

(No Model.)

L. C. WERNER.  
BUFFER DEVICE FOR LOOMS.

No. 574,510.

Patented Jan. 5, 1897.

Fig. 1.

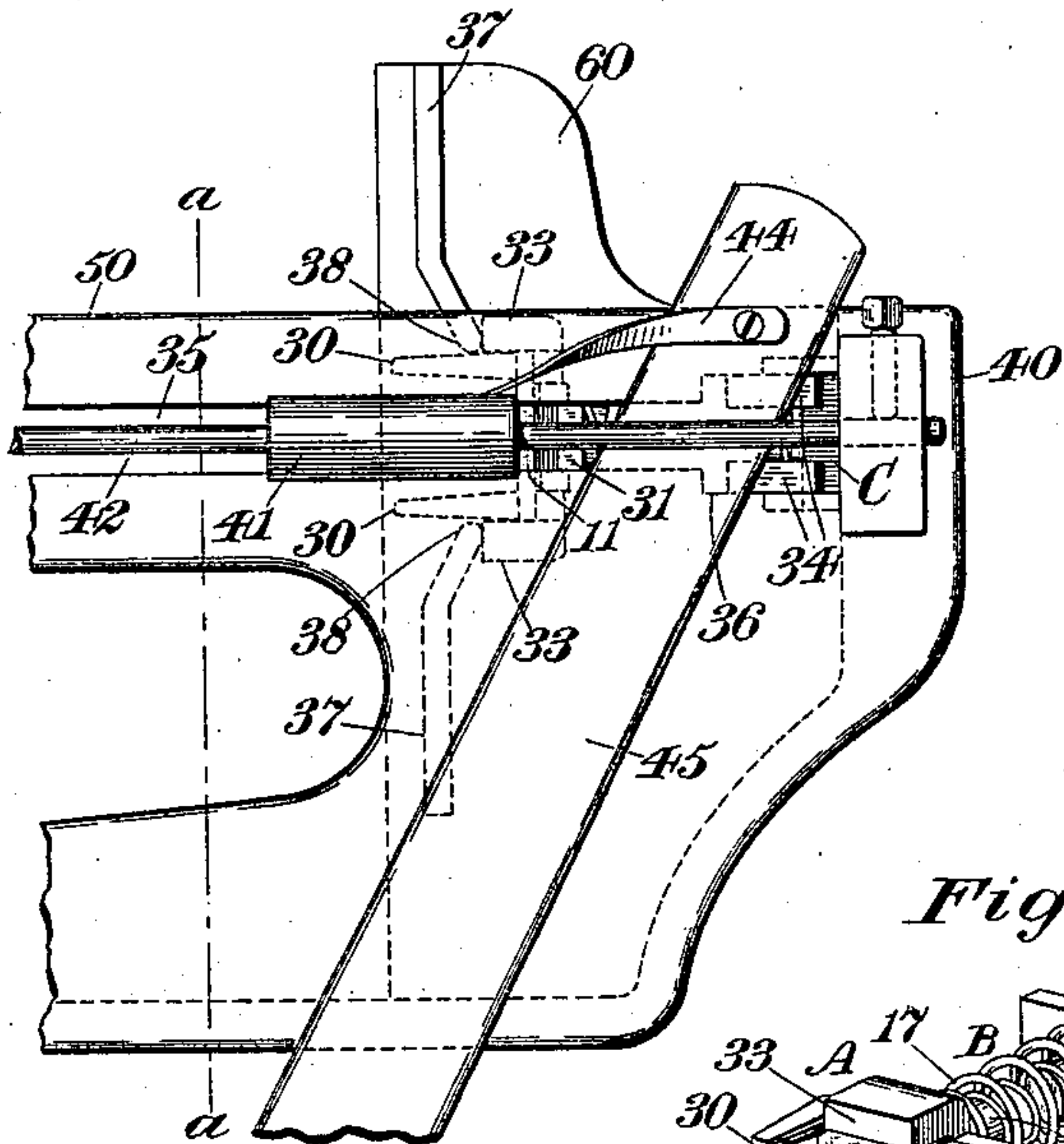


Fig. 2.

