

No. 662,867.

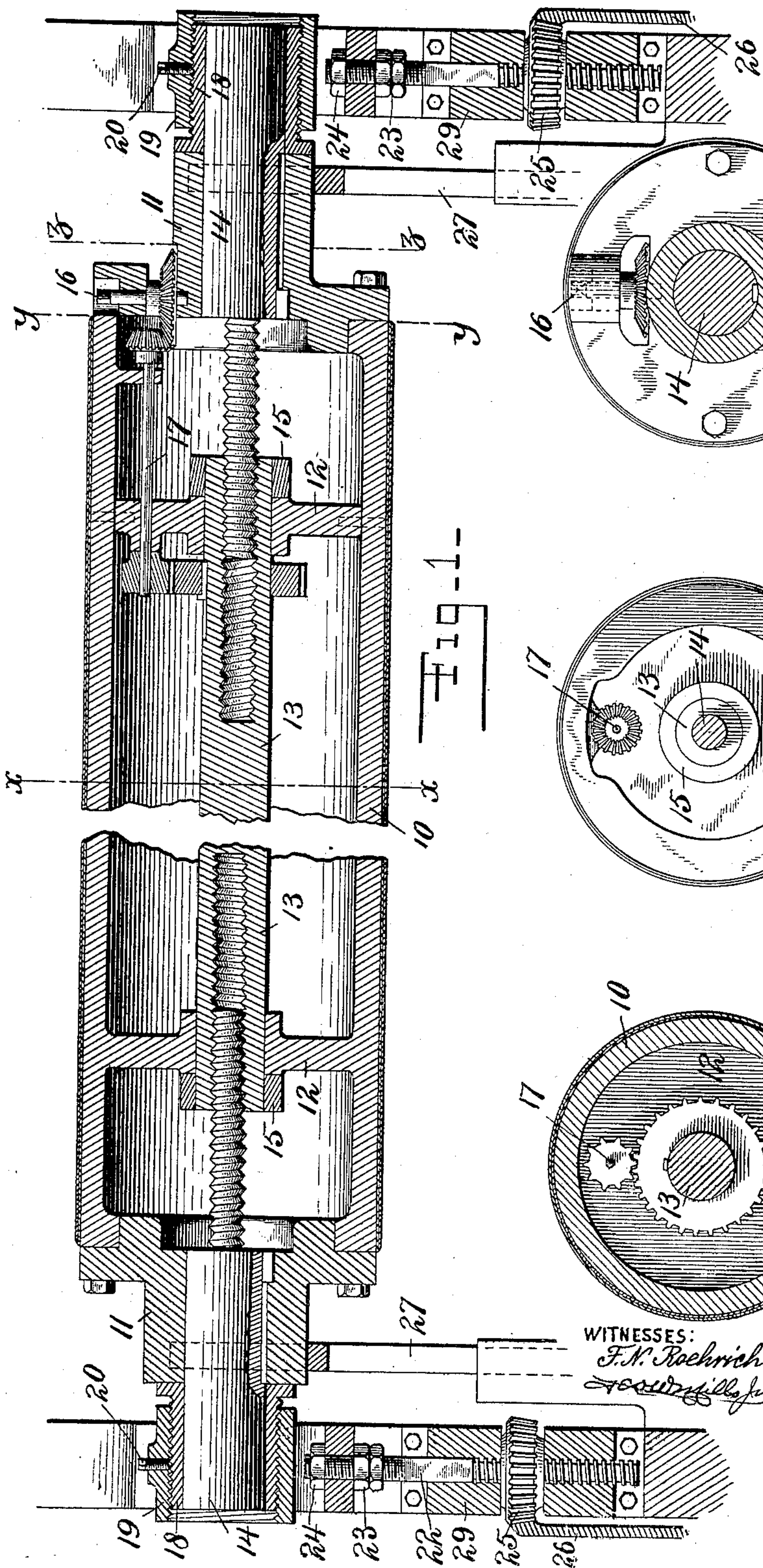
Patented Nov. 27, 1900.

