

No. 844,696.

PATENTED FEB. 19, 1907.

V. SMOROWSKI.
MECHANICAL MOVEMENT.
APPLICATION FILED AUG. 3, 1906.

2 SHEETS—SHEET 1.

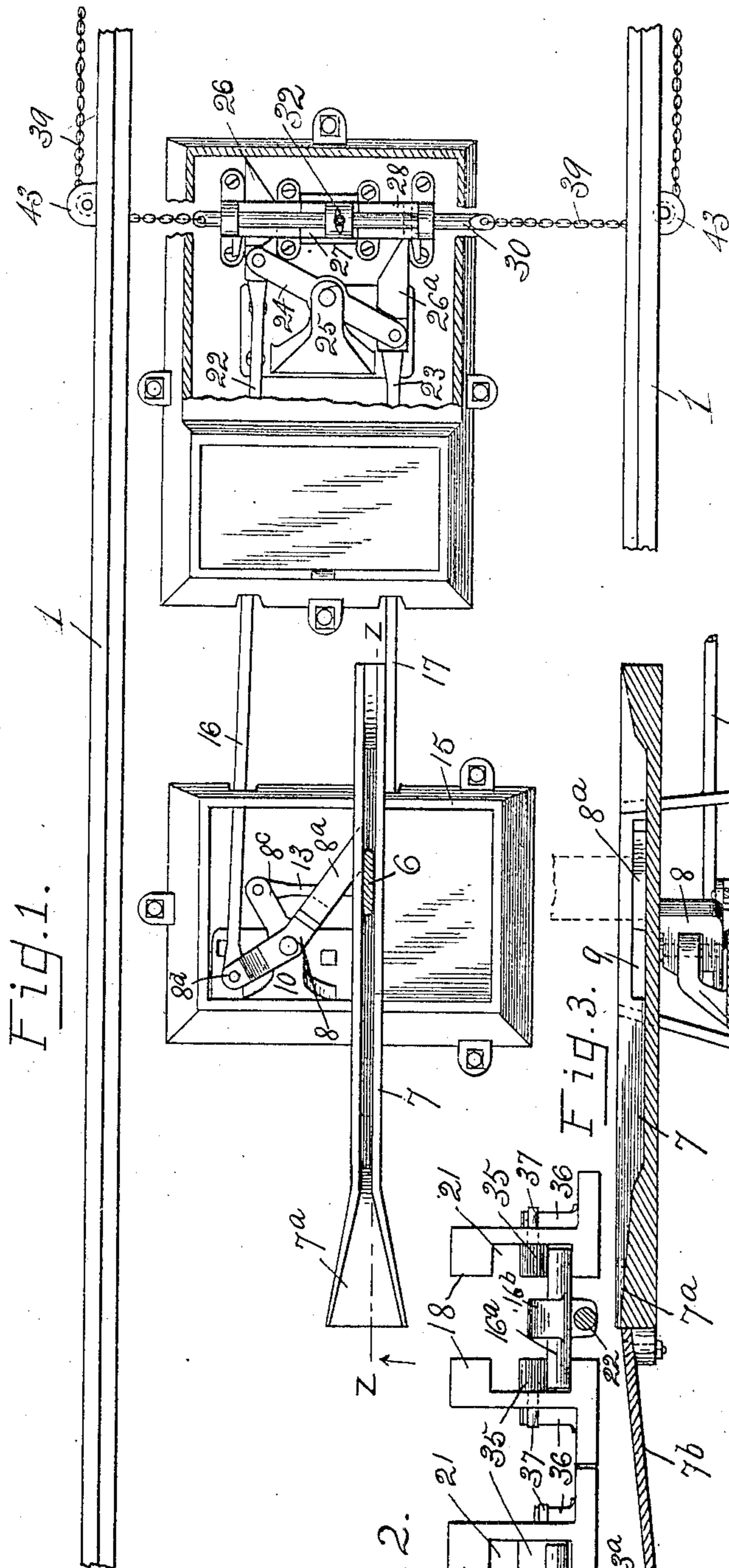


Fig. 1.

WITNESSES:

D. C. Walter
Hazel B. Kett

Fig. 2.