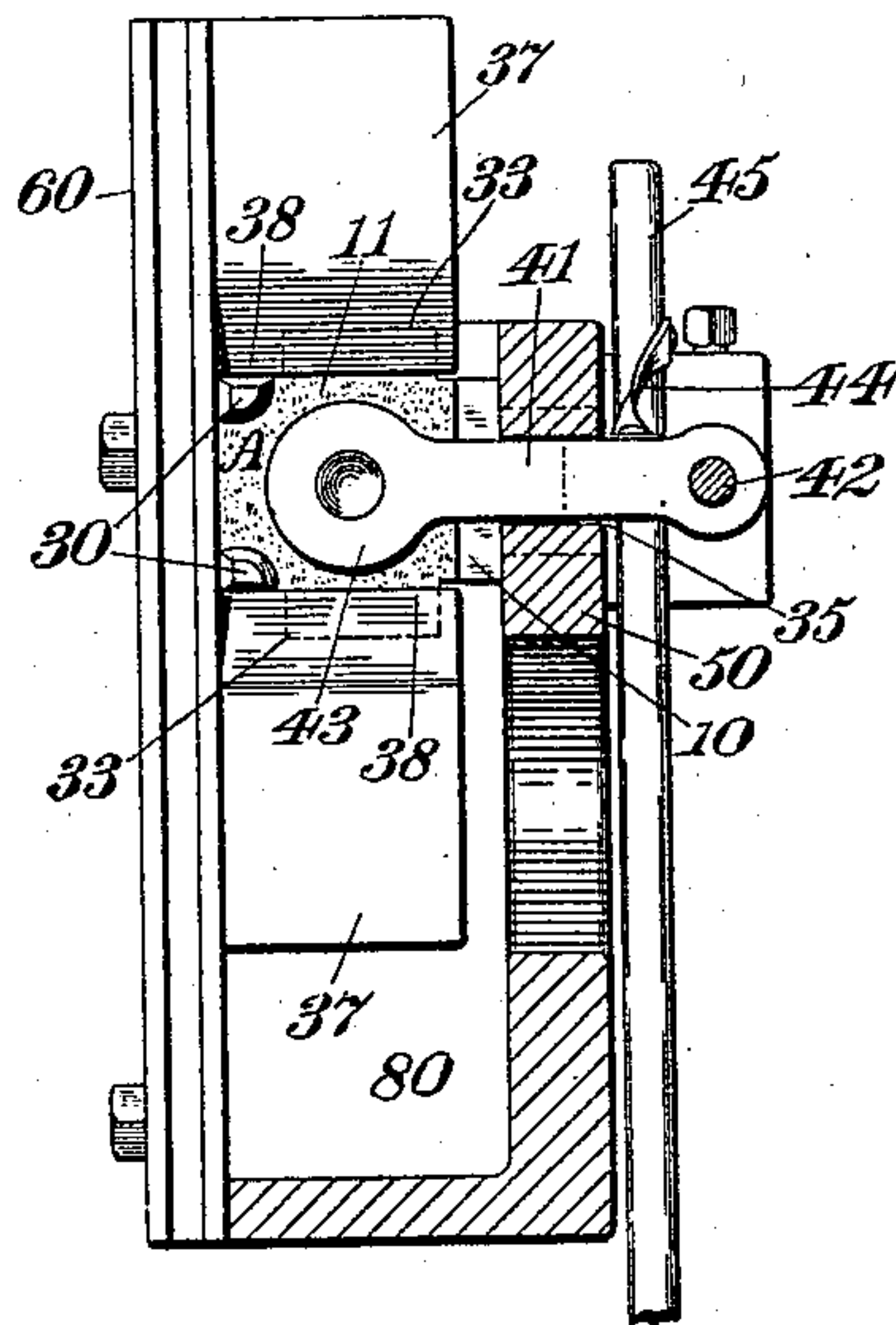


Fig. 8.

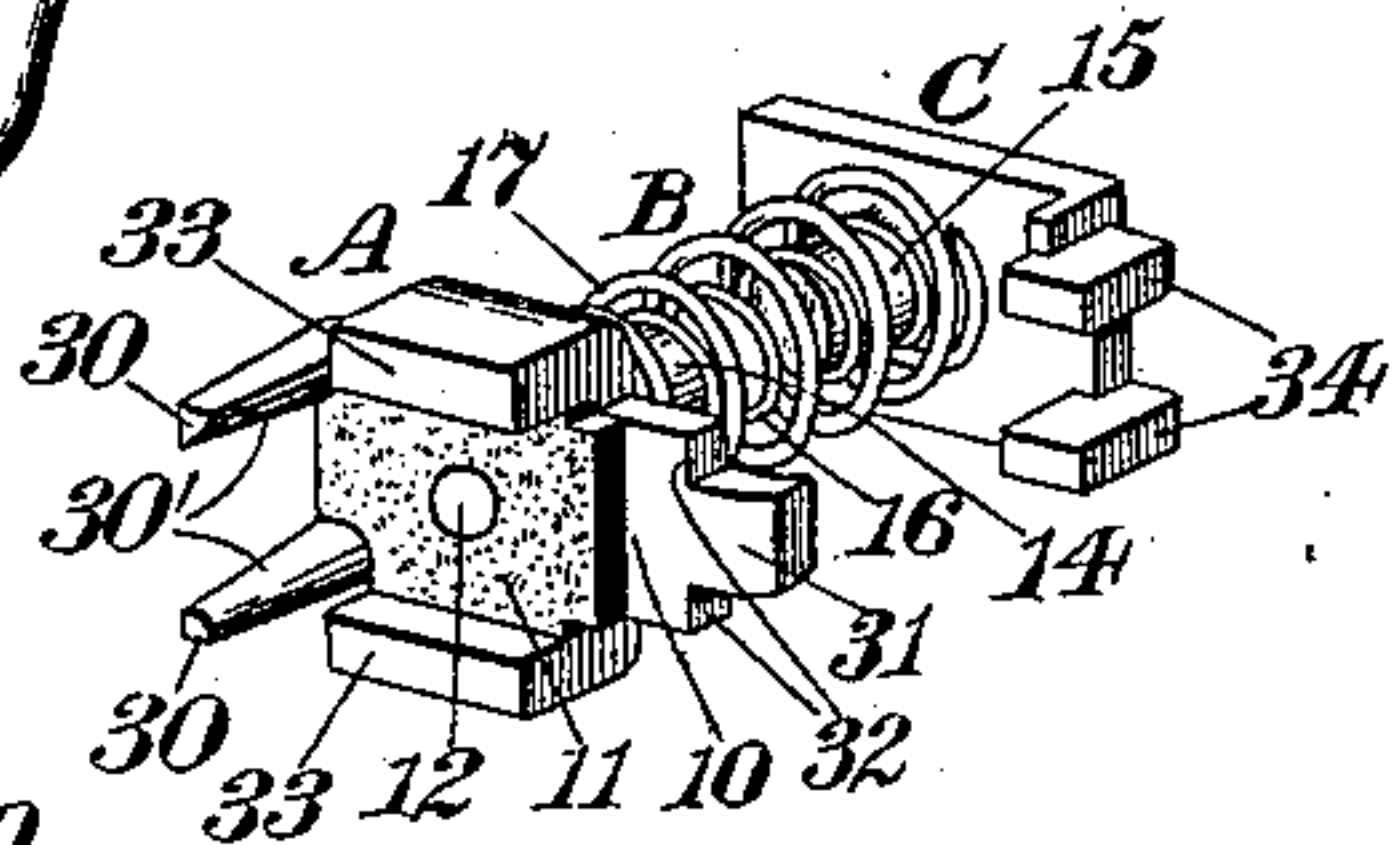


Fig. 3.

