C. MENCHEN & F. CORRELL.

COIN DELIVERY MACHINE.

APPLICATION FILED JULY 14, 1909.

1,099,661.

Patented June 9, 1914.

3 SHEETS—SHEET 1.

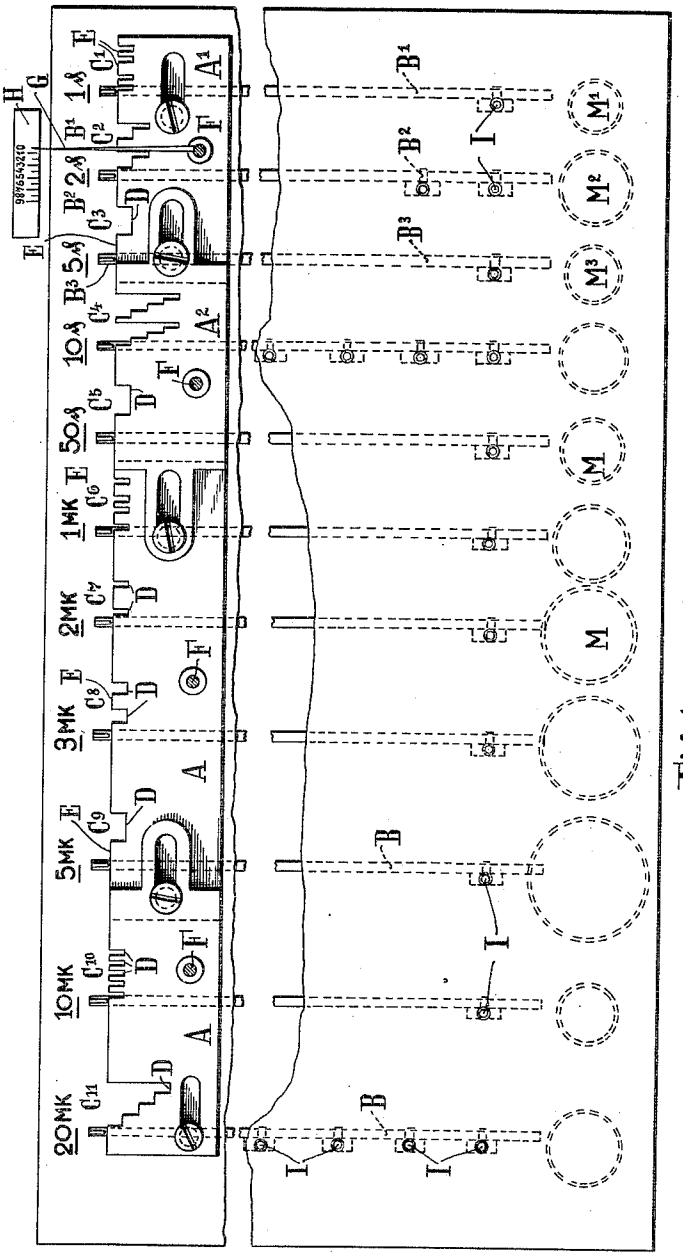


Fig. 1.

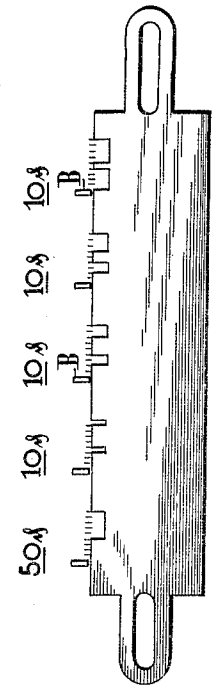


Fig. 2.

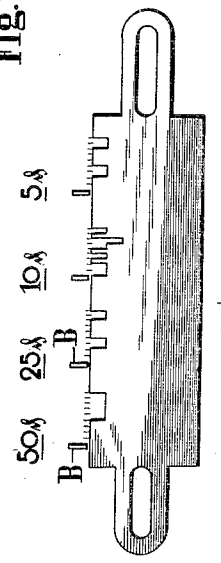


Fig. 3.

