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BOBBIN CAN FOR WEFT REPLENISHING LOOMS

Filed May 27, 1944

2 Sheets-Sheet 1

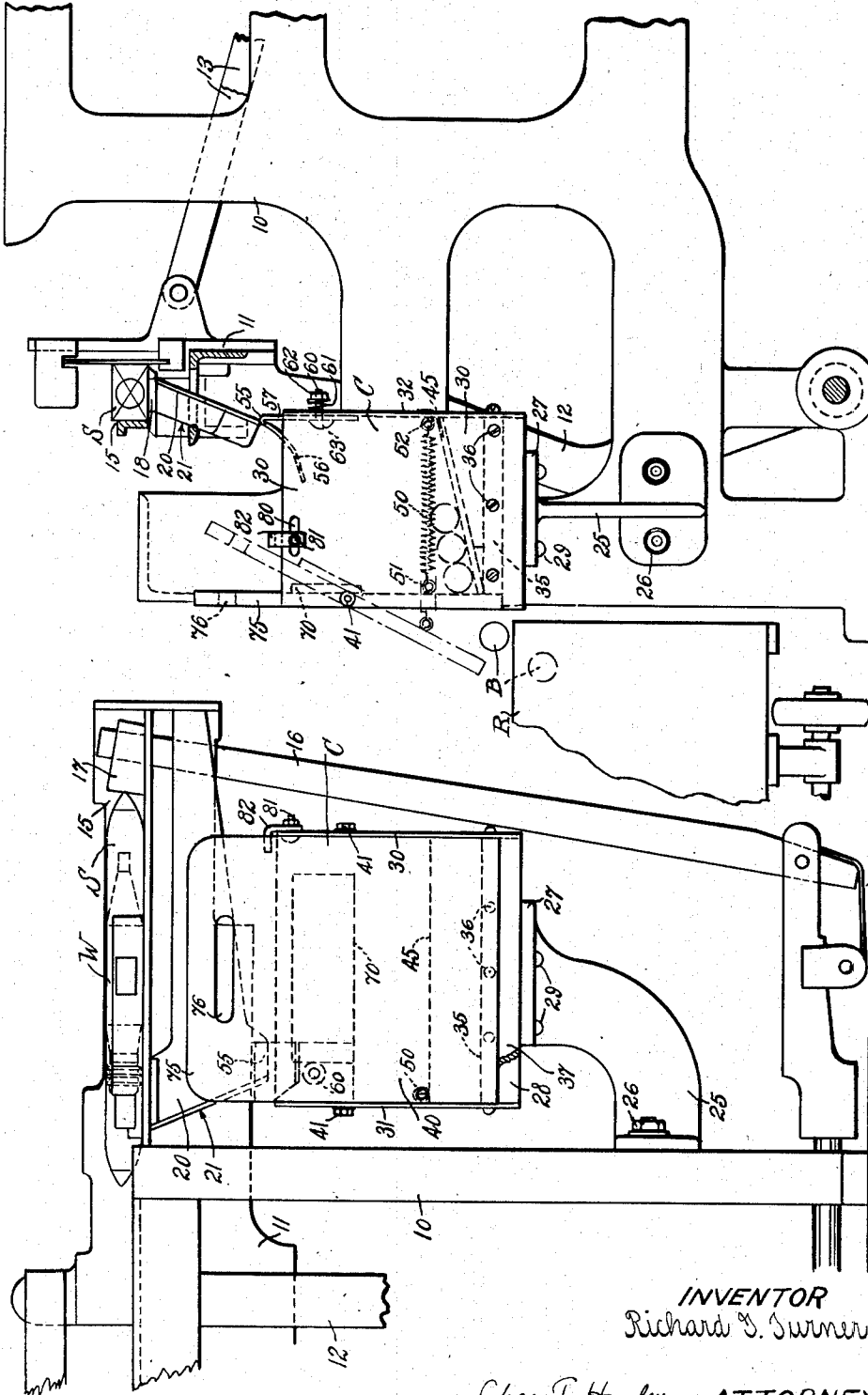


FIG. 2

FIG. 1

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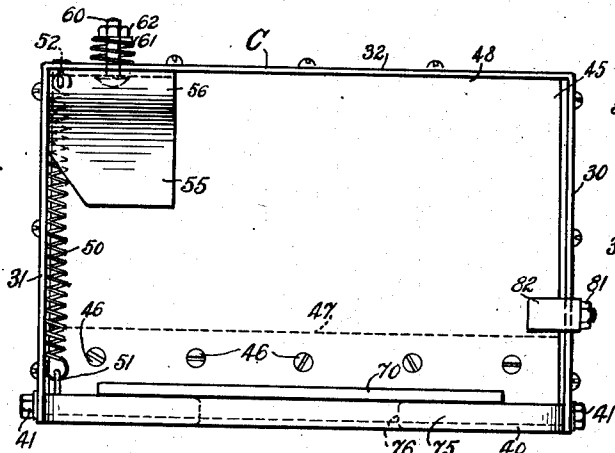


