

Sept. 25, 1951

C. SOLOMON
SLIDE RULE

2,569,202

Filed Jan. 14, 1949

2 Sheets-Sheet 1

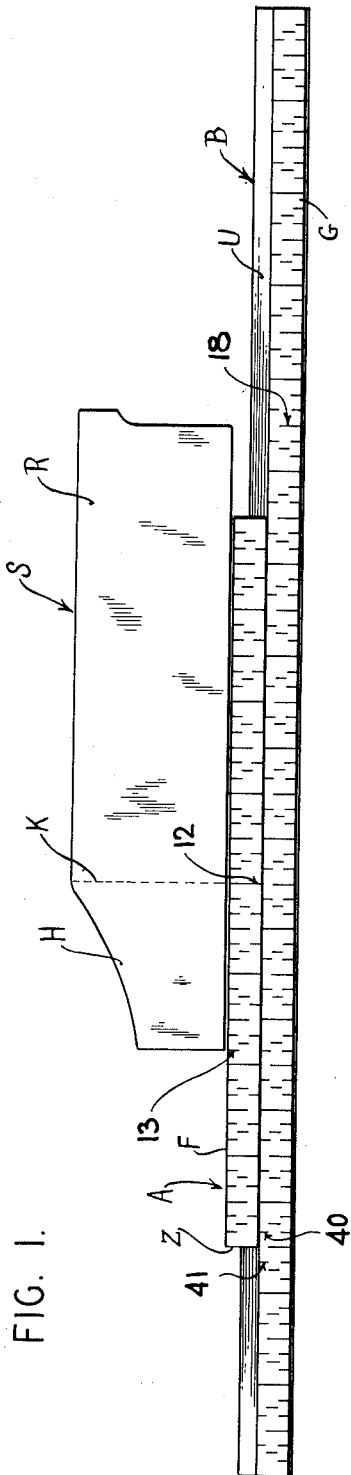


FIG. 1.

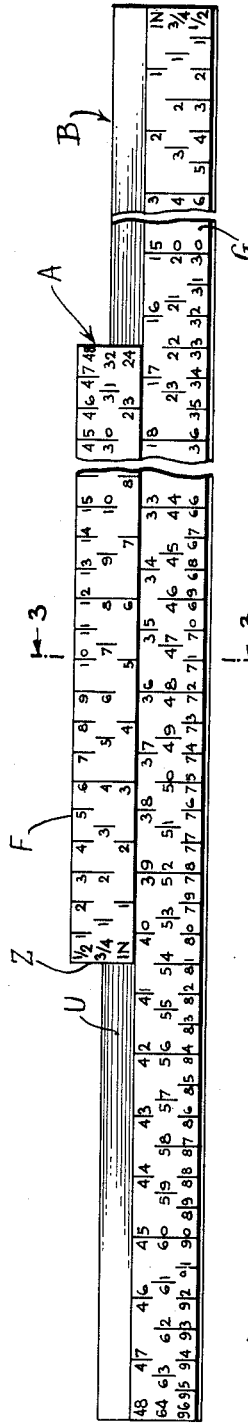


FIG. 2.

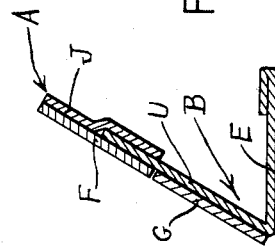


FIG. 3.