E. HETT.  
PRINTING FORM AND PRESS.

(Application filed Nov. 20, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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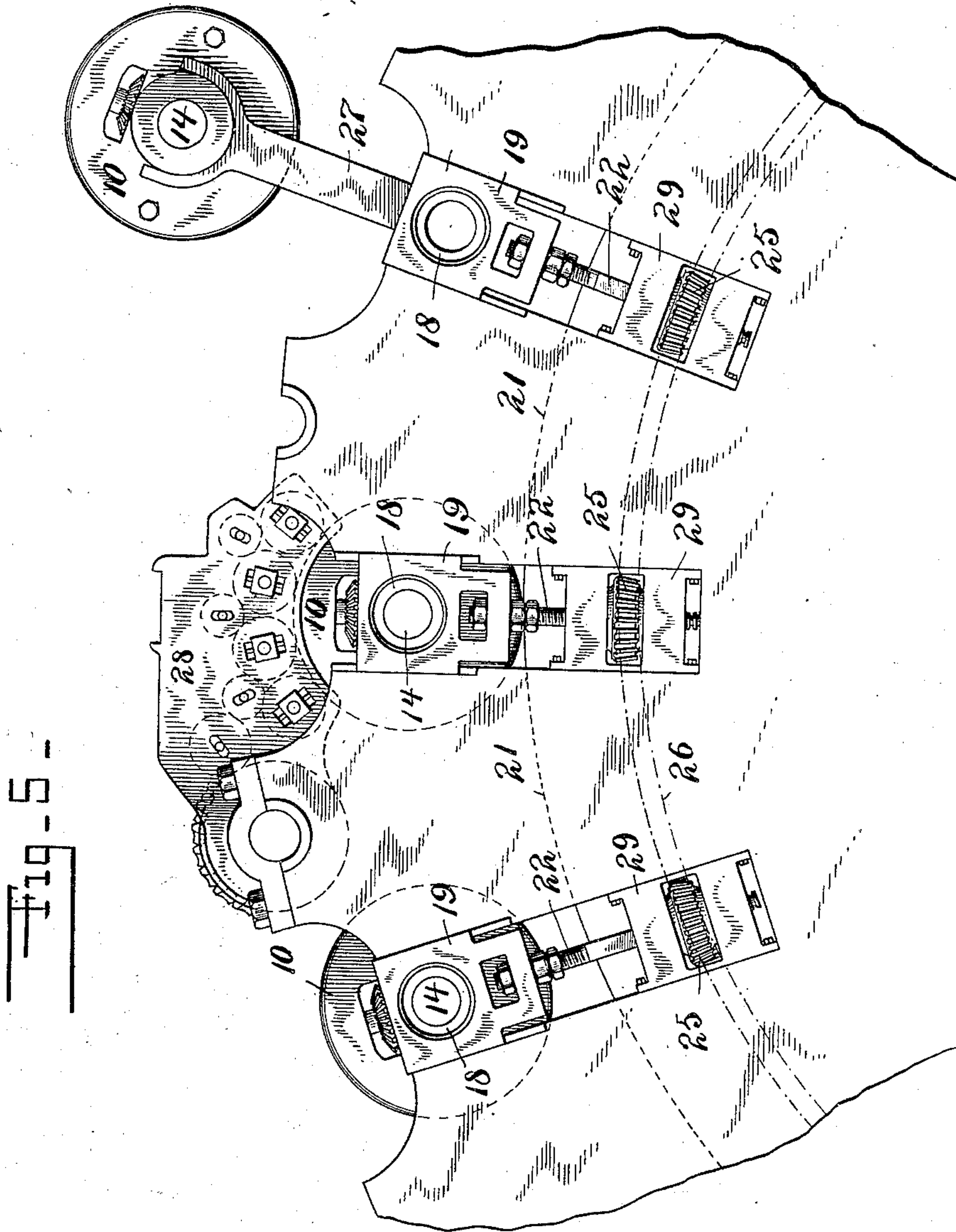
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WITNESSES:

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# UNITED STATES PATENT OFFICE.

