April 14, 1942. W. PATZER ET AL 2,279,488

COIN CHUTE

Filed Aug. 25, 1939

Fig. 4.

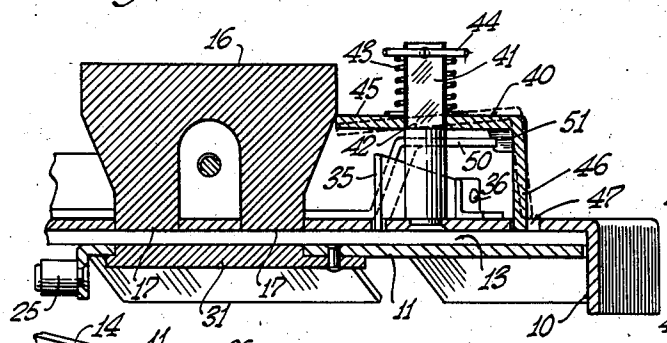
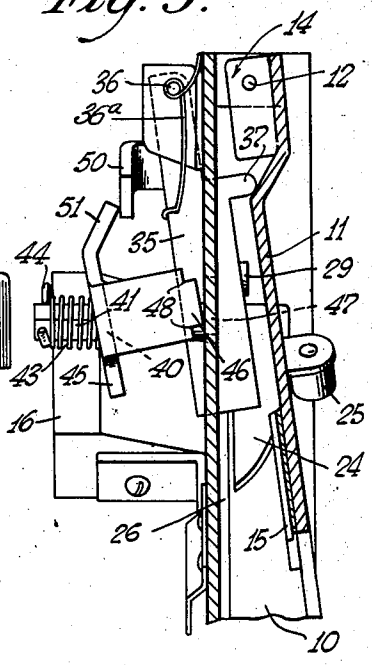


Fig. 5.



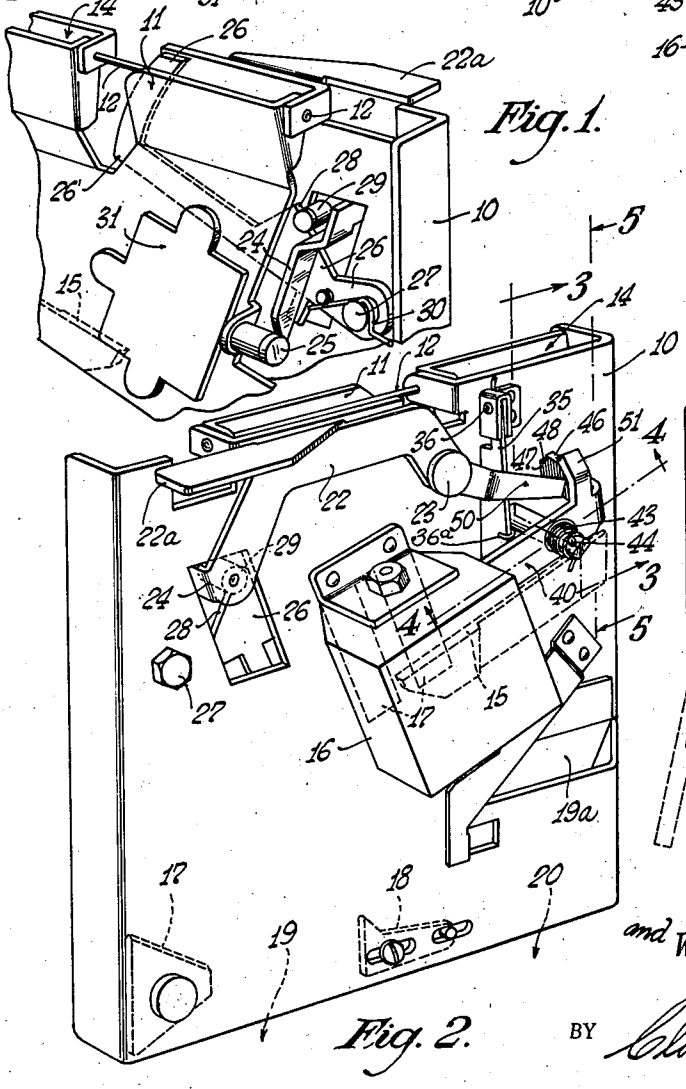
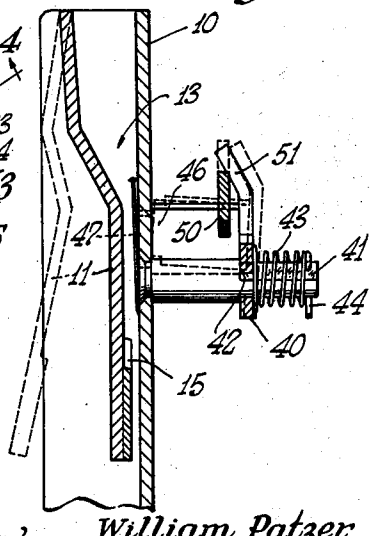