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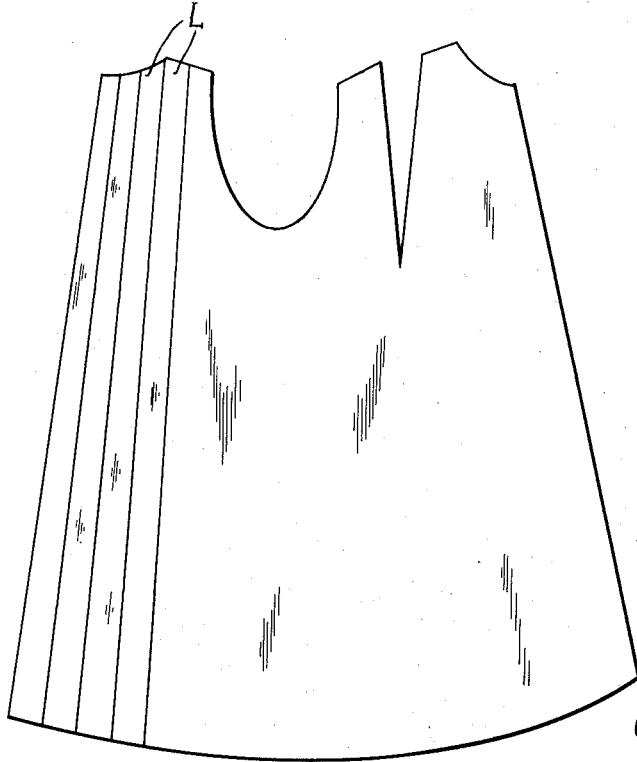


FIG. 4.

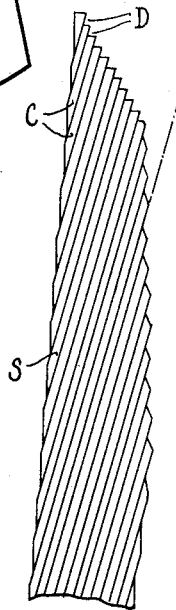


FIG. 5.

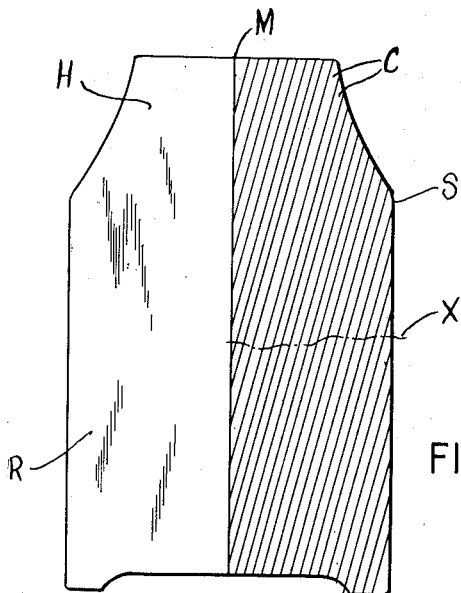


FIG. 6.

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SLIDE RULE

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Application January 14, 1949, Serial No. 70,939

4 Claims. (Cl. 235-70)

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My invention relates to improvements in slide rules, and is particularly related to a slide rule which is primarily adapted to be used in fur or pelt cutting.

In the manufacture of garments made from mink skins and other small fur skins or pelts, it is necessary to lengthen individual skins to conform to pattern specifications. This lengthening of the skins is known in the trade as the "letting-out" or "dropping" process, and reference will hereinafter be made to the process as such.

In "letting-out" a fur skin or pelt, the skin is cut into a number of parallel slices which are often diagonally disposed. After cutting, the slices are arranged in order, with each slice extended or "dropped" a pre-determined distance beyond the preceding slice, and the slices are then sewn together. This process, which will be hereinafter described in greater detail, results in the lengthening and narrowing of the skin, according to the number of cuts made and the degree to which each slice is "dropped."

Heretofore, it has been necessary to compute mathematically the number of slices necessary to conform a particular skin to pattern requirements, in the "letting-out" process. These computations are necessary in order to select a skin of the proper length, and to insure that there is no undue waste of fur. Because of the differing requirements for each skin, these calculations are time-consuming, tedious, and subject to costly error.

It is the principal object of my invention, therefore, to provide a slide rule which will conveniently, easily and quickly compute the number of cuts required in "letting-out" or "dropping" fur skins.

Another object of my invention is the provision of a slide rule which will completely eliminate the mathematical calculations which are necessary in computing the number of cuts to be made in a skin in the "letting out" process.

