

B. A. PETERSON.

DOFFER.

APPLICATION FILED JULY 20, 1910.

Patented June 3, 1913.

2 SHEETS—SHEET 1.

1,063,587.

Fig. 1.

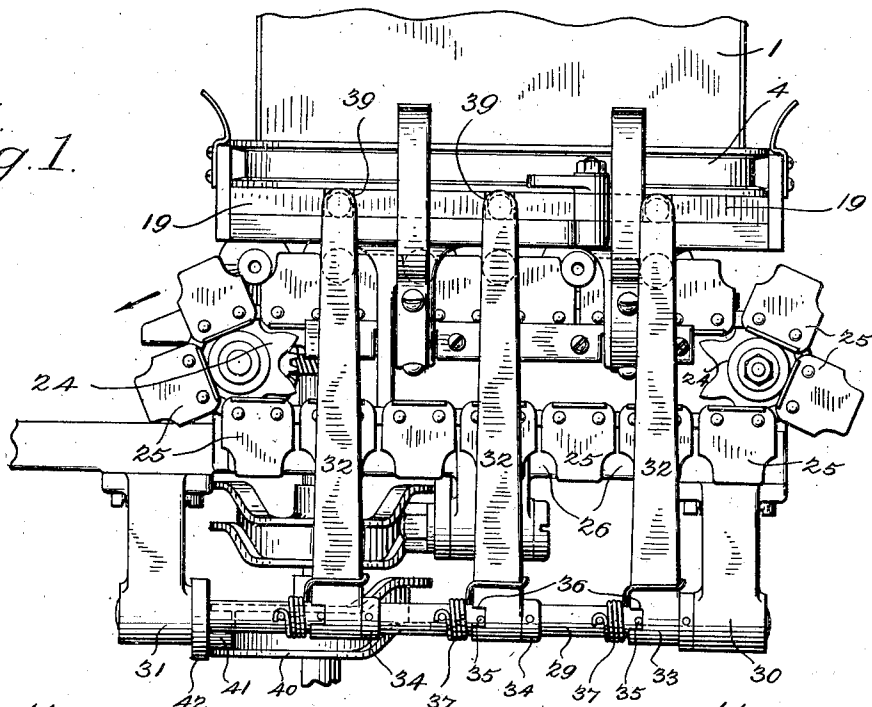


Fig. 4.

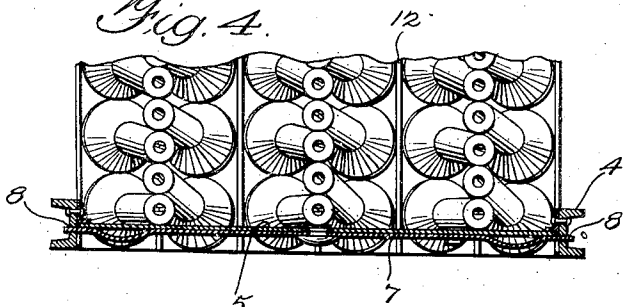


Fig. 5.

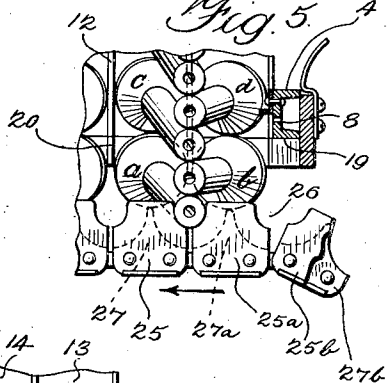
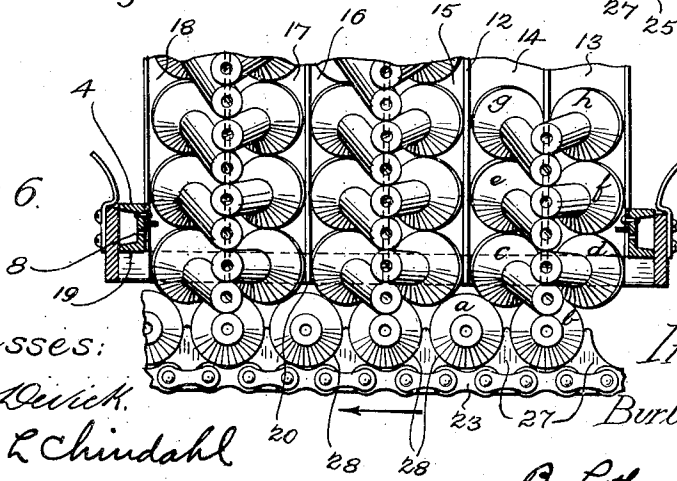


