

No. 762,688.

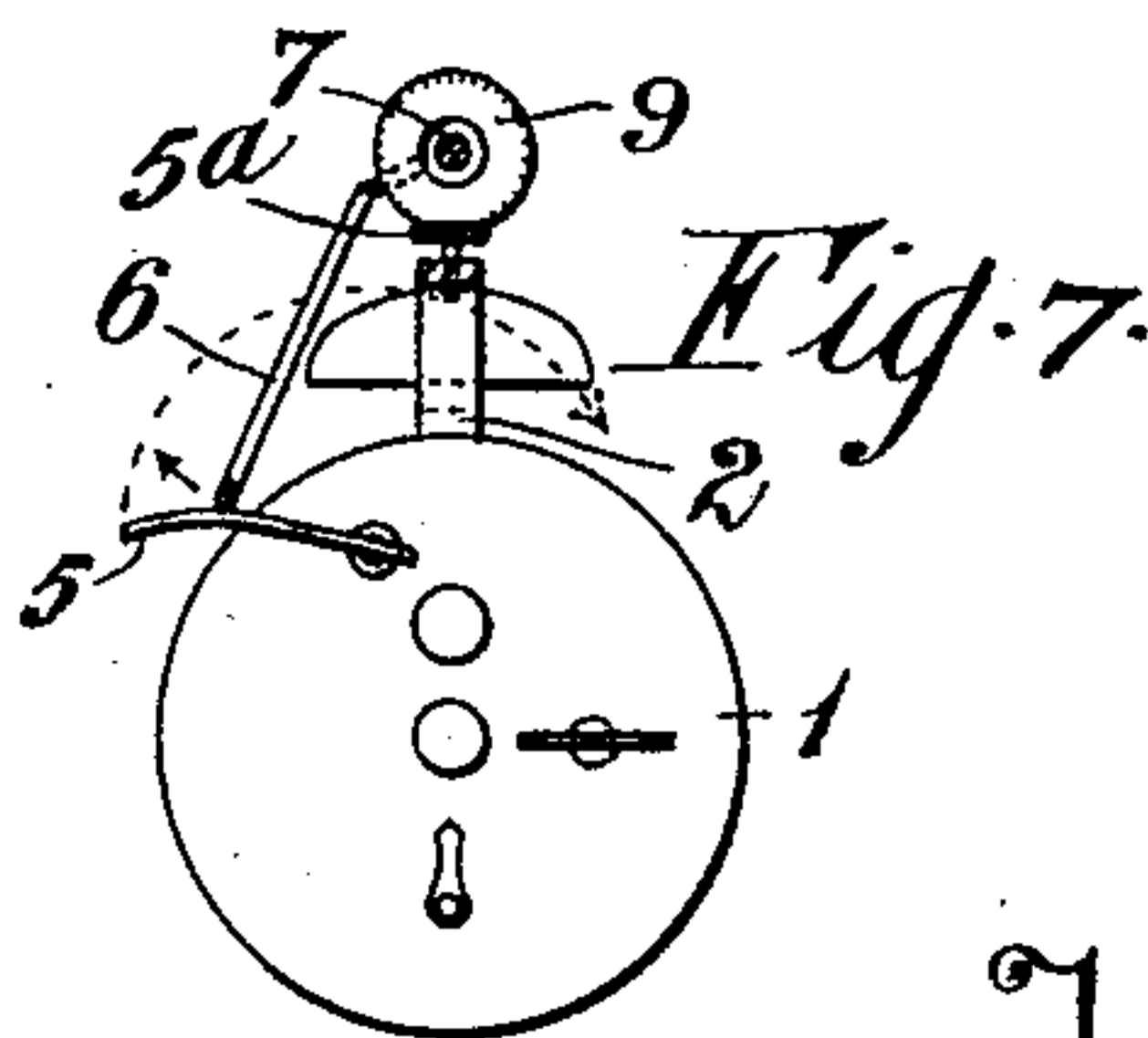
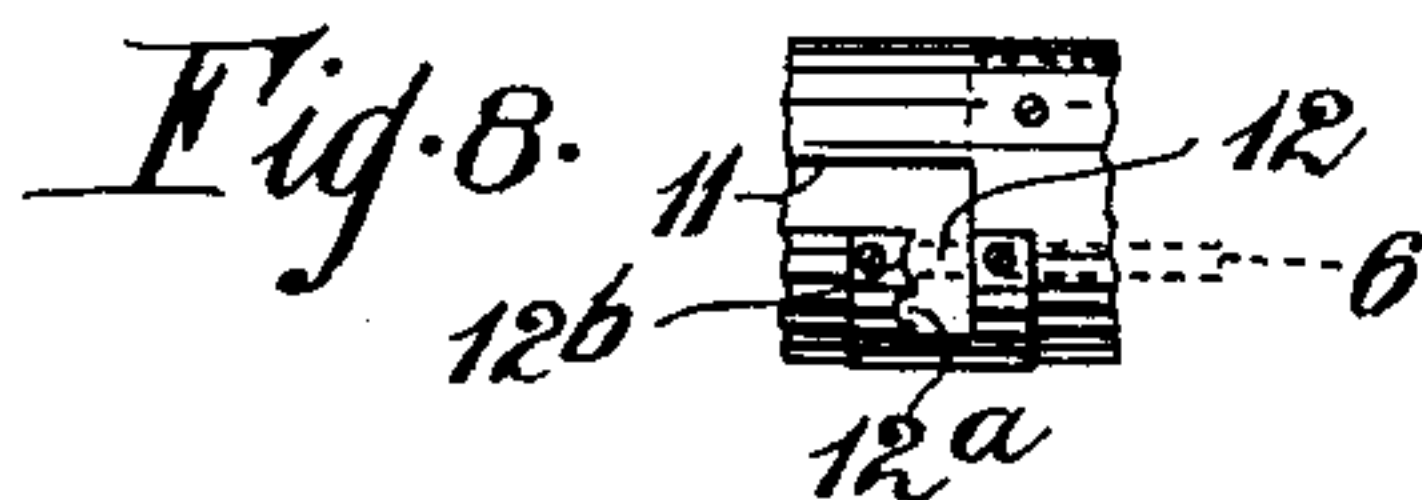