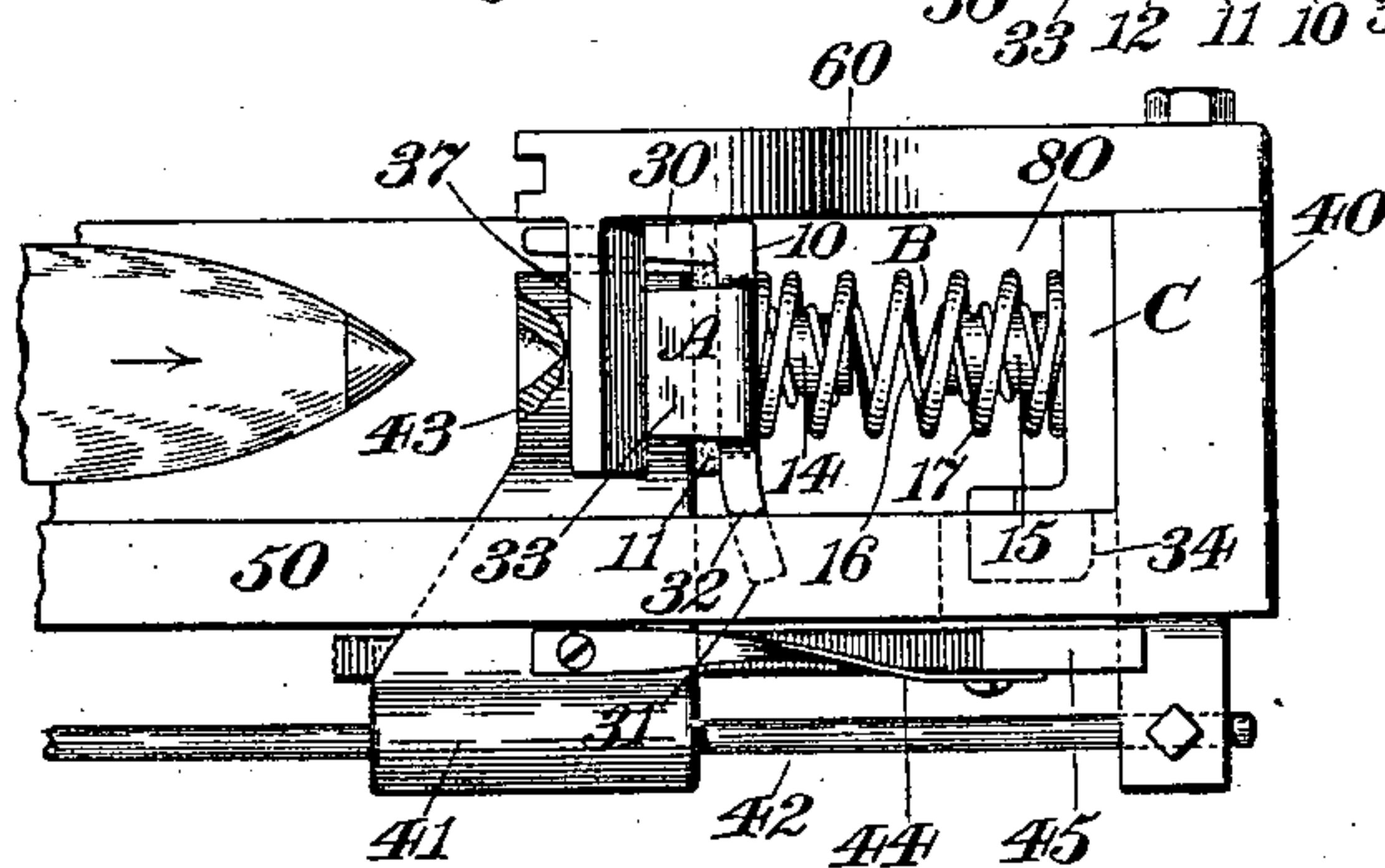


Fig. 4.

