Sept. 4, 1928. 1,683,357

R. B. KINGMAN

METALLIC ABRASIVE SCOURING DEVICE

Filed April 23, 1926 2 Sheets-Sheet 1

Fig. 1

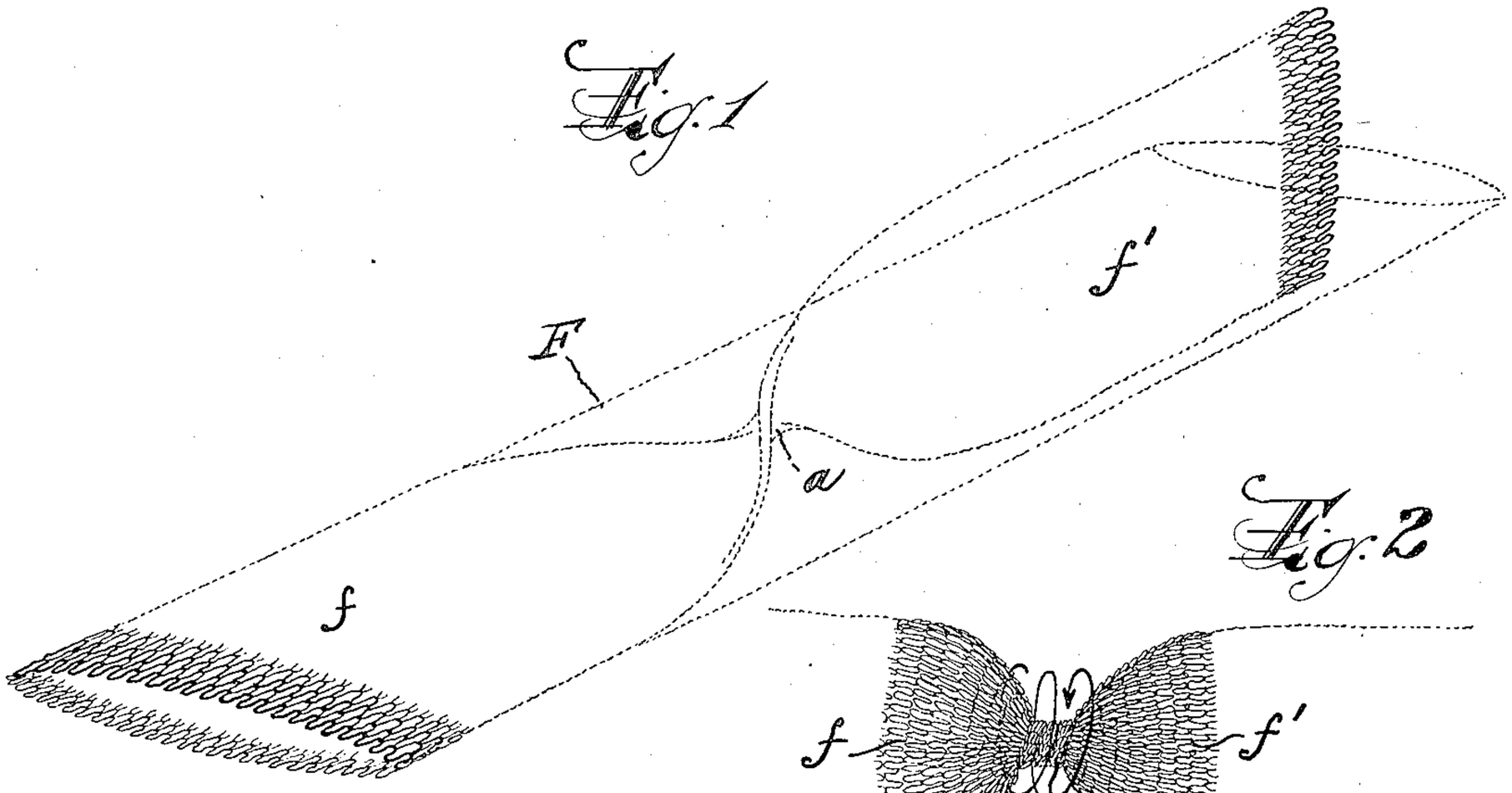


Fig. 2

Fig. 3

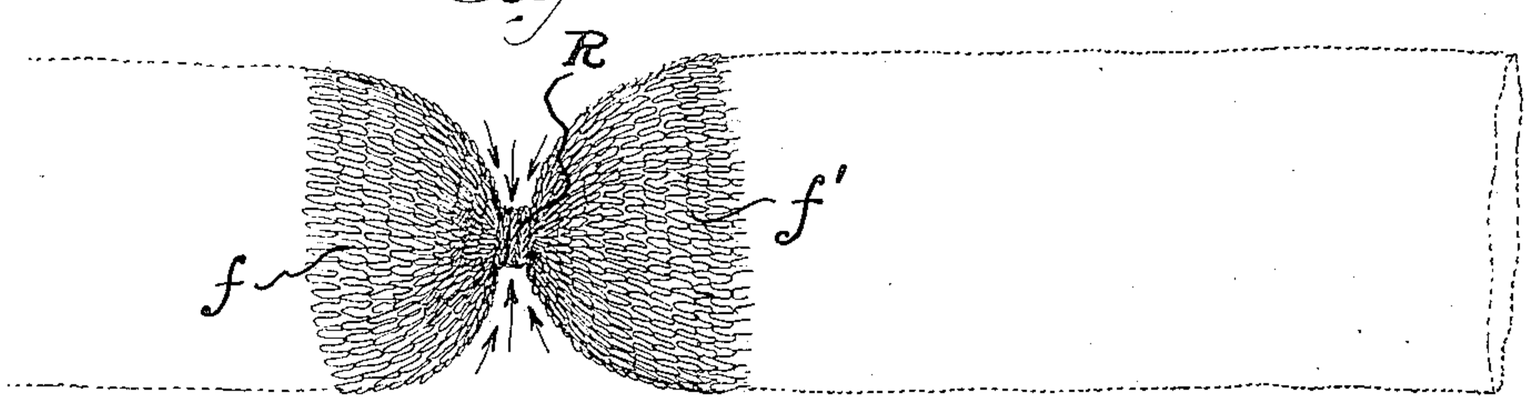
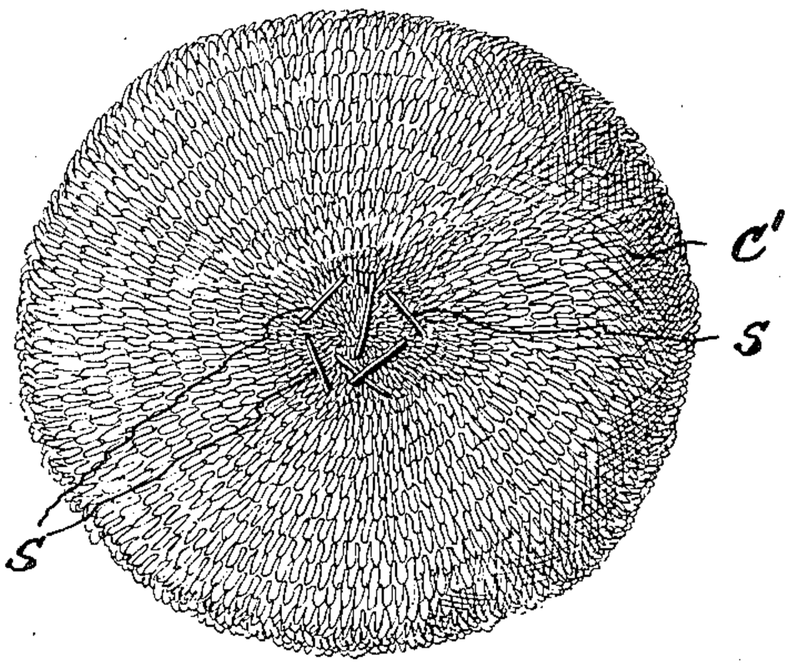


