

No. 667,731.

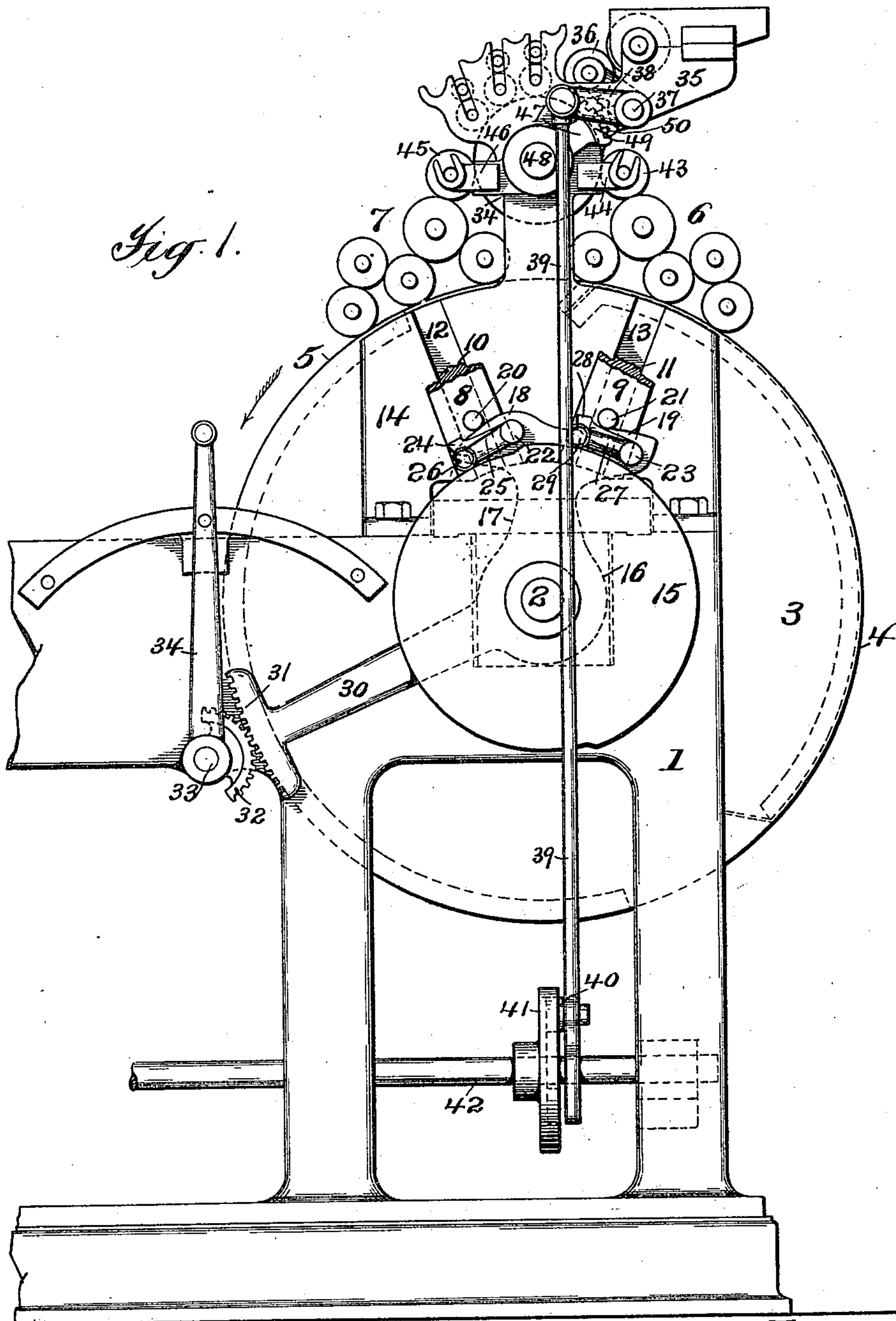
Patented Feb. 12, 1901.