Fig. 6.



Witnesses:

J. C. Devick.
George L. Chindahl

Inventor:

Burt A. Peterson

By Luther L. Miller, Atty.

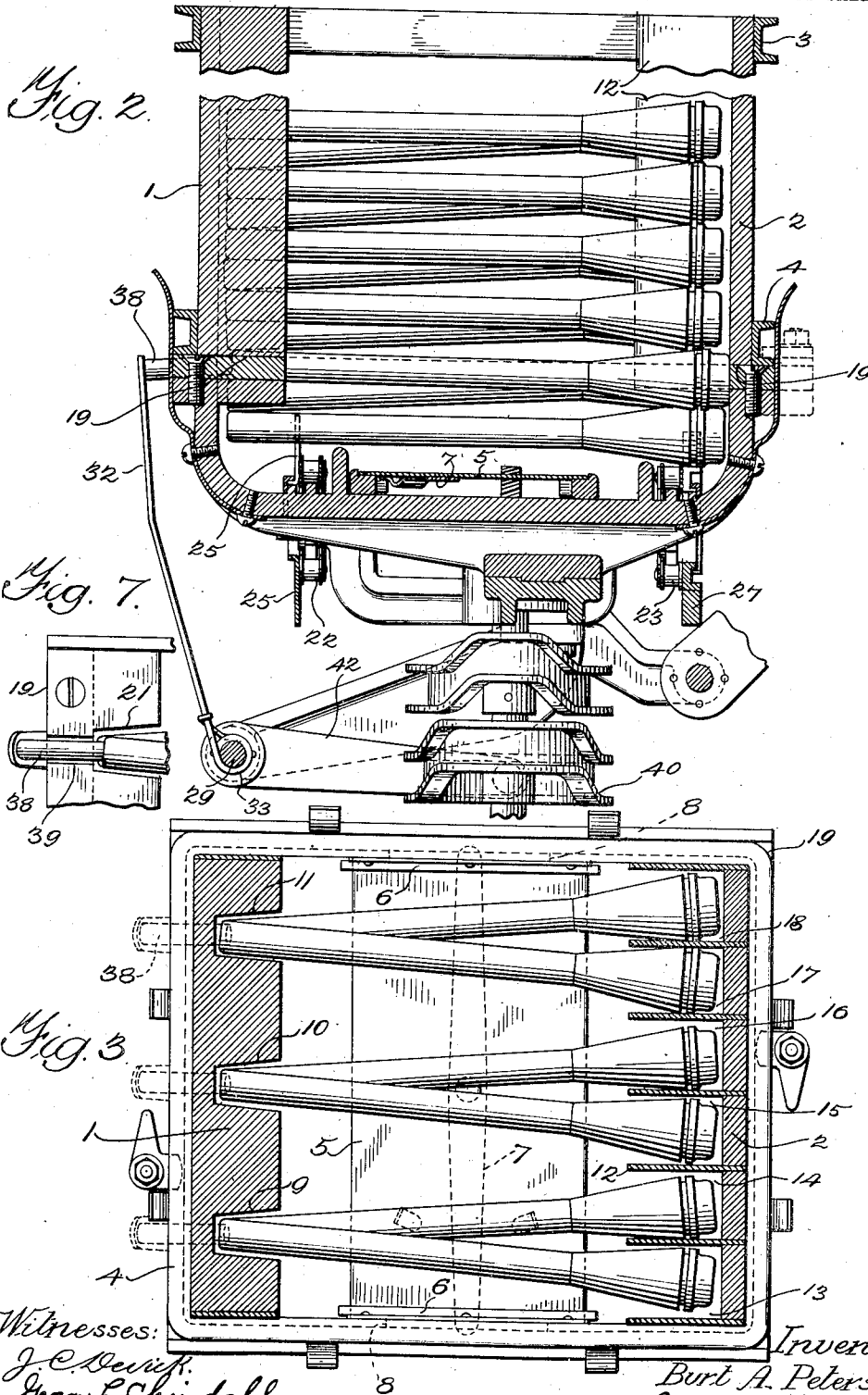
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2 SHEETS—SHEET 2.



