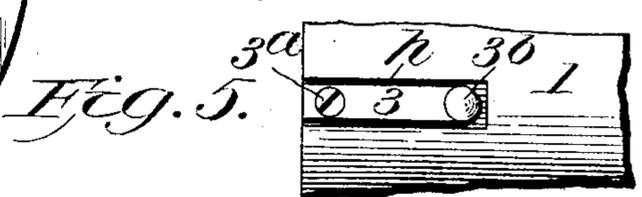
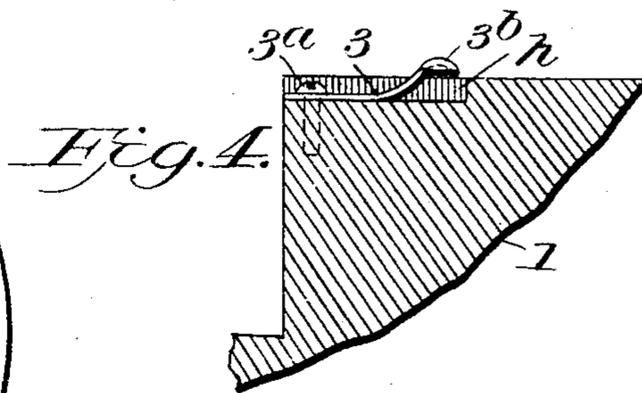
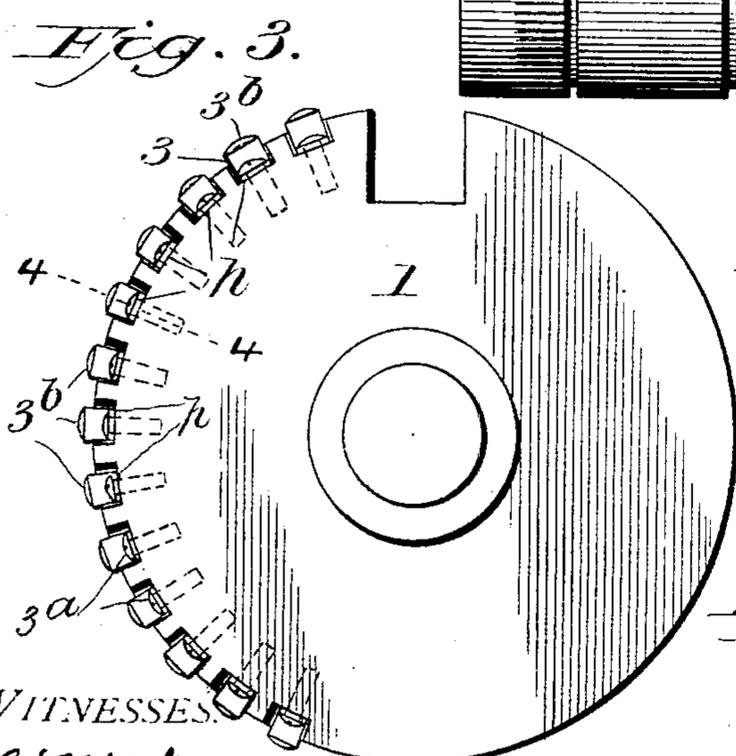
