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LIGHTER CONSTRUCTION

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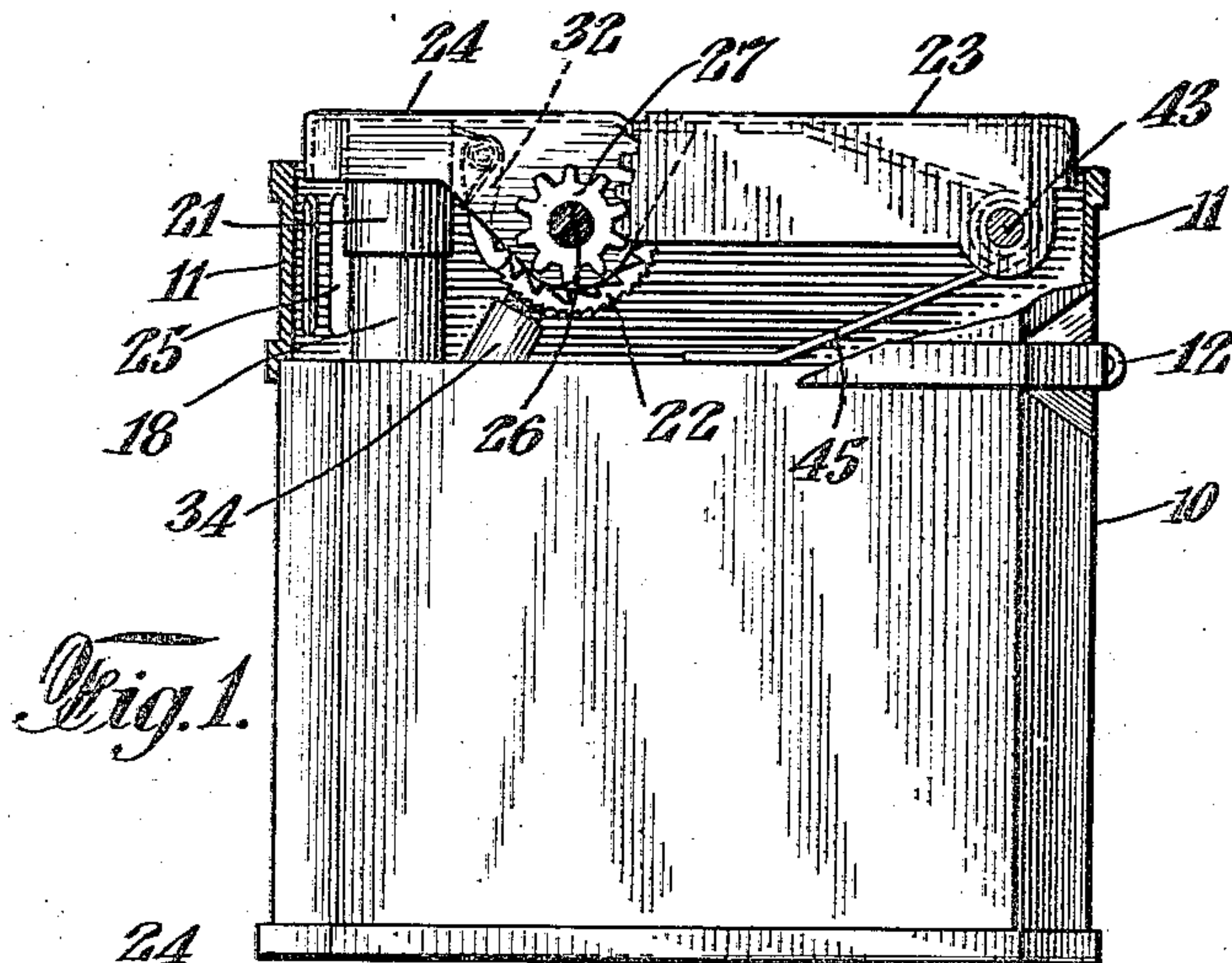


Fig. 1.

