

No. 821,396.

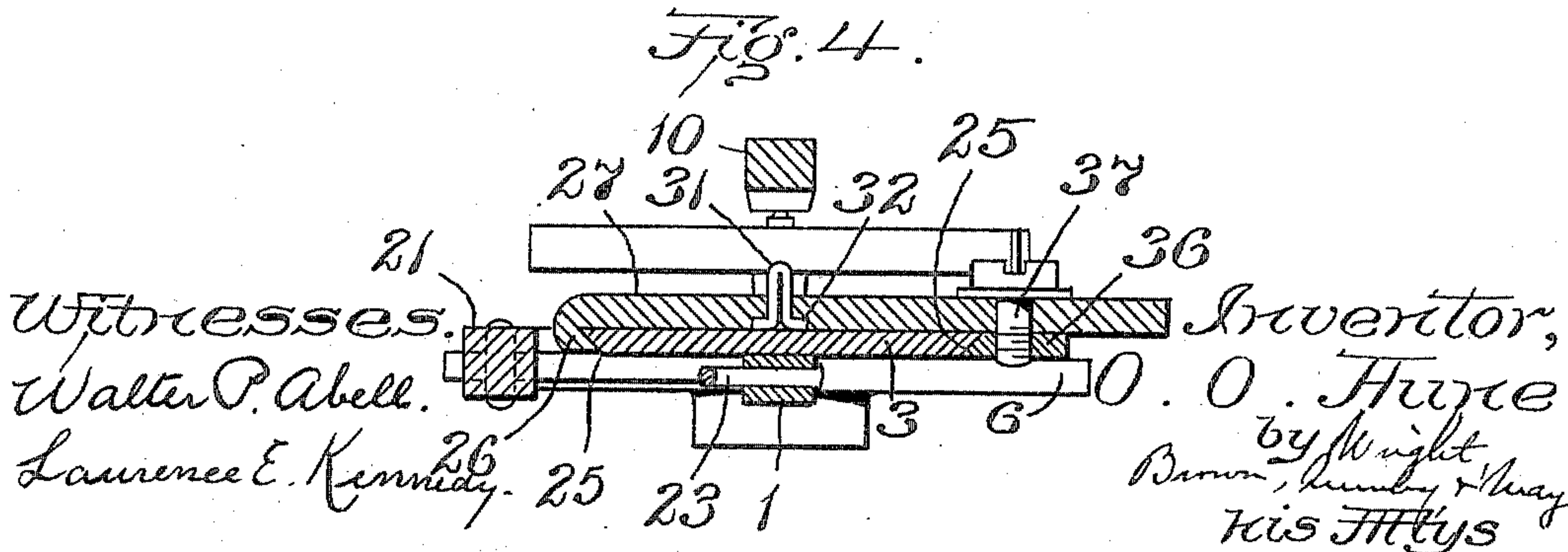
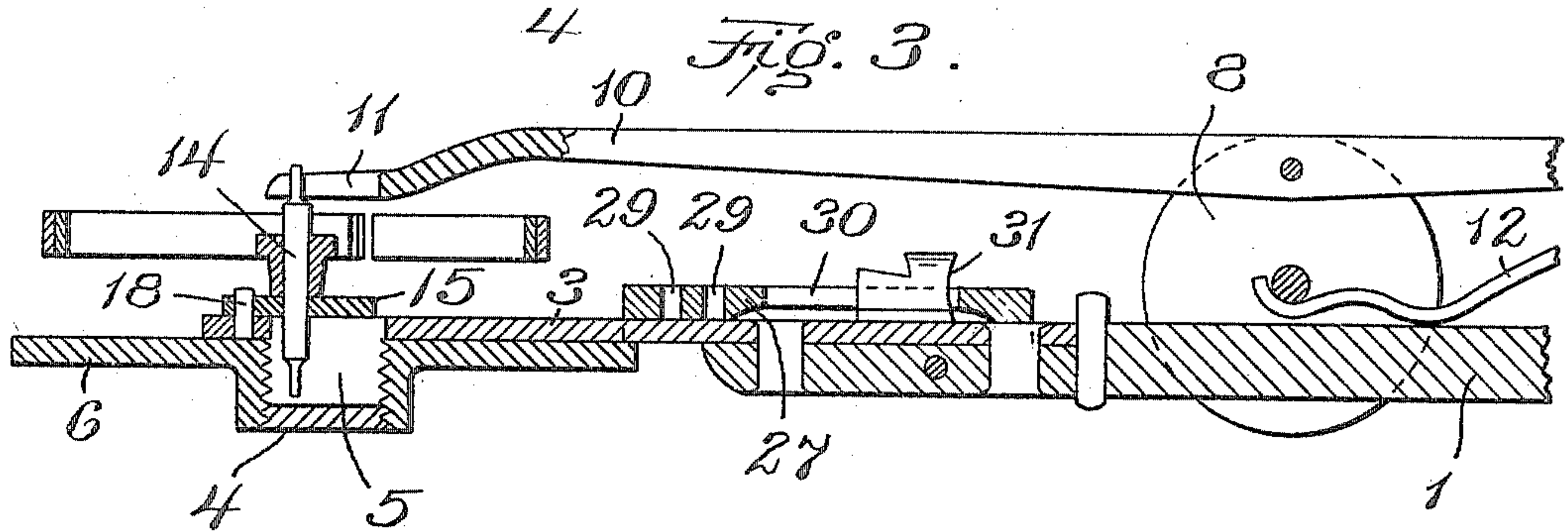
