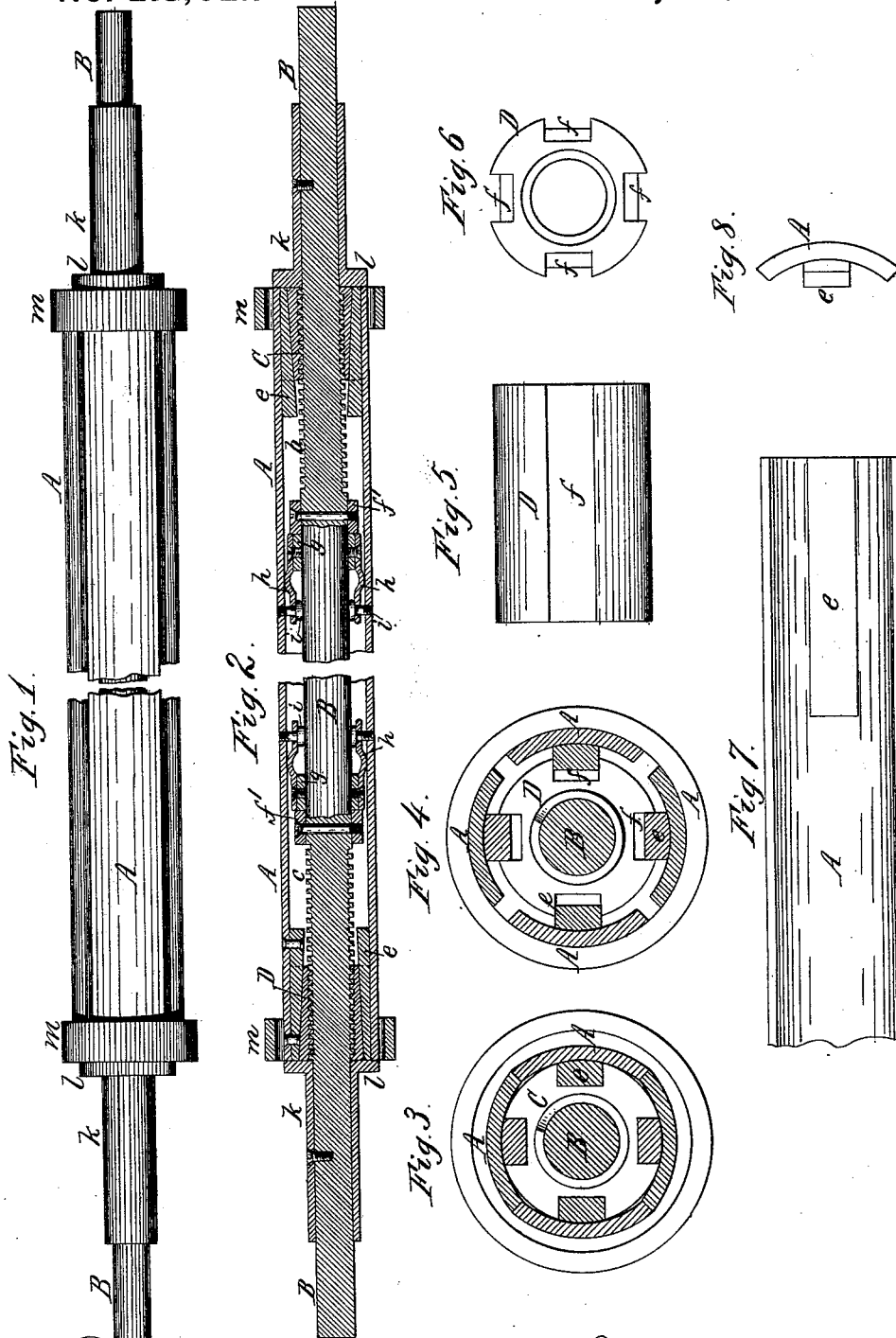


J. HARTNETT.
Expansible Core for Rolls of Paper.

No. 218,021.

Patented July 29, 1879.



Chas. J. Pugh
Edw. J. Brady
Witnesses.

