

No. 644,241.

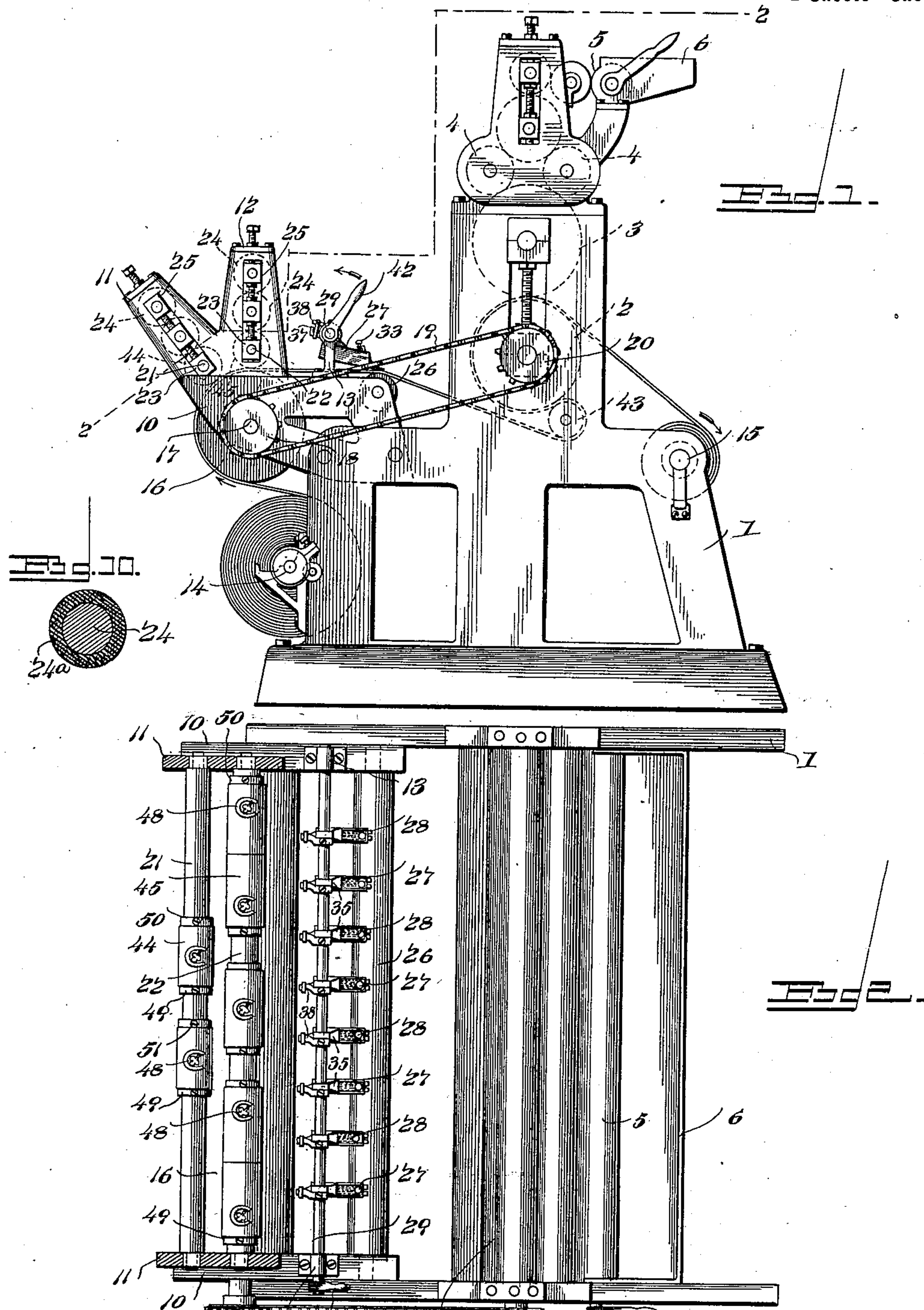
Patented Feb. 27, 1900.

