S. A. NORTH.

GAGING OR ASSORTING MACHINE.

APPLICATION FILED MAY 27, 1919.

1,348,310.

Patented Aug. 3, 1920.

2 SHEETS—SHEET 1.

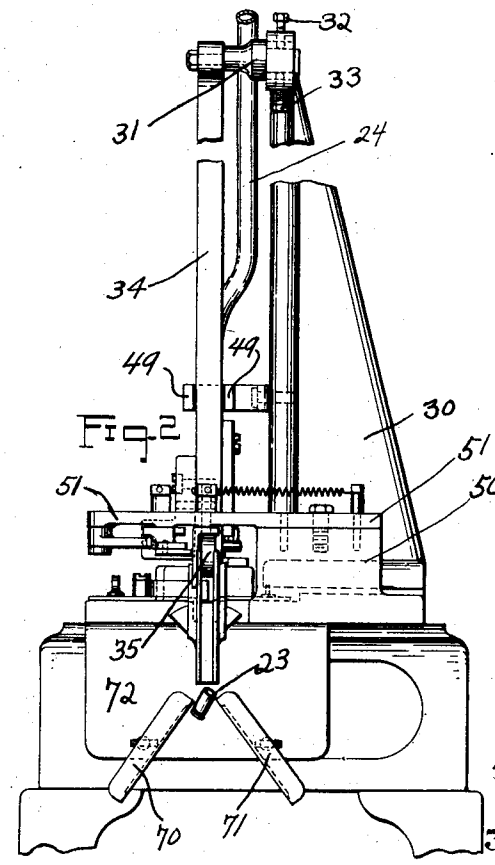


Fig. 2

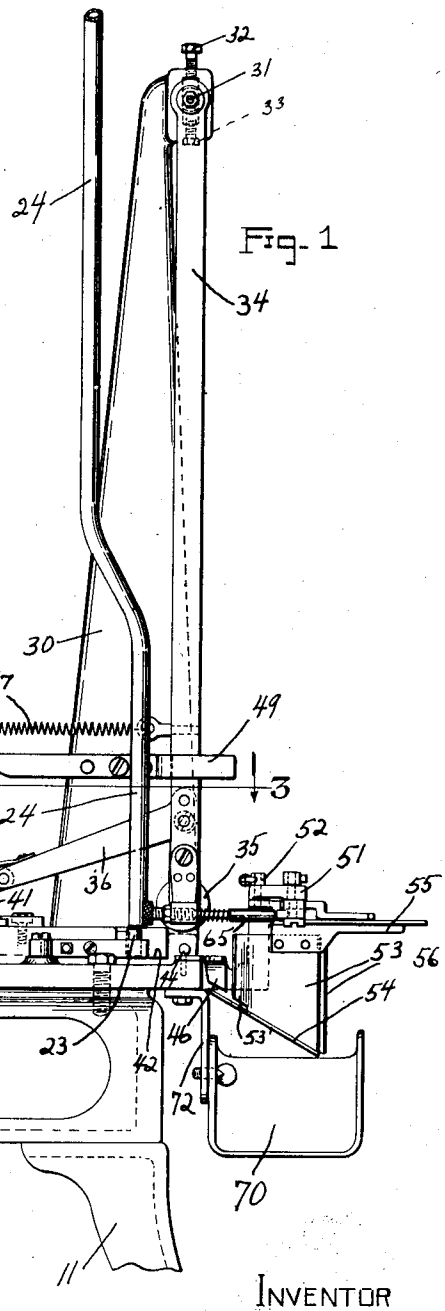
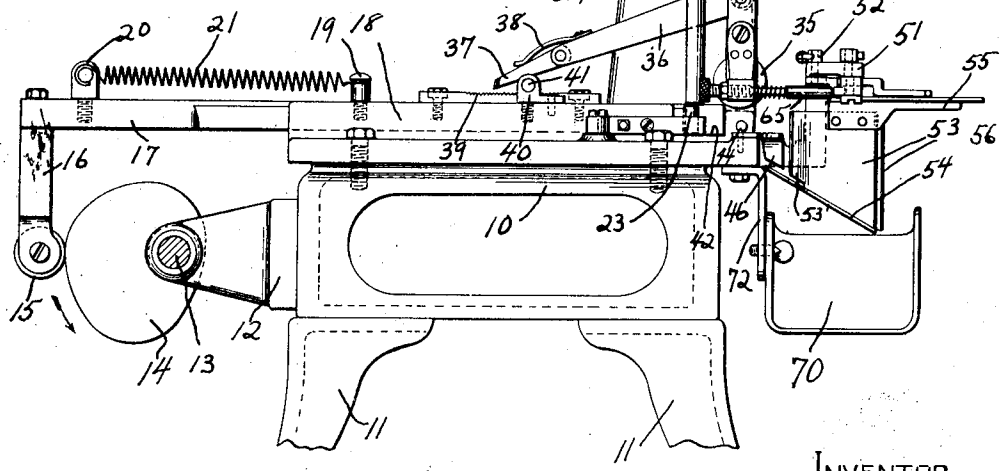


