No. 718,092. PATENTED JAN. 13, 1903.

P. B. CLARKE.

SWIVEL CHUTE HEAD.

APPLICATION FILED JAN. 26, 1901.

NO MODEL. 3 SHEETS—SHEET 1.

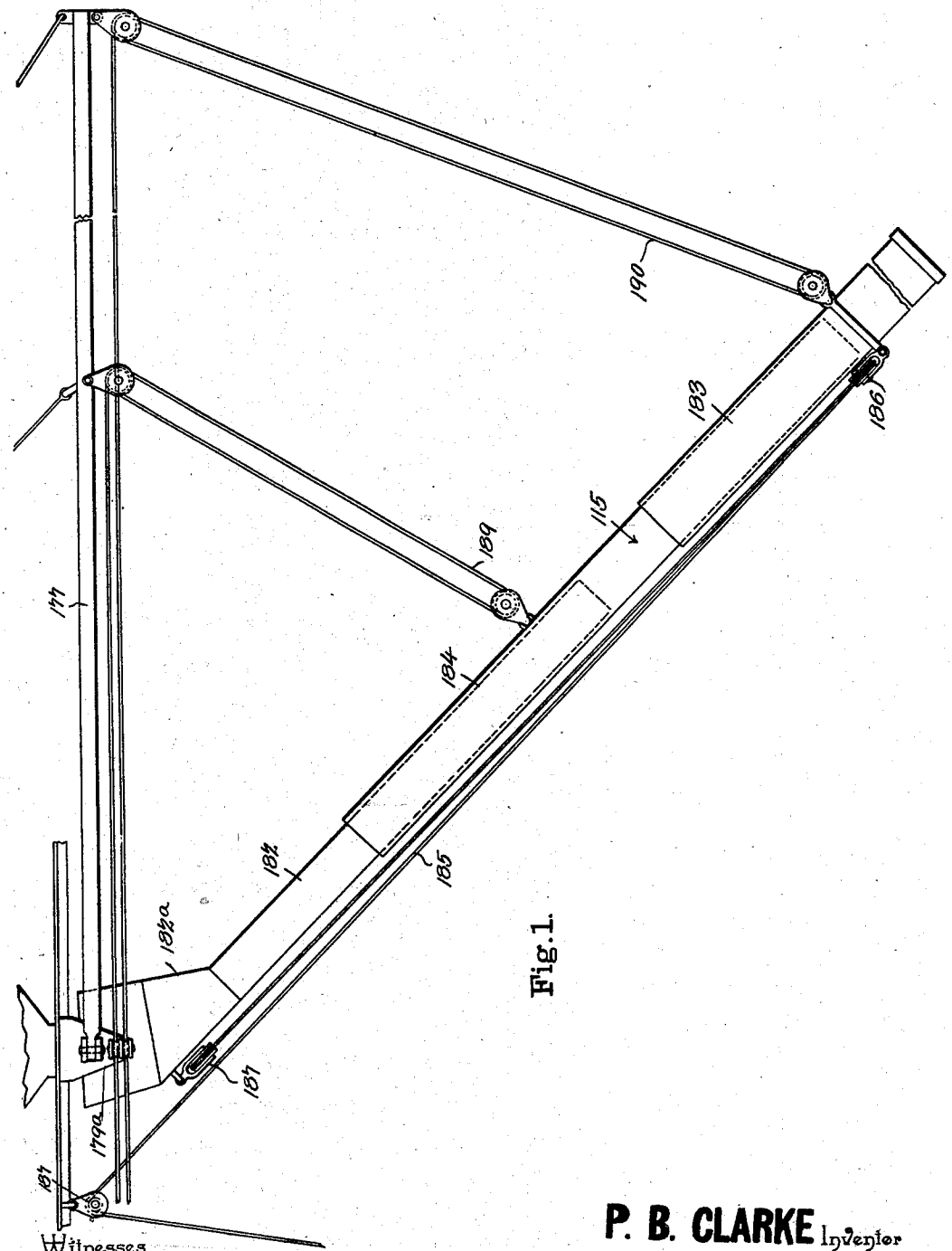


Fig. 1.

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NO MODEL. 3 SHEETS—SHEET 2.