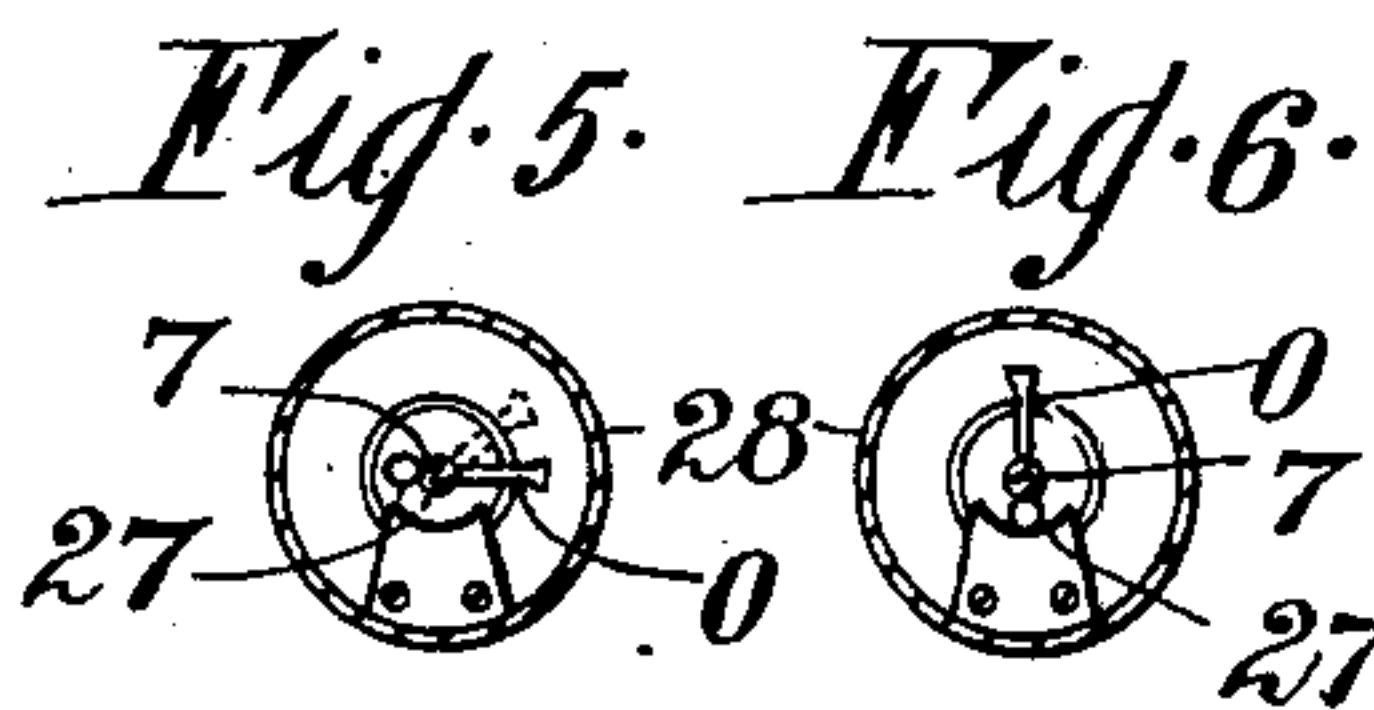
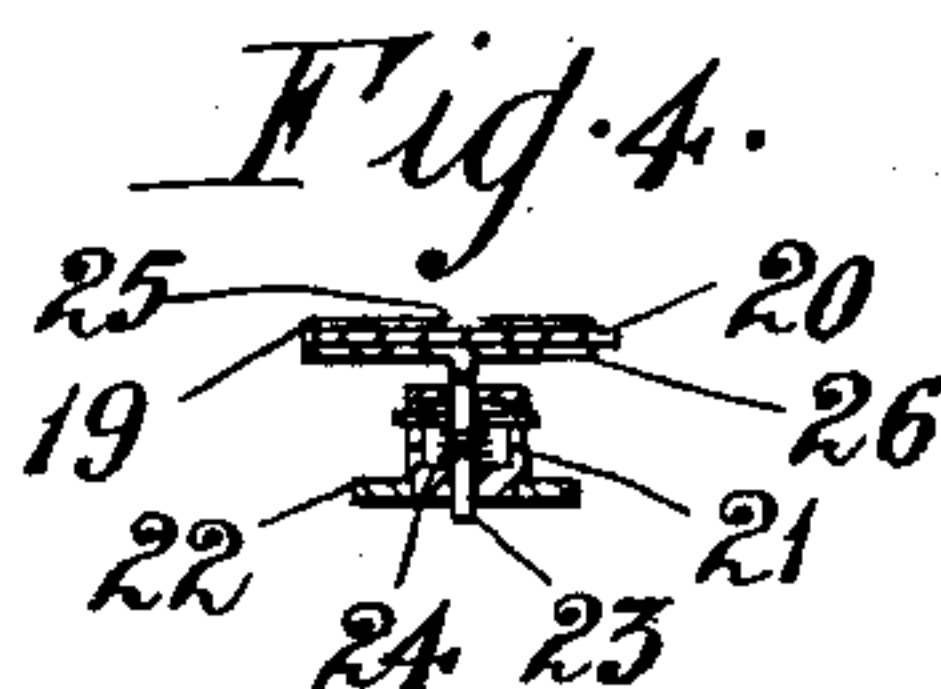
