(No Model.)

A. S. BOWNE.

HOLDER FOR CORES OF PAPER ROLLS.

No. 520,154. Patented May 22, 1894.

Fig. 2.

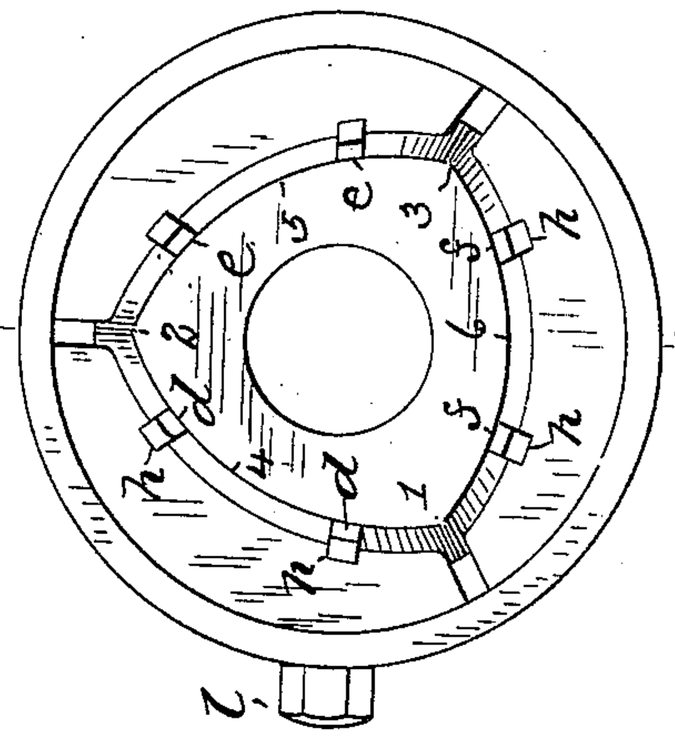


Fig. 4.

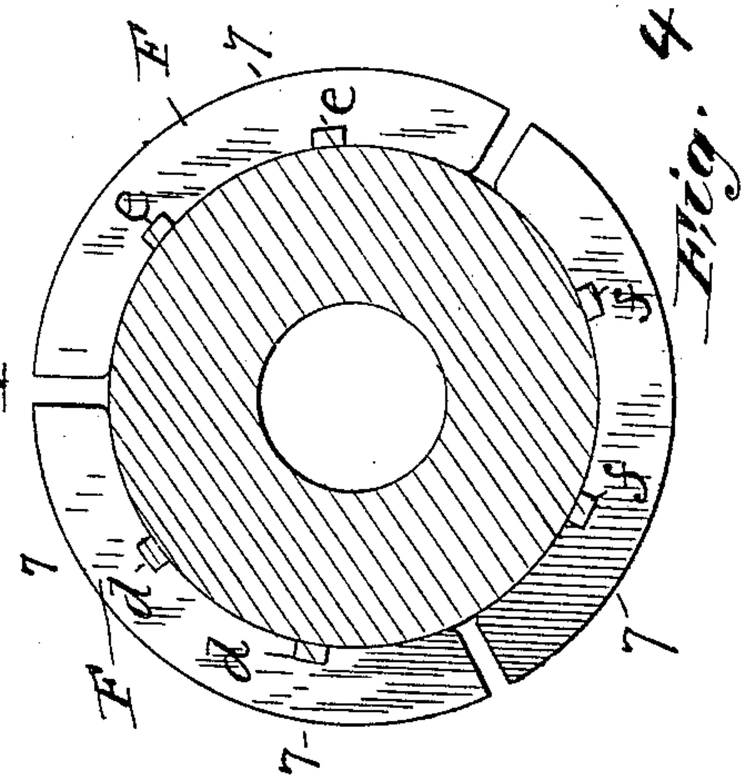


Fig. 1.

