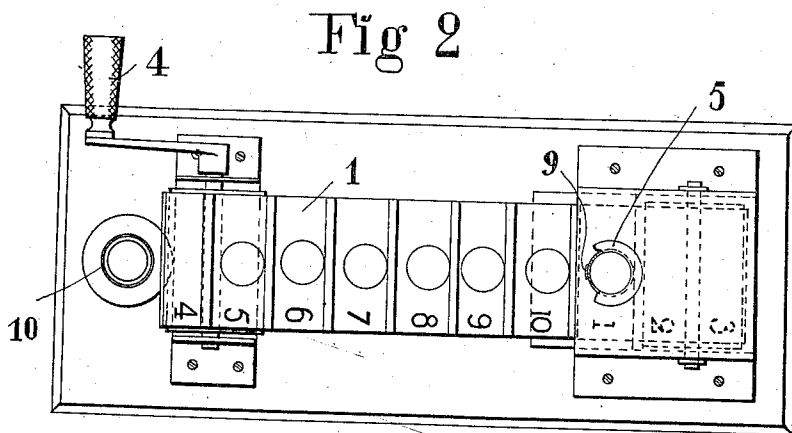
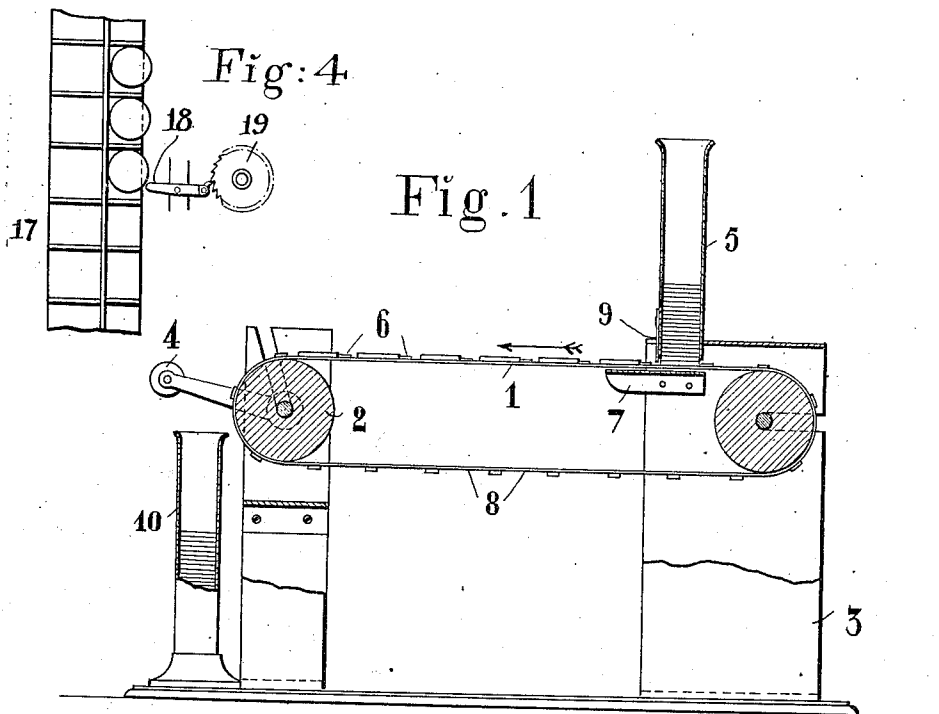


B. LUNDIN.
 COIN COUNTING APPARATUS.
 APPLICATION FILED DEC. 9, 1910.

1,026,755.

Patented May 21, 1912.
 2 SHEETS-SHEET 1.