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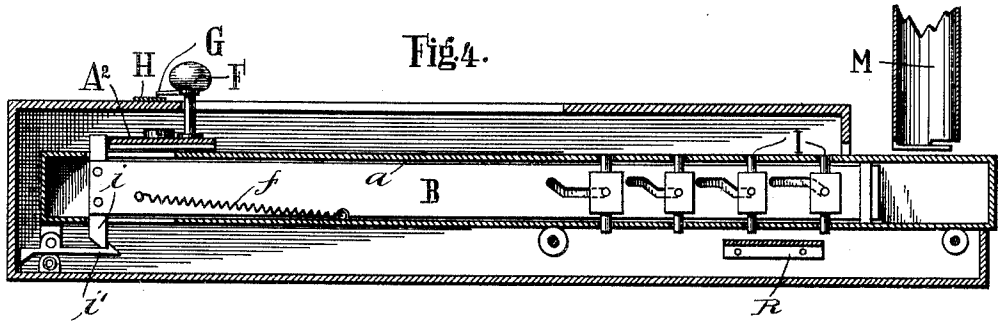
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3 SHEETS—SHEET 2.

Fig.4.



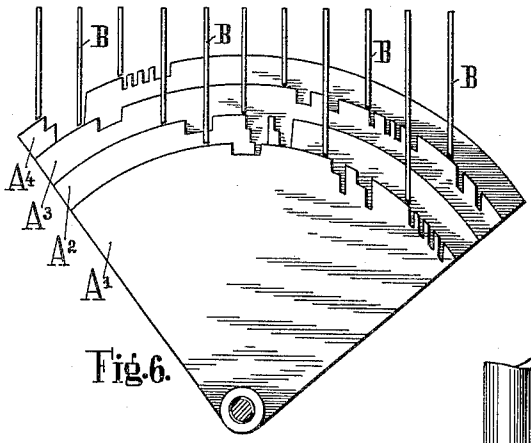


Fig.6.

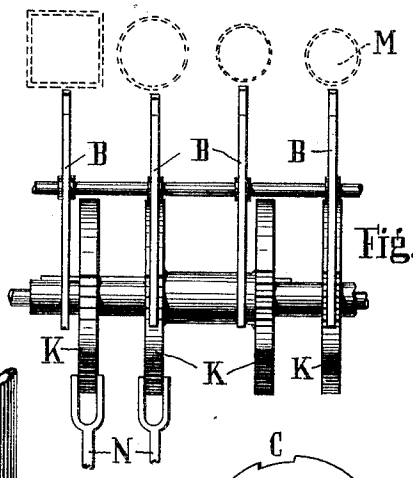


Fig.12.

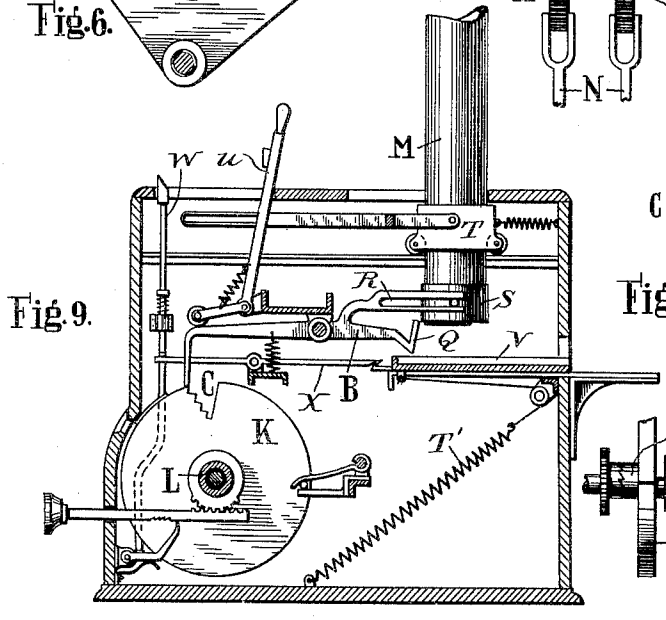


Fig.9.

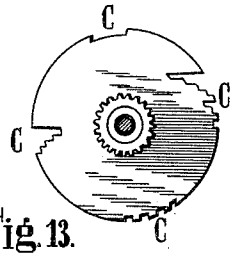
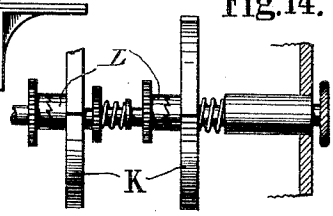


Fig.13.

