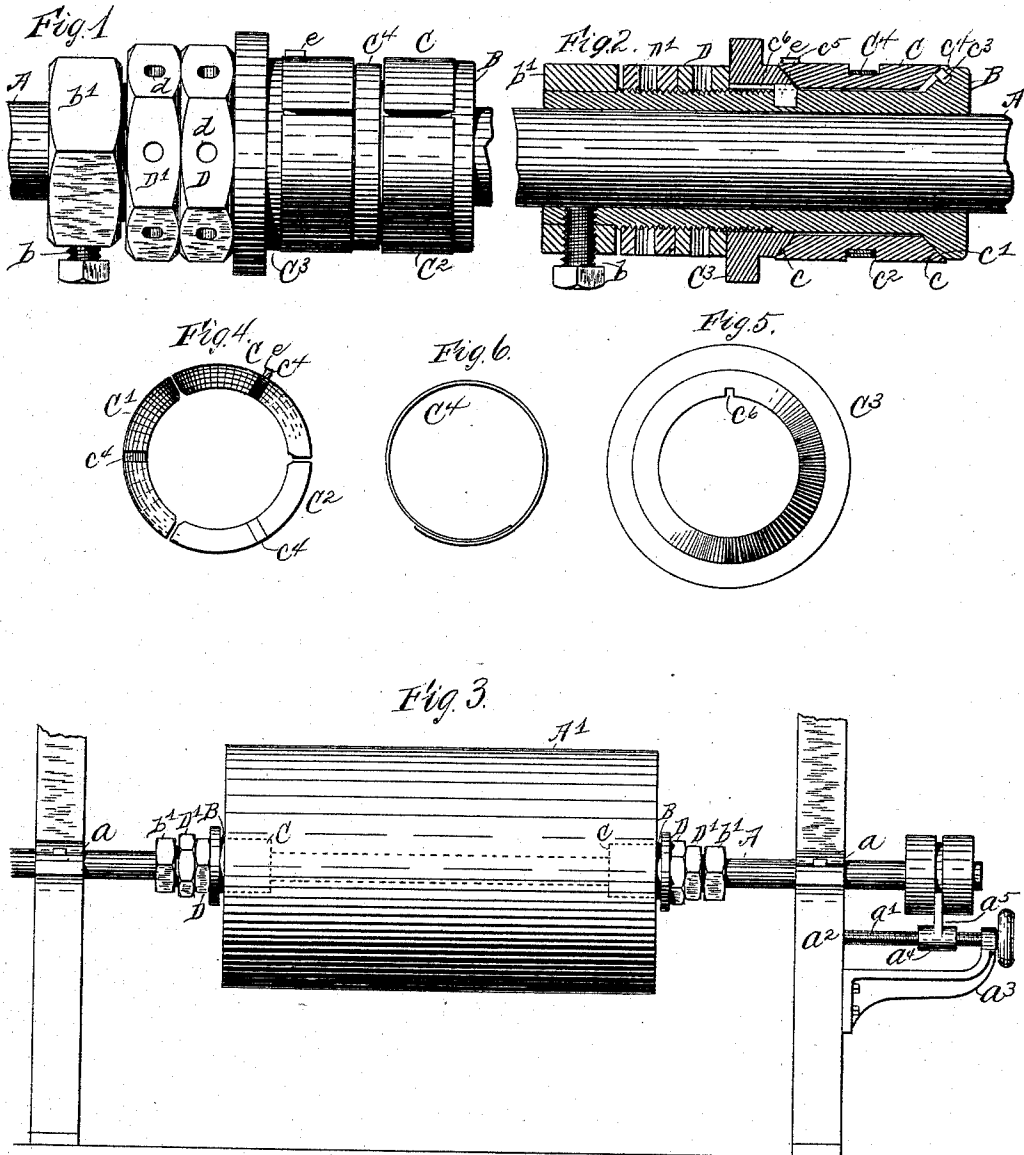


(No Model.)

S. W. TWINING & E. R. COLLINS.
EXPANDING MANDREL.

No. 522,699.

Patented July 10, 1894.



WITNESSES:
W. Ferguson
David A. Smith

INVENTORS
Samuel W. Twining
Edmund R. Collins
BY *Edwin H. Brown*
THEIR ATTORNEY.

UNITED STATES PATENT OFFICE.

SAMUEL W. TWINING AND EDMUND R. COLLINS, OF BROOKLYN, NEW YORK.

EXPANDING MANDREL.

SPECIFICATION forming part of Letters Patent No. 522,699, dated July 10, 1894.

Application filed January 19, 1893. Serial No. 458,971. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL W. TWINING and EDMUND R. COLLINS, both of Brooklyn, county of Kings, and State of New York, have
5 invented a certain new and useful Improvement in Expanding Mandrels, of which the following is a specification.

This invention relates to mandrels employed in printing presses for supporting a roll of paper and it consists of a mandrel comprising
10 segmental pieces adapted to be expanded within a roll of paper in parallel lines.

In mandrels employing conical portions designed to be forced into the roll the roll is apt
15 to be circumferentially expanded at its ends. We obviate this difficulty by expanding the mandrel parallel with the width of the paper roll.

