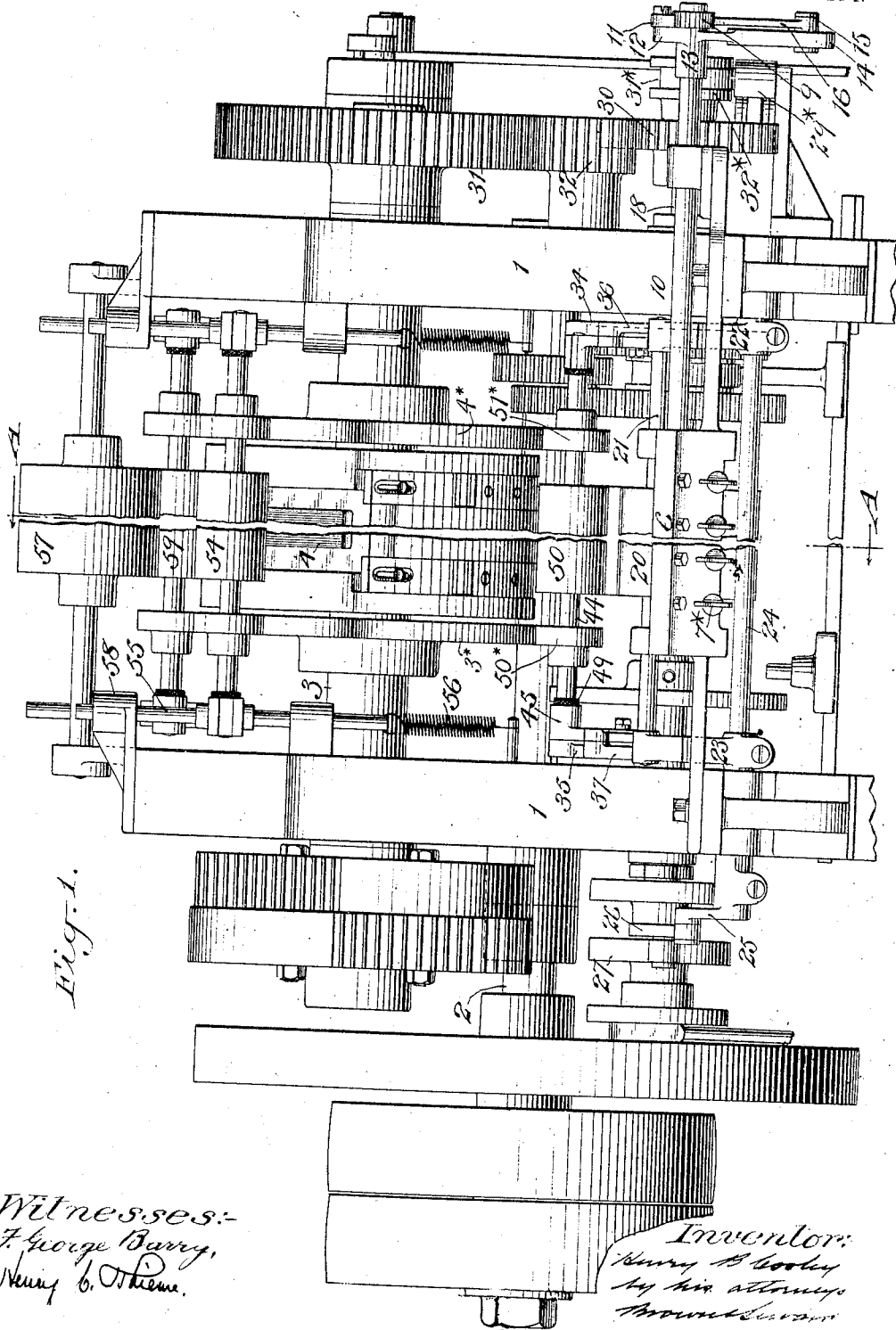


Fig. 1.

Witnesses:
 J. George Barry,
 Henry C. Thorne.

