

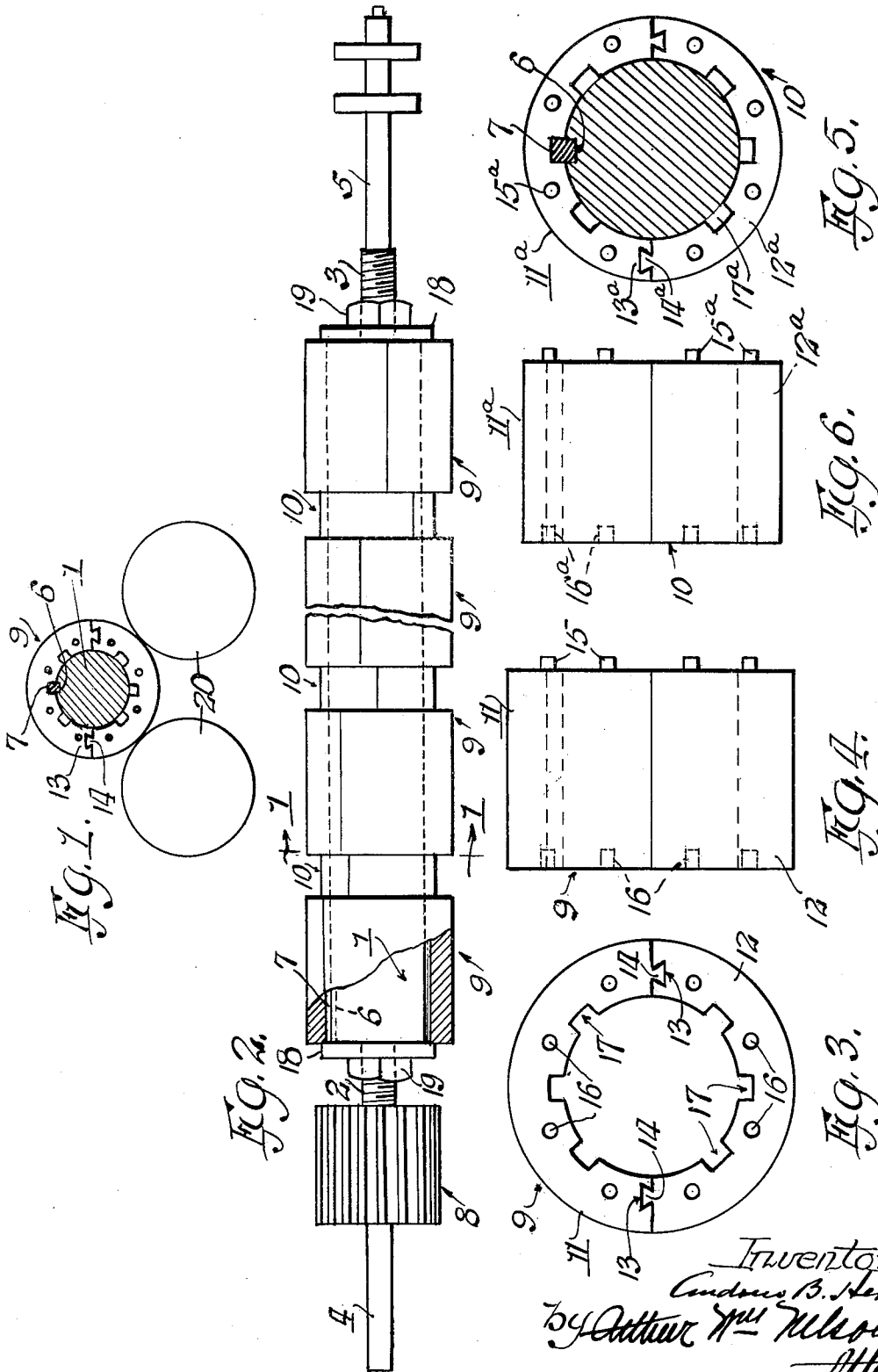
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DISTRIBUTING ROLL

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DISTRIBUTING ROLL

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16 Claims. (Cl. 101—205)

This invention relates to improvements in distributing rolls and it consists of the matters hereinafter described and more particularly pointed out in the appended claims.

5 One of the objects of the present invention is to provide an improved roll of this kind whereby spaced impressions may be produced during the printing operations of a press and more particularly whereby separate color bands may be so
10 produced in commercial work.

A further object of the invention is to provide a roll construction of this kind which is an improvement upon that construction shown and described in my prior Patent, No. 1,497,785, dated
15 June 17th, 1924, and which improved construction is more easy to apply to and remove from its associated shaft.

