

No. 870,108.

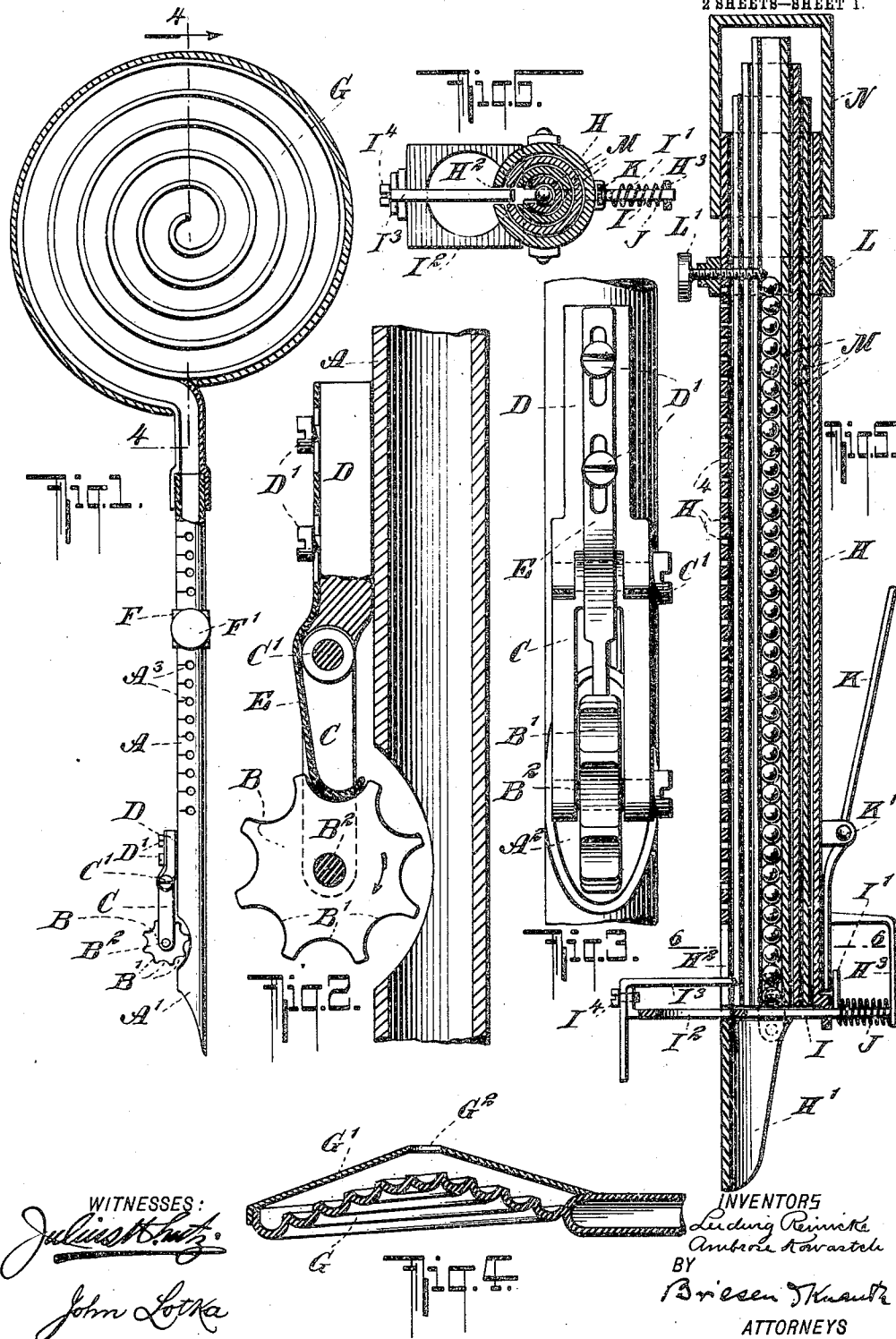
PATENTED NOV. 5, 1907.

A. KOWASTCH & L. REINICKE.

BALL DISTRIBUTER.

APPLICATION FILED NOV. 3, 1905.

2 SHEETS—SHEET 1.



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Fig. 7

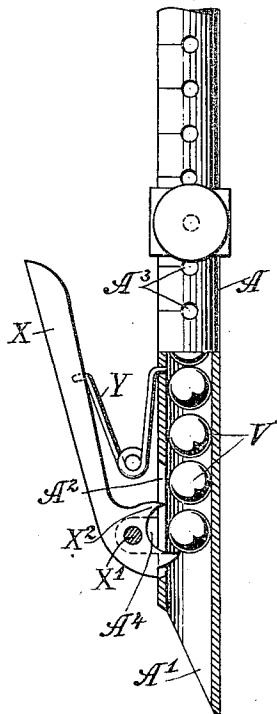
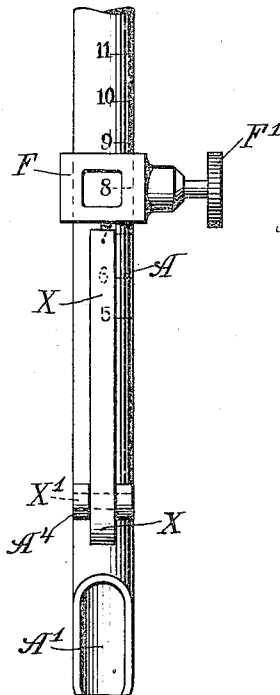


Fig. 8



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UNITED STATES PATENT OFFICE.

