J. E. GEARHART.

MATCH SAFE.

APPLICATION FILED DEC. 26, 1908.

940,387.

Patented Nov. 16, 1909.

3 SHEETS—SHEET 1.

Fig. 2.

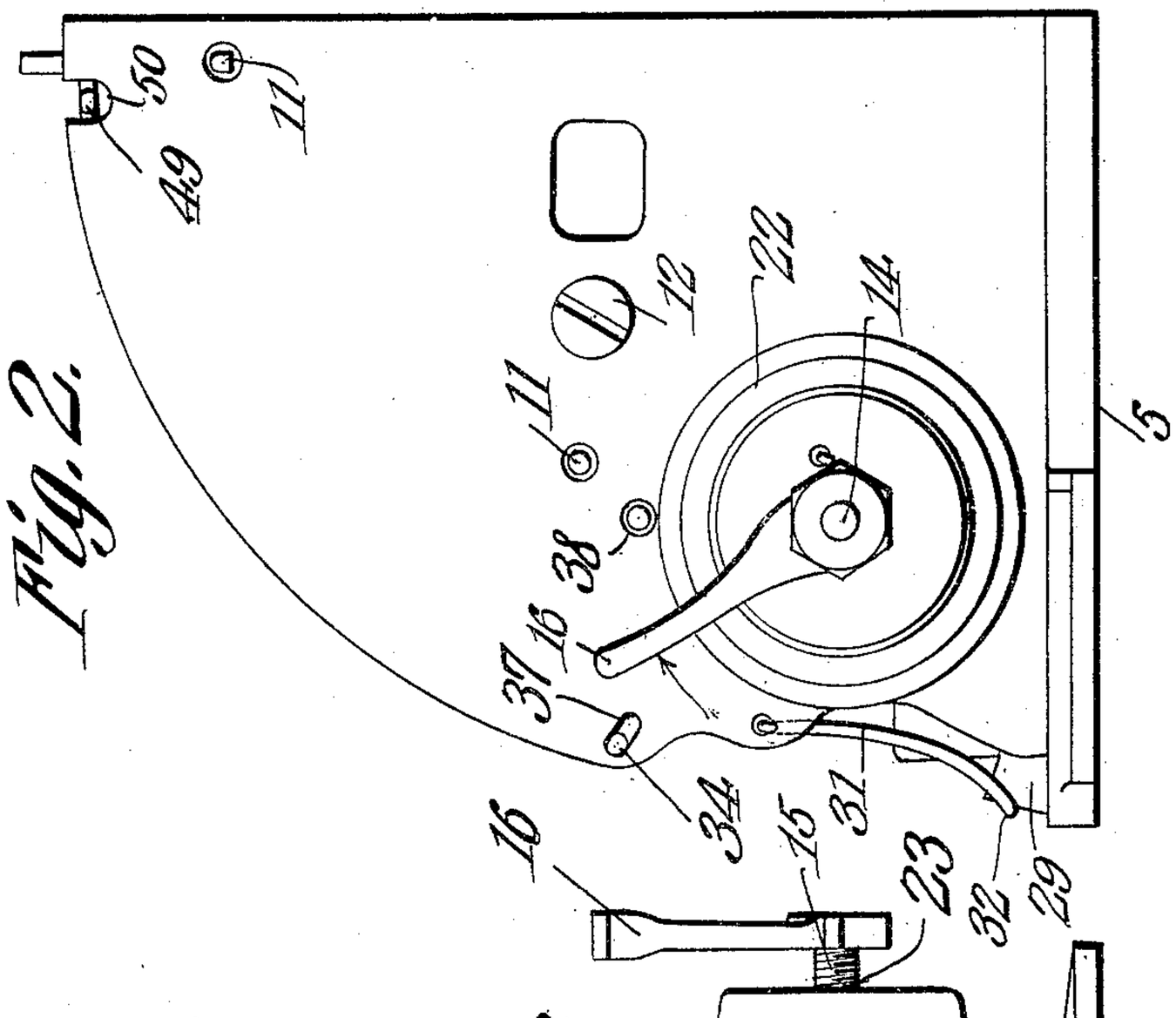

Fig. 1.

Witnesses

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3 SHEETS—SHEET 2.

