

No. 637,593.

Patented Nov. 21, 1899.

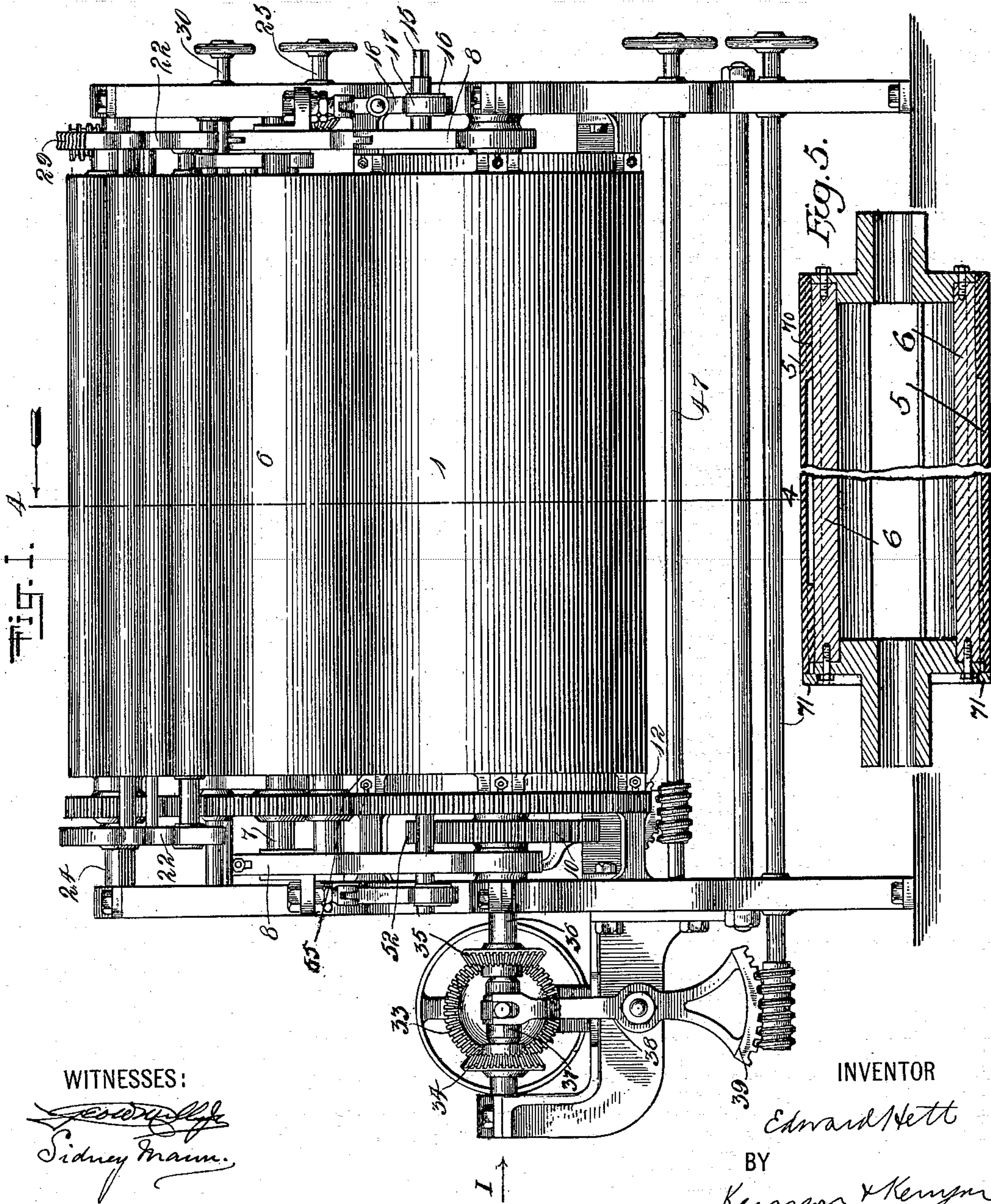
E. HETT.