AMBROSE KOWASTCH, OF NEW YORK, N. Y., AND LUDWIG REINICKE, OF HOBOKEN, NEW JERSEY.

BALL DISTRIBUTER.

No. 870,108.

Specification of Letters Patent.

Patented Nov. 5, 1907.

Application filed November 3, 1905. Serial No. 285,777.

To all whom it may concern:

Be it known that we, AMBROSE KOWASTCH, a subject of the Emperor of Germany, and a resident of the borough of the Bronx, city, county, and State of New York, and LUDWIG REINICKE, a subject of the Emperor of Germany, and a resident of Hoboken, Hudson county, New Jersey, have invented certain new and useful Improvements in Ball-Distributers, of which the following is a specification.

Our invention relates to implements for holding a number of steel balls such as are used in ball bearings and discharging such balls singly, and our invention also aims to provide means for counting off a certain number of balls, this being an obvious convenience.

In the accompanying drawings we have illustrated several devices embodying our invention.

Figure 1 is an elevation showing one form of our invention, the upper part being shown in section. Fig. 2 is an enlarged sectional elevation of the discharge portion of the apparatus. Fig. 3 is a side view of the parts shown in Fig. 2. Fig. 4 is a section on line 4—4 of Fig. 1. Fig. 5 is a longitudinal section of another form of our invention. Fig. 6 is a cross section on line 6—6 of Fig. 5. Fig. 7 is an elevation with parts of section illustrating another form of discharge device, and Fig. 8 is a side view corresponding to Fig. 7.

In the form of our invention illustrated by Figs. 1 to 4, the discharge end of the apparatus is pointed as shown at A', so that this end may be readily inserted in a ball bearing to properly guide the balls to their place. The device comprises a tube A, which is adapted to contain the customary steel balls, and this tube is provided adjacent to its discharge end, with a lateral opening A², into which projects the discharge controlling device. In this instance said device consists of a wheel B, having its periphery notched to correspond to the curvature of the balls as indicated at B'. This wheel is pivoted at B² upon an arm C, fulcrumed at C' for adjustment upon a bracket D secured to the tube A. Normally the bracket D and arm C are connected rigidly, but when it is desired to adjust the wheel B toward or from the opening A², the screw at the fulcrum C' is loosened. In order to hold the wheel B steady, we provided a spring E, adjustably secured to the bracket D as shown, and having its end curved to fit the recesses or notches B'. The wheel B is exchangeable so that if the device is used for balls of different diameters, wheels B of different sizes and having notches B' of proper shape may be substituted, the arm C being properly adjusted in such case, and the spring E being also adjusted toward or from the pivot B² if necessary. On the tube A is adjustably arranged the slide F carrying a screw F', which is adapted to project into the tube through openings A³ preferably arranged

at regular intervals. The screw serves not only to hold the slide F in position, but by projecting into the tube in the same manner as illustrated in Fig. 5, serves to divide off a predetermined number of balls between said screw and the discharge device. Said screw therefore performs the function of a counting off or measuring device. With the upper end of the tube A is connected a holder for containing a suitable number of balls. This holder as shown, consists of a spirally grooved member G, the center of which is raised giving the device a somewhat conical shape as shown in Fig. 4. A cover plate G' of like shape is arranged adjacent to said spirally grooved member so as to prevent the balls from jumping from one turn of the spiral to the next. At the apex of the cone there is an opening G² for the insertion of the balls.

To fill the device it is laid flat as shown at Fig. 4, and the screw F' is projected into the tube A. Then the balls are inserted singly through the filling opening G², and will run down the spiral to that end of the tube A which is connected with the spiral. The opening G² may then be closed by a plug or cap. To use the device it is held in a substantially vertical position, so that the balls may roll down in the tube A by gravity. The screw F' is removed from the path of the balls so that the latter will pass down the tube A until they are stopped by the wheel B. Then the slide F will be adjusted to the desired point, and the screw F' projected into the tube so as to separate a certain number of balls from those remaining in the holder and in the tube A above said screw. To then feed the balls singly through the discharge opening A', the operator turns the wheel B by hand in the direction indicated by the arrow. This will separate one ball from the others, and allow such ball to escape. The spring E will hold the wheel B steady while not preventing its turning by hand. The device may be used for balls of any size up to the maximum size that tube A is capable of receiving; all that is necessary to change in such case is the wheel B and its position, as well as that of the spring E if required, the fulcrum at C' and the adjustment at D' allowing the wheel B and the spring E to be brought to the proper position in each case.