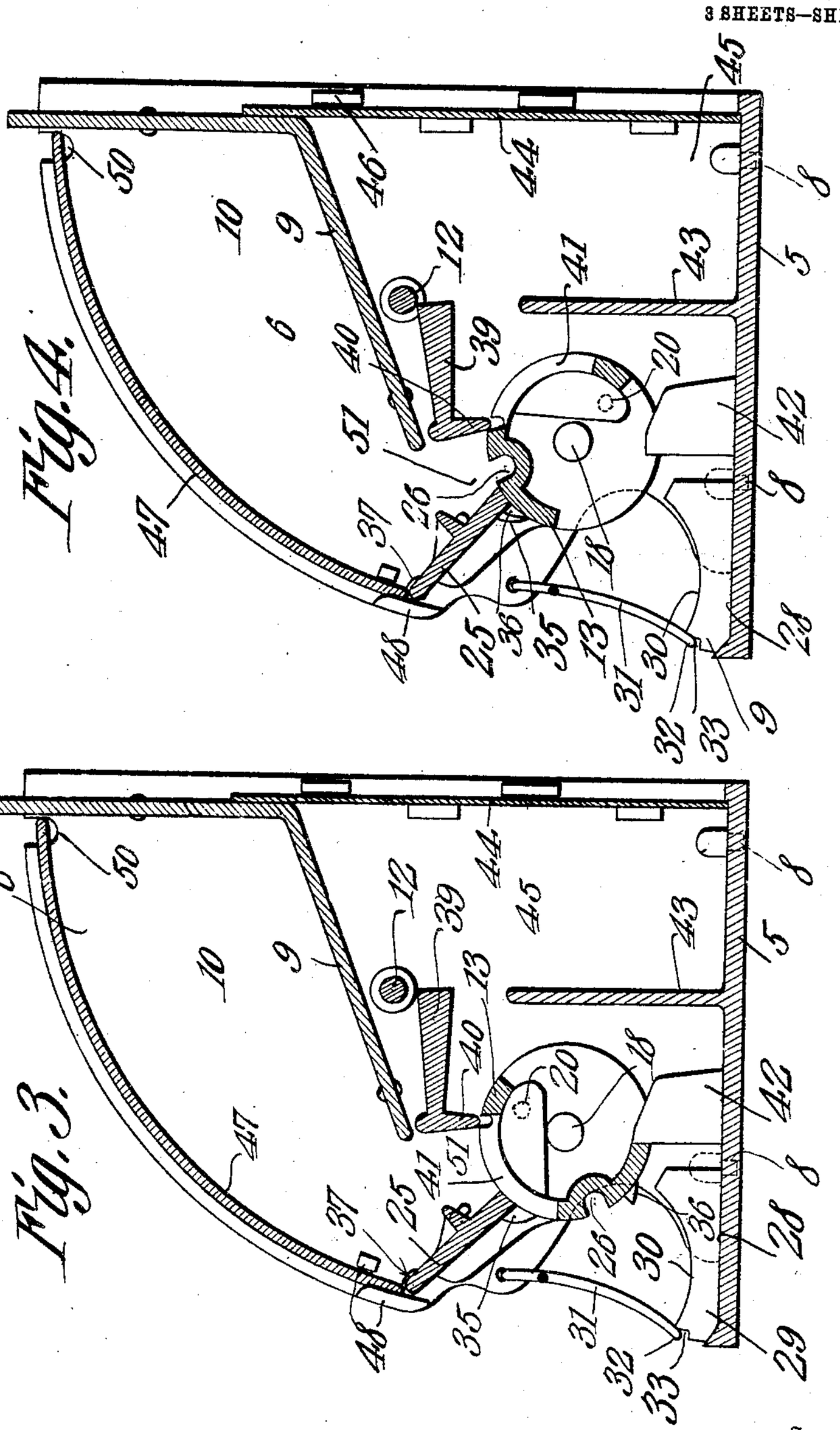

Fig. 4.

Fig. 3.

Witnesses

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3 SHEETS—SHEET 3.