Another object of the present invention is to provide a roll construction comprising sections
20 made up from cylindrical portions and which portions are secured together against separation under centrifugal force, the said section portions being so constructed as to make it unnecessary to remove them endwise off the shaft in making
25 changes in said sections.

Still another object of the invention is to provide a roll construction of this kind wherein desired roll sections may be removed and replaced without the necessity of removing other
30 roll sections from the shaft.

The above mentioned objects of the invention, as well as others, together with the many advantages thereof, will more fully appear as I proceed with my specification.

35 In the drawing:

Fig. 1 is a transverse vertical sectional view through a distributing roll embodying my invention as taken on the line 1—1 of Fig. 2 and shows its position with respect to associated composition
40 rolls in a press;

Fig. 2 is a view in side elevation on an enlarged scale of a distributing roll embodying my invention, certain of the parts of the roll being shown
45 in longitudinal section to better illustrate the construction thereof;

Fig. 3 is a view in end elevation on a further enlarged scale of one of the roll sections employed in my improved distributing roll;

50 Fig. 4 is a view in side elevation of roll section shown in Fig. 3;

Fig. 5 is a view in end elevation, also on an enlarged scale, of one of the spacing sleeve sections employed in my improved distributing roll;
55 and

Fig. 6 is a view in side elevation of the spacing sleeve section shown in Fig. 5.

In general, my improved roll comprises a shaft upon which is mounted a plurality of longitudinal
60 spaced roll sections and associated spacing sleeve

sections, all held in operative relation upon the shaft by clamping nuts and collars.

Each roll section as herein shown comprises a pair of semi-cylindrical portions having interlocking dovetailed rib and groove arrangement at their longitudinally extending meeting faces and the spacing sleeves may also embody a similar construction. Each roll and sleeve portion is provided with internal key-ways and a key or spline is provided on the shaft to engage with
70 said key-ways so that said roll and sleeve portions may be driven by the shaft.

Preferably the key-ways in the roll and sleeve portions are so formed that any one thereof may be engaged with the key or spline in the shaft
75 and thereby the seams in the various roll and sleeve sections as provided by said meeting faces may be circumferentially offset. Also said roll and sleeve sections are provided at their ends with pilot pins and holes, whereby all of said sections
80 may be securely joined together so as to take on the rigidity found in an integral roll structure.

When it is desired to change the position of the various roll sections or to substitute a new roll section, one of the clamp nuts is loosened and slid
85 outwardly on its associated part of the shaft. The several sections can then be separated endwise after which one portion of the desired section may be separated endwise from its companion and portions of the new roll section substituted therefor by a reversal of the operation
90 above mentioned.

Referring now in detail to that embodiment of the invention, illustrated in the accompanying drawing:

1 indicates as a whole a distributing roll shaft, having a threaded part 2 and 3 respectively at each end of a diameter smaller than that of said shaft and having journal parts 4 and 5 respectively of still further reduced diameter extending
100 beyond said threaded parts 2 and 3 respectively. Extending the full length of the shaft 1 is a spline groove 6 in which a spline or key 7 is engaged. On the shaft portion 4 is secured a gear 8 by means of which the roll as a whole is driven.
105 This gear is a relatively wide one so that when the roll as a whole is vibrated or reciprocated endwise, as by mechanism not shown herein, a driving relation is maintained by said gear a coacting driving gear.

On the shaft 1 is located a plurality of roll sections 9 which are held in the desired spaced apart relation by means of intermediate sleeve sections 10 of a smaller diameter.

Preferably each roll section is made up of a plurality of arcuate parts which meet on radial lines. As shown herein, each roll section is made up of two semi-cylindrical parts 11 and 12 respectively and in one radial face of each part is formed a dovetail groove 13 and on the other
115 120

radial face of each part is a correspondingly shaped rib 14. In one end of the parts of each roll section are provided arcuately spaced, axially extending pilot pins 15 and in the other end of said parts are formed pilot pin receiving recesses 16 in line with said pins. Each roll section part is also provided on its internal surface with arcuately spaced, longitudinally extending spline grooves 17, each of a width to receive the key 7 on the shaft 1.

Each spacing sleeve section is similar in construction to that of the roll section and each sleeve is made up of a plurality of arcuate parts which meet on radial lines. As shown herein each sleeve section 10 is made up of two semi-cylindrical parts 11a and 12a respectively and in one radial face of each part is formed a dovetail groove 13a and on the other radial face of each part is a correspondingly shaped rib 14a. On one end of each sleeve part are provided arcuately spaced, axially extending pilot pins 15a and in the other end of said parts are formed pilot pin receiving recesses 16a in line with said pins. Each sleeve section part is also provided on its internal surface with arcuately spaced, longitudinally extending grooves 17a.

