

No. 637,589.

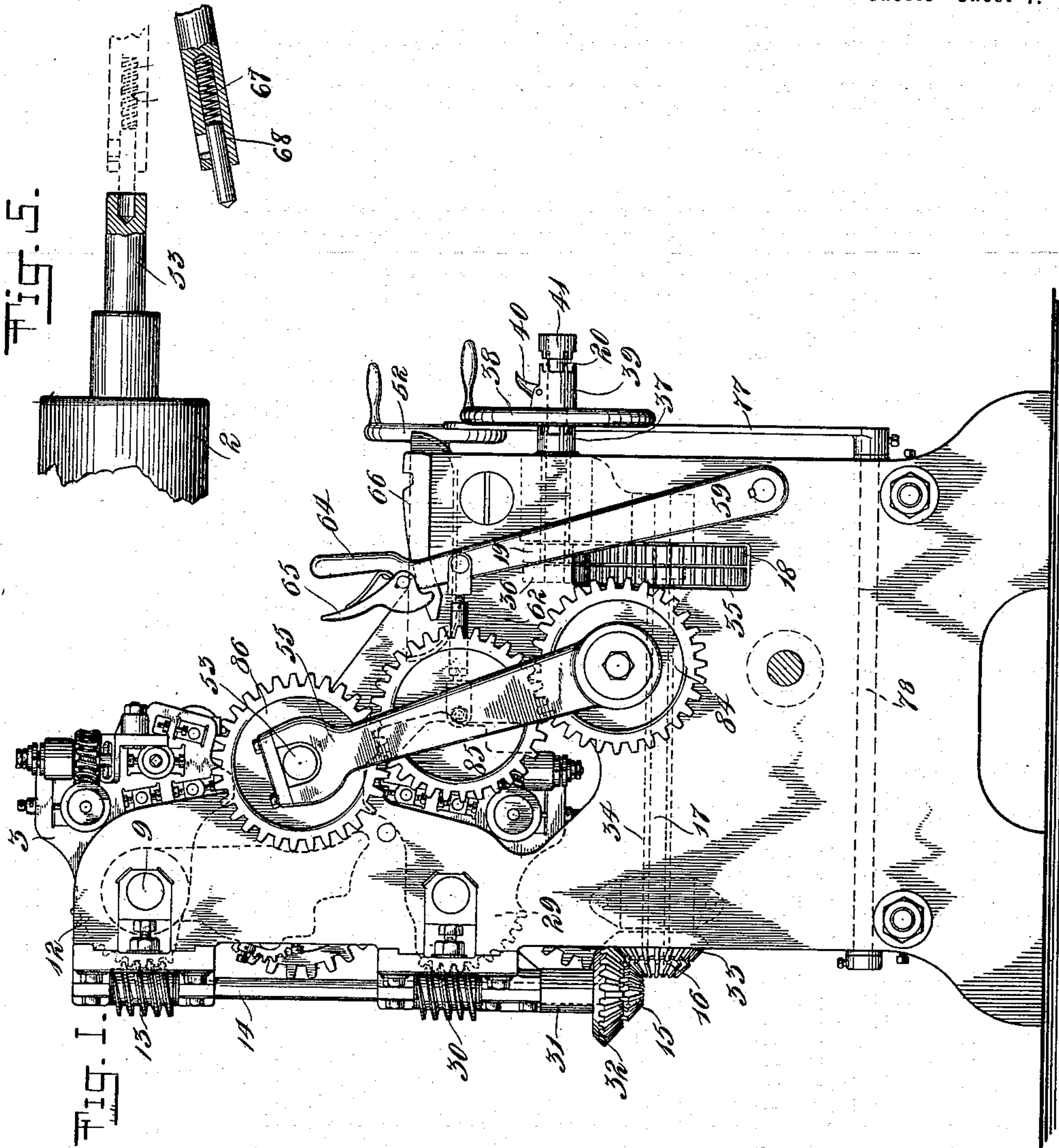
Patented Nov. 21, 1899.