Fig. 1



WITNESS

Louis LaForest

INVENTOR

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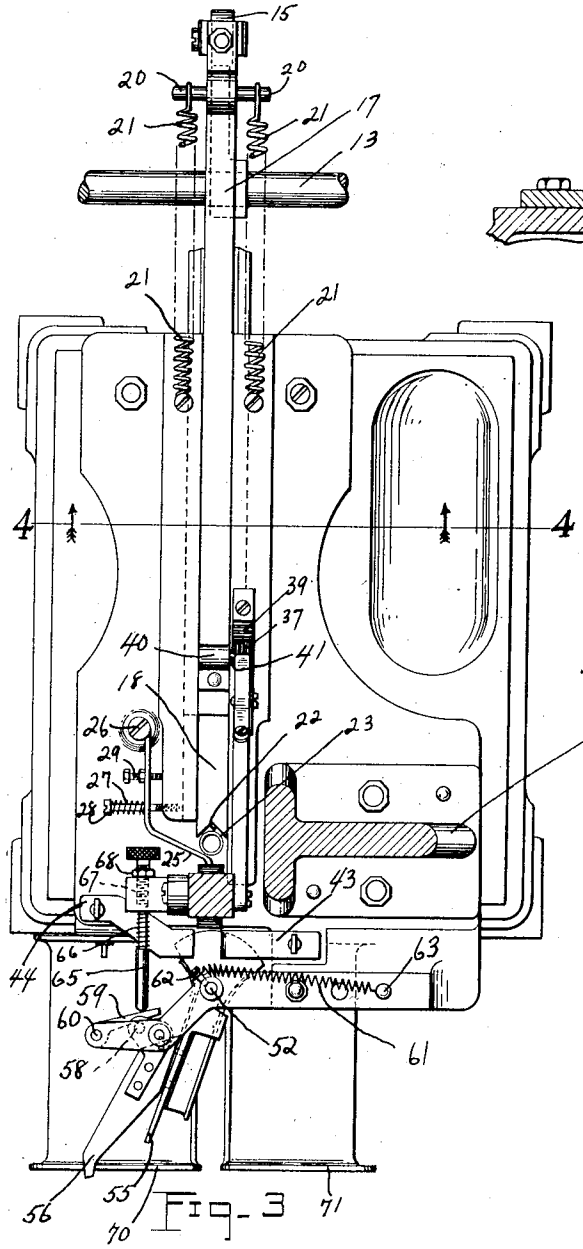


Fig. 3

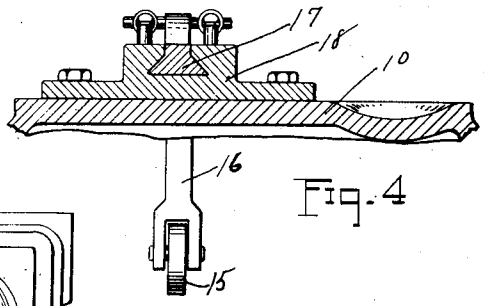


Fig. 4

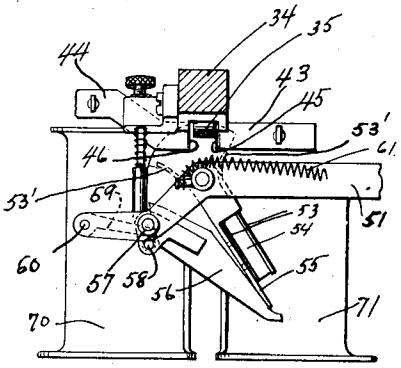


Fig. 5

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UNITED STATES PATENT OFFICE.