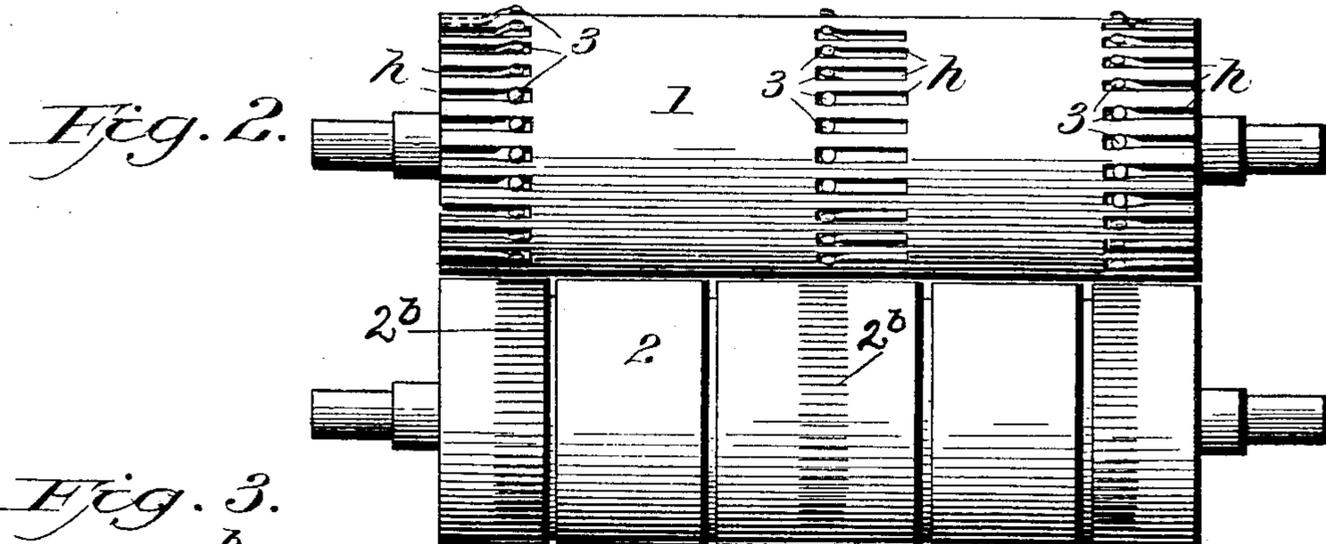
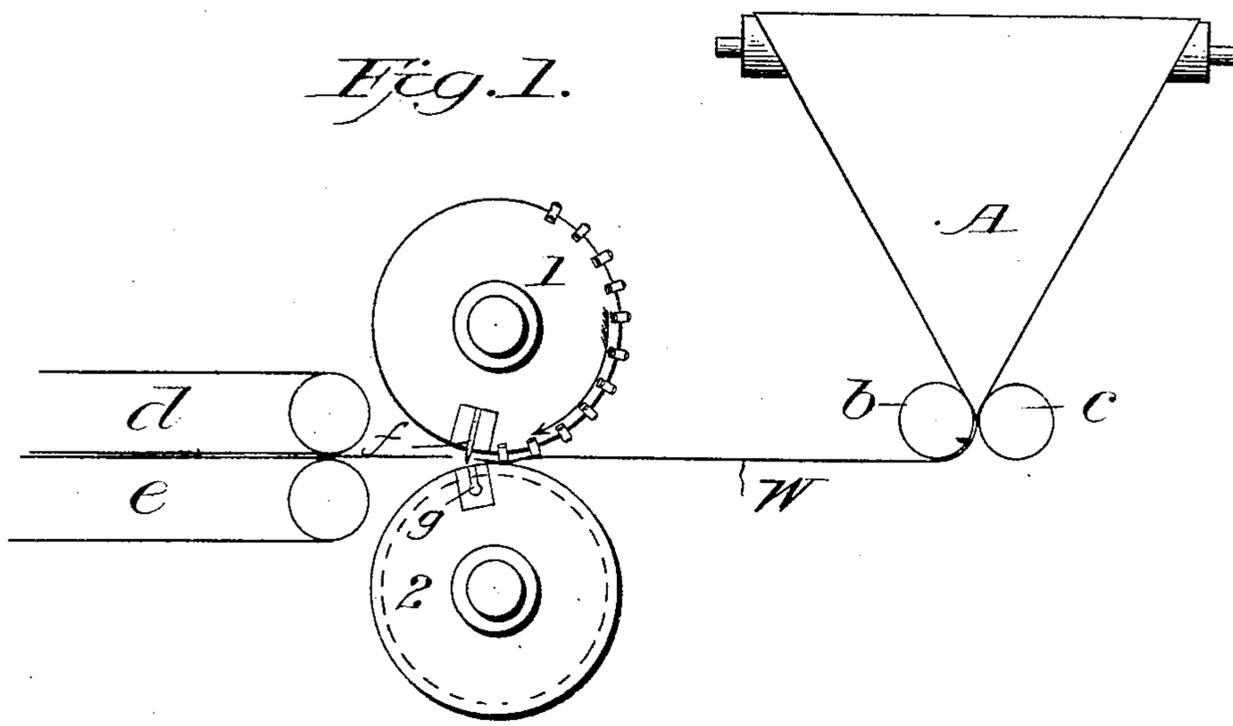