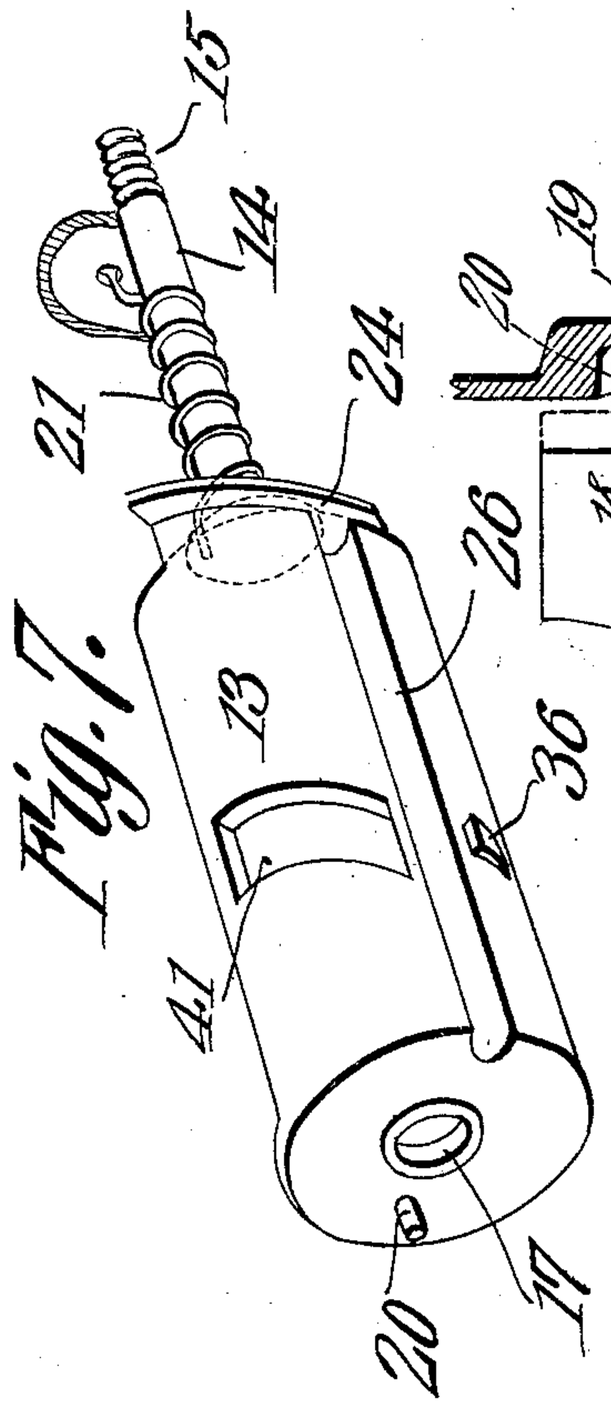

Fig. 7.

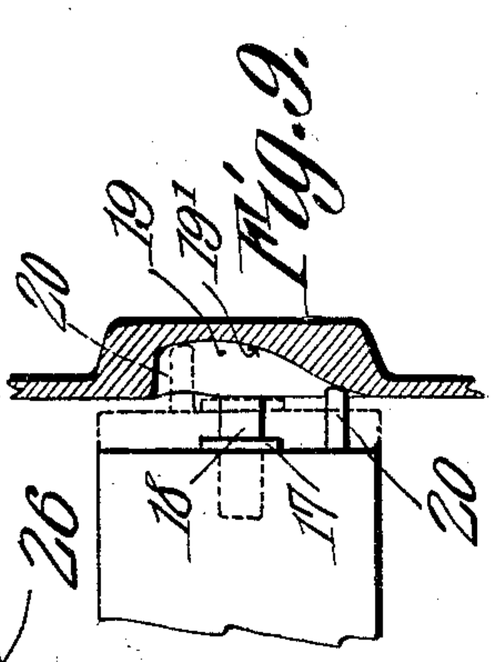

Fig. 9.