T. M. NORTH.
INKING APPARATUS.

(Application filed Dec. 10, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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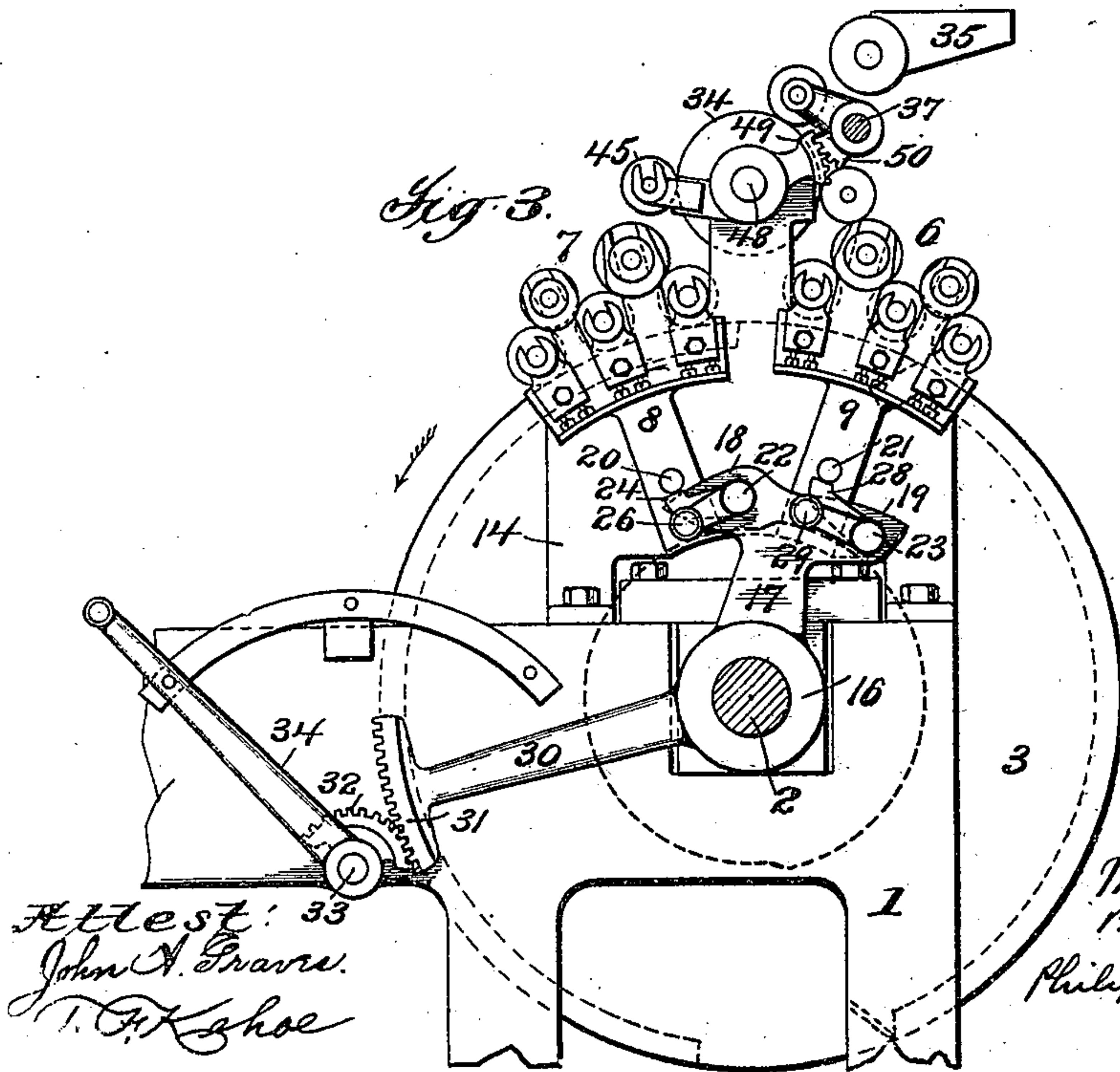
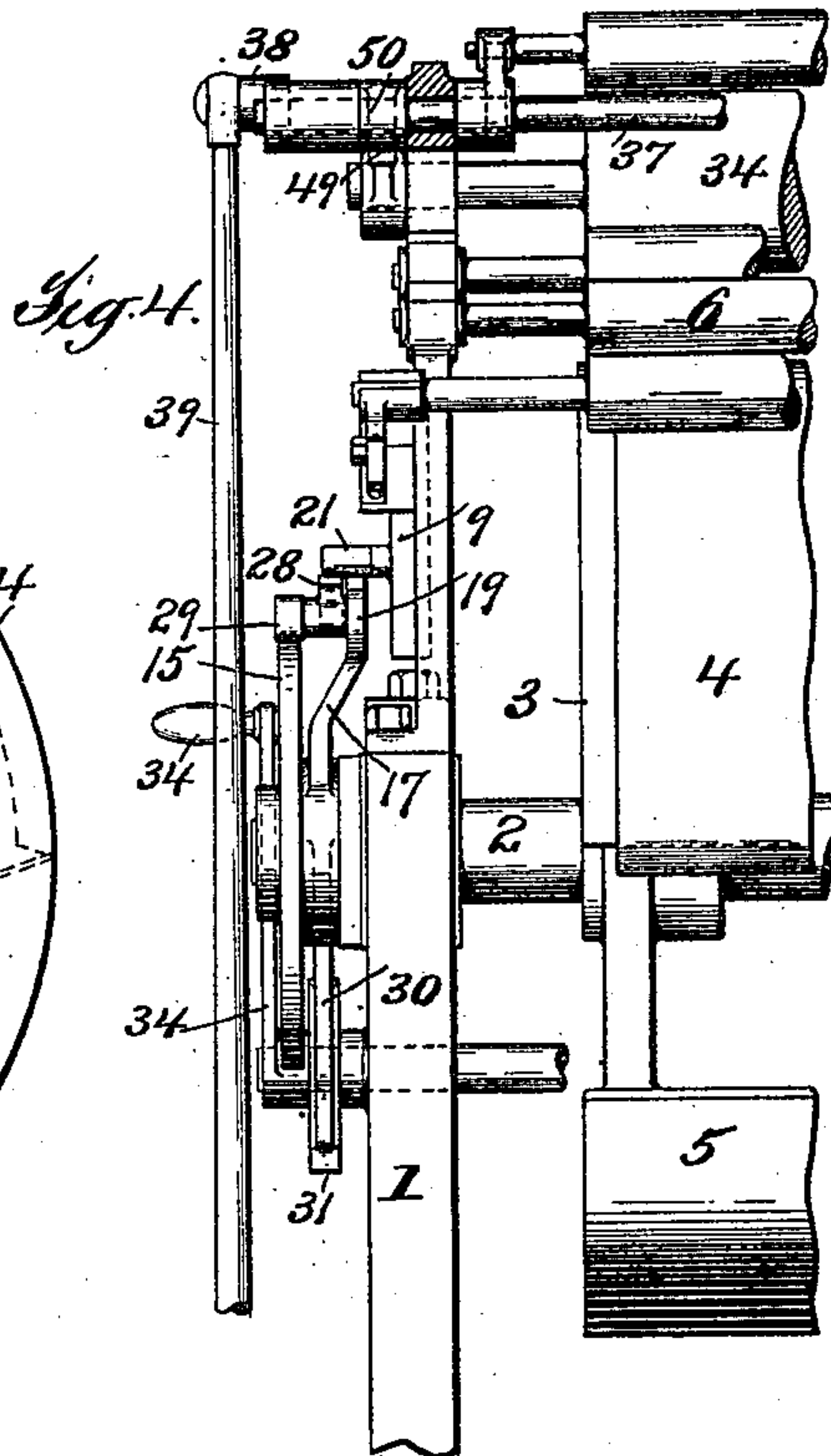
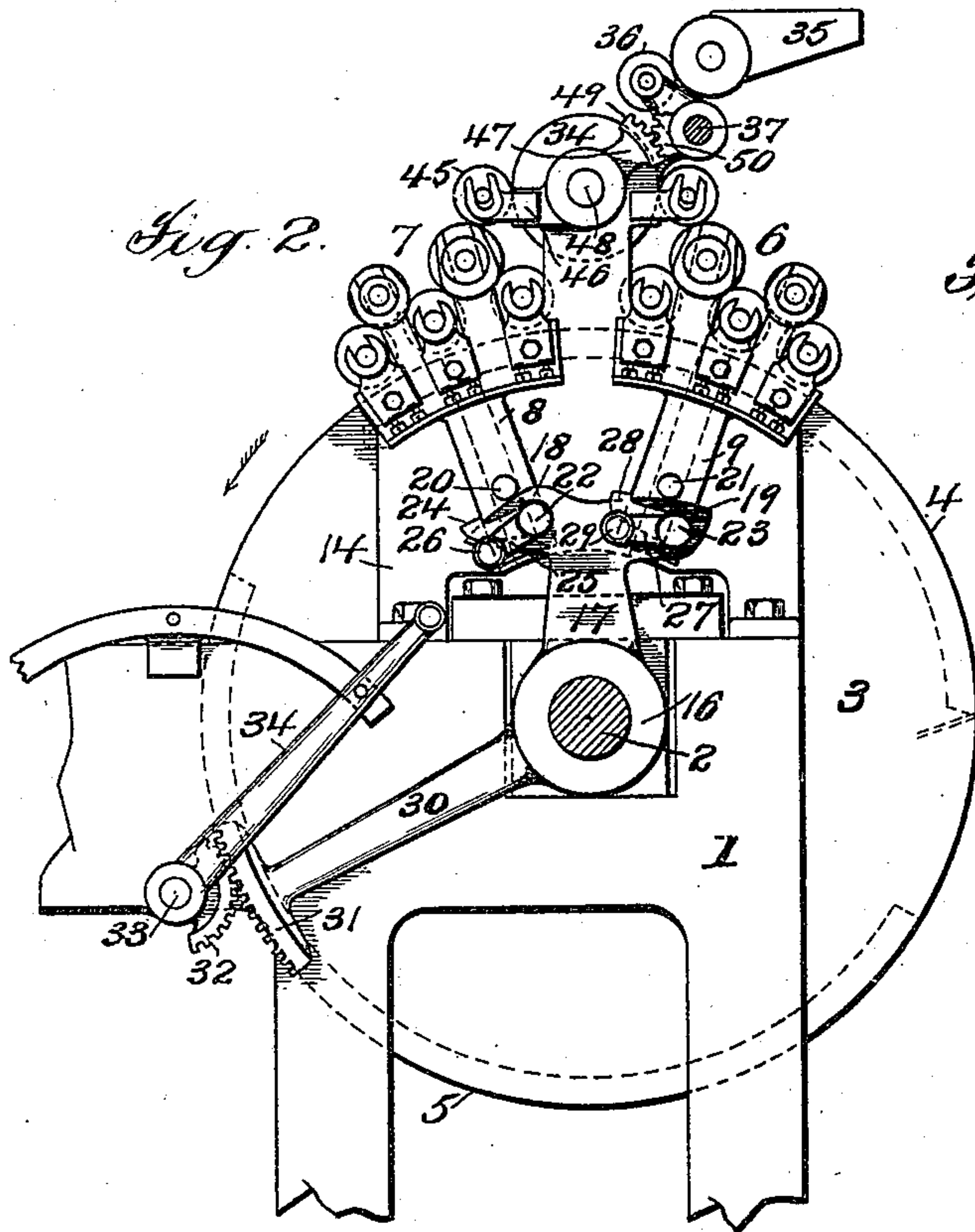
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