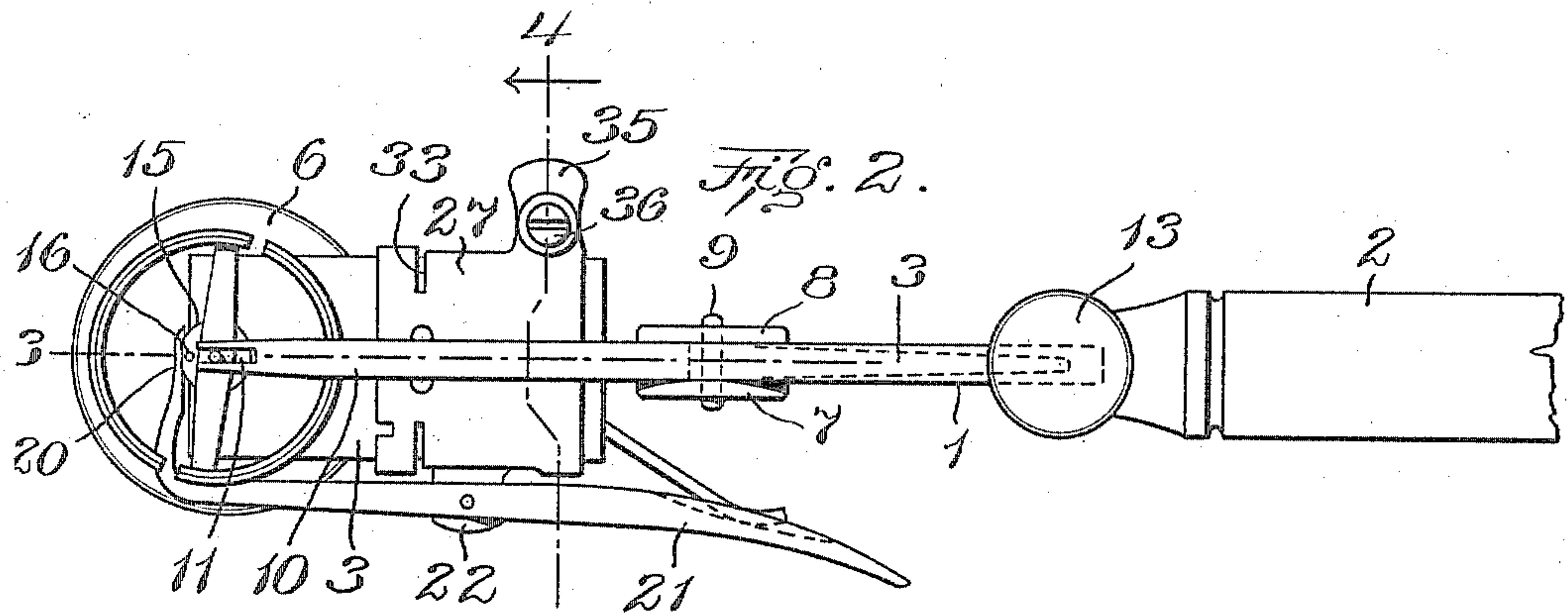
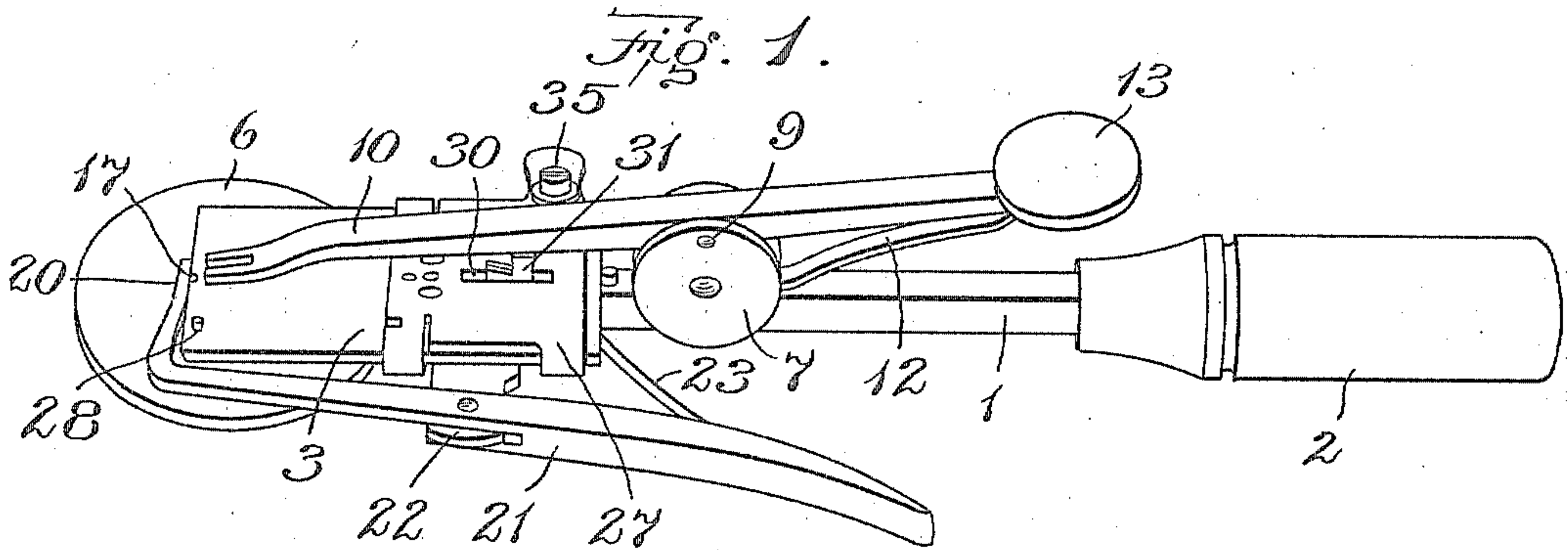
PATENTED MAY 22, 1906.

