

No. 636,413.

Patented Nov. 7, 1899.

J. H. MILLER.
MATCH SAFE.

(Application filed June 12, 1899.)

(No Model.)

2 Sheets—Sheet 1.

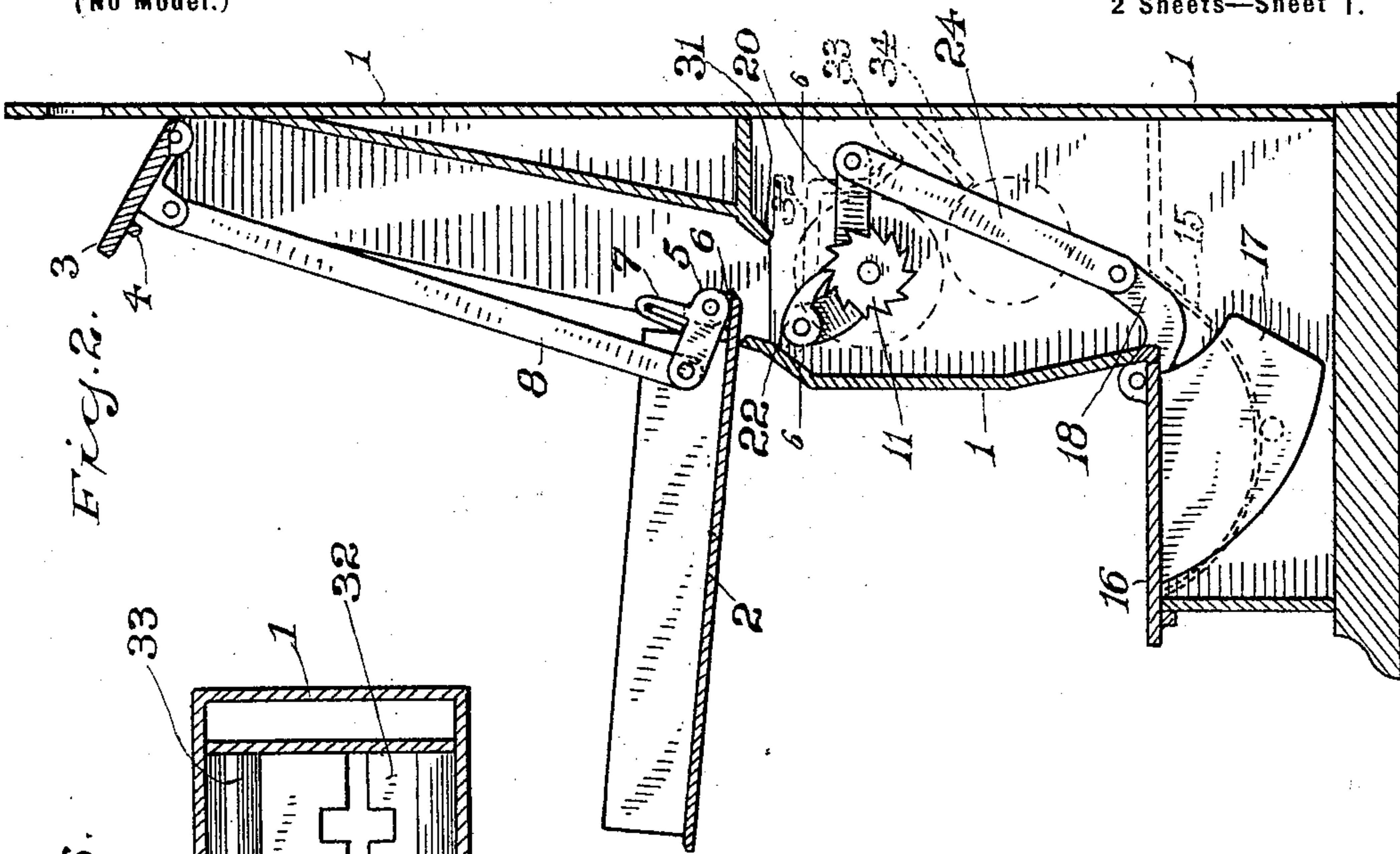


Fig. 6.

