Oct. 14, 1947. J. B. GRIFFIN 2,429,055

SLIDE FASTENER WEAR TESTING MACHINE

Filed June 14, 1945 2 Sheets-Sheet 1

Fig. 1

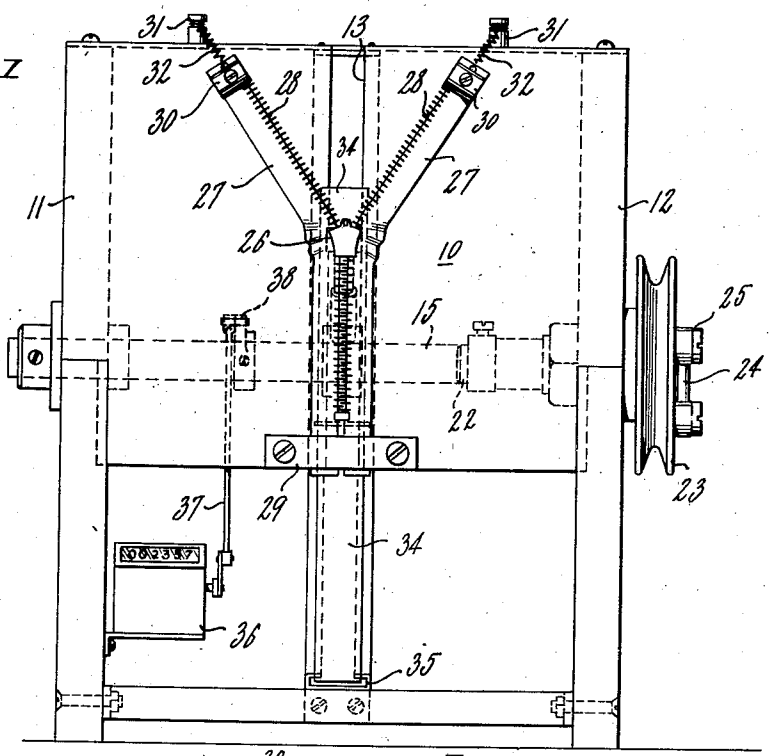


Fig. 6

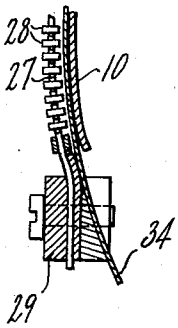


Fig. 2

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Filed June 14, 1945 2 Sheets-Sheet 2