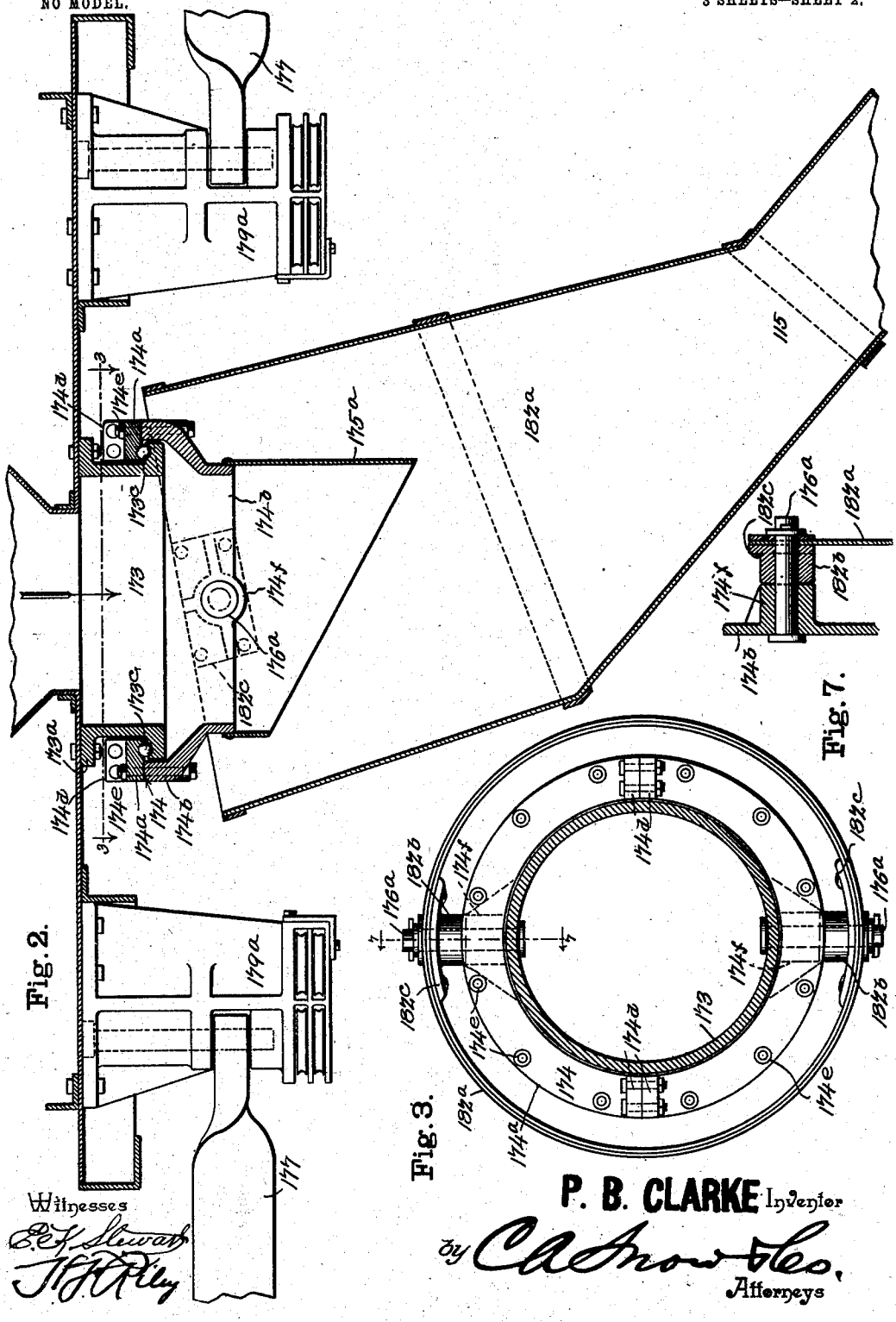


Fig. 2.

Fig. 3.

Fig. 7.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 4.