Fig. 1.

Fig. 2.

Fig. 3.



William Patzer
and Walter A. Tratsch
INVENTORS

BY Clarence E. Threedy
THEIR ATTORNEY.

Patented Apr. 14, 1942

2,279,488

UNITED STATES PATENT OFFICE

2,279,488

COIN CHUTE

William Patzer and Walter A. Tratsch,
Chicago, Ill.

Application August 25, 1939, Serial No. 291,804

8 Claims. (Cl. 194—101)

This invention relates to coin testing devices and has as its principal object the provision of improvements in magnetic testing means, said improvements relating particularly to the combination of a permanent magnet arranged for testing purposes with respect to a particular part of a chute passage, and paramagnetic extensions from the magnet to concentrate part of its field at a remote point along the passage.

Viewed from another aspect, it is an object of the invention to provide magnetic testing means including a main permanent magnet situated at a particular part of a coin passage, and auxiliary magnetic means in the form of an arm of highly paramagnetic metal mounted with one end portion in close proximity to a polar portion of the main magnet so as to be magnetized by the latter and having another end portion constituting an auxiliary pole positioned to create a magnetic field at another point along the passage.

A further object is the provision of magnetic testing means including a main magnet and an arm of highly permeable metal branching from the main magnet to create a localized magnetic field at a selected point relative to the coin passage.

A still further object is the provision of magnetic testing means including a main permanent magnet situated opposite a particular part of the coin passage, a sweep arranged for operation to dislodge coin elements arrested by said magnet, and auxiliary magnet means including a paramagnetic arm arranged to be magnetized by the main magnet and having a remote end portion constituting a pole disposed to create a local magnetic field at another point along the passage, and mechanism for moving the auxiliary magnet to withdraw the polar end portion relative to the passage and release matter arrested thereby simultaneously with the operation of said sweep.

Other objects and advantages of the invention reside in certain details of construction, as well as the arrangement and operation of parts of the preferred embodiment described hereinafter and shown in the annexed drawing, in which:

Fig. 1 is a fragmentary perspective of an upper corner part of the coin chute showing the gate and sweep operating mechanism;

Fig. 2 is a perspective of the coin chute looking at the side opposite that shown in Fig. 1, and showing the auxiliary magnetic testing means;

Fig. 3 is an enlarged vertical section through part of the auxiliary magnetic means, looking in the direction of line 3—3 of Fig. 2;

Fig. 4 is a fragmentary horizontal section looking through the magnetic testing means along line 4—4 of Fig. 2;

Fig. 5 is a fragmentary vertical section through the auxiliary testing means showing parts of the latter in elevation and looking in the direction of line 5—5 of Fig. 2.

This application forms a part of our co-pending application Serial No. 291,805 directed to a blocking means disposed in the initial coin passage for preventing magnetically attractable substance from reaching the magnetic testing means during the scavenging operation of the chute.

The coin chute is of the gravity type, and as shown in Fig. 2, includes an upstanding chute body consisting of a main plate 10 provided with a gate 11 (Fig. 1 also) which is swingably mounted on a pintle 12 so as to swing about a horizontal axis into and out of closely parallel relation with the inner side of the plate 10 to define a chute passage generally indicated at 13 in Fig. 3 between the opposing faces of the gate and main body plate.