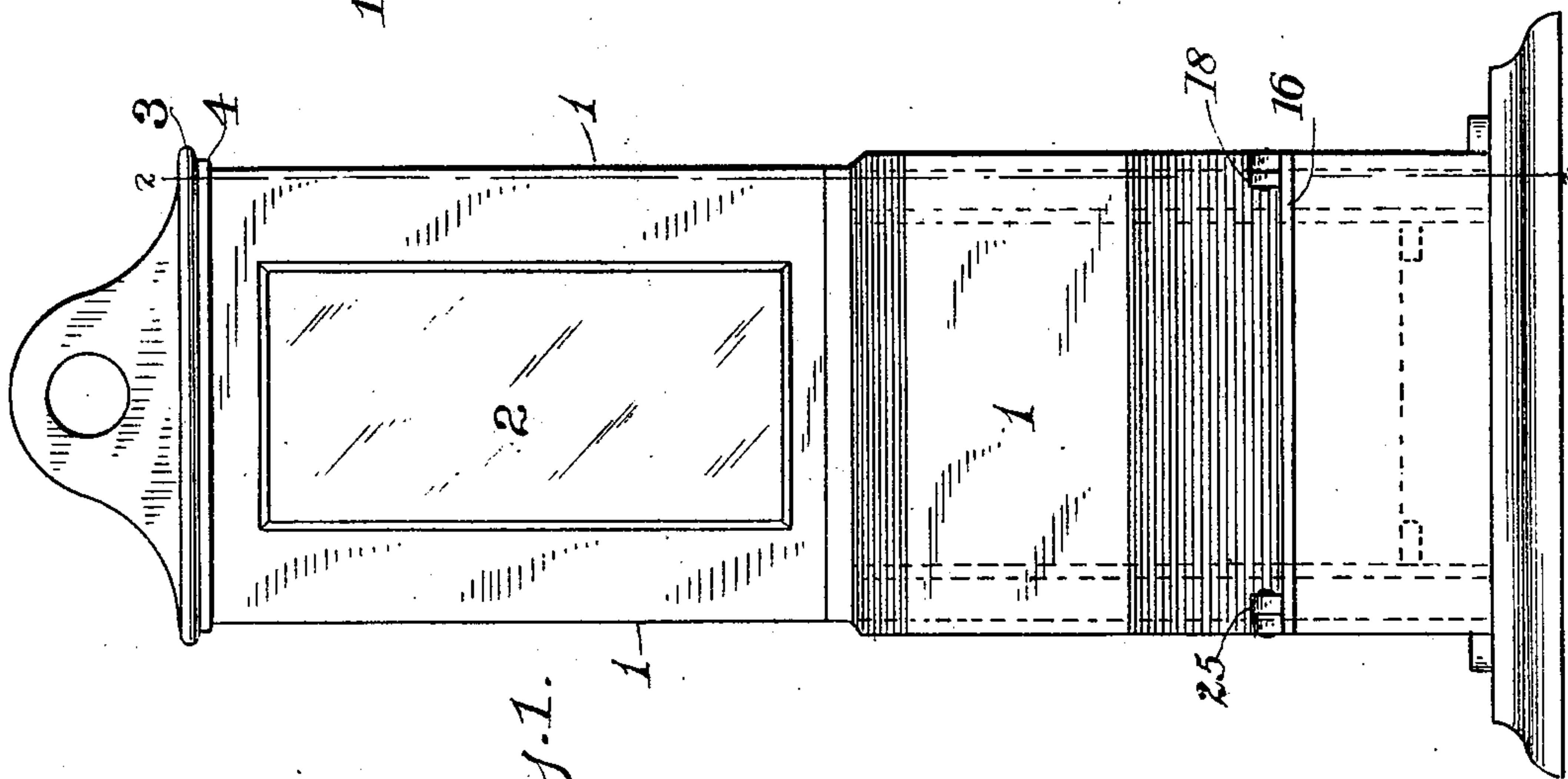