In the form of construction shown in Figs. 5 and 6, the tube H has a pointed outlet H' and a lateral opening H² adjacent thereto. Between the outlet and the body of the tube is adapted to move transversely a discharge plate I normally pressed to a closing position by a spring J, which bears against a bracket H³. A lever K, fulcrumed at K' engages a projection I' on the discharge plate I, and serves to slide it against the tension of the spring, so as to bring the discharge opening I² into registry with the end of the tube H. With the discharge plate is further connected an arm I³, the

end of which projects beyond the corresponding end of the discharge opening I^2 , and this arm I^3 is adjustable toward and from the discharge plate I , as shown, by means of a screw I^4 . The tube H is provided with a series of apertures H^4 adapted to be engaged by a screw L' on a slide L , the construction being similar in this respect to that shown in Fig. 1. Within the tube H are arranged a series of tubes M , all slitted lengthwise, and preferably having their upper ends arranged stepwise, so that each tube may be grasped individually. The slits of the tubes are in registry with each other and with the line of openings H^2 H^4 , so that the arm I^3 may be projected through said slits and the screw L' likewise. In the arrangement shown in Fig. 5, the device has been fitted for the smallest size of balls. The arm I^3 is always adjusted to a distance from the discharge plate I which corresponds to the diameter of one ball. The slide L is adjusted in the same way as previously explained for the slide F and the screw L' projected above the last ball as shown. To discharge one of the balls, the lever K is moved inward, thus causing the arm I^3 to first pass between the last two balls, and then bringing the opening I^2 into registry with the lower end of the tube, so that the last ball may escape. If a larger size of balls is to be used, the innermost tube M is removed, and the arm I^3 is adjusted upward correspondingly. In the same manner still larger balls may be accommodated up to a size which fits into the tube H exactly. A cap N may be provided to close the upper end of the device.

In the form of construction illustrated by Figs. 7 and 8, the tube A having openings A' , A^2 and A^3 , and the slide F provided with the screw F' , are practically the same as shown in Fig. 1. The discharge device consists of a lever X pivoted at X' to a bracket A^4 , and having two teeth with a curved notch X^2 between them. The lower tooth is normally projected into the tube A by means of a spring Y , so as to prevent the balls from reaching the outlet A' . By swinging the upper end of the lever X inward, the upper tooth is projected below the second ball B , and immediately thereafter the lower tooth is withdrawn from beneath the last ball V , allowing such ball to drop through the outlet A' .

We desire it to be understood that the supplemental tubes M shown in Figs. 5 and 6 may be used in conjunction with the holder A of Figs. 1, 2, and 3, the wheel B of the proper size being substituted in each case, with the requisite adjustment of the arm C and spring E .

We claim as our invention:

1. A ball distributor comprising a tubular ball-holder having apertures at different points of its length, a slide adjustable on the holder, a screw carried by said slide and adapted to be projected into the holder through said apertures, and means for controlling the discharge of the balls from the holder.

2. A ball distributor comprising a tubular ball-holder, a slide adjustable lengthwise of said holder, a screw-threaded stop carried by said slide and movable relatively thereto and capable of being projected into the holder or withdrawn therefrom, and means for controlling the discharge of the balls from the holder.

3. A ball distributor comprising a tubular ball holder, means for controlling the discharge of the balls from the holder, and a counting-off device located between the inlet and discharge ends of the holder and separate from the discharge controlling means, said counting-off device being adjustable to points at different distances from the discharge end of the holder and being further provided with a movable part adapted to be projected into the holder or withdrawn therefrom.

4. A ball distributor comprising a tubular ball-holder, a toothed discharge wheel projecting into the path of the balls, and a support in which said wheel is journaled, said support being adjustable to carry the wheel toward or from the holder.

5. A ball distributor comprising a tubular ball-holder, a toothed discharge wheel journaled at one side of the holder and projecting into the path of the balls, and a spring engaging said wheel to prevent accidental movement.

6. A ball distributor comprising a tubular ball-holder, a toothed discharge wheel projecting into the path of the balls, a support in which said wheel is journaled, said support being adjustable to carry the wheel toward or from the holder, and a spring engaging said wheel to prevent accidental movement, said spring being adjustable toward and from the wheel's axis.

In testimony whereof we have hereunto signed our names in the presence of two subscribing witnesses.

AMBROSE KOWASTCH.
LUDWIG REINICKE.

Witnesses:

JOHN A. KEHLENBECK,
JOHN LOTKA.