Fig. 4



INVENTOR
Russell B. Kingman
BY
Frantzel and Richards
ATTORNEYS

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R. B. KINGMAN

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Fig. 10

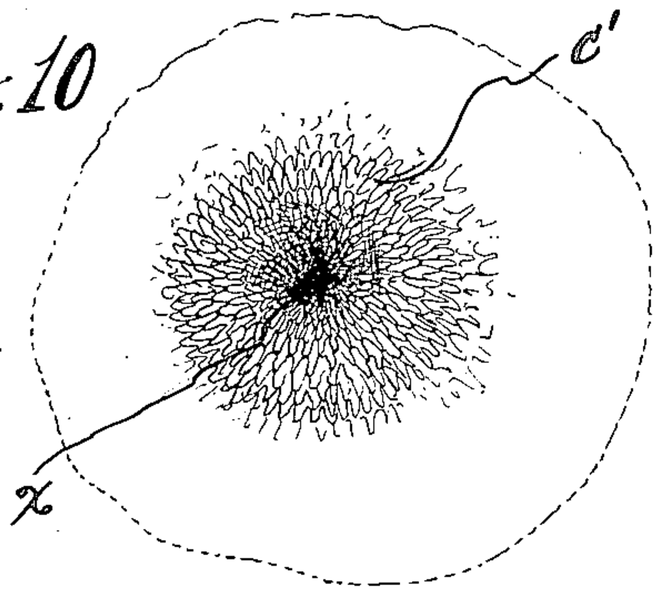
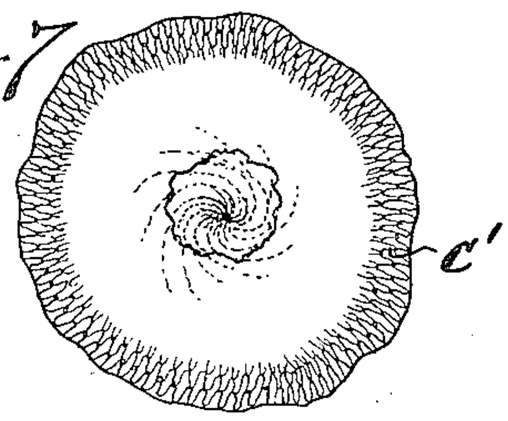