O. O. AUNE.

JEWEL PIN AND PALLET STONE SETTER.

APPLICATION FILED JUNE 3, 1905.

2 SHEETS—SHEET 1.



Witnesses.  
Walter P. Abell.  
Laurence E. Kennedy.

Inventor,  
O. O. Aune  
by Wright  
Baron, Humphrey & May  
His Attys

No. 821,396.

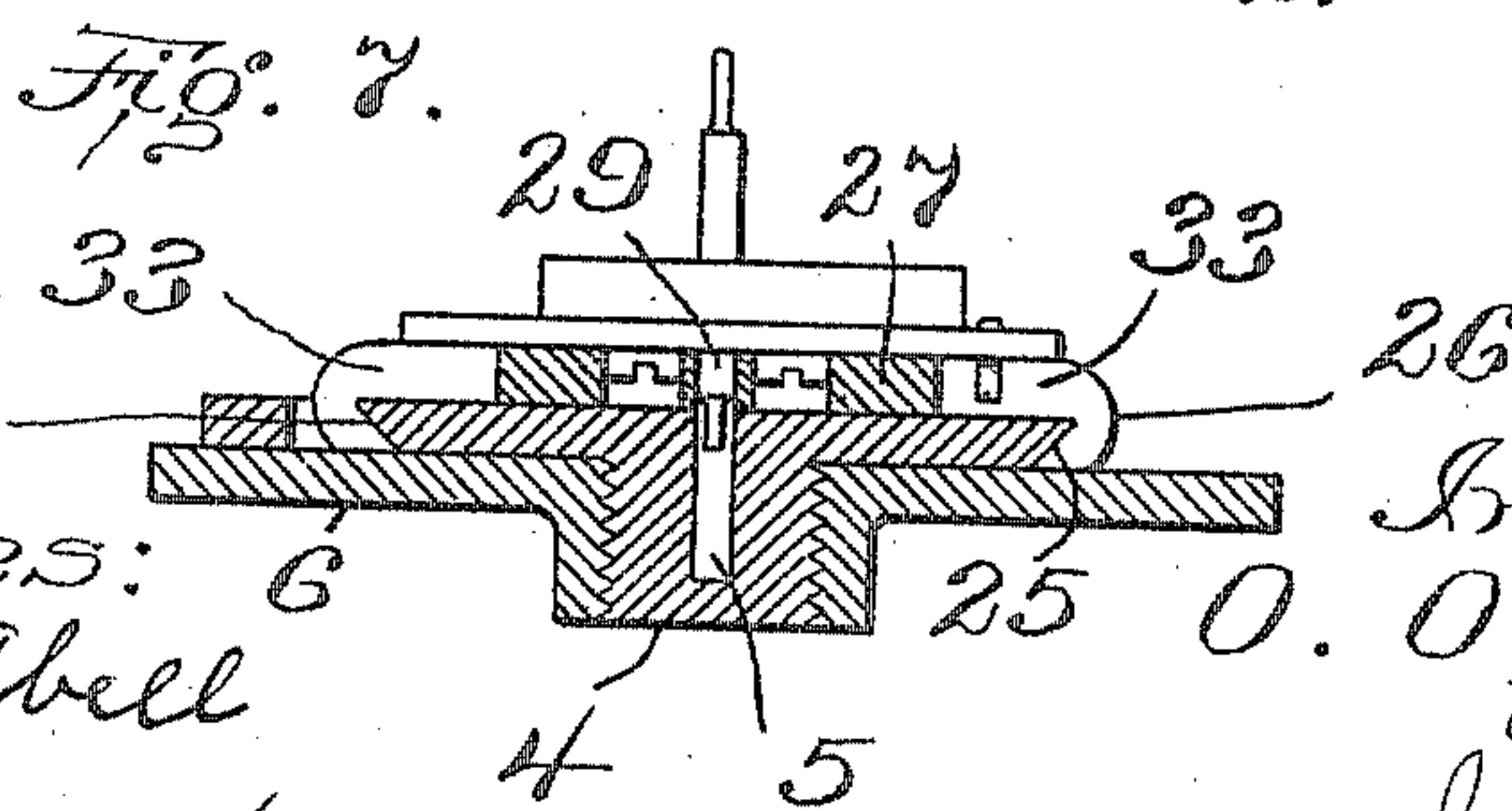
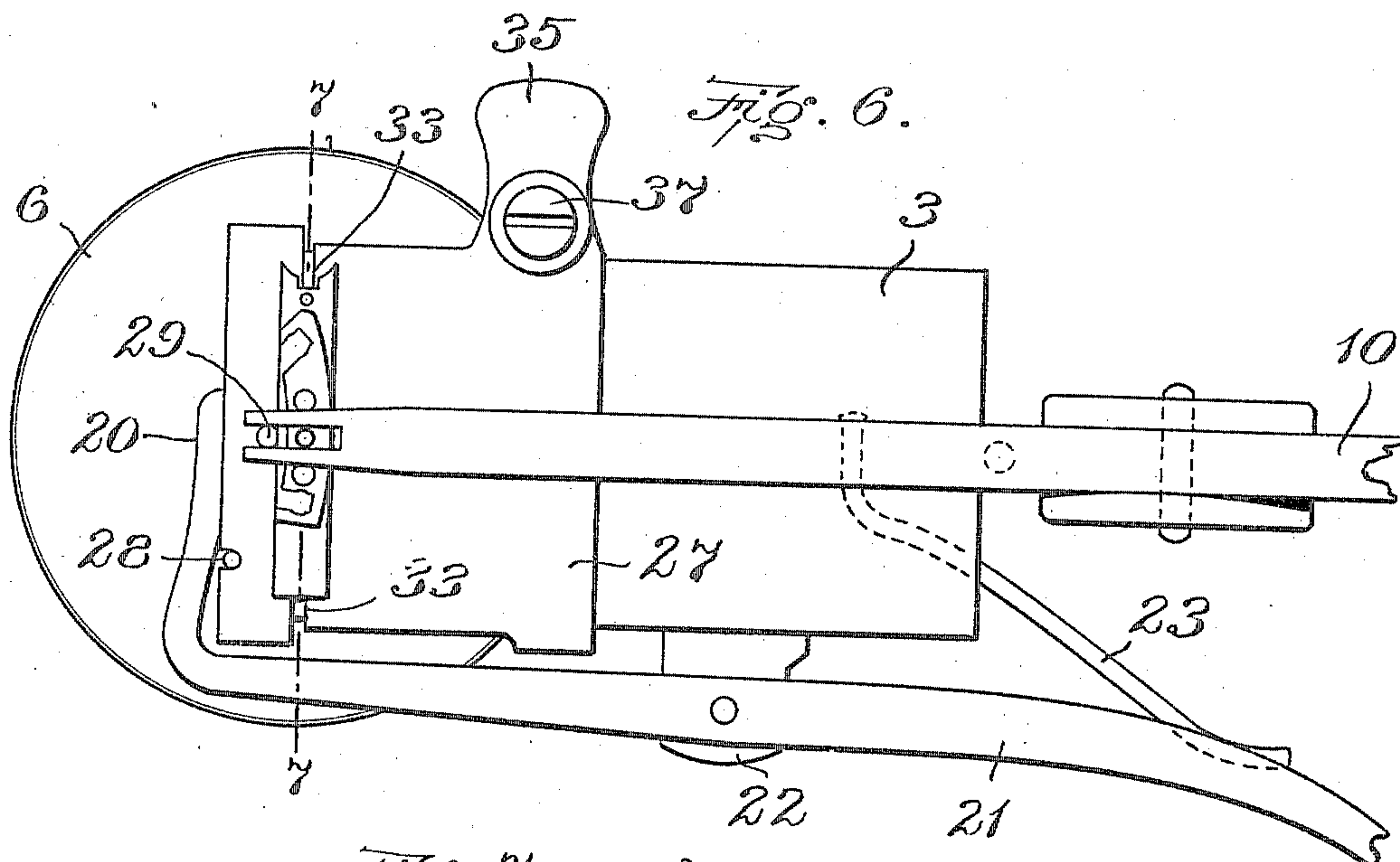
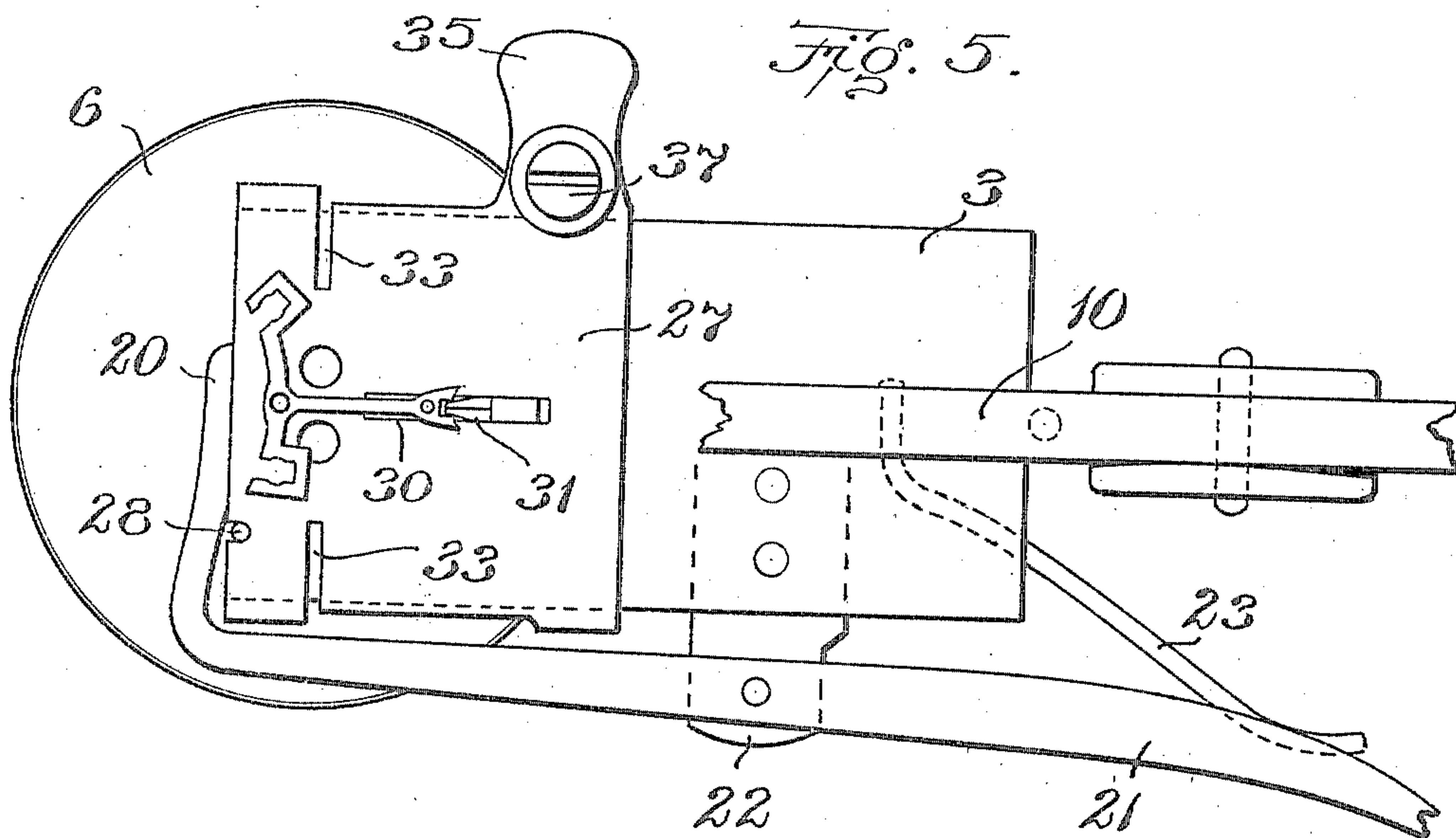
PATENTED MAY 22, 1906.