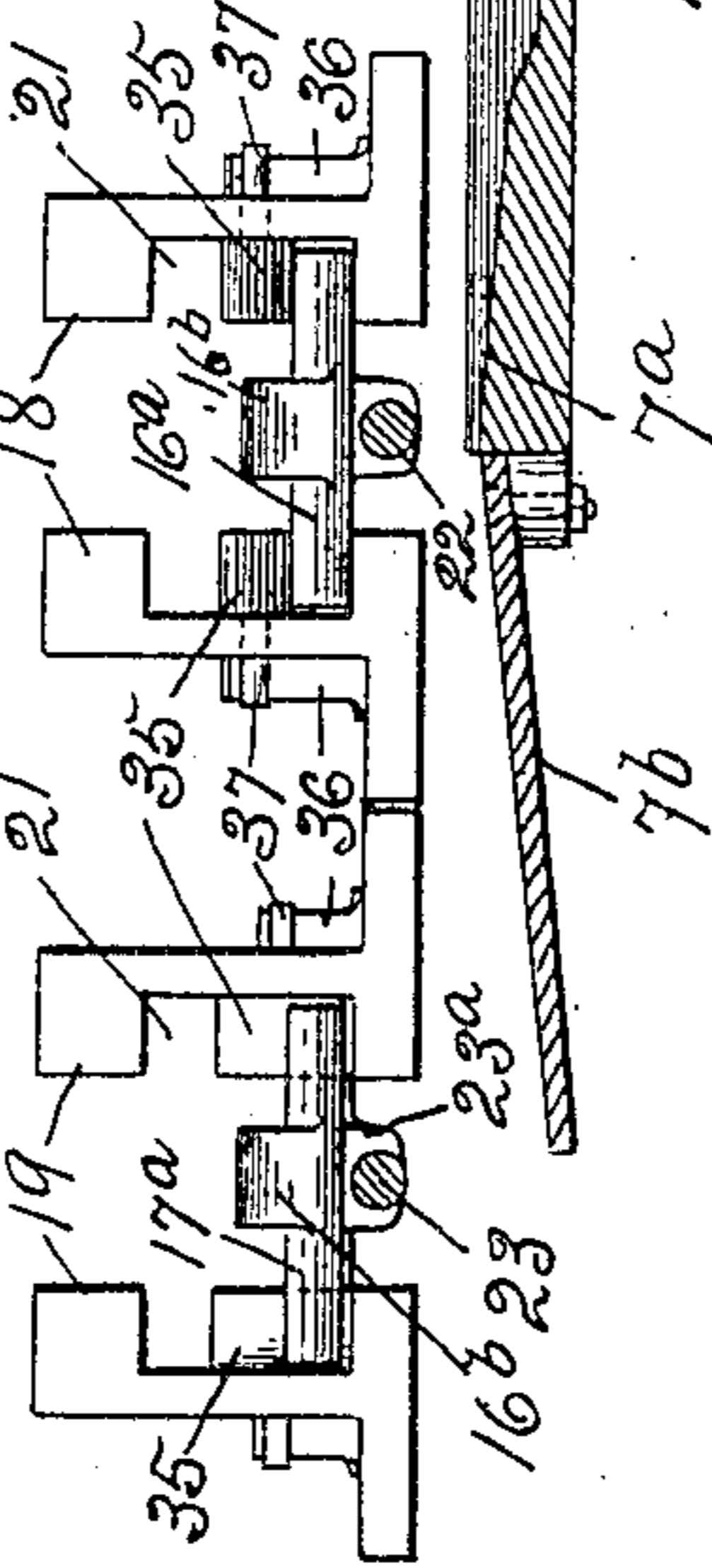


Fig. 3.

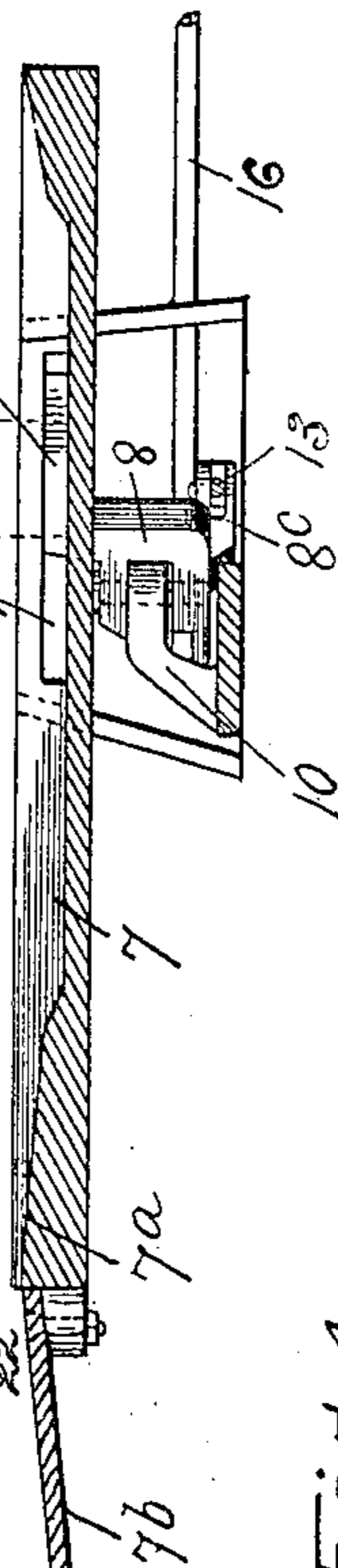
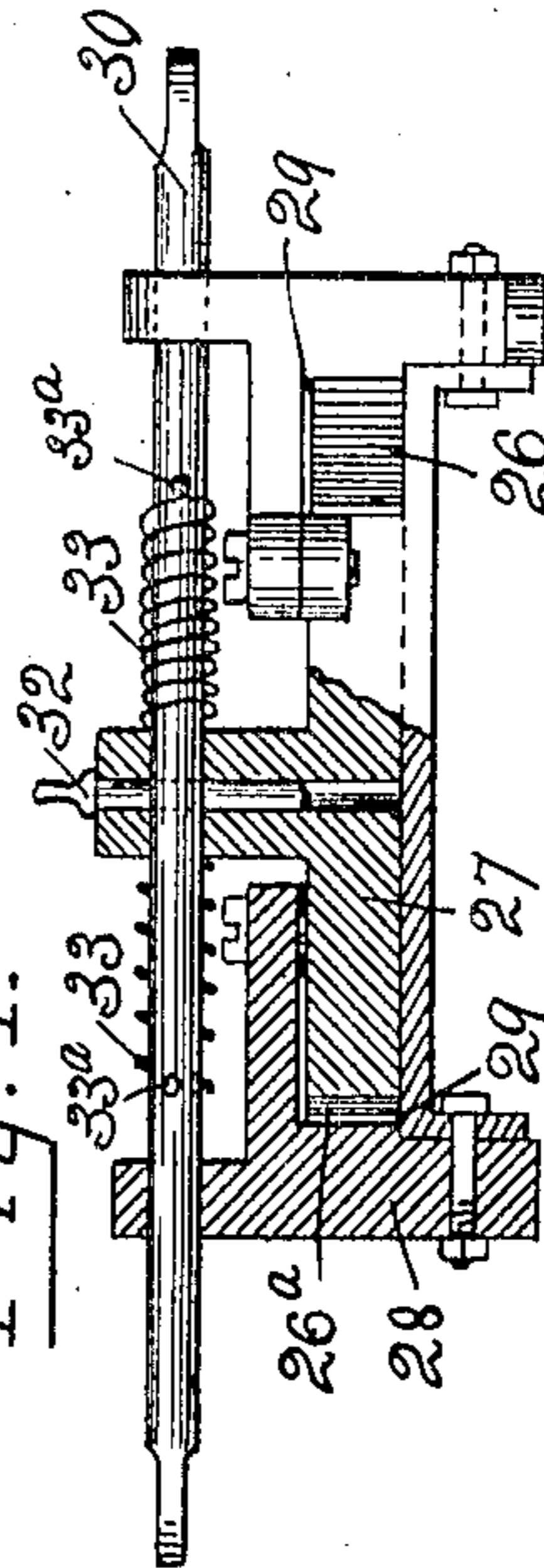