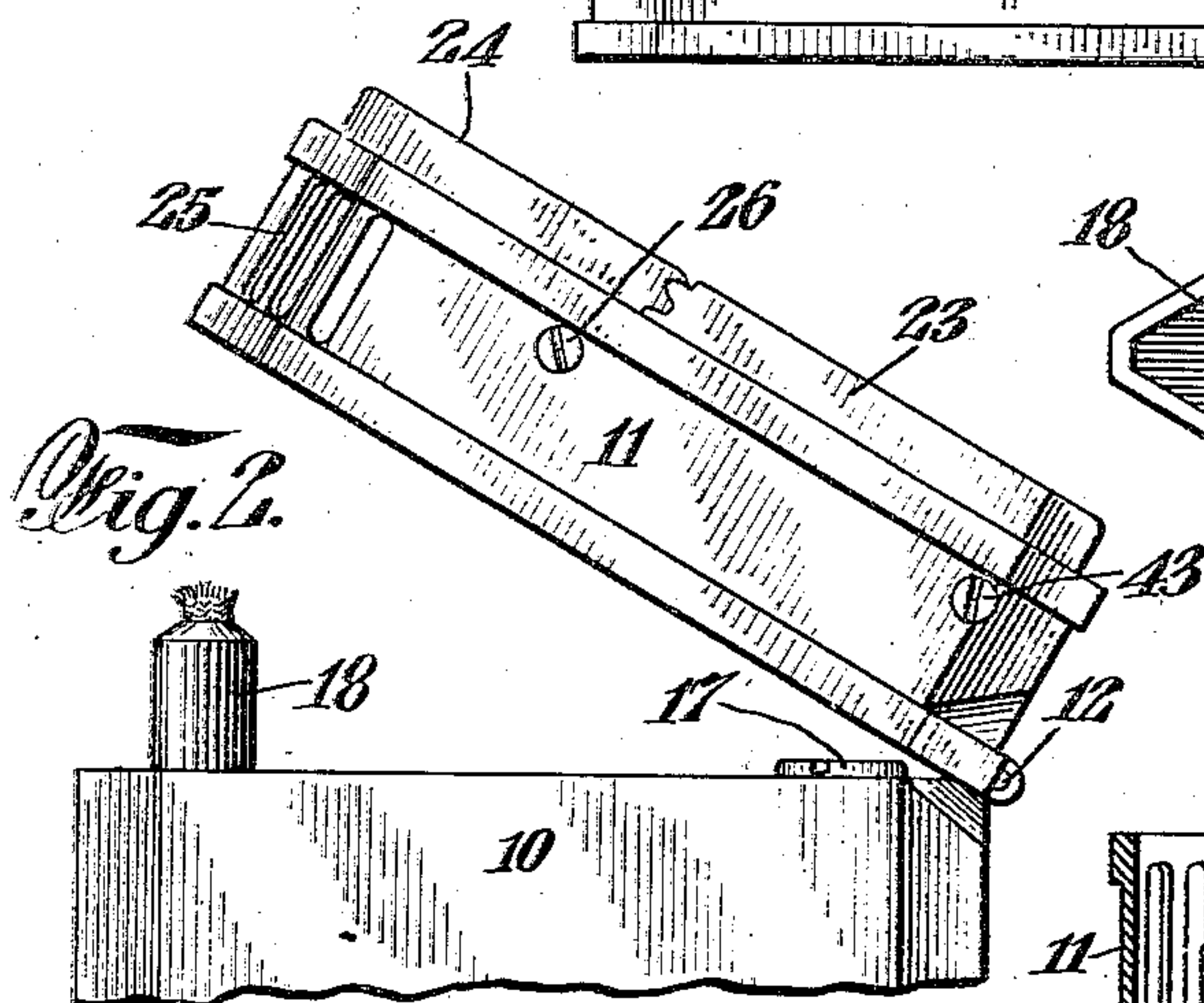


Fig. 2.