It is pointed out that the pins and recesses 15a and 16a of the sleeve sections register with the pins and recesses 15 and 16 of the roll sections and that the grooves 17a in said sleeve sections are disposed in the same relation as the grooves 17 in the roll sections.

In assembling the roll and sleeve sections on the shaft, this can be done either from one or both ends of the shaft 1. In assembling said sections, a pair of roll section parts are taken in hand and one of said parts is placed upon the shaft with one of its grooves 17 engaged on the key or spline 7. Thereafter the other section part is placed against the opposite side of the shaft but at a point longitudinally spaced from the first part, a little beyond one end thereof and with its rib and groove in line with the groove and rib on the first mentioned part. Thereafter, a relative endwise movement is imparted to said parts when the rib or tongue of one part enters the groove of the other part.

A spacer sleeve section 10 is applied in the same manner after which another roll section is applied and so on until the proper number of roll sections and sleeve sections have been applied to the shaft. In applying said sections, they are so applied that the plane of the meeting faces of one section is circumferentially offset with respect to those of an adjacent section. This can be carried out by engaging different grooves 17—17a of said section parts with the shaft spline 7. It is pointed out that when said sections have been thus applied, the pilot pins of one section enter the receiving holes or recesses in the next adjacent section.

Thereafter, a washer-like plate 18 is engaged against the exposed end face of the endmost roll sections after which a nut 19 is applied to each threaded part 2 and 3 of the shaft. These nuts are drawn up tight so as to induce an end thrust pressure which securely holds the parts assembled in roll form.

It is pointed out that by loosening the desired nut 19, it is possible to shift all the roll sections and sleeve sections as a unit on the shaft by tightening up the other nut. In this manner an extremely fine adjustment may be obtained in the positions of the said sections of the shaft.

With the construction described, it is possible to

easily change the various roll sections about as to relative position on the shaft or to substitute new roll sections which may be of different lengths for any one of those already on the shaft. This may be done without removing the shaft and its roll sections from the machine.

Due to the pilot pin and recess arrangement, the various sections cannot creep circumferentially and due to the dovetail rib and groove arrangement, the parts of the various sections are so locked together that they cannot be displaced radially under centrifugal action induced by the high speed at which the roll rotates.

By use of the washer-like plates 18 and nuts 19 the roll sections cannot creep longitudinally of the shaft under the vibratory action the said roll as a whole has with respect to the associated composition rolls 20 of the press shown in Fig. 1.

By the use of the improved roll, all cutting of associated composition rollers is eliminated with a corresponding saving therein and furthermore the time required to effect color band changes is materially reduced.

Said composition rolls remain whole and therefore, can be used for one or more colors until worn out.

While in describing the invention, I have referred in detail to the form, arrangement and construction of the various parts, the same is to be considered only in an illustrative sense so that I do not wish to be limited thereto except as may be specifically pointed out in the appended claims.

I claim as my invention:

1. In a distributing roll, a shaft, a plurality of longitudinally spaced roll sections on said shaft a spacing collar between and abutting the ends of adjacent roll sections and having a driving connection with said shaft, at least one of said roll sections comprising parts so formed as to permit the removal and replacement thereof with respect to the shaft, without requiring the removal of another roll section from said shaft and means providing interengaging parts in the abutting ends of said collar and roll sections providing a positive driving connection therebetween.

2. In a distributing roll, a shaft, a plurality of longitudinally spaced roll sections on said shaft a spacing collar between and abutting the ends of adjacent roll sections and having a driving connection with the shaft, each roll section comprising parts so formed as to permit the removal and replacement of the parts of one roll section without requiring the removal of the parts of another roll section from said shaft and means providing interengaging parts on the abutting ends of said collar and roll sections providing a positive driving connection therebetween.

3. In a distributing roll, a shaft, a plurality of longitudinally spaced roll sections on said shaft a spacing collar between and abutting the ends of adjacent roll sections and having a driving connection with the shaft, at least one of said roll sections comprising a plurality of arcuate parts grouped about a part of said shaft, means for securing said roll section parts against movement on said shaft and means providing interengaging parts on the abutting ends of said collar and roll sections providing a positive driving connection therebetween.

4. In a distributing roll, a shaft, a plurality of longitudinally spaced roll sections on said shaft a spacing collar between and abutting the ends of adjacent roll sections and having a driving connection with said shaft, at least one of said roll sections comprising a plurality of arcuate

parts grouped about a part of said shaft, means associated with the longitudinal meeting faces of said parts permitting endwise separation only of said parts, means for securing one of said parts in driving relation with respect to said shaft and means providing interengaging parts on the abutting ends of said collar and roll sections providing a positive driving connection therebetween.