J. E. CAPS.
PRINTING PRESS.

(Application filed Dec. 5, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
E. F. Stewart

H. H. Pennington

By *W. J. S.* Attorneys,

John E. Caps Inventor

C. A. Snow & Co.

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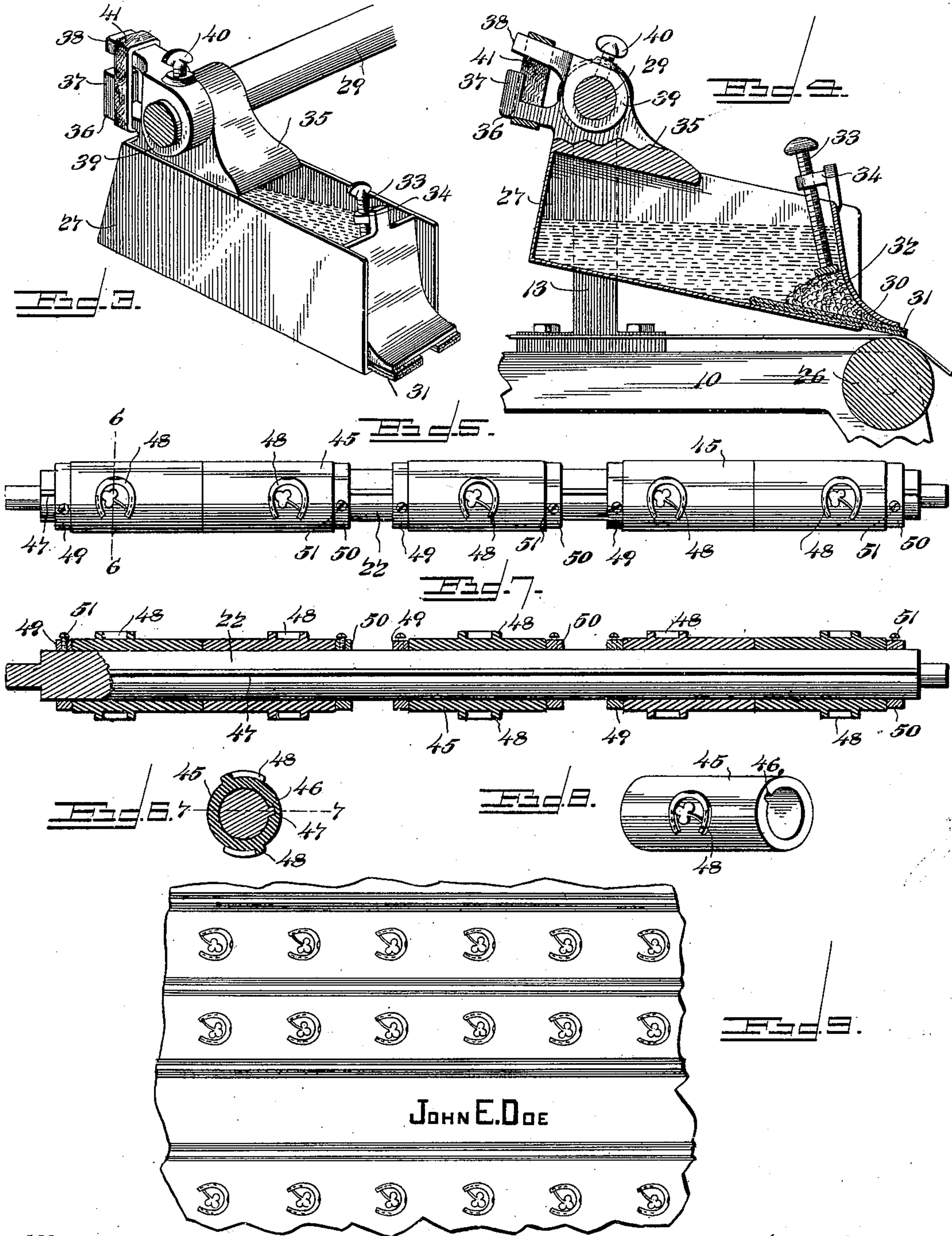
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Witnesses

E. F. Stearns
H. A. Bunker

By *W. S. Attorneys*,

John E. Caps Inventor

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

JOHN EDWARD CAPS, OF KANSAS CITY, MISSOURI.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 644,241, dated February 27, 1900.

Application filed December 5, 1898. Serial No. 698,329. (No model.)

To all whom it may concern:

Be it known that I, JOHN EDWARD CAPS, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Printing-Press, of which the following is a specification.