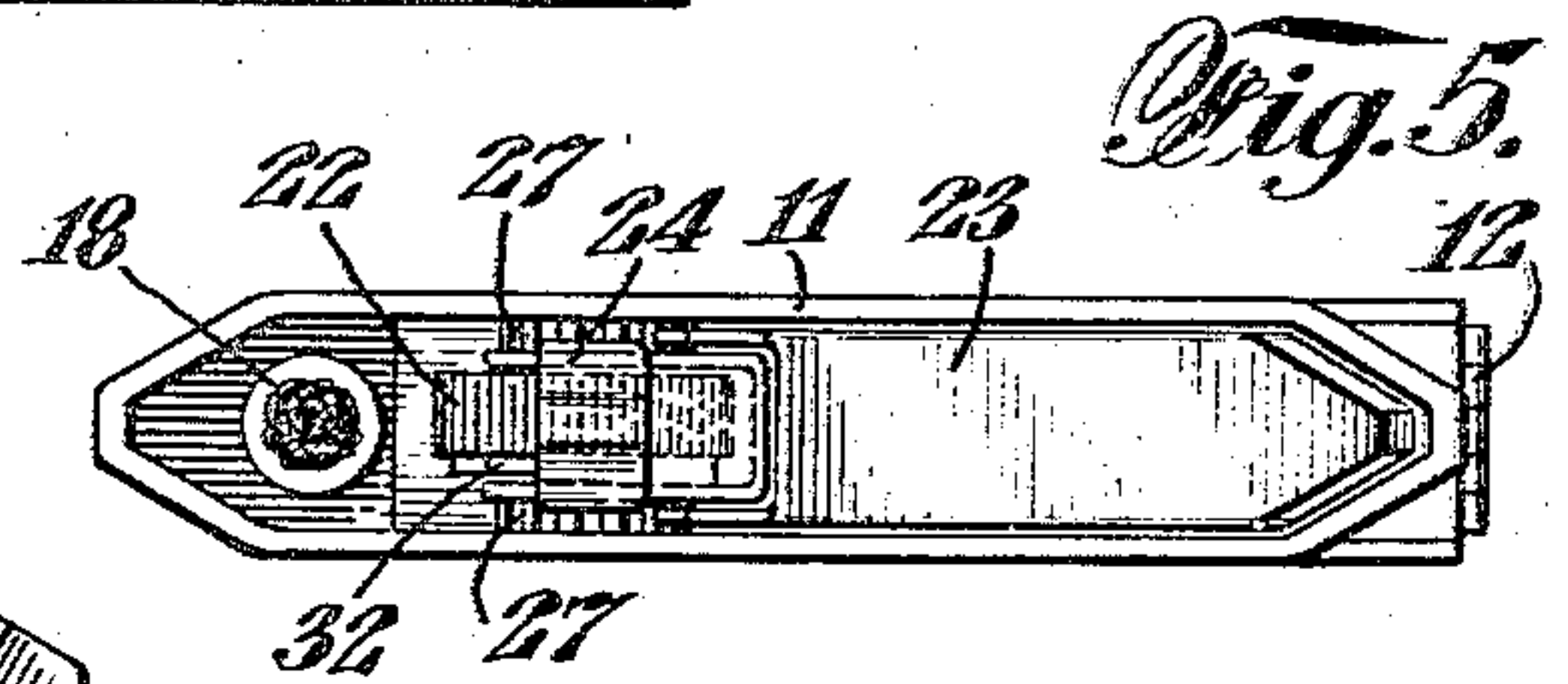


Fig. 5.

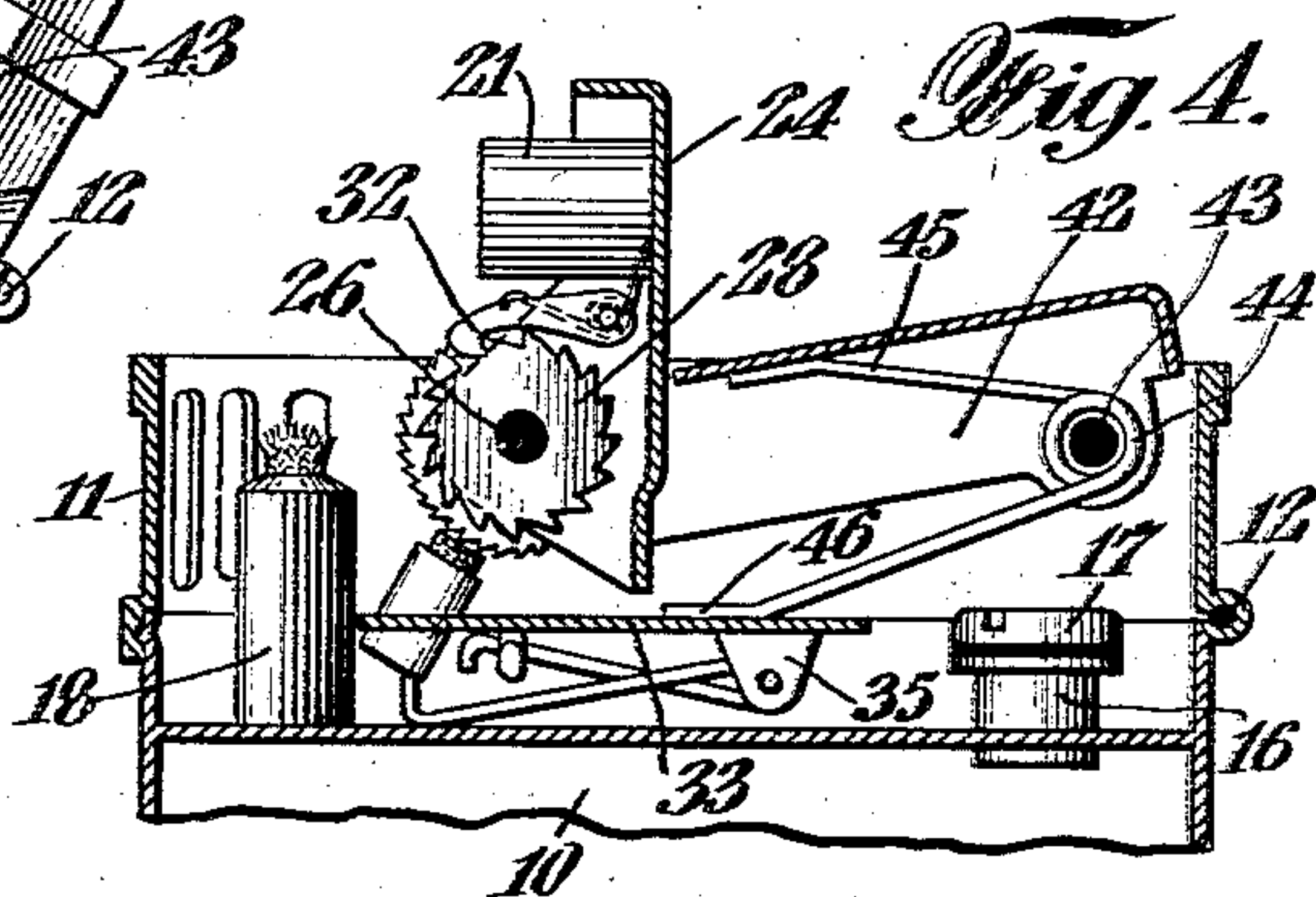


Fig. 4.