FIG. 5

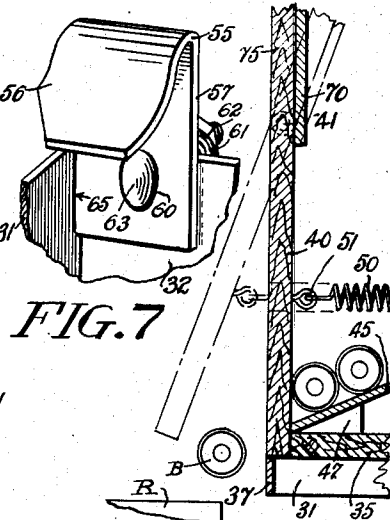


FIG. 6

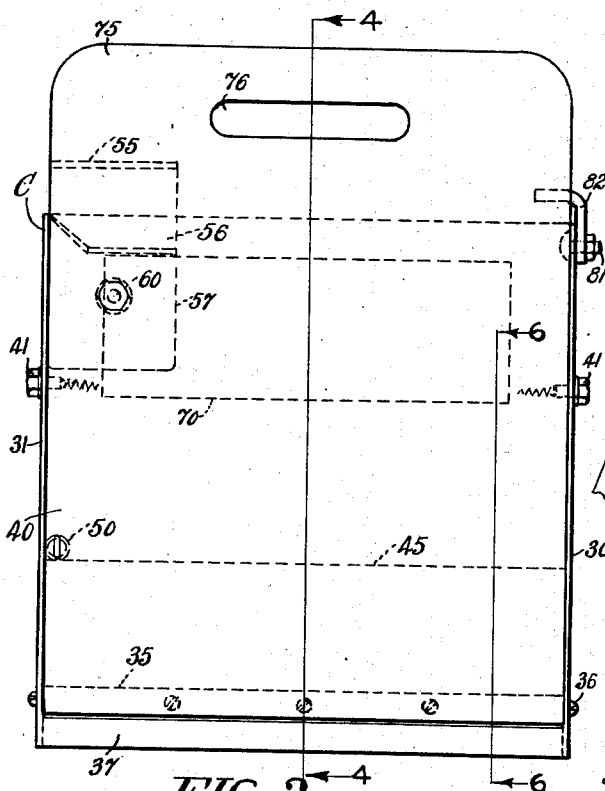


FIG. 3

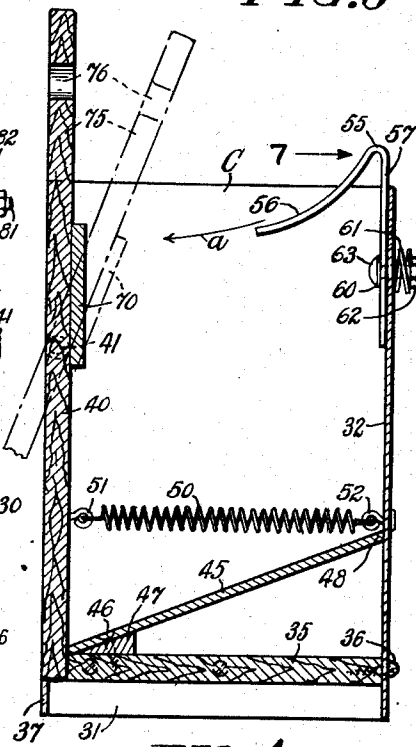


FIG. 4

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BOBBIN CAN FOR WEFT REPLENISHING
LOOMS

