Oct. 18, 1927. 1,645,628

W. S. SMITH

MAGNETICALLY OPERATED SIGNAL

Filed July 3, 1926

Fig 3

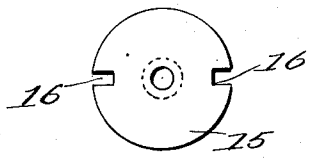
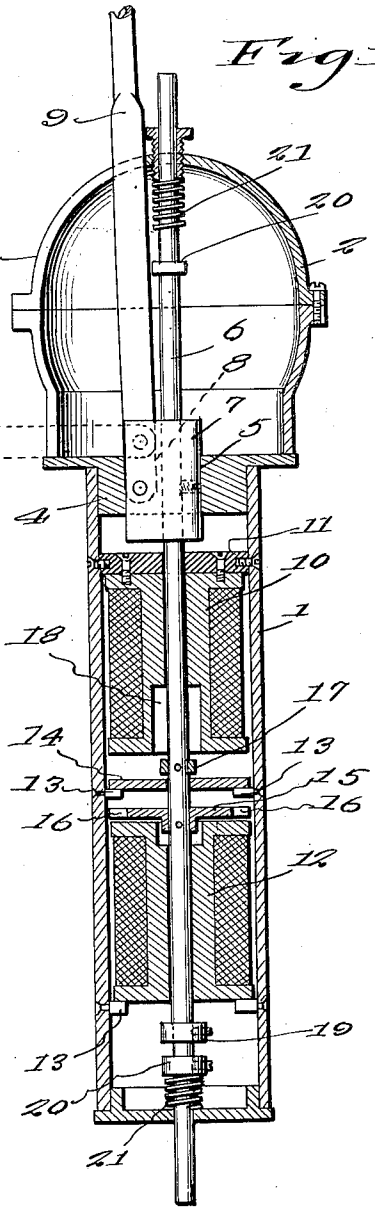
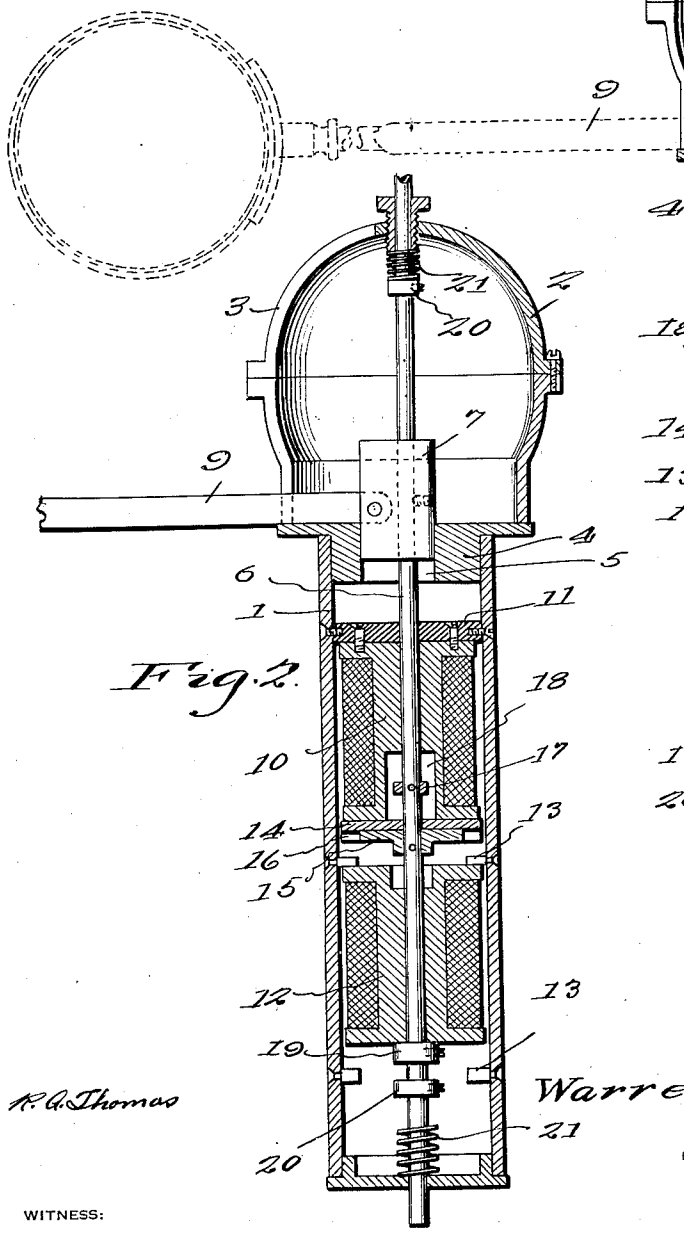


Fig 1.





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UNITED STATES PATENT OFFICE.

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MAGNETICALLY-OPERATED SIGNAL.

Application filed July 3, 1926. Serial No. 120,320.

This invention relates to a signal device, the general object of the invention being to provide magnetic means for moving the signal arm into operative and inoperative positions.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a sectional view showing the arm in raised position.

Figure 2 is a similar view but showing the arm in lowered position.

Figure 3 is a view of the lower armature disk.

The drawing shows the invention as applied to the signal forming the subject matter of my Patent No. 1,583,618, dated May 4, 1926, though it will, of course, be understood that it may be used for operating other devices.