Witnesses:
J. C. Dever
George R. Chindahl

Inventor:
Burt A. Peterson
By Luther R. Miller Atty.

UNITED STATES PATENT OFFICE.

BURT A. PETERSON, OF ROCKFORD, ILLINOIS, ASSIGNOR TO HOWARD D. COLMAN, LUTHER L. MILLER, AND HARRY A. SEVERSON, COPARTNERS DOING BUSINESS AT ROCKFORD, ILLINOIS, AS BARBER-COLMAN COMPANY.

DOFFER.

1,063,587.

Specification of Letters Patent.

Patented June 3, 1913.

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To all whom it may concern:

Be it known that I, BURT A. PETERSON, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Doffers, of which the following is a specification.

This invention relates to doffers, *i. e.*, machines for removing full bobbins from the spindles of spinning frames and replacing them with empty bobbins.

The object of the invention is to produce a bobbin magazine and bobbin feed for doffers, the magazine and bobbin feed herein shown being especially adapted to the form of bobbins known as "filling" bobbins.

In the accompanying drawings, Figure 1 is a fragmental side elevation of a bobbin magazine and a bobbin feed embodying the features of my invention. Fig. 2 is a fragmental vertical section through the magazine and bobbin feed. Fig. 3 is a horizontal sectional view through the magazine, showing it in position on the doffer. Figs. 4, 5 and 6 are views in a series showing consecutive stages in the movement of the bobbins from the magazine to the bobbin-feeding means. Fig. 7 is a fragmental top plan view of the seat upon which the magazine is supported when in place on the doffer.

The magazine comprises opposite side walls 1 and 2 united by rectangular top and bottom frames 3 and 4. It is provided with a removable bottom 5 adapted to fit between opposite sides of the lower frame 4 and against stop flanges 6 on said frame. A locking bar 7 is pivoted at its mid-portion upon the lower side of the bottom 5, the ends of said bar being adapted to enter slots 8 (Fig. 4) in the lower frame 4. It will be seen that the bottom 5 is insertible into and removable from the magazine by movement of the bottom in a vertical direction. The doffer may be provided with means for thus removing and replacing the bottom, but as this means is no part of the invention herein claimed, said means will not be described herein.

The butts of "filling" bobbins are considerably larger in diameter than the tips of such bobbins, therefore it will be seen that if filling bobbins are stacked one upon another with the tips extending in the same direction, the bobbins will depart more and

more from the horizontal position as the stack increases in height. In order to maintain approximate horizontality in the bobbins of a tier or stack, I place the bobbins so that the butts are arranged in two tiers, while the tips form a single tier; or, in other words, the butts of a pair of the bobbins will lie side by side, while the tip of one of said bobbins overlies the tip of the other bobbin. This is best shown in Fig. 4. The tips of the bobbins being approximately one-half the diameter of the butts, it will be seen that in such a double tier or column of bobbins the bobbins will be substantially horizontal. This advantageous arrangement of the bobbins in the magazine is an important feature of the invention.