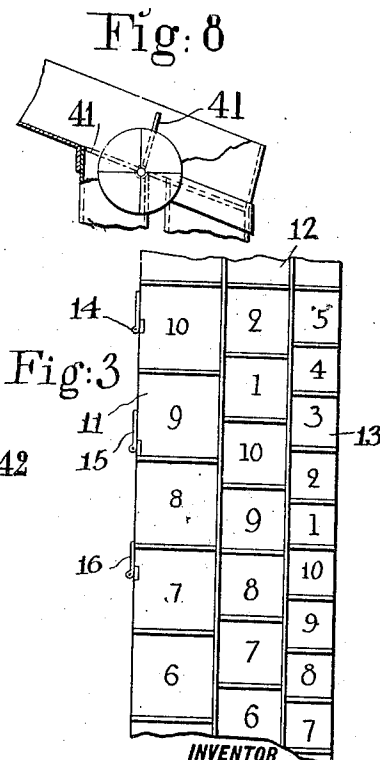
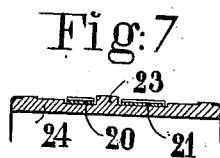
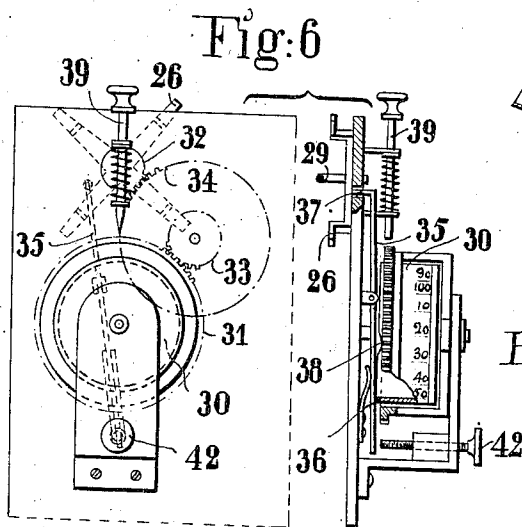
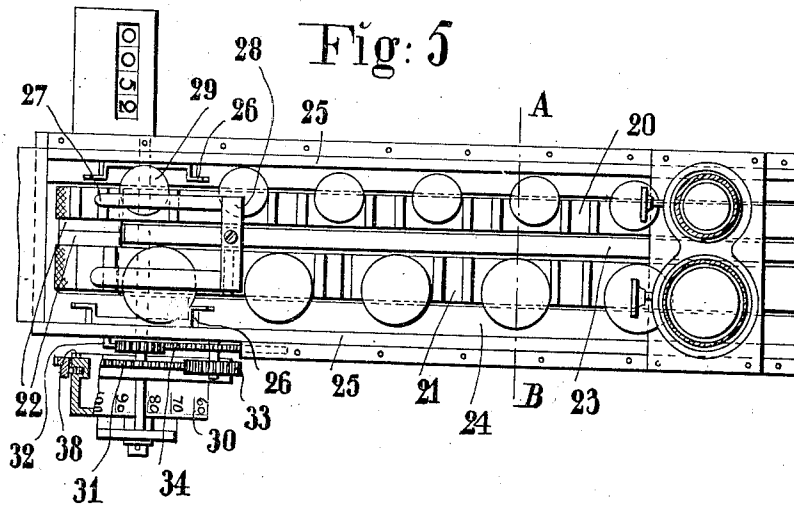
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2 SHEETS--SHEET 2..



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UNITED STATES PATENT OFFICE.

BIRGER LUNDIN, OF SKULTUNA, SWEDEN.

COIN-COUNTING APPARATUS.

1,026,755.

Specification of Letters Patent.

Patented May 21, 1912.

Application filed December 9, 1910. Serial No. 596,444.

To all whom it may concern:

Be it known that I, BIRGER LUNDIN, a subject of the King of Sweden, and a citizen of Sweden, residing at Skultuna, in the Kingdom of Sweden, have invented certain new and useful Improvements in Coin-Counting Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a coin counting apparatus which is of an exceedingly simple construction, and yet enables the coins to be counted exceedingly quickly and in a simple manner.

The invention chiefly consists in a track provided with stops, supports, projections or the like, being moved past a mouthpiece through which the coins are supplied to the track, the distance between the mouthpiece and the track being calculated in such manner that only one coin or a given number of coins are carried away by each projection of the track.