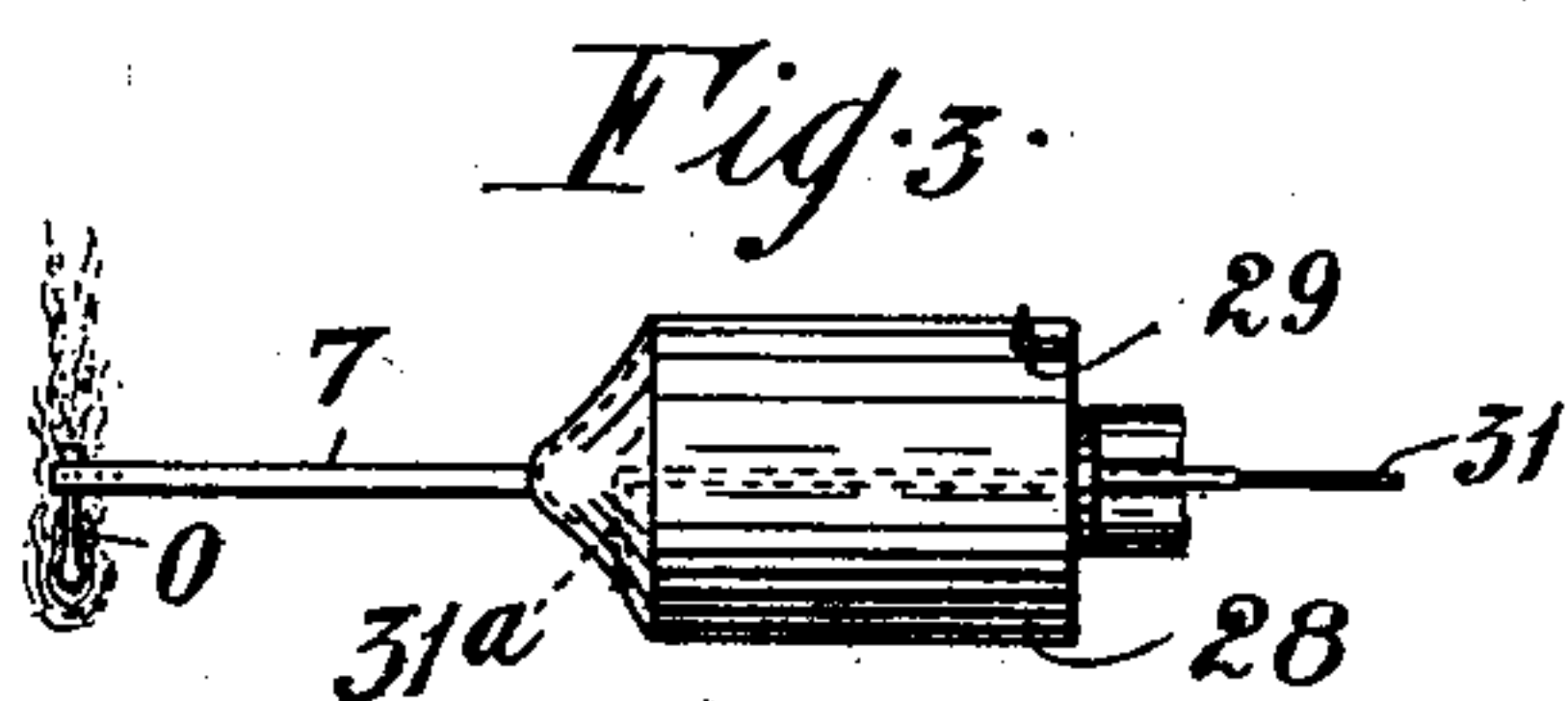
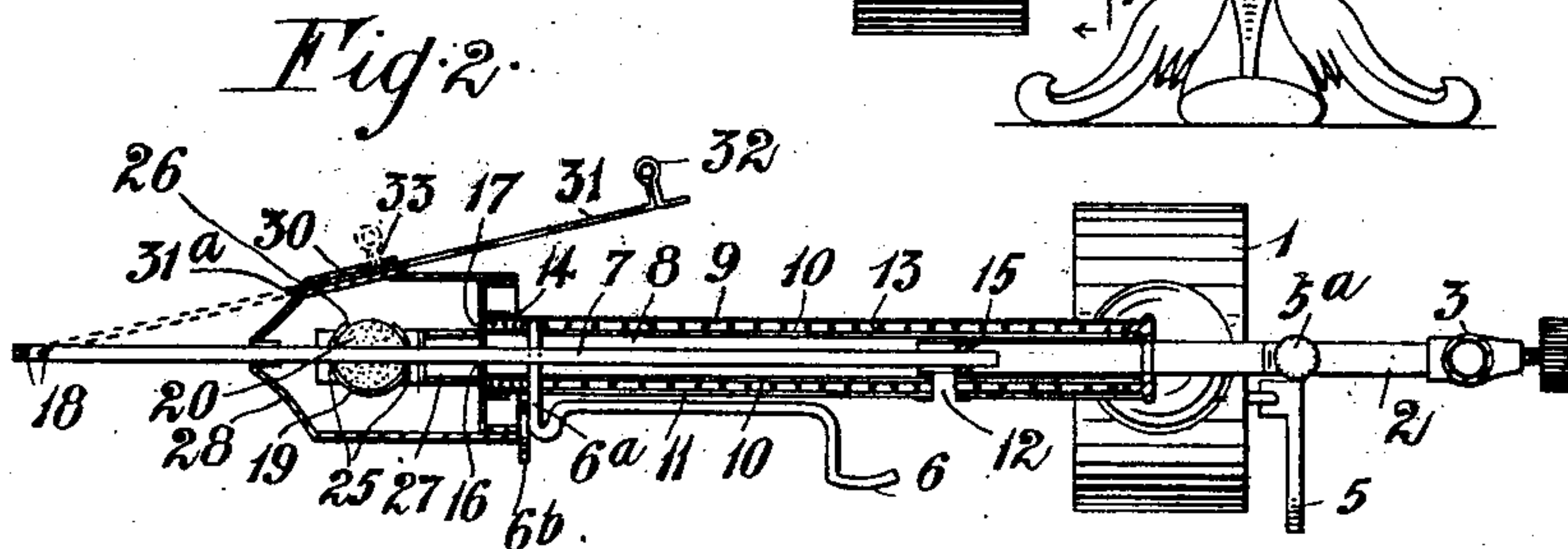
