

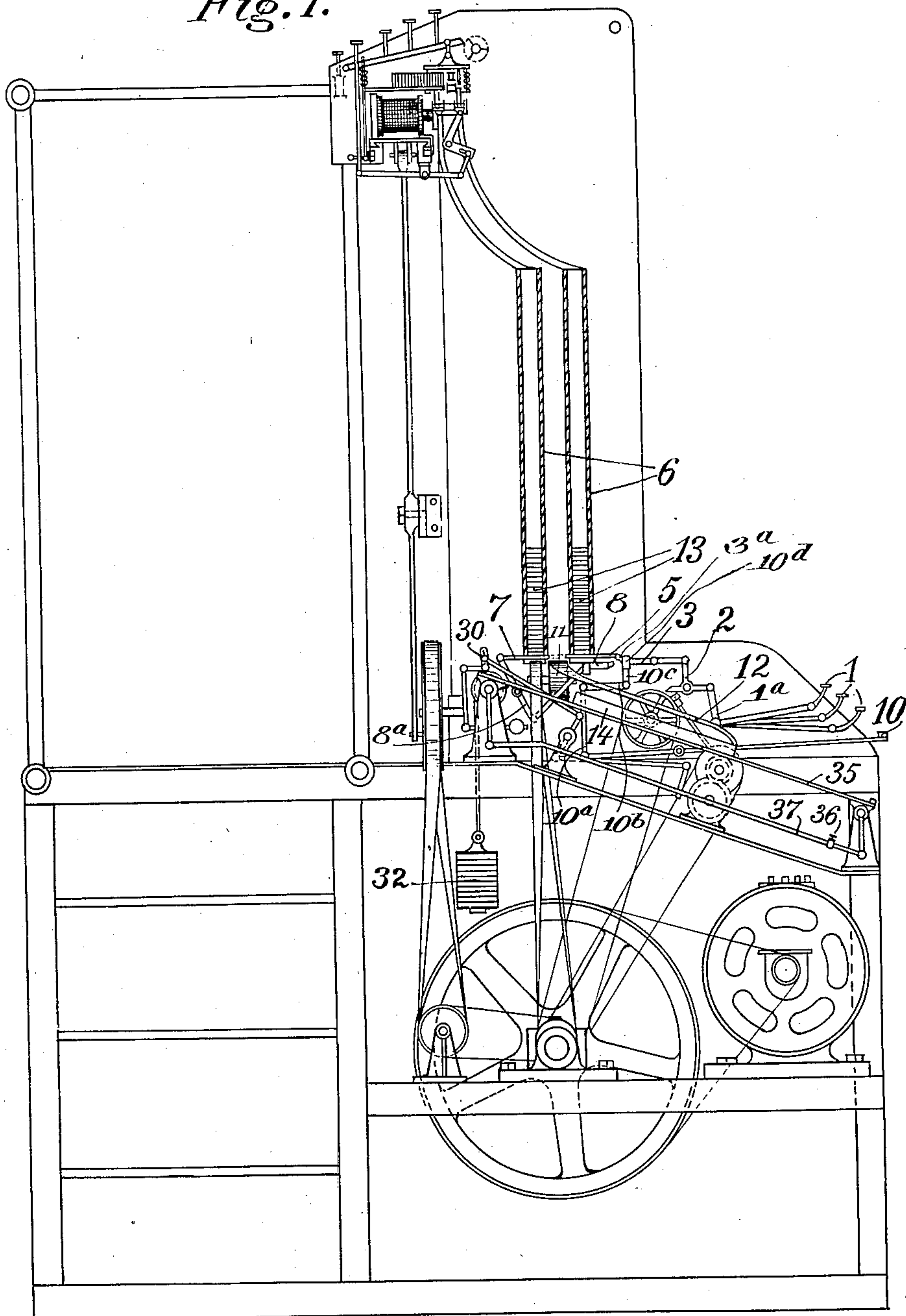
No. 863,453.

PATENTED AUG. 13, 1907.

O. G. C. SCHMITT.
TYPE SETTING MACHINE.
APPLICATION FILED MAR. 7, 1905.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Franz Reinhold.
Lillie M. Perry.

By

Inventor:
Otto Georg Christian Schmitt
Briesen & Knauth
his Attorneys.