SAMUEL A. NORTH, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO REMINGTON ARMS COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

GAGING OR ASSORTING MACHINE.

1,348,310. Specification of Letters Patent. Patented Aug. 3, 1920.

Application filed May 27, 1919. Serial No. 300,119.

To all whom it may concern:

Be it known that I, SAMUEL A. NORTH, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented a certain new and useful Gaging or Assorting Machine, of which the following is a specification.

My present invention relates to a gaging or assorting machine for cartridge shells or other similar objects and is adapted to operate upon such articles when presented to it in bulk, to separate and assort them according to the length or other rectilinear dimension thereof; and to collect together those which are too short, those which are of correct length and those which are too long in separate receptacles.

The present machine is intended and especially adapted for operating on cartridge shells and will be so described in the specification, but it is to be understood that it can be readily used or adapted for gaging various small objects, the dimensions of which must be accurately determined.

It is an object of this invention, therefore, to provide such a machine which will work to very close tolerances, *i. e.*, be able to discriminate between articles which vary only slightly in size.

It is a further object to provide assorting or distributing means which will separate the objects to be gaged into three groups according to whether the gaged dimension is within the prescribed limits or whether below or above them.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed.

The invention has been illustrated in its preferred embodiment in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the machine, the parts being shown in normal position.

Fig. 2 is a front elevation of the machine, the distributing means being in central position and shown as passing an accepted cartridge.

Fig. 3 is a view on the line 3—3 of Fig. 1, looking in the direction of the arrows.

Fig. 4 is a view on the line 4—4 of Fig. 3, looking in the direction of the arrow.

Fig. 5 is a partial plan view similar to Fig. 3, the distributer being shown in position for rejecting a long cartridge.

In said drawings the numeral 10 designates a suitable base which may be supported if desired by legs 11. This base supports a bearing bracket 12 carrying a shaft 13 upon which is mounted a cam 14. The shaft and attached cam are rotated in the direction indicated by the arrow when the machine is in operation. This cam actuates the cam roller 15 mounted on a bracket 16 on the horizontal slide 17 which has dovetailed support in the guides 18 and is spring tensioned forwardly by springs 21 attached to the lugs 19 and 20 carried by the guides and slide, respectively. The slide is formed at its forward end as at 22 with a V or similar conformation for engagement with the cartridge shell 23 to be gaged, which shell may be fed to the machine through the tube 24, preferably supplied by a suitable hopper or other automatic feed mechanism. The cartridge shell 23 is held in an upright position in the V notch by a lever 25 pivoted at 26 and spring tensioned by the spring 27 surrounding a screw 28. The screw 29 may be provided to serve as an adjustable stop.

The bed 10 also supports a vertical standard 30 carrying a stud 31 adjustably positioned by the set screws 32 and 33 and which serves as a support for the swinging arm 34 which carries at its lower end the cylindrical roller 35 and has a rearwardly extending arm 36 supporting a plurality of pawls 37 of slightly different length and spring pressed downwardly by the leaf spring 38. These pawls are engageable at times with the ratchet teeth 39 mounted on the guide 18 or other stationary part. The slide 17 carries a stud 40 having a projection or pin 41 extending under the pawls 37 which serves at times to lift the pawls away from the ratchet teeth. The forward motion of the slide pushes the cartridge shell 23 along the surface 42 and under the roller 35. The surface 42 may be a plane or curved on a large radius. If the cartridge shell is of the correct length, it will cause the arm 34 to swing outwardly sufficiently far to move

the distributer into the position shown in Fig. 2. If the cartridge shell is too long, the distributer will be moved beyond this position to the position shown in Fig. 5, and if too short, the shell will clear the roller 35 or only very slightly move the lever 34 so that the distributer assumes a position approximately as in Fig. 3. In order to guide the cartridge shells after leaving the surface 42, I have provided the guide plates 43 and 44 having downwardly bent ears 45 and 46. The arm 34 is spring tensioned rearwardly by spring 47 attached to a bracket 48, the forward end of which may be conveniently formed as guide arms 49 for restraining the arm 34 against side movement and also as a stop to limit its rearward movement.