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Application May 27, 1944, Serial No. 537,600

14 Claims. (Cl. 139—255)

This invention relates to improvements in receivers for the expelled bobbins of weft replenishing looms and it is the general object of the invention to provide such a receiver or can so constructed as to facilitate removal of the bobbins which accumulate in the receiver.

In weft replenishing looms the depleted bobbin is ordinarily expelled downwardly from the lay into a receiver or can supported either on the floor or some fixed part of the loom. It is customary practice to make the bobbin cans as deep as possible so that they can hold a large number of exhausted bobbins, but with this construction the emptying of the can or receiver is laborious. It is an important object of my present invention to provide a bobbin can or receiver having an inclined floor and a manually closed door on the front thereof to hold the expelled bobbin in the can, but movable forwardly so that bobbins can slide down the inclined floor into a portable carrier.

Weft replenishing looms customarily have bobbin chutes on their lays constructed to direct the outgoing bobbins into the bobbin can. With the present tendency to high speed operation of looms it is desirable to take as much weight as possible off the lay, and with this thought in mind it is a further object of my present invention to mount part at least of the bobbin chute on the can and provide it with a downwardly and forwardly curved surface which will direct the outgoing bobbins toward the front wall of the bobbin can. By this arrangement the expelled bobbin can then fall on the other bobbins in the can without damaging the latter, somewhat in the manner set forth in my copending application Serial No. 523,996, filed February 26, 1944. In this connection the bobbin chute is so located that it causes the outgoing bobbin to strike the previously mentioned door above its pivot so that the bobbin will exert no force tending to open it at the time of a replenishing operation.

It is another object of my present invention to provide the door with an upward extension having a hand hold so located that when the can is removed from the loom its weight will tend to hold the door closed and prevent accidental discharge of the bobbins in the can.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth.

In the accompanying drawings, wherein a convenient embodiment of my invention is set forth,

Fig. 1 is a front elevation of the replenishing

end of a weft replenishing loom having my improved bobbin can applied thereto,

Fig. 2 is a side elevation looking from the right of Fig. 1,

Fig. 3 is an enlarged front elevation of the bobbin can,

Fig. 4 is a vertical section on line 4—4 of Fig. 3 showing the door in full lines in normal position and in dot and dash lines in bobbin discharging position,

Fig. 5 is a plan view of the bobbin can shown in Fig. 3,

Fig. 6 is a detail vertical section on line 6—6, Fig. 3, showing the manner of discharging bobbins from the can, and

Fig. 7 is a perspective view showing the bobbin chute and its relation to the back and side walls of the bobbin can, and looking generally in the direction of arrow 7, Fig. 4.

Referring particularly to Figs. 1 and 2, I have shown a loom frame 10 having a lay 11 mounted on swords 12, one of which is shown in Fig. 1, for backward and forward swinging when driven by its connectors 13. The lay has a shuttle box 15 to hold a shuttle S containing bobbin W, and the usual form of picker stick 16 having a picker 17 for engagement with the shuttle may be employed. The box 15 has an open bottom 18 through which an exhausted or empty bobbin may be expelled downwardly during a replenishing operation when renewal of weft in the shuttle S is required.

The lay has secured thereto a downwardly extending bobbin guide 20 under the opening 18 to assist in directing the outgoing bobbin along a forwardly and downwardly inclined path. This guide may be provided with a side wall 21 for engagement with the butt of the bobbin to move the latter and the bobbin to the right as viewed in Fig. 1 during its downward movement.

The matter thus far described may be of common construction and of itself forms no part of my present invention. Well-known mechanism operates to detect the condition of weft on the bobbin in the shuttle and other well-known devices act to push a full bobbin into the shuttle and at the same time expel the exhausted bobbin out of the shuttle during a replenishing operation.