Fig.14.



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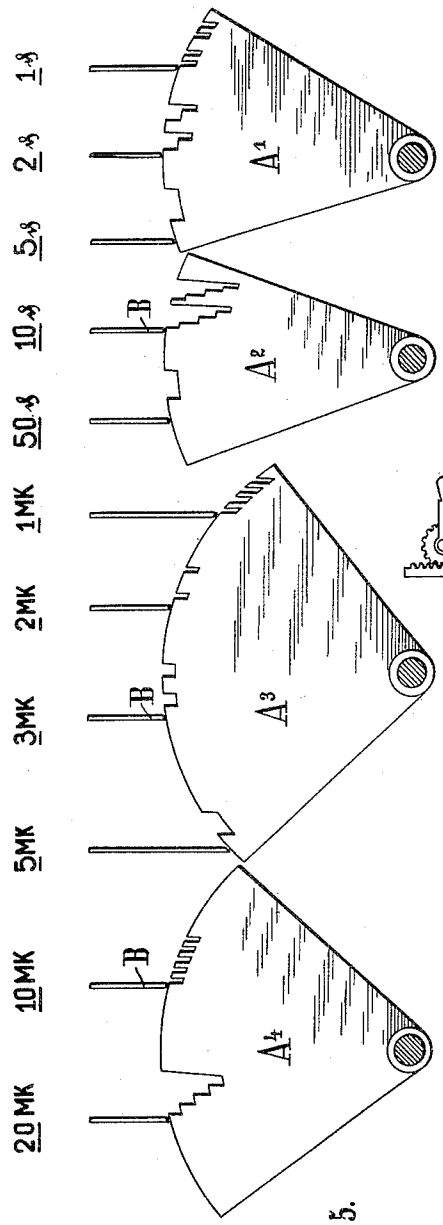


Fig. 5.

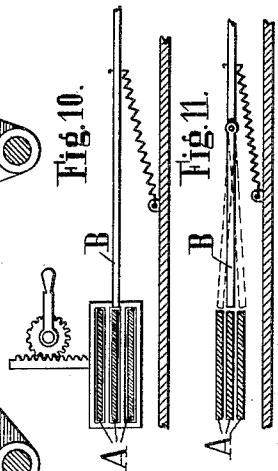


Fig. 10.

Fig. 11.

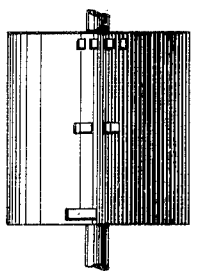


Fig. 8.

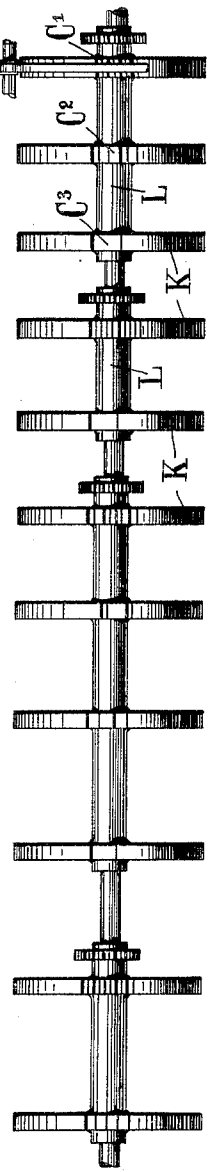


Fig. 7.

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UNITED STATES PATENT OFFICE.

CARL MENCHEN, OF MUNICH, AND FRIEDRICH CORRELL, OF BERLIN, GERMANY.

COIN-DELIVERY MACHINE.

1,099,661. Specification of Letters Patent. Patented June 9, 1914.

Application filed July 14, 1909. Serial No. 507,606.

To all whom it may concern:

Be it known that we, CARL MENCHEN, engineer, residing at Blumenstrasse 53, Munich, Bavaria, Germany, and FRIEDRICH CORRELL, civil engineer, residing at Alexandrinenstrasse 137, Berlin, Germany, both subjects of the German Emperor, have invented new and useful Improvements in Coin-Delivery Machines, of which the following is a specification.

