W. J. GOING.

ART OF FORMING BLANKS.

APPLICATION FILED OCT. 10, 1906. RENEWED NOV. 10, 1909.

961,119. Patented June 14, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

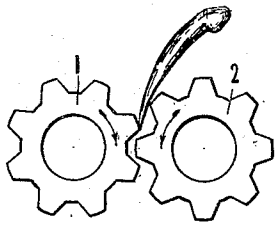

Fig. 2.

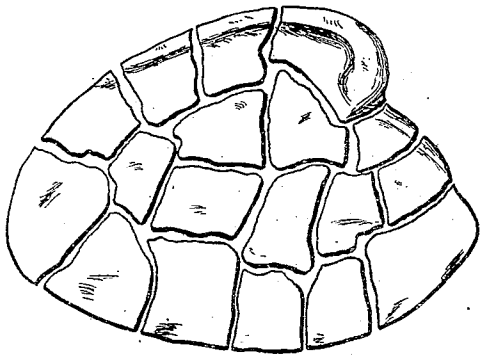

Fig. 3.

Fig. 4.

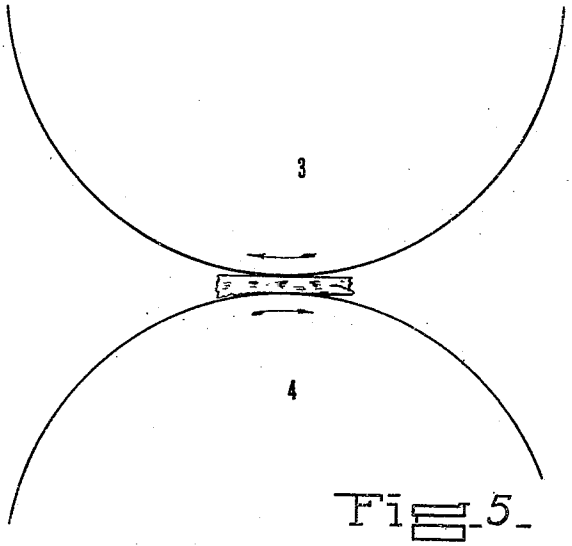

Fig. 5.

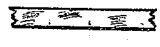

Fig. 6.

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2 SHEETS—SHEET 2.

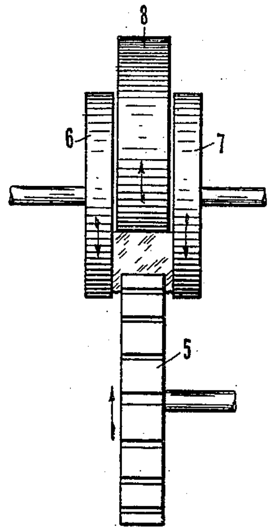

Fig. 7.

Fig. 8.

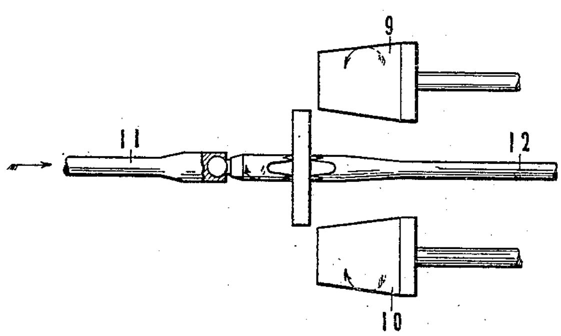

Fig. 9.

Fig. 10.

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ART OF FORMING BLANKS.

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To all whom it may concern:

Be it known that I, WILLIAM JOSEPH GOING, residing at Amsterdam, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in the Art of Forming Blanks, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates broadly to the art of forming blanks, and more particularly to a process for forming blanks for buttons from shells.

One of the principal objects of the invention is to provide an improved process whereby button blanks may be formed from shells in a cheaper and more efficient manner than has been possible by the methods hitherto employed.

Other objects will be in part obvious and in part pointed out hereinafter.