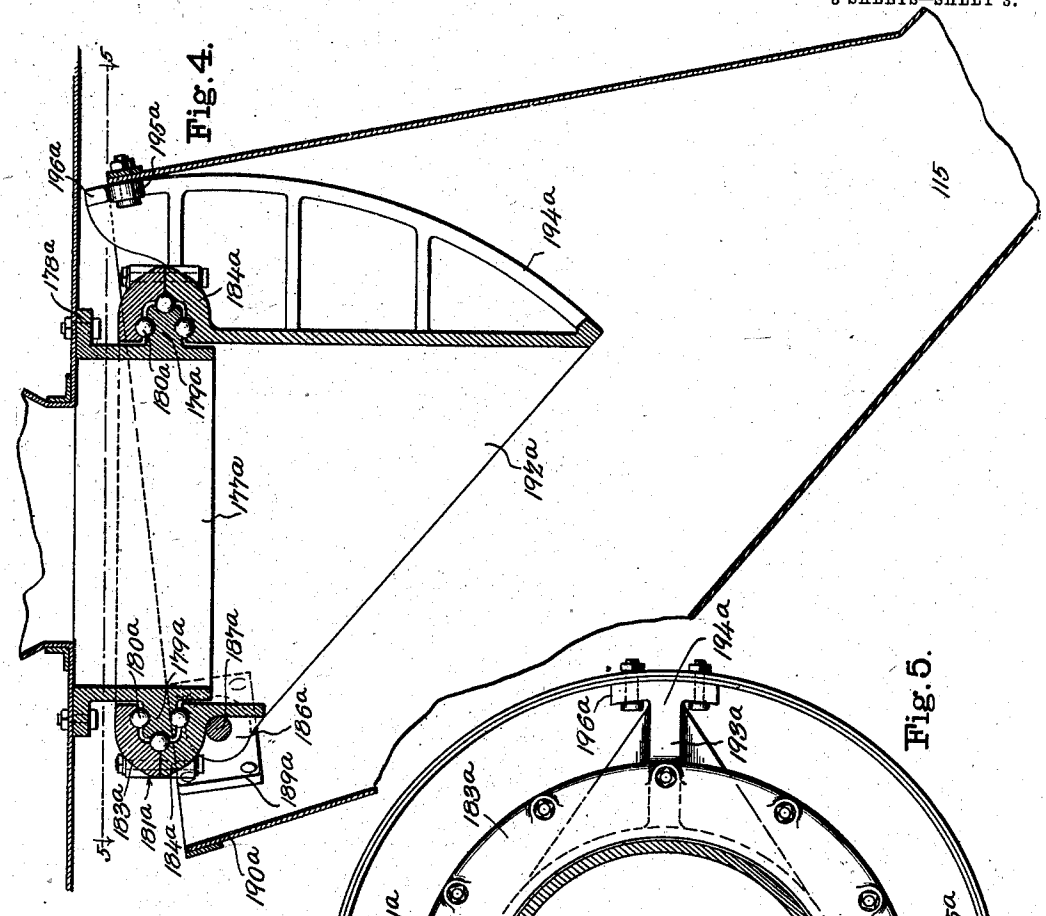


Fig. 5.

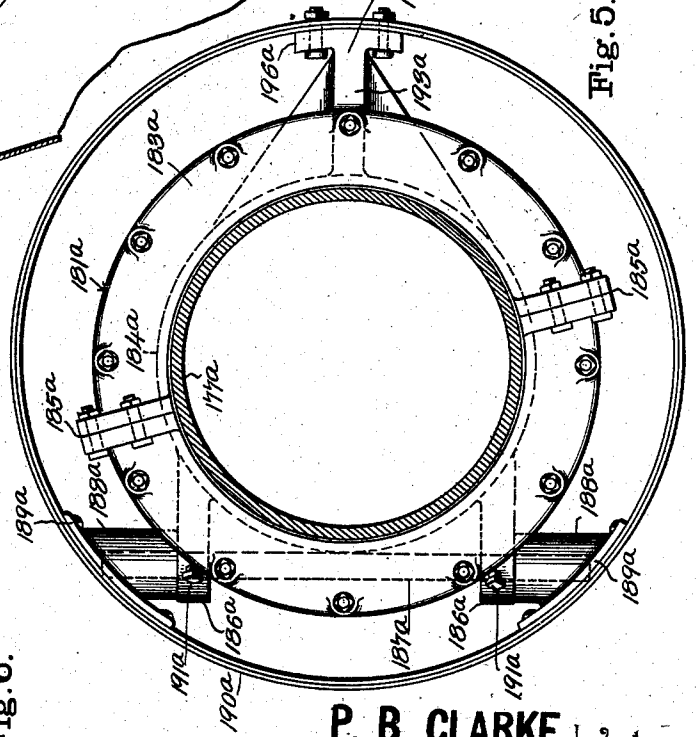
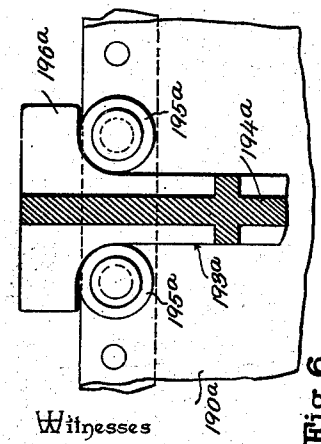