This invention relates to apparatus for delivering coins or other articles or for changing money, and more particularly to a further development of the machine described in U. S. Letters Patent #943,030 of Dec. 14, 1909. While in a machine according to the invention set forth in the said patent the movement of one and the same kind of metal only, so that separate slides are provided for the different metal coins, for instance, copper, nickel, silver and gold and at each step in a slide, in each separate position a given combination of this kind of coins is paid out, according to the present invention the arrangement of slides and recesses therein makes it possible to use one and the same slide simultaneously for delivering different kinds of metal coins. It is thus possible for example to use the first slide for delivering copper and nickel coins, the second slide for delivering nickel and silver coins; for, according to the coinage for which the machine hereinafter described is designed, the one- and two-pfennig pieces are of copper, the five- and ten-pfennig pieces are of nickel, and the fifty-pfennig pieces are of silver.

According to the present invention, when utilizing the slides in the above manner, it is possible to select the single recesses or notches on each slide in such a manner that during the step by step movement of each slide, the coin unit peculiar to the said slide will successively, and always increasing by one unit for each step, be paid out or delivered in the minimum number of coins. This can be determined beforehand, so that in this manner the position of each slide will indicate successively the number of the units peculiar to the said position. If it is a question of a decimal system of coins, the first slide can occupy for instance, ten different positions, so that the position of rest will indicate the zero value of the lowest decimal, the position after the first step, the value "one," the position after the second step, the value "two" and so on; and the last position will indicate the value "nine" of the lowest decimal. The second slide determines in its position of rest the zero value of the second decimal, and in its outermost position the value nine of the second decimal, and in the intermediate positions the remaining values one to nine of the said second decimal. In the same way the third slide indicates all the values of the third decimal, the fourth slide all the values of the fourth decimal, and so on. It is therefore merely necessary, when it is desired for instance to pay out 74 mark 98 pfennigs, to set the first slide on 8, the second slide on 9, the third slide on 4 and the fourth slide on 7. This setting can be effected directly, each slide being provided with an index or pointer which travels in front of a scale provided with the figures 0—9, or by means of keys in the usual manner. It is essential in every case that the notches of the slides and the stops should be adapted to be, and in fact must be, selected so that in case of the step by step movement of the slides always one unit more than before should be delivered. The single slides with latches and tappets can be constructed in exactly the same way as described in the said co-pending application.

In order that the invention may be clearly understood reference may be had to the accompanying drawings which illustrate its application to a cash delivery machine.

Figure 1 is a plan of a cash delivery machine for kinds of coins used in Germany, from one pfennig to twenty marks. Figs. 2 and 3 show two modifications of the adjusting device forming the essential part of the invention and made in the shape of a flat, rectangular slide. Fig. 4 shows the cash delivery machine in section. Fig. 5 shows the adjustment devices in the form of disk-

segments arranged side by side. Fig. 6 shows the said disk-segments of different diameters arranged above each other. Fig. 7 shows the adjustment devices in the form of complete disks, several of which are mounted on one and the same hollow spindle. Fig. 8 shows the adjustment device in the form of rollers. Fig. 9 shows a complete automatic delivering machine for goods with adjustment devices formed of disks, in which the ejecting latches and the ejecting levers are made in one piece. Figs. 10–14 show separate arrangements of the adjustment devices in order to enable combinations arranged on one set of ejectors to be again altered in any desired manner.

The construction and working of the improved adjustment device will be best understood with reference to a cash delivery machine.

Referring now to the drawings it will be seen that the arrangement on the cash delivery machines is such that mk. 99.99 could be paid by adjusting only four slides. As will be seen from Fig. 1, there are provided four slides A^1, A^2, A^3, A^4, of which the slide A^1 is provided with three groups C^1, C^2, C^3, of recesses D corresponding to the three coins of 1 pfg. (C^1), 2 pfg. (C^2) and 5 pfg. (C^3) which are the only pfennig unit coins in Germany. The second adjustment device A^2 has in accordance with the two kinds of coins which exist in Germany, for tens of pfgs. two groups of recesses C^4 and C^5 corresponding to the 10 pfg. pieces (C^4) and 50 pfg. pieces (C^5.) The adjustment device A^3 has four groups C^6, C^7, C^8, C^9 of recesses D corresponding to the four kinds of coins of mk. units of 1 mk. (C^6), 2 mk. (C^7), 3 mk. (C^8) and 5 mk. (C^9). Finally, the adjustment device A^4 has two groups of recesses, C^{10} and C^{11}, corresponding to the two kinds of coins C^{10} to 10 mk. and C^{11} to 20 mk. which the German currency comprises.