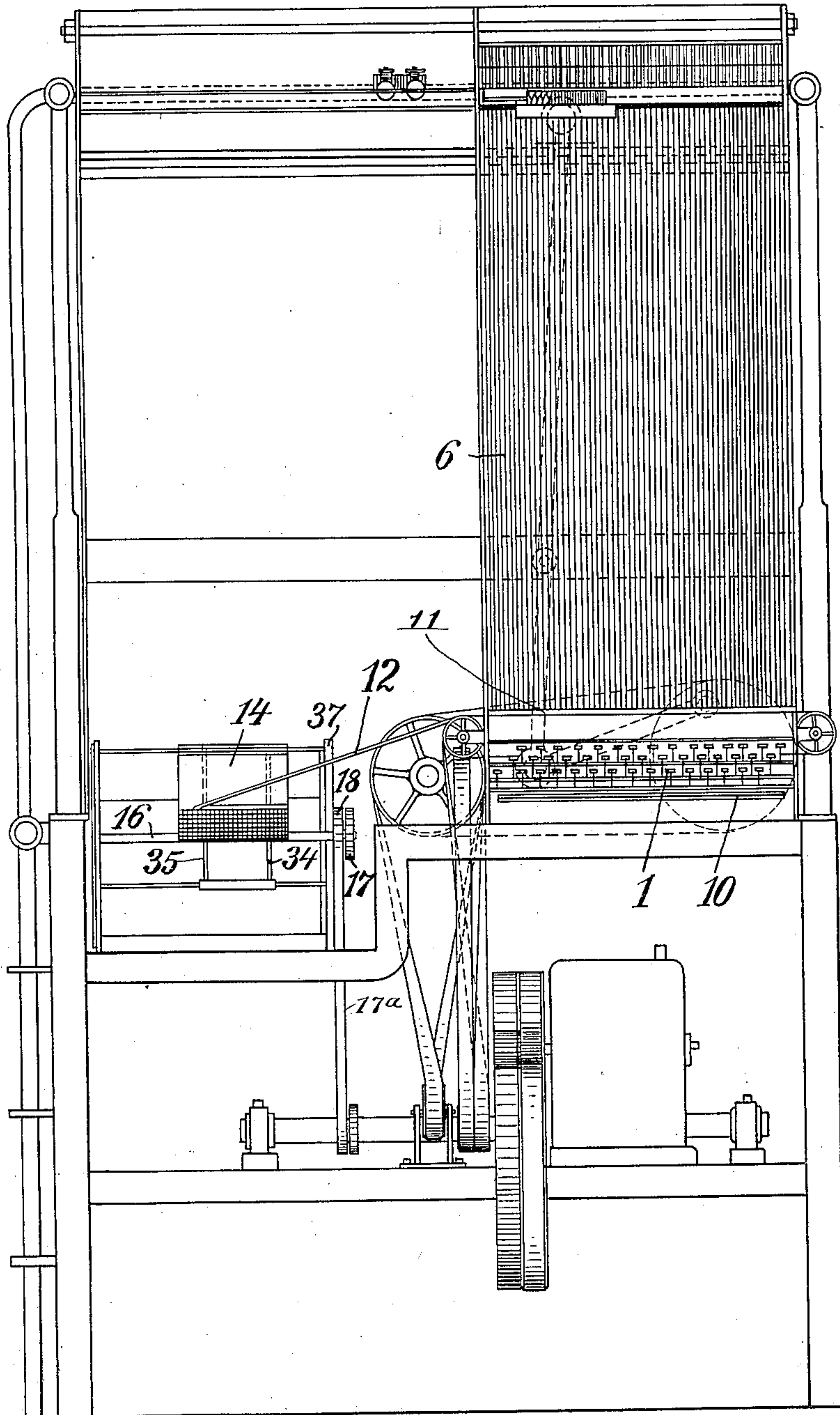
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6 SHEETS—SHEET 2.

Fig. 2.



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5 SHEETS—SHEET 3.