In carrying my present invention into effect I provide an improved can or receiver for the expelled bobbins as they move downwardly from the guide 20. Accordingly, I provide a stand 25 bolted as at 26 to the loom frame 10 and having a horizontal platform 27 to which is secured a

plate or block 28. The latter may conveniently be made of wood and attached at 29 to the platform.

The bobbin can or receiver designated generally at C may be made of light sheet metal and has right and left side walls 30 and 31, see Figs. 1 and 3, which are connected by a rear or back wall 32 extending substantially vertically as shown in Fig. 4. The can is provided with a bottom plate 35 which may be formed of wood and held to the sides and back as by wood screws 36. The plate 35 is above the bottom of the sides and back so that the latter may project downwardly around the block 28. A front guard 37 may extend across the lower part of the can below the level of the plate 35 to engage the front of the block 28 and cooperate with the depending sides and back of the can to hold the latter in fixed position on the support 25 during normal loom operation.

The front of the bobbin can is formed as a pivoted wall or door 40 and may extend between the side walls 30 and 31 as suggested in Fig. 5 and be hinged to or have pivotal connection with said walls, as at 41. The front wall or door 40 is preferably made of wood and the pivotal connections 41 may take the form of bolts or screws passing through the side walls and into the member 40. The pivoted or hinged connection between the front wall and the side walls provided by the bolts 41 is located a considerable distance above the bottom 35 but is nevertheless spaced below the top of the can.

A false bottom 45 is inclined downwardly and forwardly and extends between the side walls and forwardly from the back wall 32. This false bottom may be made of any convenient thin sheet material and has its forward end secured to the plate 35 as by screws 46 passing through a wedge shaped strip 47 extending across the front edge of the plate 35. The false bottom is chosen of such width that it will engage the back wall 32 as indicated in Fig. 4 so that support for its rear end or edge 48 is not necessary.

As shown in Fig. 4 the bottom of the door or front wall 40 extends down in front of the bottom plate 35 and is held in that position by a tension spring 50 extending backwardly and forwardly close to wall 31 and connected as at 51 to the door below the hinge or pivotal connection 41 and connected to the back wall 32 as at 52. Spring 50 normally holds the door or front wall in the position shown in Fig. 4 and the bottom plate 35 serves as a stop to hold the front wall in normal vertical position. The spring is amply strong to prevent a full complement of bobbins in the can from opening the door by their weight.

The rear wall 32 is provided with a bobbin guiding or directing member 55 shown more particularly in Figs. 2, 4, 5 and 7. This member is made preferably of sheet metal and has a bobbin guiding forward part or chute 56 which is curved downwardly and forwardly as set forth in Fig. 4. The front end of the chute is located in the bobbin can, while its rear part projects above the can and is then bent down to form a vertical flat plate 57 extending along the inside of the wall 32, as suggested for instance in Fig. 7. In order to provide a resilient connection between the chute 56 and the can, a bolt 60 is passed through the plate 57 and the back wall 32 and is surrounded by a compression spring 61 located between the back wall and a nut 62 on the back of the bolt. The bolt head 63 engages the front of the plate 57 and cooperates with the spring

to provide holding means to maintain the chute in the normal position shown in Figs. 4 and 7.

It will be noted particularly in Fig. 7 that the bolt is located intermediate the bottom of the plate 57 and the top of wall 31, and that the left edge 65 of the plate 57 extends along the corner formed by side wall 31 and back wall 32, thus positioning the latter and making it possible to hold the chute in correct operating position by a single bolt 60.

The rear part of the front wall is provided with a cushion 70 made of shock absorbing material such as felt and located in the path of a bobbin leaving the forward edge of the chute 56. It will be noted particularly in Fig. 4 that the out-going bobbin will move along a path such as that designated at arrow *a* and will exert its force on that part of the door above the pivotal connection 41. The expelled bobbin therefore has no tendency to open the door or wall incident to a transfer operation.