The adjustment slides A^1, A^2, A^3 and A^4 can be shifted step by step in nine stages, in accordance with the divisions given on a scale as H (Figs. 1 and 4) one of which is provided for each slide; or, if they are made in the form of rotary disks or sectors, they can be turned. The single adjustment devices or slides have recesses D and projections E between them, said recesses and projections being of such width, that on the gradual advance of the slides, a new combination of kinds of coins is always obtained, in order to enable the desired amounts to be paid in the highest combination of the kinds of coins at the time.

In order to explain the working of the adjustment devices, the movement of the rectangular slide A^1 of Figs. 1 and 4 will be more fully described. The slide A^1 is shown in the position in which it happens to be when the index G on the adjustment head F, Fig. 4, is at the zero of the scale H, Fig. 1. If the index G is moved to the figure 1 of the scale H by moving the slide A^1 through its attached head F, and the slide A^1 thus shifted to a corresponding extent to the left, the adjustment part B^1, which is hereinafter referred to simply as the "latch," will register with the first recess D of the recess group C^1 of one pfennig piece; while the latches B^2 and B^3 will register with the projections E, and consequently will be unable to advance, although the latches B^2 and B^3 are released simultaneously with B^1. Only the latch B^1 will, therefore, be able to bring into the ejecting position its corresponding ejecting device I for the one pfennig pieces of the coin tube M. When the latch B^1 is brought back into the initial position and the index G arranged in front of the figure 2 of the scale H, on the latches B^1, B^2 and B^3 being released, only the latch B^2 will this time fall into the first recess B for the 2 pfennig pieces, while the latches B^1 and B^3 will strike the projections E and will be unable to advance. If the index G is placed on the figure 3, and the latches B^1, B^2 and B^3 are caused to advance, the latches B^1 and B^2 will each engage with a recess D of C^1 and C^2, while the latch B^3 will remain inoperative. If the index is adjusted on the figure 4, the latch B^2 will fall two stages deep, into the recess D of the group C^2, so that in case of four pfgs. consisting of two pfgs. pieces will have to be paid out. If the adjustment is made on the figure 5, the latch B^3 will fall into the recess D of the group C^3, and the latches B^1 and B^2 will remain inoperative, as they strike the projections E. When the adjustment is made on the figure 6, the latches B^3 and B^1 will each fall into a recess D of the groups C^3 and C^1; and if the adjustment is made on the figure 9, then the latch B^3 will fall to the extent of one stage into the group C^3 and the latch B^2 to the extent of two stages into the group C^2. In the same way as in the case of this slide, the recesses D and projections E and the depths of the recesses, are grouped on all the slides A^1, A^2, A^3, A^4 of the adjustment device, in such manner that the latches B which operate up to four ejecting fingers I, (Fig. 4) become operative in such combination that each amount of tens and units of mk. and of tens and units of pfg. will be paid out in the highest kind of coins. As already stated, the arrangement of latches, ejecting fingers, etc., shown in Fig. 4 operates in the same manner as described in the prior application referred to. The extent that the latches B, B^1, etc., may thus be advanced determines the number of ejecting fingers I raised above the surface to engage the coins or the like in the corresponding

tubes M, M¹, etc., as the slide is drawn outwardly and the said fingers pass under the tubes. Each bar B is provided with a stop *i*, engaging with a beveled lug or rail i^1 common to all the bars, said bars being thus held back against the action of springs *f*, so that it is possible to adjust the plates A, A¹, etc., without hindrance. When the plate *a* is drawn out in any suitable manner, the said beveled lug or rail i^1, being pivotally attached to said plate is suitably pushed down to release the bars B which move forward under the action of the springs *f*, the distance corresponding to the adjustment of the plates A, A¹, etc. When the plate *a* is completely drawn out, the bars B strike with their stop *i* against a stationary bar R and are restored to their original condition.