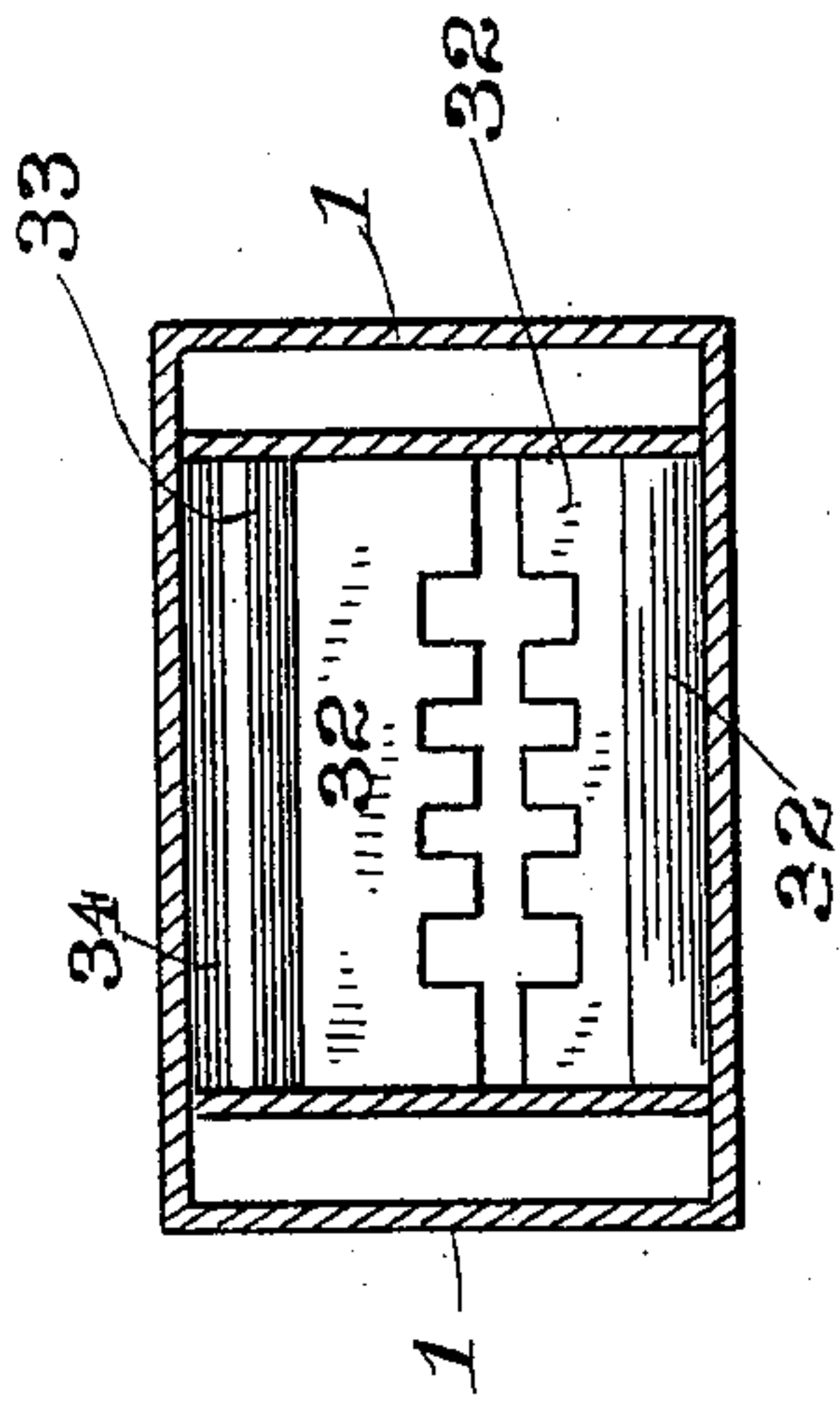