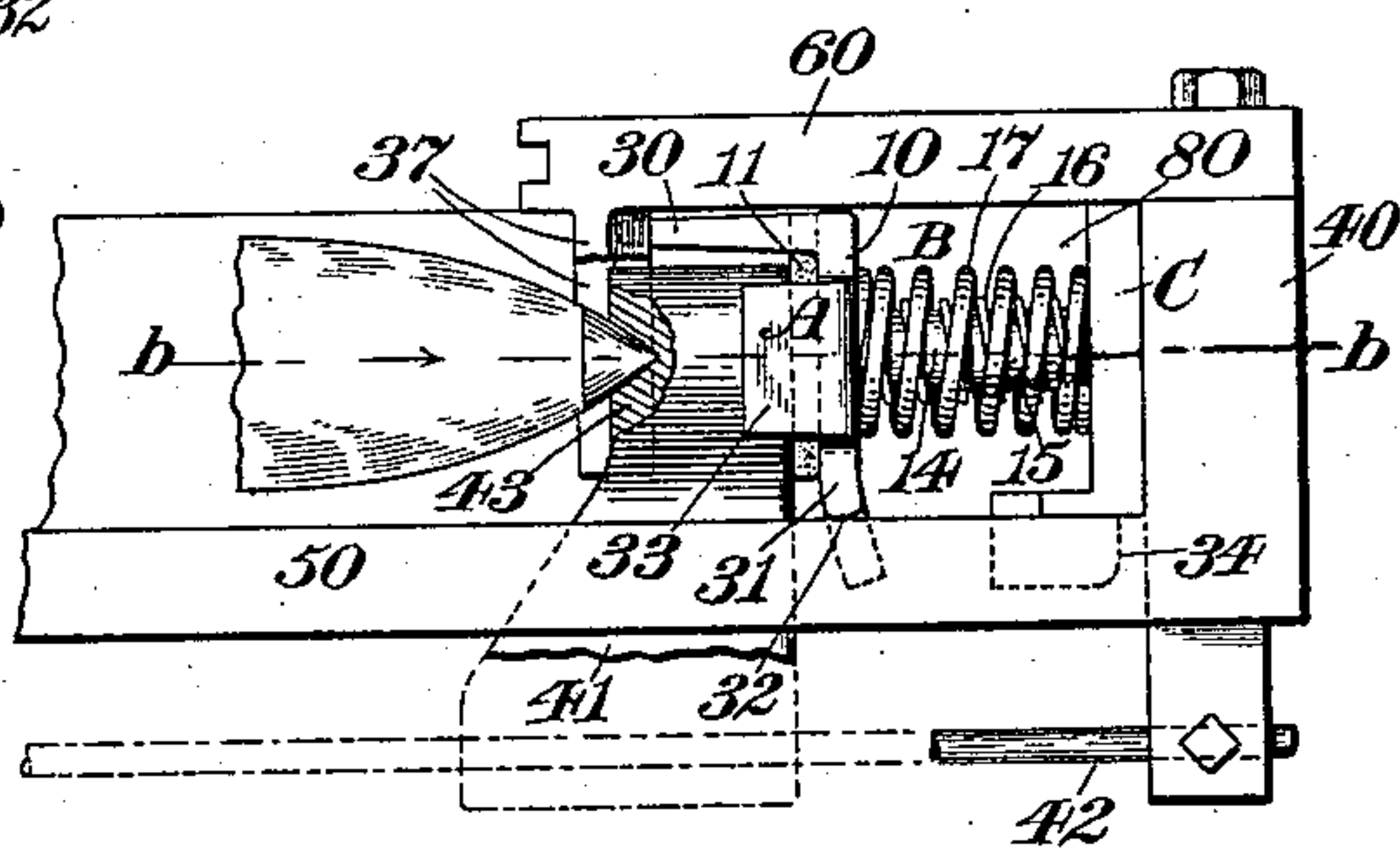


Fig. 5.

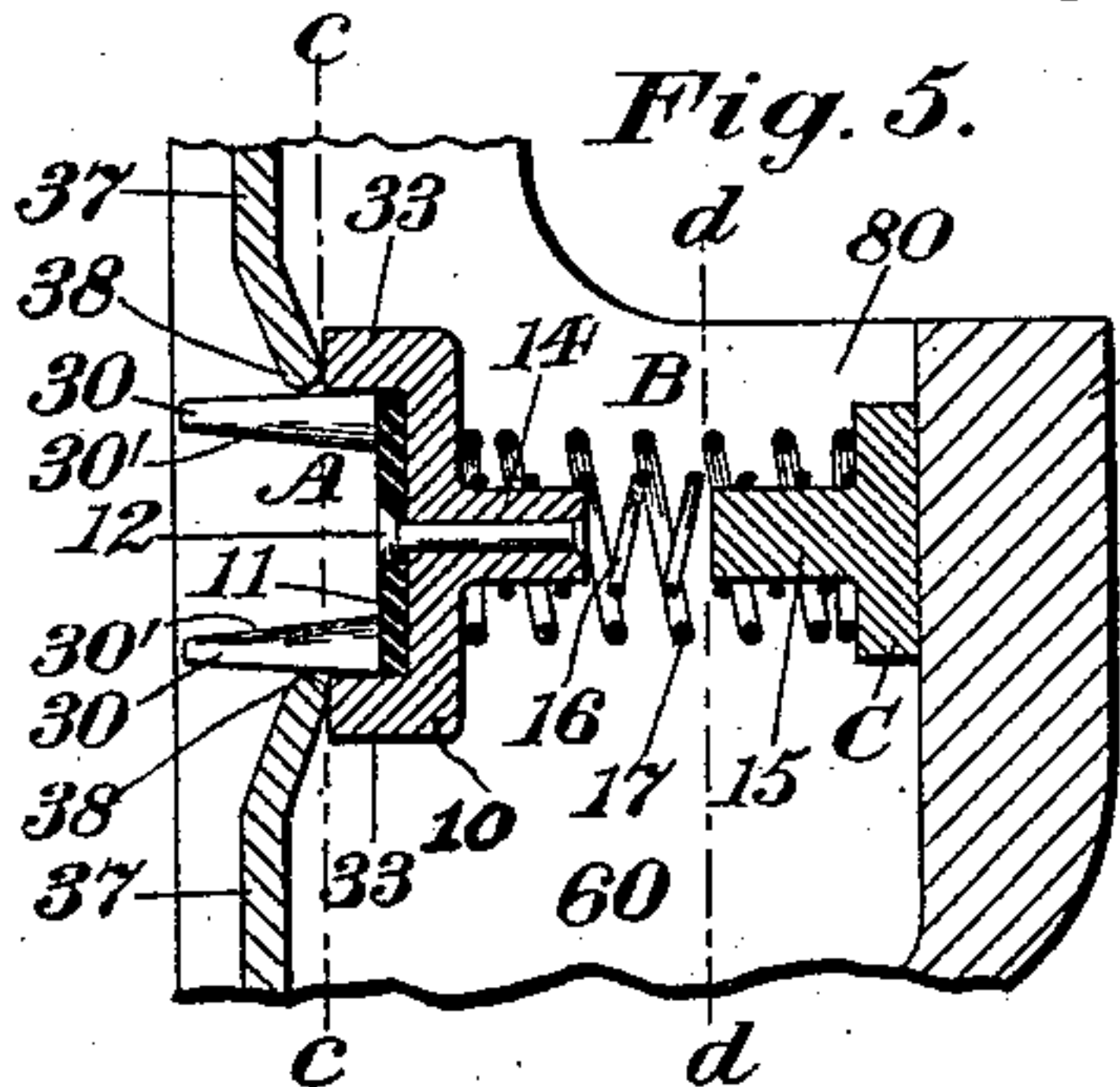


Fig. 6.