My invention relates to a multicolor-printing attachment for presses, more especially designed for applying variously-colored stripes or designs, or both, to fancy wrapping-paper and bag work. In this class of printer's work it is desirable to apply trade-marks or designs and a plurality of stripes in various water-colors to the paper at the same time that it is printed with an advertising card or cards, the latter being impressed in regular printer's ink in order to give to the paper an appearance calculated to attract attention to the advertisement.

The primary object of the present improvement is to provide an attachment which may be used in connection with any suitable press for printing advertisements on wrapping-paper or bag-paper, and this attachment is driven in unison with the impression devices of the press, so that the operation of applying in water-colors the variously-tinted stripes or the designs may be carried on simultaneously with the work of printing the advertisement in ordinary ink on paper.

A further object of the invention is to provide means by which stripes or designs in various colors may be applied, and such striping appliances are held normally under tension to impart uniformity to the work. With the striping appliances is combined a means for throwing them out of operation simultaneously.

A further object of the invention is to make provision for applying in water-colors a design or designs and to make the design-rolls adjustable on their actuating-shafts in order to apply the different designs at different places on the work. Such design-printing or striping rolls are readily detachable from their supporting and actuating shafts for the purpose of interchanging the rolls having one design with other rolls having designs in striping faces of different characters.

With these ends in view the invention consists in the novel combination of elements and

in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated a preferred embodiment of the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of an ordinary press with my multicolor striping and design-printing attachment applied thereto. Fig. 2 is a plan view with parts in section. Fig. 3 is a detail perspective view of the striping-fountain and the parts associated therewith. Fig. 4 is a vertical longitudinal section through the striping-fountain illustrated by Fig. 3. Fig. 5 is an elevation of one set of the design-rolls. Fig. 6 is a cross-section thereof on the line 6 6 of Fig. 5. Fig. 7 is a longitudinal sectional elevation on the line 7 7 of Fig. 6. Fig. 8 is a detail perspective view of one of the design-rolls. Fig. 9 is a plan view of a fragment of paper printed in accordance with my invention. Fig. 10 is a detail view of one of the inking-rolls to one of the design-printing rolls.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

An ordinary single press adapted to receive my multicolor-printing attachment is represented by Figs. 1 and 2 of the drawings, referring more particularly to which the framework is indicated by the numeral 1. The impression-cylinder 2 is in active relation to the printing-cylinder 3, which is supplied from the inking-rolls 4, one of which engages with a supply-roll 5 in the fountain 6. All these devices are ordinary in the art, and no novelty therefor is herein claimed.

While my invention is represented in connection with a single printing-press of the character shown, I would have it understood that the attachment is not to be restricted to this particular type of press, because I may use the attachment in connection with other styles of presses, as will be readily understood by those skilled in the art.

All of the operating parts of my attachment are mounted in or carried by a suitable framework, one style of which is represented by the numeral 10 as applied to the bench of

the press-frame 1, to which it is secured by bolts or other suitable means. This frame is shown as having the standards 11 12, arranged in diverging positions to accommodate the design-printing rolls and the inking-rolls therefor by which water-color ink is supplied to said design-rolls, and this frame 10 is also provided in advance of the standards 11 12 with the short posts 13, adapted to support the pivotal shaft for a series of striping-fountains, as will presently appear.

The paper which is to be printed is contained in a roll adapted to be placed on a supply-roll shaft 14, journaled in suitable bearings on the press-frame 1, below the impression-cylinder, which coacts with the water-color-printing devices. The paper-web passes over impression-cylinders, a friction-cylinder, and a guide-roll to a rewinding-shaft 15, which is supported in bearings on that side of the press-frame opposite to the feed-roll shaft 14, and both of these shafts 14 15 may be supported in bearings on the press-frame, which bearings may be constructed in any manner approved by those skilled in the art for the ready insertion or removal of said shafts.