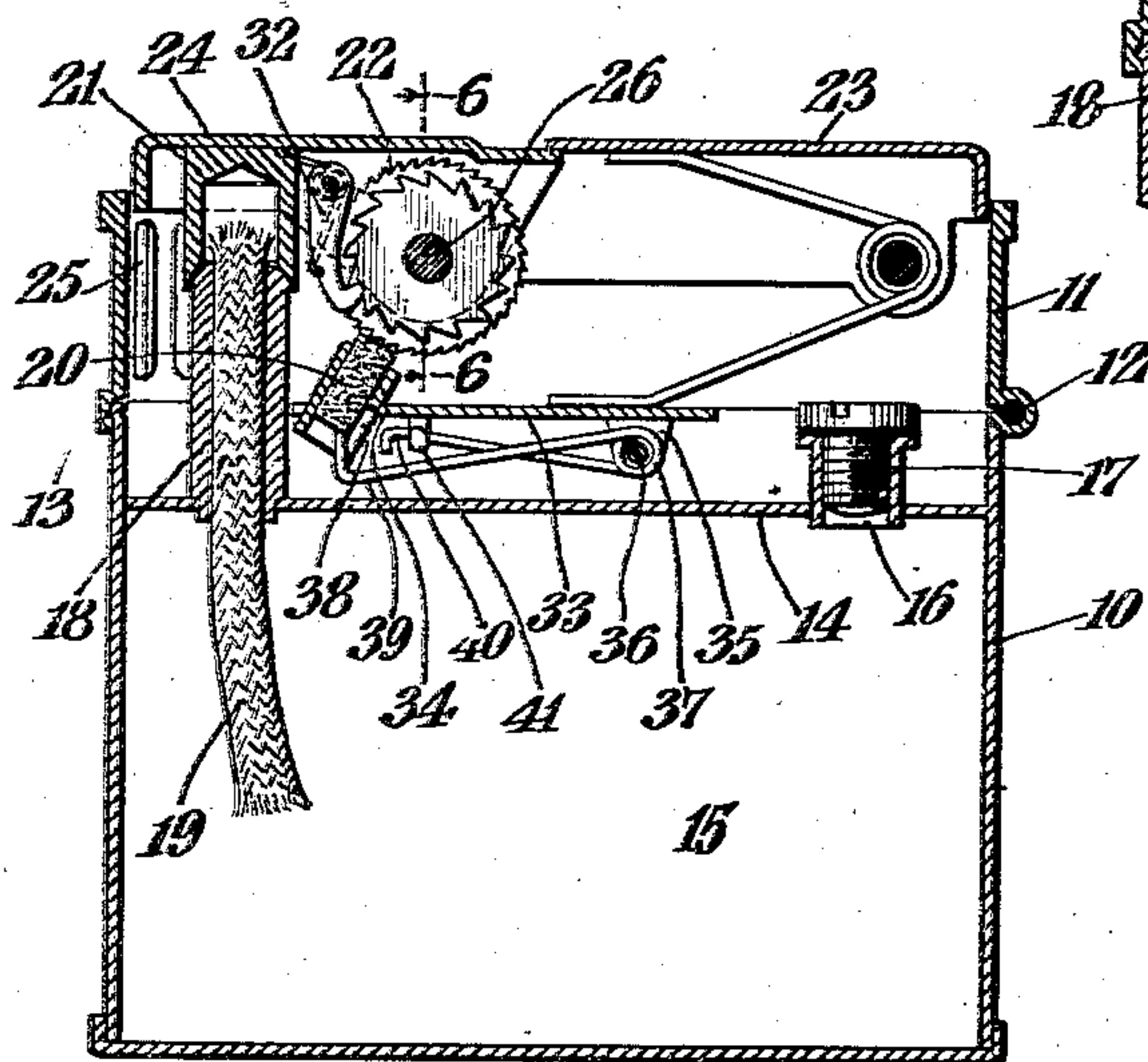


Fig. 3.