MACHINE FOR MAKING PRINTING SURFACES.

(Application filed Jan. 5, 1899.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

Edward Hett
Sidney Mann.

INVENTOR

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3 Sheets—Sheet 2.

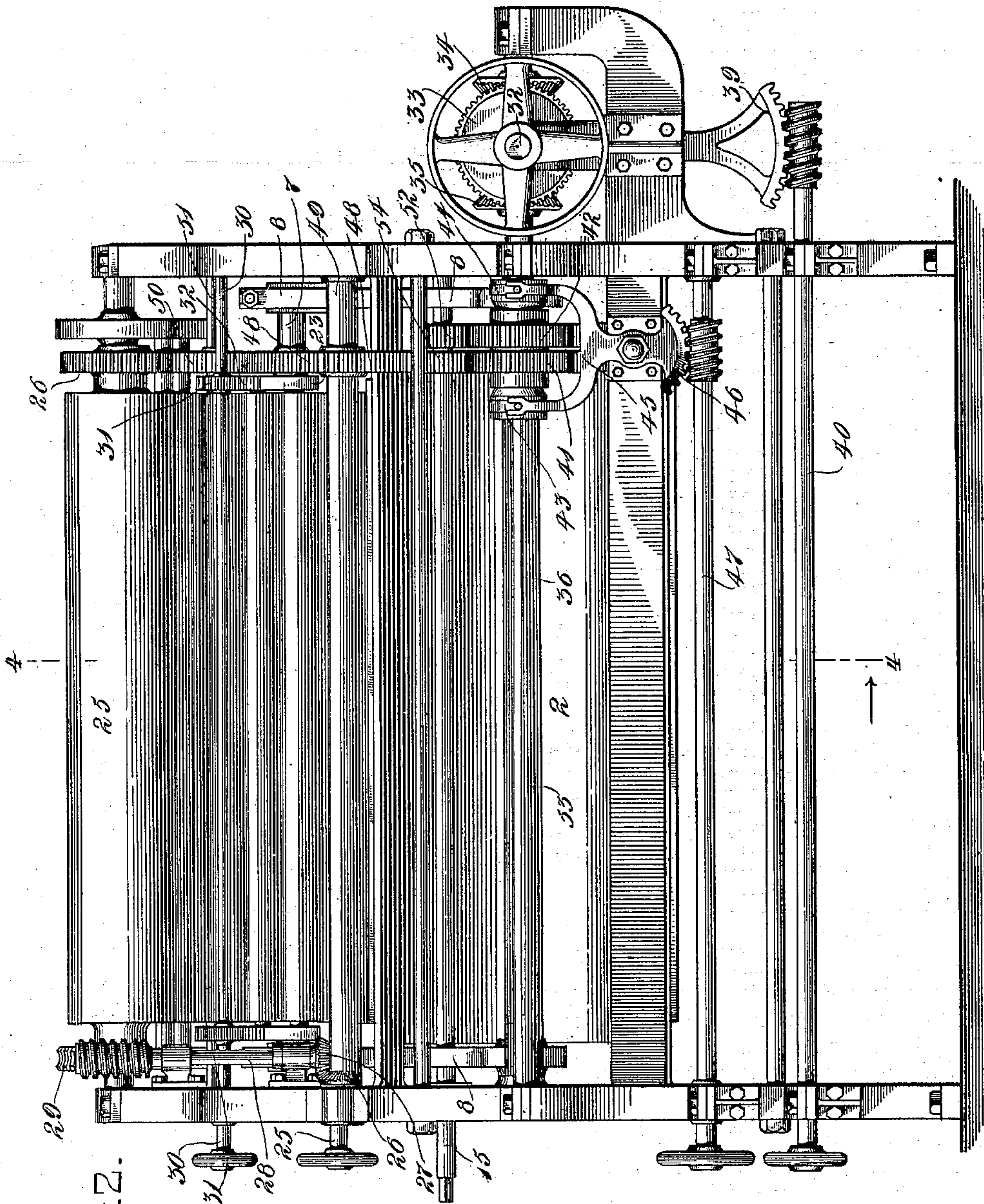


FIG. 2.