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

PEETE B. CLARKE, OF NEW YORK, N. Y.

SWIVEL CHUTE-HEAD.

SPECIFICATION forming part of Letters Patent No. 718,092, dated January 13, 1903.

Application filed January 26, 1901. Serial No. 44,783. (No model.)

To all whom it may concern:

Be it known that I, PEETE B. CLARKE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Swivel Chute-Head, of which the following is a specification.

The invention relates to a swivel chute-head for apparatus for handling material in bulk.

The object of the present invention is to provide for apparatus for handling material in bulk a swivel chute-head adapted to permit a superimposed chute to be swung upward and downward and capable of enabling the same to be rotated or swung horizontally, whereby the chute may be readily arranged in proper position for discharging the material.

A further object of the invention is to permit such adjustments of a chute without allowing any of the material to escape at the chute-head or joint between the chute and its support.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a side elevation of a chute having a swivel chute-head constructed in accordance with this invention. Fig. 2 is an enlarged vertical sectional view of the upper end or head of the chute. Fig. 3 is a horizontal sectional view on the line 3 3 of Fig. 2. Fig. 4 is a vertical sectional view, similar to Fig. 2, illustrating another form of the invention. Fig. 5 is a horizontal sectional view on line 5 5 of Fig. 4. Fig. 6 is a detail view illustrating the arrangement of the antifriction-rollers with relation to the curved guide. Fig. 7 is a detail sectional view on line 7 7 of Fig. 3.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

115 designates a depending extensible chute adapted to swing vertically and horizontally and preferably composed of upper, lower, and intermediate sections 182, 183, and 184, which are adapted to slide or telescope to vary the length of the chute. The upper section 182 of the chute is provided with an enlarged end or top 182^a, tapering downwardly and pivotally connected by the means hereinafter described with a rotary bearing-sleeve 174, which is mounted on a supporting-neck 173. The annular supporting-neck 173 is provided with an upper attachment-flange 173^a and it has a lower bearing-flange 173^b, and the upper flange 173^a is perforated for the reception of bolts or other suitable fastening devices for securing the neck 173 to the support for the chute. The lower bearing-flange 173^b extends outward from the exterior of the neck 173 and is provided at its upper face with an annular groove forming a race for antifriction-balls 173^c, which enable the bearing-sleeve 174 to rotate frictionlessly on the supporting-neck 173. The bearing-sleeve 174 is composed of upper and lower rings 174^a and 174^b, and the ring 174^a is also composed of semicircular sections provided at their ends with abutting flanges 174^d, which are bolted or otherwise secured together, as clearly illustrated in Fig. 3 of the accompanying drawings. The upper bearing-ring 174^a is arranged above the bearing-flange 173^b of the supporting-neck 173, and it rests upon the antifriction-balls and extends outward beyond the same. The projecting portion of the upper bearing-ring 174^a is secured to the lower ring 174^b by an annular series of bolts 174^e or other suitable fastening devices arranged as clearly illustrated in Fig. 3. The lower ring 174^b has a contracted lower portion and is provided with a depending inner chute-section 175^a, extending downward into the enlarged upper end of the upper chute-section 182 and adapted to prevent the escape of material when the said chute-section 182 is in any position. The inner chute-section, which is tapering and which is disposed vertically, may be constructed separate from the lower ring, as illustrated in Fig. 2 of the accompanying drawings, or it may be formed integral, as hereinafter explained in connection with Fig. 4, and it is adapted to permit the chute 115 to swing on its pivot in either direction as far as possible without any liability of the material escaping through the chute head or connection. The lower ring is provided at opposite sides with tubular extensions 174^f, adapted to register with corresponding tubular extensions 182^b of the upper section 182 of the chute, and