Fig. 7



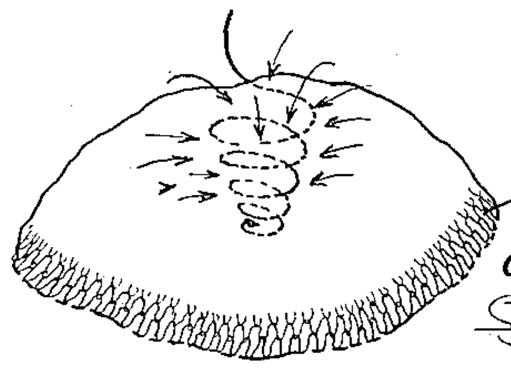


Fig. 8

Fig. 5

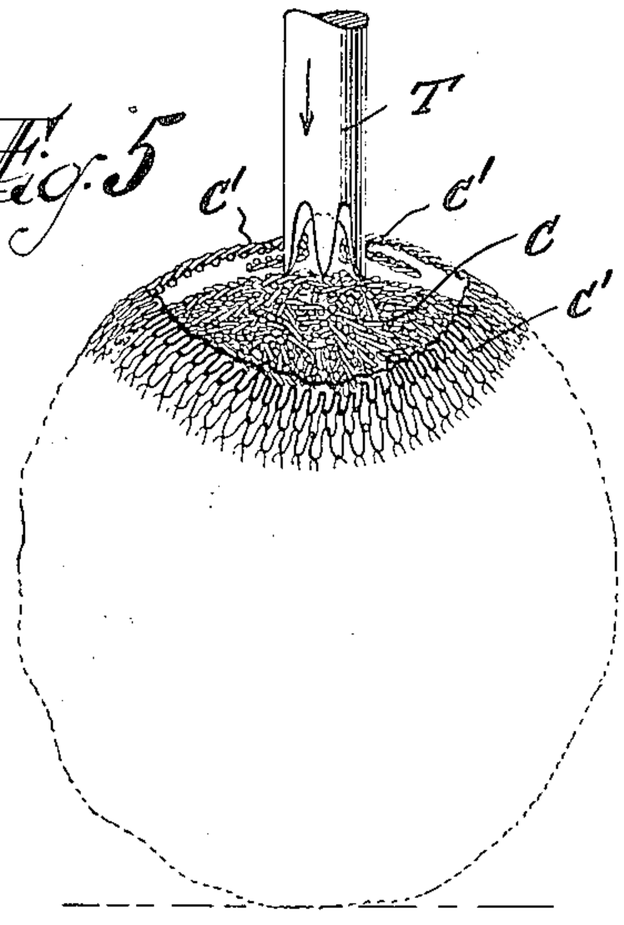


Fig. 6

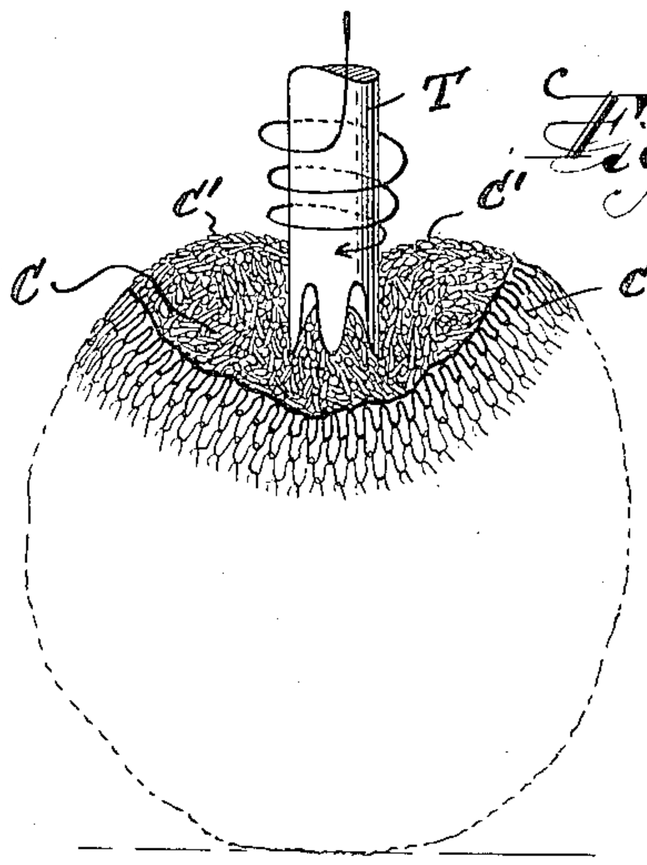
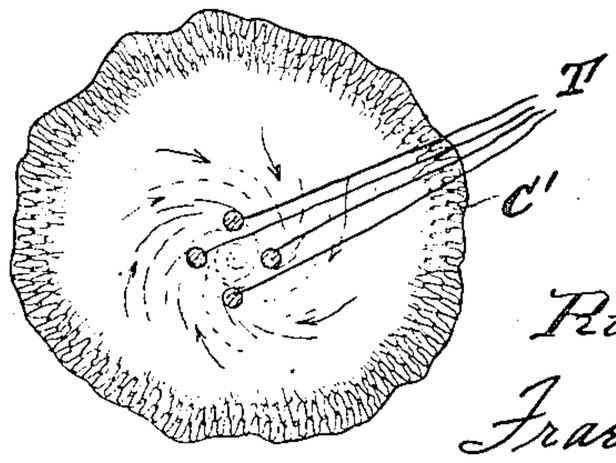


Fig. 9



INVENTOR
Russell B. Kingman;
BY
Frantzen and Richards,
ATTORNEYS

Patented Sept. 4, 1928. 1,683,357

UNITED STATES PATENT OFFICE.

RUSSELL B. KINGMAN, OF ORANGE, NEW JERSEY.

METALLIC ABRASIVE SCOURING DEVICE.

Application filed April 23, 1926. Serial No. 104,007.

This invention relates to improvements in metallic abrasive scouring devices, comprising a yieldable spongiform ball, made from knit metallic fabric, of the general kind and type shown in my prior United States Letters Patent #1,533,868 dated April 14th, 1925.

The present invention has for its principal object to provide an improved method of manufacturing metallic abrasive scouring balls of the kind above referred to, which results in a novel construction of such article.

In my aforesaid prior patent, a wire tie or restrictive winding is utilized to gather together or restrict a length of tubular knit metallic fabric intermediate its ends, thus forming two adjoined sections of such fabric; one section being balled up to form a spongiform center core, and the other section being folded over the thus formed core to provide an exterior enclosing or covering wall, adapted to retain the article in desired ball-like shape.

In the manufacture of the article, the winding of the tie wire is a hand operation entailing considerable labor, as well as loss of time in the process of making up the article, thereby adding considerably to the cost of producing the latter. In addition to the aforesaid disadvantages involved in the production of the article, the tie wire also involves other disadvantages in connection with the use of the same. Owing to the fact that the ball is used for rubbing surfaces to be cleaned, to thus effect the desired abrasive or scraping and scouring functions, the friction, wear and strain to which the ball is thus subjected, tends to break the tie wire, which thereupon loosens, with the consequence that the ball tends to disrupt and quickly lose its shape long before the service possibilities of the basic metallic fabric are exhausted.

