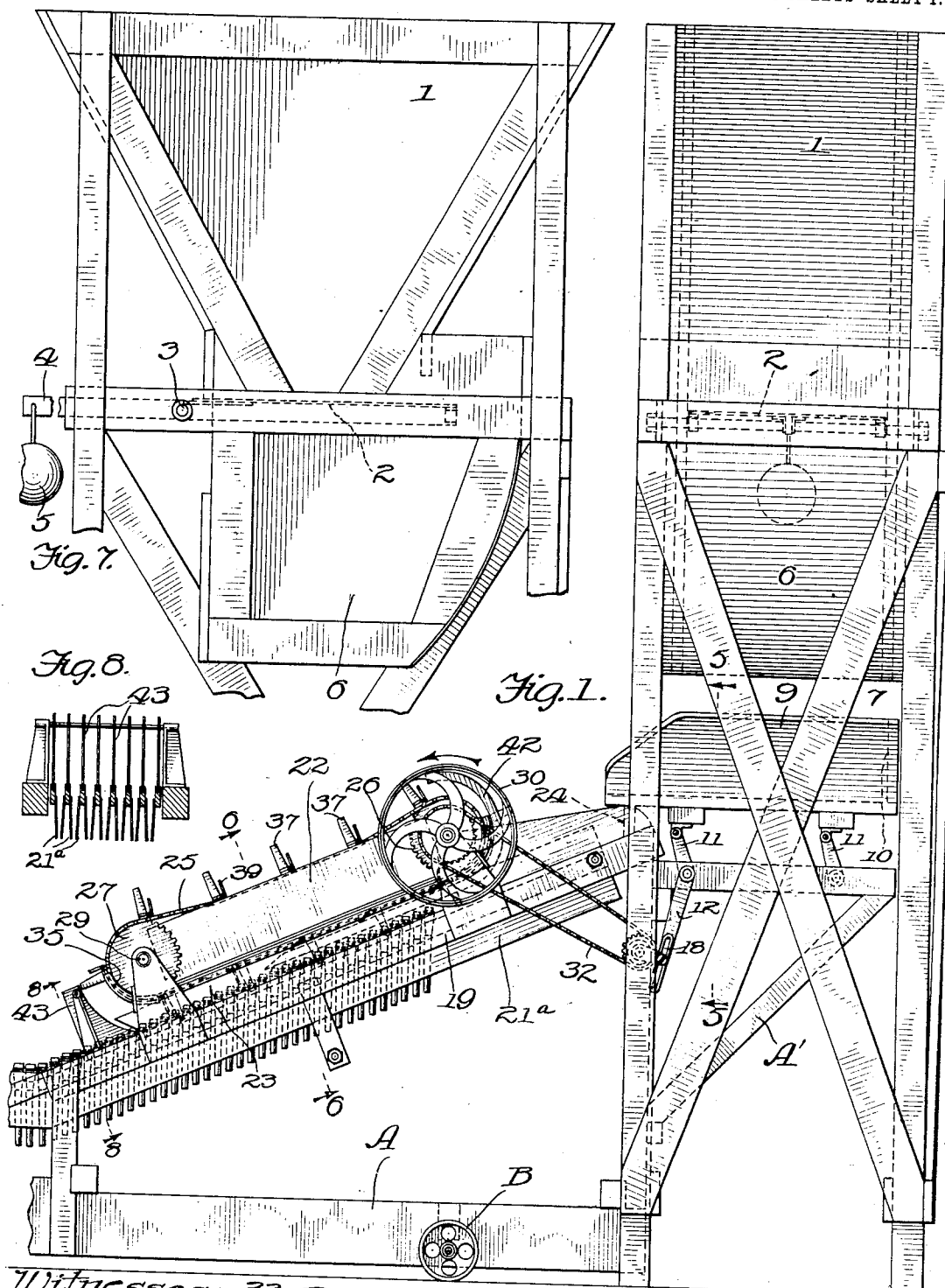


1,108,097.

Patented Aug. 18, 1914.