E. HETT.  
ROLLING UP MACHINE.

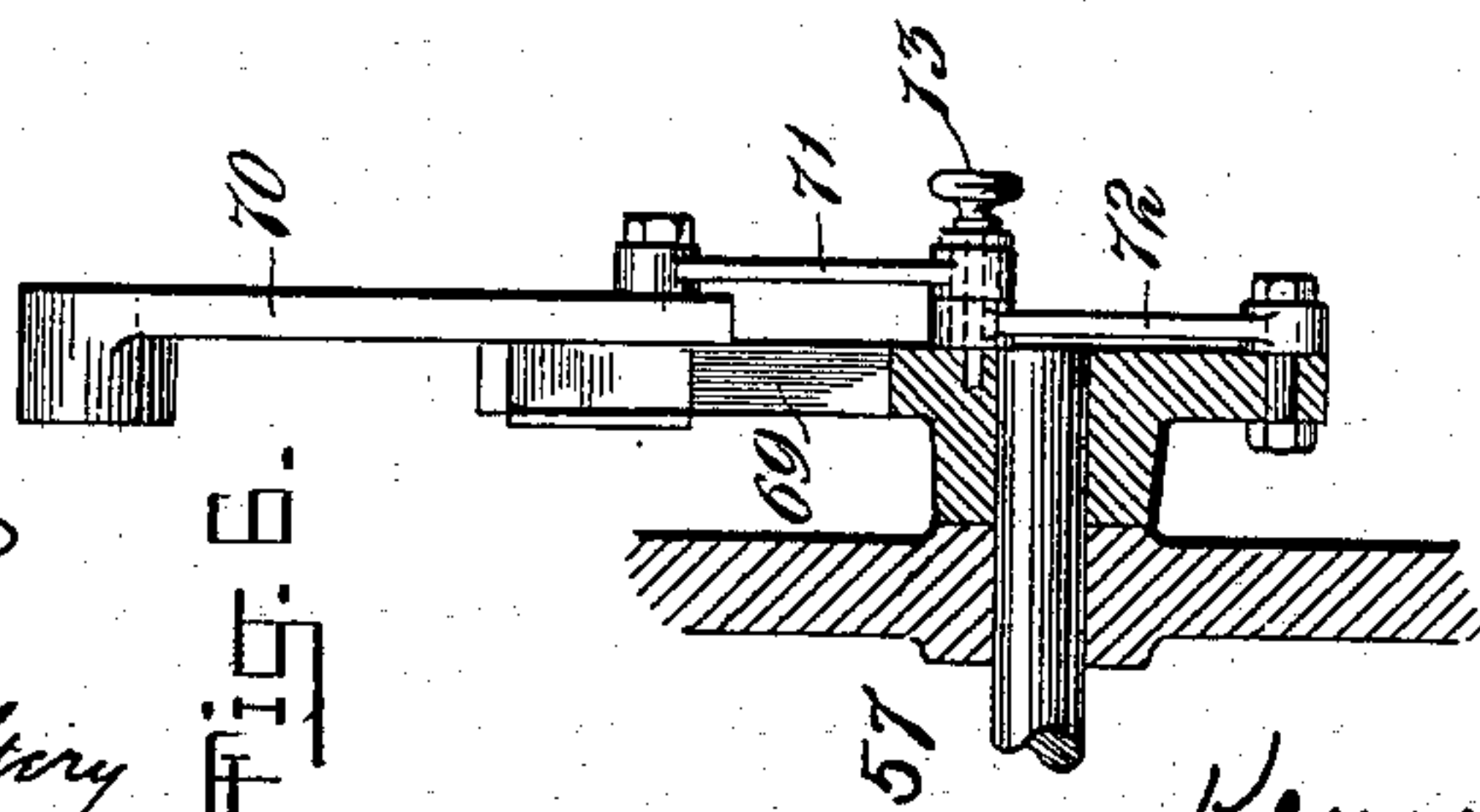
(Application filed Mar. 21, 1899.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:  
*Geoffrey*  
*Timothy E. Raftery*



INVENTOR  
*Edward Hett*  
BY  
*Kenny & Kenyon*  
ATTORNEYS

No. 637,589.

