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MECHANICAL TRANSLATING APPARATUS FOR PRINTING TELEGRAPH SYSTEMS

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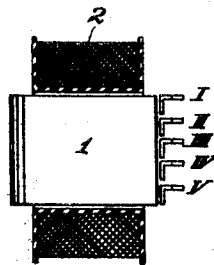
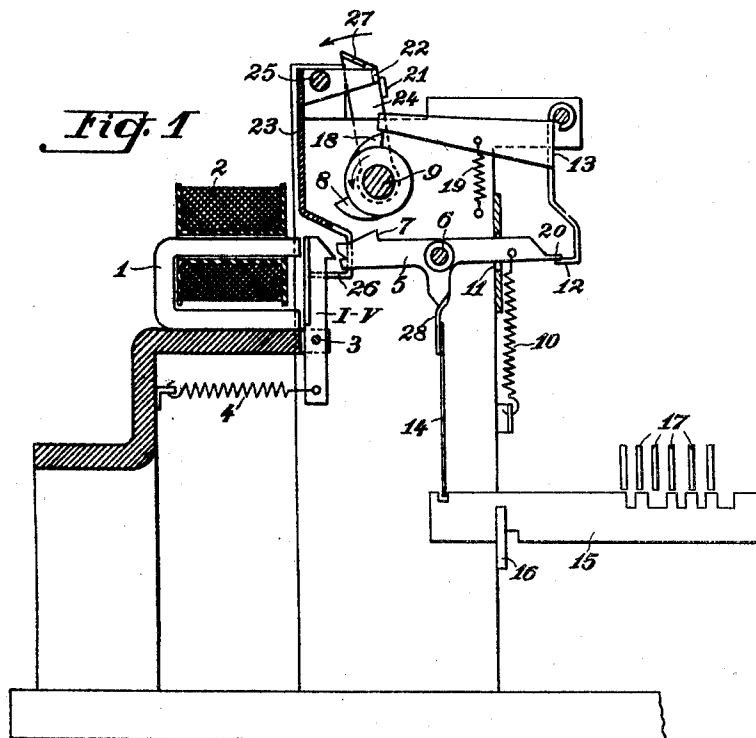


Fig. 2

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MECHANICAL TRANSLATING APPARATUS FOR PRINTING-TELEGRAPH SYSTEMS

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With the receivers of telegraph systems working according to the 5-unit alphabet code and which are released for each sign by a separate impulse the problem arises of adjusting by means of the current impulses coming on to the line one after the other, five similar devices separated from each other, according to the impulse combination. For this purpose a translating apparatus is provided which according to the position of the devices effects the printing of the sign allocated to this combination. The construction of mechanical translators is known in which, for example, the 5 impulses of a sign combination are taken to 5 electro-magnets the armatures of which effect the adjustment of selector bars. The arrangement of a single electro-magnet is also known to which the sign impulses are carried in their sequence and the armature of which influences in sequence separate selector bars. In such constructions, switch over arrangements are necessary, which are subject to disturbance but which are tolerated for the sake of the simpler structure secured by the use of only one electro-magnet.

The invention obviates the necessity of switch over devices by the provision of an electro-magnet, directly or indirectly energized by the sign impulses, with a number of separate armatures corresponding to the number of the combination elements (for example 5), and controlled one after the other. The adjustment of the armatures takes place by means of controlling devices which are moved in turn by the shaft of the receiver, rotating once for each sign. According to the condition of excitation of the electro-magnet there is a position of the controlling devices which corresponds to the respective combination element and which is in known manner transmitted to selector bars in combination with type levers for the purpose of printing the sign. In one constructional arrangement of the invention, the apparatus can be so made that the armatures are brought in turn into their attracted position and so held by the electro-magnets if these are simultaneously energized. Very

small current strengths are sufficient for this purpose.

In Figures 1 and 2 of the accompanying drawings a constructional example of the invention is shown.

Figure 1 shows the apparatus for releasing the shaft and adjusting a selector bar, in elevation, and Figure 2 shows a plan of the signal magnet common for all bars.

The horse shoe shaped magnet 1 has a winding 2, which may be connected directly or indirectly to the trunk line. In front of the magnet poles there are five separate armatures, I, II, III, IV, V, which are carried beside each other on a common axis 3, and each of which is drawn away from the magnet by a spring 4. In front of each armature there is a selector lever 5, which is rotatably carried on the shaft 6. Each selector lever has a nose piece 7 which engages with a cam 8 which with the shaft 9 makes a rotation with each transmitted sign. A powerful return spring 10 draws the selector lever 5 into its normal position against the stop 11 when it is not held by the projecting piece 12 of the lock 13 which is situated in front of all the levers. On a third arm 28 the selector lever carries a blade spring 14, which, according to the position of the selector lever, effects a displacement of the selector bar 15 to the right or to the left. The movement of the bar is limited by a stop 16. Into the indentations on the selector bar, intermediate pieces 17 can drop in known manner, which, for instance with type lever apparatuses, bring the corresponding type lever into engagement with the printing mechanism.

The sign acting on the winding 2 consists, for example, of current marking impulses for one, and current pauses for the other adjustment of the selector bars. The cams 8 are so distributed on the circumference that on the rotation of the shaft 9 the selector levers corresponding to the armatures I—V are in turn actuated at the same intervals of time in which the separate current marking impulses follow each other. In Figure 1 the adjustment of the armature I and the parts pertaining thereto is shown. When the shaft 9 (actuated by the release impulse as

will be described below) begins to rotate in a counter clockwise direction, then at first the stop 13 held by the cam 18 is released and drawn back by the spring 19 so that the selector levers are free. The cam 8 then bears on the nose piece 7 and forces the selector lever down, so that the tip of the armature I is forced out of the inclined indentation on the selector lever and the armature placed on the magnet. At the moment which corresponds to about the middle of the first sign impulse, the selector lever 5 suddenly jumps back behind the cam and thus releases the armature. If at this moment the magnet is not energized, the armature falls off and holds the selector lever 5 with its nose piece.

