

No. 671,974.

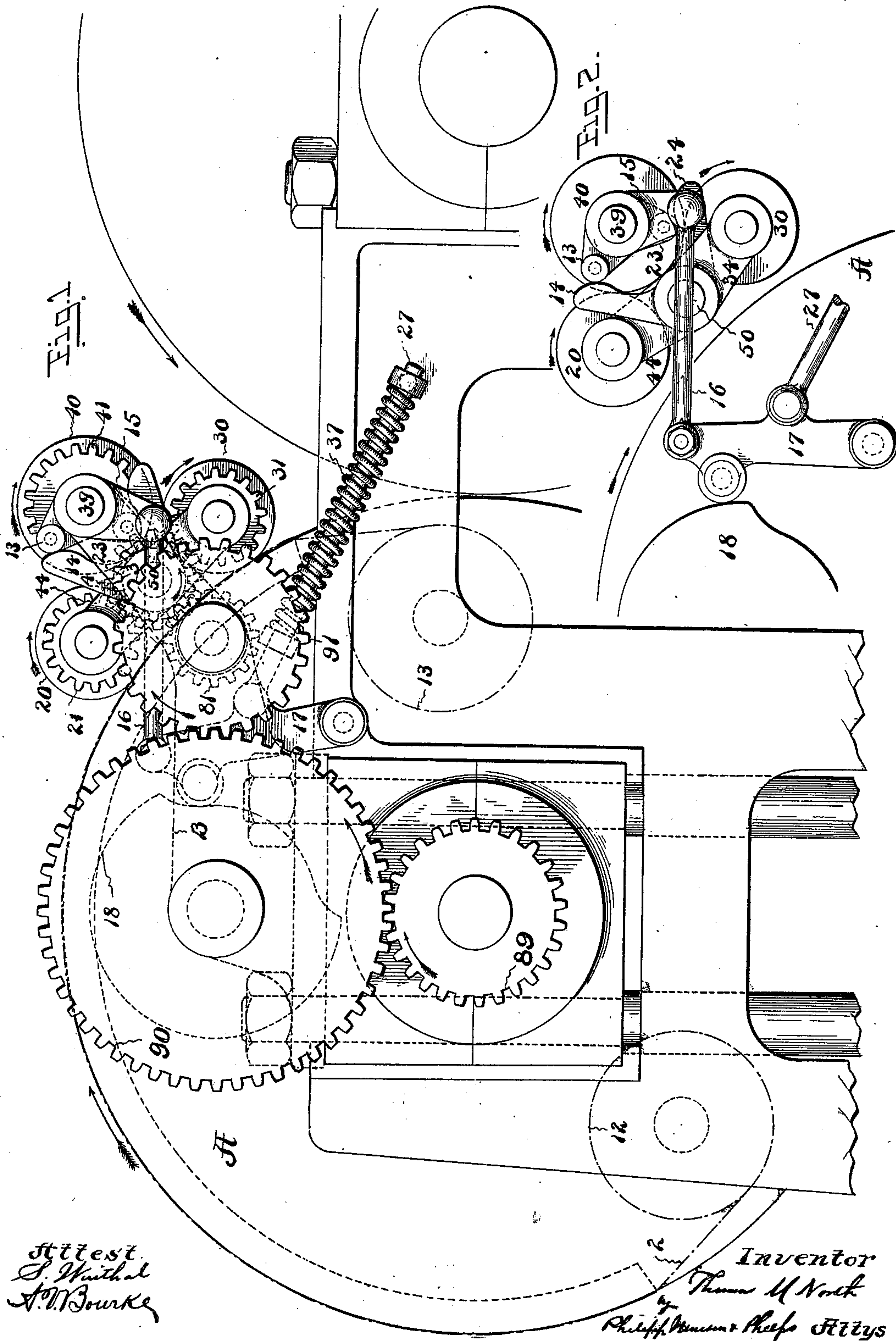
Patented Apr. 16, 1901.

T. M. NORTH.
TYMPAN CLEANING MECHANISM.

(No Model.)

(Application filed Mar. 11, 1896.)