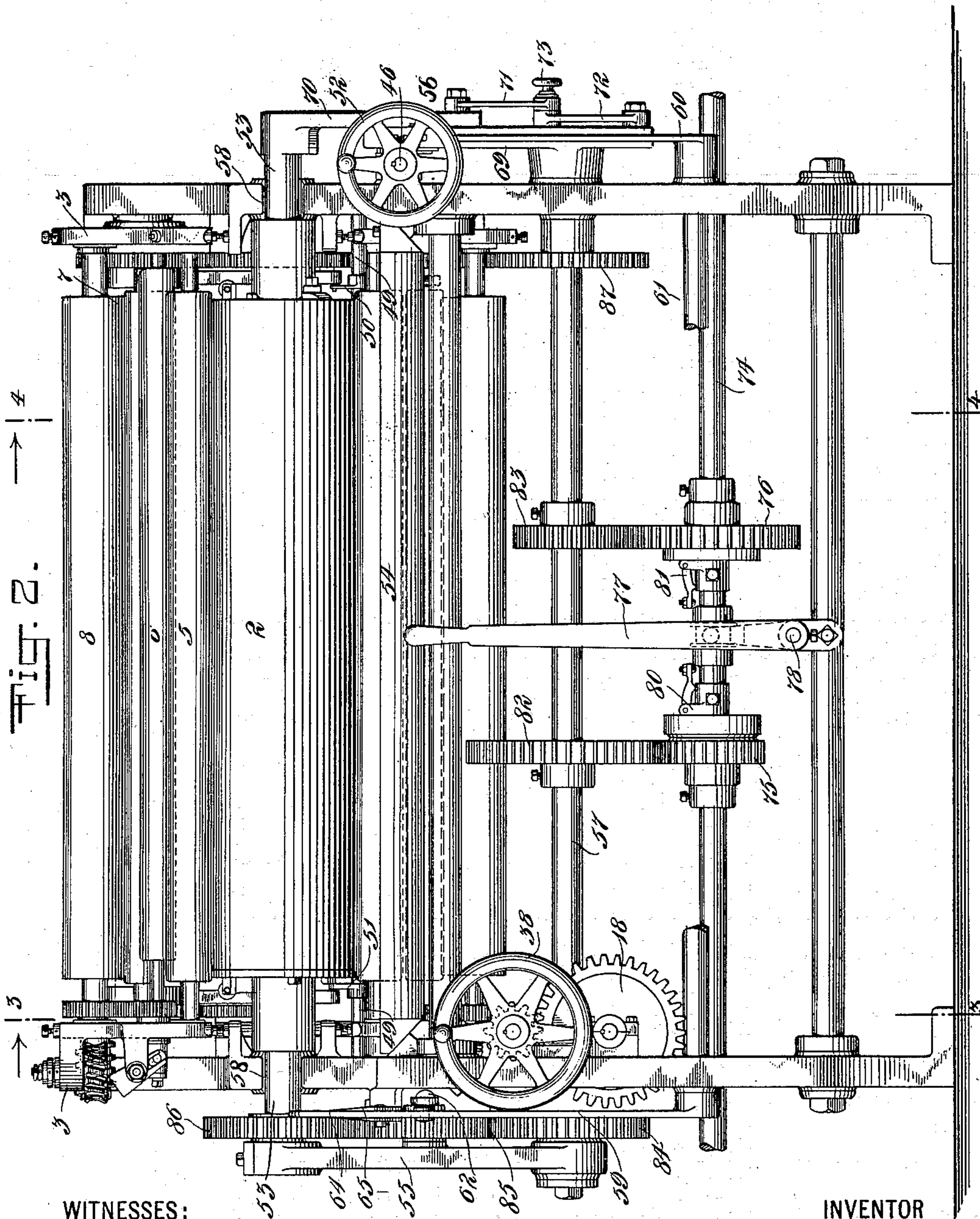
Patented Nov. 21, 1899.

E. HETT.  
ROLLING UP MACHINE.

(Application filed Mar. 21, 1899.)

(No Model.)

3 Sheets—Sheet 2.



WITNESSES:

*Edward Hett*  
*Timothy C. Raftery*

INVENTOR

*Edward Hett*

BY

*Kernyn & Kernyn*  
ATTORNEYS



**No. 637,589.**

**Patented Nov. 21, 1899.**

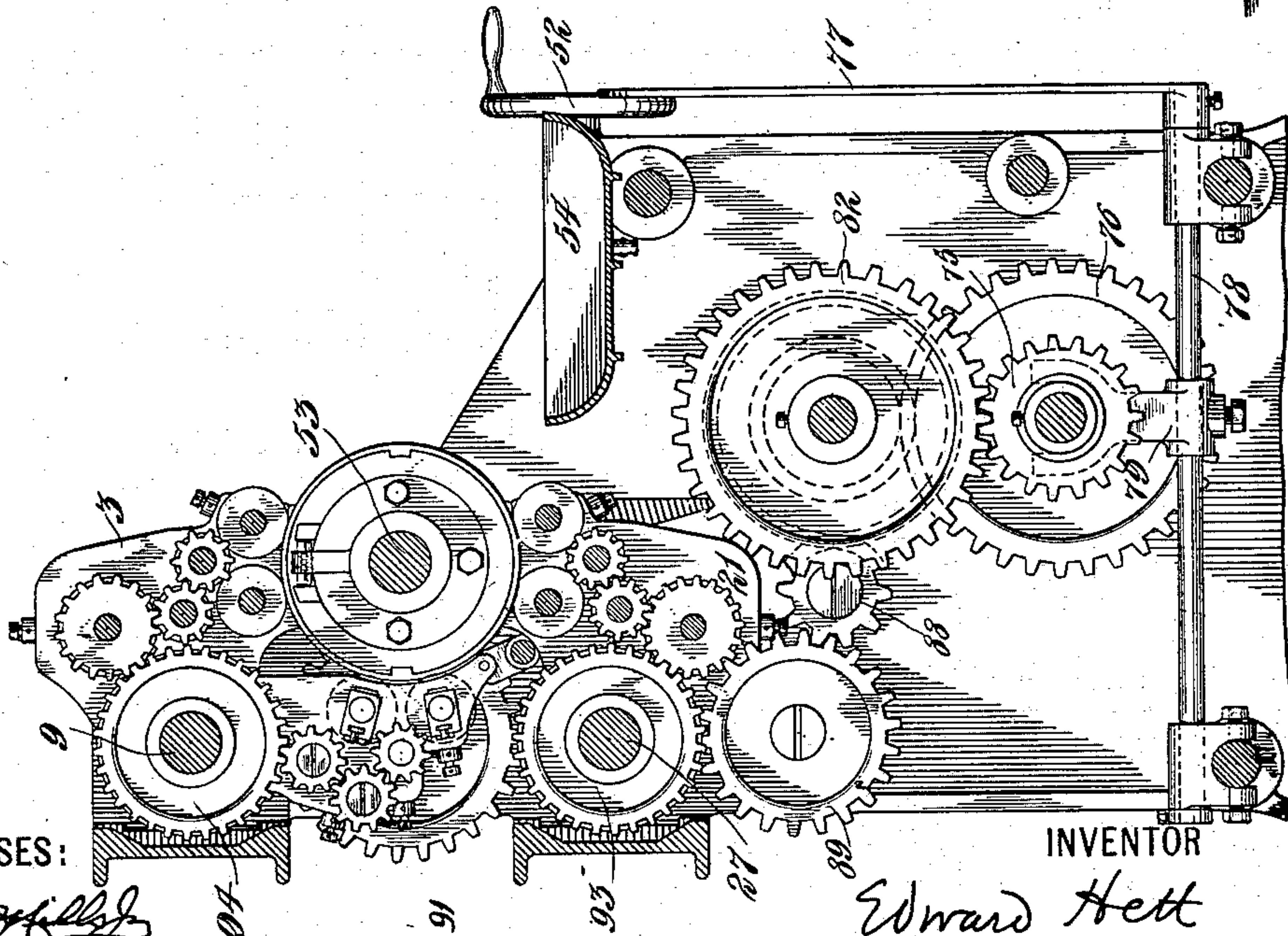
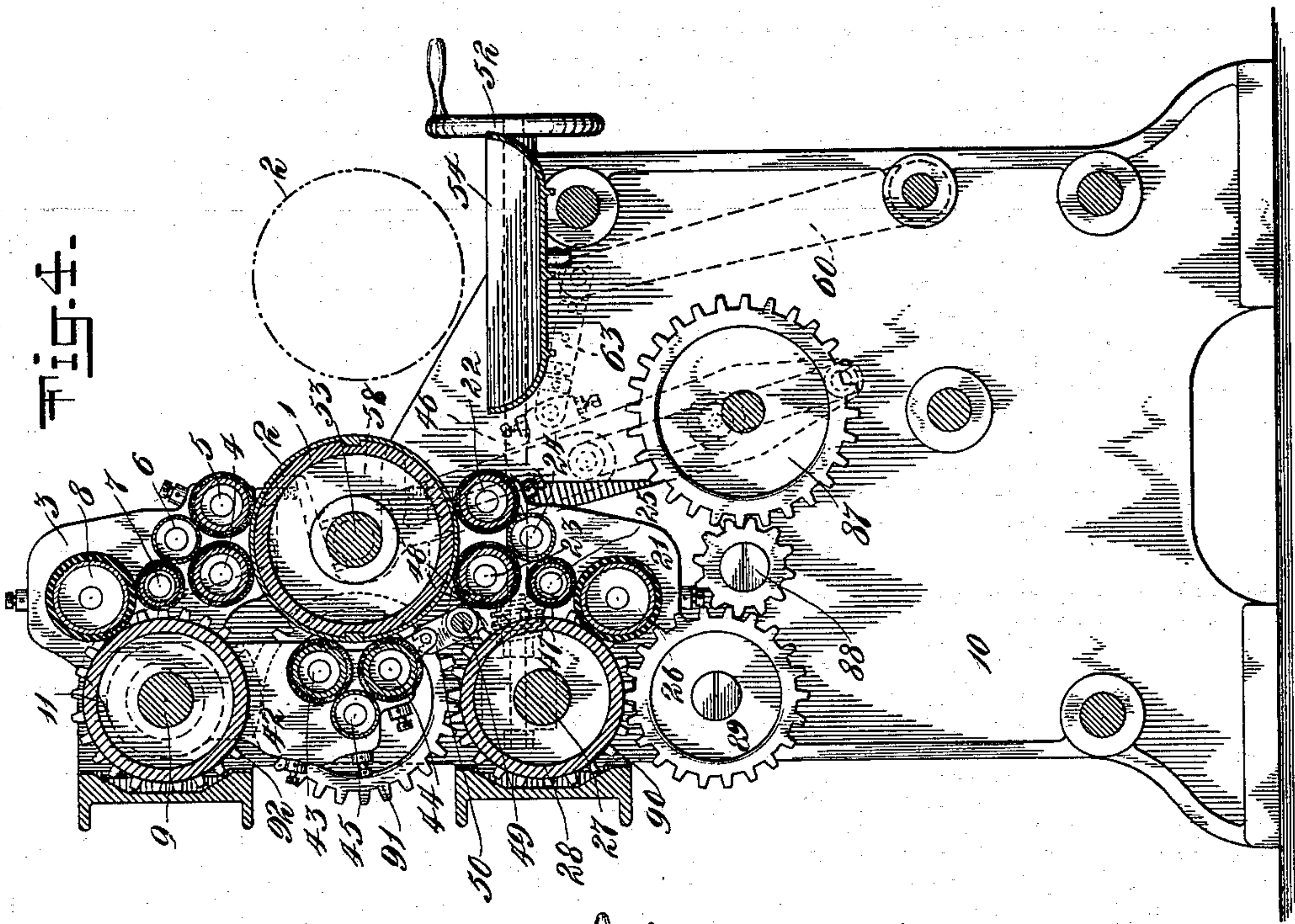
**E. HETT.**