As shown in Fig. 2, instead of giving to the recesses D four depths, when for instance up to four coins of one kind have to be paid for one amount, it is possible to arrange also four ejecting latches B for one and the same kind of coin, and four coin reservoirs for this kind of coin. This operates then, in case of two coins of the same kind, two ejecting latches B; in case of three coins, three ejecting latches; and in case of four coins, four ejecting latches which eject then the same coins from two, three or four coin reservoirs.

Fig. 3 shows how the arrangement of the groups of recesses will have to be modified relatively to each other and for each single group when, in addition to the ten and fifty pfg. coins, there should be also introduced in Germany a 25 pfg. coin. In that case, in addition to the group of recesses and projections for the 25 pfg. piece, it would be necessary to arrange also a group of recesses and projections for a 5 pfg. piece, that is to say, a second coin tube for 5 pfg. pieces would also have to be provided in the 10 pfg. slide, in order to enable the 10 pfg. amounts to be rounded off to the decimal place, where the 25 pfg. coin is required. Instead of making recesses, as shown in Figs. 1–4, in slides which are moved in their longitudinal direction, the recesses could be also arranged on the circumference of circular sectors which are rotated about their axis. Each sector could be mounted on a separate spindle, Fig. 5, in which case the sectors could be all of the same diameter; but, as shown in Fig. 6, all the sections could be rotatably mounted on one and the same spindle, in which case the sectors are preferably made of different diameters. For the rest, the recesses as regards their position, depth and length must be selected exactly in the same manner as in the arrangement of slides shown in Figs. 1–4. More particularly, there is shown in Fig. 5, by the indication of 1–5 pfgs. on the sector A¹, that the said slide is intended for simultaneously paying out copper and nickel coins, while by the indication of 10 pfgs. and 50 pfgs. recesses on the sector A², it is pointed out that the slide in this section is intended for simultaneously paying out nickel and silver coins. When the recesses are made in the disks K, Fig. 7, the different disks K must be arranged in groups in such manner that in the same way, as shown in Fig. 5 with reference to the sectors A¹ to A⁴, the first group of the disks has recesses for 1, 2 and 5 pfg. coins (that is to say, nickel and copper); the second group recesses for 10 and 50 pfg. coins (that is to say, nickel and silver) etc. The disks must be mounted in groups on joint hollow spindles, so that they must always move together, each group as a whole. In place of the hollow spindles L and of the single disks, a roller with corresponding groups of recesses as shown in Fig. 8 could also be used. It can, however, also happen in paying out money, the customer wishes instead of 20 mk. pieces 20 mk. paper notes; or, instead of one 20 mk. gold coin, two 10 mk. gold coins; or that one kind of coin may fail or be exhausted. In order to enable a large number of such frequently desired or required combinations to be obtained, the reservoirs containing, say the 20 mk. pieces might be removed and a reservoir containing 20 mk. notes inserted. It is, however, more satisfactory to have double reservoirs, for example, for 20 and 10 mk. notes, 20 and 10 mk. coins, arranged in a suitable number next to each other. The slides are then arranged accordingly, as shown in Figs. 10 and 11, in different positions above or next to each other, and in such manner that either they can be adjusted relatively to the ejecting latches B, or the latter can be adjusted relatively to the slides A. Fig. 9 illustrates the application of such round disks K to an automatic delivery machine for goods, but which of course could also be utilized for delivering coins. If the spindle L, on which are mounted a group of the disks K with the recesses C, is set in given position by means of a key Y, the downward projections P of the ejecting lever B, according to the position of the recesses C relatively to the end of the lever P, can engage with the same to a corresponding depth. In that way the other end Q of the double armed lever B is raised. The double armed lever B carries above its end Q a second arm R provided with a sleeve S, which is adapted to move over the bottom end of the coin tube or container in which are arranged the coins or goods to be delivered. When the lever end P engages with a recess C the parts Q and S are raised to a corresponding extent. When the coin tubes or recesses M mounted on a carriage T so that they can travel, are moved to the left by the movement of the handle U, the ejectors Q push out one, two or more

of the coins or goods arranged one above another in the tube M, a corresponding number having been uncovered by the sleeve S. The goods or coins thus ejected, fall on to the slide V, which, when the lever U strikes the rod W, is released by means of the lever X and carried out of the machine by the action of the spring T^1. When the lever U is released, the parts will be returned to their original position by the action of springs with the exception of the slide V which must be pushed back by hand.