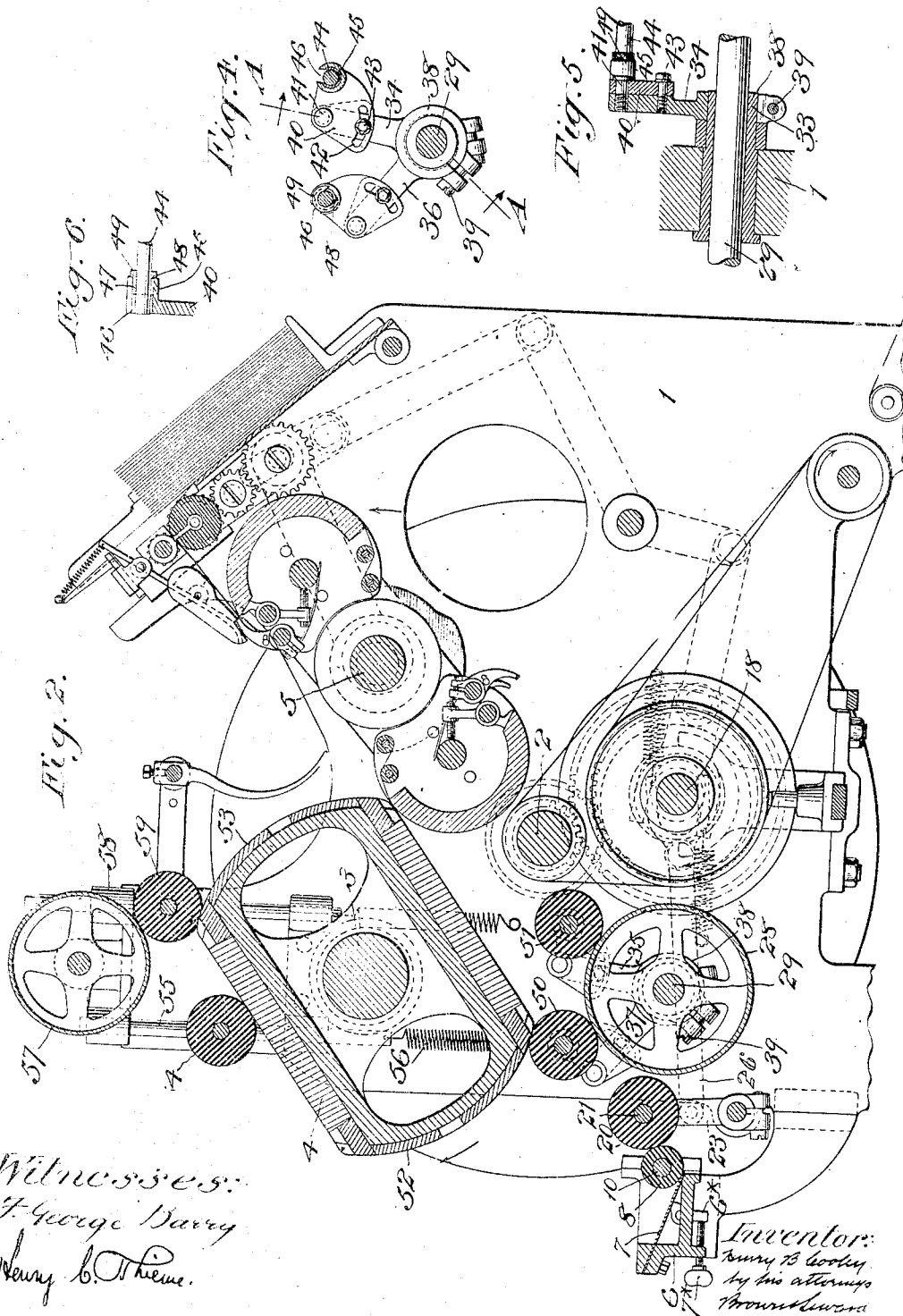
Inventor:
 Henry B. Cooley
 by his attorneys
 Thorne & Co.