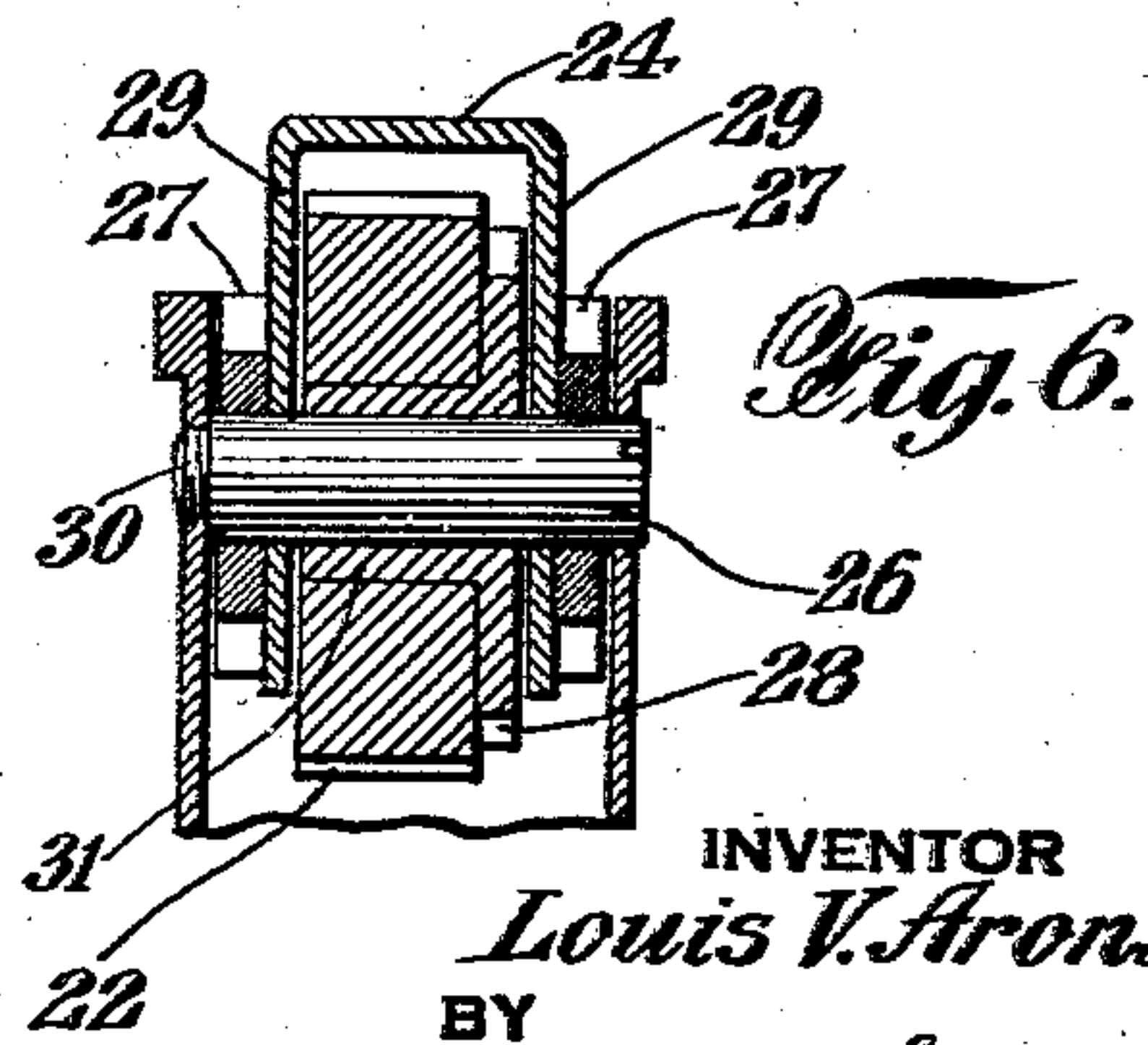


Fig. 6.

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LIGHTER CONSTRUCTION

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20 Claims. (Cl. 67—7.1)

This invention relates to a lighter and has for its main object an improved form of lighter in which the construction and the arrangement of the cooperating elements are simple, effective and compact.

One feature of the invention resides in providing a lighter having a casing which comprises a fuel chamber and a cover for said casing which has mounted therein all the operative elements in a simple and compact form, which are designed to cooperate with the wick that projects from the fuel chamber into said cover.

Another feature of the invention is directed to the arrangement of cooperating elements in such a manner as to make all parts thereof readily accessible.

Further and more specific objects, features and advantages will more clearly appear from the detail description given below, taken in connection with the accompanying drawing, which forms a part of this specification and which illustrates one embodiment of the present invention.

Fig. 1 is a front view of the lighter showing all operative parts in their normally closed inoperative positions.

Fig. 2 is a similar view showing the cover in its open position.

Fig. 3 is a longitudinal sectional view showing the cooperating elements in their normally closed inoperative position.

Fig. 4 is a similar view showing the operative elements in their operated or open position.

Fig. 5 is a plan view of Fig. 4.

Fig. 6 is a sectional detail showing taken on the line 6—6 of Fig. 3.

