June 28, 1949. K. HOWIE 2,474,627

SHOCK-DAMPING VERGE PLATE

Filed July 30, 1947

Fig. 1.

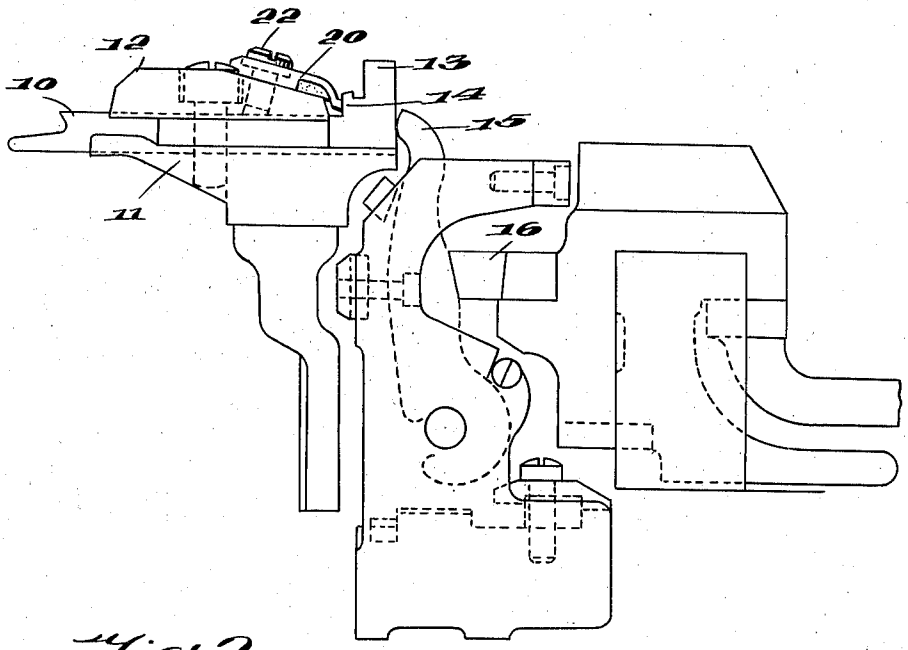



Fig. 2.

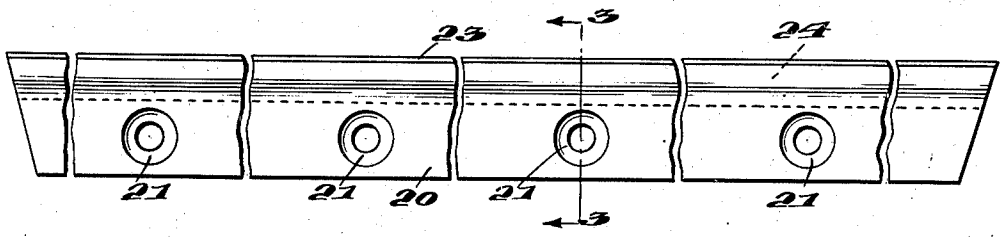



Fig. 3.

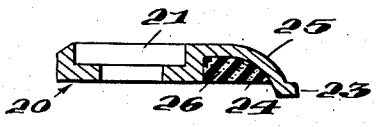



Fig. 4.

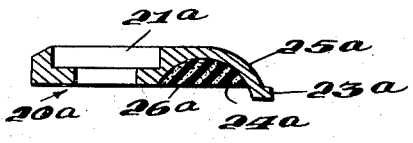
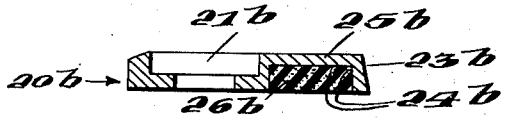



Fig. 5.