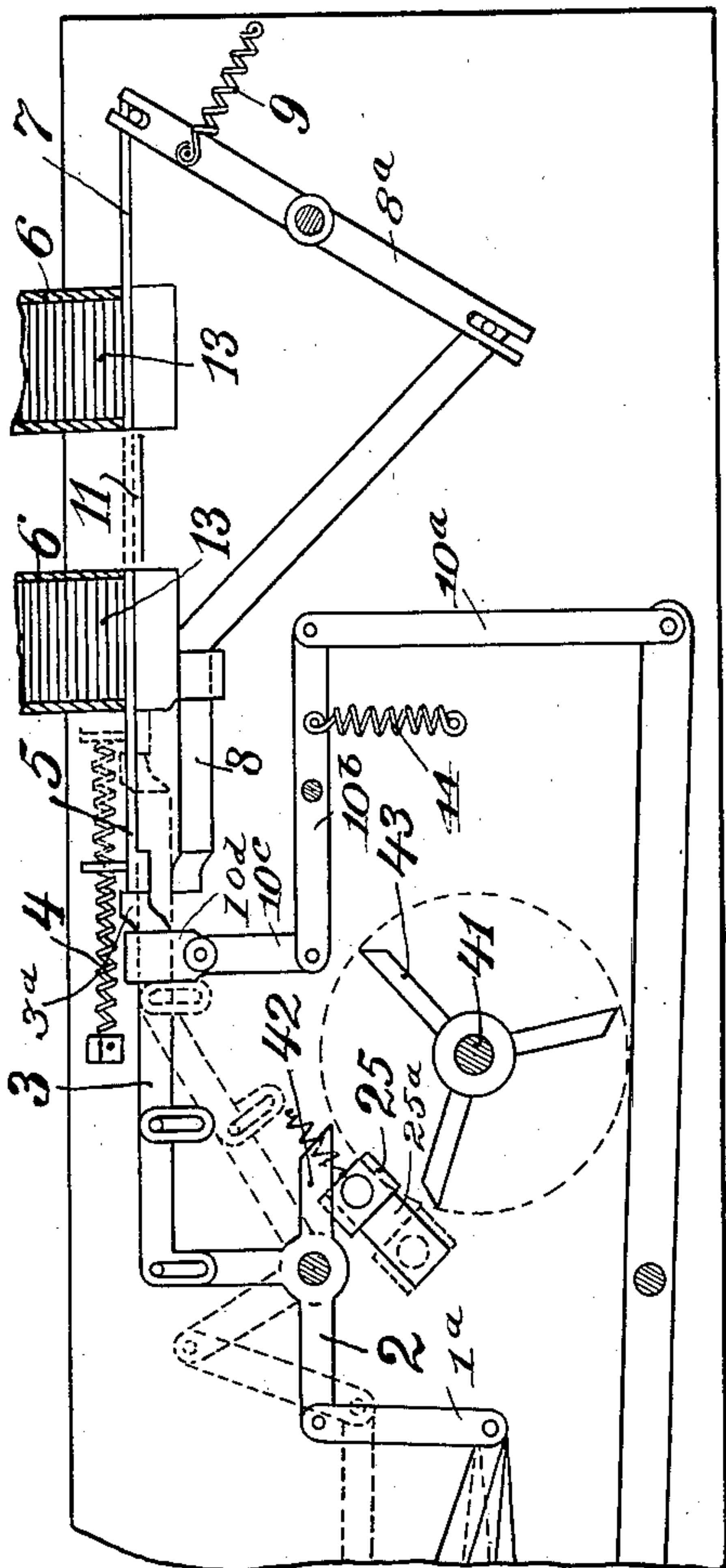


Fig. 3.

Witnesses:
Franz Reinhold.
Lillie M. Perry.

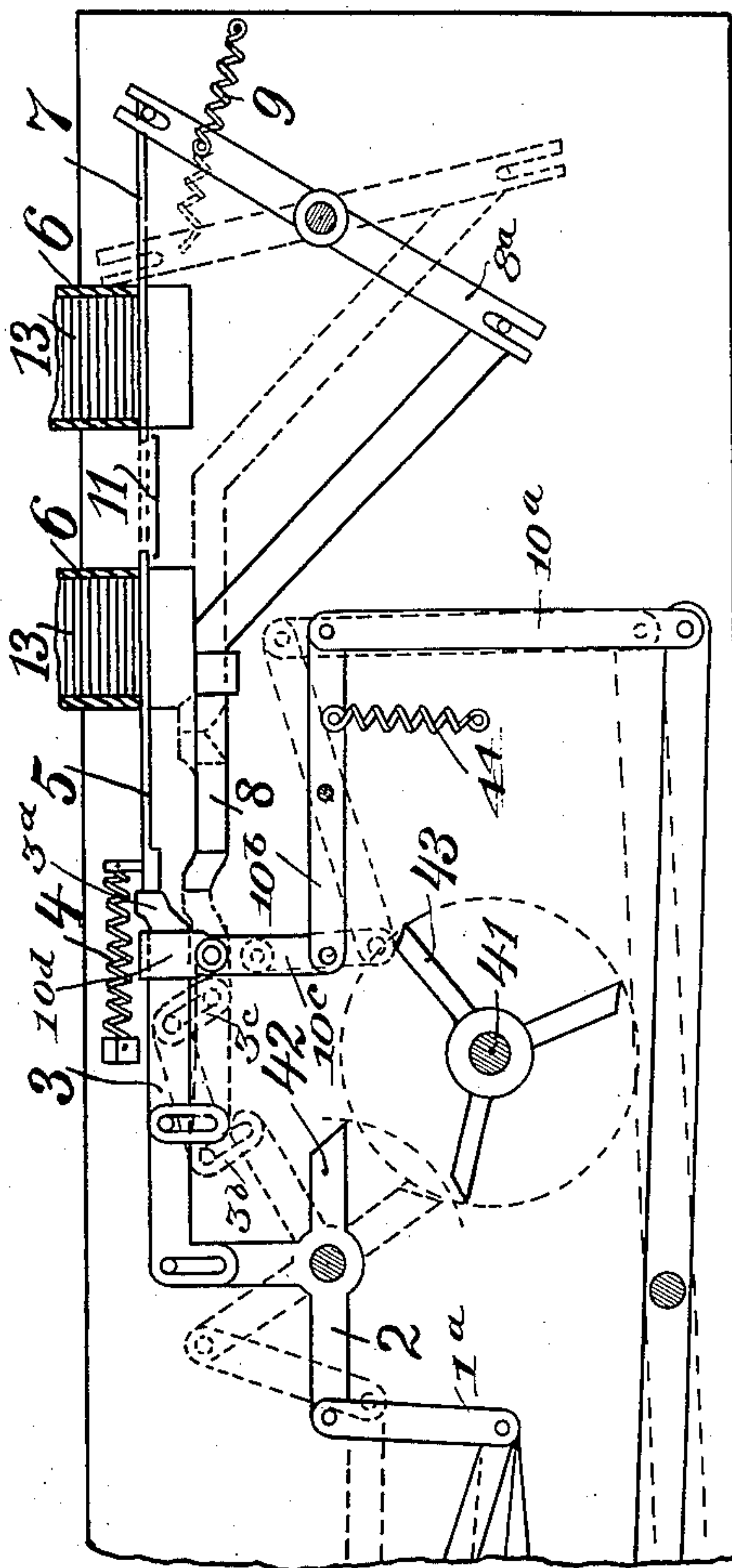


Fig. 4.

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5 SHEETS—SHEET 4.

Fig. 5.