3 SHEETS—SHEET 1.



Witnesses: 33

J. E. Devick 39

George L. Chindall 41

Fig. 9. Inventor:

Burt A. Peterson

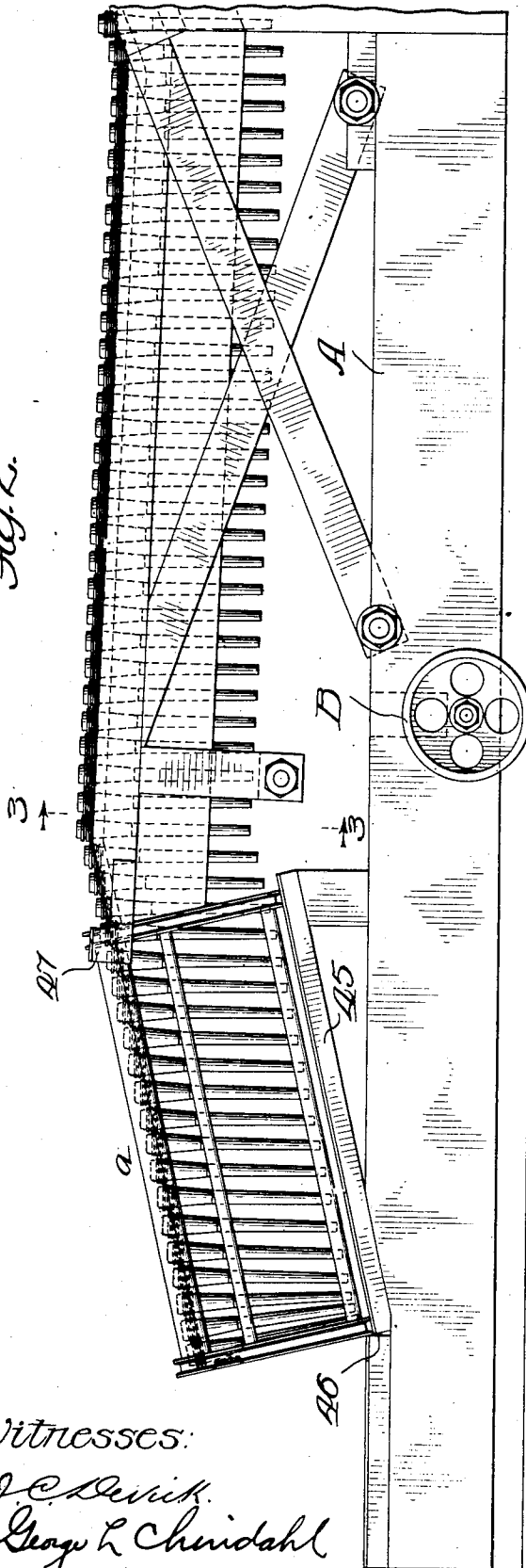
By Luther L. Miller
Att.

1,108,097.

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3 SHEETS-SHEET 2.