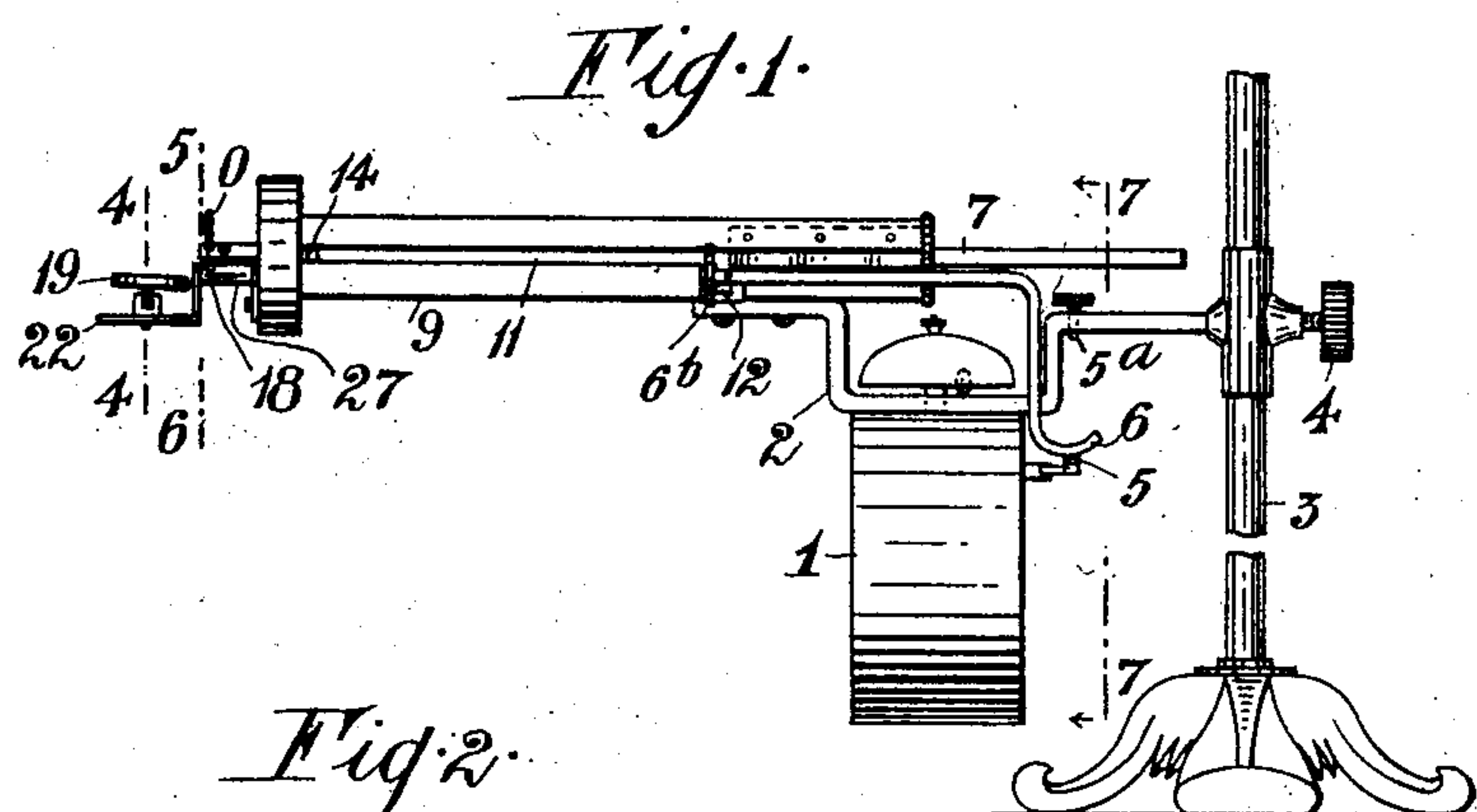
PATENTED JUNE 14, 1904.

