No. 691,505. Patented Jan. 21, 1902.

P. F. TURNER.

PROCESS OF UTILIZING THE INTESTINES OF HOGS.

(Application filed Aug. 28, 1901.)

(No Model.)

Fig. 1.

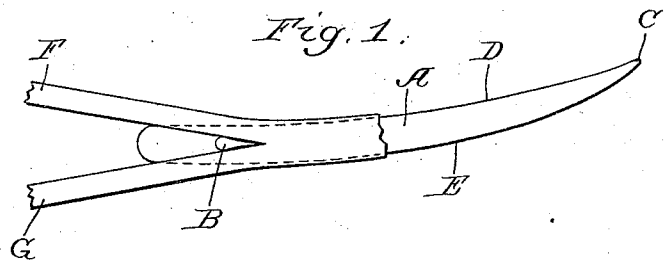


Fig. 2.

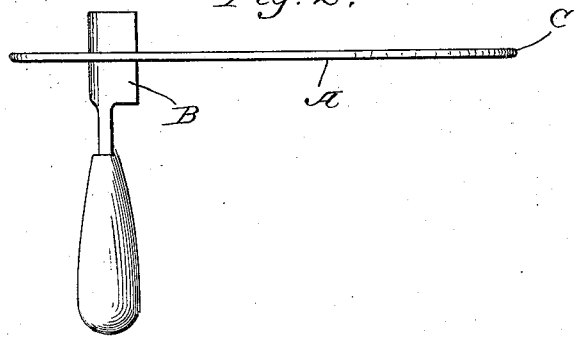


Fig. 3.

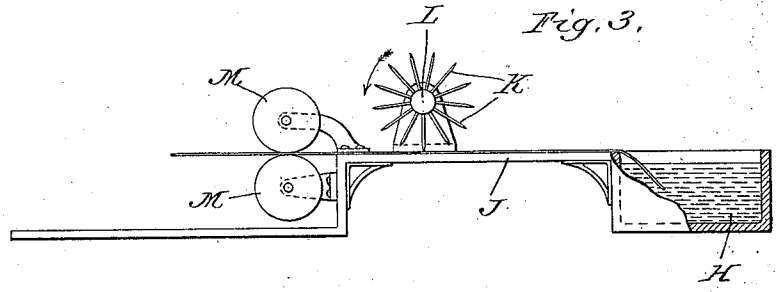
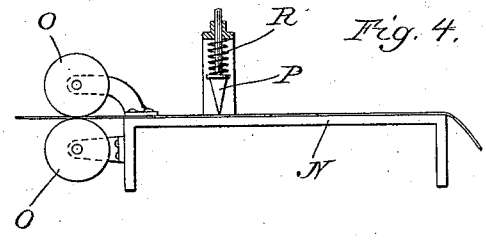


Fig. 4.



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UNITED STATES PATENT OFFICE.

PETER F. TURNER, OF CHICAGO, ILLINOIS.

PROCESS OF UTILIZING THE INTESTINES OF HOGS.

SPECIFICATION forming part of Letters Patent No. 691,505, dated January 21, 1902.

Application filed August 28, 1901. Serial No. 73,545. (No specimens.)

To all whom it may concern:

Be it known that I, PETER F. TURNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Processes of Utilizing the Intestines of Hogs, of which the following is a specification.

My invention relates to the use of the intestines of hogs and the application of certain processes thereto whereby the same may become useful for the manufacture of strings, bands, belts, and the like. Heretofore intestines of sheep and lambs have been used for this purpose and also the intestines of beef, as set forth in my prior patent, No. 221,199, of November 4, 1879; but the proper means for using the intestines of hogs have not yet been at the disposal of the public.

I have illustrated diagrammatically, as it were, apparatus for carrying out the several operations through which I propose to pass the intestines to make them proper for use.

Figure 1 is a plan view, and Fig. 2 a side elevation, of a hand-tool for splitting the intestine into two pieces. Fig. 3 is a side elevation of an apparatus for cleaning and scraping the strips. Fig. 4 is a side elevation of a somewhat similar apparatus designed to scrape and stretch the intestine-sections.