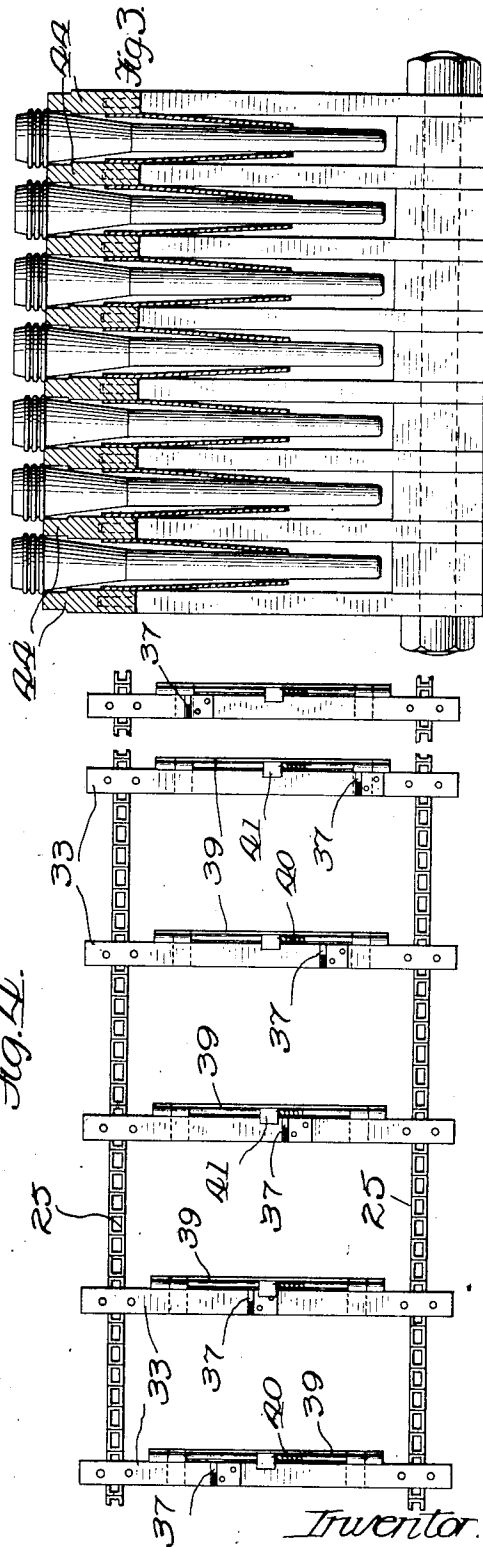
Fig. 2.



Witnesses:

J. C. Devick.
Georg L. Christdahl

Fig. 1.



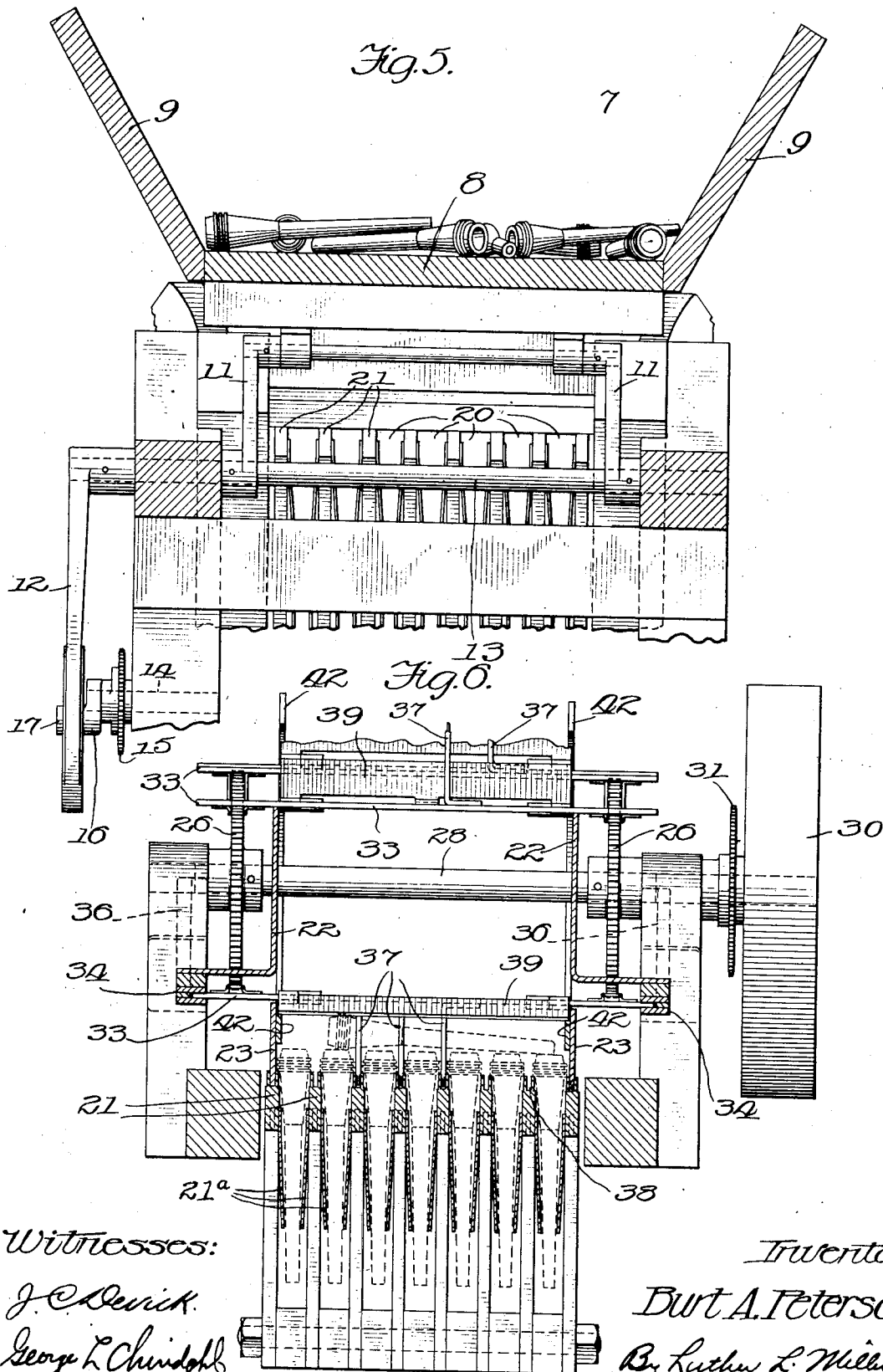
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B. A. PETERSON.
BOBBIN HANDLING APPARATUS.
APPLICATION FILED APR. 1, 1912.