Fig. 3

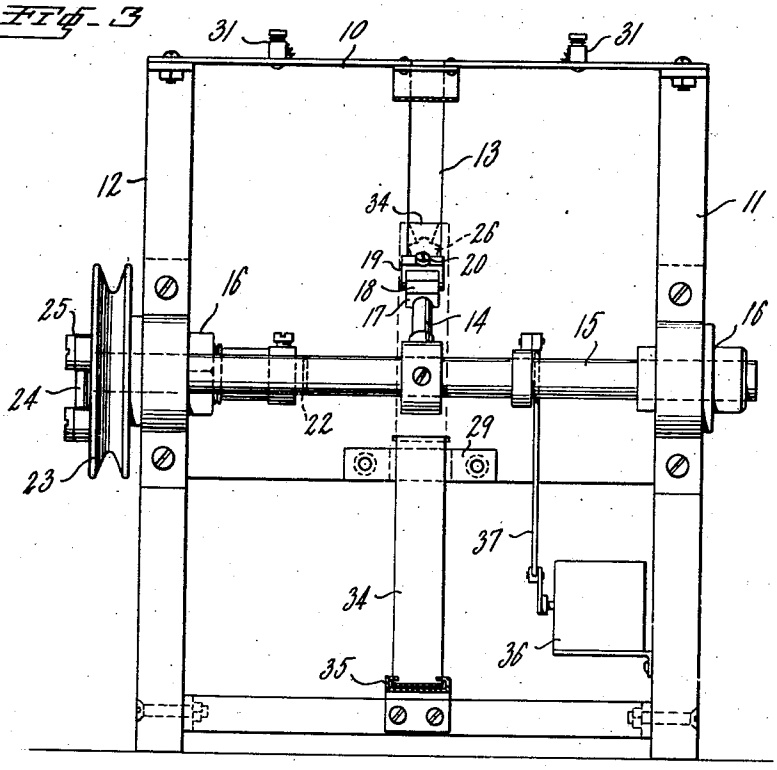


Fig. 4

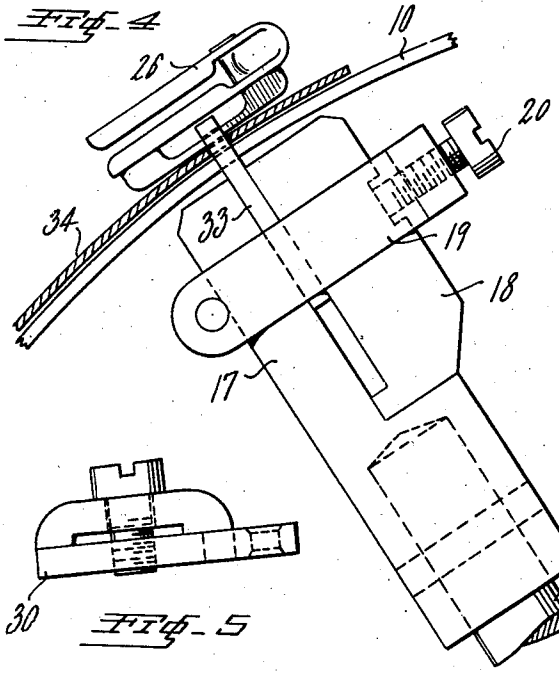
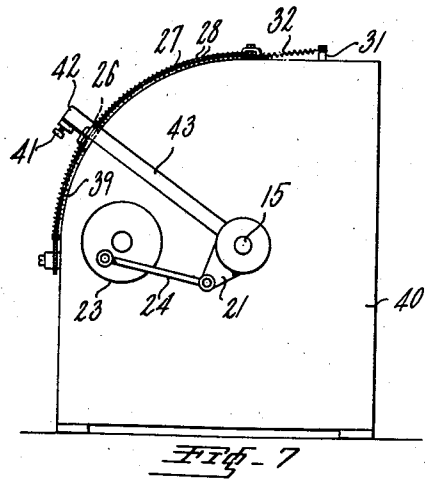


Fig. 5

Fig. 7



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UNITED STATES PATENT OFFICE

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SLIDE FASTENER WEAR TESTING MACHINE

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7 Claims. (Cl. 73—7)

1

This invention relates to a testing machine for testing the wearing properties of a slide fastener when its slider is pulled back and forth in a curved path along a stringer.

It has been proposed heretofore to test the wearing properties of a slide fastener by mechanically moving the slider back and forth in a straight line along its stringer. It frequently happens, however, that slide fasteners are required to assume a curved position in use, and it is more difficult for the slider to move back and forth along a curved stringer than along a straight one.

It is therefore desirable, at least in some cases, to test the wearing properties of a slide fastener when the slider is required to travel along a stringer that is forced to assume a curved position. The present invention therefore contemplates a testing machine adapted to hold the stringer of a slide fastener in a fully extended condition over a curve support while the slider is mechanically moved back and forth along the curved stringer to test the wearing properties of the slide fastener under these conditions.

One feature of the present invention resides in a curved support upon which the slide fastener to be tested may be secured in a fully extended condition so that the fastener tapes of the stringer will be maintained in a stretched condition while the slider is moved back and forth along the stringer. Another feature resides in spaced yielding anchoring means attached to one end of each fastener tape and disposed a substantial distance apart so that these tapes will be pulled away from each other with a spreading action as they are unlocked by the slider.

In some cases it may be desirable to test a slide fastener when the stringer is maintained in a curved position with the slider at the concaved side of the curved stringer, and in other cases it may be desirable to test the slide fastener while the stringer is maintained in a curved condition but with the slider at the convexed side of the arc defined by the stringer. The present invention contemplates mechanism for testing the slide fastener under either of these conditions.