Distributer.—At its forward part the base carries a lug 50 for supporting the bracket arm 51 provided for the support of the distributing means. The bracket 51 serves as a bearing for the pin 52 serving as a support for the distributer chute which may comprise side walls 53 and an inclined floor 54. The rear portion of the side walls is flared outwardly as at 53′ for receiving the cartridge shell in any position of the distributer chute. The chute is provided with an extension 55 which may be engaged by the cam plate 56 pivotally carried by the bracket 51 as at 57. This cam plate carries a downwardly extending stud 58 which may be engaged by the lever 59 pivoted to the bracket 51 at 60. The distributer chute is spring tensioned toward normal position by the spring 61 attached to the lug 62 on the pin 52 and to the stud 63 on the bracket. This spring serves to draw the parts into a position where the lever 59 bears against the plunger 65 carrying a spring 66 and freely carried in a lug 67 supported by the swinging arm 34. The adjustment nut 68 may be provided for determining the forward limit of movement of the plunger. It will be seen by reference to Fig. 5 that when a very long cartridge shell is presented to the machine the chute will be moved to the position shown but that as the pin 58 bears a "dead center" relation to the pin 57, that further movement of the chute is impossible. If the length of the shell should require a further movement of the arm 34, this excess movement will be taken up by the spring 66. This arrangement permits of the smallest possible movement of the distributer parts and therefore, permits of accurate gaging at a very high speed of operation. Also, jamming or breaking of the machine is prevented by the spring 66. In order to deflect the rejected shells into their respective receptacles, I have provided deflection plates 70 and 71 adjustably carried by the bracket 72.

Operation.—The cartridge shells are fed to the machine through the tube 24 and deposited on the surface 42 in the path of the slide 17. At this time the arm 34 is in vertical position and the distributer chute is in the position shown in Fig. 3. As the cam 14 rotates in the direction shown, the springs 21 will draw the slide forward forcing the shell 23 under the roller 35 which causes the arm 34 to swing outwardly to an extent determined by the length of the particular cartridge shell. The plunger 65 moves forward at this time and through the lever 59, stud 58 and cam 56, causes the chute to take a position in accordance with the length of the shell. Arm 34 is held in its extreme forward position by the engagement of the pawls 37 with the ratchet teeth 39 for a sufficiently long time to permit the gaged cartridge to pass from the chute into the proper receptacle. Upon the rearward movement of the slide, the pin 41 engages with and lifts the pawls 37 which permits the spring 47 to retract the lever 34 into home position. By providing a plurality of pawls 37 of slightly different length, I am able to reduce to a minimum the dropping back of the lever 34 before being caught by the pawl, as the pawl which is nearest the ratchet tooth will be brought into play. The lever 34 is made relatively long, as illustrated, in order that a greater movement of the plunger 65 will be obtained than would be the case if a shorter lever were employed.

In the machine illustrated and described above the article to be gaged has a rectilinear motion along the horizontal guiding surface 42 whereas the gaging roller 35 moves in a circular path which is substantially parallel to the guide surface 42 and gradually recedes therefrom. A considerable horizontal motion of the roller 35 must therefore occur to secure a very slight upward movement. This relation of the parts results in a very sensitive gaging means as a considerable motion may be given to the distributing means by a very slight variation in the height of the article being gaged. The radius of curvature of the guide surface 42, in the present instance, said surface being a plane, is infinity but any other fixed or variable radius of curvature of the guide surface and therefore of the path of movement of the article being gaged would suffice provided it be greater than the radius of curvature of the path of the roller 35.

It will be seen therefore that I have provided a device which fulfils the objects primarily stated and while I have shown a single embodiment of my invention, it is clear that other forms thereof may readily be provided without departing from my invention as defined in the following claims:—

1. In a gaging and assorting machine, a substantially plane surface, a relatively long arm pivoted at one end with its other end

normally adjacent said surface and with the arm substantially perpendicular thereto, and means for forcing the body to be gaged over said surface and under said lever, whereby said lever is swung forwardly a distance varying with the length of said body.

2. In a gaging and assorting machine, a substantially plane surface, a relatively long arm pivoted at one end with its other end normally adjacent said surface and with the arm substantially perpendicular thereto, means for forcing the body to be gaged over said surface and under said lever, whereby said lever is swung forwardly a distance varying with the length of said body, and distributing means controlled by said lever.