A further object of my invention is the provision of a slide rule which will automatically and simultaneously compute the required number of cuts to be made in both the head and rump portions of a fur skin or pelt, according to pattern specifications when a different degree of "drop-page" is required in each of the said portions.

The foregoing, as well as additional objects of my invention will be readily apparent in the course of the following specification when taken in connection with the accompanying drawings which illustrate a preferred embodiment of my invention, and in which:

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Fig. 1 is a front elevation of the slide rule embodying my invention, shown in a greatly reduced scale, a fur skin being shown as it is used with the slide rule;

Fig. 2 is a front elevation of the slide rule of Fig. 1, drawn to a larger scale, with portions thereof being broken away for convenience of illustration;

Fig. 3 is a sectional view on a still larger scale taken through line 3-3 of Fig. 2;

Fig. 4 is a plan view of a typical pattern which is utilized in the manufacturing operation in which the slide rule is employed;

Fig. 5 is a plan view of a mink skin "let-out" according to the readings of my slide rule; and

Fig. 6 is a plan view of a skin which is cut for "letting out."

The slide rule of my invention is illustrated in Figs. 1-3, and comprises an angular support member B and an upper slide A which is horizontally slidable thereon. Support B has a base wall E and an upright arm U which is disposed at an acute angle thereto. The base wall is adapted to rest upon a flat surface such as a table, and when so positioned, the upright arm U is inclined at a slight angle from the vertical, as shown in Fig. 3. The upper slide A, the support B and all of the parts associated therewith are preferably made of a light metal such as aluminum, although any rigid, inflexible material may be used.

The upper slide A comprises a front flat strip F and a rear retaining member J. The upper end of the retaining member J may be posteriorly fixed to the flat strip F by welding, riveting or similar means. The retaining member J is preferably of the same length as the flat strip F, and the upper end thereof is secured to the upper end of said flat strip F by any convenient means of attachment. The lower, depending unattached end of retaining member J is sufficiently spaced from the flat strip F so that slide A may be slidably inserted on the upper end of the upright arm U of support B, as shown in Fig. 3.

A second flat front strip G is fixedly secured to the lower front surface of the angle arm U of support B. This flat strip G is positioned so that its upper longitudinal edge abuts the lower longitudinal edge of flat strip F when upper slide A is properly inserted on support B.

In the drawings, the upper slide A is shown as being half the length of support B. This is the preferred dimension of the slide rule, although it is to be understood that the slide A and support B may be made in any suitable or desired relative proportions.

The flat strip F of the upper slide A contains on its outer face three respective scales shown in detail in Fig. 2. These scales are arranged on the strip F, one above the other, the lowermost scale being calibrated in inches, the intermediate scale in $\frac{3}{4}$ inches, and the uppermost scale in $\frac{1}{2}$ inches. Each said scale is numbered consecutively from left to right, the inch scale bearing indicia from 1 to 24; the $\frac{3}{4}$ inch scale from 1 to 32; and the $\frac{1}{2}$ inch scale from 1 to 48.

The flat strip G of support member B likewise bears a series of three similar scales: the upper scale having inch calibrations; the intermediate scale $\frac{3}{4}$ inch calibrations and the lower scale $\frac{1}{2}$ inch calibrations. These scales of support B read from right to left. The calibrations on the inch scale are arranged from one inch to 48 inches.

To fully explain the use of the above described slide rule, it will be necessary to describe the "letting-out" process of fur manufacture in some detail. For this description, reference will be made to Figs. 4-6.

Fig. 6 illustrates the shape of a mink skin before the skin is "let-out." The skin is cut longitudinally down the middle at M as illustrated, and each half is separately worked. For convenience of description, each half S will be hereinafter referred to simply as a "skin."