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

INKING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 667,731, dated February 12, 1901.

Original application filed November 13, 1897, Serial No. 659,507. Divided and this application filed December 10, 1898. Serial No. 698,847. (No model.)

To all whom it may concern:

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

This invention relates to certain improvements in inking apparatus, this application being a division of an application serially numbered 659,507, filed November 13, 1897, which has matured into a patent, No. 629,911, granted August 1, 1899.

In printing-machines, as is well understood, when the machine is printing the form-inking rollers usually remain continuously in the position which they occupy when they are applying ink to the form, the movement of the form-carrying bed, which is also supplied with an inking table or surface, operating to bring the form-rollers into contact with the ink-distributing surface or table and the form alternately. It is, however, desirable to so construct the mechanism for operating the form-rollers that it shall be possible when desired—as, for instance, when the machine is stopped or for any other reason—to move the rollers away from this position, since if the rollers remain in contact with the bed or the ink-distributing surface for any considerable length of time they would become flattened. Furthermore, where the printing-surfaces employed are planographic surfaces, if the rollers are allowed to remain in contact with them for any considerable length of time they not only become flattened, as before stated, but they also produce a stain on the surface which is exceedingly difficult to remove. It is also desirable in order to cause the ink to be thoroughly distributed on the inking surfaces or table and the form-rollers to run the machine when starting up with the inking apparatus in operation and the form-rollers contacting with the ink-distributing surface, but out of contact with the form. Furthermore, in many types of machines when

the printing-surface is alternately brought into and out of contact with the set of form-rollers to receive its ink it always meets the rollers when it is traveling in the same direction, and therefore always comes in contact with the rollers in the same order. In such machines it is desirable in order to obtain the best ink distribution that the inking-rollers which the form first meets shall be so controlled as to supply a greater amount of ink to the form than those which it meets later, for if a heavy coat of ink be applied by the first rollers it will be thoroughly worked up and broken up by the later rollers; but if a heavy coat is applied by the later rollers the form is liable to run out of contact with the rollers before the ink is properly worked up.

