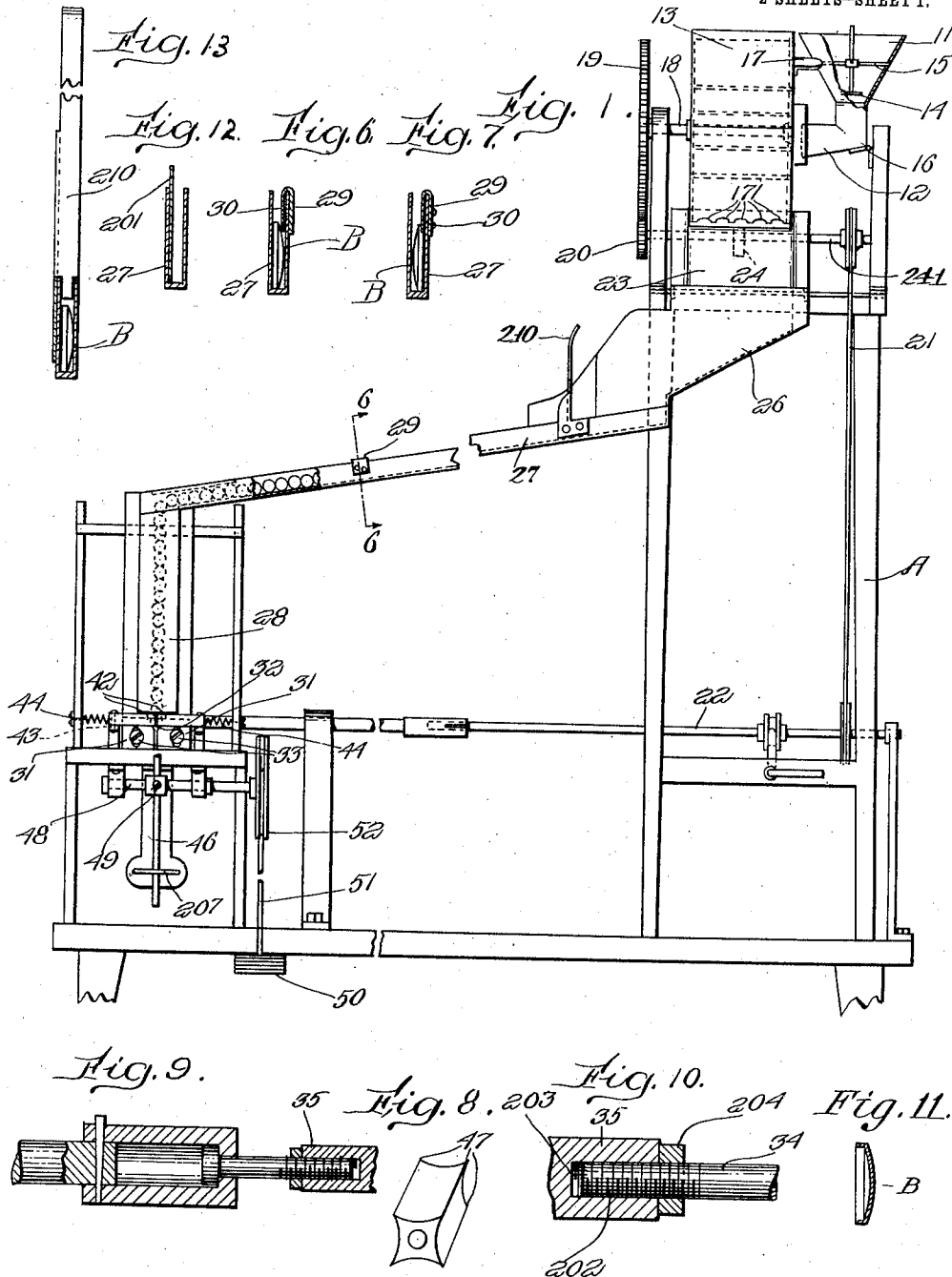


J. TOLAND.
 BUTTON BURNISHING MACHINE.
 APPLICATION FILED AUG. 25, 1910.

1,003,218.

Patented Sept. 12, 1911.