Fig. 1.

WITNESSES

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No. 636,413.

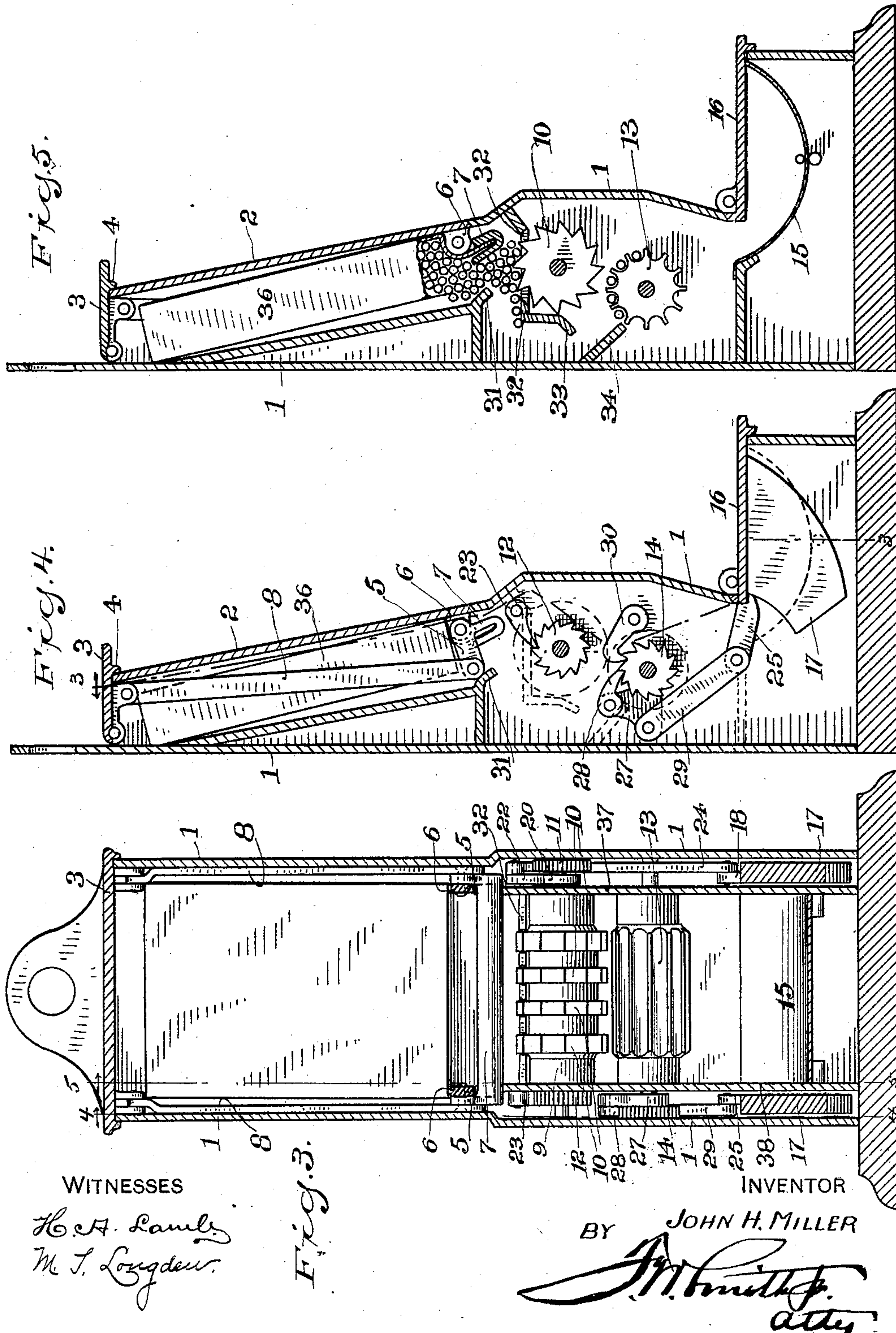
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

JOHN H. MILLER, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR OF ONE-HALF
TO ISAAC L. SOLOMON, OF SAME PLACE.

MATCH-SAFE.

SPECIFICATION forming part of Letters Patent No. 636,413, dated November 7, 1899.

Application filed June 12, 1899. Serial No. 720,216. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. MILLER, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Automatic Match-Safes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in match-safes, but more particularly has reference to a receptacle for holding a whole box of matches and for delivering the matches one at a time to the receiver, so that it will be extremely difficult for any one to take more than one or two matches at a time.

The object of my invention is to provide a device of this description which shall be entirely automatic in its operation without the use of any springs whatsoever and to render the same very positive in its action and not likely to get out of order.

With these ends in view my invention consists in certain details of construction and combination of parts, such as will be hereinafter fully set forth and then specifically be designated by the claims.