The above and other features of the present invention will be more fully understood from the following description when read in connection with the accompanying drawing, wherein;

Fig. 1 is a front view of a testing machine constructed in accordance with the present invention.

2

Fig. 2 is a side view of the machine shown in Fig. 1.

Fig. 3 is a sectional view taking substantially on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged sectional view of parts shown in Fig. 2.

Fig. 5 shows a clamp for securing one end of a fastener tape to an anchoring spring.

Fig. 6 is a sectional view showing how the slot covering strip passes slidably onto the stringer supporting wall of the machine of Fig. 1 and;

Fig. 7 is a side view showing a modification of the testing machine.

Since the testing machine contemplated by the present invention is designed to test slide fasteners when the slider thereof is pulled back and forth upon the stringer along a curved path, the present machine is constructed to provide a curved support for the stringer. This support as shown is formed of sheet metal as indicated by 10. The sheet 10 is bent to form an arc of approximately 90 degrees and is supported in this arcuate condition by securing its side edges to the curved surfaces of the side walls 11 and 12 so that the upper edge portion of the sheet 10 extends in a horizontal direction and the lower edge portion extends in a vertical direction as shown in Fig. 2. The sheet 10 is provided with the central slot 13 extending upwardly from its lower edge throughout the curved portion of this sheet. This slot is provided so that the pull tab of a slide fastener may extend therethrough to the inside of the curved support formed by the sheet 10, to be engaged by power operating means such as the rocking arm 14 that is rigidly secured to the actuating shaft 15. This shaft is disposed concentrically to the arc formed by the sheet 10 and is journaled in bearings 16 carried by the side walls 11 and 12. To the outer end of the arm 14 is secured a clamp comprising the fixed member 17 and movable member 18 and adapted to be forced one towards the other by the U-shaped yoke 19 having a clamping screw 20.

It is desirable to oscillate the shaft 15 so as to rock the arm 14 back and forth through an angle of approximately 90 degrees. This is accomplished in the construction shown by securing to one end of the shaft 15 outside of the side wall 12 the short arm 21. This side wall has rotatably mounted thereupon at some distance from the shaft 15 the stub shaft 22 on which is rotatably mounted the grooved pulley 23 adapted to be rotated by a belt not shown. When this pulley is rotated it will impart rocking movement to the

short arm 21 by means of the link 24, one end of which is pivotally secured to the outer end of the arm 21 and the other end is pivotally secured to the pulley 23 to one side of its central axis as at 25.

When a slide fastener is to be tested, such for example as a conventional slide fastener comprising the slider 26 adapted to slide along the fastener tapes 27 having the usual locking elements 28 and which tapes together form a stringer, one end of the slide fastener is clamped against the outer surface of the curved plate 10 by the clamping bar 29, and to the other end of each tape 27 is secured a clamp 30 which is best shown in Fig. 5. Each clamp 30 is yieldingly secured to an anchoring post 31 by a coiled spring 32. This serves to pull the tapes apart with a spreading action as they are unlocked. The slide fastener is positioned as shown over the slot 13 so that the pull tab 33 of the slide fastener may extend inwardly through this slot and be gripped by the clamp by means best shown in Fig. 4.

It has been found in practice that the tension exerted upon the closed slide fastener by the springs 32 may tend to pull the slide fastener into the slot 13. This is prevented by providing the relatively long covering strip 34 which is provided near its upper end with a transverse slot through which the pull tab 33 may extend. The strip 34 is long enough to cover the entire slot 13 and extend downwardly into the base portion of the testing machine where it enters the curved guiding sheath 35. The arrangement is such that as the arm 14 is oscillated by the power operating mechanism described so as to move the slider 26 back and forth along the tapes 27 the covering strip 34 will likewise slide back and forth over the surface of the plate 10 and back and forth in its sheath 35.

Since the purpose of the present machine is to test the wearing properties of a slide fastener by pulling the slider back and forth while the stringer is maintained in a curved position, it is desirable to provide counting means to show how many times the slider is actuated to open and close the slide fastener. Therefore the present machine is shown as having a counter 36 of well known construction secured to the inner face of the wall 11 and adapted to be actuated by the connecting rod 37, the upper end of which is pivotally secured to a short arm 38 that is rigidly secured to the oscillating shaft 15.