2 SHEETS—SHEET 1.



Witnesses:
 Alice H. Morrison
 John H. Parker

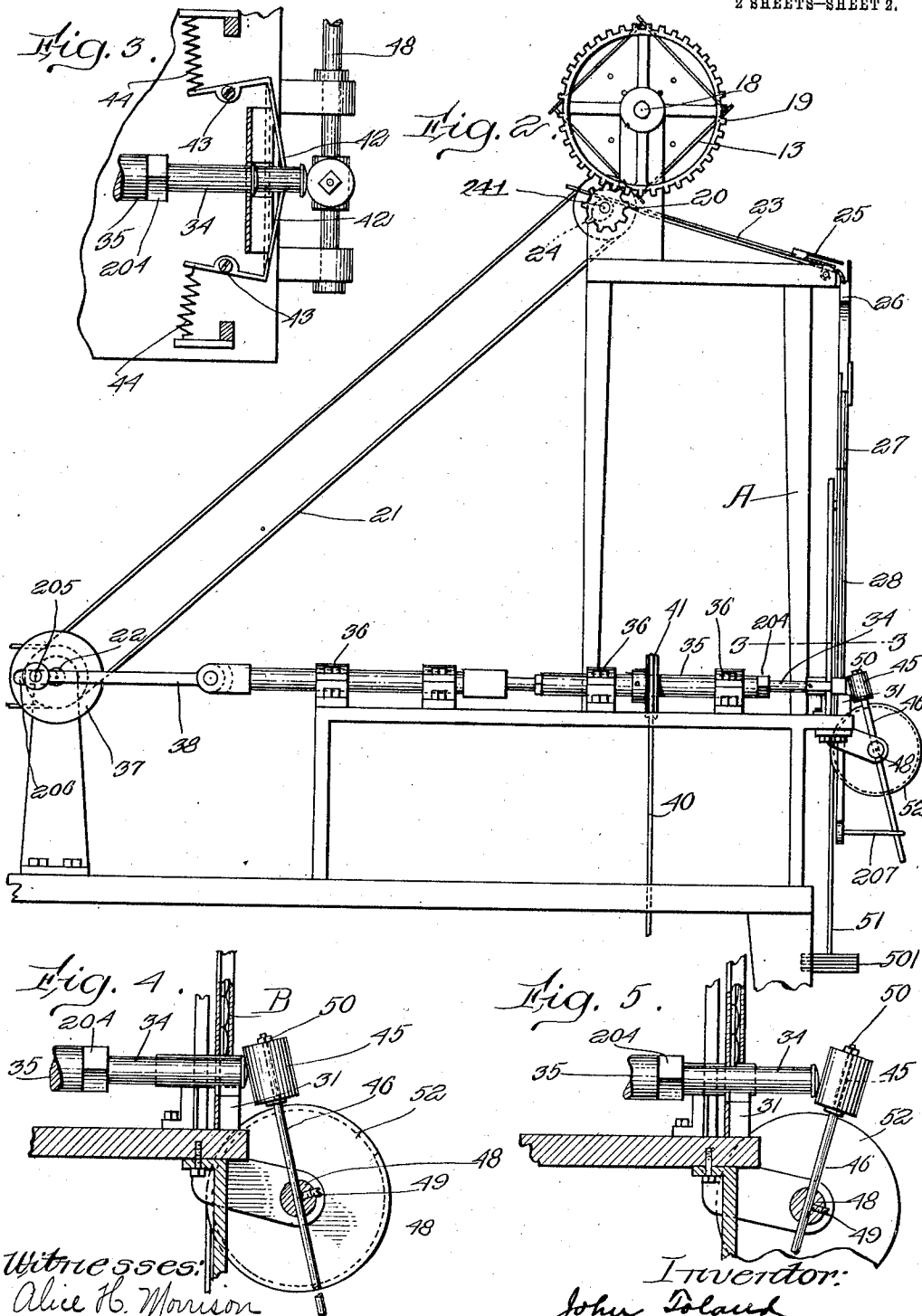
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UNITED STATES PATENT OFFICE.

JOHN TOLAND, OF BOSTON, MASSACHUSETTS.

BUTTON-BURNISHING MACHINE.

1,003,218.