We will describe a mandrel embodying our
20 improvement and then point out the novel features in claims.

In the accompanying drawings Figure 1 is a side view of a mandrel embodying our improvement. Fig. 2 is a longitudinal section
25 thereof. Fig. 3 shows a roll of paper mounted on the mandrel. Fig. 4 is an end view of mandrel sections. Fig. 5 is an end view of an expanding ring. Fig. 6 shows a spring collar employed in holding the mandrel sections together.
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It is to be understood that Figs. 1 and 2 show only one portion of the mandrel but the two portions are shown in position, partly in dotted line, in Fig. 3.

Referring by letter to the drawings A designates a rotary shaft mounted in bearings *a*. This shaft may be moved longitudinally when it is desired to adjust a roll of paper A', to
35 printing rolls. The means here shown for moving the shaft longitudinally consists of a screw rod *a'*, provided with a hand piece at its outer end and having bearings in a standard *a''* and a bracket *a'''* extended from the standard. An internally threaded sleeve *a''''*
40 engages the screw rod and has a finger *a'''''* extended into an annular groove in a pulley *a''''''* fixed on the shaft A. Obviously by rotating the screw rod the shaft may be moved longitudinally in either direction.

Referring to Figs. 1 and 2 B designates a

sleeve movably mounted on the shaft A, and held in its adjusted position by means of a set screw *b* extending through a tapped hole in the sleeve and impinging upon the shaft. A ring *b'* may surround the inner end of the
55 sleeve B and the set screw extended through a hole in this ring. The ring has an angular exterior so that a wrench or similar tool may be engaged with it to hold the shaft A from rotating during the operation of expanding
60 the mandrel.

C, C', C'', designate the segmental sections of the mandrel surrounding the sleeve B at its inner end. The ends of these sections are beveled or inclined inward as at *c*. The
65 bevels at one end engage against an annular beveled shoulder *c'* on the sleeve, and the bevels at the opposite end engage against the beveled end of an expanding ring C³ surrounding and movable longitudinally on the
70 sleeve B.

The segmental sections C, C', C'', are held in position but allowed to expand evenly by means of a spring ring C⁴, having its ends
75 lapped. This spring is seated in annular channels *c''* in the segmental sections.

To prevent a rotary movement of the segmental sections relatively to the sleeve B we employ keys *c''''* projected from the shoulder *c'* into grooves *c'''''* in the ends of the segmental
80 sections.

The expanding ring C³ is prevented from rotary movement relatively to the sleeve B by means of a key *c''''''* extended from the sleeve into a longitudinal groove *c'''''''* in the interior
85 of the ring. The ring C³ is moved longitudinally on the sleeve B by means of nuts D D', engaging a threaded portion of the sleeve as shown in Fig. 2. One of these nuts D' serves
90 as a jam nut. The nuts may be formed to receive a wrench for turning them, or they may be provided with holes *d* to receive a rod of iron for turning them.

As before stated there is a sleeve, a mandrel and its expanding mechanism at each
95 end of the paper roll. In adjusting a paper roll the shaft A is lifted from its bearings and a mandrel, with its appurtenances, at one end is removed. The roll may now be mounted on the mandrel on the shaft and the other

mandrel placed in position. By turning the nuts D D' the mandrel sections will be forced outward in parallel lines.

Paper rolls for printing are generally wound on iron pipes and these pipes have a notch in the end to engage a part and prevent the roll from turning on the rib or feather *e* on one of the mandrel sections to engage in this notch.

Having described our invention, what we claim is—

1. The combination with a rotary shaft, of a sleeve, movably mounted thereon, a mandrel mounted on said sleeve and consisting of segmental sections and means movable on said sleeve for forcing said sections outward in parallel lines relatively to the sleeve, the said means co-acting with a beveled shoulder on the sleeve substantially as specified.

2. The combination with a rotary shaft, of a sleeve mounted thereon and having the annular beveled shoulder, the mandrel comprising segmental sections having the beveled ends and the expanding ring movable on said sleeve, substantially as specified.

3. The combination with a rotary shaft, of the sleeve movably mounted thereon and having an annular beveled shoulder, the mandrel comprising segmental sections, a spring ring for holding the sections in position, means for preventing a rotation of the sections rela-

tively to the sleeve, and the expanding ring movable on said sleeve, substantially as specified.

4. The combination with a rotary shaft of the sleeve longitudinally adjustable thereon, a set screw for holding the sleeve as adjusted, the mandrel comprising segmental sections having beveled ends to engage a beveled shoulder on the sleeve, the expanding portion to engage the opposite beveled ends of the mandrel sections and a nut for forcing the expanding ring longitudinally, substantially as specified.

5. The combination with a rotary shaft, the adjustable sleeve, the mandrel sections and means for expanding said mandrel sections, of the ring surrounding the outer end of the sleeve and having an angular exterior, and the set screw passing through the ring and sleeve and engaging the shaft, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

SAMUEL W. TWINING.
EDMUND R. COLLINS.

Witnesses:

CLARENCE R. FERGUSON,
ANTHONY GREF.