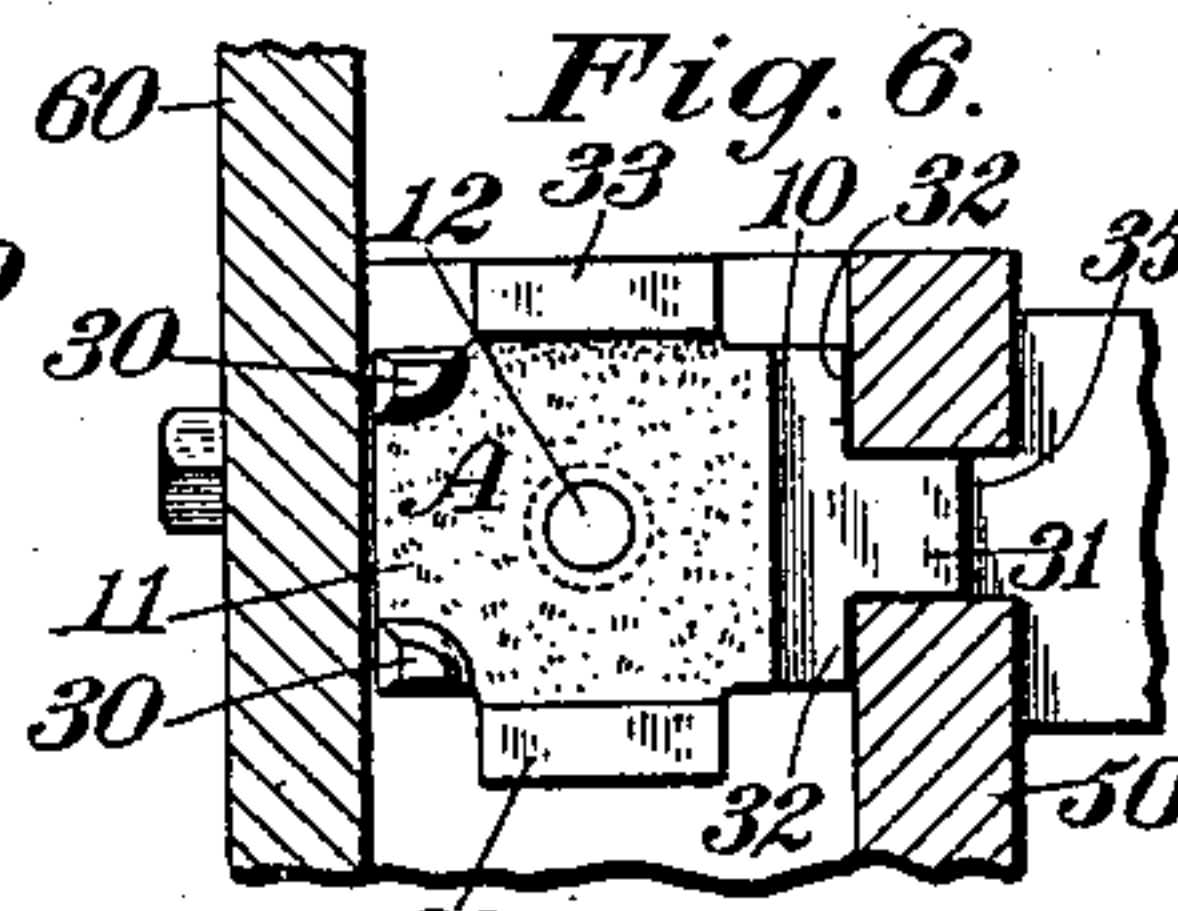


Fig. 7.

