

No. 627,698.

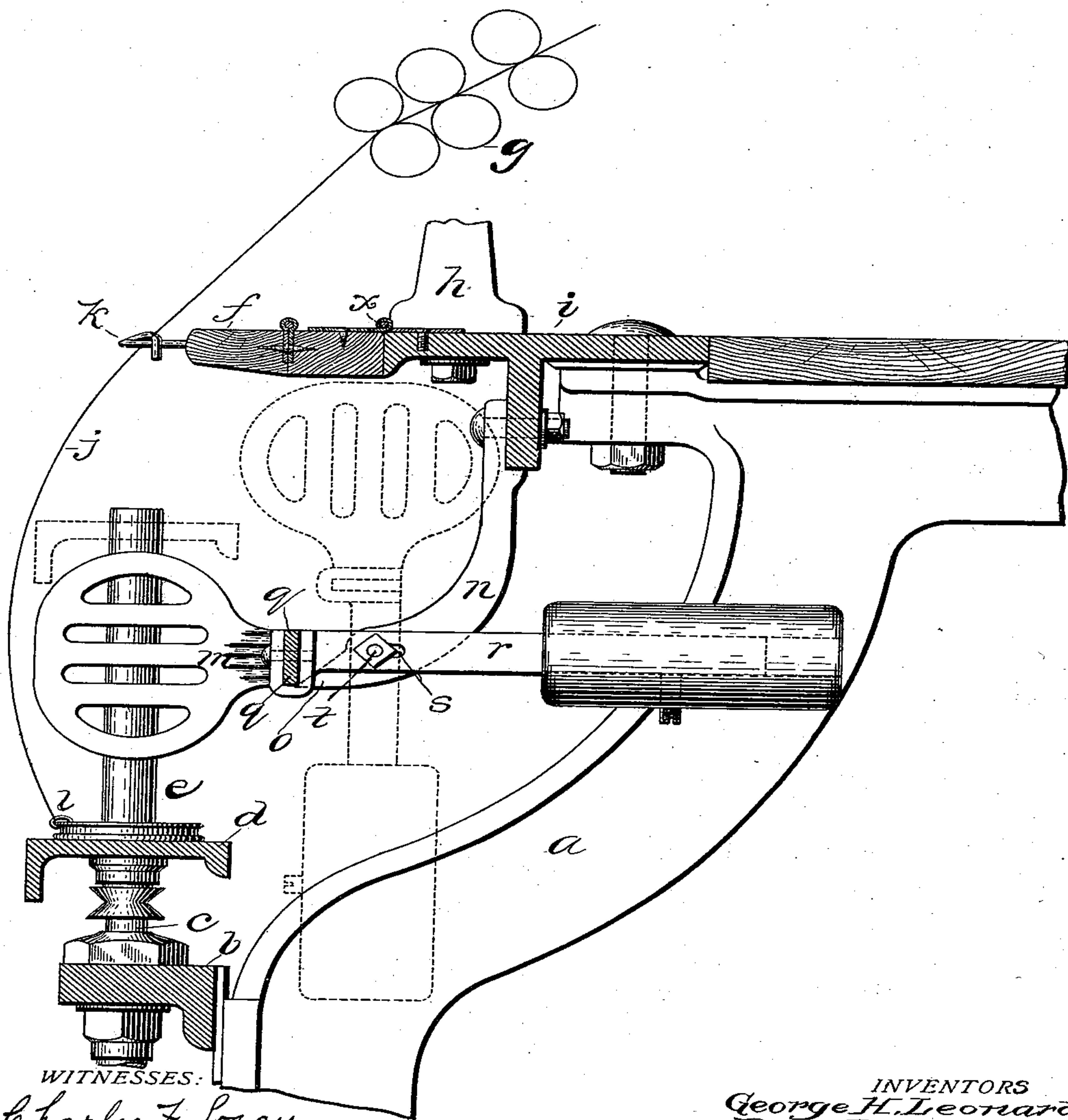
Patented June 27, 1899.

G. H. LEONARD & R. L. REYNOLDS.

RING SPINNING FRAME.

(Application filed Sept. 20, 1897.)

(No Model.)



WITNESSES:

Charles F. Logan.  
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INVENTORS

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ATTORNEYS



# UNITED STATES PATENT OFFICE.

GEORGE H. LEONARD AND ROSS L. REYNOLDS, OF FALL RIVER, MASSACHUSETTS, ASSIGNORS OF ONE-THIRD TO GEORGE H. BUSH, OF SAME PLACE.

## RING-SPINNING FRAME.

SPECIFICATION forming part of Letters Patent No. 627,698, dated June 27, 1899.

Application filed September 20, 1897. Serial No. 652,251. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE H. LEONARD and ROSS L. REYNOLDS, of Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Ring-Spinning Frames, of which the following is a description sufficiently full, clear, and exact to enable those skilled in the art to which it appertains or with which it is most nearly connected to make and use the same.