O. O. AUNE.

JEWEL PIN AND PALLET STONE SETTER.

APPLICATION FILED JUNE 3, 1905.

2 SHEETS—SHEET 2.



Witnesses: 6  
Walter P. Abell  
Laurence E. Kennedy.

Inverton,  
O. Hume,  
by Wright, Brown,  
Dunlop & May,  
his Attys.



# UNITED STATES PATENT OFFICE.

OLE O. AUNE, OF WALTHAM, MASSACHUSETTS.

## JEWEL-PIN AND PALLET-STONE SETTER.

No. 821,396.

Specification of Letters Patent.

Patented May 22, 1906.

Application filed June 3, 1905. Serial No. 263,546.

*To all whom it may concern:*

Be it known that I, OLE O. AUNE, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Jewel-Pin and Pallet-Stone Setters, of which the following is a specification.

The object of this invention is to provide a tool by which jewel-pins may be set and adjusted in the roller-tables of balance-wheels without injury to the balances or hair-springs by reason of the heat used to soften the shellac by which the jewel-pins are secured, and also to provide the same tool with means by which a pallet of a watch-escapement may be firmly held while the stones thereof are set and adjusted.

In setting and adjusting pallet-stones and jewel-pins shellac is used for securing the jewels in place, and it is necessary that the shellac should be softened by heat in order to permit of adjustment. It is customary to apply the heat by means of a flame from an alcohol-lamp, and hitherto with the methods in use it has been extremely difficult to apply the heat of the flame sufficiently to soften the shellac without burning the hair-spring and parts of the balance-wheel or distorting or otherwise injuring the pallet or chipping and cracking the jewels, and in consequence many of these parts of watch or clock movements have been spoiled.

By the present invention I have produced an improved tool capable of holding a pallet in such position that its jewels may be readily set and adjusted and having also means for holding a jewel-pin and a balance-wheel in position whereby they may be properly assembled and provided with a heat-conducting shield capable of permitting enough heat to be applied to the roller-table of the balance or the pallet to soften the shellac without permitting direct contact with the flame, thus preventing excessive heating and injury of any of the parts.

Of the accompanying drawings, Figure 1 represents a perspective view of the device embodying my invention. Fig. 2 represents a plan view of the same. Fig. 3 represents a longitudinal vertical section on line 3 3 of Fig. 2 on an enlarged scale. Fig. 4 represents a cross-section of the tool on line 4 4 of Fig. 2. Figs. 5 and 6 represent two plan views of the tool, showing the pallet-holding device in operative position, illustrating the manner of holding two pallets of different kinds. Fig. 7

represents a cross-section on line 7 7 of Fig. 6.

The same reference characters indicate the same parts in all the figures.

1 represents the shank forming a part of the body portion of the improved tool constituting my invention, to the end of which is attached a handle 2 and the forward part of which supports a plate 3, having considerable lateral extent and a flat upper surface. Near its forward end this plate is provided with an orifice in which is secured a screw projection 4, the upper end of which is flush with the upper surface of the plate and which has a slot 5 extending downward from its upper end and directed longitudinally of the tool. Upon the downwardly-projecting portion of the screw is threaded so as to be detachable and also adjustable thereon a plate 6 of as great lateral extent as the largest balance-wheel to be accommodated by the tool, the edges of which extend beyond the sides and end of plate 3 approximately equal distances in all directions from the center of the screw.

Plates 7 8 are secured to the shank 1 of the tool, and pivoted between them at 9 is a gripper or clamp 10, which extends longitudinally of the tool and has its forward end adjacent the slot 5 of the screw, this end having also a slot 11, which is parallel to the slot 5, and forming a fork which is adapted to bear upon the plate on both sides of the slot 5, being impelled thereto by a spring 12. By separating the forward end of lever 10 from plate 3 by pressure of the thumb of the operator on a finger-plate 13, secured to the gripper, a balance-wheel may be placed between the plate and gripper, as shown in Figs. 2 and 3, with one end of its staff 14 extending into the slot 5 and its other end projecting through slot 11. In placing a balance between the grippers for setting a jewel-pin the roller-table 15 is placed so as to rest upon the plate 3, which constitutes the relatively stationary jaw of the gripping pair with its side having the hole 16, in which the jewel-pin is set, projecting over the forward end of the plate 3. Slots 5 and 11 are long enough and so located as to permit a balance-wheel of any size ordinarily used to be held by the tool in proper position for the attachment of a jewel-pin.

At the forward end of the plate and in line with the slot or elongated recess 5 is a notch 17, in which a jewel-pin 18 may be placed and wherein it is held by the jaw 20 of a gripper 21, pivoted to a wing 22, extending from the body portion of the tool and held by a spring



23 normally in contact with the end of the plate. The notch 17 is of less depth than the diameter of a jewel-pin and has inclined sides, being preferably V-shaped to engage at two points the cylindrical part of the jewel-pin, which is placed in the notch with its flat side outward and is then engaged by the flat surface of the jaw 20, which is perpendicular to the slot 5 when in position to engage the jewel-pin. The jaw then in pressing upon the flat surface of the pin automatically adjusts it so that it will face exactly away from the center of a balance, which is subsequently placed between the plate 3 and gripper 10, and thus when the balance is so placed and moved toward the end of the tool until the hole 16 in the roller-table is over the jewel-pin and is then moved toward the plate the jewel-pin is accurately positioned in the roller-table with its flat face exactly tangential to the path of movement in which it is designed to travel.