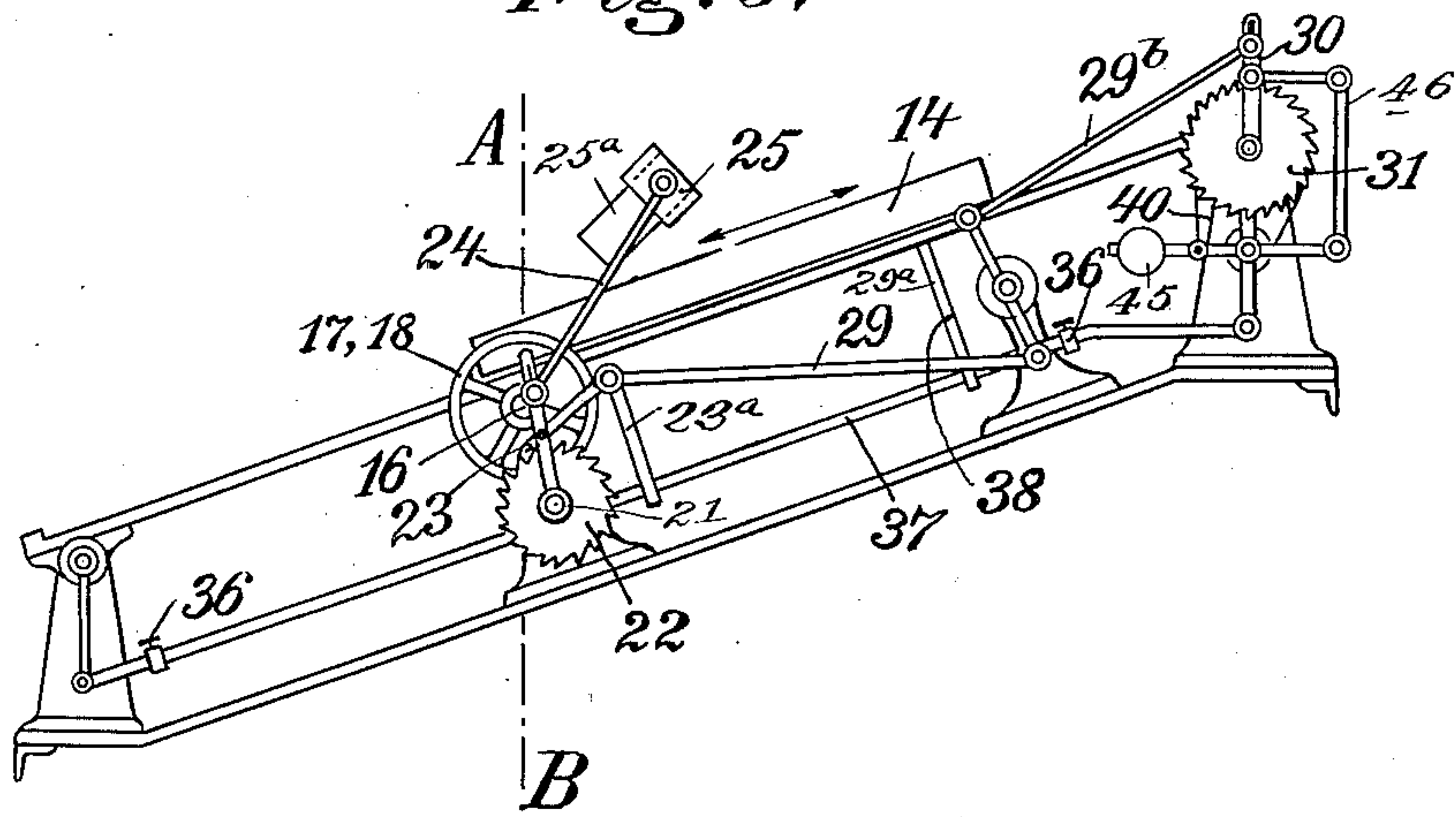
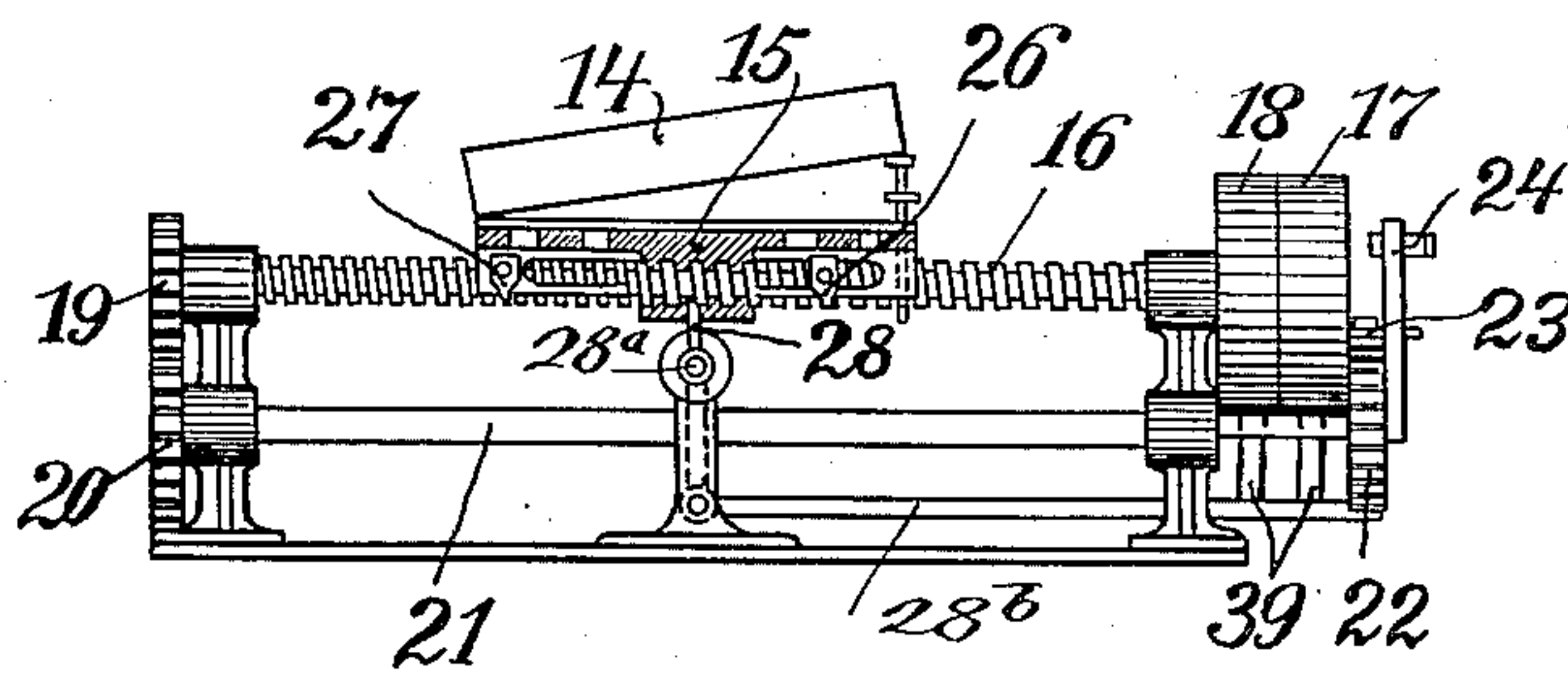