16 designates the impression-cylinder which coacts with the design-rolls of the water-color-printing attachment. The shaft of this roll is journaled in suitable bearings on the frame 10, and to a protruding end of the impression-cylinder shaft 17 is rigidly secured a sprocket-wheel 18, with which engages a sprocket-chain 19, that extends to and around a sprocket-wheel 20, firmly secured to one end of the shaft supporting the impression-cylinder 2. The sprocket-wheels 18 20 on the shafts of the impression-cylinders 16 2, respectively, are of equal diameter and contain the same number of teeth, and the impression-cylinder 16 is thus adapted to be driven in unison with and to have the same peripheral speed as the impression-cylinder 2 of the press.

The impression-cylinder 16 is of large diameter as compared with the design-rolls, which are mounted on the shafts 21 22, which are journaled in bearings 23, slidably fitted in the standards of housings 11 12 of the attachment-frame. As will be seen by reference to Fig. 1, the design-rolls are of small diameter, so that the impression-cylinder 16 will coact with the set of design-rolls supported on the frame 10. The design-rolls are supplied with water-color ink by the inking-rolls 24, having their shafts mounted in bearings 25, slidably supported in slots of the housings or standards 11 12, and these inking-rolls 24 may be supplied with the water-color ink from a fountain or fountains or other suitable source of supply.

Between the impression-cylinders 2 16 is arranged a horizontal friction-roll 26, the axis of which is parallel to the axes of the impression-rolls, and this friction-roll has its shaft

journaled in the attachment-frame 10 to lie adjacent to a series or striping-fountains.

Any desired number of striping-fountains may be supported on the attachment-frame 10, adjacent to the friction-roll 26; but in the drawings I have represented a series of striping-fountains adapted to carry different water-colors, the fountains which carry water-color of one tint being indicated by the numeral 27, and those fountains to carry water-color of another tint being designated at 28. The entire series of striping-fountains are carried by a pivotal shaft 29, which is mounted to rock or turn in bearings on the posts 13, and these fountains are adapted to be adjusted with the shaft 29 for the purpose of elevating the same away from the friction-roll 26 and the path of the paper web which passes over said roll, whereby the fountains may be thrown out of operative position. Each fountain is in the form, preferably, of a rectangular or oblong box-like structure provided at its end adjacent to the friction-roll 26 with a delivery-throat 30, and in this throat is arranged a fibrous wiper 31. The wiper 31 is a strip of any suitable fibrous material arranged in the fountain to have one end of said wiper pass through the throat 30 and protrude from the end of the fountain adjacent to the friction-roll 26, and this protruding end of the fibrous wiper may be cut or otherwise fashioned according to the width of the stripe or the number of stripes which are to be applied to the paper by the individual fountain. It is evident that the active protruding end of the wiper for each fountain may be fashioned to give a broad stripe to the paper, or said protruding wiper end may be cut with a series of incisions to make the wiper for each fountain apply a number—two, three, or more—of narrow stripes to the paper. In order to hold the fibrous wiper in the fountain and supply the liquid coloring-matter thereto, I provide a fibrous pad 32, which may consist of a wad of absorbent material placed in the fountain near the throat 30 thereof and confined in position and in engagement with the wiper by a screw 33, which extends above the fountain and is supported in a lug or bearing 34 on the fountain. A hanger 35 is secured to the fountain at or near its rear end, and this hanger is fitted loosely on the shaft 29. The hanger is provided with an arm 36, which extends rearwardly from the shaft, and extending upwardly from this arm is a stop-lug 37, which is adapted to contact with a tension-arm 38. This tension-arm is formed with an eye 39 to enable said arm to be slipped on the shaft to lie adjacent to the fountain-hanger, and the tension-arm supports a binding-screw 40, which is adapted to impinge against the shaft 29 and make the tension-arm fast therewith. In the operative position of these parts the fountain is adjusted on the shaft to incline toward the friction-roll 26, and the tension-arm is fastened

to be free from engagement with the stop-lug 37 on the hanger; but when the shaft 29 is rocked in its bearings in the direction indicated by the arrow in Fig. 1 the tension-arm 5 engages with the stop-lug of the hanger, so as to turn or tilt the hanger on said shaft and make the hanger partake of the continued movement of the shaft and the tension-arm, thereby raising the forward end of the fountain to lift the wiper from the path of the paper-web passing over the friction-roll. It will thus be seen that the fountain is adapted to be adjusted to partake of the rocking movement of the shaft and the tension-arm; but 15 at the same time the fountain is capable of a limited oscillating movement or play on the shaft 29. This limited play of the fountain is for the purpose of enabling a spring 41 to normally press the fountain in a direction for 20 its wiper to be pressed upon the paper, and the spring 41 is fitted to the arm 36 of the hanger and the tension-arm 38. I may employ elastic bands to constitute the spring; but, if desired, coiled-wire springs or metallic leaf-springs may be substituted at the option of the skilled constructor. The shaft 29, which supports the series of striping-fountains, is designed to be adjusted by hand, and to enable such adjustment to be conveniently effected I employ a lever-arm 42, suitably attached to the shaft and projecting upwardly therefrom to be within convenient reach of the attendant.