1,108,097.

Patented Aug. 18, 1914.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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BOBBIN-HANDLING APPARATUS.

1,108,097.

Specification of Letters Patent.

Patented Aug. 18, 1914.

Application filed April 1, 1912. Serial No. 687,892.

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 Bobbin-Handling Apparatus, of which the following is a specification.

This invention relates to means for arranging a confused mass of bobbins into orderly series adapted for insertion into containers for various purposes, as, for example, the magazines used in connection with spinning-frame doffers.

In the accompanying drawings, Figures 1 and 2 together constitute a side elevation of an apparatus embodying the features of my invention, Fig. 2 being upon a larger scale than that employed in Fig. 1. Fig. 3 is a transverse sectional view taken in the plane of dotted line 3 3 of Fig. 2. Fig. 4 is a fragmental view of a bobbin-arranging device comprised in the apparatus. Fig. 5 is a section on line 5 5 of Fig. 1. Fig. 6 is a section on line 6 6 of Fig. 1. Fig. 7 is an elevation of a bin comprised in the present embodiment of the apparatus. Fig. 8 is a section on line 8 8 of Fig. 1. Fig. 9 is a fragmental sectional view illustrating the operation of certain parts of the mechanism.

The embodiment herein shown of the invention is especially designed to handle weft or filling bobbins, but it will be understood that the invention may be embodied in apparatus for handling other forms of bobbins.

For the purpose of illustrating the invention, the apparatus is shown as capable of arranging bobbins for reception in a doffer magazine, but it will be apparent that apparatus embodying the invention may be used in connection with magazines intended for various purposes. The magazine *a* herein shown is adapted to accommodate seven rows of bobbins, and hence the apparatus illustrated in the drawings is designed to arrange the bobbins in a like number of rows.