In this instance the bobbins are arranged within the magazine in three double tiers or columns, the tips of all the bobbins extending in the same general direction. In the side wall 1 of the magazine are formed three grooves 9, 10 and 11, the width of each groove being substantially the same as the diameter of the tip of a bobbin. The opposite side of the magazine is divided by partitions 12 into six vertical butt-receiving spaces 13, 14, 15, 16, 17 and 18, each of said spaces being of uniform width from top to bottom. The width of each of these spaces is substantially the same as the diameter of the butt of a bobbin. As shown in Figs. 3 and 4 of the drawings, the tips of the bobbins whose butts lie in the spaces 13 and 14 are contained in the groove 9, and the tips of the bobbins alternate regularly in said groove; that is to say, the tip of the bobbin *a* underlies the tip of the bobbin *b*; the tip of the bobbin *c* underlies the tip of the bobbin *d*, etc.

The magazine is adapted to be placed upon a seat 19 and secured thereon in any suitable manner. At one side of said seat are short vertical partitions 20 which constitute continuations of the partitions 12 in the magazine. (See Fig. 5.) At the opposite side of the seat are grooves 21 (Fig. 7) which are alined with and form continuations of the grooves 9, 10 and 11.

When the doffer is in operation, the bobbins in the magazine rest upon a bobbin-feeding means located below the magazine, and constituting the bottom of the latter. Said bobbin-feeding means consists of a

conveyer formed of two endless chains 22 and 23 mounted upon sprocket wheels 24, said sprocket wheels being driven in any suitable manner. The chain 22 has fixed thereto lugs 25 adapted to form recesses 26 between them for the reception of the tips of the bobbins, while the chain 23 carries lugs 27 providing recesses 28 to receive the butts of the bobbins.

The conveyer removes the double tiers or columns of bobbins in succession; that is to say, the spaces 9, 13 and 14 are first emptied; spaces 10, 15 and 16 next, and finally spaces 11, 17 and 18.

When preparing to feed bobbins, the conveyer is positioned so that the lugs 25 and 27 occupy the position shown in Fig. 5 with relation to the magazine. The bottom 5 is then withdrawn downwardly, thereby permitting the bobbins to settle in the magazine until they rest upon the conveyer as shown in Fig. 5. It will be seen that the butts of the two lower bobbins *a* and *b* in each compartment rest upon the points of the lugs 27, that the tip of the bobbin *a* rests in the recess formed between the lugs 25 25^a opposite the lugs 27 27^a, and that the tip of the bobbin *b* rests upon the tip of the bobbin *a*. Now, when the conveyer is advanced, the points of the lugs 27 27^a will be moved out from under the bobbins *a* and *b*, thereby permitting the butts of said bobbins to drop into the recesses between the lugs 27 27^a and 27^b, and the tip of the bobbin *b* to enter the recess between the lugs 25^a and 25^b. The bobbins have now assumed the position shown in Fig. 6. It will be seen that in this position of the bobbins the butt of the bobbin *d* tends to drop onto the conveyer, whereas it is the bobbin *c* which should descend onto the conveyer, since its tip underlies the tip of the bobbin *d*.

In order to prevent the bobbin *d* and the succeeding bobbins of the right-hand side of the column (to wit, those in the space 13) from passing to the conveyer before the corresponding bobbins in the space 14 have taken their places in the conveyer, I provide the following described means: A rock shaft 29 is mounted in bearings 30 and 31 in the doffer frame. Three fingers 32 have hubs or sleeves 33 which are loosely mounted upon the shaft 29. Said hubs are held against movement longitudinally of the shaft in one direction by means of collars 34, and in the opposite direction by means of pins 35 fixed in said shaft and lying within notches 36 in said hubs. For each spring finger there is provided a torsion spring 37 which tends to swing the finger toward the magazine to the extent permitted by the engagement of the pin 35 with one wall of the notch 36. To the upper end of each of the fingers 32 is fixed a pin 38 which extends within an opening 39 formed in the seat 19 and is

adapted to bear against the tip of a bobbin lying within the adjacent groove 21 and press said bobbin against the opposite portion of the seat 19, and thus prevent said bobbin from descending onto the conveyer. The pin 38 is of such diameter that it does not enter the axial opening extending through the bobbin.