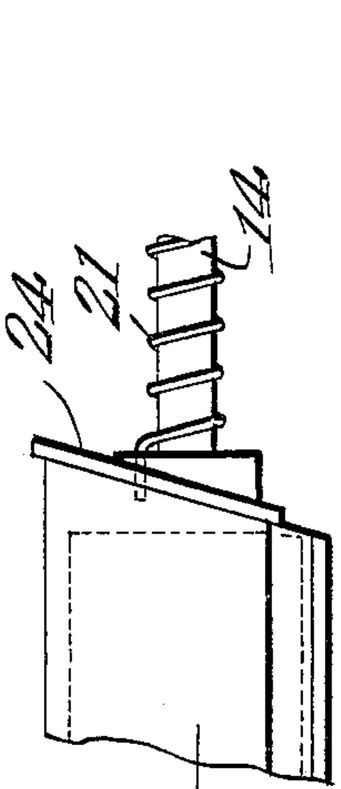

Fig. 8.

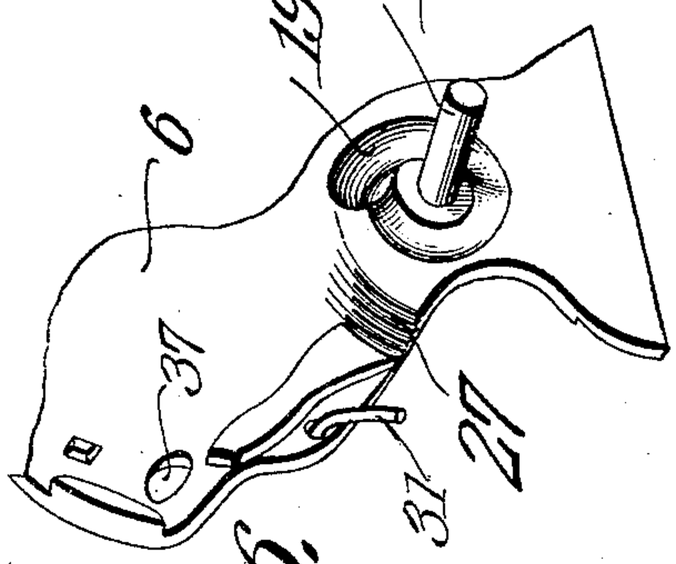

Fig. 6.