ROLLING UP MACHINE.

(Application filed Mar. 21, 1899.)

(No Model.)

**3 Sheets—Sheet 3.**



**WITNESSES:**

INVENTOR

Edward Hett

BY

Kenyon & Kenyon  
ATTORNEYS

ATTORNEYS



# UNITED STATES PATENT OFFICE.

EDWARD HETT, OF NEW YORK, N. Y.

## ROLLING-UP MACHINE.

SPECIFICATION forming part of Letters Patent No. 637,589, dated November 21, 1899.

Application filed March 21, 1899. Serial No. 709,877. (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,) in the county of Richmond and State of New York, have invented certain new and useful Improvements in Rolling-Up Machines, of which the following is a specification.

This invention relates primarily to a rolling-up or developing machine designed to be employed in the lithographic or planographic art.

It also relates to certain means whereby a printing-surface may be moved from one position in the machine in which it is mounted to another or whereby the printing-surface may be moved away from the other parts of the machine, so as to facilitate its withdrawal from the machine. Such means may be employed in a rolling-up machine, as shown in the accompanying drawings, or may be employed in other machines working with or upon a printing-surface—such, for example, as a turning-over or transferring machine or a printing-press.

It also relates to novel mechanism conveniently employed in carrying out the method set forth in my pending application filed October 21, 1899, Serial No. 734,378, whereby a prepared lithographic surface may be preserved and made ready for use in printing with a colored ink without the necessity of additional treatment preparatory to applying said colored printing-ink.

The invention consists of the features and combination of features hereinafter set forth, and specified in the claims.

In the accompanying drawings, forming part of this specification and in which like numerals of reference designate corresponding parts in the several views, Figure 1 is a side elevation of a rolling-up machine embodying my invention. Fig. 2 is a front elevation thereof. Figs. 3 and 4 are sectional elevations taken on the lines 3 3 and 4 4, respectively. Fig. 5 is a fragmental view showing a detail, and Fig. 6 is a fragmental view showing another detail.

Referring now to the specific mechanism embodying the invention and shown in the drawings, 1 is a rotating cylindrical support,

on which is mounted a curved and generally cylindrical printing-surface and preferably removable lengthwise from the support.