Fig. 4 shows a typical coat pattern to which the skins S are applied. The pattern is marked off into a plurality of longitudinal strips L. Fig. 4 shows the pattern partially marked, but it is to be understood that in practice, the entire pattern is divided into these strips L. The area of each strip L is then measured and a skin is selected which has at least the same area. The skin is selected after it has undergone the usual preliminary steps of stretching, matching, setting up, and reducing. A mink skin is generally small, usually averaging 22 inches in length. Since the strips L of the pattern are usually long and narrow, it is necessary to cut the skins in such a manner that its shape and dimensions will conform exactly with the shape and dimensions of the pattern strip L. It is of primary importance in this cutting, however, to maintain the texture and markings of the skin in a natural manner. In order to accomplish this object, the "letting-out" or "dropping" process is utilized, as follows:

The skin S is cut diagonally in such a manner as to provide a series of parallel narrow fur slices C cut on the bias, throughout the entire length of the skin as shown in Fig. 6. After the skin S has been cut, each slice C is drawn along its longitudinal axis until it extends beyond its preceding strip for a predetermined distance as shown by the stepped arrangement at D in Fig. 5. If the slices therefore, are to be "dropped" one-half inch, each slice C would be extended at point D one-half inch beyond its preceding slice. It is well-known in the art that as each slice is extended or "dropped" a certain distance, the skin is lengthened a corresponding distance. For instance, if a slice is "dropped" one inch beyond its preceding slice, the skin will be lengthened one inch. If then, the skin were cut into 25 slices, each of which was "dropped" one inch, the skin would be lengthened or "let-out" a total of 25 inches. If the 25 slices had been dropped $\frac{1}{2}$ inch each, the skin would have been lengthened $12\frac{1}{2}$ inches.

The skin S is usually cut in such a manner that all of the slices C are approximately $\frac{1}{4}$ of inch in width. It is the usual practice to "drop"

the slices C either one inch, three-quarters of an inch or one-half inch, according to the quality of work to be done, as well as the relative proportions of the pattern strips and fur skins. The common use of these three measurements in the trade, explains the provision of the three corresponding scales on the slide rule.

After the slices C have been "dropped," the skin S has the general shape shown in Fig. 5.

Each slice C is sewn to its adjacent preceding slice and the edges of the "let-out" skin trimmed evenly. The assembled skin shown in Fig. 5 is made of the slices located above the broken line X in Fig. 6. It is readily apparent that the assembled, let-out skin is longer and narrower than the original skin. A skin becomes longer and narrower proportionately with the number of cuts made, as well as the amount that each slice is "dropped."

The process is somewhat complicated, however, by the fact that the skins are not of a uniform width. Each skin has a relatively narrow head portion H, and a relatively wide rump portion R. As shown in Fig. 1, a line K is drawn on the back of the skin across the shoulder portion thereof, at the point where the head portion H joins the rump portion R. Since the skin is to be let out in such a manner that its width conforms to the even width of the pattern strips L, it is necessary to let out the rump portion R to a greater degree than the head portion H. Obviously, since the rump portion is lengthened to a greater degree than the head portion, it will also be narrowed to a correspondingly greater degree. It has been found that for most mink skins or pelts, the most satisfactory results are produced by "dropping" the slices of the head portion H $\frac{1}{2}$ inch, and those of the rump portion R either $\frac{3}{4}$ inch or one inch. In order to lengthen the skin to the length of the pattern, it is necessary to compute the number of cuts to be made in the rump section as well as the number of cuts to be made in the head section.

By way of illustration, it will be assumed that the pattern strip has been measured, and found to be $40\frac{1}{2}$ inches in length. A skin S is selected and is found to be $20\frac{1}{2}$ inches in length. It is necessary, therefore to lengthen the skin to the length of the pattern strip, which means that the skin will have to be lengthened 20 inches. The shape of the skin and the quality of the work requires that the head portion H be provided with $\frac{1}{2}$ inch "drops," while the rump portion is to be provided with $\frac{3}{4}$ inch "drops." The fur cutter is now confronted with the problem of providing both the head and rump portions with the exact number of cuts necessary so that when the slices are let out to their respective degrees, the assembled skin will be at least $40\frac{1}{2}$ inches long.