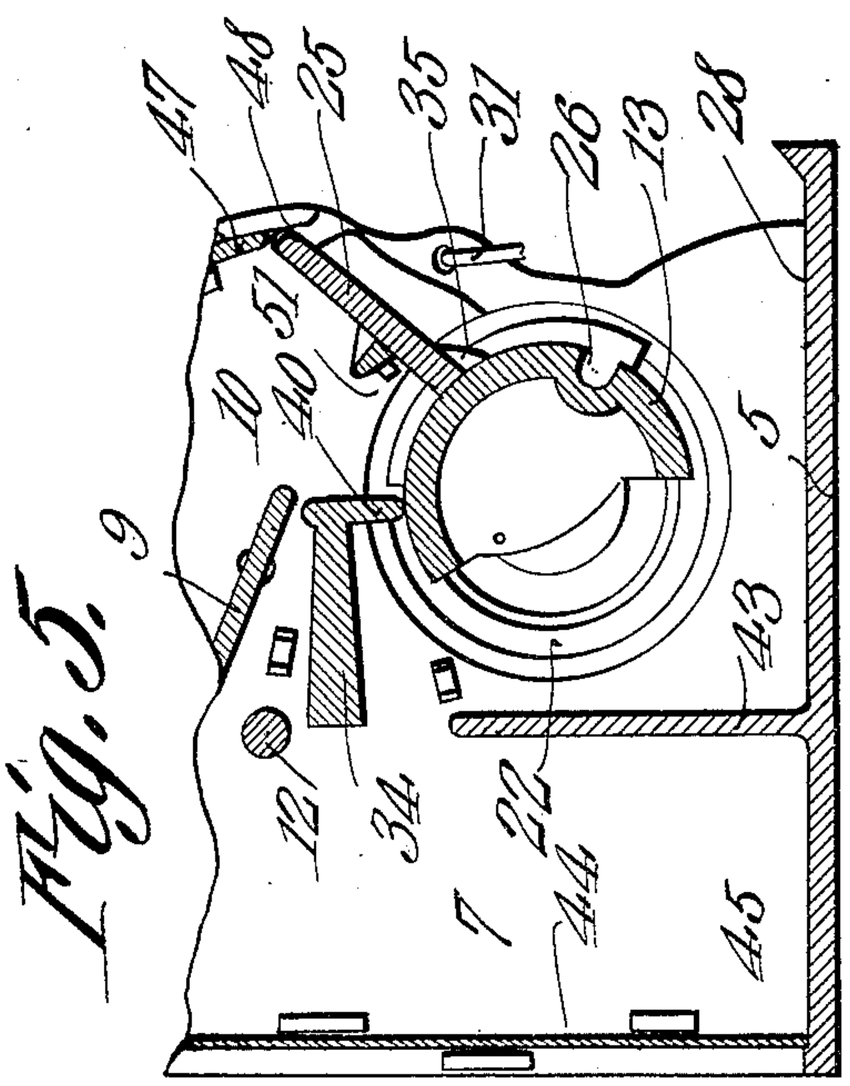

Fig. 5.

Witnesses

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MATCH-SAFE.

940,387. Specification of Letters Patent. Patented Nov. 16, 1909.

Application filed December 26, 1908. Serial No. 469,258.

To all whom it may concern:

Be it known that I, JOSEPH E. GEARHART, a citizen of the United States, residing at Clearfield, in the county of Clearfield and State of Pennsylvania, have invented a new and useful Match-Safe, of which the following is a specification.

This invention relates to match-safes and has for its object to provide a safe or receptacle adapted to store a comparatively large quantity of matches, and to effect, in a simple, positive, accurate and safe manner the selection of a single match, its delivery to a point of discharge, and its ignition and presentation to the prospective user in a position that will permit of its easy and ready removal.

A further object of the invention is to prevent waste of the matches by the employment of a novel means to check the escape of more than a single match at each operation of the machine.

A further object is to provide a guard or shield for retaining a match on the receiving table after the same has been ignited.

A further object is to provide a spring actuated selecting and delivering member having a combined oscillatory and longitudinal movement for selecting a single match from the magazine and igniting the head thereof at each oscillation of said member.

A further object is to form the casing with an auxiliary compartment for the storage of reserved matches.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

In the accompanying drawings forming a part of this specification:—Figure 1 is a front elevation of a single delivery match-safe constructed in accordance with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 1. Fig. 4 is a similar view showing the cylinder in position to receive a match from the magazine. Fig. 5 is a detail vertical sectional view looking from the opposite side of the machine from that shown in Fig. 3 of the drawings. Fig. 6 is a detail perspective view of a portion of the casing showing the igniting surface and the stud or trunnion forming one of the bearings of the feed-cylinder and its associated parts detached. Fig. 7 is a perspective view of the feed-cylinder detached. Fig. 8 is a side elevation of one end of a feed-cylinder. Fig. 9 is a detail sectional view showing the cam groove for producing the end thrust or longitudinal movement of the feed cylinder.

Similar numerals of reference indicate corresponding parts in all of the figures of the drawings.

The improved match-safe forming the subject matter of the present invention includes a base plate or support 5 to which are detachably secured the side walls 6 and 7, the latter being provided with depending lugs 8 adapted to enter corresponding apertures formed in the base plate 5 so that the casing may be readily assembled.

Interposed between the side walls 6 and 7 is an angular partition 9 defining a compartment or magazine 10 for the reception of the matches. This partition is also preferably provided with lugs 11 which enter corresponding openings in the side walls of the casing, as best shown in Fig. 4 of the drawings, the side walls being retained in position on the base 5, and the partition 9 between the side walls 6 and 7 by means of a bolt or similar fastening device 12.

Mounted for oscillation between the side walls of the casing is a spring actuated match selecting and delivering member preferably in the form of a hollow cylinder 13 to one end of which is secured a stub shaft 14 having terminal threads 15 for engagement with an operating handle or lever 16, whereby the cylinder may be actuated to deliver a single match, as will be more fully explained hereinafter.

The opposite end of the cylinder 13 is provided with a bearing 17 adapted to receive a pin or trunnion 18 extending laterally from the side wall 6 of the casing, there being a segmental groove or depression 19 formed in the side wall 6, at the trunnion

18 and having a cam face 19′ which contacts with a pin 20 carried by the adjacent end of the feed-cylinder for imparting a longitudinal movement to said cylinder, as will be more fully explained hereinafter.