One object of this invention is to provide improved means whereby the form-rollers of a printing-machine shall be allowed to remain for any desired length of time in the position they occupy when they are applying ink to the form and yet may be moved away from said position when the machine is stopped or for any other reason.

A further object of the invention is to provide means whereby when the machine is operating the form-rollers can be intermittently brought into contact with the distributing-surface and held out of contact with the form, so that the machine may be run for the purpose of thoroughly mixing and distributing the ink on the rollers and the distributing-surface without applying ink to the form.

A further object of the invention is to provide an improved means whereby a greater amount of ink is applied to those form-rollers which the form first meets in its movement than to the other rollers.

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter described, and fully pointed out in the claims hereunto appended.

In the accompanying drawings, which constitute a part of this specification, and in which like characters of reference indicate the same parts, Figure 1 is a diagrammatic side eleva-

tion of a part of a printing-machine constructed in accordance with the principles of the invention. Fig. 2 is a side view, partly in section, showing certain features of construction which appear in Fig. 1, the parts being in a different position. Fig. 3 is a view similar to Fig. 2, but with the parts in a different position. Fig. 4 is an end view, partly in section, of a portion of the mechanism shown in Fig. 1.

In the accompanying drawings, 1 indicates the frame of the machine, the side frame being provided with bearings in which is mounted a shaft 2. This shaft supports a rotating form-bed 3, which is supplied with a printing-surface 4 and an ink-distributing surface 5.

It may be here remarked that while the invention is shown as applied to a printing-machine the bed of which is a rotating cylinder it is not confined to machines of this class; but in many of its features it is equally applicable to other forms of machines—such, for instance, as those in which the form-carrying beds are flat and reciprocate.

The means for rotating the form-carrying bed may be of any of the well-known types and are here omitted in the interest of clearness, the invention not being directed toward or concerned with such means.

The form is inked from inking-rollers which are preferably arranged in two groups 6 and 7. Each of these groups of inking-rollers is mounted so as to be moved toward and away from the path of movement of the form. Any means may be employed for so mounting the inking-rollers; but they are preferably mounted on slides 8 and 9, these slides having inwardly-projecting portions 10 and 11, which run in grooves 12 and 13 in a standard 14, carried by the frame. In the machine shown the inking-rollers will preferably be supported at each end by slides such as have been hereinbefore described; but as these slides and the means for moving them are precisely alike at both ends of the cylinder it will be necessary to describe only one side.

Various means may be adopted for moving the groups of form-rollers toward and away from the path of the form. Preferably, however, the shaft 2 carries a cam 15, having a raised portion corresponding to the form-carrying surface of the cylinder and a depressed portion corresponding to that part of the cylinder which is covered by the ink-distributing surface or table. There is also preferably mounted on the shaft 2 a collar 16, which is free to turn on said shaft. This collar 16 is provided with a support or cam-carrying arm 17, which has at its outer end cam-faces 18 and 19. When the arm 17 is thrown into proper position, these cam-faces 18 and 19 coact with pins 20 and 21, carried on the slides 8 and 9 and force the slides to move in their grooves, thus lifting the inking-rollers away from the path of the form. This position of the parts is indicated in Fig. 2, the parts being arranged in Fig. 1 so that the cams 18 and

19 are not acting upon the rollers, the slides being in their inner position and the rollers contacting with the form and ink-distributing surfaces.

The devices just described, in connection with the means for operating the cam-carrying arm, which will be hereinafter described, constitute the preferred means for permitting the inking-rollers to remain in contact with and moving them out of the path of the form; but, as before suggested, other means may be adopted.