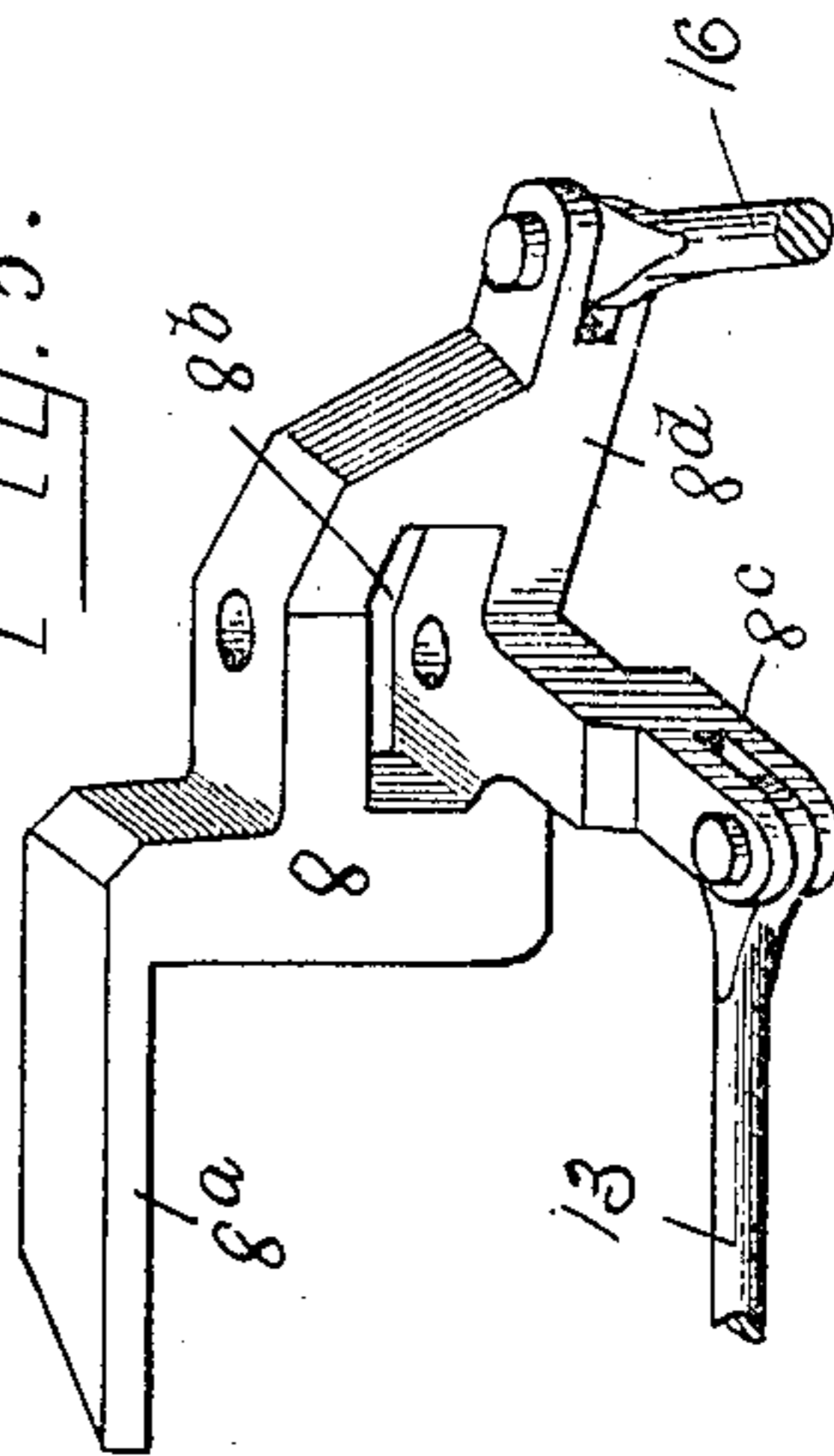
Fig. 4.



INVENTOR.

Valentine Smorowski,
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Fig. 5.