The testing machine so far described is designed to test a slide fastener by moving the slider back and forth along the stringer when this slider is disposed at the inner face of the curved arc defined by the stringer. Should it be desirable to turn the slide fastener over so that the slider will be disposed at the outer convexed surface defined by the curved slide fastener, this may be done by employing the modified construction shown in Fig. 7 where the slide fastener being tested rests upon the curved metal sheet 39 which is supported by the side walls 40 substantially as shown in Fig. 1 except that the sheet 39 is not provided with a slot such as 13 of Fig. 1. The slide fastener in accordance with Fig. 7 is clamped in place upon the sheet 39 by the same type of clamping means shown in Fig. 1 but the slide fastener is secured in place so that the slider 26 is disposed at the outer curved surface of the stringer as shown in Fig. 7. This permits the pull tab 33 to be secured by the clamp 41 against one face of the oscillating bar 42, which bar has its opposite ends secured to the rocking arms 43, the inner ends of which arms are rigidly secured to the oscillating shaft 15 outside of the side walls 11 and 12. The arrangement is such that when the shaft 15 is oscillated as above described the bar 42 will be moved back and forth in an arc of a circle just outside of the outer curved surface of the supporting plate 39, to thereby move the slider back and forth along the curved stringer.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. A testing machine for testing the wearing properties of a slide fastener having a slider that travels along a stringer formed of two fastener tapes; said machine comprising a curved support for the stringer, means for anchoring the opposite ends of the stringer so as to hold the slide fastener stretched over said curved support, and power actuated means for pulling the slider back and forth in a curved path to lock and unlock said tapes.

2. A testing machine for testing a slide fastener having a slider that travels along a stringer formed of two fastener tapes; said machine comprising a curved support for the stringer, means for anchoring one end of the stringer, widely spaced yielding anchoring means adapted to be secured to the tapes so as to hold the slide fastener stretched over said curved support and to spread the tapes apart as the slider is moved towards the open position, and power actuated means for pulling the slider back and forth in a curved path to lock and unlock said tapes.

3. A testing machine for testing a slide fastener having a slider that travels along a stringer; said machine comprising a curved slotted support for the stringer, means for anchoring the opposite ends of the stringer so as to hold the slide fastener stretched over the slotted portion of the curved support, and power actuated means connected to the slider through said slot and operable to move the slider back and forth in a curved path along the stringer.

4. A testing machine for testing a slide fastener having a slider that travels along a stringer; said machine comprising a curved slotted support for the stringer, means for anchoring the opposite ends of the stringer so as to hold the slide fastener stretched over the slotted portion of the curved support and power actuated means connected to the slider through said slot and operable to move the slider back and forth in a curved path along the stringer, and a sliding slot cover positioned between the curved support and stringer.

5. A testing machine for testing a slide fastener having a slider that travels along a stringer; said machine comprising a curved support for the stringer, means for anchoring the opposite ends of the stringer so as to hold the slide fastener stretched over this curved support, and power actuated means located at the concave side of the curved support and operable to move the slider back and forth in a curved path along the stringer.

6. A testing machine for testing the wearing properties of a slide fastener having a slider that travels along a stringer and a pull tab attached thereto, said machine comprising a curved support for the stringer and having a slot through which the pull tab may extend, means for anchoring the opposite ends of the stringer so as to hold the slide fastener stretched over said curved support, and power means secured to said tab at the inner curved face of the support and

operable to pull the slider back and forth along the curved path of the stringer.

7. A testing machine for testing the wearing properties of a slide fastener having a slider that travels along a stringer and a pull tab attached thereto; said machine comprising a curved supported for the stringer, means for anchoring the opposite ends of the stringer so as to hold the slide fastener stretched over said curved support, and a power actuated member disposed in spaced relation to said support so that the slide fastener lies therebetween and is connected to said tab to pull the slider back and forth along the stringer.

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