

PATENT SPECIFICATION



Application Date: Nov. 3, 1926. No. 27,575 / 26.

284,764

(Patent of Addition to No. 178,936: dated Jan. 25, 1921.)

Complete Left: Aug. 3, 1927.

Complete Accepted: Feb. 3, 1928.

PROVISIONAL SPECIFICATION.

Improvements relating to Number Dials for Automatic and Semi-automatic Telephone Systems and the like.

We, SIEMENS BROTHERS & Co., LIMITED, of Caxton House, Tothill Street, London, S.W. 1, a company registered under British law, and ERNEST REGINALD GARROD, of 78, Broadfield Road, Catford, London, S.E., a British subject, do hereby declare the nature of this invention to be as follows:—

10 The invention relates to an improvement in or modification of a number dial for automatic and semi-automatic telephone systems and the like as claimed in Patent Specification 178,936.

15 In the specification mentioned a dial is described which is provided with a slipping cam or mask, the cam or mask being held in frictional engagement with the impulse wheel of the dial by a spring washer.

20 In the present invention the engagement of the cam with the impulse wheel takes a more positive form. The impulse wheel is provided with a number of holes or pits spaced apart at distances corresponding to the pitch of the impulse wheel teeth and on the face adjacent to the cam. The cam carries a spring detent which is adapted to enter such holes or pits and to be pushed out if the cam is held stationary and the impulse wheel moved.

30 This detent is preferably situated adjacent to the periphery of the cam and may consist of a leaf spring with a pip that passes from the outside of the cam through a hole to the impulse wheel surface.

40 When the dial is at normal the detent engages with a hole in the impulse wheel and in the setting of the dial the cam is carried round until a projection on the same engages a stationary stop. The impulse wheel continues to rotate until the subscriber's finger meets the finger stop, when the detent re-engages a hole in the impulse wheel.

45 On release the dial rotates back to normal, the cam being carried along by the impulse wheel and impulses are sent out after the cam reaches its normal position.

50 [Price 1/-]

A further feature of the invention relates to a safeguard against a false number of impulses being sent. Sometimes a pencil is used to set the dial and the pencil being of smaller diameter than that of the finger hole, the finger plate may be carried round further than appropriate for the digit dialled, the inertia of the finger plate playing a great part if the setting motion is rapid. In such case when the dial is released an extra impulse may be sent.

55 According to this further feature the cam has a hump adjacent to the end recessed portion (which portion discloses the recesses in the impulse wheel). This hump engages the operating member for the impulse springs when the cam has nearly performed the lost motion in the return of the finger plate to normal. If the spring detent has entered a hole in the impulse wheel the hump is forced past the said operating member and impulse sending commences. If the spring detent has not entered a hole the cam is arrested until the detent does enter a hole.

60 In the patent specification mentioned the movement of the cam is limited by the engagement of a nose of the cam with a fixed stop at one end of its travel, and by the engagement of the nose with the operating member for the impulse springs as regards the other end of its travel. We may provide a larger cam having a projecting tongue which engages with a fixed stop.

Dated this 3rd day of November, 1926.

SIEMENS BROTHERS & CO., LIMITED,

The common seal of Siemens Brothers & Co. Limited, was hereto affixed by order of the Board,

H. WRIGHT,

Director,

W. WHEELER,

Secretary,

For Selves and Co-applicant.

COMPLETE SPECIFICATION.

Improvements relating to Number Dials for Automatic and Semi-automatic Telephone Systems and the like.

We, SIEMENS BROTHERS & Co., LIMITED, of Caxton House, Tothill Street, London, S.W. 1, a company registered under British law, and ERNEST REGINALD GARROD, of 78, Broadfield Road, Catford, London, S.E., a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to an improvement in or modification of a number dial for automatic and semi-automatic telephone systems and the like as claimed in Patent Specification No. 178,936.

In the specification mentioned a dial is described which is provided with a slipping cam or mask, the cam or mask being held in frictional engagement with the impulse wheel of the dial by a spring washer.

In the present invention the engagement of the cam with the impulse wheel takes a more positive form. According to the invention we provide that the engagement of the cam with the impulse wheel is effected by a spring-controlled registering device, which allows relative movement of the cam and wheel.

We may, for instance, provide the impulse wheel with a number of holes or pits spaced apart a distance corresponding to the pitch of the impulse wheel teeth and on the face adjacent to the cam. The cam is provided with a spring adapted to effect engagement between the cam and the impulse wheel during rotation of the cam, but is arranged to permit of rotation of the impulse wheel when the cam is held stationary.