2 Sheets—Sheet 1.



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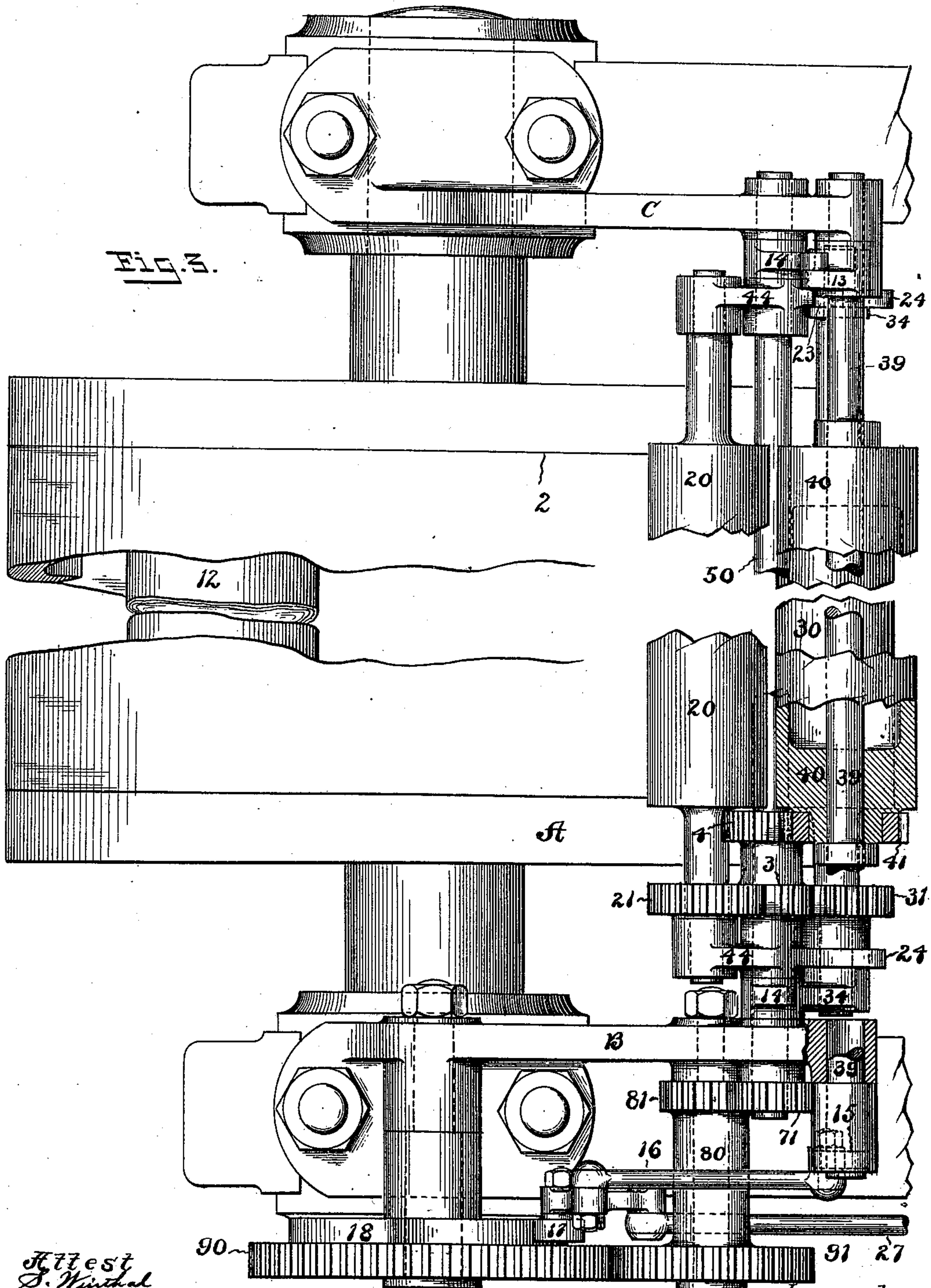
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

THOMAS M. NORTH, OF BROOKLYN, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ROBERT HOE AND CHARLES W. CARPENTER, OF NEW YORK, N. Y.

TYMPAN-CLEANING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 671,974, dated April 16, 1901.

Application filed March 11, 1896. Serial No. 582,712. (No model.)

To all whom it may concern:

Be it known that I, THOMAS M. NORTH, a subject of the Queen of Great Britain, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Tympan-Cleaning Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 This invention relates to that class of printing-machines which are provided with moving tympan, the office of which is to take up whatever ink offsets from the freshly-printed sheets during the perfecting or second printing thereof, and more especially to that class of such machines which are provided with means for moving what is called an "endless" tympan after one or more printing impressions have been made; and the invention consists in means for removing from said tympan-sheet whatever ink has offset thereon by the making of a perfecting impression, which cleansing operation of the tympan may be accomplished while it is making its shifting movement, but preferably before it is moved to its new position, to present a clean surface for the offsetting operation, all of which will be hereinafter described with particularity and finally pointed out in the claims.

30 In illustration of this invention the accompanying drawings show, in—

Figure 1, so much of a double-cylinder perfecting printing-machine as is necessary to an understanding of this invention; Fig. 2, a portion of one of the impression-cylinders with the side frame and gearing removed to illustrate more perspicuously the operation of the tympan wiping or cleaning mechanism, and Fig. 3 is a plan view of the same.