In order that those skilled in the art to which my invention appertains may more fully understand the same, I will proceed to describe its construction and operation, referring by numbers of reference to the accompanying drawings, which form a part of this application, and in which—

Figure 1 is a front elevation of my improved match-safe; Fig. 2, a section at the line 2 2 of Fig. 1; Fig. 3, a section at the line 3 3 of Fig. 4; Fig. 4, a section at the line 4 4 of Fig. 3; Fig. 5, a section at the line 5 5 of Fig. 3, and Fig. 6 a section at the line 6 6 of Fig. 2.

Similar numbers of reference denote like parts in the several figures of the drawings.

1 is the casing of my improved match-box, made of any suitable design and dimensions; 2, a drop-door pivoted at its lower end to the upper portion of the front of the casing, and 3 a lid pivoted at its rear end to the top of the casing and provided with a small lug 4. When this door and lid are in proper assembled

closed position, the lug 4 depends outside the upper edge of the door, below said edge, so as to hold said door in its closed position.

5 is a bar pivoted to ears 6, carried by the lower end of the door 2, said bar at its bottom portion being formed into a hook 7, which extends throughout substantially the width of the casing, said ears and bar being wholly contained within said casing.

8 are levers whose extremities are pivoted, respectively, to the inside of the lid 3 on each side of the casing and to the inner ends of the bar 5, as shown at Figs. 3 and 4.

9 is a drum journaled between the side of the casing immediately below the hook 7 and carrying a series of ratchet-disks 10, and 11 12 are small ratchets secured upon opposite ends of the shaft of this drum.

13 is a fluted or corrugated drum immediately below the ratchets 10, and 14 is a small ratchet carried by the shaft of this drum.

15 is a disk-like receptacle or basin secured in any suitable manner within the bottom of the casing, and 16 is a lid hinged to the casing immediately above said basin.

17 are weights which depend from the lid, at opposite sides thereof, and serve to keep the same normally closed.

18 is an arm which is rigid with one of the weights 17, and 20 is a lever pivoted around the shaft of the drum 9, to which lever is pivoted a pawl 22, which engages the small ratchets 11.

23 is a pawl which engages the ratchet 12 and acts as a detent.

24 is a lever whose extremities are pivoted, respectively, to the free ends of the lever 20 and arm 18, so that it will be clear that when the lid 16 is raised the pawl 22 will be thrown forward to operate the ratchet 11, whereby the drum 9 is revolved one step.

The levers for operating the drum 9 and ratchets 10, just described, are located at one side of the casing, and at the other side of the casing are located levers for operating the drum 13, as I will now describe.

25 is an arm rigid with the other weight 17, and 27 is a lever pivoted at its upper end to the casing and carrying around said pivotal point a pawl 28, which normally engages with the ratchet 14.

29 is a link whose extremities are pivoted,

respectively, to the lower end of the lever 27 and the free end of the arm 25, so that it will be clear that when the lid 16 is elevated the pawl 28 will be dragged along a ratchet-tooth 5 until it falls by gravity into position for active operation, while the closing of said lid will cause said pawl to operate to turn said ratchet, whereby the fluted drum will be revolved one step.

10 30 is an ordinary detent-pawl pivoted to the casing and engaging with the teeth of the ratchet 14.

The ratchets 10 and the drum 13 are the means whereby the matches are properly distributed and fed, one at a time, to the basin 15, the ratchets serving as auxiliary or primary feeding mechanism to prevent the matches from falling in a mass upon the fluted drum. I provide at suitable locations within 20 the casing a chute 31, which tends to deliver the matches properly to the ratchets 10, a ledge 32, open to allow said ratchets to project therethrough and whereby the matches are properly supported as they are driven by said 25 ratchets, and chutes 33 34, whereby said matches are caused to properly fall upon the fluted drum; but I do not wish to be limited to the location or arrangement of such chutes and ledge, because very many changes in 30 this respect may be effected, all of which are the result of ordinary mechanical skill and are fully within the scope of my invention.

In utilizing my improvement I lift the lid 3 and draw down the door 2 to the position 35 shown at Fig. 2. I then place an entire box of matches upon this door and insert the hook 7 within the end of the box. I then close the door 2 and latch it by means of the lid 3, and the act of doing this will cause the hook 7 to 40 tear out the end of the box, thus allowing the matches to drop upon the ledge 32. The lid 16 is now lifted, thereby effecting the feeding of one or more matches to the fluted drum, and the closing of the lid will cause said drum 45 to revolve. Should the first opening and closing of this lid fail to deliver a match within the basin 15, the operation is repeated until a sufficient number of matches are contained within the drum 13 to insure the delivery of 50 at least one match every time this lid is closed, and, as I said before, the weights 17 will cause this lid to drop automatically.