If, however, the magnet is energized it holds the armature fast and the selector lever is drawn by the spring 10 down to the stop 11. The adjustment of the selector lever is transmitted by the blade spring 14 to the bar 15, which is consequently adjusted by a current impulse to the left, and by another sign step without current is adjusted to the right. The adjustment of the other levers and bars takes place in the same way during the rotation of the shaft 9 until finally at the end of the rotation the cam 18 raises the lock 13, whereby the projection 12 according to the adjustment of the selector lever passes over or under the extensions 20 and so fixes the combination for the duration of the stoppage of the shaft. At the same time by means of a further eccentric (not shown on the drawing) a second shaft is released for a revolution which effects the printing of the sign.

The stoppage of the shaft 9, which is connected by a friction coupling with a continuously rotating motor shaft, is effected by means of the stop 21, which rests against the projecting arm 22 of the pawl 23. The stop 21 is on an arm 24 which is connected with the shaft 9. The pawl 23 is rotatable about the axis 25 and is so formed at its lower end that it bears with five projections 26 against all five armatures. As long as the stop 21 rests on the arm 22 the projections 26 rest against the armatures, and these are held by the magnet which receives a normal current during the pause between two signs. For releasing the receiver shaft a current interruption precedes the five current stops of each sign, this causes the magnet to allow all five armatures to drop, which throw in common the pawls 23 back and separate the arm 22 from the stop 21. The shaft 9 is thus freed and begins to rotate, in the course of which the adjustment of the bars takes place in the above described manner. At the conclusion of the rotation the lever 22 is pressed downward by the inclined projecting surface 27 on the arm 24, whereby the said lever 22 comes within reach of the stop 21 and at the same time all the armatures are brought against the magnets. The shaft remains stopped until

the next releasing impulse (current interruption) releases it for a fresh sign.

In the constructional example shown the working is based on neutral magnets and normal current. A polarized magnet system can, however, be used just as well, which retains its armatures even with the line current switched off. The sign transmission can then be provided—according to the character of the magnet system—for working current or also for double current. A line relay can also be used, controlled by the line currents and which transmits the sign impulses to the magnet winding.

I claim:—

1. In an apparatus of the kind described, the combination of a magnet, a plurality of armatures for said magnet, means for moving said armatures towards said magnet in timed sequence, and means operatively associated with said first mentioned means and with said armatures and adapted to effect controlling operations in such apparatus.

2. In an apparatus of the kind described, the combination of a magnet, a plurality of armatures for said magnet and means for moving said armatures towards said magnet in timed sequence, and means operatively associated with said first mentioned means and with said armatures, and arranged to be locked by the armatures which are not attracted by said magnet.

3. In an apparatus of the kind described, the combination of a magnet, a plurality of armatures for said magnet, means for moving said armatures toward said magnet in timed sequence, means operatively associated with said first mentioned means and with said armatures and arranged to be locked by the armatures which are not attracted by the magnet, and control elements arranged to be shifted by the second mentioned means.

4. In an apparatus of the kind described, the combination of a magnet, a plurality of armatures for said magnet, projections on said armatures, means for moving said armatures toward said magnet in timed sequence, and means operatively associated with said first mentioned means and with said armature and provided with notches co-operable with said armature projections.

5. In an apparatus of the kind described, the combination of a magnet, a plurality of armatures for said magnet, projections on said armatures, and means for moving said armatures towards said magnet in timed sequence, and including levers having notches therein co-operable with said armature projections.

6. In an apparatus of the kind described, the combination of a magnet, a plurality of armatures for said magnet, projections on said armatures, springs connected to the armatures to urge the same in one direction, a control shaft, curved cams upon said shaft

and operative to move the armatures against said magnet in timed sequence, and levers co-operating with said cams and with said armatures, and provided with notches co-operable
5 with the armature projections and springs attached to said levers urging the same in one direction.

7. In an apparatus of the kind described, the combination of a magnet, a plurality of
10 armatures for said magnet, projections on said armatures, means for moving said armatures towards said magnet in timed sequence, levers co-operating with said means and with
15 said armatures, and provided with notches co-operable with said armature projections, and latching mechanism associated with said levers.

8. In an apparatus of the kind described, the combination of a magnet, a plurality of
20 armatures for said magnet, projections on said armatures, springs connected with the armatures to urge the same in one direction, a control shaft, curved cams on said shaft operative to move the armatures toward the
25 magnet in timed sequence, plural armed levers co-operating with said cams and with said armatures and provided with notches co-operable with the armature projections, springs connected with said levers to urge the same in
30 one direction, a two armed lever operable to lock said plural armed levers with one arm, and a cam on said control shaft engageable by the other arm of such last mentioned lever.

9. In an apparatus of the kind described, the combination of a magnet, a plurality of
35 armatures for said magnet, a control shaft, curved cams upon said shaft for moving the armatures toward said magnet in timed relation, locking mechanism for said shaft, and
40 means co-operating with said magnet for releasing said locking mechanism.

10. In an apparatus of the kind described, the combination of a magnet, a plurality of
45 armatures for said magnet, a bell crank lever associated with said magnet, a control shaft, curved cams on said shaft for moving the armatures toward said magnet in timed sequence, an arm on said control shaft, and angular projections on said arm arranged to
50 co-operate with said bell crank lever to lock said shaft.

In testimony whereof I affix my signature.
HERBERT WUSTENY.