The passage 13 is provided with an entrance 14 into which coins are deposited for gravitating movement along ledge means 15 (Figs. 3 and 5 also) on the gate, toward and past magnetic testing means in the form of a permanent magnet 16 having its poles 17 positioned near the lower end of the runway 15 so as to create a magnetic field across the path of the coin and through which the coin is obliged to move before reaching the lower portions of the passage where additional testing means is situated.

The additional testing means in the lower portions of the chute include a rebound anvil 17 and a deflector 18 spaced therefrom across the open bottom portion of the chute so as to define a plurality of exits 19 and 20, the exit 19 between the anvil and deflector constituting a reject passage, while the other exit 20 constitutes an acceptance passage.

The arrangement is such that legitimate coin elements passing through the field of the magnet 16 are affected so as to follow the same trajectory toward the anvil 17 to rebound from the latter in a predetermined manner which ultimately carries them into the exit 20. Spurious and otherwise unacceptable coin elements will either have their trajectories so altered by action of the magnetic field that they do not rebound from the anvil 17 in a manner which carries them over the exit 19 and deflector 18 and into the exit 20, or such coin elements will rebound from the anvil and possibly strike the

deflector 18 at an angle which will cause them to be deflected into the exit 19.

Certain magnetically attractable coins will be arrested by the magnet 16, and in order to clear the chute of these elements, the gate 11 is arranged to be opened by means including an operating lever 22 pivoted on the main chute wall as at 23 and having an offset cam arm 24 projected through an opening in the chute (Fig. 2) to engage a roller 25 (Fig. 1) and rock the gate to open position to widen the passage and withdraw the ledge portion 15 from supporting position beneath any arrested coin elements. A sweep 26 is pivoted as at 27 with a cam portion 28 positioned to be engaged by a roller 29 on the operating lever to cause the end of the sweep 26' to move downwardly in the passage across the poles of the magnet when the operating lever 22 is depressed to open the gate, spring means 30 being provided to restore the sweep to normal ineffective position when the gate is closed.

A combination pole keeper and gate closing means is provided in the form of a paramagnetic plate 31 secured to the gate opposite the poles 17 so as to concentrate the field from the latter in the region of the end of the coin runway and also to attract the gate by action of said field into fully closed position, with the added advantage of prolonging the life of the magnet.

If a magnetically attractable substance is held by the magnet 16, it may be dislodged by pressing downwardly on the handle portion 22a of the main operating lever 22 to cause the gate to open and the sweep to move downwardly against the same away from the influence of the field from the poles 17 of the magnet, the dislodged object or objects falling sidewise out of the passage and gravitating downwardly into a chute or guide (not shown) which utimately returns the same to the depositor.

The present invention is concerned particularly with the provision of auxiliary magnetic testing means which is adapted to hold magnetically attractable objects in the region close to the entrance 14 to prevent such objects from working into the field of the main magnet 16, and thus prevent attempts at defrauding the device by insertion of magnetically attractable slugs, nails, and other objects for the purpose of blocking the passage.

While the sweep is effective to dislodge most magnetic slugs, smaller articles such as pins, nails and thin iron discs are held by the field so strongly that they are only momentarily moved away from the poles of the main magnet by action of the sweep and as soon as the sweep restores to normal position, the said objects in many instances follow the sweep back and hence are never ejected.

The auxiliary magnetic testing means is intended primarily to prevent the arrival of such miscellaneous defrauding objects into the field of the main magnet, and it may be mentioned that additional precautions are taken in this respect in the provision of a special blocking arm 35 (Figs. 2 and 5) which is pivoted as at 36 and provided with an operating extension 37 (Fig. 5) projecting across the chute passage for engagement with the gate 11 to be pushed by the latter in a direction out of the passage against the restoring effort of a spring 36a when the gate is closed. When the gate is open, the blocking member 35 moves into position to block the coin passage between the main magnet 16 and the entrance 14, and, as will now appear, between the main magnet and the auxiliary magnetic testing means as well.

