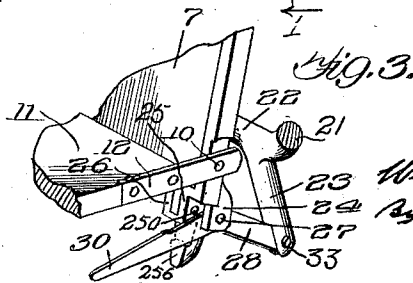
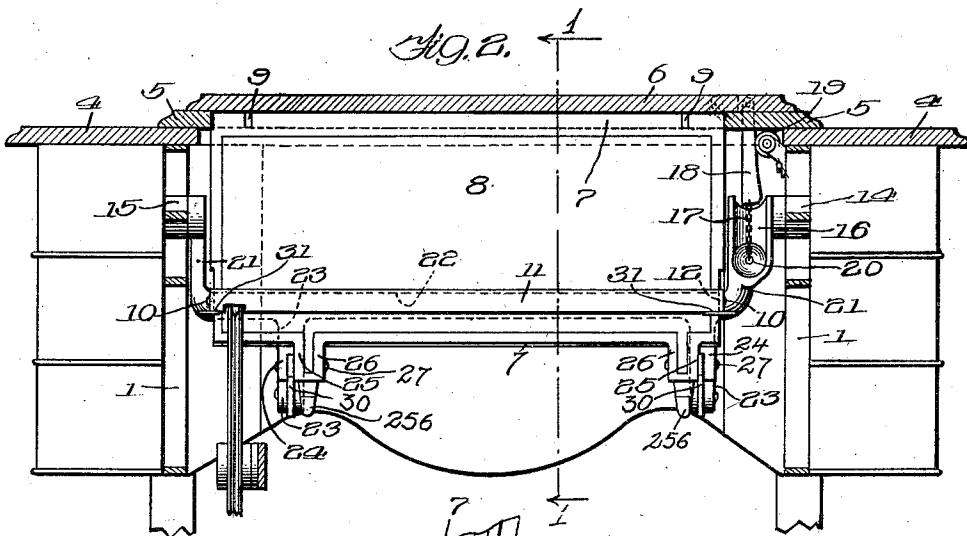
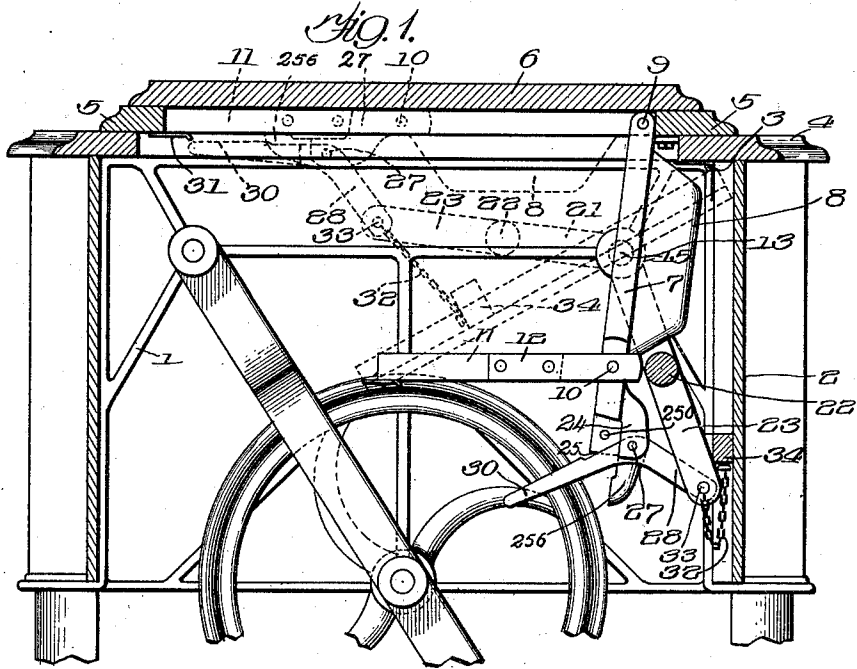


W. C. FREE.  
LIFT AND DROP HEAD MECHANISM FOR SEWING MACHINES.  
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Patented Oct. 17, 1911.



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# UNITED STATES PATENT OFFICE.

WILLIAM C. FREE, OF CHICAGO, ILLINOIS.

LIFT AND DROP HEAD MECHANISM FOR SEWING-MACHINES.

1,005,952.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed April 24, 1911. Serial No. 622,980.