According to the conventional method, the above problem is met by mathematical calculation. The head portion is measured and is found to be $5\frac{1}{2}$ inches long. The rump portion is 15 inches long. By experience in work of this type, the cutter knows that the head portion should be lengthened to 12 inches. The actual $5\frac{1}{2}$ inch length is therefore subtracted from the 12 inch desired length, indicating that the skin must be lengthened $6\frac{1}{2}$ additional inches. Since each slice is to be dropped $\frac{1}{2}$ inch, resulting in a gain of $\frac{1}{2}$ inch in the length of the skin, the cutter divides $6\frac{1}{2}$ inches by $\frac{1}{2}$ and finds that 13 cuts are required in the head portion.

In a similar manner, the number of cuts in

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the rump portion is calculated. Since 12 inches of the 40½ inch skin are to be filled by the "let-out" head portion, this leaves 28½ inches to be filled by the "let-out," 15 inch rump portion. The rump portion must thus be lengthened 13½ inches. Since the slices of the rump portion are to be let out ¾ inch, the cutter divides 13½ inches by ¾, arriving at the result of 18 cuts, to be made in the rump section.

The use of my novel slide-rule eliminates all of these calculations. To use said slide-rule, it is only necessary to set the zero end Z of the upper slide A over the desired length of the "let-out" skin as indicated on the inch scale of base B, and apply the skin to the slide rule. According to the above illustration, the zero end Z of upper slide A is set above 40½ on the inch scale of base B, as shown in Fig. 1. The skin S is then held outstretched above upper slide A with its shoulder line K registering with the desired length of the head portion, or the 12 inch mark, on slide A. A numeral is read off the appropriate scale on slide A where the terminal edge of the head section H registers with said scale. According to the illustration, half-inch "drops" were to be made in the head portion. Therefore the half-inch scale of slide A is used, and the numeral 13 is revealed. This means that 13 cuts are to be made in the head portion.

In the rump portion R, three-quarter inch "drops" are to be made. Therefore, the ¾ inch scale is consulted on base B, and it is found that the terminal edge of the rump portion registers with numeral 18 on said scale. Therefore, the operator is instantly informed that 18 cuts must be made in the rump portion.

If it should be necessary to let out a skin to a greater length than 48 inches, the slide A may be extended to the left, until the respective numeral on the inch scale of slide A plus 48 inches equals the desired length. The slide rule is then used in the same manner as previously described.

Referring to the same figures used in the above illustration, the theory of operation of my slide-rule may be explained as follows: As was previously stated, the calibrations on slide A are numbered consecutively from left to right, while the numerals on support B read from right to left. Thus, when the zero end Z of slide A is set above a number on the support B inch scale, each succeeding inch marking on slide A will register with a numeral on support B which represents the original number minus the numeral on slide A. The zero end Z of slide A was set above the 40½ inch marking on support B. When the shoulder line K of the skin S was held above the desired length of the "let-out" head portion (12 inches) on slide A, the numeral on the inch scale support B registering with this length was found to be 28½. This indicates that the rump portion R must be let out to 28½ inches.

Since the shoulder line K which is in effect the common end of both the head portion H and the rump portion R, was held at the 12 inch marking on slide A, the terminal end of the head portion H will register with a numeral on the slide A which represents the amount which said head portion H must be "let-out." In this case, the inch scale on slide A would read 6½ inches, and the half-inch scale would read 13. Thus 13 half inch "drops" are required.

Similarly, the terminal edge of the rump portion is read off the appropriate scale on support B. This is the case, since the shoulder line is

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held over that point on the support B inch scale (the 28½ inch marking) which represents the desired length of the "let-out" rump portion. The rump portion R being 15 inches in length, the terminal edge thereof will register with the scale of support B at the 13½ inch marking or the 18th ¾ inch marking.