The illustrative apparatus herein disclosed comprises a framework *A* preferably mounted on rollers *B* so that it may be readily moved about the mill and placed in operative relation to any suitable supply

of bobbins. Herein shown is an elevated bin 1 into which the bobbins to be sorted are dumped. The lower end of said bin may be closed, as herein shown, by means of a trap-door 2 arranged to swing upon the axis 3, said door normally being held in closed position by means of a weighted arm 4. When it is desired to discharge bobbins from the bin 1 the operator swings the trap door 2 downward, or permits it to swing downward, in any convenient way, as by raising the weight 5, whereupon bobbins are discharged from the bin into a chute 6 located below said bin. By means of said chute the bobbins are directed into a hopper or jogger 7 which is mounted on a support *A'* forming a part of the framework *A*. Said hopper consists of a bottom 8, (Fig. 5), side walls 9 and an end wall 10, one end of the hopper being open. While said hopper or jogger may be constructed and arranged in any suitable manner, it is herein shown as supported upon four parallel arms 11 of equal length mounted in the framework of the apparatus. The hopper may be given a swinging or reciprocating movement in any preferred way, as, for example, by affixing an arm 12 to the shaft 13 (Fig. 5) that supports two of the arms 11. On a short shaft 14 fixed in the framework is rotatably mounted a sprocket wheel 15 having fixed thereto a crank arm 16, said arm having thereon a stud 17 lying within an elongated slot 18 (Fig. 1) in the arm 12. It will be seen that as the crank arm 16 is revolved, the arm 12 will be oscillated and the hopper 7 jogged or reciprocated.

In the reciprocation of the hopper 7, bobbins are discharged from its forward or open end onto a downwardly inclined structure 19 having longitudinal downwardly-extending slots 20 therein (Fig. 5). These slots are of greater width than the diameter of the tips of the bobbins, but of less width than the greatest diameter of the bobbins. Thus it will be seen that the bobbins may hang in said slots with their butts supported upon the edge walls of said slots, as indicated in the drawings. Herein I have shown the slotted structure as formed of a plurality of parallel rails 21 spaced apart as indicated above, these rails being rigidly secured in parallel spaced relation. The space above

the rails 21 is bounded at its sides by side plates 22 and 23 (Fig. 6). Below the rails 21 are partition plates 21^a which serve to prevent sidewise movement of the bobbins.

5 The upper part of the structure 19 extends beneath the discharge end of the hopper 7, and, if desired, may be there provided with a cross piece 24. When the bobbins drop from the hopper 7 onto the slotted structure 19 they commence rolling or sliding

10 down said structure, and in so doing, the majority of the bobbins come into alinement with the slots, whereupon they swing downwardly into said slots into the position

15 shown in Fig. 1. To assist in alining the bobbins with said slots, there may be provided suitable means, as, for example, that shown in Figs. 1, 4, and 6. Said means consists of two endless sprocket chains 25 carried

20 by sprocket wheels 26 and 27, the sprocket wheels 26 being fixed upon a shaft 28 (Fig. 6) and the sprocket wheels 27 being mounted upon a shaft 29. The shaft 28 may be rotated by suitable means, such as a belt

25 (not shown) running over a pulley 30 fixed on said shaft. A sprocket wheel 31 on the shaft 28 carries a chain 32 which runs over the sprocket wheel 15. To the chains 25 are fixed cross bars 33. The lower side or run

30 of the chains is guided to move parallel with the face of the slotted inclined structure 19 by means of grooved guides 34 fixed in the framework, into which guides the ends of the cross bars extend. The entrance

35 and exit ends of said guides are turned upwardly, as indicated at 35 and 36 in Figs. 1 and 6. As shown in said figures, the bars 33 move at such a height as to clear a bobbin which may be lying upon the properly arranged bobbins.

On the cross bars 33 are mounted fingers for raking the bobbins to thus assist in alining them with the slots. These fingers may be of any suitable form and may be mounted

45 upon the bars 33 in any preferred manner. Herein I have shown one finger 37 fixed upon each cross bar, the fingers being arranged in echelon as clearly shown in Fig. 4. As the fingers 37 travel upwardly

50 they come in contact with any bobbins which may be rolling or sliding down the inclined structure 19, and thereby turn such bobbins into alinement with the slots, whereupon the bobbins swing downwardly into the desired position in the slots. Preferably the

55 fingers are held against sidewise displacement by forming slots 38 (Fig. 6) in the rails 21, into which slots the fingers 37 extend. As shown in Fig. 6 the fingers 37 travel in the spaces between the rows of properly positioned bobbins.