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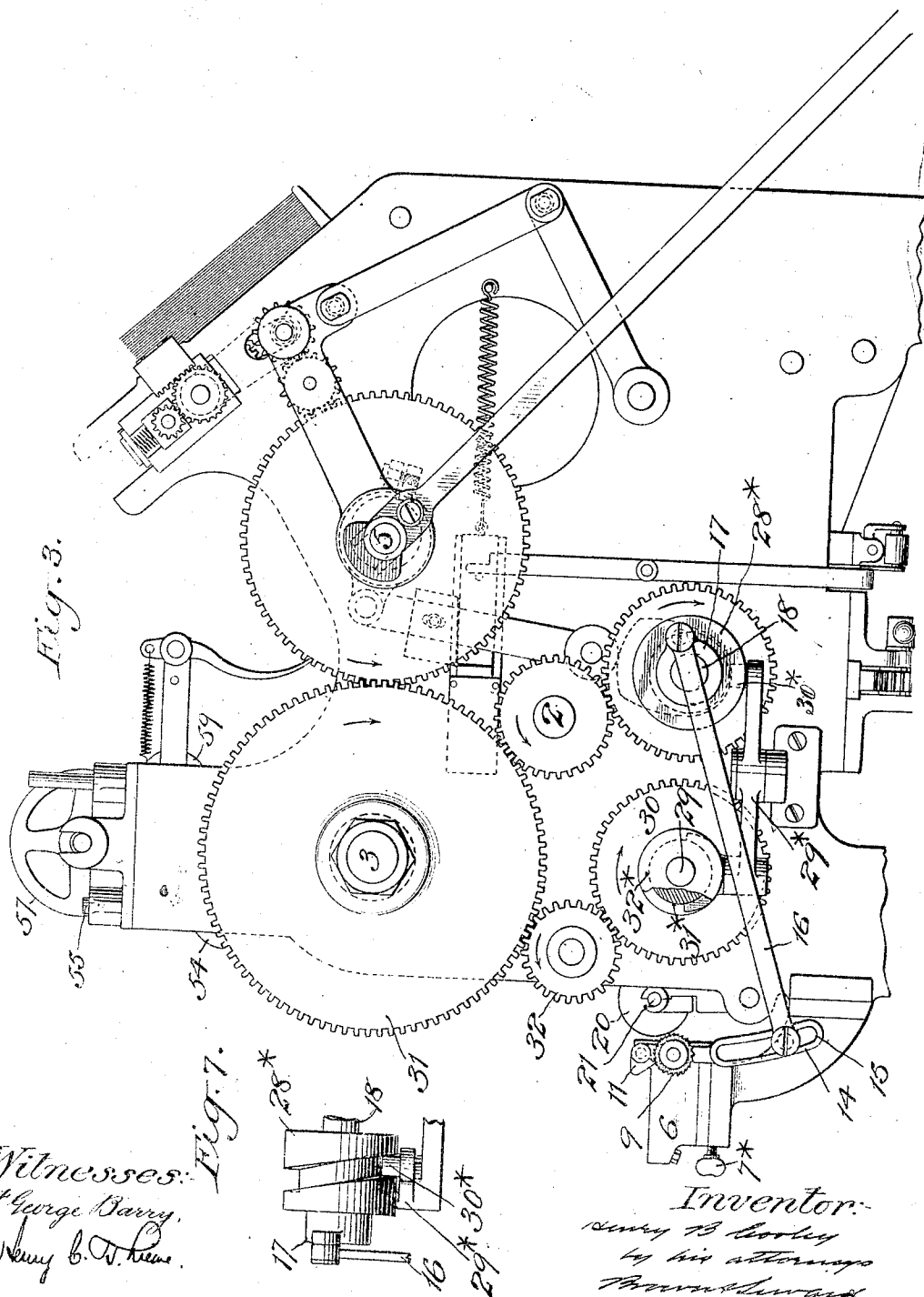
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3 SHEETS-SHEET 2.



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 J. George Barry
 Henry B. Thorne.

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 Henry B. Cooley
 by his attorneys
 Thorne & Cooley



Witnesses:
 George Barry,
 Harry B. W. Lewis.

Inventor:
 Henry B. Cooley
 by his attorneys
 Brown & Shuman

UNITED STATES PATENT OFFICE.

HENRY B. COOLEY, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE AMERICAN PAPER GOODS COMPANY, OF KENSINGTON, CONNECTICUT, A CORPORATION OF NEW JERSEY.

INK-DISTRIBUTING MECHANISM FOR PRINTING-MACHINES.

1,008,015.

Specification of Letters Patent.

Patented Nov. 7, 1911.

Application filed January 25, 1910, Serial No. 539,943. Renewed March 30, 1911. Serial No. 618,007.

To all whom it may concern:

Be it known that I, HENRY B. COOLEY, a citizen of the United States, and resident of New Britain, in the county of Hartford and State of Connecticut, have invented a new and useful Ink-Distributing Mechanism for Printing-Machines, of which the following is a specification.

