

No. 828,451.

PATENTED AUG. 14, 1906.

J. S. BANCROFT & M. C. INDAHL.  
COMPOSING MACHINE.

APPLICATION FILED JUNE 28, 1905.

4 SHEETS—SHEET 1.

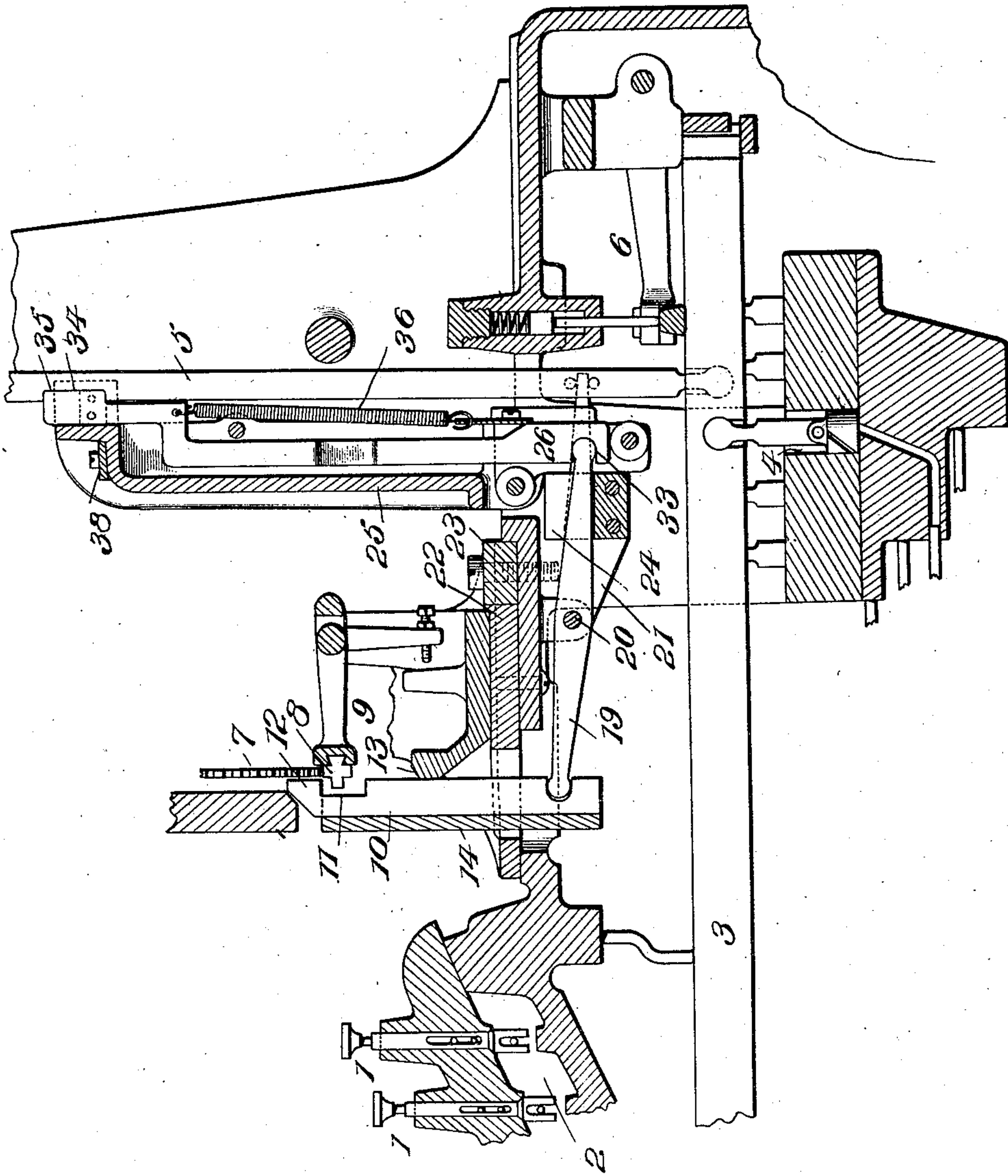


FIG. 1.