Specification of Letters Patent. Patented Sept. 12, 1911.

Application filed August 25, 1910. Serial No. 578,822.

To all whom it may concern:

Be it known that I, JOHN TOLAND, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Button-Burnishing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The present invention has to do with machines for scraping and burnishing metallic blanks for use in making buttons and similar articles. The blanks to be finished are ordinarily of brass or similar metal. Frequently a name or design is stamped in the surface and the depressions formed thereby are filled with enamel or some coloring substance by immersing the blanks in a suitable bath and thereafter the remaining surface of the blank requires to be scraped to remove the coloring matter adhering thereto, or to be burnished so as to leave the general surface of the button blank of bright metal and the depressions caused by the stamping colored by the dye or other material employed.

The present invention has for its object to provide a machine for automatically performing this work of scraping or burnishing button blanks.

The machine in general consists in addition to the burnishing or scraping mechanism of means for arranging the blanks with the proper face toward the burnisher, and mechanism for presenting the button to the stone or scraper which acts upon the surface of the blank.

In the following specification, a particular feeding mechanism by means of which the button blanks are properly presented to the arbor on which the blank is supported during the burnishing operation has been described; but it will be understood that any suitable feeding mechanism may be employed. The one shown herein is believed to be novel and may be made the subject of claims in a divisional application to be filed hereafter.

In the following specification and claims I have for convenience of expression termed the instrument which performs the work of scraping or burnishing the button blank the "burnisher" and do not intend by the use of that term to limit myself to any particular form of instrument as there are a large

variety capable of use, the one selected depending largely on the result desired to be accomplished.

The invention will be fully understood from the following description taken in connection with the accompanying drawings and the novel features thereof are pointed out and clearly defined in the claims at the close of the specification.

In the drawings,—Figure 1 is a front elevation of machine embodying the invention. Fig. 2 is a side elevation thereof. Fig. 3 is a section on line 3—3 Fig. 2, looking downward. Figs. 4 and 5 are details of the polishing apparatus, the parts being shown in different positions in the two figures. Figs. 6 and 7 are sections on line 6—6 Fig. 1, and indicate the means for preventing any buttons which are faced wrong passing down the slide. Fig. 8 is a view in perspective of the scraper employed for doing certain classes of work in the machine embodying the invention. Fig. 9 is a detail of the construction of one portion of the arbor shaft. Fig. 10 is a detail of another portion of the arbor shaft. Fig. 11 is a section of a button blank adapted to be operated upon by the machine embodying the invention. Fig. 12 is a section of the button runway showing the means employed for adjusting the runway for use with a thin button blank. Fig. 13 is a detail showing the stop 210.

Referring now to the drawings and more particularly to Figs. 1 and 2 the various instrumentalities are shown as supported in a frame A of suitable shape. At the top of the frame is a hopper 11 into which the button blanks are poured. One of these button blanks is shown in section in Fig. 11 and will be seen to have a rounded outer surface B and two flanges extending from the periphery of the blank. The button blanks pass from the hopper 11 through the spout 12 into a rotating box or drum 13, and the speed of the flow of the blanks is controlled by an adjustable gate 14 supported on a cross bar 15 in the said hopper. The said hopper 11 is supported on a hinge 16 to the frame of the machine, and is acted upon by a cam or knocker 17 on the side of the rotating box or drum 13. This knocker 17 agitates the hopper 11, causing it to move slightly on the hinge 16 and to feed the buttons to the revolving box 13.