My invention relates to ink distributing mechanism for printing machines with the object in view of providing efficient means for thoroughly comminuting and finely spreading the ink on the type.

A practical embodiment of my invention is represented in the accompanying drawings in which,

Figure 1 is a view of the ink distributing mechanism in elevation, broken away through the center, showing its arrangement with reference to a printing machine. Fig. 2 is a vertical central section through the same, in the plane of the line A—A, Fig. 1. Fig. 3 is an end elevation. Fig. 4 is a view in detail showing the means for supporting and adjusting the ink transmitting rollers. Fig. 5 is a view of the same in section in the plane of the line A—A of Fig. 4, Fig. 6 is a view in detail of one of the roller bearings, and Fig. 7 is a view in detail showing the wobble cam and co-acting mechanism.

The particular printing machine which I have chosen to illustrate the practical application of the ink distributing mechanism is a rotary flat bed printing machine, such as is shown in my pending application Serial No. 539,942 filed of even date herewith, and while the ink distributing mechanism is well adapted to this type of machine, it may also be used in connection with machines of other types.

The frame of the printing machine is denoted by 1, the drive shaft by 2, the form cylinder shaft, driven by the drive shaft, by 3, the form cylinder by 4, and the impression cylinder shaft, driven by the form cylinder, by 5.

The ink fountain is denoted by 6. It is provided with a downwardly inclined ink receiving plate 7 on which the ink is deposited and down which it travels to the ink roller 8, forming a closure for the fountain at the lower end of the plate. The plate 7 is pressed toward the roller 8 by means of a

series of rocking dogs 6* under the control of a series of set screws 7*. The ink roller 8 is rotated step by step by means of a pawl and ratchet mechanism, the ratchet toothed wheel 9 being fixed on the shaft 10 of the roller 8, and the pawl 11 for engaging the ratchet wheel 9 being pivotally secured to a lug 12 on a sleeve 13 loosely mounted on the shaft 10 in position to bring the pawl into engagement with the teeth of the wheel 9. The sleeve 13 is provided with a depending arm 14 having an elongated slot in which the pin 15 may be adjusted, the pin 15 being connected by a pitman 16 with a crank 17 on the cam shaft 18, which cam shaft is driven by interchange gear, shown dotted (Fig. 2) on the drive shaft 2.

Ink is taken from the ink roller 8 by means of the ink doctor 20 consisting of a roller mounted to rotate freely on the shaft 21 carried by a pair of arms 22, 23, fixed to a rock shaft 24 mounted in suitable bearings in the frame 1 and operated by means of a crank 25 connected by a pitman 26 with an eccentric 27 on the cam shaft 18. The rocking of the shaft 24 and hence of the arms 22 and 23 carrying the doctor roller, brings the roller alternately into contact with the positively driven ink roller 8, and the surface of the ink transferring drum 28. The transferring drum 28 is carried on the shaft 29 and is positively driven by means of gear 30 from gear 31 on the shaft of the form cylinder, through an intermediate pinion 32. The teeth on the pinion 32 are made of sufficient length so that the teeth on the gear 30 may slide along the same without getting out of mesh and a longitudinal reciprocating motion is imparted to the drum 28 by means of a wobble cam 28* on the cam shaft 18, which communicates its motion to the shaft 29 through a vibrating yoke 29*, one arm of which is engaged by means of a roller 30* with the wobble cam and the other arm with a groove 31" in a sleeve 32* on the shaft 29. There are also fixed on sleeves 33, which form bearings for the shaft 29, two sets of roller supporting arms, one set being denoted by 34, 35 and the other set by 36, 37. The arms 34 and 35 are at the opposite ends of one roller supporting shaft. Each of these arms is provided with a split hub 38, see Figs. 3 and 4, which is clamped to the sleeve 33 by means