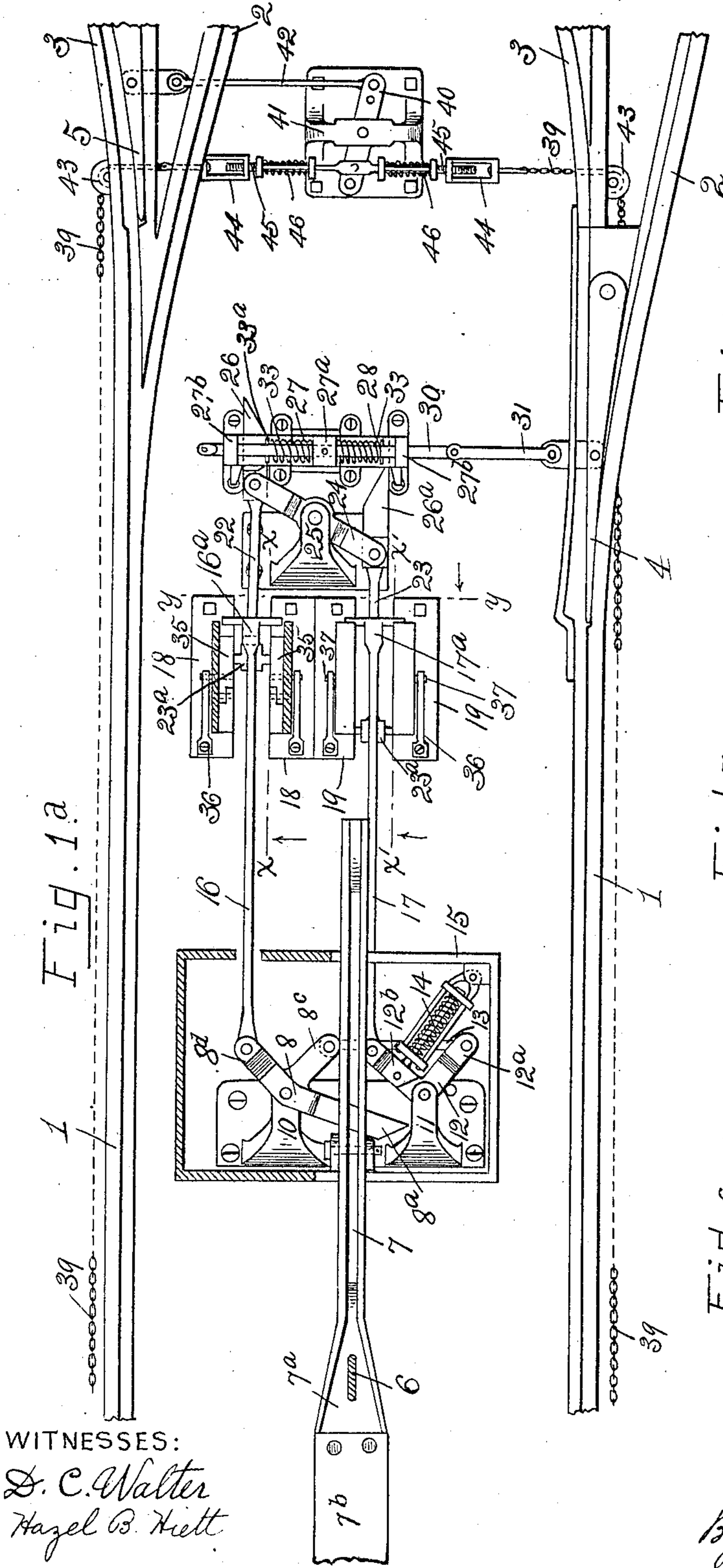


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2 SHEETS—SHEET 2.



WITNESSES:
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Fig. 8.

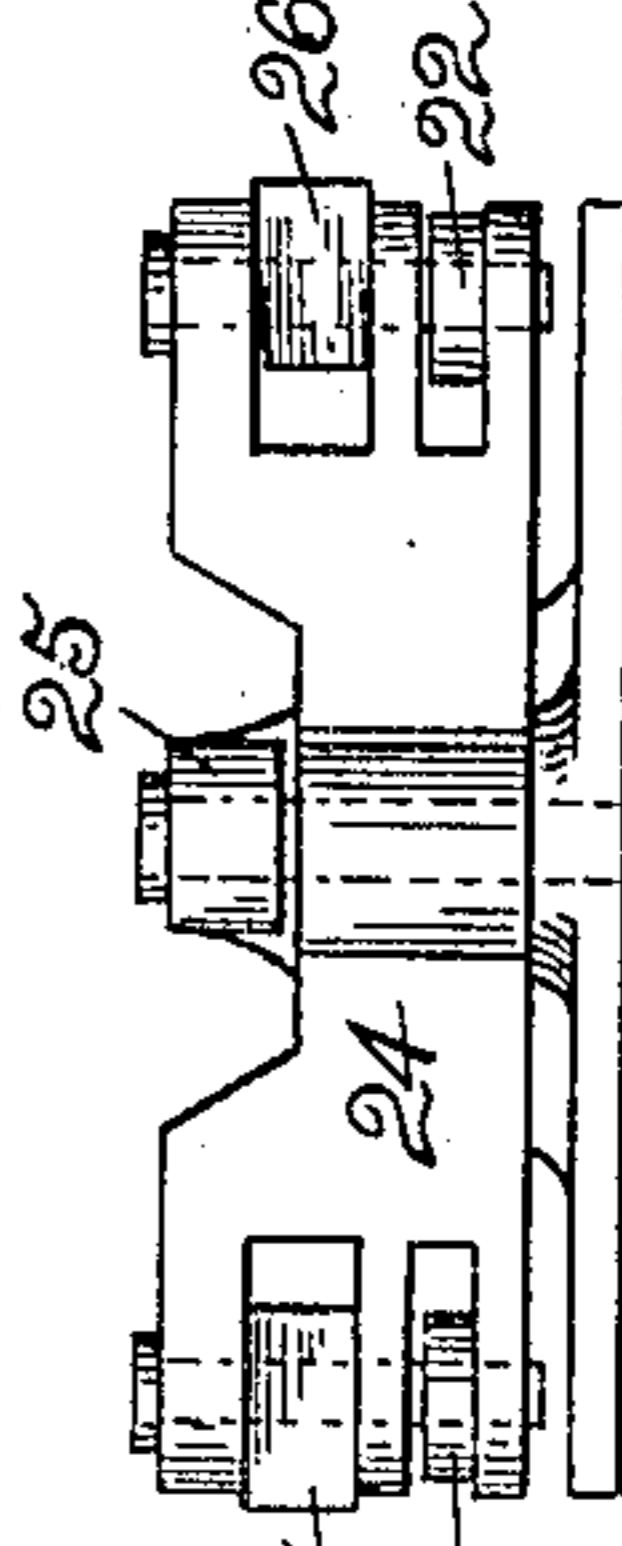


Fig. 7.