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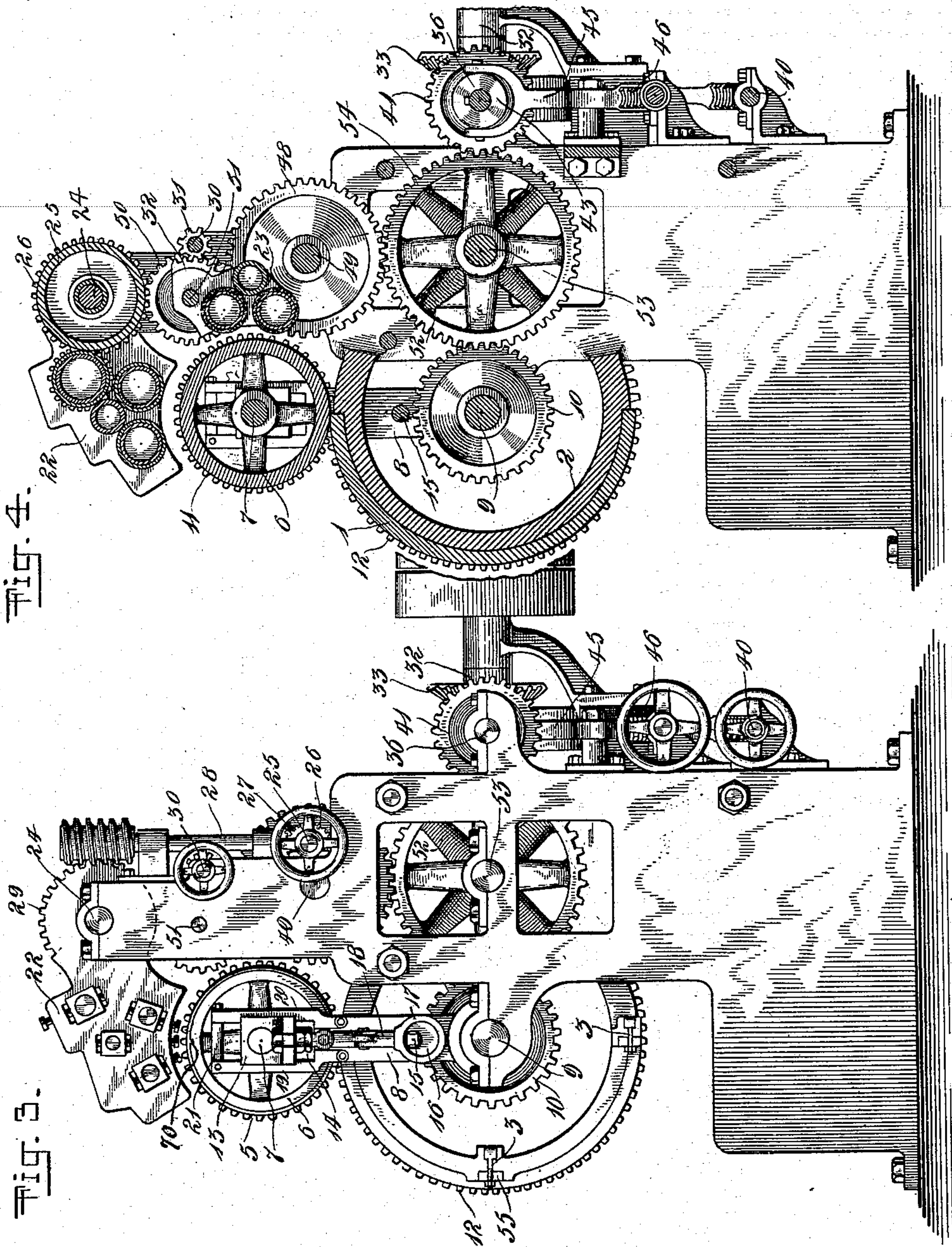
E. HETT.