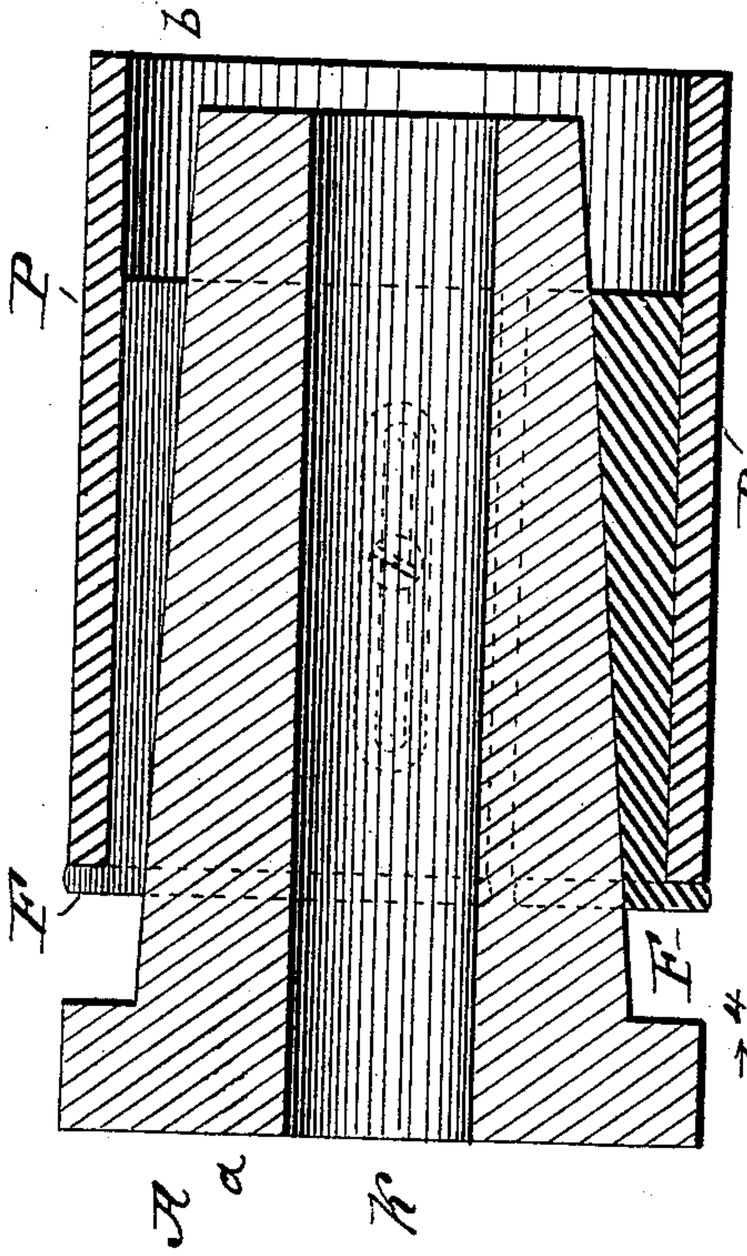
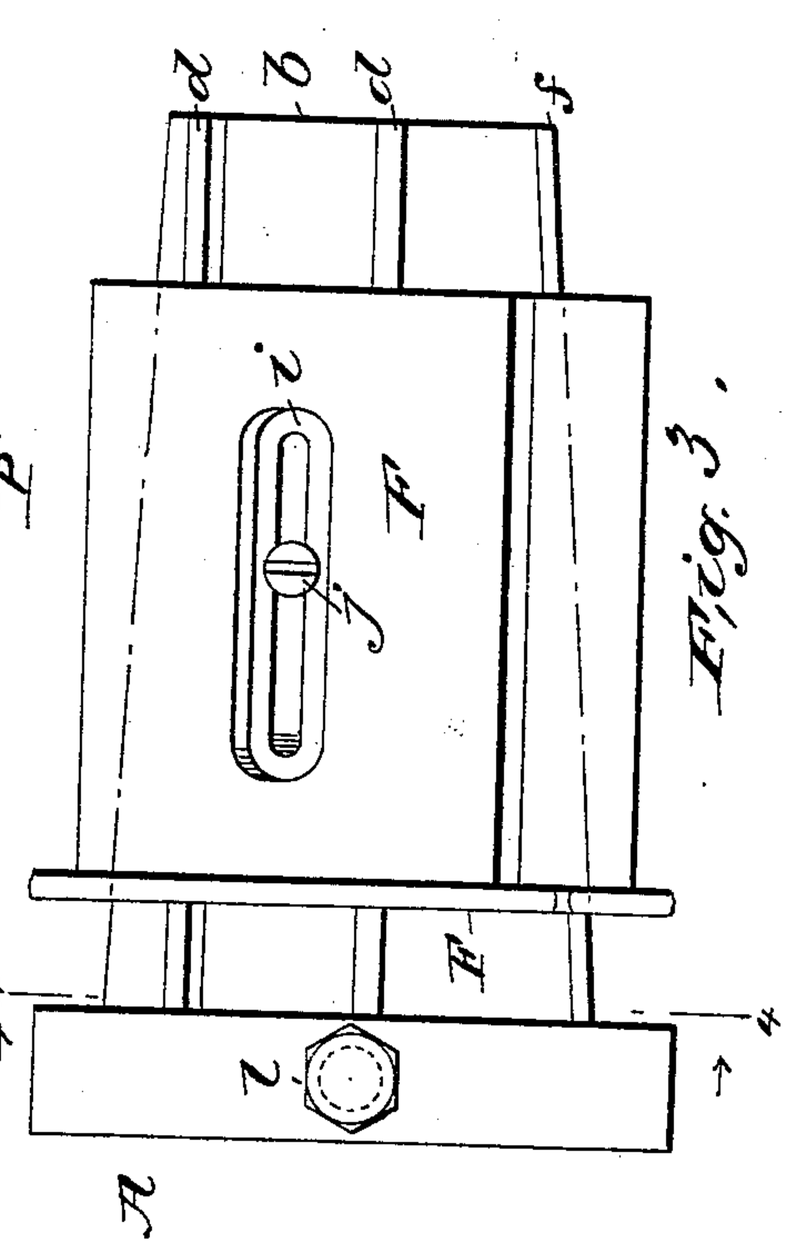