In the drawings the box containing the matches is denoted by the numeral 36, and the 55 lower portion of the casing within which the matches are contained is divided from the sides of the casing by partition-walls 37 38, the various levers and parts which have heretofore been described as operating the ratchets 10 and fluted drum being contained in the 60 space between these walls and the outside wall of the casing. It will be observed that the matches will fall from the box directly upon the ledge 32 and that they will then be properly distributed by the operation of the 65 ratchets 10 prior to the delivery to the fluted drum 13, and this feature is very important,

since the operation of these ratchets prevents the matches from being dumped promiscuously upon the drum 13 and, furthermore, insures a uniform delivery of the matches within the basin 15. 70

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is— 75

1. In a match-safe as described, the combination of the casing, the pivoted drop-door which constitutes the upper front face of said casing, the bar pivoted to the lower end of said door and carrying a hook, the lid pivoted 80 to the top of the casing, the lever having its extremities pivotally connected to said lid and to the inner ends of said bar, and means for distributing and properly feeding said matches into any suitable receptacle, substantially as set forth. 85

2. In a match-safe as described, the combination of the casing, the ledge upon which the matches are deposited, the distributing-ratchets which extend through openings in said ledge, the fluted feeding-drum below 90 said ratchets, suitable chutes whereby the matches are delivered by the operation of said ratchets to said drum, the basin at the bottom of said casing, the weighted cover 95 above said basin, and connections between said cover and ratchets and drum respectively whereby the opening and closing of said cover will effect the delivery of the matches within the basin, substantially as set forth. 100

3. In a match-safe as described, the combination of the casing provided interiorly with a ledge upon which the matches are primarily deposited, the drum journaled within the side walls of said casing and carrying 105 feed-ratchets which extend through openings in said ledge, the fluted feed-drum immediately below said ratchets and journaled between the side walls of said casing, suitable chutes whereby the matches are delivered 110 from the ratchets to said feed-drum, the small ratchet carried by the ratchet-drum at the side thereof, the lever pivoted to the casing and carrying a pawl adapted to engage with said small ratchet, the basin at the lower portion of the casing, the hinged cover immediately above said basin, the arm carried by said cover, and the link whose ends are pivoted respectively to the pawl-carrying lever 115 and to said arm, whereby the opening of the cover will effect the intermittent rotation of the feed-ratchets, substantially as set forth. 120

4. In a match-safe as described, the combination of the casing, the ratchet-carrying drum journaled within said casing, the fluted 125 feed-drum journaled within said casing immediately below the first-mentioned drum, small ratchets carried by the shafts of both drums, the hinged and weighted cover at the bottom of the casing, the levers pivoted to 130 said casing and carrying pawls adapted to engage with said ratchets, the arms carried by said weighted cover, and the links whose ends are pivotally connected with said levers and

arms, whereby the opening and closing of said cover will effect respectively the operation of said feed-ratchets and feed-drum, substantially as set forth.

5 5. In a match-safe as described, the combination of the casing, the hinged drop-door which forms the upper front portion of said casing, the hinged lid at the top of the casing which operates as a latch to hold said door
10 closed, the hook-carrying bar pivoted to the lower end of said door, the levers having their ends pivoted to said lid and bar, the ratchet-carrying drum journaled within said casing immediately below said bar, the ledge sup-
15 ported within said casing above said ratchets and having openings which permit the latter to project therethrough, the fluted feed-drum journaled within said casing immediately below the first-mentioned drum, small ratchets

carried by the shafts of both drums, the 20 hinged and weighted cover at the bottom of the casing, the levers pivoted to said casing and carrying pawls adapted to engage with said ratchets, the arms pivoted at the sides of said cover, the links whose ends are piv- 25 otally connected with said levers and arms, the basin immediately below said cover, and suitable chutes whereby the matches are delivered from the upper drum carrying the distributing-ratchets to the lower fluted drum, 30 substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. MILLER.

Witnesses:

F. W. SMITH, Jr.,
M. T. LONGDEN.