E. M. G. COLEMAN.  
TIME FIRE LIGHTER.

APPLICATION FILED SEPT. 9, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

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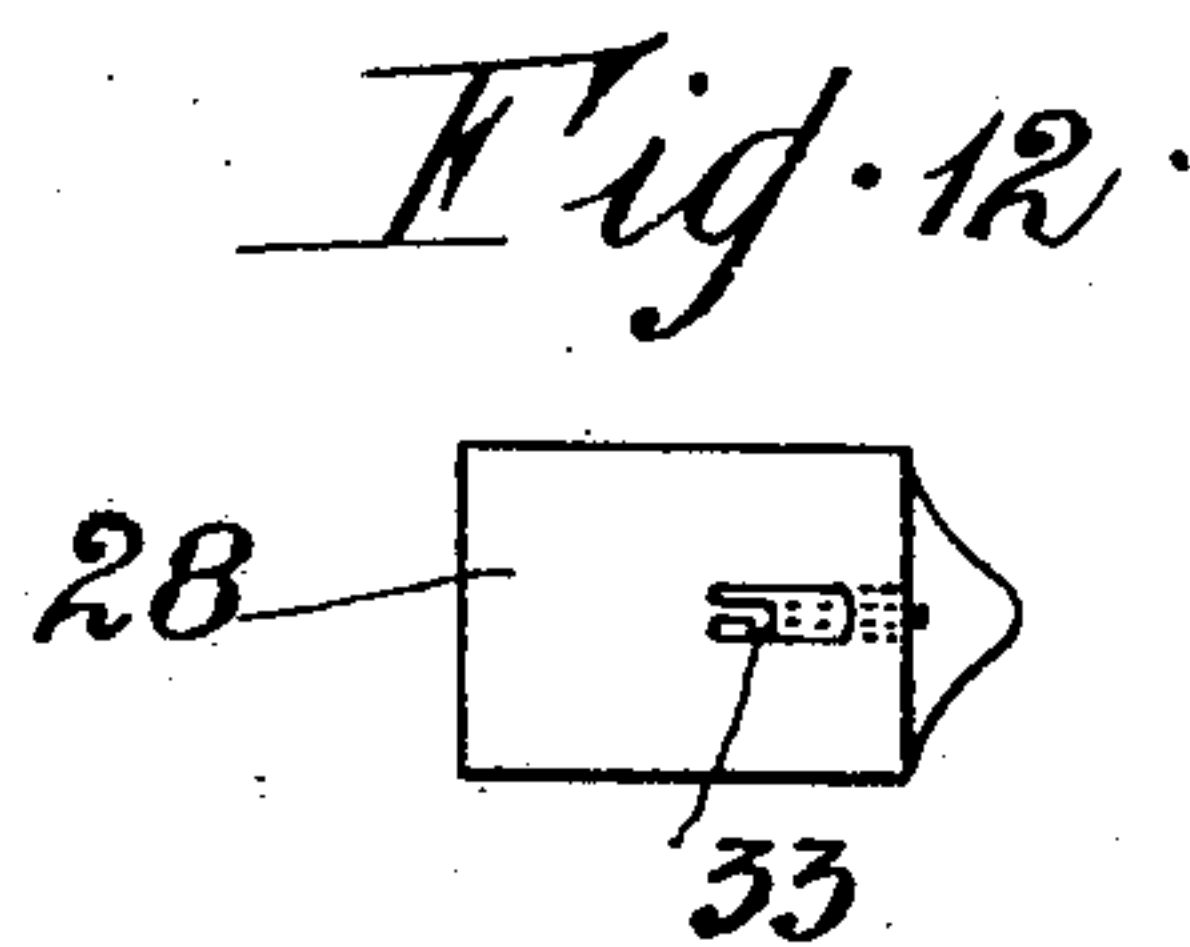