3 is a swinging frame carrying inking-rollers 4, 5, 6, 7, and 8 and fixed on a shaft 9, carried by the main frame 10. Loose on the shaft 9 is a main ink-distributing cylinder 11. The side of the frame 3 is provided with gear-teeth 12, meshing with the worm 13 on the worm-shaft 14, on which is fixed a gear 15, meshing with the gear 16 on the shaft 17. The shaft 17 carries also a fixed gear 18, which meshes with the gear 19, fixed on the sleeve 37 on the hand-shaft 20. Thus the hand-shaft, through the train of gearing indicated, is capable of moving the inking-frame 3 so as to carry its inking-rollers to and from the printing-surface 2. 21 is another inking-frame carrying inking-rollers 22, 23, 24, 25, and 26 and fixed on the shaft 27, on which is loosely mounted the main ink-distributing cylinder 28. One side of the frame 21 is provided with gear-teeth 29, meshing with the worm 30 on the tubular shaft 31, surrounding the shaft 14, and on which is fixed a gear 32, meshing with the gear 33, fixed on the tubular shaft 34, surrounding the shaft 17. The shaft 34 carries also the fixed gear 35, meshing with the gear 36, fixed on the shaft 20. A hand-wheel 38 on a toothed hub 39, provided with a latch 40, is loosely mounted on the shaft 20 and may be moved into engagement with a recessed head 41, fixed on the shaft 20, or into engagement with the recessed end of the shaft 37, and may be locked by the latch 40 in either position. Thus by means of the train of gearing indicated the inking-frame 21 may be moved so as to carry the inking-rollers to and from the printing-surface 2 and the hand-wheel 38 may be utilized for the purpose of operating either the inking-frame 3 or 21. These inking-frames, it will be seen, are on opposite sides of the printing-surface, so as not to interfere with each other.

42 is the dampening-frame, carrying the dampening-rollers 43, 44, and 45 and mounted loosely on the shaft 9. It is moved so as to carry its rollers to and from the printing-surface by means of the hand-shaft 46, which carries a fixed worm 47, meshing with a gear 48 on the shaft 49, on which are fixed two



arms 50 and 51, engaging pins projecting from the sides of the frame 42. The shaft 46 has a hand-wheel 52.

The supporting-cylinder 1 is fixed on a shaft 5 53, which is supported by suitable means, so as to be movable and in order that the printing-surface 1 may be moved from one position in the machine to another, for the purpose to be presently explained. In one position the 10 printing-surface is supported in the rolling-up machine, herein shown as in position to be operated in conjunction with the inking-rollers, as shown in full lines in the several figures of the drawings. In another position 15 it is supported over the drip-pan 54, carried by the main frame. In Fig. 4 the printing-surface is shown in this latter position in broken lines. The printing-surface is moved from one position to another by means of a 20 pair of swinging arms carried by the main frame and arranged to engage the ends of the shaft 53. These swinging arms are an important feature of my invention, and I will now proceed to describe them and their accessories, referring to one arrangement there- 25 of—viz., the specific arrangement shown in the accompanying drawings. In the drawings the arms are numbered 55 and 56 and are loosely mounted at their lower ends upon a 30 shaft 57, and at their upper ends they are arranged to engage the shaft 53, carrying the printing-surface, and are thus capable of carrying the shaft 53, and with it the printing-surface, from one position to another. The 35 arms 55 and 56 instead of being pivoted on the shaft 57 may be pivotally supported by the frame in any other suitable manner. As shown in the present embodiment of the invention, the shaft 53 is not only carried from 40 one position to another by the arms 55 and 56, but is also supported by these arms when in rotative operation. This arrangement has its advantages, but it is not essential, since it is obvious that the shaft may, if desired, 45 be supported by suitable bearings on the main frame when in rotative operation and at such times be disengaged from the arms 55 and 56, which would then be employed only for moving the shaft from one position to another. 50 In the present arrangement the main frame has open recesses 58, arranged to receive the shaft 53 and limit its backward movement toward the inking and dampening rollers, so that its operating position with respect to 55 these rollers will be predetermined.

59 and 60 are a pair of swinging arms fixed on the shaft 61 and connected, respectively, by links 62 and 63, generally adjustable, as shown, with the arms 55 and 56, by means of 60 which the arms 55 and 56 may be operated to move the shaft 53. The arm 59 is extended to provide an operating-handle 64, which carries a latch 65, arranged to engage notches in a segmental piece 66, whereby the arms, and 65 so the printing-surface, are locked in different positions.