If desired, means may be provided for preventing the bobbins from rolling or sliding down the inclined structure so far that

65 the fingers 37 are unable to aline them. For

this purpose I have provided a plurality of guard plates 39, one of said plates being hinged to each of the cross-bars 33. A spring 40 (Fig. 4) tends to hold each plate 39 in operative position, this position being determined by the contact of a stop 41 (Fig. 9) on the plate with the side of the cross bar. As the guard plates 39 move upwardly, they arrest any unalined bobbins which otherwise would roll or slide too far

75 down the inclined structure. In order that the guard plates 39 shall not interfere with the operation of alining the bobbins, I provide means to swing said plates upwardly after they have passed the point where they are needed, which means consists, in this instance, of two rails 42 fixed to the inner sides of the side plates 23, the lower ends of said rails being inclined to permit said

80 plates to ride up easily on said rails. The upper end portions of the rails 42 are curved upon the arc of a circle concentric with the shaft 28 in order to retain the guard plates 39 in inoperative position, and thereby obviate the possibility of bobbins discharged

90 from the hopper 7 fouling on said guard plates. The extreme upper ends of the rails are curved so as to allow the guard plates gradually to assume their operative position. Near the lower end of the inclined

95 slotted structure 19 there may be provided, if desired, a plurality of plates 43 which serve to stop any bobbin which might reach the lower end of said structure without entering one of the slots. At the lower end of

100 the inclined slotted structure 19 the slots are continued between rails 44 (Fig. 3), said rails being inclined upwardly sufficiently to prevent the weight of the bobbins on the inclined structure 19 from pushing bobbins

105 off the rails 44.

In order to facilitate the introduction of bobbins into the magazine, the latter is preferably supported in an inclined position, as, for example, upon a table 45, the lower end

11 of the magazine resting against a stop 46 and the upper end of the magazine being caused to register with the end of the rails 44 by means of positioning stops 47 secured to the outer rails 44. The forward ends of

11 said rails are downwardly inclined at an angle corresponding substantially with the angle of inclination of the magazine.

In operation, bobbins are discharged from the bin 1 into the hopper 7, whence they pass

12 onto the inclined structure 19. Here they become alined with and enter the slots 20 and slide down the rails 21 onto the rails 44. As sorted bobbins accumulate in the inclined structure, their weight causes the bobbins on

1 the rails 44 to advance along said rails. When a sufficient quantity of bobbins has accumulated on the rails 44, the operator pushes the bobbins into a magazine previously placed on the support 45. The op-

eration of pushing bobbins into the magazine may be performed manually in any convenient way, as by taking a bar and placing it behind the butts of a sufficient number of bobbins and pushing them forward as a body in the magazine. When the magazine has been filled, it is removed and another put in its place.

It will be seen that this apparatus is capable of operating upon a confused mass of bobbins to place their tips extending in the same direction, to arrange the bobbins into a plurality of parallel rows, and to place such rows in a position convenient for insertion of the bobbins in a magazine.

While in the present embodiment gravity is employed to move the bobbins along the slotted structure, it is evident that other means might be employed and that various other changes might be made in the construction and arrangement of the apparatus herein shown without departing from the spirit of the invention.

I claim as my invention:

1. In bobbin-handling apparatus, in combination, a longitudinally-slotted structure along which bobbins may move; and means operating in a direction opposite to the direction of movement of the bobbins for alining the bobbins with a slot in said structure.

2. In bobbin-handling apparatus, in combination, a longitudinally-slotted structure along which bobbins may move; endless chain means arranged to move along and above said structure in a direction opposite to that taken by the bobbins; and fingers carried by said endless chain means arranged to move among the bobbins and aline them with the slots.

3. In bobbin-handling apparatus, in combination, a longitudinally-slotted structure along which bobbins may move; two endless parallel chains supported for movement along said structure; cross-bars connecting said chains; and fingers on the cross-bars arranged, in the movement of the chains, to pass among bobbins lying on said structure, and aline the bobbins with the slots, said fingers moving among the bobbins in the direction opposite to the direction of movement of the bobbins.