The revolving box 13 is substantially square in cross section as shown in Fig. 2, and at the point where two of the adjacent sides come together there are formed a series of holes or slots 171 which are of such size and shape as to permit one of the button blanks to pass through them readily if the blank is lying with its curved face upward, but which will not permit the blank to pass through if it is lying with the curved face downward. Such a series of holes or slots 171 is provided at each angle of the box 13. The box 13 is mounted on a rotating shaft 18 and is turned by gears 19 and 20 themselves operated by the belt 21 from the main shaft 22. Each time the rotating box turns over some of the button blanks which are right side up slide through the slots 171 and drop onto an inclined plane 23, while such of the button blanks as come to the slots wrong side up are unable to pass through the slots and fall back into the center of the box as the rotation of the box continues. It will be seen that this construction provides for a steady flow of button blanks down the inclined plane 23 all the blanks being right side up. The said inclined plane 23 is caused to rise and fall slightly next to the edge of the boxes by means of a cam 24 mounted on shaft 241, and said inclined plane is slightly higher at its edges than on the side as will be seen from the shading in Fig. 1. This prevents any of the button blanks working off over the sides. At the bottom of the said inclined plane 23 is located a guard 25 to prevent the button blanks turning over in the air as they slide off the edge of the inclined plane 23 into the runway 26 which forms part of the canal leading to the burnishing mechanism. The runway 26 extends downwardly at a slight angle and the buttons which have laid flatwise on the inclined plane 23 now stand edgewise in the runway 26 and roll along the bottom of it. The runway 26 is just wide enough to permit a single button blank to move edgewise freely, but may be made narrower to accommodate a thinner button blank by the insertion of one or more strips 201 of thin brass or other sheet metal as seen in Fig. 12. It will of course be understood that when it is desired to operate upon a smaller size of blanks, the entire canal will be thus narrowed by the insertion of the strips of metal. The runway 26 leads into a chute 27 which itself deposits the button blank in a vertical feed slot 28. In the chute 27 is placed a stop 29, seen more plainly in Figs. 6 and 7 by means of which any button blank which is faced the wrong way is prevented from going farther along the chute. This stop 29 consists of a U-shaped member, one end of which 30 projects downwardly into the passage in the chute in such a position

that the button blanks which are faced in the right direction pass it without interference while such of the button blanks as are faced the wrong way strike against it and are stopped. This holds back the line of blanks until the blank which is faced the wrong way can be removed by the operator. This is important as the blank which is faced the wrong way is likely to do injury to the mechanism which presents the blank to the burnisher or to be itself bent or marred. In the canal there is also placed another stop 210, see Fig. 13, which prevents the blanks running down the canal on top of each other beyond the stop and causes the surplus blanks to fall out of the canal onto the floor or into a box not shown. The lowermost button blank in the vertical feed slot 28 rests against the edge of two adjacent adjustable bed pieces 31 each of which has the corner 32 rounded off to form a slight angle in which the button blank rests. These bed pieces are slightly adjustable by means of the screws 33 moving in slots 331 so that the button blank may be exactly centered as regards the end of the arbor 34, see more particularly Figs. 3 to 5, on which the button blank is held as it is presented to the polishing mechanism. This adjustment of the bed pieces also makes it possible to adjust this part of the machine for use on different sizes of blanks, the bed pieces being raised or lowered according to the size of blanks to be burnished.

The blank to be burnished is held on the end of a rotating arbor 34 which is secured to the end of a shaft 35 which is slidable longitudinally. The end of the arbor 34 is screw-threaded as shown at 202 (see Fig. 10) and this portion enters a correspondingly screw-threaded hole 203 in the end of the shaft 35. A check nut 204 secures the parts so that they can not become loosened. By this construction, arbors of different sizes may be employed according to the size of the blanks to be burnished. The shaft 35 is slidable longitudinally in bearings 36, 36 by means of a crank disk 37 and connecting rod 38, and the throw of the crank and consequently the length of the longitudinal movement may be varied by changing the position of the crank pin 205 in the slot 206. Said arbor is caused to rotate at high speed by means of a belt 40 running on the pulley 41. In practice I find a speed of about six thousand revolutions per minute is desirable. As the arbor is slid forward by the crank 37, the end of the arbor is forced into the cavity in the back side of the lowest button in the feed slot 28. Further movement of the arbor 34 pushes the button blank against two fingers 42 pivoted at 43, 43 to the frame of the machine and normally held against the button blanks by means of the springs 44 which are of sufficient stiffness to

hold the button blank until the arbor has been forced into the cavity in the back of the blank. Thereafter the further movement of the arbor 34 pushes the fingers 42, 42 to each side and allows the button blank to be moved toward the burnisher 45. The burnisher 45 is mounted on the end of a rod 46 and does not rotate thereon, although by loosening the nut 50 it may be turned around or removed. It is constructed of different materials according to the work required to be done. It may be of stone, or it may be of leather supplied with some suitable abrading substance; or, if it is desired to scrape the buttons it may be of steel with sharp edges 47, as shown in Fig. 8. The support 46 on which the burnisher is mounted passes through an axle 48 and is secured in place by a set screw 49, so that the position of the burnisher or scraper vertically may be varied as desired, also the tool may be slightly rotated to change the angle at which it is presented to the work.