The shellac, which is placed upon the roller-table and in the hole 16, is softened by passing the tool over the flame of an alcohol-lamp before the jewel-pin is placed in the roller-table and is afterward softened to permit whatever adjustment of the pin may be necessary, and when being passed through the flame one of the functions of the plate 6 is utilized. This plate then acts as a baffle, deflecting the flame of the lamp from contact with the hair-spring or any part of the balance-wheel or the jewel-pin, but at the same time conducting enough heat to the parts to cause the required softening of the shellac. Another function which the plate 6 can perform is that of an adjusting device for placing the jewel-pin in proper longitudinal position in the roller-table. When the jewel-pin is held in the notch 17, one end rests against plate 6, and by unscrewing or screwing up the plate to vary its distance from the plate 3 the amount by which the jewel-pin projects above the surface of said plate 3 on which the roller-table rests may be varied, and consequently the jewel-pin may be accurately adjusted to project by the proper amount from the roller-table. The plate 3 also is shaped to constitute a guideway, as it is formed with undercut sloping sides 25, which are engaged by overlapping tabs 26 of a slide 27, which is supported upon the upper surface of the plate 3 and is movable on the same toward and away from the forward end thereof, its forward movement being limited by a stop 28 on the end of the plate which is engaged by the slide. This slide has sockets 29, adapted to receive the staff of a pallet resting upon the slide and in line with the sockets.

Extending longitudinally of the slide is a slot 30, into which the guard-pin of the pallet-fork may extend. In this slot is mounted a clamp 31, made of a piece of

spring metal bent double and movable in the slot, being held in any adjusted position by the frictional contact due to its resiliency with the sides of the slot. The clamp also has flanges 32, projecting laterally into channels on the inner surface of the slide beside the slot. When a pallet is placed upon the slide with its staff extending into one of the sockets 29 and its forked arm extending rearwardly, the clamp 31 is moved up into the fork to hold the same against lateral displacement, and the pallet is further held by the gripping-clamp 10, which rests upon it, the slide being moved to the end of the tool for this purpose. The slide also has slots 33 in its opposite sides in line with each other and also with one of the sockets 29, these slots being perpendicular to the slot 31 and adapted to receive the guard-pin of a pallet having the form of that shown in Fig. 6, in which the fork is in line with the jewel-bearing arms of the pallet instead of being on an arm perpendicular thereto. It will be seen that the arrangement of sockets and slots permits pallets of all kinds to be used, while those of all sizes may also be accommodated. When the slide is moved forward, a pallet may be grasped between it and the clamping-arm 10, the balance-receiving slot 5 being then covered up, and when the jewel-pin is to be set in a balance the slide is moved rearward to uncover the plate 3 and permit the balance to be applied. The plate 6 serves, in connection with both holding means, to deflect the flame of the lamp.

Slide 27 has a handle 35, by which it may be moved, and beneath the handle is a piece 36, secured to the slide by a screw 37, which piece has a beveled side to fit one of the beveled sides 25 of the body portion and may be clamped against the same like a gib to take up wear and also to vary the amount of friction between the slide and its guide.

I claim—

1. A tool comprising grippers for holding a jewel-pin, means for holding a balance in assembling relation to the pin, and a heat-conducting shield in close proximity thereto adapted to receive heat from a flame and to prevent the flame coming into contact with the jewel or any part of the balance.

2. A tool comprising a single body portion having a recess adapted to receive a jewel-pin and a recess for receiving a balance-staff, a gripper arranged to hold the jewel-pin against the body portion in the recess provided therefor, a second gripper arranged to engage the staff of a balance and clamp the latter to the body portion, and a shield mounted on the body portion adjacent the recesses and grippers.

3. A tool comprising a body portion having a recess adapted to receive a jewel-pin and a recess for receiving a balance-staff, grippers coacting with said body portion ar-



ranged to hold the jewel-pin and the staff of a balance in the respective recesses, the recesses and grippers being arranged in proper relation for setting the jewel-pin in the roller-table of the balance, and an adjustable plate mounted on the body portion in close proximity to the recesses and grippers.

4. A tool comprising a body portion having a recess in its end, a pivoted gripper having an arm movable toward and from the body portion adapted to retain a jewel-pin in such recess prior to its attachment to a balance, the body portion having also an elongated recess extending toward and away from the first recess, and a second gripper having a recess parallel to said elongated recess, the parallel recesses being adapted to receive the ends of a balance-staff and to permit adjustment of the balance toward and away from a jewel-pin held by the first-named gripper.