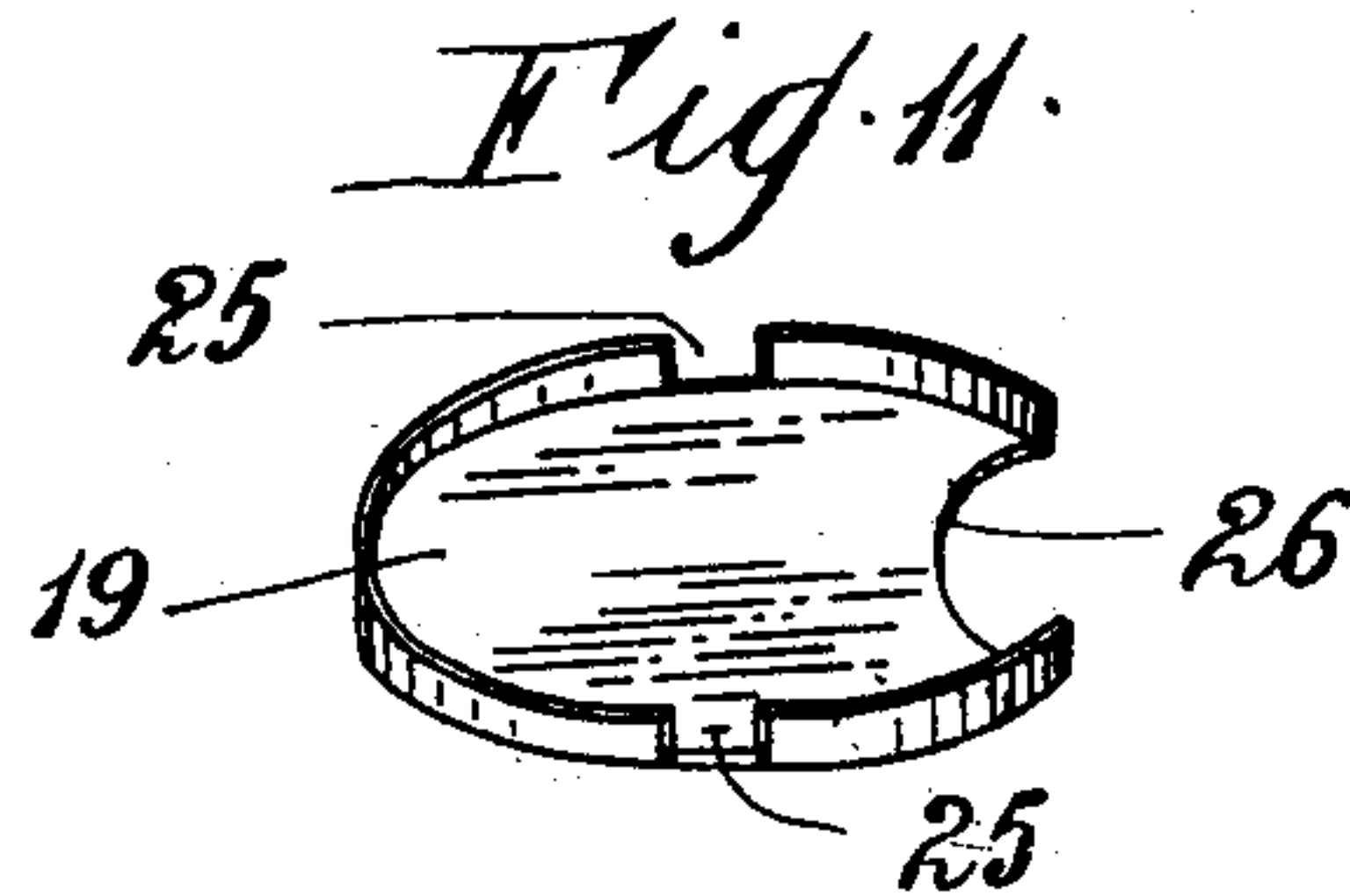
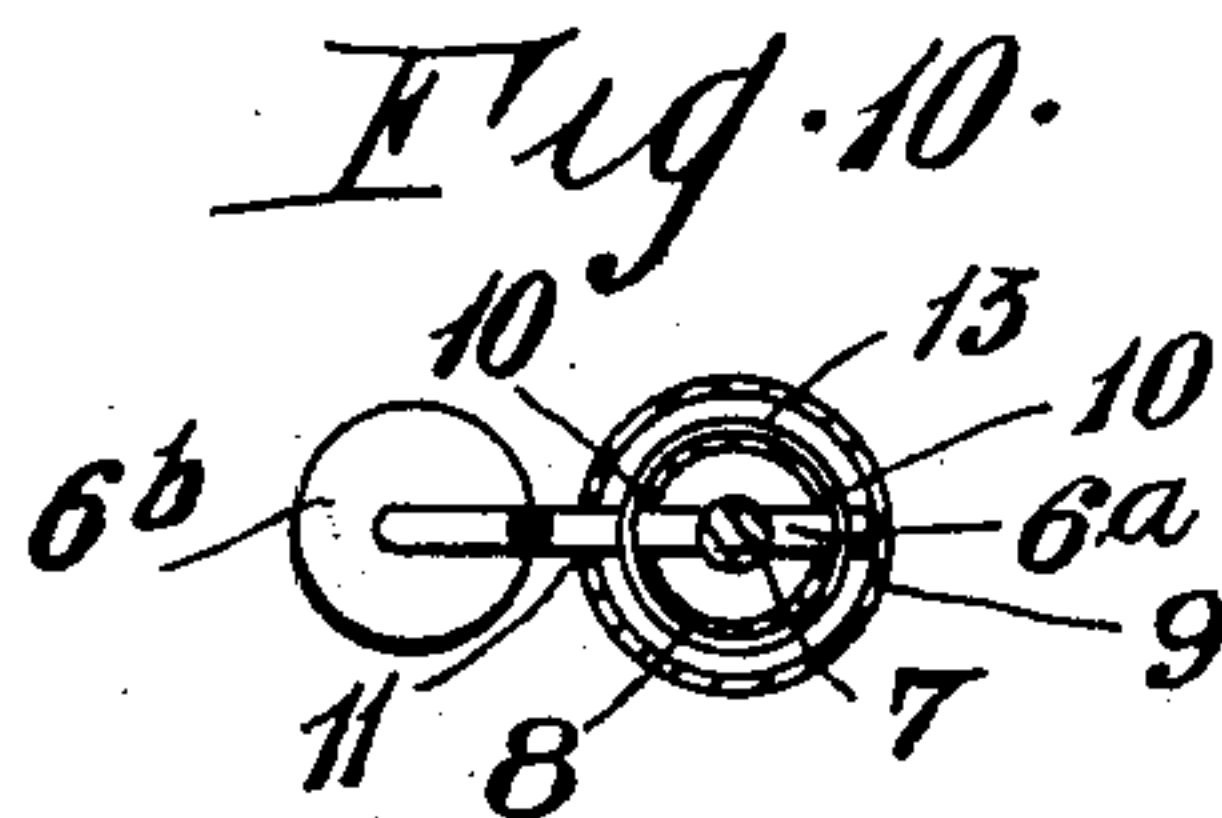
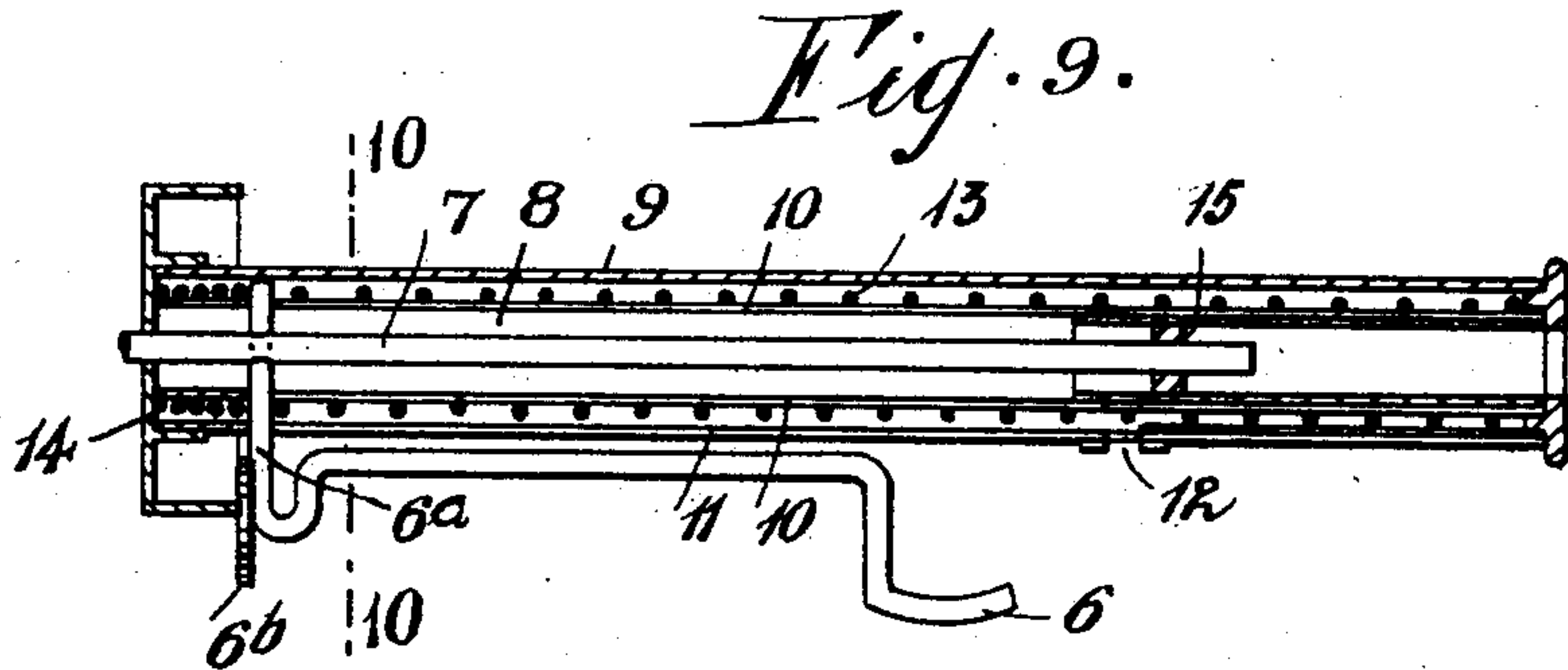
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2 SHEETS—SHEET 2.