5 In a distributing roll, a shaft, a plurality of longitudinally spaced roll sections on said shaft a spacing collar between and abutting the ends of adjacent roll sections and having a driving connection with said shaft, each roll section comprising a plurality of arcuate parts grouped about said shaft and having longitudinal meeting faces, means associated with said faces for locking them together against separation under centrifugal force, means for drivingly connecting one of said shaft section parts to said shaft and means providing a positive driving connection between the ends of said collar and roll sections.

6 In a distributing roll, a shaft, a plurality of longitudinally spaced roll sections on said shaft, each roll section comprising a plurality of arcuate parts grouped about said shaft and having a pair of longitudinal faces for engagement with a pair of faces of another roll section part, means providing a longitudinal mortise and tenon joint connection between engaging faces of adjacent parts, means for drivingly connecting one of said parts to the shaft and a spacing collar between and abutting the ends of adjacent roll sections and having a driving engagement therewith and with said shaft.

7 In a distributing roll, a shaft, a plurality of longitudinally spaced roll sections on said shaft, each roll section comprising a plurality of arcuate parts grouped about said shaft and having longitudinal meeting faces, the engaging faces of adjacent roll section parts having a dovetail groove and rib connection, means for securing at least one of said parts in driving relation on said shaft and a spacing collar between adjacent roll sections and having a driving pilot pin and recess connection therewith.

8 In a distributing roll, a shaft, a plurality of roll sections on said shaft, means for spacing said roll sections apart, each roll section comprising a plurality of parts grouped about said shaft and having meeting faces, the plane of the meeting faces in one roll section being circumferentially offset with respect to the plane of the meeting faces of the parts in an adjacent roll section and means for securing said roll sections to the shaft.

9 In a distributing roll, a shaft, a plurality of roll sections on said shaft, means for spacing said roll sections apart, each roll section comprising a plurality of parts grouped about said shaft and having meeting faces, means associated with the meeting faces of adjacent parts for locking the together, the plane of the meeting faces in one roll section being circumferentially offset with respect to the plane of the meeting faces of the parts in an adjacent roll section and means for securing said roll sections to the shaft.

10 In a distributing roll, a shaft, a spline carried thereby, a plurality of roll sections on said shaft, means for spacing said roll sections apart, each roll section comprising a plurality of section parts grouped about said shaft and having meeting faces, said section parts having internal

grooves, any one of which may be engaged with the spline on said shaft, whereby the plane of the meeting faces of the parts in one roll section may be circumferentially offset with respect to the plane of the meeting faces of the parts in an adjacent roll section.

11 In a distributing roll, a shaft, a plurality of alternately arranged roll sections and spacing collars on said shaft, said sections and collars each comprising a plurality of arcuate parts grouped about the shaft, said parts being so formed as to permit the removal of the parts of either a roll section or collar independent of the other roll sections and collars on the shaft and means providing a pilot pin and recess driving connection between a collar and adjacent roll sections.

12 In a distributing roll, a shaft, a plurality of alternately arranged roll sections and spacing collars on said shaft, said sections and collars each comprising a plurality of arcuate parts grouped about the shaft, interengaging parts on abutting ends of said collars and sections respectively for securing them together against relative rotation, the parts of each spacing collar and roll section respectively, having meeting faces so formed as to be capable of separation in a longitudinal direction only.

13 In a distributing roll, a shaft, a plurality of alternately arranged roll sections and spacing collars on said shaft, said sections and collars each comprising a plurality of arcuate parts grouped about the shaft, the abutting ends of said collars and shaft sections respectively, having interengaging pilot pins and recesses respectively, the parts of each section and collar having longitudinal meeting faces and means on said faces for securing them against separation in a direction other than a longitudinal one.

14 In a distributing roll, a shaft, a spline thereon, a plurality of longitudinally spaced roll sections on said shaft and each comprising semi-cylindrical parts cooperating to surround an associated part of the shaft and having meeting faces, coacting dovetail groove and rib arrangement on said faces for providing an interlocking connection between said roll section parts and a plurality of grooves on the interior of said sections, any one of which may be engaged with said shaft spline to determine the position of the plane of the meeting faces with respect to the shaft.

15 In a distributing roll, a shaft, a spline thereon, a plurality of longitudinally spaced roll sections on said shaft and each comprising semi-cylindrical parts cooperating to surround an associated part of the shaft and having meeting faces, coacting dovetail groove and rib arrangement on said faces for providing an interlocking connection between said roll section parts, each of said parts having a plurality of longitudinally extending internal grooves, any one of which may be engaged with said shaft spline.

16 A member for use on a distributing roll shaft comprising at least two arcuate parts having longitudinal meeting faces, coacting dovetail rib and grooves on said faces, means providing longitudinal internal groove on each part and pilot pins on one end of each part and openings in the other end, in line with said pins.

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