With the above and other ends in view, the invention accordingly consists in the several steps and the order and relation of one or more of the same to each of the others thereof which will be exemplified in the process hereinafter described, and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawings, I have illustrated schematically the various steps which I employ to carry out my process, and also the various forms taken on by the shell material from a whole shell to a completed blank.

In these drawings, Figure 1 is a plan view showing a shell from which blanks may be formed according to my improved process. Fig. 2 illustrates diagrammatically the manner of breaking the shell material into fragments. Fig. 3 is a view showing the shell broken into fragments. Fig. 4 is a view in perspective of one of the fragments. Fig. 5 illustrates diagrammatically a manner in which the fragments may be flattened. Fig. 6 is a view in elevation of a flattened fragment. Fig. 7 illustrates diagrammatically a manner in which the fragments may be squared. Fig. 8 is a view of a flattened and squared fragment. Fig. 9 illustrates diagrammatically a manner in which the fragments may be formed into the finished blanks. Fig. 10 is a perspective view of one of the finished button blanks.

Before proceeding to describe in detail the several steps which comprise my improved process and a manner in which the same may be carried out, it may first be noted, that prior to my invention, in the manufacture of buttons from shells, it has been customary to perforate the shells by means of tubular drills and the like, which cut therefrom a core or blank of the desired size and shape. This operation, in practice, has been attended by many difficulties, among the more important of which is the necessity of frequently resharpening the cutting tool, which ordinarily is made of steel or other cutting material, by reason of the fact that, although the material of the shell is comparatively friable, it is peculiarly destructive to cutting edges. Moreover, the tools employed for this purpose have very short life, and must be frequently replenished.

Another disadvantage attending prior operations of this nature resides in the fact that it has been necessary to constantly apply a lubricant to the cutting edge, which operation is rendered difficult on account of the inconvenient position of the work.

Another serious difficulty that has been encountered in the methods heretofore employed resides in the fact that the blanks are often chipped or flaked at their edges under the action of the machine.

It may also be noted that in blanks cut from shells, it is highly desirable to have the natural polish or smooth face of the shell correspond with the polished face of the button thereafter to be formed from the blank, as, on this account, a great saving of material and labor may be effected, since such polished face is more nearly finished in the first instance, it being free from the serrations such as are always found upon the back face of the shell. Moreover, such face is capable, when ground, of taking on a higher and more iridescent polish than can be secured by polishing the back face of the shell.

The manufacture of buttons, according to the methods hitherto employed, has also resulted in a great waste of the valuable shell material, owing to the necessity of leaving webs or necks between the perforations of the shell, which webs or necks serve to support the shell from which the blank is being formed. Thus, it has been necessary to scrap a relatively large portion of the shell, with

a consequent loss of valuable button material.

In overcoming the above mentioned, among other disadvantages, and in securing many highly beneficial results, I have provided a process such that in the carrying out of the same the use of boring or cutting tools is entirely eliminated. This process may be said broadly to consist in breaking or otherwise dividing shell material into fragments and then forming blanks of the desired contour from said fragments, and in so far as I am aware, I am the first to produce a button blank in the manner specified.

By the term "fragment" as herein used in the specification and claims, is meant a piece of a shell which has been broken, fractured or otherwise separated from a shell or a section of a shell, in contra-distinction to a piece which has been separated from a shell by a cutting operation, as by means of a boring instrument.

In carrying out my invention I employ several steps which I regard in a measure as being ancillary to the main steps. These steps are directed toward putting the shell fragments from which the blanks are to be made in such a condition as will permit of other and more important steps being carried out with greater facility. These ancillary steps are deemed important, particularly from an economical and commercial standpoint, as will hereinafter appear.

In the drawings to which I shall now refer, I have illustrated diagrammatically the several steps of the process in the order in which they are carried out, and while this order of the steps may be varied they will be preferably employed in the order shown and described.

The first step of my process consists in the breaking of shell material into fragments, and this operation may be effected by passing a shell such as is shown in Fig. 1 of the drawings between serrated rollers or crushers of the nature of those illustrated in Fig. 2 at 1 and 2. The fragments may then be sorted as to size in any approved manner, and any fragments of too large a size may be again passed between the crushing rollers to further reduce them. After the shell material has been thus broken into fragments, the particles or fragments too small to be utilized for blanks are discarded and those of a suitable size selected. It has been found, however, that in practice a large number of suitable fragments can be secured from a single shell, and that but a very small portion of the shell material is wasted.