EDWARD HETT, OF NEW YORK, N. Y.

## PRINTING FORM AND PRESS.

SPECIFICATION forming part of Letters Patent No. 662,867, dated November 27, 1900.

Application filed November 20, 1899. Serial No. 737,654. (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 Printing Forms and Presses, of which the following is a specification.

The invention relates to printing and other presses and to mechanism in such presses permitting the ready and convenient mounting and unmounting of rollers in general and tubular and cylindrical printing-forms in particular.

It consists of the combinations and devices herein shown and described and claimed.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a sectional view of one of the printing-forms of my invention in its preferred form, with its connected parts. Fig. 2 is a cross-section of the same on the line  $x x$  of Fig. 1. Fig. 3 is a sectional view on the line  $y y$ , and Fig. 4 a sectional view on the line  $z z$ . Fig. 5 is a diagrammatic sketch of a portion of a multicolor-printing press, showing a series of printing-forms.

The same numbers indicate the same parts in the several figures.

10 is the printing-form or roller. As shown, it is a hollow tubular roller of substantial pressure-resisting thickness. It has a hub 11 at each end, to which it is bolted, and it has two internally-depending flanges 12. The supporting-shaft consists of a central portion 13 and two end journal portions 14. The central portion 13 turns freely in the internal flanges 12 of the printing-form or roller, but is held from longitudinal motion in the printing-form or roller by collars 15, fastened to the said central portion of the shaft. Each end of the central portion of the shaft is tapped and screw-threaded and adapted to receive the inner ends of the journal portions of the shaft, which inner ends are externally screw-threaded, as shown. The pitch of the screw-thread at the opposite ends of the central portion 13 of the shaft is opposite the one to the other, so that any motion of revolution of the central portion of the shaft which operates to screw in one of the journal ends operates similarly to screw in the other journal end, and

vice versa. The mechanism for so screwing the journal ends in and out by the revolution of the central portion 13 of the shaft consists of the square-headed rod 16, which is seated in one of the hubs 11 of the printing-form or roller and which at its inner end carries a bevel gear-wheel, which meshes with a bevel gear-wheel on the end of a short longitudinal shaft 17 within the roller or printing-form and carried in internally-depending flanges or lugs of the roller. At the inner end of the shaft 17 is a gear-wheel meshing with a gear-wheel which is keyed onto and carried by the central portion 13 of the main shaft. The journal portions 14 of the shaft are keyed in the hubs 11 to keep them from any motion of revolution with respect to the roller or printing-form. In order to draw or retract the journal ends in toward the roller or printing-form, a proper tool is applied to the squared head on the short shaft 16 and that shaft is thereby turned, and with it the shaft 17 and the central portion 13 of the main shaft, and the inner screw-threaded ends of the journal portions of the main shaft are drawn in or pushed out, as the case may be.

18 represents adjustable bushings or bearings in which the ends of the journal portion turn in operation. These adjustable bushings 18 may be screwed in or out in the fixed bearings 19 and clamped in adjusted position by the set-screws 20. These adjustable bushings or bearings 18 constitute by their inner ends or faces lateral guides whereby the printing-form or roller when mounted and dismounted may be mounted always in exact lateral position, the outer ends of the hubs 11 revolving in contact with the inner ends of the adjustable bushings 18. By the use of a series of lateral bearings 18 a series of rollers or printing-forms 10 may be accurately and reliably and interchangeably mounted and unmounted and mounted always in the same exact lateral position, whereby register may be accurately maintained. The fixed bearings 19 are only fixed from lateral motion. They are capable of a sliding motion radially toward and from the center of the impression-drum 21. They are supported and carried in such radial direction by pressure-bars 22. These pressure-bars have adjusting-nuts 23 and holding and clamping nuts 24. The pres-



sure-bars 22 may be moved radially inward to give the proper printing contact and pressure or radially outward to raise the printing-form or roller from contact with the impression-surface by any suitable means. I have shown for that purpose a bevel gear-wheel 25, held in the frame and having an internal worm-gear meshing with a worm-gear cut on the pressure-rods. A gear-wheel 26, centered with the main impression-drum and driven in any suitable way and in the direction and to the extent desired, rotates the gear-wheels 25. The portion of the pressure-rods 22 where it slides in the frame of the machine 29 is square, so as to prevent rotation of the pressure-rod.