The lighter embodying the present invention comprises a casing 10 and a cover 11 for said casing, the cover being hinged to said casing by the hinge 12 at one end thereof and being normally retained in its closed position by the catch 13.

The casing 10 is provided with a transverse wall 14 which is spaced somewhat below the top of the casing, the wall 14 forming the top for the fuel chamber 15, and being provided with an internally threaded opening 16 adapted to receive the screw cap 17 which may be removed whenever it is desired to fill the chamber 15 with fuel. The tube 18 designed to hold the wick 19, is also mounted on the wall 14, and is disposed at one end of the casing and projects into the cover 11 in the manner shown.

All of the remaining cooperating elements of the lighter, namely, suitable spark-producing mechanism which comprises the pyrophoric element 20 and the friction wheel 22 together with

the snuffer 21 and the operating devices for said spark-producing mechanism, are housed and retained within the tube 11. The lighter is so designed that the cover 11 remains closed on to the casing 10 at all times except when it becomes desirable to refuel the fuel chamber or to replace the pyrophoric element; the entire lighter being operable by pressure upon the operating member or manual operator 23 when the cover is in the position shown in Figs. 1 and 3.

The cover 11 is preferably in the form of a frame as shown comprising upstanding side walls, the open upper face of this frame being substantially filled by the manual operator 23 and the snuffer carrier 24. The end face of the cover and the adjacent portions of the lateral face that are disposed in the immediate vicinity of the wick 19 are provided with slots 25. These slots provide a draft of air so that the flame of the wick is directed upwardly, particularly when the lighter is used outdoors under windy conditions.

Referring now to the operating elements which are housed within the cap or cover 11, it will be seen that the pin or shaft 26 is disposed transversely of the cover 11 and is carried by the lateral faces of the cover. A unit which comprises the snuffer carrier 24, the friction wheel 22, a pair of gears 27 and a ratchet wheel 28 are all mounted on the pin or shaft 26. The manner in which these elements are mounted can be readily observed in the showing of Fig. 6. The snuffer cap 24 is provided with lateral downwardly depending flanges 29 which are provided with registry apertures to receive the pin or shaft 26. The shaft or pin 26 is preferably provided with a threaded portion 30 which engages the threaded aperture in one of the lateral faces of the cover 11. The gears 27 are disposed between the flanges 29 and the interior faces of the lateral walls of the cover 11, the gears being attached to the flanges 29 so that they move together as a unit. The ratchet wheel 28 together with the friction wheel 22, the latter being fixedly mounted on the boss 31 of the ratchet wheel 28, are mounted to rotate freely on the pin 26; and the spring-pressed pawl 32 which is carried by one of the flanges 29 serves to rotate the ratchet wheel 28 and the friction wheel 22 whenever the gears 27 and the snuffer carrier 24 are moved from the closed to the open positions, whereas when these elements move from the open to the closed positions, the ratchet wheel 28 and friction wheel 22 are not rotated.

The plate 33 is disposed transversely of the cover 11 below the friction wheel 22, this plate

being designed to support the pyrophoric element 20 and for other purposes which will become clear in the further description of the present invention. A tube 34 is integrally mounted on the plate 33 and is preferably disposed at an angle to the plate so that the pyrophoric element 20 carried thereby is in engagement with the friction wheel 22 at such an angle that when the friction wheel is operated the sparks will be directed towards the wick 19. The plate 33 is also provided with a pair of downwardly depending lugs 35 which carry a pin 36, upon which is mounted the spiral spring 37 having one of its free ends bent in the manner shown and projecting into the tube 34 so as to exert pressure against the pyrophoric element 20 and yieldingly press the same against the friction wheel 22. The tube 34 is provided with a longitudinal slot 38 so as to permit the end 39 of the spring 37 to move into the tube of the slot and follow the pyrophoric element 20 as it is being consumed. The other end 40 of the spring 37 is caught by the hook 41 which is carried by the plate 33, or if preferred it may be attached to the tube 34.

With the construction shown and described above for mounting the yieldingly pressing pyrophoric element, the structure for holding and supporting the same has been very much simplified and the process of replacement of the pyrophoric element is very much facilitated. When it is desired to replace the pyrophoric element, the cover 11 is opened to the position shown in Fig. 2 and the end 40 of the spring 37 is removed from under the catch 41, thereby releasing the pressure against the pyrophoric element and facilitating the removal of the end 39 of the spring 37 from the tube 34. The old pyrophoric element will then drop out from the tube 34 and the new one may be replaced and retained by again inserting the end 39 of the spring into the tube and catching the end 40 on the catch 41.