Inventor

KENNETH HOWIE,

By Hall + Houghton

Attorneys

Patented June 28, 1949

2,474,627

# UNITED STATES PATENT OFFICE

2,474,627

## SHOCK-DAMPING VERGE PLATE

Kenneth Howie, Norristown, Pa., assignor to Wildman Mfg. Co., Norristown, Pa., a corporation of Pennsylvania

Application July 30, 1947, Serial No. 764,853

14 Claims. (Cl. 66—110)

1

This invention relates to a verge plate structure for full-fashioned hosiery machines, and has for its primary object the provision of a shock-cushioning and damping verge plate for such a machine.

In such machines, as shown for example in my United States Patents Nos. 1,958,823 and 1,982,991, dated May 15 and December 4, 1934, the jack sinkers which form the loops of yarn between the needles are driven forward against the striking edge of the verge plate at a high rate of speed by the movement of the slur cock. Where rigid metal verge plates are employed the blow of impact is so sharp that sinker vibration is engendered, and sinker breakage frequently occurs. When the impact edge of the verge plate is made light or springy to cushion the blow of the sinkers the operation becomes objectionably noisy. When non-metallic verge plates; for example, plates of cured fibre, or of fibrous phenolic condensation products such as "Bakelite," are employed the butts of the sinkers cut into the front or impact edge of the verge plate very quickly and the plates have to be renewed at frequent intervals.

The present invention has for its objects severally and interdependently the provision of an improved form of verge plate obviating the above-noted objections; the provision of a unitary verge plate having a springy striking edge integral with the main body of the plate and having shock-damping means to damp out the vibrations imparted thereto by the sinkers; the provision of an integral verge plate having cushioning and shock-damping means and adapted especially to reduce sinker breakage without producing objectionable noise in the case of a metallic type plate, and especially to reduce the cutting thereof by the sinkers in the case of a non-metallic type plate.

With the foregoing and other objects in mind, the invention resides in the provision of a verge plate having a springily-supported striking edge effectively integral with its body and provided with rubber-like shock-damping means arranged to absorb the vibrations incident to the blows of the sinkers thereagainst, and in the novel features of construction and arrangement of parts contributing to the realization of the objects of the invention.

In the accompanying drawings of illustrative embodiments of the invention:

Fig. 1 is a diagrammatic vertical section through the sinker-head and jack-head portions

2

of a full-fashioned knitting machine having one form of the new verge plate applied thereto.

Fig. 2 is a plan view of the verge plate thereof.

Fig. 3 is a cross-section of said plate taken on the line 3—3 in Fig. 2 looking in the direction of the arrows.

Figs. 4 and 5 are similar cross-sections of modified forms of the verge plate.

As is shown diagrammatically in Fig. 1, in the usual full-fashioned knitting machine the sinkers 10 are slidably supported in the sinker head, between a grooved sinker bed 11 and a grooved sinker cover 12. Each jack sinker 10 is provided with a reenforced butt 13 having a striker surface 14 at its forward portion. When the sinker 10 is thrown forward in the sinker head by the movement imparted to the jack 15 by the slur cock 16, the surface 14 of its butt 13 strikes against the striking edge of the verge plate 20 which arrests the forward movement of the sinker.

In accordance with the present invention, the verge plate 20 in the form shown in Figs. 1, 2 and 3 is of steel or brass construction and is preferably milled from a strip of the metal about fifteen and one-quarter inches long, an inch wide and one-fourth inch thick, when it is to be used in a fine guage stocking machine having a relatively thick sinker cover 12, such as that shown in the above-mentioned patents.

This verge plate 20, as shown in Fig. 2, is provided with spaced counter-bored bolt holes 21 providing for its securement to the sinker cover 12 as by cap screws 22, Fig. 1. When the cover 12 is relatively thick the striking edge 23 of the verge plate 20 is depressed relative to the main body or mounting portion of the plate, to abut the sinkers at as low a level as possible.