The cam spring is further adapted to effect registration of the impulse wheel and the cam before impulse transmission commences.

We may provide the cam spring with a detent or pip adapted to enter holes or pits in the impulse wheel and to be pushed out of engagement therewith when the cam is held stationary and the wheel is rotated.

A ball may replace the detent or pip and engage the holes or pits in the impulse wheel under the action of the cam spring and be pushed out of engagement therewith when the wheel is rotated and the cam is held stationary.

The relation of the members of the registering arrangements may be reversed, the spring member being mounted on the impulse wheel although we prefer the first-mentioned relationship.

The accompanying drawing shows improvements or modifications applied to number dial by way of example.

Figures 1 and 2 are back views of a number dial showing one form of modification applied thereto, the cam being shown in different positions in the two views.

Figures 3 and 4 are a sectional and an edge view respectively of Figures 1 and 2 to an enlarged scale.

Figures 5 to 8 show another form of modification, the view otherwise corresponding to those in Figures 1 to 4 except that Figure 8 is a sectional view.

Referring to the drawing 9 denotes the impulse wheel and 10 the cam or mask. The impulse spring set comprises springs 15 and 16 at which the impulse circuit is made or broken by the action of the teeth of the impulse wheel 9 on the hinged spring-actuating member 21 carrying the insulated stud 32 which acts upon the impulse springs to effect opening and closure thereof. The impulse springs are mounted and insulated in the bracket 38 in which also the change-over springs 17, 18, 19, and 20 are mounted. The cam 10 has a projection 34 which in normal position of the dial rests against the stop 35. The movement of the cam 10 is limited by the projecting tongue 12 abutting against the stop 35, the cam being somewhat larger than that described and shown in Patent Specification No. 178,936.

Referring now to the modification according to the invention as shown in Figures 1 to 4 the cam 10 carries a leaf spring 2 provided with a detent or pip 3 projecting through the hole 4 in the cam. The impulse wheel is provided with holes 5 spaced at a distance equal to the pitch of the impulse wheel teeth. The pip 3 of the spring 2 engages the holes 5 when the cam moves with the impulse wheel but when the cam projection 12 or 34 engages the stop 35 the pip 3 is pushed out of engagement with holes 5 which permits rotation of the impulse wheel 9 when the cam 10 is stationary.

The cam or mask 10 is provided with a hump or projection 8 which engages the

operating member 21 of the impulse spring set when the cam rotates with the impulse wheel. It is arranged that if the detent or pip 3 is actually in engagement with one of the holes 5 in the impulse wheel, the hump 8 is carried under the impulse spring member 21 but should the pip 3 be out of engagement with the holes 5 the hump 8 on coming into contact with the member 21 prevents rotation of the cam 10 until the pipe engages one of the holes 5 in the impulse wheel.

If, therefore, the finger plate of the dial is rotated too far when a number is being dialled, the pip 3 will come out of engagement with the appropriate hole in the impulse wheel, but when the dial driving spring returns the impulse wheel, the hump 8 engages the member 21 until the pip drops into the appropriate hole 5 after which the cam is further rotated and the impulses are transmitted. By this means, risk of transmission of false impulses is substantially reduced.

In the alternative modification shown in Figures 5 to 8, the hump 8 is dispensed with and the pip 3 is replaced by a ball 7, the holes 5 being counter-sunk as shown in Figures 7 and 8, the hole 4 in the cam 10 being shaped as indicated in these figures to facilitate rotation of the impulse wheel when the cam is held stationary.

If the finger plate is rotated too far in this case, the ball 7 will be riding upon the inclined surfaces of the holes 5 with the spring 2 pressed outwards as indicated in Figure 8 and the impulse wheel 9 will be pulled into register with the cam 10 due thereto before impulse transmission commences.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to

be performed, we declare that what we claim is:—

1. In a number dial for automatic and semi-automatic telephone systems and the like, wherein a slipping cam or mask keeps the impulse circuit closed during a portion of the return motion of the finger disc and engages with the impulse wheel, providing that the engagement of the cam or mask with the impulse wheel is effected by a spring-controlled registering device which allows of relative movement of the cam and wheel, substantially as described.