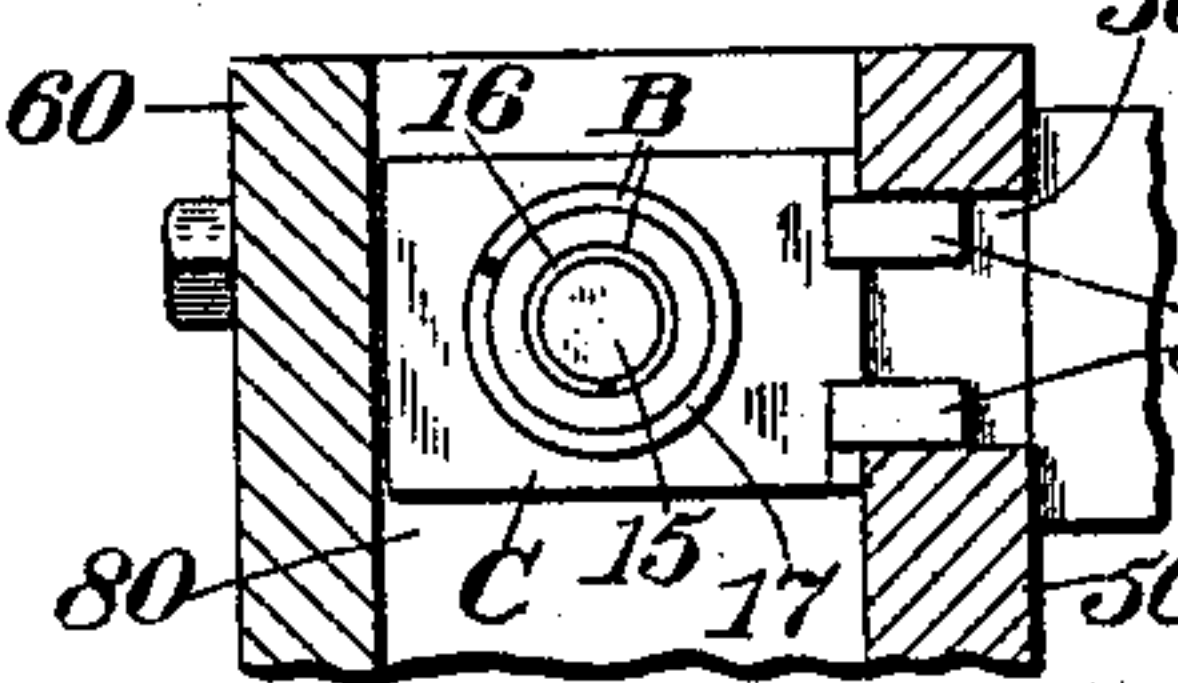
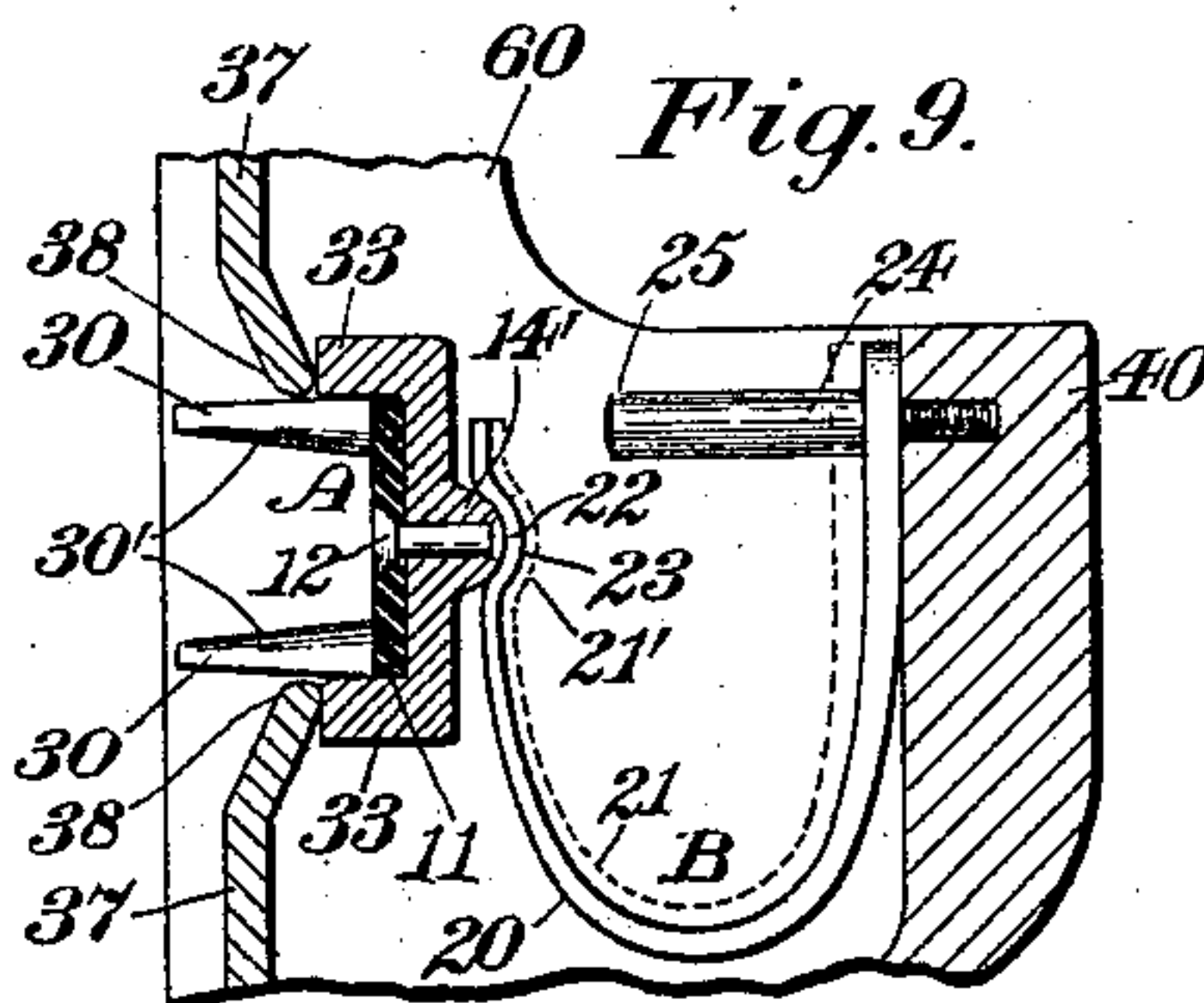


Fig. 9.



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# UNITED STATES PATENT OFFICE.

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## BUFFER DEVICE FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 574,510, dated January 5, 1897.

Application filed March 16, 1896. Serial No. 583,279. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS C. WERNER, a citizen of the United States, residing at East Windsor, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Buffer Devices for Looms, of which the following is a specification.

This invention relates to an attachment for looms, and more particularly to an improved buffer or cushioning means for the pickers and the shuttles thereof, and it primarily relates to the buffer device and secondarily to the improved means for securing the same in operative position; and the object of the invention is to provide a simple and effective check or buffer device adapted to be quickly assembled and disposed in looms already in use and readily removed therefrom, as required, without loss of time or the services of a machinist, and whereby, in the use thereof, the shuttles may be more gradually brought to rest, and the shocks and jars, as well as the wear on the pickers, incident to machines of this character, thereby materially reduced.