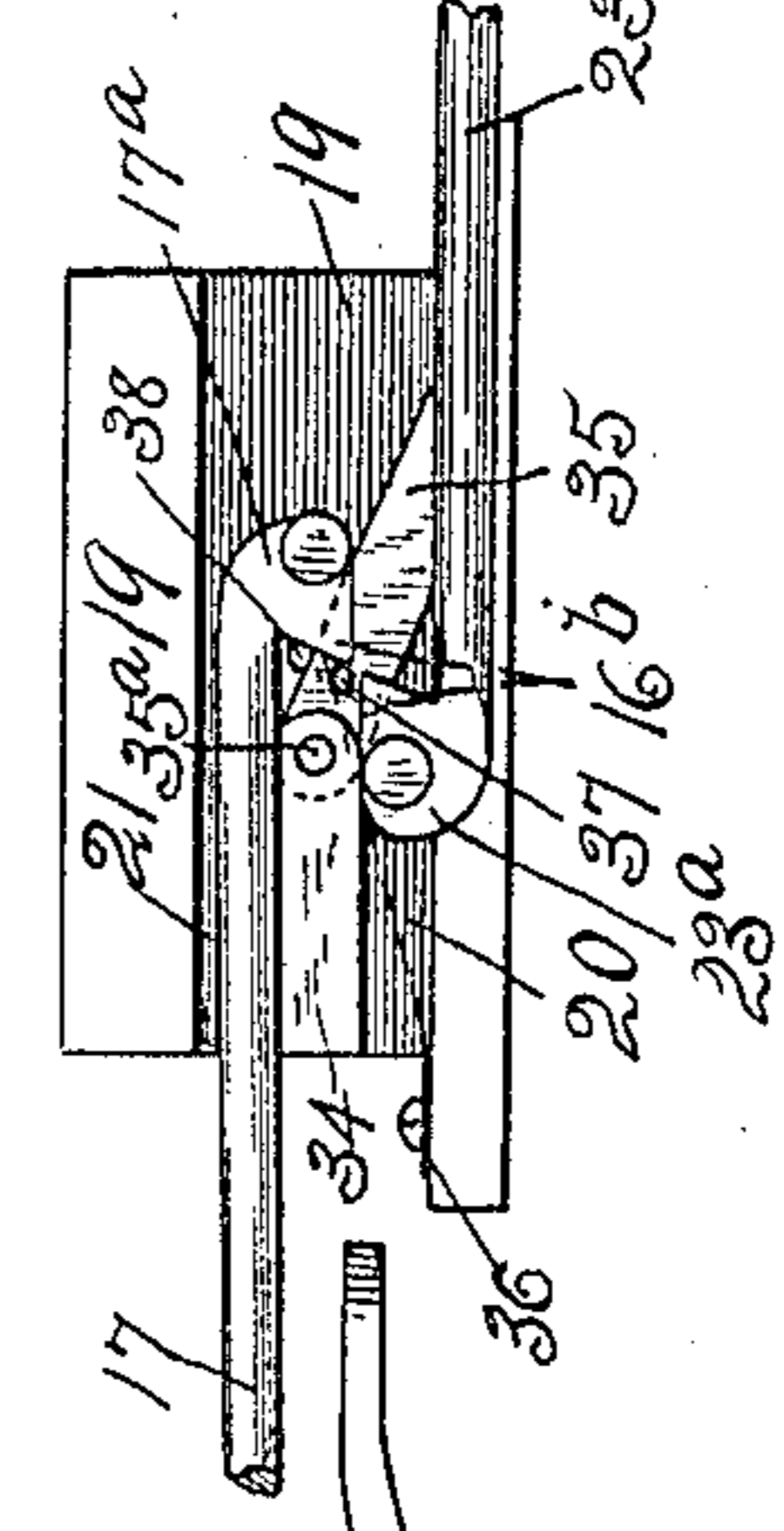
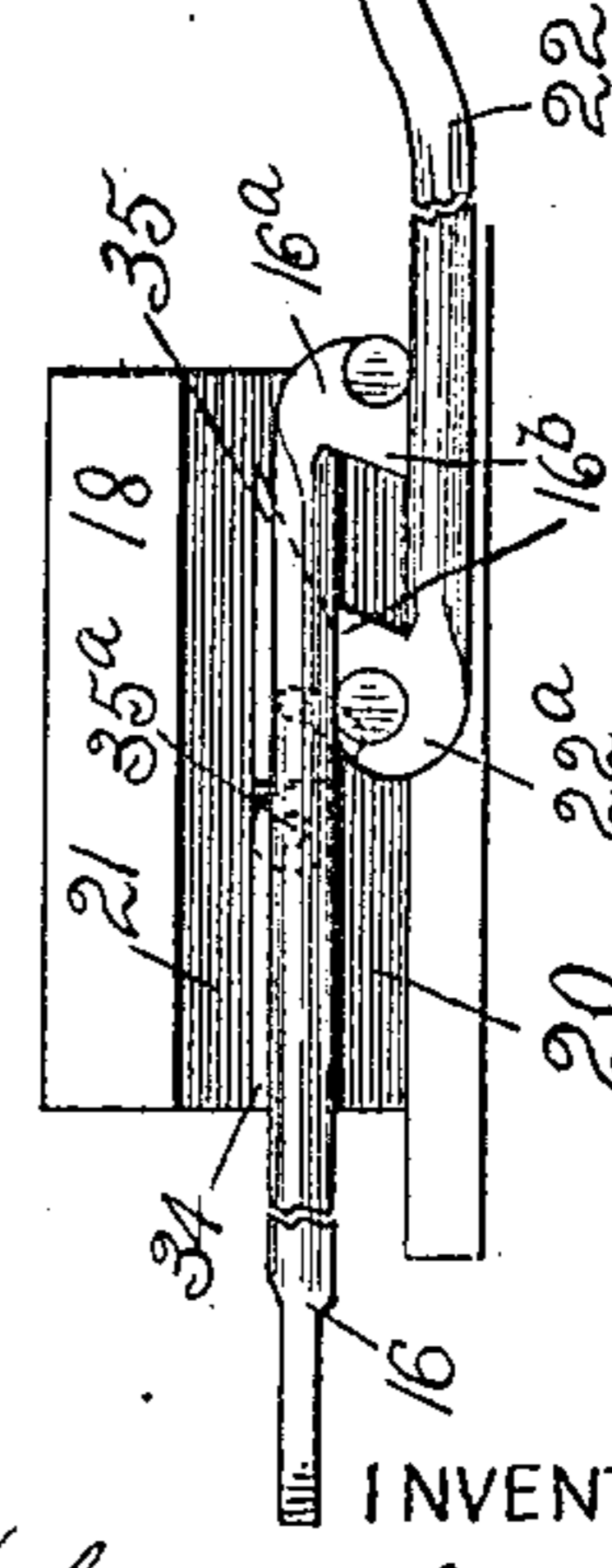