A is a curved or knife-shaped piece of wood, having arranged therein the knife B, provided with the tip C. The intestine is threaded upon this tip and forced past the knife, the piece A being shaped to accommodate itself to the natural curve of the intestine. The intestine may be drawn by hand forward against the knife. The inner side of the intestine, or that portion on which the fat adheres, lies upon the convex side of the strip D, while the outer portion of the intestine lies upon the side E. A different tension is applied to the two parts. Thus the part F of the intestine is drawn more slowly than the part G, because of the greater elasticity of the latter part. By arranging any desired number of knives B in proper relation to each other the intestines can be cut into a series of strips. The strips are then placed in the tank H and drawn across the table J under the scraping and cleaning knives K K on the rotating shaft L. They are drawn forward by means of the rollers M M. After this process they are subjected to what is called "hand-scraping." They are scraped by hand either with the bare hand or with a rude and simple scraping-tool to further clear them from adhering substances. They are then placed on the table N, being drawn forward therealong by means of the rollers O O. They are drawn under the knife or scraping-piece P, which is elastically pressed against the table by means of the spring R. This knife P tends to further clean the intestine portions and at the same time to stretch them, for it elastically holds them down upon the table as the rollers O O pull the sections forward. It is obvious that these several pieces of apparatus may be greatly varied without departing from the spirit of my invention, and I have simply shown them, as it were, diagrammatically.

The intestines of hogs are received from the slaughtering-houses in a comparatively clean condition. They are taken and split lengthwise on a line at a right angle to the diameter through the fatty portion which commonly adheres to such intestines. The splitting is accomplished by any desired means. They may be split by more than one cutting, so as to form a series of long, thin, narrow strips. In doing this each strip or cutting must be drawn forward against the knife by a different tension, because of the different elasticity of the different sections of the intestine. This cutting constitutes the first step in the process. They are now cleaned by scraping. This is conveniently accomplished by the devices illustrated—the series of rotating knives, in conjunction with the rollers. By this means the heavy substances are removed, as well as the inner membranes, where the same are necessary to be removed. This is a quick process and preferably accomplished soon after the splitting. The hand-scraping then ensues. This is an elastic treatment and calculated to give to each piece the peculiar scraping and cleaning treatment which it may require. The pieces are then immersed in a solution which preferably contains some soda, the purpose of which is to soften and toughen and take out the disposition of the strips or sections of the intestines to stretch. These operations are further aided by the

cleaning and stretching device illustrated or some similar apparatus which may be substituted for it. The sections of the intestines are drawn forward over the table by means of rollers and under an elastic scraper. The next step is to cut them into proper lengths and sort them to bring together the sections of the same character. These sections are now twisted or spun together, and it will be found that a string—for example, for a musical instrument of a certain desired thickness and strength—can be produced by using fewer strands than is the case with the intestines of sheep and lambs. Up to this time and during the several steps of the process the intestines have always been moist. They are now stretched on a frame and dried. After this process has been completed they are preferably polished and oiled by stretching them or turning them while stretched and running emery paper and oil over them in any desired manner. They are then coiled and are ready to be boxed. It is not necessary to apply all of these processes to the intestines of hogs to completely fit them for different uses; but to make fine strings for musical instruments all the steps are to be complied with. A coarser string for tennis-rackets and the like can be produced by suppressing some of the later steps in the process.

By the method of treatment of intestines of hogs herein described I am enabled to make a string of a given thickness with fewer strands or strips than heretofore used in the making of strings of the given size from the intestines of other animals.

I claim—

1. The process of producing instrument-strings from the intestines of hogs, which consists in taking the uncleaned intestines of hogs and splitting them into strips of relatively large cross-section by drawing the intestines, by unequal tensions applied to the several strips, against the cutting device, drawing them by a yielding tension under cleaning-knives, cleaning and scraping them by hand, immersing the strips in a soda solution to soften and toughen them and continuing the treatment so as to rid them of their tendency to stretch, cutting them in proper lengths and sorting them, and then taking a relatively small number of strips or strands in proportion to the cross-section of the string to be made, and twisting or spinning them together, then stretching, drying and finishing, substantially as described.

2. The process of manufacturing instrument-strings from the intestines of hogs, which consists in forming from the intestines of a hog a series of relatively thick or heavy strips, forming them into properly-shaped strings or strands and spinning or twisting them together so as to form an instrument-string of a series of relatively heavy strands, said string having fewer strands in proportion to its cross-section than is the case with strings made from the intestines of other animals.

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