One of the important advantages of the

arms 55 and 56 is their availability in the operation of removing a printing-surface from the machine or in the operation of mounting 70 a printing-surface in place in the machine. The printing-surface 2 shown in the drawings is removable lengthwise from its support, and when it is to be removed from the machine the arms 55 and 56 are swung forward into the position shown in broken lines 75 in Fig. 4. An arm 67, supported at one end by suitable means and forming part of an apparatus such as shown in application filed by me on June 13, 1895, Serial No. 552,641, 80 renewed July 12, 1898, Serial No. 685,764, is then brought into alinement with the shaft 53 on one side of the machine and the arm and shaft coupled together by suitable means, as by the bolt 68. (See Fig. 5.) The print- 85 ing-surface 2 may be then slipped from the cylinder 1 upon the arm 67, the arm 56 having first been disconnected from the shaft 53 and moved out of the way. In order that the arm 56 may thus be moved out of the way, it 90 is especially constructed to admit of this operation, being preferably collapsible. The arm 56, as shown in the drawings, (see Figs. 2 and 6,) consists of a piece 69, pivoted on the shaft 57, and a piece 70, mounted to slide in a 95 recess on the piece 69 and having a recess at its upper end to receive the end of the shaft 53. Toggle-arms 71 and 72, having a sliding bolt 73 passing through their joint and arranged to enter a recess in the piece 69 are pivotally 100 connected to the lower end of the piece 69 and to the lower end of the piece 70. In this arrangement when the arm 56 is to be disengaged from the shaft 53 to permit the printing-surface 2 to be removed from the support 1 the 105 bolt 73 is withdrawn from the recess in the piece 69, and the piece 70 then slides down beneath the shaft 53, the toggle-arms 71 and 72 bending at the same time at their joint. The arms 55 and 56 are useful not only in moving 110 the printing-surface away from the inking and dampening rollers, so that it may be removed by slipping it lengthwise from its cylinder 1, but they may be used to carry the shaft 53 forward, so that it may be deposited 115 upon a suitable support in front of the machine or may be taken from the machine in any suitable manner. It is obvious that these arms may be used in moving a printing-surface from one position to another in connection with various kinds of machines using a 120 printing-surface and for various purposes, and hence I do not wish to limit my claims for them to a rolling-up machine or to any other particular machine. 125

I will now describe the driving mechanism of the machine whereby the printing-surface may be driven in connection with the inking-rollers or dampening-rollers or alone.

74 is the driving-shaft, on which are mounted loosely the small and large gears 75 and 76. 77 is a clutch-lever fixed on the shaft 78, which carries an arm 79 for operating the 130 clutches 80 and 81 on the shaft 74, and there-



by locking either of the gears 75 and 76 on the driving-shaft. Fixed on the shaft 57 are the large and small gears 82 and 83, meshing with the gears 75 and 76, respectively. Fixed on the shaft 57 is a gear 84, meshing with a gear 85, carried on a stud on the arm 55, and meshing with the gear 86, fixed on the shaft 53. By the train of gearing described the printing-surface may be driven whatever the position of the printing-surface may be, the shaft 53 remaining in operative connection with the driving-shaft when the shaft 53 is in its extreme forward position as well as when it is in its extreme rearward position. The shaft 57 also has fixed thereon a gear 87, meshing with a gear 88, which meshes with a gear 89. The gears 88 and 89 are carried by studs on the main frame on one side of the machine. (See Fig. 4.) The gear 89 meshes with a gear 90, loose on the shaft 27 and meshing with the gear 91, carried on a stud on the main frame. The gear 91 meshes with a gear 92, loose on the shaft 9. The shafts 27 and 9 have, respectively, loosely mounted thereon the gears 93 and 94 on the side of the machine opposite from the gears 90 and 92, the gears 93 and 94 being geared in the usual manner with the smaller inking-rollers of the inking-frames 21 and 3, respectively. The gears 90 and 93 are rigidly connected to the inking-cylinder 28, and gears 92 and 94 are rigidly connected to the inking-cylinder 11. The gear 94 is also geared with the dampening-rollers, as shown in Fig. 3. Thus the inking and dampening rollers may be driven from the driving-shaft 74 in conjunction with the printing-surface. It will also be seen that the inking-rollers of the frames 3 and 21 may be driven separately in conjunction with the printing-surface. The small and large gears 75 and 76 are provided to change the speed of the printing-surface and the inking and dampening rollers from a higher to a lower rate, or vice versa. In the practical use of the rolling-up machine shown in the drawings the printing-surface is driven in conjunction with the dampening-rollers and the inking-rollers of the frame 3 when in the position shown in full lines in the several figures. The inking and dampening rollers are then moved away from the printing-surface and the printing-surface is carried by the swinging arms 55 and 56 into the position shown in broken lines in Fig. 4 over the drip-pan, where the ink is washed off and etched in the usual manner. When the rolling-up operation is satisfactorily finished, the printing-surface is removed from the machine and when required is mounted in a printing-press.

In the machine already described, and illustrated in the accompanying drawings, I have shown efficient mechanism designed to be used in economically carrying out my improved method. In these drawings the inking-rollers of the frame 3 are intended to be used in the well-known rolling-up operation of the printing-surface. When this operation has

been completed and the black ink employed in such operation has been removed, the inking-rollers of the frame 21 are used to apply the light-colored preserving body. The printing-surface is then removed from the machine and is ready to be used in printing without further treatment. The printing-surface may be used immediately in printing or may be stored away for a time.