It is the object of this invention to eliminate the tie wire or winding and to overcome the disadvantages above pointed out, by providing a novel method of manufacture and resultant novel construction of scouring ball, which on the one hand will lower the cost of manufacture, and on the other hand will increase the useful life of the product. To this end my present invention consists in a novel method of manipulating the basic tubular knit fabric to provide, without necessity of using a separate tie or winding, a gathering restriction of the material to produce the required adjoined sections respectively providing the core and cover elements of the article, while at the same time producing a novel construction of resultant ball which is better adapted to resist the wear and strains attendant upon its use without untimely loss of shape or effectiveness.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a diagrammatic perspective of a length of tubular knit metallic fabric, out of which the scouring ball is to be made, and illustrating the manner of manipulating the same to provide the restrictive gathering adapted to divide the same into the required core and cover sections; Figure 2 is a fragmentary side elevation illustrating the manner of twisting the metallic fabric in forming the restrictive juncture of the two sections thereof; and Figure 3 is a similar view showing the completed restrictive portion which is an integral part of the tubular knit metallic fabric. Figure 4 is a top end view of a completed scouring ball, showing one method of securing the free end portions of the cover section of the fabric body enveloping relation to the balled up core section.

Figure 5 is a view in part section, illustrative of an initial step of a modified method for securing the free end portions of the cover section in enveloping relation to the balled up cover section; Figure 6 is a similar view illustrating a further step of said modified method; Figures 7, 8 and 9 are respectively diagrammatic views of the intertwisting operations for securing the cover section according to said modified method; and Figure 10 is a top end view showing the finished ball, with the cover section secured by said modified method.

Similar characters of reference are employed in all of the hereinabove described views, to indicate corresponding parts.

The scouring ball is constructed from a tubular knit metallic fabric, preferably made from thin ribbon-like or flat wire all as explained in my aforesaid prior patent.

In making up the scouring ball, I take a suitable length of tubular knit metallic fabric F, and constrict the same intermediate its ends at the point *a*, by means of a twisting manipulation which produces a tightly intertwisted restrictive portion R, whereby the metallic fabric is gathered together to form two adjoined sections *f* and *f'*. The restrictive portion R being formed from the

metallic body of the fabric, once it is tightly wrought into the twisted shape, will readily retain such shape, and will form a permanent dividing juncture between the two required sections *f* and *f'*.

The section *f'* is balled together into a roughly spherical or spheroidal mass, to thereby provide a spongiform yieldable center mass or core *c* (see Figure 5), and the section *f* is turned and folded over said center mass or core *c* to envelope the same with an exterior cover *c'*, all in the manner fully set forth and described in my above mentioned prior United States Letters Patent.

The free edges of the upper end portion of the cover *c'* are gathered together at the upper end of the formed ball, and then secured to the enclosed core either by metallic stitches, staples or similar fastening means S, as shown in Figure 4, or the same may be secured by the modified method and resulting means hereafter described.

Referring now to Figures 5 to 10 inclusive of the drawings I have illustrated therein a modified method and means for securing the free end portions of the cover *c'* to the upper end of the formed ball. By this modified method the portions of said free end of the cover *c'* are gathered together at the top of the formed ball, and thereupon a suitably pronged tool T is utilized to intertwist and interlock said free end portions of the core *c'* together with the adjacent portion of the center core *c*. To this end the prongs of the tool T are thrust downwardly through the gathered free end portions of the cover *c'* as shown in Figure 5, whereupon the tool is rotated on its longitudinal axis while at the same time giving it a downward or inward thrust. These operations result in helically twisting said free end portions of the cover *c'* in the manner diagrammatically illustrated in Figures 7, 8 and 9 of the drawings, thereby intertwisting said free end portions of the cover *c'* together with the underlying portions of the core *c*, whereby the parts are interlocked together at the top of the formed ball, the basic metallic fabric tending easily and securely to retain itself in such intertwisted and interlocked condition, and thus firmly securing the cover at the upper end of the ball, as indicated at *x* in Figure 10, in much the same manner as said cover is secured at the lower end of the ball by the intertwisted restrictive portion R.

Having thus described my present invention, I claim:—

2. A scouring ball, comprising a tubular abrasive fabric twisted together intermediate its ends to provide a fixed restricted portion to divide the same into two sections, one section being balled together to form a substantially spherical center core, the other section being folded around said center core to form a continuous enveloping outer cover member, the free end portion of said cover member being intertwisted together with the adjacent underlying portion of said center core to interlock such portions together and thereby secure the cover member against separation from the core.

2. A scouring ball, comprising a tubular abrasive fabric body, a spirally twisted portion intermediate the extremities of said body to provide a filling section and a cover section with said twisted portion providing one closed end for said cover section, said filling section being balled together to form a center core, said cover section being disposed around said core in enclosing relation thereto, the remaining open end of said cover section being gathered together and secured to provide the opposite closed end of said cover section.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 27th day of March, 1926.

RUSSELL B. KINGMAN.