Fig. 6.



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UNITED STATES PATENT OFFICE.

VALENTINE SMOROWSKI, OF MONCLOVA, OHIO.

MECHANICAL MOVEMENT.

No. 844,696.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed August 3, 1906. Serial No. 329,053.

To all whom it may concern:

Be it known that I, VALENTINE SMOROWSKI, a citizen of the United States, and a resident of Monclova, in the county of Lucas and State of Ohio, have invented a certain new and useful Mechanical Movement; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to an improved mechanical movement particularly designed for use in connection with single or double railway-switches for throwing the frog or switch-points thereon, but may be used in any situation where it would perform its function in a proper manner.

The primary object of my invention is the provision of simple and efficient means which is operated from a moving car to effect a positive opening or closing of a switch which the car is approaching.

The operation, arrangement, and construction of the parts of a preferred embodiment of my invention is fully described in the following specification and illustrated in the accompanying drawings, in which—

Figures 1 and 1^a illustrate a plan view of a track, the latter figure being a continuation of the former, and the associated mechanism comprising the features of my invention for operating the frogs or switch-points of right and left switches, the incasing boxes of the operating parts being shown as wholly or partially removed from the associated parts. Fig. 2 is a transverse section taken on the line *yy* in Fig. 1^a. Fig. 3 is a longitudinal section on the line *zz* in Fig. 1. Fig. 4 is a front elevation of the transverse switch-rod and its associated carrying parts shown in Fig. 1^a, with the latter parts partially in section, and the rod fixed to its sliding block by a pin. Fig. 5 is a perspective view of the trip-lever and portions of its attached rods. Figs. 6 and 7 are longitudinal sections taken on the lines *xx* and *x'x'*, respectively, in Fig. 1^a, with the coöperating draw-bars in the latter figure shown as moved to a position in which they just escape contact with each other, and Fig. 8 is a front elevation of the oscillating wedge-block-carrying member with its wedges and operating-bars.

Referring to the drawings, 1 1 designate the rails of a main track having the right and left hand switches or sidings 2 and 3 leading therefrom, and provided with the frogs or switch-points 4 and 5, respectively.

It will be noted in the drawings, due to the proximity of the two switches, that I have positioned the mechanism for operating the first or right-hand switch 2 intermediate the operating mechanism and frog of the second switch 3; but I wish it understood that I do not desire to restrict myself to this disposition of the parts or to the use of the two operating mechanisms in conjunction with the same track, as each is entirely independent in its action from the other.

As each switch-operating mechanism is substantially the same, except as hereinafter noted, I will confine my detailed description to the mechanism operating the first frog or switch-point 4, which mechanism is shown in Fig. 1^a. The frog is primarily controlled from an approaching car by the lowering of a contact-piece 6 therefrom, which is guided into an alining trough or grooved way 7 in the bed of the track and therein has sliding contact with the trip-arm 8^a of the main operating-lever 8, which arm normally lies transversely of the path of movement of the contact-piece. This arm operates within slots 9 in the walls of the trough 7 and is moved from the position shown in Fig. 1^a to that shown in Fig. 1 by the contact-piece 6, passing thereby. The trough 7 is shown as provided with a flared mouth 7^a and inclined way 7^b to facilitate the finding of the trough by the contact-piece. The lever 8 is carried by a bracket 10, which projects within an opening 8^b therein, and is formed with the angled weight-arms 8^c and 8^d. Carried by a bracket 11 at one side of the lever 8 is a bell-crank lever 12, having the arms 12^a and 12^b, which are substantially equal in length to the arms 8^c and 8^d of the lever 8. The lever 12 is caused to move in unison with the lever 8, due to a rod 13 connecting the inner arm 8^c of the latter with the outer arm 12^a of the former, and these levers are normally retained in the position shown in Fig. 1^a by the tension member 14, which connects the arm 12^b of the lever 12 with the incasing-box 15, as shown. Connected at their rear ends to the arms 8^d and 12^b of said levers are the draft-rods 16 and 17, respectively, which have their forward ends formed with cross-heads 16^a and 17^a for operating, as herein-