In accordance with the present invention, in the form shown in Figs. 1, 2 and 3, the underside of the verge plate 20 is provided with a longitudinal groove 24 which thins that portion of the plate between its mounting portion and its striking edge to a thickness of about .032 of an inch to .045 of an inch and provides a relatively thin arched or offset web 25, from which the striking portion of the plate depends. The web 25 thus provides springy support for the striking edge 23 and cushions the blows of the sinker butts thereagainst. In addition the striking portion 23 is backed up by a body of vibration-damping material 26. This material 26 is preferably in the form of a strip-like insert of oil and grease-resistant synthetic rubber-like material such as that presently marketed under the

proprietory name "neoprene" or the like. As shown, it is positioned in the groove **24** to underlie the thinned web-section **25** and bear thereagainst, and backs up the overhanging striker portion which terminates in the striking face **23** of the verge plate.

As the verge plate **20** is generally secured in inclined position on the sinker cover, as shown in Fig. 1 the striking face **23** is correspondingly inclined to afford a substantial abutment for the striking surfaces **14** of the sinkers.

As is shown in Figs. 1 and 3, the rubber-like insert **26** is held in place between the verge plate **20** and the sinker cover **12**, when the verge plate is mounted. Hence no particular mode need be adopted for mounting the damping strip **26** in the groove **24**. It may be attached with shellac or special cement or otherwise, if desired.

In accordance with the usual practice the countersunk holes **21** are made slightly larger in diameter than the cap screws **22**, to provide for limited adjustment and alignment of the verge plate relative to the associated parts of the machine, and for moving up of the plate when the face **23** is refinished after it is worn. The striker edges **23** are preferably hardened, to reduce the wear thereof.

In the modified form of Fig. 4, in which the corresponding parts are indicated by the same reference numerals coupled with the letter "*a*," the construction is generally the same except that the groove **24***a*, milled longitudinally in the underside of the plate **20***a*, is of circular cross-section at both its sides.

This results in a web section **25***a* which in effect is shorter than the web section **24**, Fig. 3, and which is therefore less resilient than the form of Fig. 3 if the web is of equal thickness. The form of Fig. 3 is presently preferred as with this form the web may be made somewhat thicker than the form of Fig. 4, thereby avoiding cracking and warping and facilitating manufacture.

The thickness of the web **25** is preferably varied in different plates to suit different conditions in the machine due to the size of yarn being run, the width of the slots in the sinker heads, etc. Some machines run satisfactorily with this part of the verge plate quite heavy; whereas other machines which seem to be quite similar, require a much thinner verge plate. This is usually determined by the sinker breakage. If the machine is breaking too many sinkers, this may be obviated by changing to a thinner verge plate. In the form of Fig. 4, as in Fig. 3, the rubber-like vibration damping insert **26***a* is preferably shaped to conform to the groove **24***a* and bear against the web **25***a* to absorb the vibrations imparted by the blows of the sinkers against the striker edge **23***a*.

Fig. 5 illustrates the application of the invention to a non-metallic verge plate **20***b*. Such non-metallic verge plate may be formed of any suitable material; for example, fibre, a phenolic condensation product, or a fibrous phenolic condensation product, as cured laminated fabric impregnated with "Bakelite" or the like. Here the corresponding parts are indicated by the same reference numerals coupled with the letter "*b*." In general with these non-metallic materials it is desirable to keep the overhanging portion comprising the striker face **23***b* in line with the main body of the plate, as the material is usually of insufficient strength to permit extension of the overhanging portion therebelow as in Figs. 3 and 4. In addition, it is usually desirable to extend the striker face **23***b* throughout all or a greater portion of the height of the plate than in the other illustrative forms, to aid in minimizing the cutting of the sinker butts into that face. The arched or offset web **25***b* which resiliently supports the overhanging portion **23***b* in cantilever fashion, in this case is usually somewhat thicker than that employed in the metal plate. Thicknesses of .032 of an inch to .060 of an inch are satisfactory. The rubber-like insert **26***b* in this instance cooperates with the web **25***b* in supporting the striker edge resiliently, damps the blows of the sinkers against it and reduces the rate at which the edge **23***b* is cut into by the sinker butts.

The invention is not limited to the illustrative forms disclosed to exemplify the same.

I claim as my invention:

1. A verge plate comprising a longitudinally-extending body portion having a longitudinal striking edge of hard material and having a longitudinally-extending groove behind its striking edge imparting springiness to said striking edge, and a rubber-like vibration damping insert positioned in said groove.