In the drawings accompanying and forming part of this specification, Figure 1 is a side view of this improved buffer device shown in position adjacent to the shuttle-box portion of a loom. Fig. 2 is an end view of this improved buffer device in position and looking toward the right hand in Fig. 1, a part of the loom-frame being in section and taken in line *a a* of said Fig. 1. Fig. 3 is a top view thereof, showing the shuttle moving into position to engage the picker and the buffer device in its normal inoperative position with its buffer expanded. Fig. 4 is also a top view showing this improved buffer device with its buffer compressed, to thereby check or cushion the shuttle. Fig. 5 is a vertical sectional view taken in line *b b*, Fig. 4. Fig. 6 is a transverse sectional view, partly in elevation, taken in line *c c*, Fig. 5. Fig. 7 is also a transverse sectional view, partly in elevation, taken in line *d d*, Fig. 5. Fig. 8 is a perspective view of this improved buffer device. Fig. 9 is a partly-sectional view, taken in line *b b*, Fig. 4, showing another form of buffer.

Similar characters of reference indicate like parts in all the figures of the drawings.

Heretofore it has been the usual practice to form a buffer by means of cotton or other suitable waste placed in the rear of the picker; but such a buffer is not only unreliable, in that it has no uniform resistance, and therefore permits the picker and the shuttle to come to rest in various positions at different times, but it also becomes, in a short time, compressed into a rigid and practically solid mass, and thus materially loses its action as a buffer. In order to obviate these defects and disadvantages, I have provided an improved buffer device simple in construction and effective in operation, and in the use of which, by reason of the uniformity of resistance furnished, the device materially assists in maintaining the regularity and perfect operation of the loom, and also, by reason of the relatively long stroke of the buffer block or head as compared with buffer means heretofore in use, the shuttle is brought to rest more gradually, so that it can be held in the shuttle-box by a less powerful shuttle-binder, and consequently requires a less powerful blow of the picker-staff in order to drive the shuttle out of the box and through the warp into the opposite shuttle-box of the loom, whereby the loom can be operated with less power and a material saving thereby effected not only in power, but in continuity of operation and cost of maintenance.

This invention relates, as before stated, primarily to the improved buffer device and secondarily to the means whereby the same may be secured in operative position relatively to the loom; and the buffer device comprises in a general way a buffer block or head (designated generally by A) adapted to engage the picker-head when in its position of rest, a buffer (designated in a general way by B) adapted to cushion and counteract the thrust of the shuttle and permit the same to gradually come to rest on its engagement with the picker-head, and in some forms of the invention a base-block, (designated in a general way by C.)

In the preferred form thereof herein shown and described this improved buffer device has its buffer head or block A preferably composed of metal, although any suitable material might be used, such as rawhide, and it



comprises a plate 10, having suitable means for securing the same in operative position. When the buffer-head is composed of metal or of like material, the impact-face of the plate 10 is provided with a leather or other cushioning-plate 11, suitably secured thereto and adapted to cushion the blow of the picker-head and thereby further reduce the wear of the parts and the intensity of the blow. In the construction shown this leather plate 11 is secured in position by means of a rivet 12. The rear side of this plate 11 has a projection or stud 14 to engage one end of the buffer B. When a base-block C is used with the device, and which may be of any suitable construction, such block is provided on its forward or front face with a stud or projection 15 in alignment with and opposite to the stud or projection 14 of the plate 10, and said studs 14 and 15 may be of such length, if desired, that they will engage with each other and thereby limit the movement of the buffer-head A when the buffer B is compressed.

The buffer B in the preferred form thereof comprises one or more springs, herein shown, however, as two in number, preferably one inside of or superimposed upon the other. In one form of buffer device this buffer comprises an inner spiral or coiled spring 16, having its end coils fitting over the studs or projections 14 and 15 of the buffer-head and base-block, and an outer or larger spiral or coiled spring 17, superimposed upon or encircling the coils of the inner spring and having its end coils formed to bear against the rear face of the buffer head or block and the front face of the base-block at relatively remote points from the studs 14 and 15 and the inner spring 16, whereby it not only reinforces the inner spring, but normally holds the buffer-head in its correct position transversely of its path of movement—that is to say, by having the outer spring 17 with its end coils at relatively remote distances from the studs or projections 14 and 15 and the points of engagement of the inner spring 16 and engaging a relatively large surface of the buffer-head and base-block the tendency of the buffer-head to swing or oscillate transversely of its path of movement is practically eliminated, so that the buffer-head will always be held in its correct position to engage the picker-head.

According to another form of buffer device, Fig. 9, the buffer comprises a pair of superimposed plate-springs 20 and 21, the outer spring 20 having a concavity 22, adapted to engage the projection or stud 14', which in this instance is shown having a convex surface. The inner spring 21 is also provided with a concavity 21', into which the convex face 23 of the outer spring 20 is adapted to fit. The opposite ends of this spring may be secured in place in a similar way relatively to the base-block or by means of a suitable fastening device; but in this form of device the springs are shown secured to one of the walls, as 40,

of the loom-frame by a threaded fastening-pin 24, if desired. The head 25 of this pin forms a stop or abutment for the buffer-head to limit the movement thereof and the compression of the springs.

It will be understood that the buffer B might be secured intermediate the buffer-head A and the base-block C or the wall 40 of the framework in other ways than by the studs, if desired.

It will also be understood that any suitable means might be used to secure this improved buffer device in position for use; but in order to secure the same in position on looms as usually constructed, one of the frame-walls 50 of which adjacent to the shuttle-box has a slot or recess 35, forming a race or way for the neck of the usual picker, and which slot is enlarged at one part thereof, as at 36, to permit the insertion of the picker-head 43, and the opposite frame-wall 60 of which is provided with two inwardly-extending plates 37, bent backward at their inner ends, and which plates, in connection with the walls 50 and 60 and the connecting transverse wall 40 of the framework, constitute the usual stuffing-box or receptacle 80 for the reception of the cotton-waste, which in practice usually constitutes the buffer of the picker, the buffer-head plate 10 is provided at one side thereof with two forwardly-extending guide-arms 30, adapted to slide between the lower opposing edges 38 of the plates 37, and which thus constitute one of the guiding means for the buffer-head. These guide-arms 30 are transversely curved or inclined on their inner sides, as at 30', and are tapered outwardly, whereby the liability of the picker-head on its to-and-fro movements to strike the outer ends of said arms is prevented.