MACHINE FOR MAKING PRINTING SURFACES.

(Application filed Jan. 5, 1899.)

(No Model.)

3 Sheets—Sheet 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD HETT, OF NEW YORK, N. Y.

MACHINE FOR MAKING PRINTING-SURFACES.

SPECIFICATION forming part of Letters Patent No. 637,593, dated November 21, 1899.

Application filed January 5, 1899. Serial No. 701,199. (No model.)

To all whom it may concern:

Be it known that I, EDWARD HETT, a citizen of the United States, and a resident of New York, (New Dorp,) Richmond county, State of New York, have invented certain new and useful Improvements in Machines for Making Printing-Surfaces, of which the following is a specification.

This invention relates to a machine for making or preparing printing-surfaces upon printing-forms, whereby a design may be turned over, transferred, or otherwise imparted from a setting-up plate, transfer-plate, or other transfer-base upon or to a blank or unprepared printing-form—i. e., a printing-form having a surface adapted to receive a design by transfer and adapted to be thereafter developed and made suitable for printing.

The invention consists mainly of a curved or rounded stationary support and a support adapted to rotate and thereby traverse the stationary support, one of said supports being adapted to carry a printing-form and the other support being adapted to carry a transfer-base.

The invention also consists in the various features and combinations of features hereinafter set forth, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification and in which like numerals designate corresponding parts in the several views, Figure 1 is a front elevation of the machine. Fig. 2 is a rear elevation. Fig. 3 is a side elevation looking in the direction of the arrow 1 in Fig. 1; and Fig. 4 is a sectional elevation on the line 4 4, Fig. 1. Fig. 5 is a longitudinal section of the printing-form and its support.

Referring now more particularly to the specific embodiment of the invention as illustrated in the drawings, 1 is a curved transfer-base or setting-up plate removably secured on the curved support 2 and held in place by the locks 3. The curved and preferably cylindrical and continuous printing-form 5 is carried on the supporting-cylinder 6, mounted on the shaft 7, carried by the swinging arms 8, fixed on the shaft 9. On the shaft 9 is also fixed a gear 10, which when turned forward and backward carries the arms 8 back and forth, so as to reciprocate

the printing-form 5 over or cause it to traverse the transfer-base. The printing-form when brought into contact with the design carried by the transfer-base rolls over the transfer-base, and thus receives the design to be imparted to it. In order that the rolling contact of the printing-form and the transfer-base may be positive, so that one may not slip over the other, a gear 11 is fixed on the shaft 7, carrying the printing-form, which meshes with the gear 12, fixed on the support 2. The boxes 13, which carry the shaft 7, are adapted to slide in recesses 14 on the ends of the arms 8. Carried by the arms 8 is a shaft 15, on which are fixed eccentrics 16, turning in straps 17, carried by the jointed arms 18, which are connected with the boxes 13, in which the shaft 7 is journaled. By operating the shaft 15 the cylinder 6, with the printing-form, may be forced down upon the transfer-base, so as to apply the pressure required in transferring or imparting the designs of the transfer-base to the printing-form. The shaft 15 is also employed to lift the cylinder 5, with the printing-form, out of contact with the transfer-base, so that gears 5 and 12 being disconnected the printing-form may be manipulated apart from the transfer-base. The recesses 14 in the arms 8 are formed by straps 19 and 20, pivoted to and forming a part of the arms 8 and connected at the top by the cross-pieces 21, pivoted to the straps 19. When it is desired to remove the cylindrical printing-form from its supporting-cylinder, the cylinder 6 is lifted from the transfer-base and one of the arms 18 is disconnected from its box 13 and turned down out of the way. The corresponding end of the shaft 7 having been previously supported by suitable means—such as the apparatus shown in an application filed by me on July 12, 1898, Serial No. 685,764—the cross-piece 21 is then turned back and the straps 19 and 20 turned down, when the printing-form may be slipped from its cylinder 6. If desired, however, the shaft 7 and cylinder 6, with its printing-form, may be all removed together.