40 While a double-cylinder flat-bed printing-machine is illustrated, it is to be understood that the invention is equally applicable to any multicylinder printing-machine, the invention being applied, as will be at once understood by those familiar with this art, to an appropriate impression-cylinder, and it is only necessary to describe the invention with relation to one impression-cylinder.

Referring to the drawings, A is the impression-cylinder, which carries within it a long

tympan-sheet 2, which is provided with means for periodically moving it over the impression-surface from one roll, as 12, and winding it up in another roll, as 13, upon a spindle, or vice versa, that portion of the tympan intermediate the rolls passing over the outside surface of the impression-cylinder. Herein the said tympan 2 is first moved in the same direction as the cylinder travels, and when it has traveled far enough to be accumulated in the roll 13 it may be reversed and caused to travel in the opposite direction until it is accumulated in the roll 12, or, if it is desired to have it always travel in the same direction, the full and empty spindles for these rolls may be exchanged in position. Adjacent to the surface of said cylinder A and located in a convenient position, as shown, are provided two wiping-cylinders 20 30, which are covered with plush or other suitable relatively non-absorbent material, between and outside of which is mounted a third wiping-cylinder 40, which is covered with an absorbent material, as calico or its equivalent. These cylinders are all mounted upon shafts, so as to revolve, and the surface of the cylinder 40 is only in contact with the surfaces of the cylinders 20 and 30 when the same are in their raised position, and the cylinders 20 30 are periodically moved to and from the surface of the impression-cylinder A, so as to be alternately in contact with the surface of the cylinder 40 and with the surface of the impression-cylinder A. These wiping-cylinders are provided with gearing, so as to cause them to travel with suitable relative movement and whereby they are given the appropriate directions indicated by the arrows associated with each. This gearing is as follows: The shaft of cylinder 20 carries a toothed wheel 21, that of the cylinder 30 carries a toothed wheel 31, and these pinions, respectively, constantly gear with a pinion 3 on a shaft 50, that is intermediate the three cylinders, and this shaft 50 also carries a pinion 4, that gears directly with the toothed wheel 41, carried by the cylinder 40, said shaft being driven with appropriate speed by a pinion 71 on its end, which gears with a pinion 81 on a counter-shaft 80, which shaft has an outside pinion 91, that is

driven from a wheel 90, outside the framework, deriving motion from a wheel 89 on the shaft of cylinder A. The shaft 39 of cylinder 40 oscillates in fixed journals carried by arms B C, fast to the framework, (see Fig. 3,) and this cylinder 40 revolves freely upon the shaft 39, and its toothed wheel 41 is fast to one end of said cylinder 40. This shaft 39 has fast to it at each end collars, from which extend rock-arms 13 13 and rock-arms 23 23, and at one end a rock-arm 15, which arms are actuated by a rod 16, connecting the arm 15 with a rocking lever 17, that is actuated by a cam 18, fast to the inner face of the wheel 90. The rock-arms 13 13 contact with bell-cranks that turn on shaft 50, the upper arms 14 14 of which they engage, and the other arms 34 34 of which carry the journals of the cylinder 30. The rock-arms 23 23 contact with other bell-cranks that turn on shaft 50, the arms 24 24 of which they engage, and the other arms 44 44 of which carry the journals of the cylinder 20. The lever 17 is provided with a rod 27, that, through the strong spring 37 with which it is provided, constantly exerts a force operating to hold the bowl of the lever 17 in contact with the cam 18, and hence the outward position of the cylinders 20 30 when they are not in contact with the surface of the impression-cylinder A, but are in contact with the surface of the cylinder 40, as in Fig. 2, and their inward position in contact with the surface of said cylinder A only, as in Fig. 1, are maintained for an appropriate period in each of their relations to the cylinders 40 and A by the cam 18. Thus while the high part of the cam 18 is being traversed, as in Fig. 2, the lever 17, through the rod 16, rock-arm 15, rock-arms 13 13 23 23, and the bell-cranks 14 34 14 34 and 24 44 24 44, causes the cylinders 20 30 to move outward, as in Fig. 2, a sufficient distance to clean the tympan on the surface of the impression-cylinder A and bring their surfaces into contact with the surface of the cylinder 40, in which position they are maintained so long as the high part of the cam 18 thus operates, which is while the impression or printing is being performed. When, however, the leading end of the tympan is closely approaching the point occupied by these wiping-cylinders 20 30, the bowl on the lever 17 will pass onto the low part of the cam 18 and allow the force of gravity and that of the spring 37 to so move the rock-arms 15 13 13 23 23 as to permit the wiping-cylinders 20 30 to rest on the tympan on the surface of the cylinder A out of contact with the surface of the cylinder 40, as in Fig. 1, and this position is maintained until the tympan passes the cylinder 30, whereupon the high part of the cam 18 will come into operation upon the lever 17 and cause the said rock-arms 13 13 23 23 to swing the bell-cranks 14 34 14 34 and 24 44 24 44, and thereby raise the wiping-cylinders 20 30 clear from the tympan on the surface of the cylinder A and again into contact with the surface of the cylinder 40. As has before been stated, these