While a preferred embodiment of my invention has been shown and described herein, it is obvious that numerous changes, omissions, and additions may be made in my invention without departing from the spirit and scope thereof. For example, the slide rule may be made with any sort of bottom support which will hold it in an upright position. In addition, it is obvious that the scales of either or both flat strips may be arranged one above the other in any order, and that the scales may be numbered in either direction, so long as the direction of the scales of upper slide A and the scales of support member B are numbered in opposite directions.

What I claim is:

1. A slide rule for use in measuring a fur skin having a head portion and a rump portion, and simultaneously computing the number of cuts of a selected width to be made in both said head and rump portions, by direct application of said fur skin to said slide rule, said slide rule comprising an elongated base member having a planar longitudinal scale plate, and a slide member mounted on said base member for longitudinal sliding movement relative thereto, said slide member also having a planar longitudinal scale plate whose longitudinal axis is parallel to the longitudinal axis of said base member scale plate, said slide member scale plate and base member scale plate having front surfaces located on a common plane, each of said scale plates bearing longitudinally-disposed and transversely spaced rows of scales, one scale of each scale plate being calibrated in inch units, the other scales of each scale plate being calibrated in selected-fractions-of-inch units, each calibration of each scale being consecutively and integrally numbered, the scales of each respective scale plate running in the same direction and having starting points which are transversely aligned on said scale plate, the numbers of said slide member scale plate reading in the opposite direction to those of the base member scale plate, said slide rule being sufficiently long to enable said fur skin to be applied directly to the scale plates thereof, whereby, after the proper adjustment of said scale plates relative to one another, the correct cut computations may be read off one scale plate at that point intersecting with the end of the rump portion, and off the other scale plate at that point intersecting with the end of the head portion, said computations being either in inches, or in predetermined selected fractions of inches.

2. A slide rule for use in measuring a fur skin having a head portion and a rump portion, and simultaneously computing the number of cuts of a selected width to be made in both said head and rump portions, by direct application of said fur skin to said slide rule, said slide rule comprising an elongated base member having a planar longitudinal scale plate, and a slide member mounted on said base member for longitudinal sliding movement relative thereto, said slide member also having a planar longitudinal scale plate whose longitudinal axis is parallel to the longitudinal axis of the base member scale plate, said slide member scale plate and base

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member scale plate having front surfaces located on a common plane, each of said scale plates bearing longitudinally disposed and transversely spaced rows of scales, the scales of each scale plate being calibrated in different units of linear measurement, each calibration of each scale being consecutively and integrally numbered, the scales of each respective scale plate running in the same direction and having starting points which are transversely alined on said scale plate, the numbers of said slide member scale plate reading in the opposite direction to those of the base member scale plate, said slide rule being sufficiently long to enable said fur skin to be applied directly to the scale plates thereof, whereby, after the proper adjustment of said scale plates relative to one another, the correct cut computations may be read off one scale plate at that point intersecting with the end of the rump portion, and off the other scale plate at that point intersecting with the end of the head portion, said computations being in any selected unit of measurement on said scale plate.

3. A slide rule for use in measuring a fur skin having a head portion and a rump portion, and simultaneously computing the number of cuts of selected widths to be made in both said head and rump portions during the letting out process of working said fur skin, said slide rule comprising an elongated base member, and a slide member mounted on said base member for longitudinal sliding movement relative thereto, each of said members having a longitudinal front planar working surface bearing a group of scales arranged in longitudinal rows, said scale groups being in axial alinement and being located adjacent each other, one scale of each group being calibrated in a selected unit of measurement, the other scales of each group being calibrated in

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selected fractions of said unit of measurement, the calibrations of each scale being consecutively and integrally numbered with all the numerals of one scale group reading in the opposite direction to the numerals of the other scale group, said front working surfaces having a free and unobstructed area forwardly thereof and said slide rule being sufficiently long to enable said fur skin to be applied directly to said front working surfaces whereby cut computations may be read off one scale group at that point intersecting with the end of the rump portion, and off the other scale group at that point intersecting with the end of the head portion, said computations being read from any selected scale of said group.

4. A slide rule according to claim 3 in which the scales of each scale group begin on a common transverse line.

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