these tubular extensions form eyes for the reception of pivots or pintles 176ª, on which the chute 115 swings. The eyes or tubular extensions of the ring are preferably formed integral therewith, and the eyes or bearings 182ᵇ are preferably formed integral with plates 182ᶜ, which are riveted or otherwise secured to the enlarged upper end of the upper section 182 of the chute. The pivots, which are provided at their inner ends with heads, have suitable fastening devices at their outer ends for retaining them in alined eyes of the lower ring and the upper chute-section 182. By this construction the chute is pivoted to the bearing-sleeve at opposite sides thereof and the said bearing-sleeve is adapted to rotate on the supporting-neck. These movements will permit the chute to swing vertically and horizontally, whereby it may be arranged in the proper position for discharging the material handled.

In Figs. 4 to 6, inclusive, of the accompanying drawings is illustrated another form or modification of the invention in which a depending neck 177ª is employed, and this depending neck is provided with an upper attachment-flange 178ª, and it has a lower bearing-flange 179ª, located between the upper and lower edges of the neck and provided at its upper, lower, and side faces with annular grooves forming ball-races for antifriction-balls 180ª, interposed between the bearing-flange and a bearing-sleeve 181ª. The bearing-sleeve 181ª is composed of upper and lower bearing-rings 183ª and 184ª, and the upper bearing-ring is sectional and is provided at the ends of its sections 185ª with abutting flanges which are bolted or otherwise secured together, as clearly illustrated in Fig. 5 of the drawings. By constructing the upper bearing-ring of sections the bearing-sleeve is readily interlocked with the bearing-flange of the depending neck and the parts may be readily assembled. The lower bearing-ring of the bearing-sleeve is provided with a pair of rearwardly-extending eyes 186ª, located at opposite sides of the bearing-sleeve and receiving a continuous pivot or pintle 187ª, which extends beyond the eyes 186ª into a pair of eyes 188ª, formed integral with plates 189ª, which are secured to an upper chute-section 190ª, as clearly shown in Fig. 5. The bores of the eyes 188ª of the upper chute-section are arranged opposite apertures or openings of the latter, and the pivot or pintle is retained in place by set-screws 191ª, mounted in threaded perforations of the rearwardly-extending ears and engaging the pivot or pintle. The bearing-sleeve is provided with an inner tapering chute-section 192ª, depending from and formed integral with the lower bearing-ring and provided at its front side with a curved guide 193ª, consisting of a skeleton frame having a curved outer edge struck on an arc of which the pivot 187ª is the center. The guide is provided at opposite sides with laterally-extending webs or flanges 194ª, located between a pair of antifriction rollers or wheels 195ª and provided at its top with a head 196ª, forming laterally-extending stops arranged to be engaged by the antifriction rollers or wheels, as clearly illustrated in Fig. 6 of the accompanying drawings, when the upper section of the chute is at the limit of its movement in one direction and the guide is provided at its bottom with a suitable stop for limiting the movement of the chute in the opposite direction. The antifriction rollers or wheels 195ª are mounted on the inner face of the upper section 190ª of the chute and are located at the upper edge of the same, and they permit the chute to move freely and frictionlessly. The guide supports the chute and prevents the same from moving laterally and straining the pivot.