H. F. BECHMAN.  
WEB FEEDING ROLLS.  
APPLICATION FILED FEB. 11, 1905.

2 SHEETS—SHEET 1.



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Fig. 6.

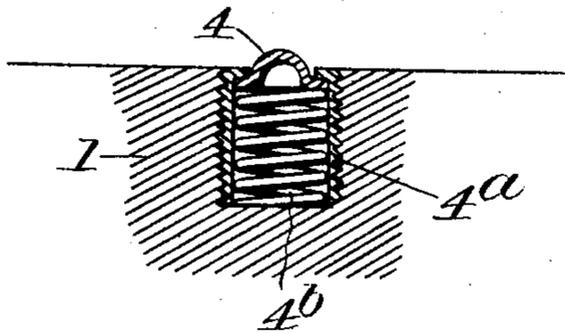


Fig. 7.

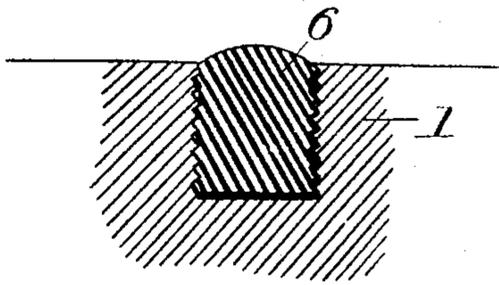


Fig. 8.

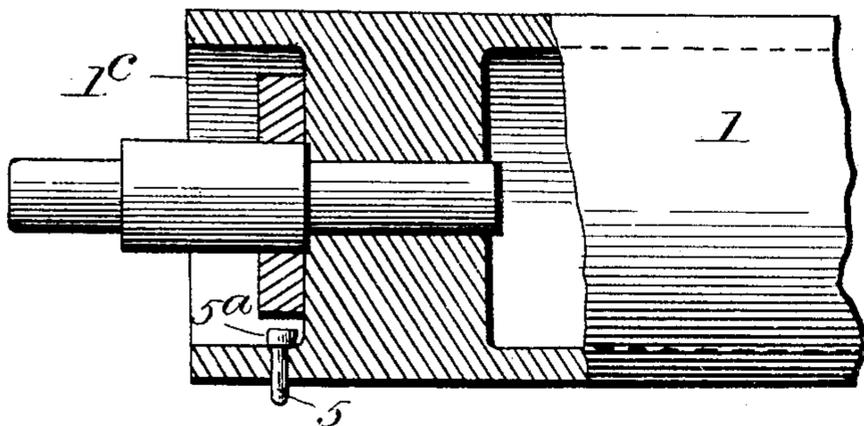


Fig. 9.

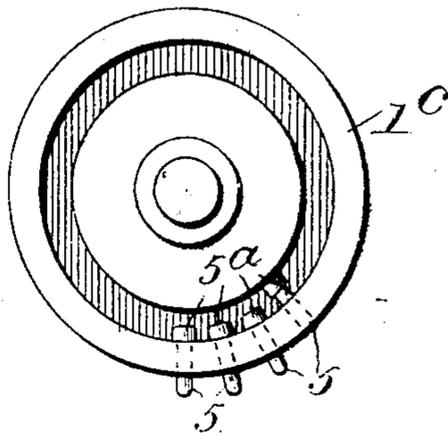


Fig. 10.

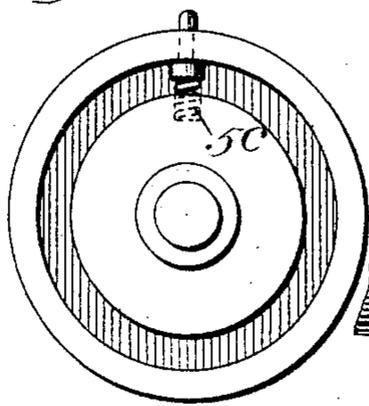
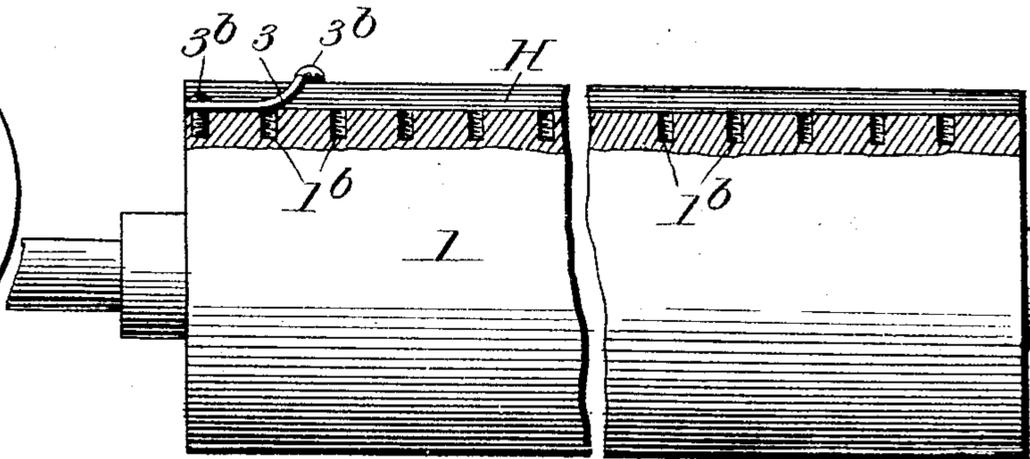