A guide-roll 43 is journaled in the press-frame below and adjacent to the impression-cylinder 2, and the paper web after passing over the friction-roll 26 is led beneath the guide-roll 43, around the latter, to and around the impression-cylinder 2, after which the 40 web of paper is conducted to the rewinding-shaft 15.

The design-rolls to be mounted on the shafts 21 22 are made of a composition of rubber or other suitable material, and these rolls are 45 cheaply constructed with the desired pattern, design, striping, or trade-mark which is to be printed on the paper. Each of the shafts 21 or 22 is intended to carry one or two of these design-rolls, and if a pair of rolls is fitted to 50 each shaft they are constructed for rigid attachment to their shaft in a manner to permit a longitudinal adjustment of the rolls on said shaft. To this end I provide each roll with a longitudinal keyway 46 to receive a 55 key 47 of the shaft, and the roll may be slipped on the shaft to the desired position thereon. Each roll is held in place by a pair of collars 49 50, which are fitted to the shaft at points adjacent to the ends of the rolls, and 60 said collars have the binding-screws 51 to impinge against the shaft and make the collars fast therewith to hold the roll to the desired position. The pair of rolls are held by their clamping-collars in spaced or separated positions on the shaft, as shown by Fig. 5. Each 65 roll is represented in the drawings as formed with a plurality of designs 48, arranged in

series on the working surface of the roll and with the designs of one series in alternate or staggered relation to the designs of an adjacent series; but I would have it understood 70 that the arrangement of the designs on each roll and the character and nature of the designs may be varied within wide limits.

To use the press, the fountains are supplied 75 with ink. Ordinary printer's ink is placed in the press-fountain, while a mixture of water-coloring matter is placed in the striping-fountains and is adapted to be supplied to the inking-rolls of the design-rolls carried by the 80 shafts 21 22. The roll of paper having been placed on the shaft 14, one end of the paper web is carried around the impression-cylinder 16, over the friction-roll 26, around the guide-roll 43, over the impression-cylinder 2, 85 and thence attached to the rewinding-shaft 15. The press having been set in motion, the web of paper is carried forward continuously, and it receives the type-impression from the printing-cylinder 3, the impression of the designs from the designs-rolls 44 45, and is 90 striped by the action of the wipers in the striping-fountains. These operations are carried on continuously and automatically, because the impression-cylinders operate in unison, and it is evident that water-colors of different tints may be supplied to the striping-fountains to impart stripes of different colors to the paper web. The springs or elastic 95 bands act against the striping-fountains to normally press the wipers in firm contact with the paper web; but it is obvious that the operator may adjust the lever-arm 42 to throw the entire series of striping-fountains out of the path of the paper web. In case 100 it is desired to print the advertisement alone on the paper web the sprocket-chain 19 may be disconnected from the gears 18 20 and the lever-arm 42 held in a locked position to throw the multicolor-printing mechanism out of active relation to the paper web as it passes 105 over the cylinder 16 and friction-roll 26 to the ordinary printing devices of the press.

Although I have shown and described the water-color-printing rolls of smaller diameter 115 than the impression-roll 16, which coacts with said water-color rolls, it is evident that the relative diameters of the rolls may be changed by the skilled constructor.