after described, within the guide-blocks 18 and 19, respectively, which blocks each have the double superimposed ways 20 and 21, as shown in Figs. 6 and 7. Also operating in the guide-blocks 18 and 19, with their cross-heads 22^a and 23^a reciprocating in the lower way 20 thereof, are the forward draft-rods 22 and 23, respectively, which have their forward ends connected to opposite ends of the centrally-pivoted horizontal oscillatory member 24, which is carried by the bracket 25 in advance of the guide-blocks 18 and 19. The contiguous ends of the draft-rods 16 22 and 17 23 are formed with cooperating hooks 16^b for the purpose hereinafter described. At the ends of the member 24 are also pivotally carried the two forwardly-projecting oppositely-beveled wedge-blocks 26 and 26^a, which are adapted, when the member 24 is oscillated, to have their wedge surfaces alternately coact with the opposite ends of the slide-block 27, whereby to drive it first in one direction and then the other. This slide-block is carried by a transversely-disposed trough member 28, which is provided adjacent its ends with transverse openings 29, through which the wedges 26 26^a operate. Formed centrally on the upper surface of the slide 27 is a boss 27^a, which projects through a suitable opening in the top of the trough member and has an opening extending longitudinally of the slide through which the switch-rod 30 extends. This rod has its ends reciprocally supported by the apertured ears 27^b, rising from the ends of the trough, or in any other suitable manner, and has one end connected to the associated frog or switch-point 4 by a link or connecting-rod 31. Either a positive or yielding reciprocatory movement may be communicated to the rod 30 from the slide 27 for the purpose of throwing the connected frog, due to the inserting of a pin 32 in alining apertures in the boss 27^a and rod 30, as shown in Figs. 1 and 4, or the positioning of coiled compression-springs 33 between the boss 27 and fixed pins 33^a on the rod 30, as shown in Figs. 1^a and 4, thus effecting in the latter case a yielding resistance between the slide and rod. To accomplish a positive reversing movement of the member 24 each time the lever 8 is tripped, for the purpose of throwing a connected switch-frog, I provide each guide-block 18 19 with the double superimposed grooved ways 20 and 21 and form the forward portion of each dividing rib 34 thereof with an oscillatory tongue 35, which is pivoted to the end of the fixed portion of the rib, as at 35^a, and forms a continuation thereof. These tongues each have their lower forward edges beveled and terminating in a point which when lowered rests upon the base of the lower way 20, thus forming inclined ribs for connecting the bases of the lower ways with those of the upper ways, as shown in Fig. 7. A flat spring

36 is secured to the base of each block 18 19 and has its free end coacting with a pin 37, which projects from the contiguous tongue through a slot 38 in the wall of the guide to normally maintain the associated tongue in depressed position.

With the parts in the position shown in Fig. 1^a a tripping of the lever 8 will cause each draft-rod 16 17 to have a like simultaneous rearward movement, due to the lever 8 connecting with the lever 12 in the manner shown. As the cross-head 16^a of the former rod moves rearwardly it passes under the associated tongues 35, which are held in horizontal position against the tension of the springs 36 by the cross-head 22^a of the draft-rod 22 being disposed thereunder, as shown in Fig. 6, and its hook 16^a is caused to engage the alining hook 16^b of the draft-rod 22 and draw said rod 22 to the rear with it, thus effecting an oscillation of the member 24, which withdraws the wedge-block 26 from the trough 28 and forces the opposite wedge-block 26^a therein and effects a consequent movement of the frog 4 to the left, so as to guide a car upon the siding or diverging line 3. As the draft-rod 17 moves rearwardly its hook is caused to escape that of the forwardly-moving draft-rod 23, due to the cross-head of the former riding upwardly on the inclined ways formed by the lowered tongues 35 and finishing its stroke in the way 21, as indicated in Fig. 7, while the cross-head 23^a finishes its stroke under said tongues, thus raising them to the elevated position shown in Fig. 6. After the contact-piece 6 has passed by the trip-arm 8^a of the lever 8, said lever and the lever 12 and their attached rods 16 17 are actuated by the tension member 14 to return to their normal positions, so that the cross-heads of said rods lie in advance of the tongues 35 in the planes of movement of the cross-heads of the associated draft-rods 22 23. As the lever 8 is next tripped for the purpose of throwing the frog 4 to the right to open the straightway-track, the movement of the operative parts, with the exception of the levers 8 and 12, is just the reverse to that above described, as the cross-head of the rod 16 is now caused to ride up the inclined ways formed by the lower tongues 35 of the block 18, thus escaping contact of its hook 16^b with that of the rod 22, while the cross-head of the rod 17 travels under the raised tongues of the block 19 and its hook has contact with the hook of the rod 23, thus drawing the rod 23 rearwardly, which effects an oscillation of the member 24 and drives the wedge 26 again within the trough to force the slide-block 27 and its attached parts to the right. It is thus apparent that a successive tripping of the lever 8 effects an alternately hit and miss action of the hook 16^b of each draft-rod 16 17 with the cooperating hook of its associated rod 22 23,

so that first one wedge-block and then the other is driven into place within the trough member 28 to effect a desired movement of the switch-rod 30 and its connected frog or switch-point. It is also apparent that either wedge when in position rigidly locks the slide-block 27 against movement within its trough, and if the switch-rod 30 is locked to the slide by a pin 32, as shown in Fig. 4, also prevents a movement of the frog or switch-point relative to said slide. The preferable mode, however, is to permit the switch-rod to have a yielding movement relative to the slide, due to the action of the springs 33, so as to form a spring-frog, which enables the flange of a wheel passing over the frog in the direction toward which it is pointing to force it over to open the channel, which channel is afterward closed by the elasticity of the springs.

The mechanism employed for operating the frog 5 of the second switch is shown as being positioned at the rear of the mechanism operating the frog 4, and has the ends of its switch-rod 30 connected by chains 39 to one end of the lever 40, which is carried by a bracket 41 between the tracks adjacent the frog 5, and has its other end connected to such frog by the rod 42. The chains 39 pass through openings in the rails around suitable sheaves 43, as shown, and have their forward ends attached by turnbuckles 44 to the ends of a bar 45, which is pivoted at its central part to the lever 40. With this arrangement the switch-rod 30 is preferably fixed to its slide-block 27 by a pin 32 and the yielding tendency given to the frog by positioning coiled springs 46 on the bar 45.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to one skilled in the art; nor do I desire to be restricted to the use of the mechanism shown and described in conjunction with a switch, as it is obvious that it can be used in numerous connections in which it is desired to communicate a reciprocatory or oscillatory movement to an object.