One preferred form of the auxiliary magnetic testing means includes an arm 40 (Figs. 2 and 4) which is of iron or other highly paramagnetic material and provided with an oblong slot to fit into the oblate reduced end portion 41 of a mounting post so as to rest against a shoulder portion 42, with sufficient clearance between the slot and post to permit rocking movement of the arm. A spring 43 retained by a cotter pin 44 urges the arm into a normal position with one end portion 45 in close proximity to the magnet 16 or the field thereof so as to be magnetized by the same. The arm 40 has an offset end portion 46 at its extremity remote from the end 45 and the magnet, and which constitutes a magnetic pole which in its normal position relative to the coin passage 13 creates a local field at a point along the passage distant from the field of the poles 17 of the main magnet.

The offset end portion or pole 46 of the auxiliary magnetic arm is projected through an opening 47 in the wall 10 of the chute so as to lie close to the coin passage to exert maximum attractive force upon objects deposited in the entrance of the chute and moving in the general direction of the main testing means, there being notches 48 (Fig. 5) formed at the extremity of the offset to limit the movement thereof into the opening 47.

Means for moving the auxiliary magnetic member 40 from its normal position into ineffective position to release arrested objects, includes the provision of an extension 50 on the main operating lever 22 for engagement with an offset ear 51 on the auxiliary arm 40, which ear constitutes a form of cam so that when the scavenging lever 22 is depressed as heretofore described, to open the gate and operate the sweep, the extension 50 bearing against the offset ear 51 will rock the auxiliary arm 40 against the effort of its spring 43 and withdraw the polar offset 46 from the opening 47, thus freeing such objects as may be held by the auxiliary arm, which objects will drop into a discharge pan 19a therebelow, the blocking means 35 heretofore described preventing the objects released by the auxiliary testing means from being drawn into the field of the main magnet when the gate is opened. The manner in which a small magnetically attractable object such as a pin may be arrested by the auxiliary means is illustrated in Fig. 3, the movements of the gate and the auxiliary means out of their respective normal positions being shown therein in dotted lines.

It is contemplated that any source of magnetomotive force may be provided in substitution for permanent magnet 16, the only requisite being that the field of such source of distributed or directed in a manner to induce magnetism in the auxiliary member 40.

The blocking means 35 adapted to be interposed between the auxiliary and main testing magnets is described and claimed in a copending application, Serial No. 291,805, filed of even date herewith.

The various advantages and objects of the invention may be accomplished by modifications of the particular embodiment specifically described herein, and it is intended that the appended claims shall include all equivalent arrangements fairly coming within their call.

Having thus described our invention, what we

claim as new and desire to protect by Letters Patent is:

1. In a coin testing device, means providing a coin passage having an entrance and an exit, magnetic means for creating a magnetic field concentrated in a certain region of said passage between said entrance and said exit, and auxiliary magnetic means including a paramagnetic member mounted with relation to said magnetic means so as to be magnetized by the latter, said member having a portion constituting a magnetic pole situated at a distance from the concentrated portion of said field between said magnetic means and said entrance and disposed to provide a localized magnetic field at a different region of said passage.

2. In a coin testing device, means providing a coin passage having an entrance and an exit, magnetic means for creating a magnetic field concentrated in a certain region of said passage between said entrance and exit, and auxiliary magnetic means including a paramagnetic member mounted for movement into and out of a normal position and having a portion normally disposed in contact with respect to said magnetic means to have magnetism induced from the latter, said member having another portion remote from said magnetic means and constituting a magnetic pole positioned with respect to said passage between said magnetic means and said entrance to provide a localized magnetic field remote from said first-mentioned field and in close proximity to said passage to influence magnetic substances therein when said member is in normal position, and mechanism for moving said member out of normal position to move said pole away from the passage for the purpose of effecting release of magnetically attractable objects arrested by action of the localized field.

3. In a coin chute having a passage leading from an entrance to a plurality of exits, magnetic testing means arranged at a certain position with respect to said passage between said entrance and exits, and auxiliary magnetic testing means comprising a paramagnetic arm positioned so as to lie within the field of said first-mentioned magnetic testing means to be magnetized by the latter and having an end portion remote from said field constituting a magnetic pole positioned closely adjacent said passage between said magnetic means and said entrance to provide another magnetic field concentrated at a point along said passage spaced from the field of said first-mentioned magnetic testing means.