3. In a gaging and assorting machine, a substantially plane surface, a relatively long arm pivoted at one end with its other end normally adjacent said surface and with the arm substantially perpendicular thereto, means for forcing the body to be gaged over said surface and under said lever, whereby said lever is swung forwardly a distance varying with the length of said body, distributing means controlled by said lever, and means for holding said distributing means in set position.

4. In a gaging machine, a surface for supporting and guiding the article to be gaged, means movable in a path substantially parallel to said surface but receding therefrom and propelling means for forcing said article along said surface and under said movable means for moving it a distance determined by a dimension of said article.

5. In a gaging machine, a guiding surface for supporting and guiding the article to be gaged, gaging means movable in a circular path having a radius less than the radius of curvature of said surface, said path being approximately parallel to said surface, and propelling means for forcing said article along said surface and under said gaging means, whereby said means is swung forwardly a distance varying with a dimension of said article.

6. In a gaging machine, a guiding surface for supporting and guiding the article to be gaged, pivoted means movable in a path substantially parallel to said surface, said path having a radius less than the radius of curvature of said surface, propelling means for forcing said article along said surface and under said pivoted means, whereby said means is swung forwardly a distance varying with a dimension of said article, and distributing means controlled by said pivoted means.

7. In a gaging machine, a guiding surface for supporting and guiding the article to be gaged, pivoted means movable in a path substantially parallel to said surface, said path having a radius less than the radius of curvature of said surface, propelling means for forcing said article along said surface and under said pivoted means, whereby said means is swung forwardly a distance varying with a dimension of said article, distributing means controlled by said pivoted means, and means for temporarily holding said distributing means in set position.

8. In a cartridge shell gaging machine, a base formed with a guide surface, a lever pivotally supported above said surface substantially perpendicular thereto and with its end adjacent said surface, a slide movable over said surface and under said lever, and means for depositing cartridge shells one at a time on said surface in the path of said slide, whereby said slide will carry the shell under the lever and swing it forwardly a distance varying with the length of the shell.

9. In a cartridge shell gaging machine, a base formed with a guide surface, a lever pivotally supported above said surface substantially perpendicular thereto and with its end adjacent said surface, a slide movable over said surface and under said lever, means for depositing cartridge shells one at a time on said surface in the path of said slide, whereby said slide will carry the shell under the lever and swing it forwardly a distance varying with the length of the shell, and a pivoted distributing chute positioned by said lever.

10. In a cartridge shell gaging machine, a base formed with a guide surface, a lever pivotally supported above said surface substantially perpendicular thereto and with its end adjacent said surface, a slide movable over said surface and under said lever, means for depositing cartridge shells one at a time on said surface in the path of said slide, whereby said slide will carry the shell under the lever and swing it forwardly a distance varying with the length of the shell, a pivoted distributing chute positioned by said lever, a pawl carried by said lever coöperating with ratchet teeth on the base for holding said lever and chute in set position, and a projection on said slide for engaging and lifting the pawl when returning to normal position.

11. In a gaging machine, a pivoted differentially operable distributing chute, deflection plates adjustably positioned in spaced relation below said chute and serving to distribute the gaged articles in three groups depending upon whether the chute is positioned above either of the plates or between them.

12. In a gaging machine, a surface for supporting and guiding the article to be gaged, an arm substantially perpendicular to said surface and provided with a cylindrical roller movable over said surface, and

propelling means for forcing said article along said surface and under the roller, whereby the arm is displaced a distance varying with the length of the article gaged.

13. In a gaging machine, relatively movable gage elements, a propelling means for forcing the article to be gaged into coöperative relation with said elements, spring means for actuating said propelling means, and a cam for retracting said propelling means against the tension of said spring means.

14. In a gaging machine, means for moving the article to be gaged in a fixed path, and gaging means movable in a path substantially parallel to said surface but receding therefrom in the direction of movement of the article being gaged.

15. In a gaging machine, means for moving the article to be gaged in a fixed path, gaging means movable in a path substantially parallel to said surface but receding therefrom in the direction of movement of the article being gaged, and distributing means differentially controlled by said gaging means.

In witness whereof I have signed my name hereto this 29th day of April 1919.

SAMUEL A. NORTH.