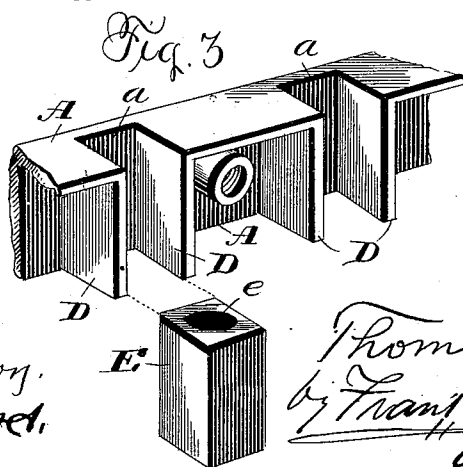
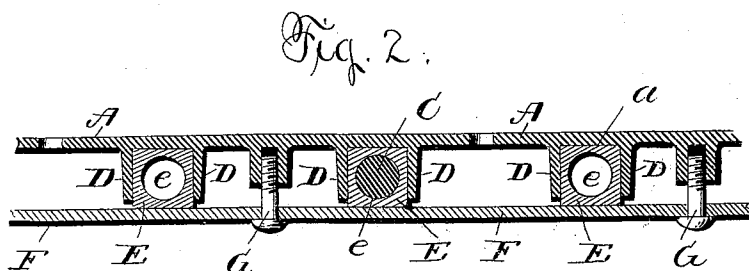
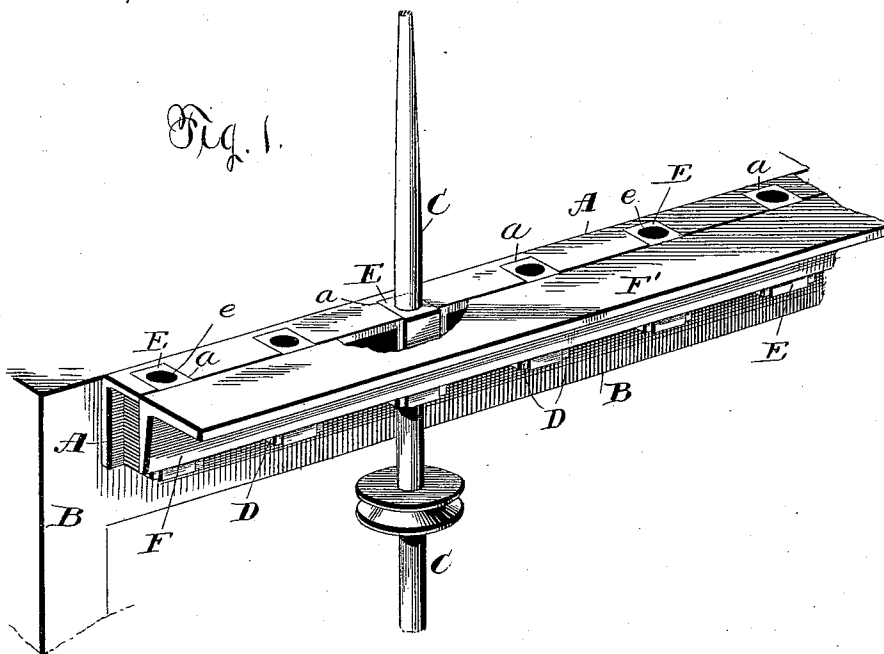


(No Model.)

T. L. BUTLER.
SPINDLE BEARING FOR JACKS AND MULES.

No. 468,939.

Patented Feb. 16, 1892.



Witnesses
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THOMAS L. BUTLER, OF WORCESTER, MASSACHUSETTS.

SPINDLE-BEARING FOR JACKS AND MULES.

SPECIFICATION forming part of Letters Patent No. 468,939, dated February 16, 1892.

Application filed October 10, 1891. Serial No. 408,357. (No model.)

To all whom it may concern:

Be it known that I, THOMAS L. BUTLER, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Spindle-Bearings for Jacks and Mules; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to supports for the spindles of mules and jacks of spinning-machines, its object being to remedy certain important defects which exist in these devices as commonly constructed.