2. In a number dial according to Claim 1, providing the cam or mask with a spring member which has a detent or pip projecting through the cam and adapted to engage with holes or pits in the impulse wheel, substantially as described.

3. In a number dial according to Claim 1, the provision of a spring-pressed ball seated in the cam or mask and adapted to engage counter-sunk holes in the impulse wheel substantially as described.

4. A number dial with an arrangement for registering a slipping cam and an impulse wheel substantially as described with reference to the accompanying drawing.

Dated this 30th day of July, 1927.

SIEMENS BROTHERS & CO.
LIMITED,

The common seal of Siemens
Brothers & Co. Limited, was
hereto affixed by order of the
Board,

H. WRIGHT,

Director,

W. WHEELER,

Secretary,

For Selves and Co-applicant.

45

50

55

60

65

70

[This Drawing is a reproduction of the Original on a reduced scale.]

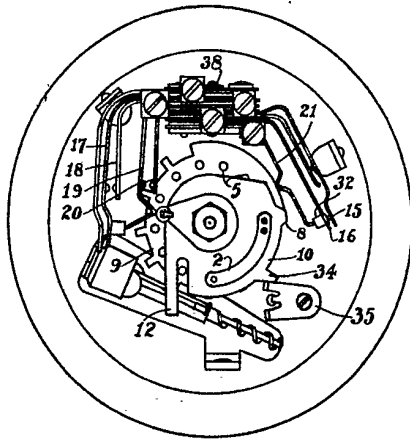


Fig. 1.

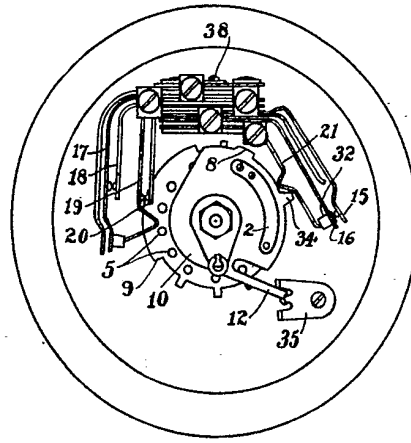


Fig. 2.

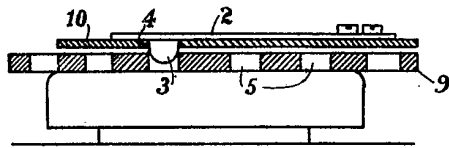


Fig. 3.

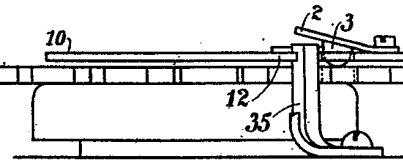


Fig. 4.

284764

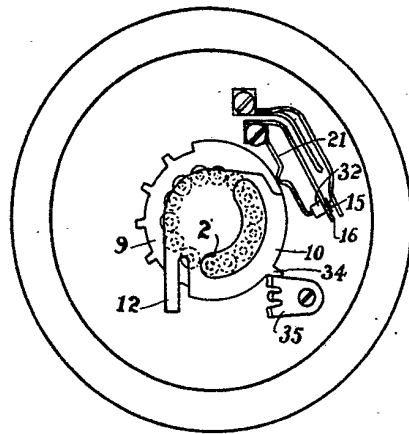


Fig. 5.

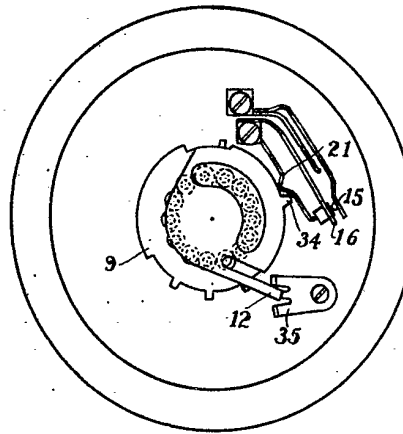


Fig. 6.

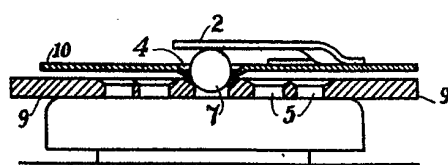


Fig. 7.

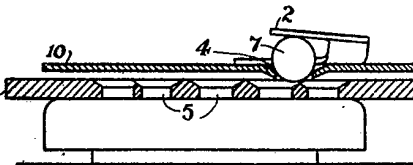


Fig. 8.