The terms "lithography" and "lithographic" are herein used in their broader significance and without reference to whether the printing-surface is stone, zinc, aluminum, or other material the printing with which is dependent upon the mutual-repelling properties of grease and water.

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

1. In a machine for making permanent curved printing-surfaces, the combination with the curved printing-form and means for rolling up the surface of the same, of a pair of swinging arms carried by the frame of the machine and arranged to carry the said printing-form and to hold it in operative position for such treatment, and to move the same into and out of such position, whereby the surface may be readily treated and the printing-form may be readily removed from and inserted in the machine, substantially as described.

2. In a machine for making permanent hollow curved printing-surfaces, the combination with the hollow curved printing-form and an interior form-support, and means for rolling up the surface of the printing-form, of a pair of swinging arms carried by the frame of the machine and arranged to carry the said form-support and to hold it in operative position for such treatment, and to move the same into and out of such position, whereby the surface of the printing-form may be readily treated and the printing-form may be readily removed from and inserted in the machine, substantially as described.

3. In a machine for making permanent curved printing-surfaces, the combination with the curved printing-form and means for treating the surface of the same, of a pair of swinging arms carried by the frame of the machine and arranged to carry the said printing-form and to hold it in operative position for such treatment, and to move the same into and out of such position, one of said arms being removable from its supporting position independently of the other arm, whereby the surface may be readily treated and the printing-form may be readily removed from and inserted in the machine, substantially as described.

4. In a machine for making permanent hollow curved printing-surfaces, the combination with the hollow curved printing-form and an interior form-support and means for treating the surface of the printing-form, of a pair of swinging arms carried by the frame of the machine and arranged to carry the said form-



support and to hold it in operative position for such treatment and to move the same into and out of such position, one of said arms being removable from its supporting position 5 independently of the other arm, whereby the surface of the printing-form may be readily treated and the printing-form may be readily removed from and inserted in the machine, substantially as described.

10 5. In a planographic or other machine using a curved printing-surface, the combination with a curved printing-surface, of a pair of swinging arms carried by the frame of the machine and arranged to move said printing- 15 surface from one position to another, one of said arms being removable from its supporting position independently of the other arm.

6. In a planographic or other machine using a curved rotating printing-surface, the combination with a curved rotating support for a printing-surface, a removable printing-surface adapted to be carried on said support, a pair of swinging arms carried by the frame of the machine and arranged to move said rotating support from one position to another, 25 one of said arms being removable from its supporting position independently of the other arm.

7. In a planographic or other machine using a curved printing-surface, the combination with a suitable frame, of a pair of swinging arms carried by said frame, one of said arms being removable from its supporting position independently of the other arm, and a rotating curved printing-surface carried in bearings on said arms, whereby the printing-surface may be swung to and from its working position in said machine. 30

8. In a planographic or other machine using a curved printing-surface, the combination with a suitable frame, of a pair of swinging arms carried by said frame, one of said arms being removable from its supporting position independently of the other arm, a rotating curved support for a printing-surface carried in bearings on said arms, and a removable printing-surface carried in said support whereby the printing-surface may be swung to and from its working position in said machine and whereby said printing-surface may be removed from the machine when swung from said working position. 45

9. In a rolling-up machine, the combination

with suitable inking-rollers, of a removable curved printing-surface, a pair of swinging arms carrying said surface and adapted to support the printing-surface in position to work with said inking-rollers and to carry said surface out of such working position whereby the printing-surface may be removed from the machine. 55 60

10. In a planographic or other machine using a curved printing-surface, the combination with a curved printing-surface, of a pair of swinging arms carried by the frame of the machine and arranged to move said printing-surface from one position to another, rollers for inking said printing-surface in said machine, and mechanism for driving said printing-surface both when moved into and out of operative contact with said inking-rollers. 65 70

11. In a planographic or other machine using a curved printing-surface, the combination with a curved printing-surface, of a pair of swinging arms carried by the frame of the machine and arranged to move said printing-surface from one position to another, gearing for rotating said printing-surface including a gear carried by one of said swinging arms, whereby the printing-surface may be rotated in all positions of the swinging arms. 75 80

12. In a rolling-up machine, the combination of a plurality of swinging frames, each carrying a set of inking-rollers, a printing-surface and mechanism for driving the printing-surface in contact with either or both of said sets of inking-rollers. 85

13. In a rolling-up machine, the combination of a plurality of swinging frames, each carrying a set of inking-rollers, a printing-surface and mechanism for driving the printing-surface in contact with either or both of said sets of inking-rollers, and mechanism for independently operating the inking-frames to move the inking-rollers to and from the printing-surface. 90 95

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 100

EDWARD HETT.

Witnesses:

EDWIN SEGER,  
SIDNEY MANN.