2. A verge plate comprising a longitudinally-extending body portion having a longitudinal striking edge supported therefrom by a relatively thin arched web-like portion, said body portion and striking edge being formed of hard material, and a relatively soft rubber-like vibration damping element bearing against said web-like portion.

3. A verge plate comprising a longitudinally-extending body portion having a longitudinal striking edge supported therefrom by a relatively thin offset web-like portion, said body portion and striking edge being formed of hard material, and a relatively soft rubber-like vibration damping element within and substantially filling the offset of and bearing against said web-like portion.

4. A verge plate comprising a longitudinally-extending body portion having a longitudinal strike-receiving portion and a relatively thin offset supporting web by which said strike-receiving portion is supported in overhanging relation from said body portion, said body portion and striking edge being formed of hard material, and a relatively soft rubber-like vibration-damping insert back of said strike-receiving portion.

5. A verge plate for full-fashioned knitting machines and the like, comprising a unitary body provided with an integral strike-receiving portion supported therefrom in overhanging fashion by a thinned section thereof, said body portion and striking edge being formed of hard material, and having a shock-damping insert of relatively soft rubber-like material backing up said strike-receiving portion.

6. A verge plate for a sinker type knitting machine, comprising a relatively rigid mounting portion, said plate having a striker portion of hard material to receive the blows of the sinkers, means for cushioning said blows comprising a relatively thin offset web portion supporting said striker portion from said mounting portion, and means for damping the vibrations imparted by the sinker blows comprising a relatively soft rubber-like insert bearing against said web-like portion.

7. A verge plate of relatively hard material having its striking edge supported by a relatively thin springy web and having a relatively soft rubber-like vibration damping insert back of its striking edge.

8. A verge plate of relatively hard material

having a resilient web-like portion supporting its striking edge and defining a longitudinally-extending groove therebehind, and a relatively soft rubber-like vibration damping insert in said groove.

9. A quieted metal verge plate comprising a longitudinally-extending metal bar having a longitudinally extending groove therein between its striking edge portion and its mounting portion and which provides flexibility in its striking edge portion, and a rubber-like vibration damping insert in said groove.

10. A non-metallic verge plate comprising a longitudinally-extending bar of machineable non-metallic material having a longitudinally-extending groove therein between its striking edge portion and its body portion and which provides flexibility in said striking edge portion, said striking edge portion being backed up by a rubber-like shock damping body positioned in said groove.

11. A verge plate for sinker type knitting machines, having a unitary body provided with an integral hard, relatively springy impact portion and with shock-damping means in backing up contact therewith to damp out the vibrations imparted to said impact portion by the impact of the sinkers.

12. A verge plate for sinker type knitting machines having an integral hard, overhanging impact portion supported from the main body of the plate in cantilever fashion by a thinned section thereof and having an insert of oil-resistant rubber-like material underlying the said



thinned section and backing up said overhanging portion.

13. A metallic verge plate for sinker type knitting machines having an integral overhanging impact edge supported from the main body of the plate in cantilever fashion by a thinned section thereof, and having an oil-resistant rubber-like insert backing up said cantilever-supported impact edge and serving to deaden the noise of impact of the sinkers thereagainst.

14. A non-metallic verge plate having an integral overhanging impact portion supported from the main body of the plate in cantilever fashion by a thinned section thereof and having an oil-resistant rubber-like insert backing up the cantilever-supported edge and serving to cushion the impact of the sinkers thereagainst and reduce the rapidity with which they cut into said impact portion.

KENNETH HOWIE.

## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS


| Number | Name | Date |
|---|---|---|
| 1,622,976 | Schulz | May 29, 1927 |
| 2,080,353 | Bay et al. | May 11, 1937 |
| 2,162,660 | Weisbecker | June 13, 1939 |
| 2,227,403 | Weisbecker | Dec. 31, 1940 |
| 2,384,451 | Brumbach | Sept. 11, 1945 |
| 2,426,803 | Weisbecker | Sept. 2, 1947 |