The top part 75 of the door 40 extends preferably above the side walls and has a horizontal slot 76 therein affording a hand hold which is above that part of the wall 40 in the path of the expelled bobbin. If a transfer operation should occur while the door is being manipulated, therefore, the operator's hand will not be struck by the bobbin.

In order to protect the operator from injury by the lay I may employ a stop to limit rearward movement of the upper end of the wall or door 40. Thus, as shown in Figs. 2 and 3, the upper end of the side wall 30 is provided with a horizontal slot 80 through which extends a bolt 81 holding a stop clip 82 in fixed adjusted horizontal position with respect to the side wall. This clip is in position to engage the right side of the wall 40 and limit angular movement of the latter, as suggested for instance in Fig. 2. The stop clip is so located that the bottom of the wall 40 can swing open far enough to permit the bobbins to move out of the bobbin can.

In operation, the bobbin can is held on the support 25 and an expelled bobbin moves down the lay carried guide 21 and then strikes the downwardly and forwardly inclined chute 56 and is directed by the latter toward the shock absorbing cushion 70. The bobbin then falls to the bottom of the can, having spent its force against the front wall 40. When a considerable number of bobbins have accumulated in the can a portable receptacle R may be moved to receiving position in front of the can, and the upper part of the front wall moved rearwardly to the dot and dash line positions shown in Figs. 2, 4 and 6. Because of the inclination of the false bottom 45 the bobbins B will slide off the floor 45 into the receptacle R. This operation may safely be carried on while the loom is running and without affecting the operation of the chute 56. During pivotal movement of the door or front wall the upper part of the latter above the hinge 41 will remain in position to be engaged by an outgoing bobbin.

From the foregoing it will be seen that I have provided an improved form of web replenishing loom bobbin can having a front wall which is pivoted intermediate its upper and lower ends and is swingable so that the bottom thereof may move away from the inclined false bottom 45 to permit accumulated bobbins to move into a receptacle R. It will also be seen that the upper end of the wall is provided with a hand hold 76 by means of which the front wall or door

can be swung pivotally against the action of spring 50. This hand hold also affords means for lifting the can C from the support 25, at which time the weight of the can, being behind the front wall 40, holds the bottom of the latter against the bottom plate 35. The operator may therefore safely carry the can by means of the hand hold in the upper end of the wall 40. It will also be seen that the chute 56 is so located that it directs the outgoing bobbins toward a part of the front wall which is above the hinge or pivotal connection 41 but below the hand hold. Furthermore, the spring 61 permits forward movement of the chute 56 relatively to the can should the chute be engaged by a misplaced bobbin or picker stick. Also, as seen more clearly in Fig. 7, the relation between the side edge 65 of the plate 57 and the corner defined by side wall 31 and back 32 is such that a single securing bolt 60 will hold the chute 56 in proper position for operation.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a weft replenishing loom in which a bobbin expelled during a replenishing operation moves downwardly from the lay, a bobbin can below the lay and having front and back walls, a downwardly and forwardly curved bobbin chute in the path of the expelled bobbin extending from the back wall forwardly in the can toward the front wall and projecting above the can, and a resilient connection between the chute and back wall of the can normally holding said chute in position to direct the expelled bobbin toward the front wall of the can, said connection yieldable in a direction to engage the chute to move from the back wall toward the front wall of the can.

2. In a weft replenishing loom in which a bobbin expelled during a replenishing operation moves downwardly from the lay, a bobbin can below the lay and having front and back walls, a bobbin directing member having a downwardly and forwardly curved bobbin chute and an attaching plate behind the chute, and means to connect the plate to the back wall in such position as to locate the chute in the path of the expelled bobbin with the forward end thereof in front of the back wall and below the top of the can to direct the expelled bobbin toward the front wall of the can.

3. In a weft replenishing loom in which a bobbin expelled during a replenishing operation moves downwardly from the lay, a bobbin can below the lay and having front and back walls, a bobbin directing member having a downwardly and forwardly curved bobbin chute extending forwardly in the can from the back wall, an attaching plate behind the chute depending from the upper rear end of the latter, and connections between said plate and the back wall normally holding the chute in the path of the expelled bobbin.