The chute is controlled by suitable ropes or cables designed to be operated by a winch (not shown) and connected with a boom 177, which is hinged at its inner end. A pair of booms are designed to be provided and are located at opposite sides of the upper end of the chute, as indicated in Fig. 2 of the accompanying drawings, suitable brackets 197ª being provided for supporting the booms. The telescoping or sliding movement of the sections is controlled by a rope or cable 185, secured at one end to the upper section of the chute and extending longitudinally of the latter to a pulley 186 and passing therefrom rearwardly along the chute to a pulley 187. The pulley 186 is mounted on the lower section of the chute, and it will be apparent that by drawing in the cable or line 185 and by paying the same out the chute may be shortened or lengthened. The intermediate and lower sections of the chute are connected with the boom by means of ropes or cables 189 and 190. The rope or cable 189 is secured at one end to the boom at a point intermediate of the ends thereof, and it extends downward to the intermediate section and back to the boom, forming a supporting-loop, which is connected with the intermediate section 184 by a suitable block having a pulley. The other rope or cable 190 is arranged at the outer end of the boom and is connected in a similar manner with the lower or bottom section 183, and by drawing in the ropes or lines 189 and 190 and paying them out it will be clear that the chute may be swung upward and downward to arrange it at the desired elevation.

It will be apparent that the construction for supporting the depending chute is simple and comparatively inexpensive in construction, that it will permit the chute to be swung vertically and horizontally to arrange the same in the desired position, and that it will prevent the material from escaping at the top of the chute when the latter is in any position.

What I claim is—

1. A device of the class described comprising a support forming a conduit for the ma-

terial, a movable chute suspended from the support, and an inner chute-section mounted independently of the chute and located wholly within the latter, substantially as described.

2. A device of the class described comprising a support, a chute, and an inner chute-section mounted independently of the chute and located wholly within the same, substantially as described.

3. A device of the class described comprising a rotary bearing-ring, a chute pivotally connected with the bearing-ring, an inner chute-section mounted independently of the said chute, and means for supporting the bearing-ring, substantially as described.

4. A device of the class described comprising a support, a rotary bearing-ring, a chute pivotally connected to and carried by the rotary bearing-ring, and a tapering inner chute-section, extending downward below the bearing-ring and mounted independently of the said chute, substantially as described.

5. A device of the class described comprising a supporting-neck having a bearing-flange, a bearing-sleeve interlocked with the neck and composed of upper and lower bearing-rings, the upper bearing-ring consisting of sections, and a chute pivotally suspended from the bearing-sleeve, substantially as described.

6. A device of the class described comprising a supporting-neck having a bearing-flange provided with upper, lower and outer ball-races, antifriction-balls arranged in the races, a rotary bearing-sleeve interlocked with the supporting-neck and receiving the bearing-flange and the said balls and composed of a sectional upper ring, and a lower ring secured to the upper ring, and a chute pivotally connected with the bearing-sleeve, substantially as described.

7. A device of the class described comprising a rotary bearing-sleeve provided with a curved guide, a chute pivotally connected with the bearing-sleeve and supported by the guide, and a supporting-neck receiving the bearing-sleeve, substantially as described.

8. A device of the class described comprising a support, a rotary bearing-sleeve, a chute pivotally connected with the rotary bearing-sleeve and carried by the same, and an upright guide having a curved outer face arranged to support the chute, substantially as described.

9. A device of the class described comprising a support, a rotary bearing-sleeve, a chute pivotally connected with the bearing-sleeve and carried by the same, a curved guide depending from the bearing-sleeve, and antifriction-wheels mounted on the chute and arranged to run on the guide, substantially as described.

10. A device of the class described comprising a support, a rotary bearing-sleeve, a chute pivotally connected with the bearing-sleeve at opposite sides of the back thereof, and a curved guide extending downward from the front of the bearing-sleeve and supporting the chute, substantially as described.

11. A device of the class described comprising a support, a rotary bearing-sleeve, a chute pivotally connected with the bearing-sleeve, a guide extending downward from the bearing-sleeve and provided at its ends with stops, and a pair of antifriction-wheels mounted on the chute and arranged at opposite sides of the guide, substantially as described.

12. A device of the class described comprising a support, a rotary bearing-ring, a chute pivotally connected with the bearing-ring, an inner chute-section extending downward from the bearing-ring, and a curved guide mounted on the bearing-ring and on the inner chute-section and supporting the chute, substantially as described.

13. A device of the class described comprising a rotary sleeve, and a chute pivotally connected with and supported by the sleeve, whereby it is adapted to be swung vertically and horizontally, and means for supporting the sleeve, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PEETE B. CLARKE.

Witnesses:
JOHN FRENCH,
CHARLES ENGEL.