The invention also comprehends constructions by which the form-rollers may be intermittently moved away from the path of the form, but allowed to return to their normal position, so as to contact with the ink-table, the purpose of the construction being to allow the rollers to be held away from the form while the machine is being run for the purpose of "inking up." Various constructions may be adopted for producing the result referred to. Preferably, however, the carrying arms or supports 17 are constructed to carry two-armed levers, these levers being connected to the said arms by means of pins 22 and 23. The two-armed lever which is held in place by the pin 22 is provided with arms 24 25, the arm 25 carrying a roller 26, which runs in contact with the cam 15, the arm 24 in a certain position of the arm 17 lying beneath the pin 20. In the same way the two-armed levers secured in position by the pin 23 is provided with arms 27 and 28, the arm 27 carrying a roller 29, which runs in contact with the cam 15, and the arm 28 operating in connection with the stud 21. It will be seen that when the arm 17 is properly manipulated to bring the arms 24 and 28 beneath the pins 20 and 21, which position of the parts is shown in Fig. 3, each rotation of the cam 15 will cause its raised portion to act on these levers and they will be rocked and will force the slides 8 and 9 outward, thus moving the form-rollers away from the path of the form. As soon as the rolls 26 29, carried by the arms 25 27, pass from the high onto the low part of the cam, which will be at the time when the form-carrying surface has passed the rollers and the rollers are opposite the ink-distributing surface, the movement of the two-armed levers will be such as to permit the slides to move inward, thus bringing the inking-rollers into contact with the ink-distributing surface. When, however, the arm 17 is positioned so that the arms 24 28 are not beneath the pins 20 21, the said arms will be rocked idly by the cam, effecting no movement of the slides.

Various means may be provided for moving the arms 17. Preferably, however, the collars 16 will have connected to them arms 30, provided with segment-racks 31. These segment-racks 31 mesh with segments 32, mounted on a shaft 33, which extends across the machine and is provided with a handle 34 or other manipulating device, which is located

so as to be conveniently accessible to the pressman.

The groups of inking-rollers may be supplied with ink in various ways. Preferably, however, there is provided a distributing-roll 34, which receives its ink from a fountain 35 by means of a ductor 36, and this ductor is mounted on arms on a shaft 37, said shaft being provided with an arm 38, which is connected to a rod 39. The rod 39 is forked at its lower end and carries a roller 40, which operates in connection with a cam 41, which is mounted on a cam-shaft 42, the fork of the rod 39 being arranged to straddle said shaft. It is desirable in order to obtain the best distribution of the ink to arrange the inking apparatus so that the group of form-rollers which the form first meets in its rotation is given a more liberal supply of ink than is given to the set of form-rollers 7. This result may be accomplished in various ways. Preferably, however, there is provided a transferring-roll 43, which is mounted in bearings 44, said roll being arranged to be constantly in contact with the distributing-roll 34 and with the group of form-rollers 6. The distributing-roll therefore will act to continuously deliver ink to the set of rollers 6.

Various means may be resorted to by which to control the delivery of the ink so that a less amount shall pass to the group of rolls 7 than passes to the group 6. In the preferred construction, however, a transferring-roll 45 is mounted in a bearing 46, secured to a rocking arm 47, mounted on a shaft 48 of the distributing-roll. The rocking arm 47 is provided with a rack 49, which meshes with a segment 50, carried on the rock-shaft 37, which operates the ductor-roll. As the ductor-roll is operated through the means before described the transferrer 45 will be intermittently lifted out of and forced into contact with the group of rolls 7 and will therefore carry less ink to this group of rolls than the transferrer 43 carries to the group of rolls 6, with which it is continuously in contact. The roll 45 is preferably arranged so as to be continuously in contact with the distributor 34. When, therefore, it is not acting to transfer ink to the group of rolls 7, it will operate to assist in breaking up and mixing the ink on the distributor. It is believed that the operation of the device will be clear from the description before given, and a detailed statement thereof is therefore regarded as unnecessary.

As has been indicated in the specification, wide changes may be made in the mechanical details by which this invention is carried into effect. The invention is not, therefore, to be limited to the particular mechanical devices shown and described, but is to be regarded as comprehending all such changes as are within the spirit and scope of the invention as it is defined in the claims hereto appended.

What is claimed is—

1. In a printing-machine, the combination

with a rotating bed carrying a printing-surface and a distributing-surface, of a set of form-rollers, a cam rotating with the bed, devices intermediate the cam and the form-rollers and mounted independent of the roller-shafts whereby the cam is caused to move the rollers out of contact with the form and into contact with the distributing-surface and means whereby said devices are rendered operative, substantially as described.

2. In a printing-machine, the combination with a rotating bed, of a series of form-rollers, a cam rotating with the bed, devices intermediate the cam and the form-rollers and mounted independently of the roller-shafts, whereby the cam is caused to raise the form-rollers away from the path of the form, and manually-operated means whereby said devices are rendered operative, substantially as described.