Fig. 11.



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# UNITED STATES PATENT OFFICE.

HENRY F. BECHMAN, OF BATTLECREEK, MICHIGAN, ASSIGNOR TO THE  
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## WEB-FEEDING ROLLS.

No. 803,972.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed February 11, 1905. Serial No. 245,227.

*To all whom it may concern:*

Be it known that I, HENRY F. BECHMAN, of Battlecreek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Web-Feeding Rolls; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in web-handling mechanisms, and relates particularly to the feed cylinders or rolls for giving a progressive movement to webs, sheets, &c., and is particularly adapted for use in machines handling a number of thicknesses of web, such as the folding or assembling rolls on web-printing presses and like machines.

The invention is especially designed for use in connection with the cutting-cylinders of web-printing machines, said cylinders being adapted to sever webs into lengths or sheets, and are usually slightly separated to allow the cutting-knives to operate properly upon the web without tearing the latter.

Great trouble has been experienced heretofore in keeping the paper traveling properly to and between the cylinders after the cut has been made, as the cutting-cylinders ordinarily do not bite the paper sufficiently to progress the same, particularly at the moment of severance thereof, so that it frequently happens that the web buckles at the infeed side of the cutting-cylinders or drops at the outfeed side thereof, producing creases in the paper and frequently clogging and requiring stoppage of the press and spoiling the products.

The present invention is designed to keep the web taut, prevent its buckling or falling back from the cylinders at the moment of severance, and insure its proper feed between the cutting-cylinders when the invention is used in connection with cutting-cylinders.

The invention also will prevent irregular pulls on the web and can be arranged so that the web will be gripped between margins, and thus the printed side of the sheets will not be smeared or smudged.

I will describe the invention more particularly as applied to the cutting-cylinders of a web-printing press, which are usually located just between the apex of the "former," which makes the first fold in the web before severance thereof and the mechanism which further

folds the web after the same is severed into sheets.

It should of course be understood that I do not restrict myself to the application of the invention to cutting-cylinders, as the same may be used to advantage in a great variety of web mechanisms, neither is it restricted to any specific size or dimensions of parts, and I refer to the claims for summaries of the features and combination of parts embodied in the invention for which protection is desired.

In the drawings, Figure 1 is a detail diagrammatical view of part of the folding mechanism of a web-printing press and end elevation of the cutting-cylinders employed therein and equipped with the preferred form of my invention. Fig. 2 is a side elevation of the cutting-cylinders equipped with my invention. Fig. 3 is an enlarged end view of one of the cutting-cylinders. Fig. 4 is a detail section on line 4 4, Fig. 3. Fig. 5 is a top plan view of Fig. 4. Figs. 6 and 7 are detail sectional views of modified forms of "coaxers." Figs. 8, 9, and 10 are detail views of other forms of coaxers. Fig. 11 illustrates a cylinder provided with horizontally-adjustable coaxers.

A designates the former or plow of a web-folding mechanism, such as is ordinarily employed in web-printing presses, over which the printed web *W* is led to and between the rolls *b c* at the lower end of the plow, the web or webs being longitudinally folded by the former and rolls. From the rolls *b c* the web is led to the receiving-tapes *d e* of any suitable folding mechanism, of which only a part is shown, as the construction thereof is not claimed herein nor essential hereto.