The spindle-support generally used consists of a wooden board, through which are bored a number of round holes equal to the number of spindles employed in a section, in each of which is secured a collar or bushing consisting of a piece of wire formed into a close coil. This board is commonly known as the "wooden collar-board," and through each opening provided with the just-described collar or bushing is passed or journaled a spindle. The serious objections to this device are, first, that the collars or bushings soon work loose, the holes containing them becoming enlarged, necessitating that the whole board be removed and thrown away, even though but a few only of the bushings become loose, and the substitution of a new one, involving not only the loss of the board, but of time and disuse of the machine to make the change, and, second, that the spindles cannot be driven at as high a rate of speed as is desirable, because of the hastening of the enlargement of the hole and loosening of the bushing.

The spindle-support which I have invented entirely obviates the above-named defects, as it discards the wooden collar-board, providing in its stead a metal support and collar or bushing of peculiar construction, as will be hereinafter particularly described and claimed, and shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a spindle-support constructed in accordance with my

invention, one spindle being shown in position; Fig. 2, a horizontal section thereof, and Fig. 3 a detail perspective view showing portions of a support and a collar or bushing separated from each other.

The same letters refer to like parts in the several figures.

My device is placed upon the carriage of the mule or jack in the same position as that occupied by the wooden collar-board for which it is substituted, so as to support the spindles midway between their ends, their lower ends being supported and journaled in any desired way. As shown, it consists of a plate A, secured by screws to the carriage B of the mule and having a series of vertical cavities *a* equal in number to the number of spindles C intended to be supported. Said cavities for lightness' sake are formed each by two thin straight parallel pieces D D, which project from the face of the plate and preferably are cast integral therewith. In each of these cavities is placed a square metal block E, whose dimensions are such as to entirely fill and tightly fit them. Said blocks form the spindle bushings or collars and are provided each with a round vertical opening *e* to contain and journal the spindle. They are held in the cavities *a* by a plate F, of substantially the same length and height as the plate A, which is placed parallel with the latter against the front faces of the blocks and caused to tightly clamp them by means of screws G, passing through said plate F and into threaded openings in the plate A. To insure that the blocks shall be tightly clamped between the two plates, their front faces extend a little beyond the edges of the pieces or walls D, so that the clamping-plate will not touch the latter. The clamping-screws G are so located that two collars or blocks come between two adjacent screws.

The spaces between the walls of adjacent cavities and between the plates A and F at the top are, as shown, closed, and the plate F has a horizontal extension F' in the same plane as the top of the plate A, forming a shelf-like supporting-surface.

It will be seen that in my support the collars or bushings E are held absolutely immovable against any vibration from the motion of the spindles, so that they cannot pos-

sibly work loose in use, thus enabling the spindles to be driven at as high a rate of speed as may be desired. The only wear will be such as the revolution of the spindle will cause
5 on the blocks or collars, and when on this account a new collar has to be put in place it is necessary simply to loosen the clamping-plate sufficiently to remove the worn collar and then to place another in its stead, which, as will be
10 seen, can be quickly and easily done and without disturbing at all any of the other collars or bushings.

The blocks E are given an angular shape, as such conduces to their being held most
15 rigidly, because the flat faces afford the best clamping-surfaces.

The function of the walls or projections D, it will be noted, is to prevent lateral displacement of the blocks, and although it is preferred that they engage the whole side surfaces of the blocks this of course is unnecessary, as any smaller-sized projection which will answer the purpose will do.

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

1. A spindle-support consisting of two clamping-plates and a flat-faced spindle-journaling block or collar held or clamped between said two plates, substantially as described.

2. In combination with a spindle-journaling block or collar having flat faces, two plates engaging said faces to clamp the block, one of said plates having projections to engage
35 said block on opposite sides to prevent lateral displacement, substantially as described.

3. In combination, the plate having the series of cavities, the spindle-journaling blocks in said cavities having flat faces, and the
40 clamping-plate engaging the latter, substantially as described.

4. In combination, the plate having the series of cavities formed by parallel projections, the angular spindle-journaling blocks in said
45 cavities projecting beyond them, and the clamping-plate engaging the projecting portions of said blocks, substantially as described.

5. In combination, the plate having the series of cavities, the square spindle-journaling blocks in said cavities, the removable clamping-plate engaging said blocks, and the screws passing through the latter plate into the former, substantially as described.
55

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS L. BUTLER.

Witnesses:

DENNIS FINNEGAN,
ADA S. WHITNEY,
E. H. VAUGHAN.