The manual operator 23 is provided with a U shaped downwardly depending flange 42 and is pivotally mounted on the pin 43 which is disposed transversely of the cover 11 and is carried by the lateral faces thereof, the pin 43 being preferably disposed in substantially the same horizontal plane as the pin 26. The forward ends of the U shaped flange 42 are provided with teeth which engage the gears 27. A spiral spring 44 is mounted on the pin 43, the end 45 of the spring being in engagement with the operator 23 and the other end 46 of the spring pressing against the face of the plate 33. By this means the manual operator 23 is normally maintained in the position shown in Figs. 1 and 2. The manual operator 23 is pivoted near its rear-most end at a point near the rear end of the cover 11, so that the downward finger pressure exerted over almost any portion of its face will cause the operator to move downwardly about the shaft 43 and will bring about the upward movement of the snuffer and also the rotation of the wheel 22, so as to produce sparks which will ignite the wick 19. When the pressure is released the spring 44 reverses the operator back to its normal position and the snuffer is thereby moved to its normal position while the friction wheel is held against rotation.

While I have described my improvements in detail and with respect to a preferred form thereof, I do not desire to be limited to such details or form since many changes and modifications may be made and the invention embodied in other forms without departing from the spirit

and scope of the invention in its broader aspects. Hence, I desire to cover all modifications and forms coming within the language or scope of any one or more of the appended claims.

What I claim as new and desire to secure by Letters Patent, is:

1. A lighter comprising a casing having a fuel chamber therein, a wick holder carried by said casing, a hinged cover for said casing, a snuffer, spark-producing mechanism, and a manual operator carried by said cover and operable through the open end of said cover when the latter is in its closed position.
2. A lighter comprising a casing having a fuel chamber therein, a wick holder carried by said casing, a hinged cover for said casing, a snuffer, spark-producing mechanism, and a manual operator carried by said cover and operable from without said cover when said cover is in its closed position, said manual operator comprising a spring pressed rack bar pivotally mounted at one end of said cover.
3. A lighter comprising a casing having a fuel chamber therein, a wick holder carried by said casing, a hinged cover for said casing, a snuffer, spark-producing mechanism, and a manual operator, carried by said cover and operable through the open end of said cover when said cover is in its closed position, said wick holder projecting into said cover and said cover being provided with a plurality of openings adjacent said wick holder.
4. A lighter comprising a casing having a fuel chamber therein, a wick holder carried by said casing, a hinged cover for said casing, a snuffer, spark-producing mechanism and a manual operator, carried by said cover and operable from without said cover when said cover is in its closed position, said snuffer and said manual operator forming a top for said cover.
5. A lighter comprising a casing having a fuel chamber therein, a wick holder mounted on said casing and projecting therefrom, a hinged cover for said casing, a plate disposed transversely of said cover, a tube mounted on said plate, a pyrophoric element disposed within said tube, a rotary friction wheel mounted in said cover, spring means for yieldingly pressing said pyrophoric element into engagement with said friction wheel, and manual operable means pivotally mounted at one end of said cover for rotating said friction wheel to produce a spark.
6. A lighter comprising a casing having a fuel chamber, a wick holder carried by said casing and projecting beyond said casing, a hinged cover for said casing, a friction wheel mounted within said cover, a plate disposed transversely of said cover and intermediate the ends thereof, a tube carried by said plate, a pyrophoric element disposed within said tube, resilient means mounted on the lower face of said plate for holding said pyrophoric element in engagement with said friction wheel, a pin disposed transversely of the cover at one end thereof, a manually operable rack bar operator pivoted on said pin for operating said friction wheel, and a spring carried by said plate and having one end thereof in engagement with the outer face of said plate and the other end thereof in engagement with said rack bar.
7. A lighter comprising a casing having a fuel chamber therein, a wick holder mounted on said casing, a hinged cover for said casing in the form of an open ended extension of the lateral faces of said casing, a snuffer for said wick holder,

spark-producing mechanism, and a manual operator for said snuffer and sparking means mounted within said cover, said snuffer and manual operator forming a top for one end of said cover.

8. A lighter comprising a casing having a fuel chamber therein, a wick holder mounted on said casing, a hinged cover for said casing in the form of an open ended extension of the lateral faces of said casing, a snuffer for said wick holder, spark-producing mechanism, and a manual operator for said snuffer and sparking means mounted within said cover, said snuffer and manual operator projecting beyond the open end of said cover and forming a top therefor.

9. In pyrophoric lighting mechanism, a fuel casing, wall structure upstanding from said casing and pivoted thereto, a wick disposed within the space defined by said wall structure, a movable member carrying a snuffer cap for coaction with said wick, and an operating member for said movable member, said movable member and said operating member being disposed within the periphery of said wall structure, said operating member being manually actuatable through the open end of said wall structure.

10. In pyrophoric lighting mechanism, a fuel casing, wall structure upstanding from said casing and pivoted thereto, a wick disposed within the space defined by said wall structure, a pivoted member carrying a snuffer cap for coaction with said wick, and an operating member for said pivoted member, said pivoted member and said operating member being disposed within the periphery of said wall structure and carried thereby, said pivoted member and said operating member in predetermined position extending substantially equal distances beyond the top surface of said wall structure.