4. In bobbin-handling apparatus, in combination, a downwardly-inclined longitudinally-slotted structure down which bobbins may move; and means operating in a direction opposite to the direction of movement of the bobbins for alining the bobbins with the slots.

5. In bobbin-handling apparatus, in combination, an inclined longitudinally-slotted structure; and means for raking the bobbins into alinement with a slot in said structure.

6. In bobbin-handling apparatus, in combination, an inclined longitudinally-slotted

structure down which bobbins may move; and devices for raking the bobbins into alinement with a slot in said structure and for limiting the downward movement of unalined bobbins.

7. In bobbin-handling apparatus, in combination, a longitudinally-slotted structure along which bobbins may move; and means moving longitudinally of said structure for raking the bobbins into alinement with a slot in said structure.

8. In bobbin-handling apparatus, in combination, an inclined longitudinally-slotted structure down which bobbins may move; an endless series of traveling devices for alining the bobbins with a slot in said structure; and means associated with said series for limiting the downward movement of unalined bobbins.

9. In bobbin-handling apparatus, in combination, a downwardly-inclined longitudinally-slotted structure down which bobbins may move; two endless parallel chains supported for movement along said structure; cross-bars connecting said chains; fingers on the cross-bars for raking the bobbins into alinement with the slots; and guards carried by the cross bars arranged to arrest the downward movement of unalined bobbins.

10. In bobbin-handling apparatus, in combination, a downwardly-inclined longitudinally-slotted structure down which bobbins may move; two endless parallel chains supported for movement along said structure; cross bars connecting said chains; means on the cross bars for alining the bobbins with the slots; guards on the cross bars for arresting the downward movement of unalined bobbins; and means actuated in the movement of the chains for withdrawing the guards from operative position.

11. In bobbin-handling apparatus, in combination, a longitudinally-slotted structure along which bobbins may move; two endless parallel chains supported for movement along said structure; means carried by said chains for alining the bobbins with the slots; pivoted guard plates carried by said chains for limiting the downward movement of unalined bobbins; and means operating in the movement of the chains to swing the guard plates out of operative position.

12. In bobbin-handling apparatus, in combination, a downwardly-inclined longitudinally-slotted structure down which bobbins may move; and fingers operating longitudinally of a slot in said structure and above said structure for raking the bobbins into alinement with the slot.

13. In bobbin-handling apparatus, in combination, a downwardly-inclined longitudinally-slotted structure down which bobbins may move; a series of guards to arrest the downward movement of bobbins which are not alined with the slots; and means for

moving the guards upwardly along said structure.

14. In bobbin-handling apparatus, in combination, a downwardly-inclined longitudinally-slotted structure down which bobbins may move; a series of guards to arrest the downward movement of bobbins which are not alined with the slots; means for moving the guards upwardly along said structure; and means to withdraw the guards from operative position at a certain point in their upward movement.

15. In bobbin-handling apparatus, in combination, a downwardly-inclined longitudinally-slotted structure down which bobbins may move; endless chain means arranged to move upwardly and longitudinally of the structure; and bobbin-raking fingers mounted in echelon on said chain means.

16. In bobbin-handling apparatus, in combination, a plurality of spaced rails providing bobbin-receiving slots, certain of said rails being longitudinally grooved in their

upper edges; and bobbin-raking fingers arranged to move above and longitudinally of said rails, the lower ends of said fingers traveling in said grooves.

17. In bobbin-handling apparatus, in combination, a downwardly-inclined longitudinally-slotted bobbin-sorting structure; a structure tilted slightly upwardly and connected at its lower end to the lower end of the inclined structure and having bobbin-receiving slots communicating with the slots of the inclined structure; a table adapted to support a magazine with the receiving end of the magazine in register with the discharge end of the second mentioned structure; and a stop to hold a magazine in place on said table.

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

BURT A. PETERSON.

Witnesses:

W. C. FROHNING,

LOUISE A. CULVER.