3. In a printing-press, the combination of the form-cylinder, with a suitable stand or frame movable with relation to the cylinder, form-inking rollers carried in the stand or frame, a cam on the form-cylinder, operating means operated by said cam for moving the stand or frame toward and away from the cylinder, and manually-operated controlling means for throwing the stand-operating means into and out of action, substantially as set forth.

4. In a printing-press, the combination of a form-cylinder, with a vertically-movable stand or frame, the inking-rollers carried in said stand or frame, a rock-arm engaging the stand or frame for moving it vertically, a cam on the form-cylinder, and suitable operating connections between said cam and the rock-arm, substantially as described.

5. In a printing-press, the combination of a form-cylinder, a vertically-movable stand or frame comprising movable side frames sliding in guides on the press-frame, the inking-rollers carried in said vertically-movable stand or frame, rock-arms engaging the side frames of the vertically-movable stand or frame for moving the same vertically, a cam on the form-cylinder, and suitable operating connections between said cam and said rock-arms, substantially as described.

6. In a printing-machine, the combination with a bed carrying printing and distributing surfaces, of a set of form-rollers, a cam moving with the bed, devices intermediate the cam and the form-rollers and mounted independently of the roller-shafts whereby the cam is caused to move the form-rollers away from the path of the bed and into contact with the distributing-surface for each movement of the bed, and means whereby said devices are rendered operative, substantially as described.

7. In a printing-machine, the combination with a bed carrying printing and distributing surfaces, of means for operating the bed, a set of form-rollers, a cam moving with the bed, devices intermediate the cam and the form-rollers and mounted independently of

the roller-shafts whereby the cam may be caused to move the form-rollers away from the path of the form and into contact with the distributing-surface during each movement of the bed, and manually-operated means whereby said devices are rendered operative, substantially as described.

8. In a printing-machine, the combination with a rotating bed carrying printing and distributing surfaces, of a set of form-rollers, a cam rotating with the bed, and devices intermediate the cam and the form-rollers and mounted independently of the roller-shafts whereby the cam may be caused to move the form-rollers away from the path of the form and into contact with the distributing-surface during each rotation of the bed, and manually-operated means whereby said devices are rendered operative, substantially as described.

9. In a printing-machine, the combination with a rotating bed, of a set of form-rollers, a cam, a movable support, and means brought into position by the movement of the support whereby the cam is caused to move the form-rollers away from the path of the form, substantially as described.

10. In a printing-machine, the combination with a bed, of a slide mounted in proximity thereto, a set of form-rollers mounted in the slide, a cam, a movable support, and means carried by the support and acted on by the cam for operating the slide to raise the form-rollers away from the path of the form, substantially as described.

11. In a printing-machine, the combination with a rotating bed, of a slide mounted in proximity thereto, a set of form-rollers mounted in the slide, a cam mounted on the shaft of the bed, a movable support also mounted on the shaft, and a lever carried by the support and operated by the cam to raise the slide when the support is in one position, said lever being inoperative in another position of the support, substantially as described.

12. In a printing-machine, the combination with a rotating bed, of a slide mounted in proximity thereto, a set of form-rollers mounted in the slide, a cam mounted on the shaft of the bed, a movable support also mounted on the shaft, a lever carried by the support and operated by the cam to raise the slide when the support is in one position, said lever being inoperative in another position, and manually-operated means for controlling the position of the support, substantially as described.

13. The combination with a rotating bed, of a slide mounted in proximity thereto, a set of form-rollers mounted in the slide, a movable support, a cam mounted on the shaft of the bed, a two-armed lever having one arm resting upon the cam, the other arm in one position of the support acting to move the slide and inoperative in another position of the support, and means for moving the support, substantially as described.

14. In a printing-machine, the combination with a bed carrying printing and distributing surfaces, of a set of form-rollers, a cam, means whereby the cam operates to intermittently move the form-rollers away from the path of the printing-surface and permits them to move into contact with the distributing-surface for each movement of the bed, means independent of the cam for holding the rollers out of contact with said surfaces and means whereby said holding means may be rendered operative or inoperative, substantially as described.

15. In a printing-machine, the combination with a bed and means for operating it, of a set of form-rollers, a cam, a movable support, means carried by the support whereby the cam is caused to move the form-rollers toward and away from the path of the form for each movement of the bed, and means also carried by the support for holding the form-rollers continuously away from the path of the form, substantially as described.