The printing-form may be removed from the machine and the printing-surface thereof developed apart, if desired; but the printing-surface is preferably developed before the

form is removed from the machine, and for this purpose I provide the machine with the inking and dampening frames 22 and 23, carrying the usual inking and dampening rollers. Inking-frame 22 is fixed on the shaft 24, on which is loosely mounted the main ink-distributing cylinder 25, which carries gear 26, arranged to drive the inking-rollers. The inking-frame is moved to and from the printing-form by means of the hand-shaft 25, on which is fixed the gear 26, meshing with the gear 27 on the worm-shaft 28, which carries a worm which meshes with the gear 29 on the inking-frame. The dampening-frame 23 is moved to and from the printing-form by means of the hand-shaft 30, on which are fixed the gears 31, meshing with the gears 32 on the dampening-frame. The driving mechanism of the machine is so arranged that the printing-form may be reciprocated over the transfer-base without operating the inking and dampening rollers and so that when the printing-form is separated from the transfer-plate it may be driven in conjunction with the inking-rollers. The dampening-rollers, as shown in the drawings, turn on the printing-form by friction; but they may of course be arranged to be positively driven like the inking-rollers. I will now describe the driving mechanism of the machine.

32 is the pulley-shaft, on which is fixed a beveled gear 33, meshing with the beveled gears 34 and 35, loose on the shaft 36. The clutch 37 serves to lock either the gear 34 or the gear 35 on the shaft 36, as occasion requires. The clutch is operated by the lever 38, provided with the gear 39, meshing with the worm-shaft 40. Loose on the shaft 36 are two gears 41 and 42, arranged to be locked on the shaft by the clutches 43 and 44, respectively. These clutches are operated by the Y-shaped lever 45, provided with the gear 46, meshing with the worm-shaft 47. The gear 42 meshes with the gear 52, loose on the shaft 53, and the gear 43 meshes with the gear 54, loose on the shaft 53. The gear 52 meshes with the gear 10, and when the clutch 44 is operated to lock the gear 42 fast on its shaft and the pulley-shaft 32 is operated the arms 8 are actuated to carry the printing-form over the transfer-base, the movement of the arms being reversed by a reversal of the shaft 36. The gear 54 meshes with the gear 48, fixed on the shaft 49. The gear 48 is also meshed with the gear 50, loosely mounted on the shaft 51, upon which the dampening-frame 23 is fixed. The gear 50 also meshes with the gear 26 on the main ink-distributing cylinder. When it is desired to roll up the printing-surface in developing it, the gear 41 is made fast on its shaft and the cylinder 6 is lifted, so that its gear 11 meshes with the gear 50. The rotation of the pulley-shaft 32 will then drive the printing-form in conjunction with the inking-rollers, the dampening-rollers riding by friction on the surface of the form.

It will be evident that various changes in

the driving mechanism may be effected without departing from my invention. It will also be evident that various changes in the form and arrangement of various parts may be made without departing from my invention. For example, instead of having the printing-form reciprocate and roll over the transfer-base I may arrange the transfer-base so as to reciprocate and rotate over the printing-form. This could be effected by mounting a transfer-base of suitable size upon the cylinder 6 and mounting a printing-form of suitable size upon the support 2. The printing-surface of the form may be developed so as to be planographic, relief, or intaglio, and in the process of development employed the printing-surface may be lightly or deeply etched and routed out, or it may be developed in any other suitable way. In the preferred embodiment of the invention the transfer-base is in the form of a setting-up plate, on which the ordinary transfers will be struck up, so that the transfers may be turned over upon the printing-form, in accordance with the practice of transferring in the lithographic art. The transfer-base may, however, be made of any suitable material and may be made to carry the design to be imparted to the printing-form in any suitable manner.