Witnesses  
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Attorneys



# UNITED STATES PATENT OFFICE.

EMIL MAXIMILIAN GOLTERMANN COLEMAN, OF MELBOURNE, VICTORIA,  
AUSTRALIA.

## TIME FIRE-LIGHTER.

SPECIFICATION forming part of Letters Patent No. 762,688, dated June 14, 1904.

Application filed September 9, 1903. Serial No. 172,523. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL MAXIMILIAN GOLTERMANN COLEMAN, watchmaker, a subject of the King of Denmark, residing at Cromwell Buildings, corner of Bourke and Elizabeth streets, Melbourne, in the State of Victoria and Commonwealth of Australia, have invented Improved Mechanism for Automatically Igniting Matches at Predetermined Times, of which the following is a specification.

This invention comprises an improved mechanical arrangement whereby matches may be automatically ignited at certain predetermined times, as set on an ordinary alarm-clock, the winding-handle of the alarm mechanism being enlarged to form a tappet or lever adapted to release a trigger and so permit a spring-bolt carrying a match or matches to shoot out of the end of a cylinder over a striking-surface, so as to ignite the match and hold same in its desired position under a made fire or above a gas-stove, lamp, or candle, as the case may be.

Referring to the accompanying drawings, Figure 1 is a side elevation of my mechanism with the cap removed, showing the operating parts in their "set" position. Fig. 2 is a horizontal section with the cap included, showing the position of the parts after the trigger has been released and the match ignited. Fig. 3 is a side elevation of the forward end of the mechanism when the match has been ignited. Fig. 4 is an enlarged vertical section of the striking attachment, taken on line 4 4 of Fig. 1. Figs. 5 and 6 are vertical sections taken on line 5 6 of Fig. 1, illustrating the varying positions of the match. Fig. 7 is a vertical section on line 7 7 of Fig. 1, illustrating the operating mechanism. Fig. 8 is an enlarged detail showing the cocking-plate. Fig. 9 is an enlarged sectional view of the parts shown in Fig. 2. Fig. 10 is a transverse section taken on the line 10 10 of Fig. 9. Fig. 11 is a perspective view of the tray hereinafter referred to, and Fig. 12 is a view in side elevation of the cap.

Now according to this invention I mount

the igniting mechanism and the alarm-clock 1 on a bracket 2, adapted to slide vertically on a standard 3 and be clamped thereto by a thumb-screw 4 at the desired height.

5 represents the tappet or lever formed by extending the handle of the alarm mechanism, said tappet being curved at the end, as shown in Fig. 7, and adapted to release a trigger 6, correspondingly curved at one end, at a predetermined time as fixed by the setting of the clock. An adjustable screw 5<sup>a</sup> on the bracket is provided to check the tappet when required.

The trigger consists of a bent rod secured to a bolt 7, mounted within a sleeve 8 inside the cylinder 9, said sleeve and cylinder being provided with elongated openings 10 10 11 to enable said bolt to shoot forward a certain distance when the trigger is released from the cocking-slit 12, formed at right angles to and at the end of the opening 11 of the cylinder. Said slit 12 is reinforced by a cocking-plate and provided with two nicks 12<sup>a</sup> and 12<sup>b</sup>, the former (which is deeper) holding the trigger safe and the latter ready to be fired. (See Fig. 8.)

Around the sleeve 8 is a spiral spring 13, exerting a pressure on the bolt by contacting with the end 6<sup>a</sup> of the trigger, which extends through the slits 10 10 in said sleeve and is provided with a thumb-plate 6<sup>b</sup> for cocking the trigger.