In a multicolor-press in which the advertising matter may be printed over the striped or ornamented surface of the work it is necessary for the ornamented design or striped impressions to become dry enough for the work to receive the subsequent impression in printers' 125 ink, and this end is attained in my invention by the employment of striping or ornamenting printing mechanism which utilizes a water-color that is quickly absorbed by the paper or bag material and dries rapidly thereon. 130

Although I have disclosed the water-color-printing mechanism as having its printing-rollers provided with suitable designs or trade-marks, it is contemplated by the invention to

make the water-color-printing rolls with working faces adapted to apply stripes, polka-dots, or any suitable ornamentation to the work. The employment of the water-color-printing mechanism with rolls having their working surfaces adapted to apply stripes to the work is especially well adapted for service when printing on a filled fabric or jute material adapted for the manufacture of bags, and it will be understood that such water-color-printing mechanism is employed in connection with an ordinary printing mechanism, so that the water-color-printing mechanism will apply the ornamentation in one or different water-colors to the work before the card or advertisement is printed in ordinary printers' ink on the ornamented surface of the work, thus giving the water-color printing an opportunity to dry before the ordinary printer's-ink impression is made on the work.

In view of the above it will be understood that an essential feature of the invention resides in the arrangement of the water-color-printing mechanism, whereby the paper will first be printed or striped in colors and then will be impressed over the colors with the ordinary type in the printing-press. A reversal of this operation would be quite impracticable in color-printing, whereas, on the other hand, it is well known that printers' ink will print better upon water-colors than upon plain paper.

When printing on paper, the striping-fountains are employed to apply stripes in one or more water-colors to the paper, and the printing-rolls apply the designs or patterns of any suitable nature to the paper, all the water-color printing being effected before the impressions in ordinary printers' ink are made on the paper over or between the water-color impressions; but in printing on fabric or jute material for manufacture into bags it is not practicable or desirable to employ the striping-fountains. Hence I propose to make the water-color-printing rolls with working faces which will apply the water-colors in stripes, designs, trade-marks, or any other suitable or preferred matter to the fabric or jute material prior to the ordinary printer's impression. It will therefore be understood that the rollers of the water-color-printing mechanism may have working surfaces of any character. I believe myself to be the first to provide a multicolor-printing mechanism in which impressions in water-color of stripes, designs, or ornamental figures may be made on paper or bag material in advance of or prior to impressions in ordinary printers' ink on the same material, the latter impression being made over or between the water-color ornamental impressions, and hence I desire to protect such multicolor-printing mechanism, broadly, when used to apply impressions in one or more colors to material in advance of the ordinary printer's-ink impressions.

It has been explained that in printing on fabric, jute, or other like material it is not

practicable or desirable to employ the striping-fountains, and under such conditions said fountains are thrown out of operation and the color-printing rolls depended upon for printing the desired stripes or designs upon the paper. To convert the shafts 21 and 22 into printing-rolls for applying closely-arranged and narrow stripes to the paper, it is simply necessary to change the design-rolls 44 and 45 and substitute therefor other rolls or rings formed with the necessary peripheral configuration to print stripes of the desired width. It may be further observed in this connection that the striping-fountains are only employed for certain kinds of work, and especially where very broad stripes are required, whereas the color-printing rolls are used for all other kinds of striping.

Changes may be made in the form of some of the parts, while their essential features are retained and the spirit of the invention embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

The water-color ink may be supplied to the inking-rolls for the design-printing rolls in any suitable way, and as one means for feeding the water-color uniformly to said design-rolls I employ one or more feed-rolls 24, of the character shown by Figs. 1 and 10. This color-feed roll is represented by Fig. 10 as consisting of a suitable core having a fabric jacket 24^a, wound or otherwise applied thereto, and said roller is mounted in the described way (by bearings) in the housing, so as to distribute and apply the water-color to the face of the design-printing roll. The water-color is supplied to the color-feed roll by a swab or other implement in the hands of the operator; but it is to be understood that I do not confine myself strictly to this particular way of supplying the water-color to the design-printing rolls.

Having thus described the invention, what I claim is—

1. The combination with a printing-press, of a multicolor-printing attachment embracing an impression-roll, a color-printing roll, cooperating with said impression-roll, independent color-striping mechanism interposed between the color-printing roll and the printing devices of the press, to operate upon the paper as it is fed to the latter, and means for adjusting said independent color-striping mechanism to throw the same in and out of action without disturbing the adjustment of the color-printing roll, substantially as set forth.

2. The combination with the printing mechanism and a paper-feed mechanism of a printing-press, of a plurality of independent striping-fountains mounted on a common support to be adjustable simultaneously therewith and each fountain capable of a limited play and held under yieldable tension in active relation to the path of the paper web, substantially as described.