*To all whom it may concern:*

Be it known that I, WILLIAM C. FREE, a citizen of the United States, residing at Chicago, in the county of Cook and the State of Illinois, have invented certain new and useful Improvements in Lift and Drop Head Mechanism for Sewing-Machines, of which the following is a specification.

The present invention relates to mechanism for lifting and dropping the head of the machine, so that when in use it will be in customary position, at the top of the table, and when not in use it will be contained within a space provided for it in the cabinet.

Customarily the sewing machine head is directly supported by a frame or platform which is hinged at one of its longitudinal sides, while its other side has hinged thereto, a bib which forms an extension of the platform when in position for use. The object in hinging this bib is to permit it to fold upward when the platform is lowered so as to prevent its extending down an objectionable distance when the platform is lowered.

It is to the mechanism for lifting this hinged bib into operative position and there holding it that the present invention relates.

The object of the invention is to provide an improved mechanism for this purpose and the invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawing which is made a part of this specification and in which:

Figure 1 is a vertical section of a sewing machine cabinet, having lift and drop mechanism embodying the invention, the section being taken on the line 1—1, Fig. 2, looking in the direction of the arrow. Fig. 2 is a vertical longitudinal section of the cabinet looking toward the front thereof. In both of these figures the parts are shown by full lines in their lowered positions and in Fig. 1 they are shown by dotted lines in their upper or operative positions. Fig. 3 is a perspective view of a detail.

The frame, 1, of the cabinet may be of any desired construction and is suitably incased at its sides, its front side or apron, 2, being hinged, as at 3, to the top of the cabinet, or table, 4. The top has an opening surrounded by strips, 5, leaving a corresponding opening and these registering

openings are closed by the customary hinged extension leaf, 6. The machine head platform, as shown in the drawing, consists of an integral casting comprising at the top a rectangular frame, 7, and beneath this frame a drip pan, 8. At one of the longitudinal sides the platform is hinged, as at 9, to the table top, or to one of the strips, 5, which form parts thereof, and to the free side of this platform is hinged, as at 10, a bib 11. Preferably this connection is made by a pair of metallic plates, 12, the outer ends of which are secured to the ends of the bib, while, both the bib and the platform are recessed for receiving these plates in order that their outer faces will be flush with the outer ends of the platform and bib.

For raising and lowering the platform, an offset or crank-like shaft, 13, is mounted in suitable bearings, 14 and 15, in the frame of the cabinet. Adjacent to the bearing, 14, the shaft is provided with a pulley, 16, which is partly surrounded by a chain, 17, the upper end of which is connected to the lower end of the lever, 18, the upper end of which is pivotally connected to the hinged extension leaf, 6, a pulley, 19, being journaled to a bracket on the cabinet frame, in order to afford a fulcrum for the lever, 18, during its movement. It will be observed that when the extension leaf is lifted to open the cabinet, the lever, 18, will be elevated and at the same time will rock upon pulley, 19, as a fulcrum, and this movement will draw upward the chain, 17, the lower end of which is secured in an opening, 20, in a lug carried by one of the two radial arms, 21, of the shaft. These arms are connected by an offset portion, 22, the object in offsetting it being to enable the drip pan to pass it during the up and down movements.

Projecting from the free side of the platform and integral therewith are three lugs, 24, 25, and 26 which are spaced apart. The lug, 24, is located in a plane below the plane of the platform, and the lug 25, has a downwardly extending portion which lies opposite the lug, 24, said lugs being perforated for the passage of a pivot pin, 27, which passes through one end of a link, 28, which lies between them, the other end of the link being pivoted to the free end of a radial arm, 23, which projects from the offset portion, 22, of the shaft. This arm is substan-

tially in line with the radial portion, 21, of the shaft and taken together they form in mechanical effect a swinging arm the center motion of which is the bearings of the shaft.

5 The drawing shows two such swinging arms and their accessories but it is found in practice that only one is sufficient, and in this event only one link and its accessories is used.

10 Projecting from the link, 28, and preferably radial with respect to its pivotal connection with the platform, is a tongue, 30, which forms, with the link, a bent lever and is so positioned that it is adapted to  
15 engage the under side of the bib for raising and lowering it. The pivotal centers of the hinged platform and swinging arm are located the former above the latter, and the point of pivotal connection between the link and the platform is at a greater distance  
20 from the center movement of the platform than the point of pivotal connection between the link and swinging arm is from the center of movement of the latter, so that the points  
25 of pivotal connection between the link and platform and the link and swinging arm will move in circular paths of different radii and so that the circular path of the pivotal connection with the swinging arm will cross  
30 the circular path of the pivotal connection with the platform.