11. In pyrophoric lighting mechanism, a fuel casing, wall structure upstanding from said casing and pivoted thereto, a wick disposed within the space defined by said wall structure, a pivoted member carrying a snuffer cap for coaction with said wick, and an operating member for said pivoted member, said pivoted member and said operating member being disposed within the periphery of said wall structure and carried thereby, said pivoted member and said operating member in predetermined position closing the upper end of said wall structure.

12. In pyrophoric lighting mechanism, a fuel casing, wall structure upstanding from said casing and pivoted thereto, a wick disposed within the space defined by said wall structure, a pivoted member carrying a snuffer cap for coaction with said wick, and an operating member for said pivoted member, said pivoted member and said operating member being disposed within the periphery of said wall structure and carried thereby, said operating member being manually actuatable through the open end of said wall structure, said pivoted member being movable through said open end of said wall structure.

13. In pyrophoric lighting mechanism, a fuel casing, wall structure upstanding from said casing and pivoted thereto, a wick disposed within the space defined by said wall structure, a pivoted member carrying a snuffer cap for coaction with said wick, and an operating member for said pivoted member, said pivoted member and said operating member being disposed within the periphery of said wall structure and carried thereby, spark-producing means carried by said wall structure, said operating member being manual-

ly actuatable through the open end of said wall structure, said pivoted member being movable through said open end of said wall structure.

14. In pyrophoric lighting mechanism, the combination with a fuel casing, of a mechanical assembly carried by said fuel casing and movable as a unit with respect thereto, said assembly comprising upstanding walls, a pivoted member carried by said walls, a snuffer cap carried by said pivoted member, and a manually depressible member for operating said pivoted member.

15. In pyrophoric lighting mechanism, the combination with a fuel casing, of a mechanical assembly carried by said fuel casing and movable as a unit with respect thereto, said assembly comprising upstanding walls, a pivoted member carried by said walls, a snuffer cap carried by said pivoted member, a friction wheel rotatably carried by said walls, a pyrophoric element biased into engagement with said wheel, and a manually depressible member for operating said pivoted member.

16. In pyrophoric lighting mechanism, the combination with a fuel casing, of a mechanical assembly carried by said fuel casing and movable as a unit with respect thereto, said assembly comprising upstanding walls, a pivoted member carried by said walls, a snuffer cap carried by said pivoted member, a friction wheel rotatably carried by said walls, a pyrophoric element biased into engagement with said wheel, and a second pivoted member carried by said walls for operating said first pivoted member, said second pivoted member being actuatable by manual action through the opening defined by said walls.

17. Pyrophoric lighting mechanism comprising a fuel casing, spark-producing means, a pivoted member, a snuffer cap carried by said pivoted member and normally positioned at one side of said casing, and a member provided with rack teeth for operating said pivoted member and said spark-producing means, said operating member being pivoted at the side of said casing opposite said snuffer cap whereby rotation of said operating member in a counter-clockwise direction produces rotation of said pivoted member in a clockwise direction, said pivoted member and said operating member overlying the top wall of said casing.

18. Pyrophoric lighting mechanism comprising a fuel casing having spaced walls upstanding therefrom, spark-producing means, a pivoted member, a snuffer cap carried by said pivoted member and normally positioned at one side of said casing, and a member for operating said pivoted member and said spark-producing means, said operating member having spaced walls adapted to telescope said first named spaced walls, said pivoted member and said operating member overlying the top wall of said casing, the spaced walls of said casing enclosing and terminating below the upper horizontal section of said operating member to thereby render the latter accessible for manual operation.

19. Pyrophoric lighting mechanism comprising a fuel casing having spaced walls upstanding therefrom, spark-producing means, a pivoted member, a snuffer cap carried by said pivoted member and normally positioned at one side of said casing, a member for operating said pivoted member and said spark-producing means, said operating member having spaced walls adapted to telescope said first named spaced walls and being pivoted at the side of said casing opposite said snuffer cap whereby rotation of said operat-

ing member in a counter-clockwise direction produces rotation of said pivoted member in a clockwise direction, said pivoted member and said operating member overlying the top wall of said casing, and a spring disposed between said spaced walls for biasing said operating member in one direction.

20. A lighter construction comprising a casing having rigid side walls, a wick positioned at one side of said casing, pyrophoric lighting mechanism adjacent thereto, a wick snuffer member associated with said mechanism, and an operator extending substantially in alignment with said

snuffer member and provided with rack teeth at its end adjacent said mechanism for operating the latter, said operator being pivotally mounted at the side of said casing opposite said wick whereby rotation of said operator in a counter-clockwise direction produces rotation of said snuffer member in a clockwise direction, said snuffer member and operator substantially adjoining and cooperating to normally provide a top surface covering said mechanism and overlying the top wall of said casing.

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