In Fig. 5 the central printing-form is represented in what would be its printing position in pressure contact with the impression-surface, whereas the printing-form on the left of the figure is represented in its raised or non-printing position out of contact with the impression-surface. One figure is used simply for illustrative purposes to show these two positions of the printing-forms.

When it is desired to dismount or unmount the roller or printing-form, any suitable lifting devices 27 are brought into supporting contact with the hubs. Then the shaft 16 is turned by the use of a suitable tool and in the proper direction to retract the journal ends of the shaft until those journal ends are drawn in toward the center of the printing-form, so as to clear the lateral guides 18. The entire roller or printing-form is then free and clear in its bearings and can be raised bodily and radially from its position in the press outward to any desired point for removal simply by properly moving out the hoisting devices 27. This is indicated at the right-hand end of Fig. 5.

By the construction described rollers or printing-forms or the supports for printing-forms may be conveniently and quickly mounted and dismounted from the press and may be reliably mounted, a whole series of them, in accurate lateral adjustment and may be mounted in a transfer-press, as for the purpose of receiving a design, and subsequently mounted in a printing-press for purposes of printing the design, all in accurate and preestablished lateral adjustment, whereby, together with convenience in mounting and unmounting, may be attained exactitude of lateral alinement in a whole series of printing-forms for the purposes of accurate register in printing.

28 represents, diagrammatically, suitable inking mechanism for the printing-form.

Many of the details may be varied, and the special forms of mechanism specifically shown in the drawings and heretofore described in connection with the drawings may be changed or altered or omitted without departing from my invention, the essentials of which are respectively set out in the claims hereto appended.

For the purposes of some of the features of my invention it is immaterial whether the roller be a printing-form or merely the support for a printing-form or be a roller used for other purposes. For the purposes of other features of the invention the roller is itself a printing-form. In such case and for such purpose it may be constructed in any desired way and of any desired and suitable material. I prefer to construct it of aluminium, faced with a thin electrolytical deposit of copper and having upon such coating a printing-surface of electrolytically-deposited zinc. It will be observed that the retraction of the journal ends of the supporting-shaft is achieved without weakening the roller or printing-form and without breaking into or interfering with the circumferential continuity of the surface.

The printing-form referred to in this specification may have either a planographic, relief, or intaglio printing-surface.

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

1. In a press, a tubular printing-form having a surface that is continuous or unbroken in combination with a shaft having a retractile journal end and means to retract the same located within the printing-form, whereby the printing-form may be mounted and dismounted, substantially as described.

2. In a press, a tubular printing-form having a surface that is continuous or unbroken in combination with a shaft having retractile journal ends and means to retract the same located within the printing-form, whereby the printing-form may be mounted and dismounted, substantially as described.

3. In a press, a tubular printing-form having a surface that is continuous or unbroken in combination with a shaft having a central portion that is held from longitudinal motion in the printing-form and a journal portion that is capable of longitudinal motion in the printing-form and means for moving the journal portion longitudinally in the printing-form, whereby the said journal portion may be retracted and the printing-form mounted and dismounted, substantially as described.

4. In a press, a tubular roller in combination with a shaft having a central portion that is held from longitudinal motion in the roller and a journal portion that is capable of longitudinal motion in the roller and means located within the roller for moving the journal portion longitudinally in the roller, whereby the said journal portion may be retracted and the roller mounted and dismounted, substantially as described.