of a screw 39. Each of the arms, furthermore, carries at its outer end, a plate 40, in the present instance, a plate shaped like the quadrant of a circle, the said plate being pivotally secured at 41 to the arm and having a curved slot 42 formed in it through which a set screw 43 extends into the arm 34 to lock the plate in the desired rocked adjustment on its pivot 41. The plate 40 also contains a bearing for the roller shaft or trunnion 44. This bearing for the shaft or trunnion 44, is so constructed as to either lock the roller shaft or trunnion in its position within the bearing or to readily open to permit the shaft, together with the roller, to be removed. It consists of a stationary part 45 fixed to the plate 40 and provided with an inner lining of some suitable bearing metal extending part way of the length of the bearing, the bearing itself being provided with an opening sufficiently wide to permit the passage of the shaft 44. Within the stationary part 45 of the bearing, there is a rocking bearing or part bearing 47, also provided with an opening 48 sufficiently wide to permit the shaft to pass through, and this half bearing is provided with a disk 49 and is mounted loosely on the shaft 44 and also within the stationary bearing 45, and this bearing or lining within it meets the lining in the stationary bearing end to end so that this movable part of the bearing may be rocked to bring the two openings into alinement and permit the shaft to be removed or when the shaft is adjusted it may be rocked into position with its opening directed in the direction opposite that of the opening 46 in the stationary bearing, thereby effectively locking the shaft in its position and completing the full bearing for the shaft.

Each of the arms 34, 35, 36, 37, is provided with an adjustable supporting plate and bearings quite similar to the plate and bearing already described, so that each of the ink distributing rollers 50 and 51, each carried by one set of the arms 34, 35 or 36, 37, may be lifted out of and put into its place and locked at pleasure. The ink distributing rollers 50 and 51 are intended to bear on the ink distributing drum 28 and receive their supply of ink from the surface of said drum. These ink distributing rollers 50 and 51 are also in position to bear against and roll along the curved portions 52, 53, of the form cylinder 4, these curved portions 52, 53, which are, in the present instance, portions of the surface of a cylinder, in the present type of machine being located between two flat beds formed on the cylinder for receiving the chase. The distributing rollers 50, 51 are replenished from drum 28 during the interval when they are out of contact with the form cylinder.

The ink fed being applied to the curved

portions 52, 53 of the form cylinder, is, before it is allowed to come in contact with the face of the type, transferred to a roller 54 mounted in suitable bearings in a vertically sliding rod or bar 55, which bar or rod is held in a normally depressed position or in a position toward the form cylinder by means of a spring 56. The rotary movement of the form cylinder presses the roller 54 upwardly so that when the curved portion 52 engages the roller 54, the latter will have its surface in contact with the grinding and spreading drum 57 mounted in the cross head 58 fixed to the main frame, and, before the roller 54 passes the curved portion 52 on the form cylinder and begins to travel under the tension of its spring 56 and of gravity, along the face of the type on one of the flat beds on the form cylinder, the curved portion 52 of the form cylinder will have engaged a second roller 59 mounted in a manner quite similar to the roller 54, in position to be pressed against the drum 57, and as the curved portion 52 leaves the roller 54 and permits the latter to travel along the face of the type, it will still rub against the roller 59, causing it and the drum 57 to rotate, and finally the roller 59 will itself pass over the face of the type, the combined action of the several rollers being such as to thoroughly comminute and finely spread the ink on the type, completely avoiding any tendency to blur or daub the sheet being printed.

The means for feeding the paper or other material to be printed to the impression cylinder is quite similar in its general operation to that shown, described and claimed in my Patent No. 874943 granted me on December 31, 1907, entitled mechanism for feeding paper, and the impression cylinder for conveying the paper or material to be printed to the form cylinder may be of any suitable structure, for example, the structure shown in my pending application hereinbefore referred to.

The several rollers 50, 51, 54 and 59 are provided each with a pair of bearing disks similar to the disks 50*, 51* on the shaft of the roller 50, which bearing disks engage bearing rims 3*, 4* on the form cylinder to drive and hold the roller in its proper relation to the form cylinder.

What I claim is:

Ink distributing apparatus comprising a form cylinder provided with alternating curved and flat surfaces, an ink reservoir, ink distributing drums located on opposite sides of the form cylinder and ink rollers interposed between the said drums and form cylinder and between one of said drums and the ink reservoir, one set of rollers interposed between a drum and the form cylinder being arranged to engage the drum and curved portions only of the form cylinder

and the other set of rollers interposed between the other drum and form cylinder being mounted to reciprocate and engage the drum and both the curved and flat surfaces
5 of the form cylinder.

In testimony, that I claim the foregoing as my invention, I have signed my name in

presence of two witnesses, this 21st day of January 1910.

HENRY B. COOLEY.

Witnesses:

HENRY C. THIEME,
C. S. SUNDGREN.