cylinders 20 30 are covered with plush or other suitable relatively non-absorbent material, whereby they are adapted not only to pick up but to so carry the ink as to freely give it off to the cleaning-cylinder 40, and they are so geared that their surfaces move in a direction contrary to that of the tympan on the impression-cylinder, and hence operate to brush or wipe off from the tympan any accumulation of ink thereon, which removed ink they carry without absorbing it, this action being due to the fact that the particles of ink are picked up by the ends of the cut pile of the plush fabric. The body of ink thus accumulated upon these wiping-cylinders 20 30 is when the said cylinders are raised out of contact with the tympan and into contact with the surface of the cylinder 40, which cylinder 40 is geared so that its surface moves in a direction opposite to that of the adjacent surfaces of the cylinders 20 30, as shown by the arrows in Fig. 2, deposited thereon and absorbed thereby, as will be readily apparent. It is to be observed that these cylinders 20 30 40 are constantly running, though the gearing might be arranged so that the cylinder 40 would only run when the cylinders 20 30 are raised in contact therewith; but the arrangement shown is preferred. By this arrangement of wiping-rolls the great advantage of using a traveling tympan for a long period of time is accomplished, for the reason that whatever offset it receives from the printed sheet is immediately cleansed from its surface, so that it may be thus reused, and by clothing the cylinders 20 30 with suitable material and immediately removing the ink they receive from them they are constantly maintained in a condition to act as cleaning devices, and, further, by providing the cleaning or absorbing roller 40 there remains but one cylinder that needs to be renewed, which may be done either by changing it for a fresh one or by removing the accumulated ink therefrom in any manner, as by a scraper, or as printers usually clean their composition rollers, which may be readily performed, for the reason that this cylinder is exposed, so that its surface may be readily reached.

It is obvious that only one of the cylinders 20 30 may be used or that they may be of a greater number than the two shown.

What is claimed is—

1. The combination with an impression-cylinder provided with a tympan shifted at intervals to present a clean surface, of a tympan-wiping cylinder or cylinders, a cleansing-cylinder coacting with the wiping cylinder or cylinders and means for moving the wiping cylinder or cylinders alternately into contact with the tympan and with the cleansing-cylinder, said means being so adjusted relatively to the movement of the impression-cylinder that the wiping cylinder or cylinders bear against the surface of the impression-cylinder and the tympan thereon during the passage of all or part of said surface supporting the

tympan and are out of contact with the impression-cylinder at other times, substantially as described.

2. The combination with an impression-cylinder an offset-tympan carried thereby, of the wiping cylinder or cylinders as 20, 30 and a receiving-cylinder as 40, of means for alternately rocking said wiping-cylinders to and from contact with the surface of the impression-cylinder or tympan thereon and the surface of the cylinder 40, substantially as described.

3. The combination with cylinder A and cylinders 20, 30, 40, of bell-cranks 14, 34 and 24, 44, of rock-arms 13, 23 and intermediate connecting mechanism, substantially as described.

4. The combination with an impression-cylinder provided with a tympan shifted at intervals to present a clean surface, of a tympan-wiping cylinder or cylinders, a cleansing-cylinder coacting with the wiping cylinder or cylinders, and means for driving said wiping cylinder or cylinders so that their surface or surfaces shall move in opposite directions to the adjacent surfaces of the impression-cyl-

inder and the cleansing-cylinder whereby a rubbing contact is secured, substantially as described.

5. The combination with an impression-cylinder provided with a tympan which is shifted to present a clean surface for the printing operation, of a relatively non-absorbent tympan-wiping cylinder or cylinders, an absorbent cleansing-cylinder coacting with the wiping cylinder or cylinders, means for driving said wiping cylinder or cylinders such that the surface or surfaces thereof will move in the opposite direction to the surfaces of the impression-cylinder and the cleansing-cylinder, and means for moving the wiping cylinder or cylinders alternately into contact with the tympan and with the cleansing-cylinder, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THOMAS M. NORTH.

Witnesses:

F. W. H. CRANE,
E. L. SPEIR.