5. In a press, a tubular printing-form having a surface that is continuous or unbroken in combination with a shaft having a central portion that is held from longitudinal motion in the printing-form and a journal portion that is capable of longitudinal motion in the printing-form and means located within the printing-form for moving the journal portion longitudinally in the printing-form, whereby



the said journal portion may be retracted and the printing-form mounted and dismounted, substantially as described.

5 6. In a press, a tubular roller in combination with a shaft having a central portion that is held from longitudinal motion in the roller and two journal portions that are capable of longitudinal motion upon the central portion and means for so moving them longitudinally  
10 upon the central portion, whereby the said journal portions may be retracted and the roller mounted and dismounted, substantially as described.

15 7. In a press, a tubular roller in combination with a shaft having a central portion that is held from longitudinal motion in the roller and two journal portions that are capable of longitudinal motion upon the central portion and means located within the roller for so  
20 moving them longitudinally upon the central portion, whereby the said journal portions may be retracted and the roller mounted and dismounted, substantially as described.

25 8. In a printing-press, in combination with suitable impression surface or surfaces and a series of suitable inking mechanisms, a series of tubular printing-forms, the printing-forms having a surface that is continuous or unbroken and having a supporting-shaft, a journal  
30 end of which is retractile and means to retract the same, and a series of lateral guides, whereby the printing-forms may be mounted and dismounted and the entire series mounted always in exact lateral position, substantially  
35 as described.

9. In a printing-press, in combination with suitable impression surface or surfaces and a series of suitable inking mechanisms, a series of tubular printing-forms, the printing-forms  
40 having a surface that is continuous or unbroken and having a supporting-shaft, both the journal ends of which are retractile and means to retract the same, and a series of lateral guides, whereby the printing-forms may  
45 be mounted and dismounted and the entire series mounted always in exact lateral position, substantially as described.

10. In a printing-press, in combination with suitable impression surface or surfaces and a  
50 series of suitable inking mechanisms, a series of tubular printing-forms, the printing-forms having a surface that is continuous or unbroken and having a supporting-shaft, a journal end of which is retractile and means lo-  
55 cated within the printing-forms to retract the same, and a series of lateral guides, whereby the printing-forms may be mounted and the entire series mounted always in exact lateral position, substantially as described.

60 11. In a printing-press, in combination with suitable impression surface or surfaces and a series of suitable inking mechanisms, a series of tubular printing-forms, the printing-forms having a surface that is continuous or un-  
65 broken and having a supporting-shaft, both the journal ends of which are retractile and means located within the printing-forms to

retract the same, and a series of lateral guides, whereby the printing-forms may be mounted and dismounted and the entire series mounted  
70 always in exact lateral position, substantially as described.

12. In a press, a tubular roller having supporting and guiding end hubs 11 and internal flanges or hubs 12, in combination with a shaft  
75 having a central portion 13 provided with collars 15 and retractile journal portions 14, and means for revolving the central portion 13 and thereby moving the journal portions in or out, substantially as described. 80

13. In a press, a tubular roller having supporting and guiding end hubs 11 and internal flanges or hubs 12, in combination with a shaft  
85 having a central portion 13 provided with collars 15 and retractile journal portions 14, and a revoluble key-shaft 16 and mechanism mounted within the roller connecting said key-shaft with the central portion 13, whereby the  
90 central portion 13 of the shaft may be rotated and the journal ends 14 thereby moved in or out, substantially as described.

14. In a press, a tubular roller having a surface that is continuous or unbroken in combination with a shaft having a retractile journal end and means to retract the same and  
95 suitable lifting devices, whereby the roller may be mounted and dismounted, substantially as described.

15. In a press, a tubular printing-form having a surface that is continuous or unbroken  
100 in combination with a shaft having a retractile journal end and means to retract the same and suitable lifting devices, whereby the printing-form may be mounted and dismounted, substantially as described. 105

16. In a press, a tubular printing-form having a surface that is continuous or unbroken in combination with a shaft having retractile journal ends and means to retract the same and suitable lifting devices, whereby the  
110 printing-form may be mounted and dismounted, substantially as described.