Several constructions according to this invention are illustrated in the accompanying drawing in which:—

Figure 1 shows an apparatus according to this invention in vertical section, Fig. 2 a plan, and Figs. 3 and 4 show two modified constructions of the apparatus. Fig. 5 shows the preferred form of my apparatus in plan; Fig. 6 is a side elevation of the same; Fig. 7 is a cross-section on line A—B of Fig. 5; and Fig. 8 is a detail, showing chute and flap to supply feed tubes adapted to be applied to the above form when a plurality of feed tubes are used.

In the construction shown in Fig. 1, the apparatus consists of an endless band 1 arranged about two rollers 2 mounted in a frame 3. The spindle of one of the rollers is provided with a handle 4, so that, by turning the said handle, the band can be moved. The coins are introduced into a tube 5 which is funnel-shaped at the top, the bottom end of which opens over the band near to one supply or feed roller. On the outer side of the band are arranged transverse stops in the form of cross-pieces 6 at a distance from each other which is slightly larger than the diameter of the coins to be counted. Opposite the supply or feed pipe, the band is

supported by a plate 7 secured to the stand. The device is of such construction that, when the band is rotated by means of the handle 4 in the direction indicated by the arrow (see Fig. 1), the coins are supplied to the charging pipe, and one coin is caught by each of the compartments formed by the cross-pieces. In order to obtain that result, that is to say, in order that each of the compartments 8 should take up only one coin, the device must be of such construction that only one coin should be able to pass each time at the bottom end of the tube in the direction of movement of the arrow. The simplest way for obtaining that result, would be to bring the tube or pipe down toward the band to such an extent that the distance between these parts should be slightly larger than the thickness of one coin, but smaller than the thickness of two coins. Such an arrangement would be however, unpractical as coins are often bent out of shape, so that they would be unable to pass through such a narrow interval or space between the tube and the band. For that reason, the distance between the tube and the band in the apparatus in question is slightly larger than the double thickness of coins, and at the front side of the tube is arranged a spring 9 yielding in the direction of supply—which spring can be replaced by any other suitable elastic or springy part—the bottom portion of the said spring being arranged at a distance from the band which is only slightly larger than the thickness of a coin, but not as large as the double thickness of a coin. The spring regulates the supply of coins so that each time only one coin can pass it, and at the same time also enables more or less deformed coins to pass, as in case of such coins the spring will yield.

The coins after passing over the left hand supply or feed roller (Fig. 1), fall down into a suitable receiver. It is preferable to allow the coins to fall down into a device forming them into a packet as shown in the drawing. This device consists of a pipe or tube 10 with a paper tube inserted into the same. The coins, in falling down into the paper tube, take up their place on the top of each other in good order.

The compartments 8 which take up the coins on the band, are numbered, so that the number of the coins falling down from

the band, can be easily counted. The numbers are preferably divided into series, each of which comprises the figures 1-10, and the apparatus is combined with a counting device indicating in well known manner tens, hundreds, etc. At each compartment of the band marked 10, there is provided for the purpose a projection rotating an index, disk or the like, to the extent of one division. It is obvious that the projections could be equally well arranged on the metal rollers of the band. The units are read on the bands, it being merely necessary to read the number of that compartment in which the last coin is situated.

When the coins are first to be passed through a coin sorting device, several apparatus of the above described kind are combined with the coin-sorting device, that is to say, for each kind of coins, there is a separate band, the compartments, supply tubes, etc., being adapted to the corresponding kind of coins. The rollers at one end of the different bands, for instance at the delivery end, are then arranged on one and the same spindle, so that all the bands can be rotated by means of a crank mounted on the spindle in question. The rollers are preferably arranged in that case on one and the same spindle also at the other end of the bands. The collecting compartments of the coin sorting device for the different kinds of coins, are of course arranged in proportion to the supply tubes of the coin counting apparatus in such manner that the coins fall directly into the pipes as soon as they have been sorted.