Coiled around the stub shaft 14 is a spring 21, one end of which is anchored to the side wall 7 of the casing, while the other end thereof is fastened to the adjacent end of the cylinder 13, the function of the spring 21 being to automatically return the cylinder to normal position after the handle is released.

The side wall 7 of the casing is provided with an annular enlargement 22 adapted to receive the adjacent end of the feed-cylinder when the latter is moved longitudinally by the action of the cam 19′ and pin 20, there being a bearing 23 formed in the enlargement for the shaft 14, as shown.

One end of the cylinder 13 is provided with a laterally projecting inclined rib or cam 24 which serves to prevent accidental displacement of the matches from the groove 26 of the feed cylinder when the latter is oscillated.

The inner face of the side wall 6 is corrugated or roughened to produce an igniting surface 27, which latter is arranged in the path of rotation of the cylinder 13 and is adapted to successively ignite the matches so that a single ignited match may be presented to the feed-table at each rotation of the cylinder.

The receiving table 28 is provided with a plurality of spaced ribs 29, the upper faces of which are concaved at 30 so as to receive the matches as they are transferred from the magazine to said table.

Disposed in front of the feed-cylinder and pivotally mounted in suitable openings formed in the side walls 6 and 7 of the casing is a guard 31 preferably formed of a single length of wire bent to produce spaced loops 32 adapted to enter depressions or recesses 33 formed in the outer ends of the ribs 29. The guard 31 serves to prevent the ignited matches from being forcibly thrown from the receiving table, thereby to prevent danger of conflagration.

The apron 25 is pivotally mounted at 34 between the side walls 6 and 7 of the casing and is arranged with its lower edge normally resting on the periphery of the feed-cylinder 13, there being spaced guide lugs 35 extending laterally from the apron and arranged to rest on the cylinder, as best shown in Figs. 3 and 4 of the drawings.

Extending laterally from the feed-cylinder 13 is a lug 36 adapted to strike the adjacent face of the apron 25 at each oscillation of the feed-cylinder, thereby to oscillate the apron 25 and thus assist in feeding the matches into the receiving groove 26, the pivot points of the apron 25 being loosely mounted in slots 37 in order to allow a slight lateral movement of said apron when struck by the lug 36.

Arranged back of the apron 25 and pivotally mounted at 38 between the side walls of the casing 13 is a gravity actuated match-feeding device 39. The match-feeding device 39 is provided with a depending lip 40 which enters a cam slot 41 in the feed-cylinder 13 so that as the feed-cylinder is oscillated the lip 40 of the member 39 will bear against the walls of the cam slot 41 and thus impart a slight vibratory movement to the feeding device so as to prevent crowding of the matches at the discharge throat of the magazine.

Extending vertically from the base 5 of the receptacle is a finger or lug 42 which projects into the path of movement of the feed-cylinder 13 and serves to assist in preventing further oscillating movement of the feed-cylinder when the latter is in the position shown in Fig. 3 of the drawings, that is to say, with the match-receiving groove 26 in position to discharge a match on the concaved ribs of the receiving table.

A partition 43 is arranged at the rear of the cylinder and spaced from the back plate 44 of the receptacle to form a compartment 45 which may be utilized for storing reserved matches, the back plate 44 being slidably mounted between spaced lugs 46 extending inwardly from the side walls of the receptacle in order that said plate may be readily removed to permit access to the interior of the compartment 45.

The matches in the compartment or magazine 10 are housed and protected by an arcuate cover plate 47, one end of which extends between a plurality of sets of retaining lugs 48 carried by the side walls 6 and 7, while the other end thereof is provided with spaced pins or trunnions 49 which enter grooves or recesses 50 formed in said side walls near the rear end of the partition 9.