John Hartnett, Inventor.
By Nicholas P. Brown
Attorneys.

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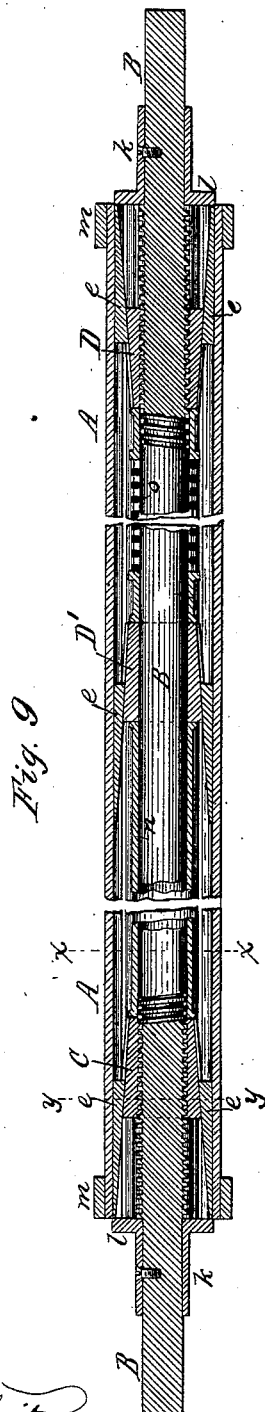


Fig. 9

Fig. 11.

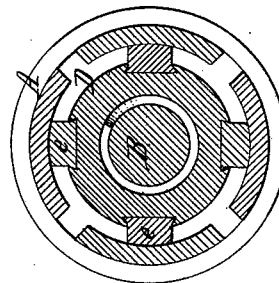
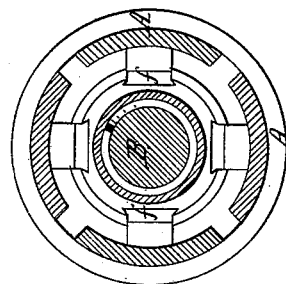


Fig. 10.



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UNITED STATES PATENT OFFICE.

JOHN HARTNETT, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF HIS
RIGHT TO STOUGHTON PETTIBONE, OF NIAGARA FALLS, NEW YORK.

IMPROVEMENT IN EXPANSIBLE CORES FOR ROLLS OF PAPER.

Specification forming part of Letters Patent No. **218,021**, dated July 29, 1879; application filed
June 3, 1879.

To all whom it may concern:

Be it known that I, JOHN HARTNETT, of the city of St. Louis, in the county of St. Louis and State of Missouri, have invented new and useful Improvements in Expansible Cores for Rolls of Paper, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to a removable core or shaft designed to be used on paper-making machines, printing-presses, &c., for supporting the roll of paper in winding and unwinding the same.

Ordinarily the shaft or core upon which the web of paper is wound in a paper-making machine is left in the roll and shipped with the same to its destination. This necessitates the use of a large number of shafts by the paper-manufacturer, and occasions considerable expense.

The object of my invention is to construct the shaft or core in such manner that it can be expanded and contracted, or, in other words, that its diameter can be enlarged or reduced, whereby the core or shaft is enabled to be readily withdrawn from or be inserted into a roll of paper, as may be required.

My invention consists of the particular construction of the expansible core, as will be hereinafter fully set forth.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of my improved core. Fig. 2 is a longitudinal section thereof. Fig. 3 is a cross-section of the core contracted, and Fig. 4 a similar view, showing the core expanded. Fig. 5 is a side elevation of the traveling nut. Fig. 6 is an end view thereof. Fig. 7 is an inside view of one of the core-sections. Fig. 8 is an end view thereof. Fig. 9 is a longitudinal section, showing a modified form of my improved core. Figs. 10 and 11 are cross-sections thereof in lines *xx* and *yy*, respectively, of Fig. 9.

Like letters of reference designate like parts in the several figures.