In order to enable different kinds of coins to be sorted with a simple apparatus with only one band, the apparatus is constructed in the manner shown in Fig. 3. The band is then divided into several, for instance three, portions, one portion 11 being provided for large coins, for instance 2 Mk. pieces, another portion 12 for medium coins, for instance 1 Mk. pieces, and the third portion 13 for smaller coins, such as for instance 50 Pfg. and 10 Pfg. pieces. The compartments of the different portions are then dimensioned in accordance with the different kinds of coins, and opposite each compartment marked 10 there are provided movable fingers 14, 15 and 16 for the portions 11, 12 and 13 respectively, of the band, said fingers being adapted to engage a wheel or pawl or other suitable actuating means for any convenient form of counting mechanism, one set of mechanism being provided for each portion and operated by each finger. These fingers are hinged, pivoted or otherwise movably attached to the band, so that they may be turned out by hand into operative position or brought down at will on the band out of operation. When large coins are to be counted, only the stops 14

are therefore brought into the operative position. For each series of traveling band portions there must be of course also one supply pipe.

Fig. 4 shows a device in which the coins themselves control a counting device. In that case the band is provided with a longitudinal ledge 17 arranged in such manner that the coins slightly project beyond one edge of the band. Next to the band is arranged a spring hook or pawl 18 which is in the path of the projecting edges, so that during the passage of the coins, it turns each time a disk 19 or the like to the extent of one step.

Figs. 5-7 show a construction on the same principle as that in Fig. 4. Two endless bands 20, 21, are arranged next to each other and around the same rollers 22. Between the upper portions of the band is arranged a fixed bar 23 projecting from a plane 24 on which travel the upper portions of the bands. The bands are so narrow that the coins project beyond the outer edges of the bands. The lateral movement outward of the coins is limited by lateral ledges 25 arranged on the plane in question. The coin compartments of the smallest band 20 are dimensioned in such manner that the band can be used for all small coins, such as 1, 2, 5, 10 and 15 Pfg. pieces, and the coin compartments of the largest band can be used for any large coins, such as 1, 2, and 3 Mk. pieces. A single apparatus of the construction shown in Figs. 5-7 can be, therefore, used for all kinds of coins. At the delivery end of the bands there is arranged for each band a star wheel 26 operated direct by the coins, so that the wheel is rotated to a small extent by each coin. The wheel is connected to a suitable counting device. In order to enable each band to be used, as already stated, for coins of different sizes, the distances between the points of the star wheel are calculated at a certain proportion to the distances between the coin compartments, so that, even when the smallest coins are counted, two adjoining points of the star wheel engage always in front of each two consecutive coins. The cross pieces of the bands are preferably made of hard material. In order to avoid excessively wide cross pieces which would prevent an exact fitting of the bands about the rollers, two adjoining compartments are separated by means of two (or more) cross pieces, as shown in Fig. 5. Before reaching the star wheel, the coins slide under a spring 27 which keeps them in proper position on the band when they operate the star wheel. The springs are secured to a cross member 28 screwed down to the bar 23. The two star wheels are preferably secured to one and the same spindle 29.

When a given number of coins is to be

brought into different receivers (paper sleeves or the like), a locking or stopping device is inserted which stops the movement of the band after the given number has been counted. This stopping device consists of a cylinder 30 provided on its circumference with a division, for instance from 0-100, rotatably inserted into a toothed wheel 31 connected to the spindle of the star wheel by means of toothed wheels 32, 33, 34. Between one star wheel and the cylinder 30, is pivoted a lever 35 provided with a portion 36 engaging with the inner side of the cylinder, and with a projection 37 facing the star wheel. On the inner side of the cylinder is provided a recess 38 which, when the cylinder is rotated, comes into a certain position exactly opposite the portion 36 of the lever 35, the portion 36 engaging with the recess under the action of a spring. The projection 37 is at the same time moved inward and engages between two points of the star wheel, so that the wheel, and thus the band, are locked. The lever can be connected to a signaling device which, after a certain number of coins has been counted, gives a signal. By setting the cylinder, or the recess 38, in a certain position relatively to the portion 36 of the arm 35, the apparatus will be therefore automatically stopped, as soon as the number of coins corresponding to the said position, have been counted. The cylinder can be rotated relatively to the toothed wheel 31 when the latter is locked for instance by means of pawl 39, the cylinder being loosely inserted into the wheel 31 and connected to the same only by friction. The locking device is thrown out of gear by means of a screw 42 which, in its movement inward, moves the lever out of the locking position.