In Fig. 3 of the drawings is shown the integral fragments of a shell which has been broken in the manner described, and the size and shape and relative arrangement of the fragments of the shell therein shown may be considered typical of all fragments of other shells which have been broken in a manner similar to that above described. I have found that fragments of shells that have been broken in this manner will usually have, at least, one substantially straight edge, and this fact, as will hereinafter appear, is of material aid in the carrying out of a further step of the process. After the shell material has been thus broken into fragments and suitable fragments selected, they are ready to receive the next step of the process.

Flattening the fragments.—In this next step of my process, the fragments are "flattened", such operation being effected by removing material from the opposite faces of the fragments until said faces lie in parallel planes. One method of carrying out this step is illustrated in Fig. 5 wherein the numerals 3 and 4, respectively, indicate diagrammatically a pair of rotatably mounted, grinding or abrasive members, which are spaced apart a distance sufficient to permit a fragment such as shown in Fig. 4 to be passed between them. These abrasive members are preferably rotated in opposite directions, as indicated by the arrows, and remove the shell material from the opposite face of the fragment in a manner which will be readily understood. A fragment after being passed between these abrasive members is shown in Fig. 6 of the drawings, and it will be seen that the opposite faces thereof are disposed in parallel planes. At this stage of operations upon the fragments, each one thereof will preferably be marked upon its inner or pearl side, so that such side may readily be distinguished when the fragments arrive at the finishing machine where the particular pattern or style of button is faced in the blank. This latter operation, however, forms no part of the present invention.

Any desirable method may be employed to mark the fragments. In practice, however, I found that they may be conveniently marked by delivering them from abrasive members, such as shown in Fig. 5 with their faces or pearl sides downward, upon an inked belt, means being provided to press them against said belt to insure that they will take up coloring matter therefrom. This inked belt will drop the fragments into a suitable receptacle whereupon they are ready for the next step of my process.

Squaring.—In this step of my process the fragments are "squared" by having material removed from their edges in such a manner that the fragment will take on a predetermined angular contour. In Fig. 7 of the drawings, one of the various ways in which this latter operation may be accomplished, is shown diagrammatically. In this figure 5 indicates a feed cylinder provided with a plurality of slots, each of

which is adapted to receive one of the flattened fragments. This cylinder revolves between a pair of rotatively mounted abrasive members 6 and 7 respectively. A third abrasive member 8 is mounted to rotate between members 6 and 7 as shown. It will be seen, therefore, that when the operator places a flattened fragment in a slot of cylinder 5 said fragment will be carried into engagement with the abrasive members 6, 7 and 8, which are disposed in such a manner that three sides of the fragment will be subjected to the action thereof. At this point it may be noted that it is only necessary that three sides of the fragment be subjected to the action of abrasive means, as actual experience has demonstrated that every fragment of broken shell will have one substantially straight side. The fragment is placed in the slot of the feeding cylinder with the substantially straight edge down. This edge serves as a base to which the other edges are squared. This squaring step of my process while not absolutely necessary is yet most important from a commercial view-point, since it reduces the broken fragments of shells into such form as will permit of their being fed automatically to the mechanism employed for performing the peripheral grinding or rounding step of my process, which will presently be described, and in this connection it may be noted that the particular contour given the fragments in the squaring step is immaterial, it being only essential that they be reduced to such shape as will permit of their being automatically fed as by means of a hopper. In this embodiment of my invention I have shown the fragments as being reduced to substantially a square form, as in practice I have found that fragments of this shape may be successfully fed through a hopper. After this squaring step has been performed the flattened and squared fragments are ready to receive the finishing step of the process.