The operation of the device is as follows:—The cover 47 is removed by exerting a slight upward pull on the pins 49 and the magazine 10 filled or partially filled with matches. If a lighted match is desired, the operator moves the handle 16 in the direction of the arrow, indicated in Fig. 2 of the drawings, which oscillates the feed-cylinder and causes the slot 26 to register with the throat 51 of the magazine and in which position a single match will be deposited in said slot. As the cylinder 13 is oscillated to present the slot 26 to the throat of the magazine, the spring 21 will be placed under tension, while the pin 20 of said cylinder will bear against the cam face 19′ of the groove and impart a longitudinal movement of said cylinder. As the cylinder is oscillated against the tension of the spring 21 the lug 36 will bear against the adjacent wall of the apron

25 and oscillate said apron, while the lip 40 of the feeding device 39 will travel in the cam groove 41 and oscillate said feeding device, which in conjunction with the apron serves to agitate the matches at the throat of the magazine and permit but a single match to be delivered to the slot 26. As soon as the operator releases the handle 16 the tension of the spring 21 will oscillate the cylinder in the reverse direction and at the same time move said cylinder longitudinally in the direction of the corrugated igniting surface 27 so as to force the head of the match against said surface and ignite the latter during the reverse movement of the oscillating feed-cylinder. When the cylinder engages the stop 42 the ignited match in the groove 26 will fall upon the concaved faces of the ribs 29 at the rear of the guard 31, the latter serving to prevent the ignited match from being forcibly ejected from the receiving table, in the manner before described. In order to remove the ignited match from the receiving table, it is merely necessary to insert the fingers between the loops 32 and exert a longitudinal pull on the match when the same may be removed from beneath the fingers 32, which latter will return by gravity into engagement with the recessed ends 33 of the ribs after the match has been removed. Attention is here called to the fact that the spring 21 performs the double function of returning the oscillating cylinder to normal position after each movement of the operating lever and also serves to move said cylinder in a longitudinal plane so that on the return movement of the cylinder the head of the match will be forced against the igniting surface.

It will also be noted that by reason of the cam groove 19 and pin 20 the head of the match will be spaced from the adjacent wall of the casing when the groove 26 registers with the throat of the magazine so as to prevent accidental ignition of the head of the match. The apron and gravity actuated agitator co-act when agitating the matches and feed them to the throat of the magazine. If desired, a pin or lug may be secured to the wall 7 of the casing for engagement with the inclined rib or cam 24 for imparting an end motion to the feed cylinder.

It will be seen from the foregoing description that all the objects stated are secured in a thoroughly feasible and practical manner and with the employment of a minimum of mechanism for that purpose.

Having thus described the invention what is claimed is:—

1. A match-safe, including a magazine, an abraded member supporting means for a delivered match, and a revoluble match selecting and delivering member having a combined oscillatory and longitudinal movement for transferring a single match from the magazine to the abraded member and to the supporting means.

2. A match-safe including a magazine, supporting means for a delivered match, and a selecting and delivering member having a combined oscillatory and longitudinal movement for delivering a single match to the supporting means at each operation of said member, and a spring for yieldingly holding the said member against both oscillatory and longitudinal movement.

3. A match-safe including a magazine, supporting means for a delivered match, an igniting device, and a cylindrical match selecting and delivering member having a combined oscillatory and longitudinal movement for igniting the match and delivering the same to the supporting means, and a pivotally supported apron bearing upon said member.

4. A match-safe including a magazine, supporting means for a delivered match, an igniting device, and a cylindrical match selecting and delivering member having a combined oscillatory and longitudinal movement for presenting the head of a match to the igniting device, and a spring for yieldingly holding said member against both longitudinal and oscillatory movement.

5. A match-safe including a magazine, supporting means for a delivered match, a spring controlled selecting and delivering cylinder having a combined oscillatory and longitudinal movement for delivering a single match to the supporting means, and a match igniting device for lighting a match when the selecting and delivering member is operated.

6. A match-safe including a magazine, supporting means for a delivered match, a spring controlled match selecting and delivering cylinder having a combined oscillatory and longitudinal movement for delivering a single match to the supporting means, and a pivotally supported guard above and loosely mounted on the supporting means for preventing accidental displacement of the delivered matches.

7. A match-safe including a magazine, supporting means for a delivered match, an igniting device, a match selecting and delivering member co-acting with the igniting device for presenting a single ignited match to the supporting means, and a pivotally mounted guard suspended in front of the selecting and delivering member and loosely engaging the supporting means for preventing accidental displacement of the matches delivered to said supporting means.

8. A match-safe including a magazine, supporting means for a delivered match, a spring actuated match selecting and delivering cylinder having a combined oscillatory and longitudinal movement, there being a slot in said cylinder, an igniting device ex-

tending in the path of movement of the matches carried by said member, and means projecting into the slot for limiting the oscillatory and longitudinal movement of said member.