16. The combination with a rotating bed, of a cam rotating with the bed, a hand-lever, and devices controlled by the lever whereby the cam may be caused to lift the form-rollers away from the path of the form during each rotation of the form, or the form-rollers continuously held away from the path of the form, substantially as described.

17. In a printing-machine, the combination with a rotating bed, of a set of form-rollers acting in conjunction therewith, a cam mounted on the shaft of the bed, a moving support, devices carried by the support which in one position of the support cause the cam to raise the form-rollers away from the form during each rotation of the bed, and means also carried by the support and acting in another position of the support to hold the form-rollers continuously away from the path of the form, substantially as described.

18. In a printing-machine, the combination with a rotating bed, of a set of form-rollers acting in conjunction therewith, a cam mounted on the shaft of the bed, a moving support, devices carried by the support which in one position of the support cause the cam to raise the form-rollers away from the form during each rotation of the bed, means also carried by the support and acting in another position of the support to hold the form-rollers continuously away from the path of the form, and manually-operated means for controlling the position of the support, substantially as described.

19. In a printing-machine, the combination with a rotating form-carrying cylinder, of a cam, a set of form-rollers, a support, means controlled by the support and operating in one position of the support to hold the form-rollers continuously away from the cylinder and in another position of the support to permit the form-rollers to be continuously in contact with the cylinder, devices carried by the support and operating in connection with the

cam in a third position of the support to cause the form-rollers to be moved away from the cylinder once during each rotation of the cylinder, and means for moving the support, substantially as described.

20. In a printing-machine, the combination with a rotating form-carrying cylinder, of a cam, a set of form-rollers, a support, means controlled by the support and operating in one position of the support to hold the form-rollers continuously away from the cylinder and in another position of the support to permit the form-rollers to be continuously in contact with the cylinder, devices carried by the support and operating in connection with the cam in a third position of the support to cause the form-rollers to be moved away from the cylinder once during each rotation of the cylinder, and manually-operated means for controlling the position of the support, substantially as described.

21. In a printing-machine, the combination with a rotating form-carrier, of two groups of form-rollers, a source of ink-supply, means for constantly supplying ink to that group of form-rollers which the form first meets in its rotation, and intermittently-operating means for supplying ink to the second group of form-rollers, substantially as described.

22. The combination with two groups of inking-rollers, of a moving form which always comes in contact with the groups of inking-rollers in the same order, means for continuously supplying ink to the group which the form first meets, and means for intermittently supplying ink to the other group, substantially as described.

23. In an inking apparatus, the combination with two groups of form-rollers, of a distributing-roller, means whereby the distributing-roller supplies ink continuously to one group of form-rollers, and intermittently-operating means whereby the distributing-roller supplies ink to the other group of form-rollers, substantially as described.

24. In an inking apparatus, the combination with two groups of form-rollers, of a dis-

tributer, a transferring-roll continuously connecting the distributor and one set of form-rollers, and a second transferring-roll intermittently connecting the distributor and the other set of form-rollers, substantially as described.

25. In an inking apparatus, the combination with two groups of form-rollers, of a distributing-roll, an ink-fountain, a ductor for transferring ink from the ink-fountain to the distributing-roll, a transferring-roll operating to continuously connect the distributing-roll and one set of form-rollers, a second transferring-roll, and means operated by the movement of the ductor whereby the second transferring-roll acts to intermittently connect the distributing-roll and the other set of form-rollers, substantially as described.

26. In an inking apparatus, the combination with a distributing-roll, of two groups of form-rollers, means whereby the ink is continuously supplied from the distributing-roll to one group of form-rollers, and a roll continuously in contact with the distributing-roll and intermittently operating to transfer ink to the second group of form-rollers, substantially as described.

27. In an inking apparatus, the combination with a distributing-roll, of an ink-fountain, a ductor for transferring ink from the fountain to the distributing-roll, a group of form-rollers, means whereby the distributing-roll supplies ink continuously to said group of form-rollers, a second group of form-rollers, a pair of rock-arms, a roll carried by said arms and intermittently operating to connect the distributing-roll and the second group of form-rollers, and means whereby the arms are rocked from the shaft of the ductor-roll, substantially as described.

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

THOMAS M. NORTH.

Witnesses:

T. F. KEHOE,
JOHN A. GRAVES.