Fig. 12 shows the disks K which can be shifted either one at a time or in groups; and, for instance, instead of gold coins of 20 mk. a paper note of 20 mk. or two 10 mk. pieces, can be paid for a 20 mk. piece, the disks K being connected alternately to the corresponding ejecting latches B by means of forks N.

Figs. 13 and 14 show how the various groups of recesses C can be arranged on one adjustable disk K, and in that way any desired predetermined combination of movement of the latches and the latch groups B can be obtained. Each sum can be indicated by a combination of coins determined in advance. If, however, some kinds of coins are switched out, as there are no more left, the said switching out will also have an influence on the whole combination.

Fig. 13 shows diagrammatically four different possible combinations arranged on one single disk. According as one or the other of the groups of recesses C is to be brought into the operative position, the disk K is rotated to an angle of 90°. The mechanism for the purpose is shown diagrammatically in Fig. 14. The disk K is mounted on a spindle, so that it can be moved longitudinally of the same, but cannot rotate on it. The sleeve L can, on the contrary, rotate freely on the spindle, but cannot move on it. The disk and the sleeve are held in engagement with each other by means of suitable couplings and springs. Their relative position can be modified by operating the button shown on the right hand side four times, so that always another group of recesses C comes into the operative position shown in Fig. 9.

We claim:—

1. A cash or change delivery machine comprising: suitable containers and ejecting mechanism coöperating therewith to remove coins or the like from the said containers, and controlling means for the ejecting mechanism, the said controlling means including members provided with recesses and stops arranged in groups corresponding to the smaller and larger fractions of the unit of coinage and to multiples of the unit of coinage, the arrangement of the groups being such that each ejecting mechanism for each group at each step successively brings about the delivery of one unit more than in the previous position and a common setting device for the various recesses and stops of each group.

2. A cash or change delivery machine comprising: suitable containers and ejecting mechanism coöperating therewith to remove coins or the like from the said containers, and controlling means for the ejecting mechanism provided with suitable recesses, and stops cut in said controlling means, the said controlling means being arranged in groups, the recesses and stops of the first group corresponding to hundredths of the unit coinage, of the second to tenths of the unit of coinage, of the third to the unit of coinage and multiples thereof up to and including nine times the said unit, and of the fourth ten times the unit of coinage and multiples thereof up to and including ninety times the unit of coinage, the arrangement of the groups being such that each ejecting mechanism for each group at each step successively brings about the delivery of one unit more than the previous position and a common setting device for the various recesses and stops of each group.

3. A cash or change delivery machine comprising: suitable containers and ejecting mechanism adapted to remove coins or the like from the said containers, and controlling means for the ejecting mechanism including a plurality of controlling slides provided with recesses, and stops in said slides, and means to adjust the same, the said slides each being adapted to occupy ten different positions, the normal position corresponding to the zero value of the lowest decimal, the first position the value one, and so forth to the last position which will indicate the value nine of the lowest decimal; the second slide in its normal position the value zero of the second decimal, and its last position the value nine of the said second decimal; and so forth and a common setting device for the various recesses and stops of each group.

4. In an automatic ejecting machine: a plurality of latches; means to move the same; means to control the degree of movement of said latches, comprising a set of keepers provided with recesses, and projections in said keepers, said recesses and projections of each set being adapted to be engaged by the corresponding latches and each keeper of a set representing the same value, means to cause a desired keeper of a set or sets of said keepers to coact with a particular latch or latches, the other keepers of the particular set or sets remaining inoperative, and means to impart a step by step movement to said keepers.

5. In an automatic ejecting machine: a plurality of latches; means to move the same; means to control the degree of move-

ment of said latches, comprising a set or sets of keepers provided with recesses, and projections in said keepers, said recesses and projections of each set being adapted to be engaged by the corresponding latches and each keeper of a set representing the same value, means to adjust said latches with respect to an entire set or sets of said keepers, and means to impart a step by step movement to said keepers.

Dated this 14th day of June 1909.

In testimony whereof, we affix our signatures, in presence of two witnesses.

CARL MENCHEN.
FRIEDRICH CORRELL.

Witnesses as to Carl Menchen:
LOUIS I. MUELLER,
MATHILDE K. HELD.
Witnesses as to F. Correll:
HENRY HASPER,
WOLDEMAR HAUPT.

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