A spring-buffer 14 is provided at the forward end of the cylinder to reduce the shock on the end 17 of same when the spring-operated bolt 7 is released. The bolt passes through a bearing 15 within the sleeve and extends forwardly through an opening 16, constituting another bearing on the end 17 of the cylinder, and is provided with one or more holes 18, in which the match 0 is inserted.

19 is a shallow tray in advance of the match for holding the striking-surface 20 and is mounted in a seating 21 on a small bracket 22, screwed to the cylinder. Around the stem 23 of said tray is a coiled spring 24, (see Fig. 4,) which maintains the striking-sur-



face at its normal level, but allows same to give if the head of the match should be extra large.

The edges of the tray 19 are cut away, as at 25 25, to prevent the liability of the match striking same, and on one side, as at 26, the edge and bottom are recessed to enable the reversible striking-surface to be gripped and partially turned round in order to present a new line of same to the match.

It will be noticed that the tray, and consequently the striking-surface therein, has a rearward tilt, as shown in Fig. 1, to provide for any irregularity in the adjustment of the match in the holes of the bolt.

On the bracket 22 beneath the forward end of the bolt 7 is a small trough 27, against which the head of the match rests when ready for firing, which, furthermore, prevents the match from dropping before it contacts with the striking-surface.

The forward end of the cylinder and the parts in advance thereof are inclosed within a cap 28, formed with an opening at its forward end for the passage of the bolt and readily secured in position by a bayonet-joint 29.

On one side of the cap and at the same level as the bolt is a sleeve 30, (see Fig. 2,) set at an angle, through which a gage-rod 31, bent downwardly at the end, as at 31<sup>a</sup>, is adapted to slide. When said rod is pushed forward as far as its handle 32 will permit, as shown by dotted lines, Fig. 2, its point is in the position which the match-head will occupy when ignited. By this means the mechanism may be adjusted in such a position on the standard that the match when ignited will be in contact with the kindling medium of the fire, stove, or wick of the candle. A catch 33 is provided in the sleeve 30 to temporarily lock the handle 32 in either its extended or retracted positions.

In order to set the mechanism to awaken a sleeper, for instance, and start a fire at a predetermined time, the alarm mechanism of the clock is set and the trigger 6 drawn back and then turned down so that its part 6<sup>a</sup> engages the deeper nick 12<sup>a</sup> in the slit 12 and its curved end is above the tappet, Fig. 7. The cap of the cylinder being removed, a match is passed horizontally through the hole 18 in the bolt 7 and flattened at the end with tweezers or otherwise, as shown in Fig. 5 in full lines. Then the part 6<sup>a</sup> of the trigger is placed in the shallower nick 12<sup>b</sup>, which movement partially rotates the bolt upwardly and turns the match into the position shown by dotted lines in Fig. 5, so that the head of same is resting against the side of the trough 27. When the alarm "goes off," the tappet 5 raises the curved arm of the trigger 6, rotates the bolt, and releases the part 6<sup>a</sup> from the nick 12<sup>b</sup> of the cocking-slit 12, and so permits the spring

13 to shoot the bolt forward with the match in the position shown in Fig. 6 over the yielding striking-surface, which ignites said match and holds it in the position shown in Fig. 3 over the kindling medium, the flattened end of the match preventing its falling through the hole in the bolt.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. An improved mechanism for automatically igniting matches at predetermined times, comprising a horizontal longitudinally-slotted cylinder, a longitudinally-slotted sleeve arranged concentrically in said cylinder, a bolt arranged centrally in the sleeve and provided at its outer end with means for carrying a match, a trigger passing at one end transversely through said bolt and through the slots in the sleeve, a spiral spring arranged within the cylinder about the sleeve and bearing against said trigger to project the bolt forward, said trigger being provided with a bent end, a cocking-slit formed in one side of the cylinder and adapted to be engaged by the bent end of the trigger to hold the bolt in its retracted position, clock mechanism arranged to engage said trigger and move its bent end out of engagement with the cocking-slit to permit the spring to project said bolt forward, and an abrading-surface arranged to be engaged by the head of the match to ignite the same, substantially as described.

2. A mechanism for automatically igniting matches at predetermined times, comprising a horizontal longitudinally-slotted cylinder, a spring-actuated and partially-rotatable bolt arranged in said cylinder and provided with an aperture near its forward end for the reception of a match, a fixed trough segment-shaped in cross-section supported on the end of the cylinder, an igniting-surface supported in front of said trough, means for holding the bolt in its retracted position, a clock mechanism, means actuated by the clock mechanism for releasing the bolt, and a cap removably fixed on the forward end of the cylinder and provided at its end with an aperture for the passage therethrough of said bolt, substantially as described.

3. A mechanism for automatically igniting matches at predetermined times, comprising a horizontal cylinder, a spring-actuated bolt arranged in said cylinder and provided at its forward end with means for carrying a match, an inclined and vertically-yielding shallow tray the edges of said tray being recessed on opposite sides in the path of movement of a match carried by the bolt and recessed on one side and edge, an abrading-surface carried by said tray, a trigger for holding the bolt in its retracted position, and means actuated by



clock mechanism for releasing the bolt, substantially as described.

4. A mechanism for automatically igniting matches at predetermined times, comprising a  
5 horizontal cylinder, a spring-actuated bolt arranged within said cylinder and provided with means for carrying a match at its forward end, means for holding the bolt in its retracted position, means actuated by clock mechanism  
10 for releasing the bolt, an abrading-surface arranged in the path of movement of a match carried by the bolt, a cap fitted on the forward

end of the cylinder and provided with a sleeve, and a gage-rod endwise movable in said cap for indicating the final position of the match 15 after ignition, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMIL MAXIMILIAN GOLTERMANN COLEMAN.

Witnesses:

EDWARD WATERS,

EDWARD WATERS, Junr.