It will be seen that when the platform is in its lowered position, the link, 28, forms an acute angle with the arm, 23, whereas  
35 when the platform is in its lifted position they will form an obtuse angle, the angle becoming gradually greater as the platform rises. It will be seen also that when the platform is lowered the downward move-  
40 ment of the free side of the bib is arrested by coming to a bearing on the top of the driving wheel, and that the tongue, 30, is below and out of contact with it, so that during the former part of the upward move-  
45 ment of the platform the tongue, 30, is out of engagement with the bib. As the upward movement of the platform proceeds the tongue will come in contact with bib and lift it during all excepting the last short  
50 interval of the upward movement of the platform. By reason of the described proportion and arrangement of the parts, when this last interval is reached, the rocking of the bent lever (comprising the link, 28,  
55 and the tongue, 30) about the pivotal point, 27, will cause the tongue to move downward relatively to the bib. At this point a rigid finger, 256, which is integral with the lugs, 25 and 26, and projects beyond the free  
60 side of the platform, engages the under side of the bib and lifts it to its final position, thereby relieving the lifting mechanism of excessive strain to which it would be subjected if the tongue remained constantly in con-  
65 tact with the bib and the parts were not con-

structed and arranged with absolute accuracy. To limit the upward movement of the free side of the bib and prevent its upper surface from moving above the upper surface of the table top, a rigid finger, 31, is secured to its under side in position to engage  
70 the under side of the table top.

The lugs, 25 and 26, are located in the plane of the platform and are spaced apart forming hinge members adapted to receive  
75 the hinge members of the base of the machine-head (not shown in the drawing) the pintle of which passes through the oppositely located perforations 250.

As before stated, the front or apron, 2, 80 of the cabinet is hinged at its upper side in order that it may be lifted to provide clearance for the knees of the operator. For lifting it, one end of a chain, 32, is connected to the arm 23 through the medium of its  
85 pivot pin, 33, and its other end is connected to a reinforcing strip, 34, secured to the inner base of the apron.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the class described, the combination with a hinged platform and mechanism for raising and lowering it, said mechanism including a pivoted part, of a  
90 bib hinged to the free side of the platform and a tongue projecting from said pivoted part and adapted to engage the under side of the bib.

2. In a device of the class described, the combination with a table having a hinged  
100 extension leaf, a hinged platform, mechanism for raising and lowering it, said mechanism having a swinging arm, a link pivotally connected at its opposite ends with said platform and swinging arm, respectively, and mechanism operated by the  
105 hinged extension leaf for moving said swinging arm, of a bib hinged to the free side of the platform and a tongue projecting from said link and adapted to engage the under  
110 side of the bib for raising and lowering it.

3. In a device of the class described, the combination with a hinged platform, and mechanism for raising and lowering it, said  
115 mechanism having a pivoted part, of a bib hinged to the free side of the platform, a tongue projecting from said pivoted part and adapted to engage the under side of the bib, and a rigid lug projecting from the  
120 free side of the platform and adapted to engage the under side of the bib when the platform is about to complete its upward movement.

4. In a device of the class described, the combination with the table having a hinged  
125 extension leaf, a hinged platform, a bib hinged to the free side thereof, and mechanism operated by the hinged extension leaf for lifting and lowering the platform and  
130 bib, said mechanism including a swinging

arm, a link pivotally connecting the swinging arm and platform, and a tongue projecting from the link at an angle thereto, forming therewith a bent lever, said tongue being  
5 adapted to engage the under side of the bib.

5. In a device of the class described, the combination of a hinged platform, a swinging arm, the center of movement of the former being above the center of movement  
10 of the latter, a link pivoted at one end to the platform at a given distance from its center of movement and at the other end pivoted to the arm at a less distance from its center  
15 of movement, whereby the point of pivotal connection between the arm and link will move in a circular path that crosses the circular path of the point of pivotal connection  
20 between the link and platform, whereby the link will assume a greater angle to the arm as the upward movement proceeds, a bib  
25 hinged to the free side of the platform, and a tongue projecting from the link adapted to engage the under side of the bib.

6. In a device of the class described, the combination of a hinged platform, a swing-

ing arm, the center of movement of the former being above the center of movement of the latter, a link pivoted at one end to the platform at a given distance from its center of movement and at the other end  
30 pivoted to the arm at a less distance from its center of movement, whereby the point of pivotal connection between the arm and link will move in a circular path that crosses the circular path of the point of pivotal connection  
35 between the link and platform, whereby the link will assume a greater angle to the arm as the upward movement proceeds, a bib hinged to the free side of the platform,  
40 a tongue projecting from the link and adapted to engage the under side of the bib, and a rigid lug projecting from the under side of the platform and adapted to engage the under side of the bib, when the upward movement is being completed.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."