4. In a weft replenishing loom in which a bobbin expelled during a replenishing operation moves downwardly from the lay, a bobbin can below the lay and having front and back walls, a bobbin directing member having a downwardly and forwardly curved bobbin chute in the can and an attaching plate secured to the chute and extending along the back wall of the can, and resilient means normally holding said plate

against said back wall to locate said chute in the path of the expelled bobbin to direct the latter toward the front wall, said means yielding to permit the chute and plate to move forwardly.

5. In a weft replenishing loom in which a bobbin expelled during a replenishing operation moves downwardly from the lay, a bobbin can below the lay and having front and back walls, and a side wall forming a rear vertical corner with the back wall, a bobbin directing member having a downwardly and forwardly curved bobbin chute and a vertical plate extending along said corner, and holding means passing through the plate and back wall at a level between the top and bottom of said plate and holding the chute in the path of the expelled bobbin.

6. A bobbin directing member for a weft replenishing loom bobbin can having a back wall, said member having a downwardly and forwardly curved bobbin chute and a plate connected to the chute behind the latter and having provision for attachment to the back wall of the bobbin can.

7. In a bobbin can for a weft replenishing loom, the can having side and back walls, a floor extending between the side walls and inclined downwardly and forwardly from the back wall, a front wall pivoted to said can above said floor, and resilient means supported by the can and connected to the front wall normally holding the lower end thereof against said floor, said front wall swingable relatively to the can against the action of said resilient means in a direction to move the bottom of the front wall away from said floor.

8. In a bobbin can for a weft replenishing loom, the can having side and back walls, a floor extending between the side walls and inclined downwardly and forwardly from the back wall, a front door hinged to the side walls above said floor and movable away from said floor, and resilient means sufficiently strong to withstand the force of a full complement of bobbins in said can tending to move down said floor and normally holding the door against said floor.

9. In a bobbin can for a weft replenishing loom, the can having side and back walls, a floor extending between the side walls and inclined downwardly and forwardly from the back wall, a front door hinged to the side walls above said floor and movable away from said floor, resilient means normally holding the bottom of the door against said floor, and a hand hold on the upper part of the door for manually opening the latter against the action of said resilient means.

10. In a bobbin can for a weft replenishing loom, said can having side and back walls, a floor extending between the side walls and inclined downwardly and forwardly from the back wall, a front door for the can extending vertically and from one side wall to the other, pivotal support means on the can for the door between the top and bottom of the latter, means normally holding the door closed, and a hand hold on the door above the pivotal support for swinging the top thereof rearwardly and the bottom thereof forwardly away from said floor.

11. In a bobbin can for a weft replenishing loom, said can having side and back walls, a floor extending between the side walls and inclined downwardly and forwardly from the back wall, a front door for the can extending vertically and from one side wall to the other, pivotal support means on the can for the door between the top and bottom of the latter, means normally holding

the door closed, and a bobbin chute positioned to direct an expelled bobbin toward a point on said door above the pivotal support.

12. In a bobbin can for a weft replenishing loom, said can having side and back walls, a floor extending between the side walls and inclined downwardly and forwardly from the back wall, a front door for the can extending vertically and from one side wall to the other, pivotal support means on the can for the door between the top and bottom of the latter, means normally holding the door closed, a hand hold on the door above the pivotal support for swinging the top thereof rearwardly and the bottom thereof forwardly away from said floor, and a bobbin chute positioned to direct an expelled bobbin toward a point on said door between the pivotal support and said hand hold.

13. In a bobbin can for a weft replenishing loom, said can having side and back walls and a

3 floor, a front door pivoted between the top and bottom thereof to the side walls, and a hand hold on the upper part of the door for manual lifting of the can, the can due to the weight thereof when supported by the hand hold to maintain the bottom of the door in closed position.

14. In a bobbin can for a weft replenishing loom, said can having side and back walls and a floor, a front door extending across the front of the can, pivotal connections between the can and the door located between the top and bottom of the latter, and a hand hold on the door above said pivotal connections for manual support of the can, the weight of the can holding the bottom of the door in closed position relatively to the can when the latter is supported by the hand hold.

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