In order to enable one single channel or chute to be used for the two bands, the said channel or chute is arranged in the manner shown in Fig. 8. The bottom of the channel is provided with an opening extending over the two feed pipes, and in the chute is rotatably mounted a flap 41 which, in one of its end positions, closes the smallest pipe and forms an extension of the bottom of the chute, so that the coins fall into the large pipe, while in the other end position, shown in the drawing, the flap forms a partition in the chute which closes the communication between the chute and the large pipe.

Of course it is perfectly obvious that minor changes may be made in my construction and operation, but it is intended to include and protect all such modifications in this application and the claims forming part thereof, only several preferred forms being illustrated and specifically described, it being impracticable to illustrate or describe all the possible modifications.

Having now particularly described and

ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. A coin counting device comprising an endless band divided into coin compartments, rollers about which said band travels, means for supplying coins upon said band, a counting mechanism, a longitudinal ledge parallel with the longitudinal edges of the upper part of the band and adapted to engage the coins so as to cause them to project with one edge beyond one longitudinal edge of the band and operate the counting mechanism.

2. A coin counting device comprising an endless band divided into coin compartments, rollers about which said band travels, means for supplying coins upon said band, a counting mechanism, a longitudinal ledge made as a fixed ledge extending along and parallel with the upper part of the band and adapted to engage the coins so as to cause them to project with one edge beyond one longitudinal edge of the band and operate the counting mechanism.

3. A counting device comprising an endless band divided into coin receiving compartments, a counting mechanism, a fixed plate supporting the upper part of the band, a longitudinal ledge projecting from the upper surface of said plate so as to cause the coins to project with one edge beyond one longitudinal edge of the band and operate the counting mechanism, another longitudinal ledge projecting from the upper surface of said plate to limit the lateral movement of the coins from the first mentioned ledge.

4. A counting device comprising two endless bands divided into coin receiving compartments, a counting mechanism for each of said bands, a fixed plate supporting the upper parts of the bands, a longitudinal ledge projecting between the two bands from the upper surface of said plate so as to cause the coins on each band to project with one edge beyond the outer edges of the bands and to operate the counting mechanism, two other longitudinal ledges projecting from the upper surface of said plate to limit the lateral movement of the coins from the intermediate ledge.

5. A coin counting device comprising a band divided longitudinally and laterally into coin receiving compartments, means for supplying coins to said compartments, a ledge parallel with the upper edge of said band and on which the coins carried by said band project, counting mechanism and means actuated by coins carried by said band for operating said counting mechanism.

6. A counting device comprising a band divided laterally and longitudinally into coin receiving compartments, ledges arranged in the same plane, and parallel with the upper edges of said band, the coins carried by said band extending slightly on said

ledges, lateral ledges for limiting the lateral movement of said coins, counting mechanism and means actuated by the coins carried by said band for operating said counting mechanism.

5 7. A coin counting device comprising a band divided into coin receiving compartments, counting mechanism, means for operating said mechanism, said means being actuated by the coins carried by said band, and
10 means for locking said counting mechanism, said latter means comprising a cylinder provided with a recess in its edge and connected by a train of gears to the operating means,
15 and a lever, said lever entering said recess at a predetermined point and locking said counting mechanism.

8. A coin counting device comprising an endless band suitably divided into coin compartments, rollers about which said band
20 travels, means for actuating said band,

counting mechanism, means for operating said counting mechanism and means for automatically locking the device out of operation when a predetermined number of coins
25 have been counted, said locking means consisting of a cylinder connected with the counting mechanism through a train of gears and provided with a recess in its edge, and a pivoted spring pressed lever, its lower
30 end being pressed into said recess and its upper end being forced into engagement with the counting mechanism, when the predetermined number has been reached.

In testimony whereof, I have signed my
35 name to this specification in the presence of two subscribing witnesses.

BIRGER LUNDIN.

Witnesses:

JON SWENSON,
AXEL L. HANSSON.