The shaft 29 is arranged to be rocked by any suitable means, as, for example, a cam 40 operating upon a roller stud 41 carried by an arm 42 fixed to said shaft. The pin 38 is yieldingly pressed against the bobbin by the spring 37.

In use, when the bottom 5 is lowered into the position shown in Fig. 2, all the bobbins in the magazine settle until the lowermost bobbins of all the columns rest upon the conveyer, as shown in Fig. 5. When the conveyer begins to move, these lowermost bobbins drop into their proper spaces in the conveyer, thus filling the latter. Thereafter, the column of bobbins contained in the spaces 9, 13 and 14 is the only one fed until that column is exhausted, when the next column (that in spaces 10, 15 and 16) is fed. While the first column is feeding, the finger 32 for that column detains the bobbins *d*, *f*, *h*, etc., and thus prevents said bobbins from dropping into the spaces intended for the bobbins *c*, *e*, *g*, etc.

I claim as my invention:

1. In a doffer, a magazine for filling bobbins provided with means forming two separate spaces for the butts of the bobbins and a single space for the tips of all the bobbins.

2. In a doffer, a magazine for filling bobbins comprising two opposite side walls, one of said walls having tip-receiving spaces therein, and the opposite side of the magazine having butt-receiving spaces, there being twice as many butt-receiving spaces as there are tip-receiving spaces, each butt-receiving space being only wide enough to receive a single bobbin-butt.

3. In a doffer, a bobbin magazine having a withdrawable closure for its lower end, a support for the lower end of said magazine, an endless conveyer beneath said magazine, said conveyer having a plane upper side on which the bobbins in the magazine rest when said closure is withdrawn, said closure being withdrawable below the upper side of said conveyer, and mechanism acting upon bobbins in the magazine to control their descent onto the conveyer.

4. In a doffer, a magazine, a support upon which said magazine rests, and a member movable through one side of said support into position to press against one end of a bobbin and press said bobbin against the opposite side of the support.

5. In a doffer, a magazine adapted to contain a vertical column of bobbins, an endless conveyer located beneath said magazine

and supporting the column, and operating transversely of the bobbins, and mechanism acting upon bobbins in the column to control their gravitational movement onto the conveyer.

6. In a doffer, a magazine adapted to contain a vertical column of bobbins, said magazine having a vertical groove therein to receive the tips of the bobbins, a support for the magazine containing a groove forming a continuation of the groove in the magazine, and a member movable into and out of engagement with a bobbin-tip in the second mentioned groove.

7. In a doffer, means for guiding bobbins for gravitational movement, an endless bobbin-moving conveyer below said guiding means, and means for controlling the descent of bobbins to said conveyer, said controlling means comprising a pivoted arm, a bobbin-engaging means carried by said arm, and means for swinging said arm to move said engaging means toward and away from the path of the bobbins.

8. In a doffer, means for guiding bobbins for gravitational movement, an endless bobbin-moving conveyer below said guiding

means, and means for controlling the descent of bobbins to said conveyer, said controlling means comprising a pivoted arm, a bobbin-engaging means carried by said arm, means tending to swing said arm toward the path of movement of the bobbins, and means for swinging said arm away from such path of movement.

9. In a doffer, a magazine adapted to contain a vertical column of bobbins, a support upon which the lower end of said magazine rests and to which said magazine is detachably connected, said magazine having a withdrawable closure for its lower end, an endless conveyer beneath the magazine and operable transversely of the bobbins, said closure being withdrawable below the upper side of the conveyer, and a member movable toward and away from a bobbin in the column and adapted to press against one end of the bobbin to prevent its discharge onto the conveyer.

BURT A. PETERSON.

Witnesses:

F. C. MITCHELL,
LOUISE A. CULVER.