Inasmuch as the spindles of spinning-frames are to-day driven much faster than was deemed possible or practicable only a few years ago, and since also it is common to give the rail a considerably longer traverse than was then given, new difficulties have presented themselves to the practical operator. First, the higher speed of the spindle has greatly increased the tendency of the yarn to "balloon," thus making it impracticable under the conditions before mentioned to use the narrow blades heretofore employed. Second, the longer rail traverse has also made it imperative to employ much wider separator-blades than before. In practice with the longer traverse and higher speed the threads will balloon out beyond the narrow blades and come in contact with each other, thus causing a breaking down of the ends. Since, however, the distance from the roller-beam to the thread-eye above the spindle is for practical reasons incapable of substantial variation and because also for practical reasons the beam has always been made in the form of an angle-iron to prevent twisting and warping when the casting cools, as well as to secure the necessary rigidity of the beam, it is not possible to substitute the wide blades now in use for the narrow ones in the old style of separators. The reason is that the roller-beam of necessity, in order to support the rollers at the proper distance from the thread-eye, comes so near the vertical plane of the spindle that there is no room for a wide blade to be thrown back in the way that the narrow blades were thrown back in the old style of separator. As the wide blades cannot be thrown back out of the way, they interfere with the operation of doffing and make it im-

possible to lift off the rail, which is necessary for the purpose of cleaning the frame and for other purposes as well. Various inventions have been made for solving this problem; but the solutions heretofore proposed involved the use of a more complex separator mechanism than was used in the old narrow-blade separator and made it necessary to lower the ring-rail in order to throw the separator-blades out of the way for doffing and other purposes.

Our invention proceeds along a different line and involves such a modification of the roller-beam and the relationship of the separator-blades and their adjuncts to the beam as shall permit the folding back of the wide separator-blades in substantially the same manner that the narrow blades were thrown back heretofore, but without in any way disturbing the relative positions of the beam, the rollers, and the thread-eyes.

The invention consists in the construction, arrangement, and relationship of parts hereinafter described and claimed.

Reference is to be had to the annexed drawing, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

The drawing is a vertical sectional side elevation of a portion of a ring-spinning frame equipped with our improvements.

In the drawing, *a* is the frame of the machine.

*b* is the bolster-rail.

*c* is the spindle.

*d* is the ring-rail.

*e* is the bobbin on the spindle.

*f* is the thread-board.

*g* are the drawing and delivery rolls.

*h* is the base of the roller-stand, and *i* is the roller-beam supporting the roller-stand and other portions of the machine.

The line *j* represents the course of the yarn being spun on its way from the rolls *g* through the guide-eye *k*, projecting from the thread-board and through the traveler *l* to the bobbin. In the spinning operation the "ballooning," so called, of the thread will become even much greater than that represented if not restrained by contact with separators or



blades *m*, extending between adjacent spindles, and when these separator-blades are made as broad relatively as they are shown in the drawing they cannot under the prior art be folded up and back out of the way, as explained above.

In order to accomplish the desired end mentioned, I undercut, as it were, the forward part of the beam *i*, and to do this in one of the most desirable ways I make the roller-beam substantially in the form of a T in cross-section, bolting the rear arm of the said beam to the frame of the machine, hinging the thread-board to the front edge of the forward arm, and employing the depending leg for the support of the curved separator-hanger *n*, the toe *o* of which acts as a stop to the downward movement of the separator-bar *q*.

*r* designates the counterweighted arm or bar, which is pivoted upon the separator-hanger and at its forward end supports the separator-bar.

The bar *r* is slotted, as is indicated at *s*, and the pivot-pin *t*, connected with the separator-hanger *n*, extends through the said slot, which construction provides for a slight adjustment of the separator-bar and the separators thereon forward and back, which is a matter of importance in some cases. The separator-bar *q* provides for the movement of the separators in unison.

Under the construction shown and described it will be seen that when the separators are by any means and at any time thrown back from the full to the dotted line position (turning upon the pivot *t*) they will pass under the projecting part of the roller-beam back of the line *x* where the thread-board is hinged to the said beam, leaving full and free space and room for acting upon the bobbins or other things connected with the spindle, ring, and ring-rail. This feature of the invention is very important, particularly when the ring-rail is raised to its highest position, as will be well understood by those skilled in the art.

The advantages of our improvements reside

not only in their cheapness and simplicity, but in the fact that they enable us to employ the wide blades on the simplest form of separator-operating mechanism known and fold them entirely up out of the way of the operator when doffing and that this operation is thereby made possible no matter what the position of the ring-rail may be, whether at the bottom or top of the traverse. Moreover, they enable us to lift off the rail at any position of its traverse and lay it upon the thread-board for the purpose of cleaning or making repairs without the necessity of breaking ends or removing blades.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

The combination of the roller-beam having a projecting portion at its front edge and in front of the stiffening-flange; the thread-board provided with guide-eyes and hinged to the front edge of the said projecting portion; the spindles arranged in a plane vertically coördinate with the guide-eyes; the ring-rail; and broad separator-blades having a fixed pivotal relation to a stationary axis, and adapted to extend between the spindles and to be folded back therefrom to a position beneath the projection of the beam and partially back of the line of hinging the thread-board to the projection, whereby the separators may be made most efficient when in use and may be moved out of the way of the spindles and bobbins to permit doffing or the removal of the ring-rail at any stage of its traverse.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 16th day of September, A. D. 1897.

GEORGE H. LEONARD.  
ROSS L. REYNOLDS.

Witnesses:

ANDREW J. JENNINGS,  
MERTON C. FISHER.