Between the rolls *b c* and the tapes *d e* are located the cutting-cylinders 1 2, of which the former is provided with a cutting-blade *f* and the latter with a cutting-recess *g*, with which the blade coacts, so that for each rotation of the cutting-cylinders a length of the web *W* is severed in the usual manner. As ordinarily constructed the cutting edge of the knife *f* projects slightly beyond the periphery of the cylinder 1, and it is therefore necessary that the cylinders be slightly separated so the knife can act upon the web and properly register with the recess *g*.

As previously stated, trouble is experienced at this point, because ordinarily there are no means employed to feed the web forward from

the rolls *b c* to the cutting-cylinder, and the cutting-cylinders are depended upon not only to cut the web, but to also feed it forward to the folder-tapes *d* and *e*.

5 At the point where the web is folded it is of course thicker than at other points, and along the fold-line the web will be fed more positively by the cutting-cylinders than at other points. Many attempts have been made  
10 to insure uniform feed of the web and prevent its slipping back at the time of severance from between the cutting-cylinders, such as providing compressible bands on the cylinders and such as providing compressible strips at  
15 each side of the knife intended to grip the web at the moment of severance. None of these devices, however, have proved wholly satisfactory or reliable in operation and great trouble is experienced in the unreliable feed  
20 action of the cutting-cylinders.

In my invention the difficulties heretofore experienced with such cylinders is obviated, and the proper feed of the web therebetween is insured by means of what I term "coaxers,"  
25 attached to the cylinder, which coaxers may be of different kinds, but preferably are of the nature of yielding projections extending in series more or less around the periphery of one or both cylinders and preferably at  
30 such points as will cause them to engage the marginal spaces on printed webs, these coaxers being adapted to yieldingly grip and retain the webs to bridge the space left between the cutting-cylinders, so that at no time will  
35 the web be entirely freed, and while it is not impinged directly between the surfaces of the cylinders portions of the web will be impinged between the coaxers or between the coaxers on one cylinder and the periphery of the op-  
40 posed cylinder. These coaxers may be of various forms. The preferred form is that illustrated in Figs. 1 to 5. In these a series of longitudinally-disposed recesses *h* are formed in the periphery of the cylinder extending  
45 parallel with the cutter *f* and may be arranged at the end of the cylinder and, if desired, at the center thereof or at intermediate points wherever they can operate upon margins of the printed web. As shown in Fig. 2, they  
50 are arranged at both center and ends; but I do not restrict myself to any particular location of these coaxers, except as may be specified in some of the claims. In these recesses are secured spring-fingers 3, which may be  
55 secured at one end within the recesses *h* by means of screws 3<sup>a</sup>, tapped into threaded apertures in the metal of the cylinder, the other end of the finger 3 projecting slightly above the periphery of the cylinder and being pro-  
60 vided, preferably, with a parti-globular projection 3<sup>b</sup>, which is adapted to contact with the paper and press the same firmly against the periphery of the opposed cylinder or coaxer on such cylinder, so as to bite and hold  
65 the web. Any desired number of these coax-

ers may be arranged in parallel series around the periphery of the cylinder. They may extend entirely around the same, if desired, or only part way thereof, sufficient, however, to insure the desired feed of the web between  
70 the cylinders.

In the drawings I have only shown coaxers on the cylinder 1; but it is obvious that the lower cylinder 2 might be similarly equipped. As shown in Fig. 2, the surface of cylinder 2  
75 may be milled, as at 2<sup>b</sup>, opposite the coaxers on cylinder 1 to increase the biting action of the coaxers on the web.

As shown in Fig. 2, the coaxers at the opposite end of the cylinders need not be in lon-  
80 gitudinal axial alignment, so that they will not exactly simultaneously bite the web.

As shown in Fig. 6, the coaxers may consist of balls 4, confined in small casings 4<sup>a</sup>,  
85 compressed upward by a spring 4<sup>b</sup>, the casings being exteriorly screw-threaded and screwed into corresponding apertures in the periphery of the cylinder 1.

As shown in Figs. 8 and 9, the coaxers may consist of loose pins 5, projecting through suit-  
90 able apertures in flanges 1<sup>c</sup> on the end of the cylinder and having heads 5<sup>a</sup> on their inner ends, which will limit their projection from the cylinder. These pins may be thrown out-  
95 ward by gravity and centrifugal force, so as to operate in the desired manner, and, as indicated in Fig. 10, the pins 5 may be pressed outward by springs 5<sup>c</sup>.