A represents four parts or sections, forming the shell of the core. They are preferably made of wrought-iron tubing, of suitable length and diameter, divided longitudinally into four

parts. *B* is a shaft, arranged axially within the core, and provided, near each end of the core, with a screw-thread, the thread *b* at one end being a right-hand thread, and the thread *c* at the opposite end a left-hand thread. *C D* are traveling screw-nuts, arranged within the shell *A*, and working, respectively, on the threads *b c*. *e* is an inclined feather or wedge, secured to the end of each core-section *A* on its inner side; and *f* represents correspondingly inclined grooves or recesses formed in the traveling nuts *C D* for the reception of the wedges *e* of the core-sections. *f'* is a collar, secured to the shaft *B* at the inner end of each screw-thread *b c* by a rivet, set-screw, or other suitable means, to limit the inward movement of the traveling nuts *C D*.

g represents two or more collars, mounted loosely on the shaft *B*, and *h* are elastic arms or springs, bearing with their inner ends against the heads of screw-bolts *i*, screwed into the core-sections *A*, and having their opposite ends secured to the collars *g*, so as to form an elastic connection between the shaft *B* and the core-sections *A*, whereby the latter are held in a contracted position. Each core-section is provided with a spring, *h*, near each end.

k represents a sleeve, secured to each end of the shaft *B*, to limit the outward movement of the screw-nuts *C D*, and to give the end of the core a finished appearance. The sleeves *k* are provided with flanges or heads *l*, which may be made square or hexagonal, or which may have holes for permitting the application of a suitable wrench to turn the shaft.

m are removable rings, having an internal diameter equal to or slightly less than the largest diameter to which the core can be expanded. These rings are placed upon each end of the core, as shown in the drawings, to limit the expanding movement of the core-sections.

When the core-sections are in their contracted position, as shown in Fig. 2, the turning of the shaft *B* in the proper direction causes the traveling nuts *C D* to move inwardly. The inclined recesses *f* of the traveling nuts operate during this movement of the nuts upon the wedges *e* of the core-sections in such manner as to force the latter apart against the tension

of the springs *h* until the limit of expansion has been attained. By reversing the rotary movement of the shaft B the traveling nuts C D are caused to move outwardly, when the springs *h* return the core-sections to their former contracted position.

In using my improved core in a paper-making machine, the core is expanded and the web of paper wound upon the same. When the roll of paper is finished, the core is contracted and withdrawn from the roll, and the opening in the center thereof closed with wooden plugs, or by any other suitable means, and the roll is shipped in this condition.

When the roll of paper is to be used in a printing-press or other machine, another expansible core, previously contracted, is inserted into the roll and then expanded, so as to fill the axial opening of the roll, when the latter is ready for use.

In the modified form of my improved expansible core represented in Figs. 9, 10, and 11 the springs *h*, connecting each core-section A with the shaft B, are dispensed with. The core-sections A are in this case connected with the traveling nuts C D by forming the wedges *e* of the core-sections and the inclined recesses *f* of the traveling nuts in the form of dovetails, as clearly shown in the drawings, whereby the core-sections are caused to respond to the movement of the traveling nuts in either direction.

In order to prevent the springing of the core-

sections when the core is very long, it may become necessary to arrange another set of wedges *e* and an additional traveling nut, D', at the center of the core, as shown in Fig. 9. This central nut, D', may be operated by a suitable screw-thread arranged upon the shaft B; or, as shown in Fig. 9, it may be operated in one direction by a rigid tube, *n*, interposed between the nut C and the nut D', and in the other direction by a spring, *o*, placed around the shaft B between the nut D' and the nut D. When the arrangement shown in Fig. 9 is used, no screw-thread is formed in the nut D'.

I claim as my invention—

1. An expansible core composed of the shaft B, provided with right and left hand screw-threads *b c*, core-sections A, provided with wedges *e*, and traveling nuts C D, having inclined recesses *f*, substantially as set forth.
2. The combination, with the shaft B, provided with right and left hand screw-threads *b c*, core-sections A, provided with wedges *e*, and traveling nuts C D, of the collars *g* and springs *h*, substantially as set forth.
3. The combination, with the expansible core-sections A, of the removable rings *m*, for limiting the expanding movement of the sections, substantially as set forth.

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Witnesses:

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