Fig. 8.



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5 SHEETS—SHEET 5.

Fig. 6.

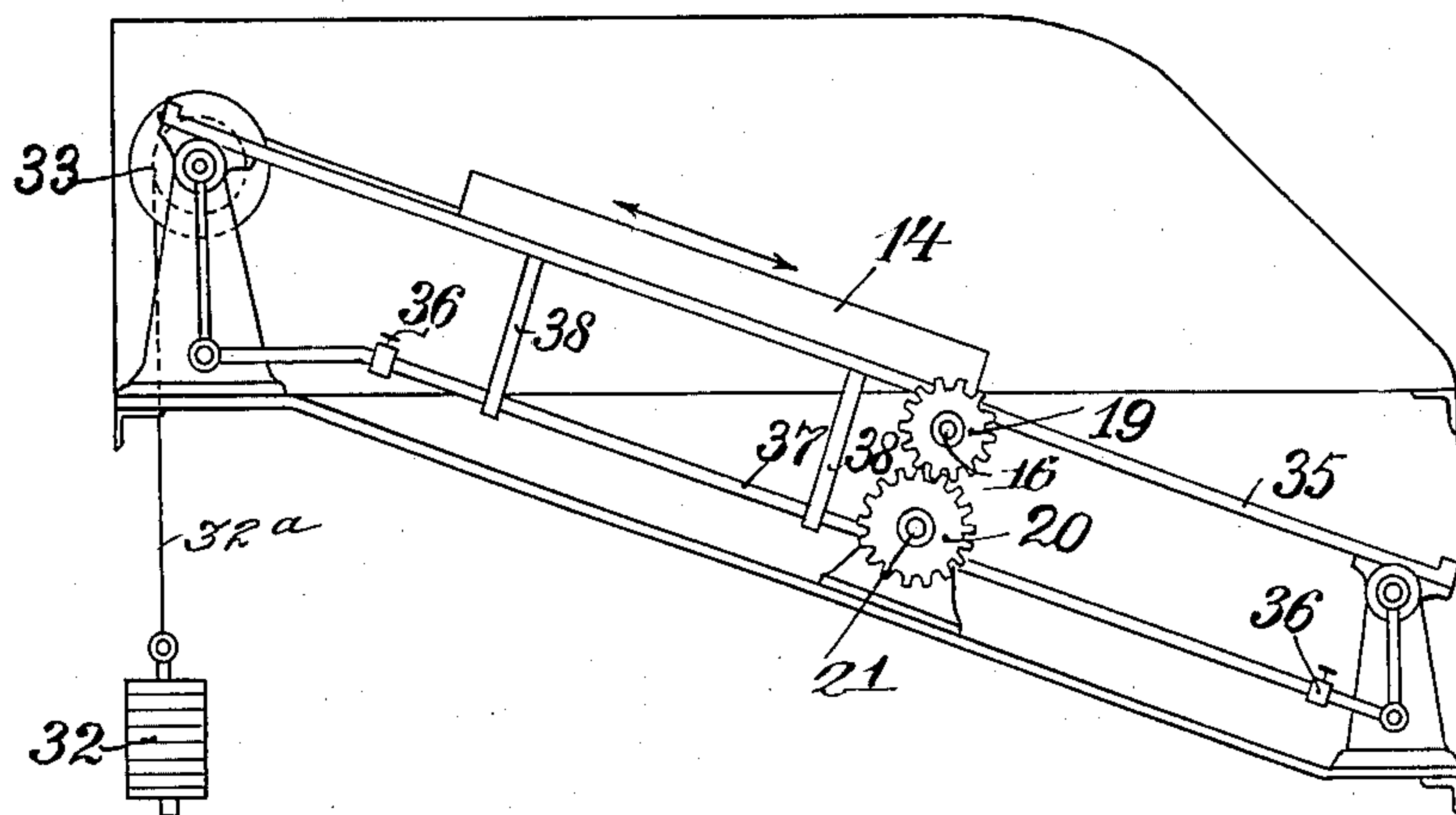
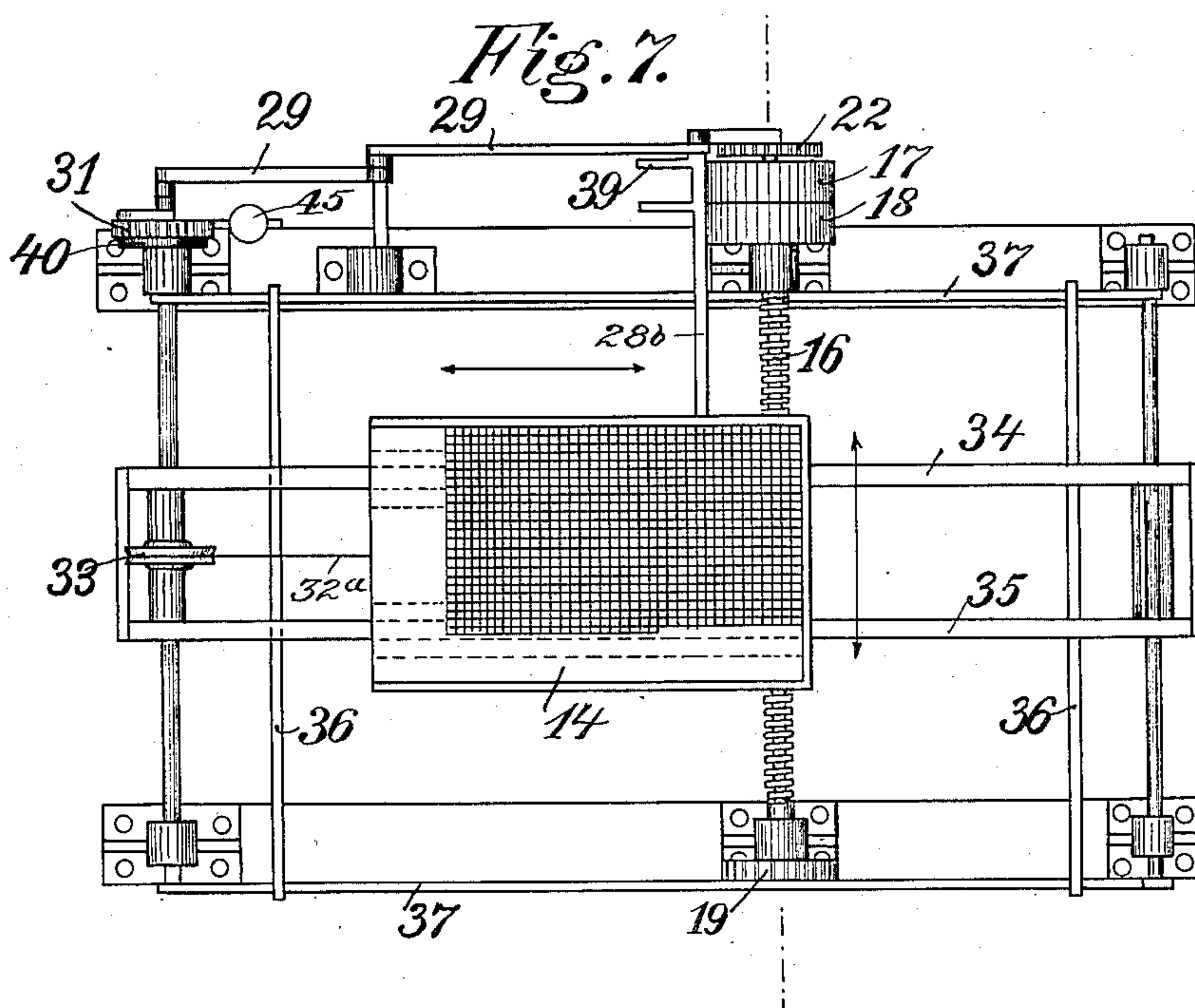


Fig. 7.



Witnesses:

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UNITED STATES PATENT OFFICE.

OTTO GEORG CHRISTIAN SCHMITT, OF FRANKFORT-ON-THE-MAIN, GERMANY, ASSIGNOR
TO THE FIRM OF WAGNER & BRAND, OF FRANKFORT-ON-THE-MAIN, GERMANY.

TYPE-SETTING MACHINE.

No. 863,453.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Original application filed May 20, 1904, Serial No. 208,793. Divided and this application filed March 7, 1905. Serial No. 248,915.