3. The combination with the printing mechanism and a paper-feed mechanism of an ordinary press, of a friction-roller adjacent to the path of the paper web, a rock-shaft adjacent to the friction-roll, and a series of striping-fountains supported by the rock-shaft to be adjustable therewith and each fountain equipped with a tension device which yieldably supports a wiper in said fountain contiguous to the path of the paper web, substantially as described.

4. The combination with the printing devices and paper-feed mechanism of a printing-press, of a plurality of independent striping-fountains arranged in advance of the printing-press and mounted on a common support, said fountains being capable of simultaneous adjustment, and each having an independent limited play, substantially as set forth.

5. The combination with a printing mechanism and a paper-feed mechanism, of a color-striping mechanism wholly independent of the printing mechanism and embracing a friction-roll, a series of independent fountains supported adjacent to said friction-roll, a series of fibrous wipers supported by the respective fountains in active relation to the path of the paper web as it traverses the friction-roll, a tension device for each fountain, and means for adjusting said fountains, substantially as described.

6. The combination with a printing mechanism and a paper-feed mechanism of an ordinary press, of a color-striping mechanism embracing the roll, a rock-shaft, a series of striping-fountains hung independently on said shaft and each carrying a wiper which is presented in active relation to the path of the paper web as it traverses said roll, tension devices by which the series of fountains are yieldingly held in active relation to the roll, and means for simultaneously lifting the striping-fountains from the path of the paper web, substantially as described.

7. The combination with the printing devices and paper-feed mechanism of an ordinary press, of a multicolor mechanism embracing a series of striping-fountains and a revoluble color-printing roll, the latter being operatively connected with the printing devices, and means to exert a yielding pressure on each fountain, substantially as described.

8. A striper-fountain for a multicolor attachment for printing-presses provided with a fibrous wiper having its active end projected beyond the fountain, a fibrous pad in contact with the wiper, and a clamping device by which the fibrous pad and wiper are confined in proper position within the fountain, substantially as described.

9. The combination with a friction-roll, of a shaft, a series of striper-fountains hung loosely on the shaft and each having a wiper

which has its active end contiguous to the friction-roll, and a tension device carried by the shaft and operatively connected with the fountain to yieldingly press the wipers thereof on a paper web adapted to traverse the friction-roll, substantially as described.

10. The combination with a shaft and a roll, of a series of fountains each having a hanger mounted loosely on the shaft, a tension-arm fixed to the shaft adjacent to each fountain-hanger, and a spring connecting the hanger and tension-arm, substantially as described.

11. The combination with a roll and a shaft, of a series of fountains each having a hanger fitted loosely on the shaft, a tension-arm clamped to said shaft adjacent to each hanger and normally free from contact therewith to permit the fountain and hanger to have a limited rocking movement on the shaft, a tension-spring connecting the arm and hanger, and means for rocking the shaft whereby the tension-arms may engage with the hangers to tilt the fountains away from active relation to the roll, substantially as described.

12. The combination with a roll, of a rock-shaft having a lever-arm, a series of fountains each carrying a wiper, a series of hangers rigid with the fountains, loosely fitted on the shaft and having the stop-arm, a tension-arm clamped to the shaft adjacent to each of the hangers and normally separated from the stop-arm to permit the hanger and fountain to have a limited play on said shaft, and a tension-spring connecting said arm with the hanger, substantially as described.

13. The combination with a printing-press, of a multicolor mechanism comprising a color-printing roll, arranged in advance of the printing-press, a plurality of striping-fountains arranged in the path of the paper between said roll and the printing devices of the press, and means for throwing the striping-fountains in and out of action independently of the color-printing roll, substantially as set forth.

14. In a multicolor-press, the combination with a printing mechanism including means for supplying ordinary printers' ink thereto, of a water-color printing mechanism including printing and impression rolls arranged for joint operation to apply impressions in one or more water-colors to the work in advance of the impressions in ordinary ink, and means for feeding the work from the water-color mechanism continuously to the ordinary printing mechanism, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN EDWARD CAPS.

Witnesses:

JNO. N. DAVIS,
SAMUEL FELLER.