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

1. In combination, a movable element, a reciprocatory block having connection with the element, an oscillatory member carrying wedges for alternate engagement with opposite ends of the block, and mechanism for imparting an intermittent oscillatory movement to said member, substantially as described.

2. In combination, a movable element, an oscillatory member, wedges carried by said member for alternate engagement with opposite ends of said element to effect a reciprocation thereof, hooked members in connec-

tion with opposite ends of the oscillatory member, reciprocatory rods for engagement with said hooked members, and means for effecting an alternate hit-and-miss action of the reciprocatory rods relative to the hooked members whereby an intermittent oscillation is imparted to the oscillatory member.

3. In combination, a reciprocatory element, two reciprocatory draft members capable of like movement in unison, oscillatory means movable by said two draft members for effecting opposite movements to the reciprocatory element, and means for causing first one and then the other of said draft members when reciprocated to successively engage and move said means whereby to effect opposite movements to the element.

4. In combination, a reciprocatory element, a sliding block in yielding engagement therewith, two reciprocatory draft members having like simultaneous movements, means movable by a reciprocation of said draft members to effect a reciprocation of the sliding block, and means for causing the draft members to have an alternate hit-and-miss engagement with the first means to effect successive reverse movements thereof.

5. In combination, an element capable of reciprocal movement, a reciprocal wedge member for coacting with each end of said element to impart movement thereto, a draft member associated with each wedge, said two draft members being movable together in like directions, and means for causing first one and then the other of the draft members on alternate reciprocations thereof to cooperate with its associated wedge member to effect a movement thereof.

6. In combination, a reciprocal element, wedge members associated therewith for effecting a reciprocation thereof, draft members movable to effect a movement of the wedge members, means for effecting a like simultaneous movement to the draft members, and means for cooperating with the draft members to cause them when operated to alternately coact with the wedge members to successively reverse their positions relative to the reciprocatory element.

7. In combination, a reciprocal element, an oscillatory member carrying wedges for cooperating with said element to effect opposite movements thereof and having trailer-arms pivotally connected to its ends, draft-rods associated with the trailer-arms, means for reciprocating the draft-rods in unison, and means for causing the draft-rods when operated to have an alternate hit-and-miss coaction with the trailer-arms whereby to impart an oscillatory movement to the oscillatory member.

8. In a mechanical movement, an element capable of reciprocal movement, a pair of wedge members movable to effect a reciprocation of said element, and each having a

trailer-arm, a draft-rod cooperating with each trailer-arm, means for imparting a like simultaneous reciprocal movement to the draft-rods, and means for causing each draft-rod to alternately coact with its associated trailer-rod at each second movement in the same direction of the draft-rods.

9. In a mechanical movement, a movable element, a plurality of members movable to coact with and effect a reciprocal movement of said element, a draft-rod associated with each member, means for imparting a like simultaneous movement to the draft-rods, and means for causing each draft-rod to cooperate with and impart movement to its associated member alternately with the cooperation of the other draft-rod with its associated member.

10. In a mechanical movement, a reciprocal element, a pair of draft members operating at an angle to the line of movement of the element, means for operating the draft members in unison, and mechanism intermediate the reciprocal element and draft members cooperating with each and with which the draft members when reciprocated have alternate successive engagement to communicate a reciprocal movement to the element.

11. In a mechanical movement, a reciprocal element, a pair of draft members movable in unison, means intermediate the element and draft members movable to effect a reciprocation of the element, and means for causing the draft members to have successive alternate engagement with said intermediate means, whereby to reverse the movement of said intermediate means at each successive draft movement of the draft members.

12. In a mechanical movement, a reciprocal element, a pair of draft members, means for reciprocating the draft members in unison, mechanism for cooperating with the element for imparting movement thereto and having a pair of trailer-arms, the said draft members and trailer-arms having cooperating parts, and means for guiding the cooperating parts of the draft members and trailer-arms whereby first one and then the other draft member coacts with a trailer-arm at successive movements of the draft members.

13. In a mechanical movement, a reciprocal element, means movable to effect a reciprocation of said element and having a pair of arms trailing therefrom, a pair of draft members capable of like reciprocal movement in unison and each having a portion adapted to coact with the associated trailer-arm to impart movement thereto, and guide means op-

erating to hold first one and then the other draft member out of engagement with its trailer-arm as the draft members are successively reciprocated whereby a reversing movement is communicated to the means cooperating with the element.

14. A mechanical movement comprising a movable element, means movable to effect a reciprocation of said element and having two rods trailing therefrom, a draft member cooperating with each rod to communicate movement to said means, mechanism for imparting like simultaneous movements to the draft members, and a guide associated with each cooperating rod and draft member, said guides each having double superimposed guideways therein the dividing ribs of which have pivoted parts which lower when the associated rod is in one position relative thereto, whereby to cause the draft member to move to the second way and escape contact with the rod, and which are raised when the rod is in another position relative thereto and permit the draft member to travel in the plane of movement of the rod and impart movement thereto, said two draft members operating to alternately engage and impart movement to the rods, substantially as described.

15. In combination, an element capable of reciprocatory movement, an oscillatory member carrying means for alternately coacting with said element when said member is oscillated whereby to impart a reciprocatory movement to the element, and mechanism having reciprocal parts, which, when reciprocated, alternately connect with said oscillatory member and effect a reversal of the positions of the means carried by said member relative to the element.

16. In combination, a movable element, an oscillatory member having parts, which, when the member is oscillated, alternately coact with the element to effect a movement thereof, mechanism having reciprocal parts, which, when reciprocated alternately connect with said member to effect an oscillation thereof, and means for normally maintaining the parts of said mechanism in one position when at rest.

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

VALENTINE SMOROWSKI.

Witnesses:

WILBER A. OWEN,
HAZEL B. HIETT.