Fig. 3.



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HOLDER FOR CORES OF PAPER-ROLLS.

SPECIFICATION forming part of Letters Patent No. 520,154, dated May 22, 1894.

Application filed February 24, 1894. Serial No. 501,439. (No model.)

To all whom it may concern:

Be it known that I, ALBERT S. BOWNE, a citizen of the United States, and a resident of Brooklyn, in the county of Kings, State of New York, have invented a certain new and useful Improvement in Holders for Cores of Paper-Rolls, of which the following is a specification.

My invention relates to improvements in holders for the cores of paper rolls, and especially for the paper cores that are now coming into use as substitutes for the iron cores formerly employed.

As is well known, the paper for the modern newspaper printing presses is shipped from the paper mill in large rolls. Formerly these rolls were wound on iron spools or cores, which were rather expensive to make and were therefore returned to the mill to be used again when the paper had been unwound from them. But not only were these cores expensive, they were also heavy, adding materially to the weight of the roll, and the increased freight charges by reason of their weight and re-shipment to the mill were considerable. Therefore an attempt was made to substitute cores made of paper for the iron cores, as being very cheap and light, costing in fact so little as to be discarded without perceptible loss when the paper was unwound from them. But the use of paper cores has heretofore been almost impracticable, owing to the difficulty of fixing them on the shafts which support the roll while the paper is being unwound and printed on.

It is the purpose of my invention to furnish a holder which can be very easily applied, will hold the core very firmly and can be very readily removed from the core.

My core holder consists of two principal parts, viz., an inner sleeve or bushing which is adapted to be secured to the aforesaid shaft, and a number of outer segments, preferably three, which are arranged to slide lengthwise of the inner sleeve. Further, the surface of the said sleeve is formed in such a manner, that while the diameter of the sleeve increases from the inner to the outer end thereof, the radius of curvature of each surface of the sleeve on which the segments slide remains the same throughout the length of the sleeve. The purpose of this formation of the sleeve is to afford a broad and uniform support for the segments no matter at what part of the sleeve they may be, which would be impossible if the sleeve were formed as a core with a constantly changing radius of curvature. The segments are also so shaped that their surfaces are always parallel to the axis, no matter what the position of the segments on the sleeve may be. With holders constructed in this manner the paper core is very readily and firmly secured on the supporting shaft and as readily removed therefrom.

Referring to the drawings which accompany the specification to aid the description, Figure 1 is a longitudinal section of my holder on the line 1—1 of Fig. 2 and showing a part of the paper core wedged in place on the holder. Fig. 2 is a view of the end of the holder as it appears when looking at the small end thereof, and showing the several bearing surfaces and the guides. Fig. 3 is an elevation of the holder, showing the slots in the segments. Fig. 4 is a cross section at the upper end of the holder on line 4—4, but looking toward the segments.