The burnisher 45 is held against the button blank by means of a weight 50, see Fig. 1, supported by a chain 51, running in a grooved wheel 52 which is secured to the end of the axle 48. It will be seen that by varying the size of the weight 50 the pressure with which the burnisher is held against the button blank may be varied as desired.

The axis of the axle 48 is located at such a distance horizontally from the end of the button blank when it first passes out of contact with the fingers 42 that the burnisher comes in contact first with the extreme edge of the rounded portion of the blank so that this portion of the button blank is first acted upon by the burnisher. The sliding movement of the arbor 34 thereafter pushes the burnisher into successive positions until the position shown in Fig. 5 is reached when the edge of the button is again being burnished. As the arbor is drawn back again, the burnisher 45 is returned to its original position by the weight 50. It will be seen that it results from this construction that the entire rounded surface of the button is gone over by the burnisher four times; first as the burnisher advances from the edge to the center of the button blank; second as it advances from the center to the edge, this being the position shown in Fig. 5; third, as it returns from the edge to the center, and fourth as it moves from the center to the edge again, this being the position shown in Fig. 4. This construction affords effective means for burnishing every portion of the rounded surface of the button blank quickly, thoroughly and completely. After the arbor 34 has been withdrawn so that the button blank is no longer in contact with the burnisher the edges of the button blank catch against the edges of the fingers 42 which are

held against the sides of the arbor by springs 44, 44, and the further movement of the arbor causes the fingers to scrape the button blank off the end of the arbor. The button blank then drops into a basket or other receptacle (not shown).

As will be seen from Figs. 1 and 2, the end of the burnisher support 46 extends considerably below the axle 48 and engages a stop 207 which limits the movement of the burnisher in the direction of the arbor 34, that is toward the left as seen in Fig. 2. By adjusting the position of this stop 207 or by varying the throw of the crank 37, the length of time during which the blank is in contact with the burnisher may be varied. Thus if the throw of the crank is small the burnisher will start at the edge and travel to the center and then back again to the edge of the blank, going over the surface of the button only twice instead of four times as previously described. Or, the crank may be given its full throw and the stop 207 set so that the burnisher is nearly vertical when at rest. In this case the burnisher will begin at the center and travel to the edge, and then back again to the center, going over the surface of the blank twice.

What I claim is;

1. In a machine of the character described, a rotating arbor for the button blank, said arbor being slidable longitudinally and a polishing instrument pivoted at one side of the axis of the said arbor whereby the sliding movement of the said arbor causes the said polishing instrument to change the angle of its inclination to the axis of the said arbor.

2. In a machine of the character described, a rotatable arbor for the button blank slidable longitudinally of its axis, a polishing instrument pivoted at one side of the axis of said arbor whereby the sliding movement of the said arbor causes the said polishing instrument to change the angle of its inclination to the axis of the said arbor, and means for holding the said polishing instrument in contact with the button blank.

3. In a machine of the character described, a rotatable arbor for the button blank slidable longitudinally of its axis, a polishing instrument pivoted at one side of the axis of said arbor whereby the sliding movement of the said arbor causes the said polishing instrument to change the angle of its inclination to the axis of the said arbor, and a weight to hold the said polishing instrument in contact with the button blank.

4. In a machine of the character described, the combination with polishing mechanism, of a rotatable arbor for button blanks slidable longitudinally of its axis, a vertical feed channel terminating at the end of said arbor, spring fingers engaging the lowermost blank in said vertical feed channel whereby

the sliding motion of the said arbor causes the end of the arbor to enter the cavity in the lowermost button blank and further motion of the said arbor pushes the button blank out of contact with the said spring fingers and into contact with said polishing mechanism.

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

JOHN TOLAND.

Witnesses:

WALTER J. MAYERS,
ALICE H. MORRISON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."