5. A tool comprising a body portion having an elongated recess for receiving a balance-staff, a gripper constructed to move laterally toward and from the body portion and to cooperate therewith in holding a balance and provided with a corresponding recess to receive the other end of the balance-staff and permit adjustment of the balance laterally with respect to its axis, the body portion having a notch in its end in line with the elongated recess, and a pivoted gripping-jaw adjacent the notch arranged to hold a jewel-pin in position to be attached to the roller-table of the balance prior to its attachment thereto.

6. A tool comprising a body portion having an elongated recess for receiving a balance-staff, a gripper constructed to cooperate with the body portion in holding a balance and provided with a corresponding recess to receive the other end of the balance-staff and permit adjustment thereof, the body portion having a notch in line with the elongated recess, a gripping-jaw adjacent the notch for holding a jewel-pin in position to be attached to the roller-table of the balance, and an adjustable plate mounted on the body portion in position to adjust the jewel-pin longitudinally in the notch.

7. A tool comprising a body portion having an elongated recess for receiving a balance-staff, a gripper constructed to cooperate with the body portion in holding a balance and provided with a corresponding recess to receive the other end of the balance-staff and permit adjustment thereof, the body portion having in its end a notch formed with inclined sides in line with the elongated recess, a gripping-jaw provided with a flat surface pivoted to the body portion adjacent the notch for holding a jewel-pin with its flat side away from the balance-staff in position to be attached to the roller-table of the balance, a threaded projection

extending from the body portion on the side opposite to the first said gripper, and a shield having a flat surface in adjustable threaded engagement with said projection.

8. A tool comprising a body portion, a screw attached to the body portion flush with the surface thereof and provided with a slot, a baffle-plate threaded on said screw and projecting beyond the body portion, a gripper movably mounted on the body portion adapted to clamp a balance thereto and having a notch parallel to the slot, a V-shaped notch in a side of the body portion in line with the slot, and a gripper pivoted to the body portion having a jaw adjacent the notched side thereof.

9. A tool comprising jaws adapted to hold a pallet and having recesses for receiving the staff of the pallet, and a clamp arranged to enter and engage the notch of a forked pallet.

10. A tool comprising jaws constructed for holding a pallet, and a holding device mounted for engagement with the fork of the pallet between the arms thereof.

11. A tool comprising jaws constructed for holding a pallet, and a clamp mounted movably on one of the jaws for entering the notch in the fork of the pallet.

12. A tool comprising a jaw having a recess for receiving the staff of a pallet and slots at right angles to each other radial to said recess, and a cooperating pallet-holding jaw.

13. A tool comprising a jaw having a recess for receiving the staff of a pallet and slots at right angles to each other radial to said recess, a clamp movably mounted in one of said slots, and a cooperating pallet-holding jaw.

14. A tool comprising jaws for holding a pallet, one of said jaws having a guideway, and a clamp formed and arranged to enter the notch of the pallet-fork mounted in the guideway in frictional engagement with the sides thereof.

15. A tool comprising jaws for holding a pallet, one of said jaws having a guideway, and a clamp consisting of a strip of resilient material mounted in the guideway and frictionally engaging by its resiliency the sides thereof.

16. A tool comprising a body portion formed in part as a guide and having provisions for holding a balance, a pallet-holder slidably engaged with the guide and having provisions for holding a pallet, and a gripper cooperating with either the body portion or the slide for grasping a balance or a pallet respectively.

17. A tool comprising a body portion formed in part as a guide and having provisions for holding a balance, a slide mounted on the guide and having provisions for holding a pallet, a gripper cooperating with either the body portion or the slide for grasping a



balance or a pallet respectively, and a baffle-plate mounted adjacent the end of the guide and adapted to be interposed between a flame and the balance or pallet.

5 18. A tool comprising a body portion formed in part as a guide and having provisions for holding a balance, a slide mounted on the guide embracing the sides thereof, a retaining member carried by the slide and  
10 adjustable to vary the friction between the slide and guide, provisions on the slide for holding a pallet, and a gripper for cooperating with the body portion and the slide for grasping a balance or a pallet.

15 19. A tool comprising a body portion having a guiding portion provided with a slot

near its end for receiving a balance-staff and a notch at its end for receiving a jewel-pin, grippers mounted on the body portion cooperating with the guide to hold a balance and 20 a jewel-pin respectively, a slide mounted on the guide having provisions for retaining a pallet and movable toward the end of the guide into operative relation with the balance-gripper to coact therewith in securely 25 holding a pallet.

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

OLE O. AUNE.

Witnesses:

A. C. RATIGAN,

H. L. ROBBINS.