The sleeve A, preferably made of cast iron, is shaped in the following manner: At the larger or outer end *a* said sleeve A has a truly circular shape, as shown in Fig. 4. From said outer end *a* the sleeve A tapers toward the smaller end *b*, as indicated in Fig. 1, but the bearing surfaces retain always the same radius of curvature. This result is attained in the following manner: The diameter of the smaller end *b* having been decided on, points as 1, 2, 3, which divide the circumference of the smaller end into any number of parts, (preferably three equal parts) are taken as the intersections of the bearing surfaces of the sleeve A, at that end *b*, and arcs of circles, as 4, 5, 6, are drawn through said points 1, 2, 3 with the same radius as that of the circle at the large end of the sleeve. Then the surface of the sleeve, (or rather, if the sleeve be of cast iron, the surface of the pattern) is worked to the lines 4, 5, 6 on a true taper from the larger to the smaller end of the sleeve A. Then guides *d d*, *e e*, *f f* are fixed on the surface of the sleeve, the guides of a pair being parallel each to each.

The segments F are preferably shaped as

shown of cast metal. Each segment is preferably as wide as the several arcs 4, 5, 6 at the small end of the sleeve A, and the outer surfaces 7 of the segments F are all arcs of the same circle, and of such radius that, when the segments are at the large end of the sleeve F, their said surfaces 7 coincide with a cylinder which has the same axis as the said sleeve A. The inner surface of each segment F tapers on the same slope as that of the bearing surfaces of the sleeve A, as shown in Fig. 1, so that the surface 7 remains parallel to the axis in all positions; also the curvature of the inner surface of said segments is the same as that of the arcs 4, 5, 6, of the sleeve A. Consequently the said segments F bear truly throughout their extent on the sleeve A. Said segments F are each provided with parallel grooves *h*, *h* to fit the aforesaid guides *d*, *d*, and in each of said segments is a chamfered slot *i* which slides by a flat-headed screw *j*, the head of the screw bearing on the flanges of the chamfered slot as seen in Figs. 1 and 2.

In operation, I prefer to use two of my holders; one being fixed by the set screw *l* on the usual shaft, which passes through a hole, but is not shown in the drawings. The core of the paper roll, P, indicated by hatched lines, is slipped over the said fixed holder. Then the other and similar holder is brought to a position on the shaft such that the holder enters well into the other end of the paper core, and the sleeve A driven sharply into the paper core, thus wedging the sliding segments F tightly into the said core at both ends thereof. Then the sleeve is fixed on the shaft by the set screw *l*.

To increase the grip of the segments F on the paper core, I may provide their outer surfaces with ribs or corrugations, and it will be understood that while I prefer to form the arcs 4, 5, 6, of the sleeve F as circular arcs, I am not restricted to this shape, but may select other shapes, the essential element of the invention being that the radius of curvature of the several bearing surfaces of the sleeve A shall be the same for all parts of the length of the sleeve, notwithstanding the change in the diameter of said sleeve. It will also be apparent that I could make the small end of the sleeve A circular, and shape the large end on the eccentric arcs.

Now, having described my improvement, I claim as my invention—

1. A holder for the cores of paper rolls having a sleeve which is provided with bearing surfaces each of which retains the same radius of curvature throughout its length, while the diameter varies from end to end, substantially as described.

2. A holder for the cores of paper rolls having a sleeve which is shaped at one end as a circle and at the other end as a plurality of eccentric arcs of the same circle, substantially as described.

3. In a holder for the cores of paper rolls, the combination of a sleeve provided with a plurality of bearing surfaces each of which retains the same radius of curvature while varying in diameter from end to end, and sleeves for each of said surfaces adapted to slide thereon, substantially as described.

4. In a holder for the cores of paper rolls the combination of a sleeve provided with a plurality of tapering bearing surfaces which retain the same radius of curvature throughout their length, segments having a sliding fit on said surfaces and provided with a tapering inner surface and a cylindrical outer surface, and devices for movably securing the said segments on said bearing surfaces, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 19th day of February, 1894.

ALBERT S. BOWNE.

Witnesses:
BERNARD J. ISECKE,
HENRY H. DE VAS.