4. In a coin chute providing a coin passage having an entrance and an exit, a permanent magnet arranged to concentrate a magnetic field with respect to a certain part of said coin passage, auxiliary magnetic testing means arranged on said coin chute between said permanent magnet and the entrance to said chute and comprising: an arm of magneto-permeable material mounted with an end portion disposed in engagement with said permanent magnet so that said arm will be magnetized by the magnet, means mounting said arm in spaced relation to said passage, said arm having an offset end portion remote from the end portion in engagement with the magnet and which offset end portion is disposed in close proximity to said passage at a point remote from said magnet, in a direction toward said entrance to provide a localized magnetic field.

5. In a coin chute providing a coin passage having an entrance and an exit a permanent magnet arranged to provide a magnetic field in a certain region of said coin passage between the entrance and exit thereof, auxiliary magnetic testing means in the form of an arm of magneto-permeable material mounted for rocking movement relative to said passage and in spaced relation to the latter, said arm having an end portion disposed normally in engagement with said magnet so as to be magnetized by the latter, said arm having an end portion remote from said first-mentioned end portion and offset toward said passage so as to lie close to the latter when the arm is in a normal position whereby to provide a localized magnetic field at a point relative to the passage remote from said certain region in the direction of said entrance, means yieldingly urging said arm into normal position, and means for rocking said arm out of normal position in a direction to move said remote end portion of the arm away from the passage to effect release of objects attracted by the same.

6. In a coin chute of the type including a coin entrance opening and a coin passage having an open side wall formed therein and a pivotally mounted gate normally arranged adjacent said coin passage to close said open side wall and adapted to be opened for clearance of arrested objects from the passage together with mechanism for opening said gate, said coin chute further including magnetic testing means comprising a fixed magnet arranged on said chute to provide a magnetic field in a region below said coin entrance opening and along said coin passage, an auxiliary magnetic testing means including a paramagnetic arm mounted in spaced relation to said passage for rockable movement relative thereto and having one portion thereof disposed in engagement with said fixed magnet so as to be magnetized by the latter, said arm having an offset portion projected toward said passage and disposed close to the latter when said arm is in a normal position to provide a localized field between said first mentioned field and the coin entrance, and mechanism coacting with said means for opening the gate and for moving said paramagnetic arm to move said offset portion away from the passage when the gate is opened to clear said arrested objects stayed at said localized field.

7. In a coin chute of the type including a magnet arranged to provide a field in a certain region between the entrance and exit of a coin passage therein, a normally closed gate arranged as one side wall of said coin passage and mechanism for opening the same to provide an exit for ejection of objects arrested by said magnet, together with a sweep adapted to move within the passage across the face of said magnet and means on said sweep operatively engageable by said mechanism for operating the sweep when the gate is opened to dislodge objects arrested by said magnet to permit ejection of said objects as aforesaid, auxiliary testing means including a paramagnetic arm mounted for movement relative to said passage, means yieldably urging said arm into a normal position with a portion in close proximity to said passage at a point remote from said magnet between the latter and said entrance, said paramagnetic arm having a portion disposed in engagement with said magnet so as to be magnetized by the latter, the proximate portion of said arm constituting a magnetic pole providing a localized field spaced at a distance from said magnet in the direction of said

entrance, and mechanism coacting with said means for operating the sweep and opening the gate adapted to move said arm out of normal position and withdraw said pole from the passage to release objects arrested thereby at the time of opening of the gate and operation of the sweep.

8. In a coin chute including a magnet for creating a magnetic field at a point along a coin passage spaced from an entrance to the latter, auxiliary magnetic means comprising an arm of magnetizable material and means mounting the same for rocking movement toward and away from said passage, means yieldably urging said arm to project a particular end portion thereof normally close to said passage, said arm having a portion remote from said particular end portion and on the opposite side of its rocking axis from the latter positioned in engagement with said magnet whereby to effect magnetization of the arm, said particular end portion constituting a magnetic pole by means of which an additional and localized field of force is created at a point along said passage remote from the field of said magnet, between the latter and said entrance to the coin passage and hand operated mechanism arranged on said coin chute for movement relative thereto and having a portion engageable with said arm to move the latter away from said passage.

WILLIAM PATZER.
WALTER A. TRATSCH.