The opposite side or edge of the buffer-head plate 10 is provided with an extension 31, adapted to engage in the picker race or way 35, and it is preferably slightly rearwardly curved and recessed to form shoulders 32, engaging the inner face of the frame-wall 50 adjacent to said race or way, and thus forming an additional guiding means for the buffer-head. The bottom and top sides of the buffer-head plate 10 are preferably also provided with outwardly-extending parallel projections or walls 33, adapted to abut against the lower portions of the plates 37, and thus limit the outward or forward movement of the buffer-head. These extensions may also constitute, to a certain extent, guiding means for the head 43 of the picker, which when at rest is seated intermediate thereof. The base-block C, when one is used, is also provided with two parallel extending wings or projections 34, adapted to extend into the enlarged part 36 of the picker race or way, the rear or outer wall of said block resting against the usual transverse frame-wall 40 of the stuffing-box 80, and which rear wall may, however, constitute, if desired, a substitute for



the base-block in the manner shown in Fig. 9, in which case it would be necessary to provide the same with some suitable means, such as a knob or stud, for the reception of that form of buffer shown in Figs. 1 to 8, inclusive.

It will be understood that the means of attachment of this improved buffer device might in practice be indefinitely varied, and yet permit the same to be attached to the ordinary construction of loom.

In the use of this improved device, the picker having been placed in its race 35, with the shank 41 thereof carried by the usual guide-rod 42 and connected by the usual strap 44 to the picker-staff 45, the buffer-head is placed in position with its guide-arms 30 and extension 31 in their respective positions, as above set forth, to permit the buffer-head to engage the picker-head 43. The base-block is then placed in position with its rear face engaging the transverse wall 40 and its wings or extensions 34 in the recess 36. The springs are then compressed and placed in position intermediate the base-block and the buffer-head, and the device is then in position for use, and when the shuttle, by means of the picker and picker-staff, is forced through the warp and the end thereof strikes one of the pickers the springs are compressed, Fig. 4, the force of the blow thereby taken up, the shuttle and the picker cushioned with uniform regularity, and the shuttle permitted to gradually come to rest.

Having described my invention, I claim—

1. In a loom-picker buffer device, the combination with that portion of the framework of a loom adjacent to the shuttle-box, of a buffer-head comprising a plate having guiding-arms extending beyond the same; and a buffer comprising a pair of superimposed springs intermediate said plate and the transverse wall of the framework.

2. A buffer device comprising a buffer-head having a rearwardly-extending stud or projection; a base-block remotely disposed from said buffer-head and having a forwardly-extending stud or projection; a buffer comprising a pair of coiled or spiral springs one encircling the other intermediate said base-block and buffer-head, the end coils of the inner spring having an engagement with the buffer-head and base-block and with the studs or projections thereof and the end coils of the outer springs having an engagement with the buffer-head and base-block at relatively remote points from the end coils of the inner spring and the studs of the buffer-head and base-block thereof, whereby oscillatory or lateral movement of the buffer-head is prevented.

3. A buffer device consisting of a buffer-head comprising a plate having forwardly-extending guide-arms; forwardly-extending parallel walls, and a curved and recessed extension; a base-block having extending

wings; and a buffer intermediate said base-block and buffer-head.

4. A buffer device consisting of a buffer-head comprising a plate having a pair of forwardly-extending guide-arms; forwardly-extending parallel walls and a recessed extension, and also having a stud or projection on its rear face; a base-block also having a pair of parallel extensions, and a stud or projection on its front or inner face; and a pair of superimposed coiled or spiral springs intermediate the base-block and the buffer-head.

5. In a loom-picker buffer device, the combination with the framework of a loom adjacent to the shuttle-box, one wall thereof having a slot, and the opposite wall thereof having inwardly-extending plates; of a buffer-head having guide-arms working intermediate the opposing edges of said plates, and an extension projecting into said slot; and a buffer intermediate the buffer-head and the transverse wall of the framework.

6. In a loom-picker buffer device, the combination with the framework of a loom adjacent to the shuttle-box, one wall thereof having a slot, and the opposite wall thereof having guiding means; of a buffer-head having a part thereof extending into said slot, and a part thereof engaged by said guiding means; a base-block also having a part thereof extending into said slot; and a buffer intermediate said base-block and buffer-head.

7. In a buffer device for a loom-picker, the combination with the framework of a loom adjacent to the shuttle-box, one wall thereof having a slot, and the opposing wall thereof having guiding means; of a buffer-head having a part thereof extending into said slot, and a part thereof guided by said guiding means; a base-block also having a part thereof extending into said slot; and a buffer comprising a pair of superimposed coiled or spiral springs intermediate said buffer-head and base-block.

8. In a device of the class specified, the combination with a stuffing-box of a loom-picker, of a buffer device constructed to fit therein and comprising a buffer-head adapted to engage the picker; and a pair of superimposed springs one encircling the other intermediate said buffer-head and one of the walls of said box, the ends of said springs having a bearing engagement with said buffer-head and said wall at remote points relatively to each other, whereby oscillatory, or lateral movement, of the buffer-head is prevented.

9. In a buffer device for a loom-picker, the combination with the framework of a loom adjacent to the shuttle-box, one wall thereof having a slot or way, and the opposite wall thereof having inwardly-extending plates bent at their lower ends and forming a guide-way; of a buffer-head comprising a plate having an extension adapted to engage the slot of said wall, a pair of forwardly-extending

guide-arms guided by said plates, and a pair  
of parallel projections or walls adapted to  
abut against the lower ends of said plates  
when the buffer-head is in its normal inoper-  
5 ative position; a base-block having parallel  
extensions projecting into the slot of the wall;  
and a buffer comprising a pair of superim-

posed coiled or spiral springs intermediate  
the base-block and the buffer-head.

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