To all whom it may concern:

Be it known that I, OTTO GEORG CHRISTIAN SCHMITT, a subject of the Emperor of Germany, and a resident of Frankfort-on-the-Main, Germany, have invented certain new and useful Improvements in Type-Setting Machines, of which the following is a specification.

This invention relates to an improved type-setting machine and has for its object first, to enable the setting of the type to be effected by means of an arrangement of mechanism similar to the key-mechanism of a type-writing machine in such manner that by depressing a key corresponding to the particular letter required to be set, the type then occupying the lowest position in the type chutes, is removed by means of a "pusher", from out of the type-chute and deposited on a conveyer which transfers it to the composing galley, and that further, by depressing a special key which actuates a cross-bar common to all the keys, the composing galley is shifted laterally through a distance equal to the width of a type. Finally, when the composition of a line of type has been completed, the throwing into gear of a driving belt effects the restoration of the composing galley to its initial position and also by raising a counterweight causes the composing galley to descend through a distance equal to the depth of a type.

Such a type-setting machine is illustrated in the accompanying drawings wherein

Figure 1 is a side elevation showing the general arrangement of the machine; Fig. 2 is a front elevation showing the general arrangement of the machine; Fig. 3 is a side elevation showing the arrangement of keys for removing and conveying the types from the type chutes to the composing galley; Fig. 4 is a similar view to Fig. 3 illustrating the use of the shift key for setting capital letters; Fig. 5 is an outside general elevation of the composing galley mechanism; Fig. 6 is a similar view the nearer portions of the mechanism being removed; Fig. 7 is a plan of the same; Fig. 8 is a sectional elevation on line A—B of Fig. 5.

1 (Figs. 1, 3 and 4) are the keys of the keyboard for the type-setting apparatus. These keys, of which there are 45, are arranged in three superposed rows like the keys of a typewriting machine. Each key lever is coupled by means of a connecting link 1^a to one arm of a bell crank lever 2, the other arm of which is coupled to an operating member 3^a by means of a connecting rod 3 and links 3^b, 3^c. Each operating member, when in its upper position, is adapted to engage a delivery slide 5, the latter being held in position of rest by a spring 4.

Each delivery slide extends, when in position of rest, beneath the lower end of a type chute, there being as many chutes arranged side by side in a row as there are keys. In addition to this row of type chutes, there

is arranged behind it a second similar row for containing the capital letters of the alphabet. Beneath these latter type chutes also there extend delivery slides 7 which are pivotally connected by means of a two-armed lever 8^a as shown, or by equivalent means, to connecting rods 8, the delivery slides 7 being held in position of rest by tension springs 9 and operated by the connecting rods 3 coupled to the keys 1. For this purpose the keys 1 are connected elastically to a shift key 10 which is common to all the keys (see Figs. 3 and 4). The vertically movable guide 10^b for the operating members 3^a, is connected by a link 10^c with a lever 10^b under the influence of a spring 44, and linked to the shift key 10 by a connecting member 10^a. Thus, when the shift key is depressed, all operating members 3^a are brought from registry with the slides 5 into registry with the rods 8, shown in dotted lines in Fig. 4. Those ends of the delivery slides 5 and 7 which, when the slides are in position of rest, are directly beneath the type chutes, are formed with apertures for the reception of the type which for the time being is lowermost, and this lowermost type is caused by the depression of the corresponding key to be pushed out of the chute so as to fall on to an endless conveyer belt 11 traveling between the rows of chutes and adapted to convey the type to the type-setting galley (Figs. 1 to 4).

The belt conveyer 11 delivers the type to a passage or channel 12 (Figs. 1 and 2) which extends downwards in a curved direction and is contracted at its lower part. The side wall of the passage 12 is so formed as to cause the type on entering the passage to turn through an angle of 90 degrees, so that as the types 13 which are deposited by the delivery slides 5 and 7 transversely upon the conveyer belt 11, assume an upright position on the composing galley 14 which is situated below the passage 12.

The composing galley 14 (Figs. 5 to 8) is mounted so as to be capable of being automatically shifted and reversed both in order to enable successive types to be set side by side and also for the purpose of insuring the sequence of the lines to be composed. For this purpose the composing galley 14 is supported by means of a nut 15 working on a screw-spindle 16 (Fig. 8) one end of which carries fast and loose belt pulleys 18, 17, while on its other end there is keyed a toothed wheel 19 which engages with another toothed wheel 20 on a horizontal shaft 21. Fast on the other end of this shaft is a ratchet wheel 22 in which engages a pawl 23 (Fig. 5). This ratchet wheel 22 is coupled by means of a connecting rod 24 to a horizontal bar 25 which extends through the entire key-lever mechanism and which, when any of the keys 1 is depressed, is caused by an arm 42 on the bell crank lever 2 to slide downwards on the stationary guide 25^a from the position of rest shown in full lines in

Fig. 3 to the operative position indicated by dotted lines in the same figure. By this means the ratchet wheel 22, Fig. 5, is at each depression of a key 1 forwardly rotated to the extent of one tooth and consequently by the engagement of the toothed wheels 19, 20, the screw-spindle 16 is correspondingly rotated intermittently and the composing galley 14 mounted on it is moved laterally step by step.