The printing-form is preferably tubular and continuous and is provided with means to insure that the printing-form shall be mounted upon its support in a predetermined position both longitudinally and transversely. The means shown in the drawings for attaining the transverse or circumferential position consists of internal ribs 70 on the printing-form, adapted to slide in corresponding grooves in the supporting-cylinder—a marked rib in a marked groove. For attaining the longitudinal position of the printed form on its support any suitable means may be used. The means preferably employed consist of a stop or shoulder 71 on the end of the support, as shown in Fig. 5, against which the printing-form is located, all as more fully set forth in application filed by me the 7th of February, 1895, Serial No. 537,582. Thus it will be seen that an accurate preestablished seat is provided for the printing-form and successive printing-forms. The successive printing-forms designed to be manipulated in the machine are provided with similar means, so as to insure that these successive printing-forms shall be mounted in the same relative situation on the supporting-cylinder 6. The transfer-base or setting-up plate is also provided with devices, so as to insure that it shall always be mounted in the same relative position on its support. As shown in the drawings, the transfer-base is provided with ears 55, fitting in corresponding recesses in the support 2. The locks 3 engage the ears 55 and hold the setting-up plate firmly in place. Thus it will be seen the transfer-base is provided with an accurate preestablished seat, whereby it may be arranged in exact prede-

terminated position both longitudinally and transversely. Intermeshing gearing for the transfer-base and printing-form are so marked as to insure that they shall always intermesh in the same way. By means of these preestablished guides it will be seen that a printing-form and its coacting setting-up plate or transfer-base may always be brought into contact in an accurate predetermined relation both longitudinally and transversely, so that duplicate identical and interchangeable printing-forms may be readily made and accuracy of register may be obtained in the operation of preparing the printing-surfaces thereof.

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

1. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support carried in bearings and arranged to roll over and thereby traverse the stationary support, a transfer-base being mounted on one of said supports and an unprepared printing-form being mounted on the other support.

2. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support carried in bearings and arranged to roll and reciprocate over the stationary support, a transfer-base mounted on one of said supports and an unprepared printing-form mounted on the other support.

3. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support arranged to roll over and thereby traverse the stationary support, a transfer-base being mounted on one of said supports and a printing-form being mounted on the other support, and means for bringing said supports together and separating them whereby the transfer-base and printing-form may be brought together under pressure as required.

4. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support arranged to roll and reciprocate over the stationary support, a transfer-base being mounted on one of said supports and a printing-form mounted on the other support, and means for bringing said supports together and separating them whereby the transfer-base and printing-form may be brought together under pressure as required.

5. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support carried in bearings and arranged to roll over and thereby traverse the stationary support, a transfer-base being mounted on one of said supports and an unprepared printing-form being mounted on

the other support, and devices for inking the printing-form.

6. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support arranged to roll over the stationary support, a transfer-base mounted on one of said supports and a printing-form mounted on the other support, preestablished guides with reference to which said printing-form and transfer-base may be arranged in accurate predetermined relation both longitudinally and transversely.

7. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support arranged to roll over and thereby traverse the stationary support, a transfer-base being mounted on one of said supports and a printing-form being mounted on the other support, means for bringing said supports together and separating them whereby the transfer-base and printing-form may be brought together under pressure as required, and devices for inking the printing-form.

8. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support arranged to roll and reciprocate over the stationary support, a transfer-base being mounted on one of said supports and a printing-form mounted on the other support, and means for bringing said supports together and separating them whereby the transfer-base and printing-form may be brought together under pressure as required, and devices for inking the printing-form.

9. In a machine for making printing-surfaces, the combination with a curved or rounded stationary transfer-base, of a cylindrical printing-form arranged to roll in positive contact with and thereby traverse the transfer-base, and means for bringing together and separating said transfer-base and printing-form.

10. In a machine for making printing-surfaces, the combination with a curved or rounded stationary transfer-base of a cylindrical printing-form arranged to roll in positive contact with and thereby traverse the transfer-base, means for bringing together and separating said transfer-base and printing-form, and devices for inking the printing-form.