In Fig. 7 I have shown coaxers formed of plugs 6, of rubber or resilient material,  
100 screwed into suitable apertures in the periphery of the cylinder. For ordinary purposes, particularly for paper webs, I do not consider the rubber coaxers desirable.

The form shown in Fig. 1 I prefer at pres-  
105 ent, as it has been practically and successfully employed and is in practical and successful operation.

As the cutting-cylinders are used with dif-  
110 ferent widths of webs, it may be desirable at times to have the coaxers longitudinally adjustable of the cylinders, so that they can be made to operate on the margins of the web. For this purpose and as shown in Fig. 11  
115 the grooves *H* may be continuous, or a number of such grooves may be arranged in line along the length of the cylinder, so as to be practically continuous, and the cylinder is provided with a series of threaded apertures  
120 1<sup>b</sup> at intervals to receive the screws 3<sup>b</sup>, and thus the coaxers might be adjusted at different points on the cylinder.

As is obvious, where the coaxers, such as shown in Figs. 6 and 7, are employed the cyl-  
125 inders may be provided with longitudinal series of threaded apertures, in any of which the coaxers may be placed. Obviously other ways will readily suggest themselves for enabling the coaxers to be adjusted longitudi-  
130 nally of the cylinders.

While I have described the coaxers as applied to cutting-cylinders, it is obvious that they can be usefully employed in other locations wherever it is desired to insure firm gripping or feeding of the web, particularly where numbers of thicknesses of web are fed between the same rolls.

The various modifications above referred to and shown in the drawings are merely illustrative and not restrictive of the variety of possible modifications of the invention, as it is obvious that after the invention is once disclosed various constructions embodying the same can be devised within the scope of the invention. I therefore do not wish to be limited to the constructions illustrated and described herein, except as to such of the claims as may specify them.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent thereon, is—

1. In combination, a pair of cutting-rolls, one of said rolls having a series of alined circumferentially-arranged yielding web biting or coaxing devices, adapted to hold the web closely in contact with the face of the opposed roll after the severance of the web, for the purpose and substantially as described.

2. In combination, a pair of cutting-rolls, a plurality of alined circumferentially-arranged series of yielding web-coaxing devices attached to one roll and adapted to project beyond the periphery thereof, and engage the web in the margins thereof and hold the same closely against the surface of the opposed roll, for the purpose and substantially as described.

3. In combination, a pair of combined web feeding and cutting cylinders, a series of yielding web-coaxers attached to one of said cylinders and adapted to engage the web and hold the same in contact with the opposed cylinder, for the purpose and substantially as described.

4. In combination, a pair of cutting-cylinders, with circumferentially-arranged series of alined coaxing devices attached to and pro-

jecting from the periphery of one cylinder and adapted to engage the marginal spaces of the web and press it against the other cylinder, substantially as described.

5. In combination, a pair of cutting-cylinders, one of said cylinders having circumferentially-arranged series of alined peripheral recesses; with radially-yielding coaxers secured in said recesses and normally projecting beyond the periphery of said cylinder.

6. In combination, a feeding-cylinder for web-handling machines, with the curved spring-fingers attached to said cylinder and having coaxing parts normally projecting beyond the periphery thereof.

7. In combination, a feeding-cylinder for web-handling machines, with a series of coaxing devices attached to said cylinder, and adjustable longitudinally thereof, said coaxers normally projecting beyond the periphery of the cylinders.

8. In combination, a web-feeding cylinder having circumferentially-arranged series of peripheral recesses; with coaxing devices secured in the recesses of said cylinder, and adjustable longitudinally thereof and normally projecting beyond the periphery thereof, for the purpose and substantially as described.

9. In combination, a web-feeding cylinder; with bent spring-fingers secured to said cylinder and having parts normally projecting beyond the periphery thereof, for the purpose and substantially as described.

10. A web-feeding cylinder having recesses in its periphery, in combination with spring coxer-fingers secured at one end in said recesses and having their other ends normally projecting beyond the periphery of the cylinder, for the purpose and substantially as described.

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

HENRY F. BECHMAN.

In presence of—

CHARLES A. GRAMES,

GUY H. FENN.