17. In a press, a cylindrical printing-form having a surface that is continuous or unbroken in combination with a shaft having a  
115 retractile journal end and means to retract the same and suitable lifting devices, whereby the printing-form may be mounted and dismounted, substantially as described.

18. In a press, a cylindrical printing-form  
120 having a surface that is continuous or unbroken in combination with a shaft having retractile journal ends and means to retract the same and suitable lifting devices, whereby the printing-form may be mounted and  
125 dismounted, substantially as described.

19. In a press, a tubular printing-form having a surface that is continuous or unbroken in combination with a shaft having a retractile journaled end and means to retract the  
130 same located within the printing-form and suitable lifting devices, whereby the printing-form may be mounted and dismounted, substantially as described.



20. In a press, a tubular printing-form having a surface that is continuous or unbroken in combination with a shaft having retractile journal ends and means to retract the same  
 5 located within the printing-form and suitable lifting devices, whereby the printing-form may be mounted and dismantled, substantially as described.

21. In a press, a tubular roller in combination with a shaft having a central portion that is held from longitudinal motion in the roller and two journal portions that are capable of longitudinal motion upon the central portion and means for so moving them longitudinally  
 10 upon the central portion and suitable lifting means, whereby the said journal portions may be retracted and the roller mounted and dismantled, substantially as described.

22. In a printing-press, in combination with  
 20 suitable impression surface or surfaces and a series of suitable inking mechanisms, a series of tubular printing-forms, the printing-forms having a surface that is continuous or unbroken and having a supporting-shaft, a journal end of which is retractile and means to retract the same, and a series of lateral guides and suitable lifting devices, whereby the printing-forms may be mounted and dismantled and the entire series mounted always in exact lateral position, substantially  
 25 as described.

23. In a printing-press, in combination with suitable impression surface or surfaces and a series of suitable inking mechanisms, a series  
 35 of tubular printing-forms, the printing-forms having a surface that is continuous or unbroken and having a supporting-shaft, both the journal ends of which are retractile and means to retract the same, and a series of lateral guides, and suitable lifting devices whereby the printing-forms may be mounted and dismantled and the entire series mounted always in exact lateral position, substantially  
 40 as described.

24. In a printing-press, in combination with suitable impression surface or surfaces and a series of suitable inking mechanisms, a series  
 45 of tubular printing-forms, the printing-forms having a surface that is continuous or un-

broken and having a supporting-shaft, a journal end of which is retractile and means located within the printing-forms to retract the same, and a series of lateral guides, and suitable lifting devices whereby the printing-forms may be mounted and the entire series  
 50 mounted always in exact lateral position, substantially as described.

25. In a printing-press, in combination with suitable impression surface or surfaces and a series of suitable inking mechanisms, a series  
 60 of tubular printing-forms, the printing-forms having a surface that is continuous or unbroken and having a supporting-shaft, both the journal ends of which are retractile and means located within the printing-forms to retract the same, and a series of lateral guides, and suitable lifting devices whereby the printing-forms may be mounted and dismantled and the entire series mounted always in exact lateral position, substantially as described.  
 70

26. In a press, a tubular roller having supporting and guiding end hubs 11 and internal flanges or hubs 12, in combination with a shaft having a central portion 13 provided with collars 15 and retractile journal portions  
 75 14, and means for revolving the central portion 13 and thereby moving the journal portions in or out, and suitable lifting devices substantially as described.

27. In a press, a tubular roller having supporting and guiding end hubs 11 and internal flanges or hubs 12, in combination with a shaft having a central portion 13 provided with collars 15 and retractile journal portions 14, and a revoluble key-shaft 16 and  
 85 mechanism mounted within the roller connecting said key-shaft with the central portion 13, whereby the central portion 13 of the shaft may be rotated and the journal ends 14 thereby moved in or out, and suitable lifting  
 90 devices, substantially as described.

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.