In these views, 1 indicates a cylinder having a dome 2 at its upper end, said dome being provided with a vertically arranged slot 3 in its front part. The dome is provided with a base 4 which is fastened in the upper end of the cylinder, and said base has a circular opening 5 therein. A rod 6 passes through the dome and the cylinder. A cylindrical-shaped block 7 is suitably attached to the rod and said block is movable in the opening 5. It has a slot 8 therein in which is pivoted the inner end of the signal arm 9. These parts are so arranged that the arm can assume a horizontal position when the block is in raised position, as shown in Figure 2 and dotted lines in Figure 1, but when the block is pulled downwardly, the engagement of the base 4 of the dome with said arm will cause the arm to swing upwardly into vertical position, as shown in full lines in Figure 1. The arm is held in this position by its inner end engaging the walls of the opening 5.

A magnet 10 is fastened to a stationary disk 11 arranged in the casing 1 and a second magnet 12 is movably mounted in the casing or cylinder, the amount of movement being limited by the stops 13. An armature disk 14 is loosely arranged on the rod 6 between the two magnets and a second armature disk 15 is fastened to the rod under the first disk. The second disk is provided with notches 16 so that it can pass the upper stops 13. The first disk will be limited in its downward movement by these stops. A projection 17 is fastened to the rod 6 above the disk 14 and said projection can enter a recess 18 in the bottom part of the magnet 10. A collar 19 is adjustably fastened to the lower end of the rod 6 and is adapted to engage the lower magnet when the rod is raised to move the same upwardly against the upper stops. Similar collars 20 are arranged on the rod adjacent its ends for engaging the springs 21 which act to cushion the movement of the parts and these springs also act to equalize the weight or pressure of the arm and the upper spring helps the lower magnet to raise the arm.

From the foregoing, it will be seen that with the arm in raised and inoperative position, and it is desired to give a signal, a circuit to the upper magnet 10 is closed so that the magnet will be energized. This will raise the armature disk 14 and as said disk strikes the projections 17 on the rod 6, it will raise the rod and also the block 7 so that the arm will drop to a horizontal position, as shown in dotted lines in Figure 1 and full lines in Figure 2. Near the end of this movement, the collar 20 will compress the upper spring 21 so that said spring will absorb the shocks. The collar 19 will engage the bottom of the lower magnet after the rod has moved upwardly a certain distance and raise the same, as shown in Figure 2, and as the lower armature 15 is fastened to the rod, this armature will move with the rod until it engages the upper armature. This upper armature will come to rest against the bottom of the upper magnet before the arm reaches its horizontal position so that the projection will move away from the armature 14, as shown in Figure 2. The parts will remain in this position due to the weight of the arm until current is supplied to the lower magnet, when this magnet will attract the armature 15 and pull the same downwardly and thereby lower the rod 6. The upper spring 21 helps the armature to lower the rod. This action will swing the arm upwardly due to its engagement with the base 4 and then the weight of the parts will

cause the rod 6 and its attached parts to move downwardly until the armature 12 engages the lower stops 13 and the collar 20 engages the lower spring 21, which eases the downward movement of the parts. As the magnet 12 is energized, it will give the armature 15 and, therefore, the rod 6 a quick downward movement and this movement will be assisted by the upper spring 21 so that the arm 9 will be swung upwardly to a point where the weight of the parts will finish its upward movement, due to its peculiar position with respect to the member 7 and the hole in the base 4. As the rod 6 moves downwardly, the collar 19 will also move downwardly so that the magnet 12 will be unsupported and will move downwardly under the action of gravity.

Thus I have provided simple magnetic means for raising and lowering this rod and the parts to which it is attached.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

I desire it to be understood that I may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:—

1. In combination with a support and a longitudinally movable member therein, a stationary magnet connected with the support, an armature on the member and attracted by the magnet, a movable magnet in the support, means for moving the same when the member is moved by the first magnet and a second armature attached to the member and adapted to be attracted by the second magnet for moving the member back to its normal position.

2. In combination with a support and a longitudinally movable member therein, a stationary magnet connected with the support, an armature on the member and attracted by the magnet, a movable magnet in the support, means for moving the same when the member is moved by the first magnet and a second armature attached to the member and adapted to be attracted by the second magnet for moving the member back to its normal position and shock absorbing means operated adjacent the limits of movement of the member.

3. In combination with a support and a longitudinally movable member therein, a stationary magnet connected with the support, an armature on the member and attracted by the magnet, a movable magnet in the support, means for moving the same when the member is moved by the first magnet and a second armature attached to the member and adapted to be attracted by the second magnet for moving the member back to its normal position and means associated with the member for causing it to finish its movement in either direction under the action of gravity after it has been initially moved by the magnets.

4. A device of the class described comprising a casing having an enlarged upper end provided with a vertically arranged slot, a partition in the casing having an opening therein, a slotted block movably arranged in the opening, an arm passing through the slot in the upper end of the casing and having its inner end pivoted in the slot in the block, said arm resting upon a portion of the partition when in horizontal position and having its inner end entering the opening in the partition when in vertical position, a rod passing through the casing and through the block and attached to the block, a magnet in the casing, an armature loosely mounted on the rod and adapted to be attracted by the magnet, a stop on the rod engaged by the armature, a second armature below the first and fastened to the rod, a second magnet in the casing and movably mounted therein, the second armature being attracted downwardly by the second magnet, stops for limiting the movement of the second magnet, an adjustable stop on the rod for raising the second magnet when the rod is raised, bumper springs at the upper and lower ends of the casing and encircling the rod and adjustable collars on the rod for engaging said springs.

In testimony whereof I affix my signature.

WARREN S. SMITH.