Rounding.—In this step of the process, the flattened and squared fragments have material removed from their peripheries until they are reduced to the desired size and shape. This operation is preferably carried out by means of grinding or abrasive members, such as are shown diagrammatically in Fig. 9 of the drawing. As shown in said figure, 9 and 10 are a pair of abrasive members, each of which comprises a circular wheel, a portion of the periphery of which is inclined toward its axis of rotation, the remainder of the periphery thereof being disposed substantially parallel to the axis of rotation. These abrasive members may be driven by any suitable means, so that when a fragment is passed between them they will act upon the same, and thereby reduce it. As shown herein, the fragment is clamped between a pair of spindles 11 and 12, said spindles being adapted to be moved endwise while rotating, whereby the fragment will be revolved while it is being acted upon by the abrasive members 9 and 10. The fragment, will therefore, take on a circular contour. This last operation is the last of the several steps of my process, a finished blank being shown in perspective in Fig. 10 of the drawings.

It will thus be seen from the above description of the several steps which constitute my invention, that said invention, as herein disclosed, is well adapted to realize all the ends and objects above pointed out in an exceeding efficient and economical manner. A highly important advantage accruing from the carrying out of my process, as described, is that the use of all tools and cutting instruments is eliminated, whereby there is effected a correspondingly great saving as regards the cost of carrying out the same. A further advantage attained by my process lies in the fact, that by its use a great saving of shell material is effected, since the process may be successfully carried out upon fragments of shell, and is not dependent upon complete shells, as are methods of producing button blanks as hitherto provided. For instance, my process may be effectively carried out upon shells from which blanks have been already cut by means of circular boring tools, as the webs or necks, which separate the perforations provide considerable valuable button material. Thus the present process is well adapted for employment upon waste products of machines of the core-drill type. By the process above described, I am also able to utilize all parts of the shell, as, for instance, the hinged portion thereof, which it heretofore has been impossible to successfully utilize in the making of button blanks. Another, and a most important, advantage obtained by my process lies in the fact that the carrying out of the several steps may be rendered substantially automatic, requiring few attendants to operate the several organizations employed for carrying out the same.

In order to remove any chance of ambiguity occurring in this specification, or in the claims, it may be stated that by the term "flattening" is meant the grinding off of the faces of shell to cause such faces to lie in substantially parallel planes; that by the term "squaring" is meant the reducing of a fragment to such square, angular, or other form, as will permit the same to be fed automatically to a hopper; and that by the term "grinding" is meant the final step of peripheral grinding, which reduces the flattened and squared fragments to a circular contour, thus completing the blank ready to be faced or bored. The marking of the front face of the shell in

the flattening step of my process, is also of great service to the button manufacturer, inasmuch as it enables him to readily determine which side of the blank should be faced or formed into the front face of the button.

While I have described the several steps which constitute my invention in the above order, it is apparent that the order of certain of said steps may be varied without effecting a departure from the spirit of the invention; thus the broken fragments might be squared prior to their being flattened. I prefer, however, to preserve the order as above given.

As many changes could be made in the method of practicing the above invention without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. The process of forming a blank for a button, which consists in breaking a shell into fragments and then removing material from the periphery of one of said fragments until the same is reduced to the proper size.

2. The process of forming blanks for buttons, which consists in breaking a shell into fragments and then forming said fragments into blanks of the desired contour.

3. The process of forming a blank for a button, which consists in breaking a shell into a plurality of fragments, and then peripherally grinding one of the fragments until the same is reduced to the proper size.

4. The process of forming a blank for a button, which consists in removing material from one of the lateral surfaces of a fragment of a shell and then removing material from the periphery thereof until said fragment is reduced to a blank of the proper size.

5. The process of forming a blank for a button, which consists in removing material from the opposite faces of a fragment of a shell to flatten the same, and then removing material from the periphery of the fragment to reduce the same to a blank of the proper contour.

6. The process of forming a blank for a button, which consists in grinding at least one of the lateral faces of a fragment of a shell to flatten the same, and then grinding the same peripherally to reduce the same to a blank of the proper contour.

7. The method of making buttons from a shell, which consists in dividing the shell into pieces, grinding the opposite faces of the pieces to make them substantially parallel, and then working said pieces into buttons.

In testimony whereof I affix my signature, in the presence of two witnesses.

WILLIAM JOSEPH GOING.

Witnesses:
WM. T. SAVAGE,
JAMES W. FERGUSON.