11. In a machine for making printing-surfaces, the combination with a curved or rounded transfer-base of a cylindrical printing-form arranged to rotate in positive contact with and reciprocate over the transfer-base, and means for bringing together and separating said transfer-base and printing-form.

12. In a machine for making printing-surfaces, the combination with a curved or rounded transfer-base of a cylindrical printing-form arranged to rotate in positive contact

with and reciprocate over the transfer-base, means for bringing together and separating said transfer-base and printing-form, and devices for inking the printing-form.

5 13. In a machine for making printing-surfaces, the combination with a curved or rounded stationary transfer-base carried on a support and removable therefrom, of a cylindrical printing-form arranged to roll in positive contact and thereby traverse the transfer-base, and means for bringing together and separating said transfer-base and printing-form.

10 14. In a machine for making printing-surfaces, the combination with a curved or rounded stationary transfer-base carried on a support and removable therefrom, of a cylindrical printing-form arranged to roll in positive contact with and thereby traverse the transfer-base, means for bringing together and separating said transfer-base and printing-form, and devices for inking the printing-form.

15 15. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support carried in bearings and arranged to roll over and thereby traverse the stationary support, a transfer-base being mounted on one of said supports and an unprepared printing-form being mounted on the other support, said printing-form and transfer-base being removable from their supports.

20 16. In a machine for making printing-surfaces, the combination with a curved or rounded stationary transfer-base mounted upon a support and removable therefrom, of a supporting-cylinder carrying a printing-form removable therefrom, said supporting-cylinder being mounted in sliding boxes carried by a pair of arms arranged to swing back and forth so as to carry the printing-form back and forth over the transfer-base, preestablished guides with reference to which said transfer-base and printing-form may be arranged accurately in predetermined cooperating relation both longitudinally and transversely, means for moving the sliding boxes for the supporting-cylinder in said carrying-arms, and mechanism for actuating said arms.

25 17. In a machine for making printing-surfaces, the combination with a curved or rounded stationary transfer-base mounted upon a support and removable therefrom, of a supporting-cylinder carrying a printing-form removable therefrom, said supporting-cylinder being mounted in sliding boxes carried by a pair of arms arranged to swing back and forth over the transfer-base, intermeshing gears on

said supporting-cylinder and on said support for the transfer-base, means for moving the sliding boxes for the supporting-cylinder in said carrying-arms, inking-rollers for said printing-form, and mechanism for driving the printing-form in conjunction with its inking-rollers and for actuating the printing-form without operating the inking-rollers.

30 18. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support arranged to roll over and thereby traverse the stationary support, a removable transfer-base being mounted on one of said supports and a removable printing-form being mounted on the other support, the printing-form and its support being provided with devices to insure that said printing-form or identical printing-forms shall be mounted on the support in the same identical position, intermeshing gearing for the printing-form and transfer-base, so marked as to insure that it shall always be intermeshed in the same way, whereby accuracy in making duplicate identical and interchangeable printing-surfaces may be obtained and whereby accuracy of register may be obtained in making the printing-surfaces.

35 19. In a machine for making printing-surfaces, the combination with a stationary curved or rounded support, of a curved or cylindrical support arranged to roll over and thereby traverse the stationary support, a removable transfer-base being mounted on one of said supports and a removable printing-form being mounted on the other support, the printing-form and its support being provided with devices to insure that said printing-form or identical printing-forms shall be mounted on the support in the same identical position, and the transfer-base and its support being provided with devices to insure that said transfer-base shall always be mounted on its support in the same identical position, intermeshing gearing for the printing-form and transfer-base, so marked as to insure that it shall always be intermeshed in the same way, whereby accuracy in making duplicate identical and interchangeable printing-surfaces may be obtained and whereby accuracy of register may be obtained in making the printing-surfaces.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD HETT.

Witnesses:

EDWIN SEGER,

GEO. W. MILLS, Jr.