The length of the lines composed is determined by stops 26, 27 (Fig. 8) which are adjustably fixed to the underside of the composing galley so that if for example the stop 27 strikes against the tappet 28 (Fig. 8) fulcrumed at 28^a, the belt-shifting device 39 will be actuated by the rod 28^b carrying it and will shift the driving belt from the loose pulley 17 on to the fast pulley 18 and at the same time the pawl 23 will, by means of a bell crank lever 23^a, be moved out of gear with the teeth of the ratchet wheel 22, whereupon the screw-spindle 16 will be rotated by the belt 17^a from the main shaft of the machine in a direction opposite to that of the advancing motion, and therefore the composing galley will be returned to its starting point.

At the same time as the pawl 23 is disengaged from the teeth of the ratchet wheel 22, a ratchet wheel 31 is forwardly rotated to the extent of one tooth by means of link and lever gear 29, 29^a, 29^b, and a pawl 30 whereby a counterweight 32 (Fig. 6) suspended from a cord or chain 32^a passing over a pulley 33 mounted on the axle of ratchet wheel 31 is correspondingly raised, so that the composing galley 14, which is suspended from the other end of the same cord or chain is permitted to slide downwards for a corresponding distance along its guides 34, 35.

When the galley 14 has received its complement of composed type, which can be determined at will by means of stop bars 36 adjustably fixed on the release rods 37, stop pins 38 provided on the composing galley strike against the stop bars 36 which in turn move the release rods 37 forward in the direction of their length, thus raising a counterweight 45. By this means a band brake 40 (Fig. 5) is slackened, and at the same time the pawl 30 is disengaged from the ratchet wheel 31 by means of link mechanism 46, thus permitting the counterweight 32 to come into operation and draw the composing galley 14 up into its initial position.

For the purpose of facilitating the operation of the keys in the type-setting machine, there is provided (see Figs. 3 and 4) a fly shaft 41 having arms 43 which is constantly rotated by the main shaft of the machine.

Into the path of the arms 43 the arms 42 (on the bell crank levers 2) project when the keys 1 are operated, so that the key levers when once started are carried by the arms of the shaft through a distance of about 60 degrees. By this means the types are pushed out of the type chutes so that the actuation of the type-setting apparatus requires the exertion of only a slight pressure upon the corresponding keys.

The mode of operation of the described type-setting machine is as follows: If it be desired for example to set a type belonging to the small alphabet, the key 1 corresponding to that letter is struck. Thereupon the corresponding slide 5 pushes the type which for the time being is lowermost, out of the type chute 6 on to the conveyer belt 11 whence the type is conveyed by means of the passage 12 into type-setting galley 14. If a type

belonging to the capital or large alphabet is to be set, then while the key 1 corresponding to the said letter is struck, there is also struck the shift key 10 which thus lowers the operating members 3^a from registry with the slides 5 (Fig. 3) into registry with the connecting rods 70 8, (Fig. 4) that the corresponding slide 7 is caused to push the corresponding lowermost type out from the rear row of type chutes 6 forward onto the conveyer belt 11 by which the type is then conveyed to the type-setting galley as already described. If only one or a small number of type are contained in the type chutes, then a spring such as 7^a (Fig. 3) extends through the aperture in the delivery slide and prevents the slide from being pushed out until, by the type chute being refilled, the spring has been caused by the weight of the type then resting on it to resume the position in which the delivery slide together with the type engaged by it can slide over the spring. For letters which are frequently used in composing, such as for instance e and n several type chutes are provided for the purpose of preventing the loss of time which would otherwise be caused by the frequent emptying of the corresponding type chutes.

My present application is a division of another application for patent filed by me in the United States Patent Office on May 20, 1904, Serial No. 208,793, on which Letters-Patent of the United States, No. 815,748, were granted to me on March 20, 1906.

I claim:

1. In a type-setting machine, the combination of type-holders, key-operated ejecting mechanism, a composing galley, means for feeding said galley a distance equal to the width of a type at each operation of a key, and means for feeding the galley in a direction transverse to that of the first-named feeding movement.

2. In a type-setting machine, the combination of type-holders, key-operated ejecting mechanism, a composing galley, means for feeding said galley a distance equal to the width of a type at each operation of a key, means for feeding the galley in a direction transverse to that of the first-named feeding movement, and adjustable mechanism for bringing about the operation of the second-named feeding means after a predetermined, variable number of operations of the first-named feeding means.

3. In a type-setting machine, the combination of type-holders, key-operated ejecting mechanism, a composing galley, means for feeding said galley a distance equal to the width of a type at each operation of a key, and means controlled by the movement of the galley, for returning it the distance it has been fed.

4. In a type-setting machine, the combination of type-holders, key-operated ejecting mechanism, a composing galley, means for feeding said galley a distance equal to the width of a type at each operation of a key, means, controlled by the movement of the galley, for returning it the distance it has been fed in the aforesaid manner, means for feeding the galley, after a number of feeding operations of said kind, in a direction transverse to that of the first-named feeding movement, and mechanism, controlled by the second movement of the galley, for returning it the distance it has been fed in such transverse direction.

5. In a type-setting machine, the combination with a key-actuated mechanism, of type-chutes, a composing galley and means whereby the composing galley is caused to advance through a distance equal to the width of a type for each actuation of a type-key, said means composing a screw-spindle supporting the composing galley, a rotated wheel for producing the rotation of the screw-spindle and a bar adapted to be actuated by means of any one of the type-keys, substantially as described.

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Witnesses:

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