9. A match-safe including a magazine, a receiving table for a delivered match, a spring actuated match selecting and delivering member having a combined oscillatory and longitudinal movement for delivering a single match to the receiving table, an igniting device co-acting with the selecting and delivering member for igniting the matches before they are delivered to the receiving table, and a guard for preventing accidental displacement of the matches on the receiving table.

10. A match-safe including a magazine, a receiving table having a series of ribs provided with concaved faces, a spring actuated match selecting and delivering member mounted for oscillatory and longitudinal movement for delivering a single match to the receiving table, an igniting device co-acting with and arranged at one end of the selecting and delivering member for igniting the matches carried by said member before being delivered to the receiving table, and a guard co-acting with the ribs on the receiving table for preventing accidental displacement of the delivered matches.

11. A match-safe including a magazine, a match-receiving table provided with spaced ribs having concaved upper faces provided with terminal recesses, a spring actuated match selecting and delivering member, an igniting device arranged at one end of the selecting and delivering member for igniting the matches carried by said member, and a guard pivotally mounted in the walls of the magazine and having spaced fingers adapted to engage the recesses in the ribs of the receiving table.

12. A match-safe including a magazine, a receiving table for supporting a delivered match, a spring actuated match selecting and delivering member having a combined oscillatory and longitudinal movement for transferring a single match from the magazine to the receiving table, an apron forming one wall of the magazine, and a lug carried by the match selecting and delivering member and adapted to engage the apron for agitating the latter.

13. A match-safe including a magazine, a match-receiving table, a spring actuated match selecting and delivering member having a combined oscillatory and longitudinal movement, an apron forming one wall of the magazine, an ejecting device operable by engagement with the match selecting and delivering member, and a lug carried by said member and adapted to engage the apron for vibrating the latter at each operation of said member.

14. A match-safe including a casing having a magazine, a match selecting and delivering cylinder mounted for rotation in the casing and having a cam slot formed therein, a receiving table, a match-agitator provided with a lip operating within the cam slot, an apron forming one wall of the magazine, and a lug carried by the cylinder and adapted to engage and vibrate the apron.

15. A match-safe including a casing having a magazine, a match-receiving table, a match selecting and delivering cylinder mounted for oscillatory and longitudinal movement within the casing, and a spring operatively connected with the casing and cylinder, respectively.

16. A match-safe including a casing having a magazine, a match-receiving selecting and delivering cylinder mounted for oscillatory and longitudinal movement in the casing and having one end thereof provided with an extension, a match-receiving table, a guard pivotally mounted in the walls of the casing and co-acting with the table for preventing accidental displacement of the delivered matches, an agitator operable by the cylinder, an apron forming one wall of the magazine, a lug carried by the cylinder and adapted to intermittently engage and vibrate the apron and the handle carried by the extension for operating the cylinder.

17. A match-safe including a casing having a magazine, a spring actuated match selecting and delivering member carried by the casing and having a combined oscillatory and longitudinal movement, the inner wall of the casing at one end of the cylinder being provided with a roughened surface constituting an igniting device, and a table extending in front of the match-selecting and delivering member for receiving the ignited matches.

18. A match-safe including a casing provided with a magazine and having one wall thereof formed with a cam groove and its opposite wall provided with an enlargement, a pin extended laterally from one wall of the casing at said groove, a combined selecting and delivering cylinder mounted for oscillation on said pin and provided with a stub shaft extending through the enlargement on the opposite wall of the casing, a pin carried by the cylinder and adapted to bear against the cam face of said groove, one wall of the casing near the groove being provided with a roughened surface constituting an igniting device, and a table for receiving the ignited matches.

19. A match-safe including a casing having a magazine, a spring actuated cylinder having a combined oscillatory and longitudinal movement arranged within the casing and provided with a groove for the reception of a match, a lateral rib carried

by the cylinder and forming a closure for one end of the match-receiving groove, an apron disposed within the magazine and co-acting with the cylinder, an igniting device arranged in the path of movement of the matches carried by the cylinder, and a table for the reception of the ignited matches.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOSEPH E. GEARHART.

Witnesses:

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B. G. TITUS.