Witnesses

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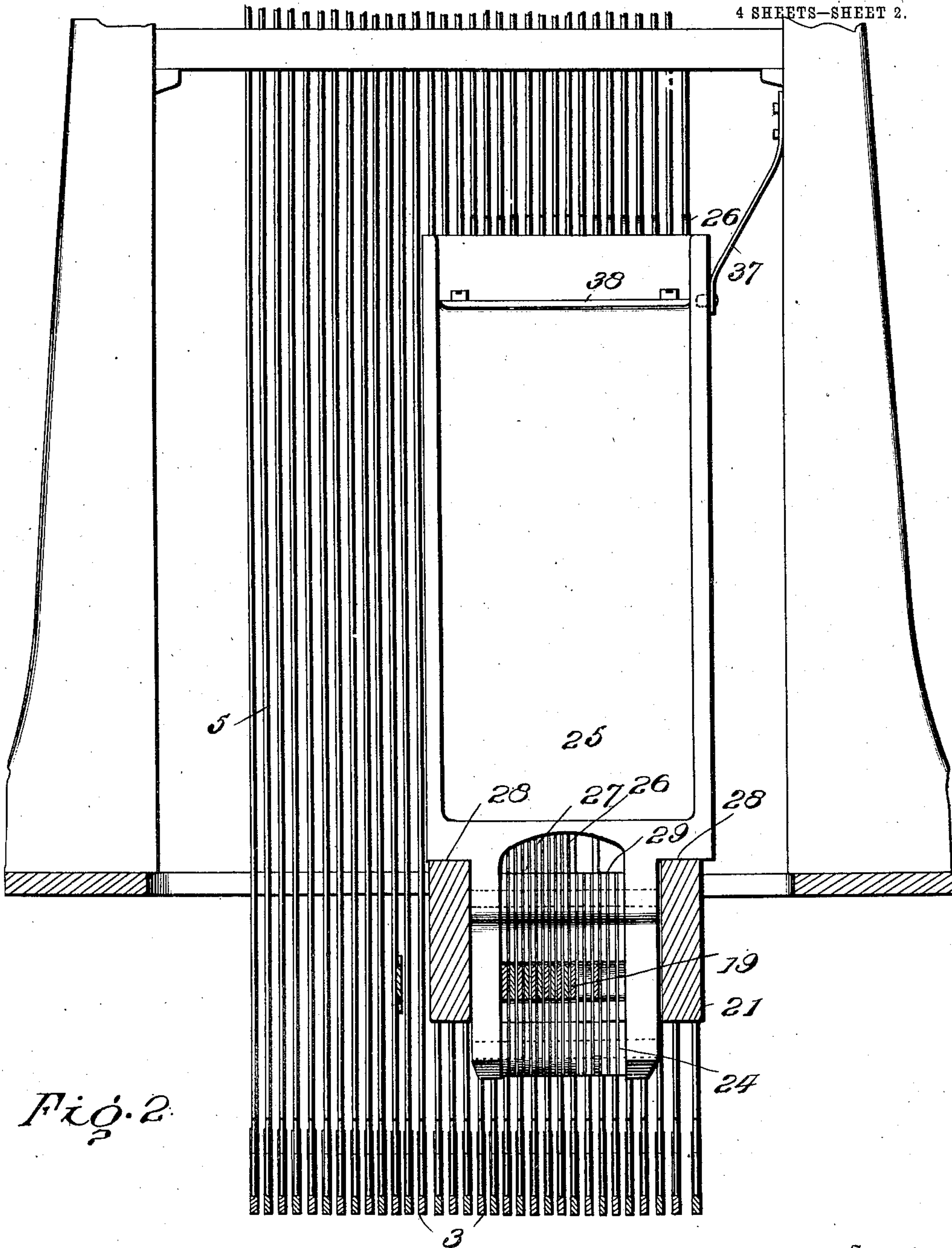


Fig. 2.

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4 SHEETS—SHEET 3.

Fig. 3.

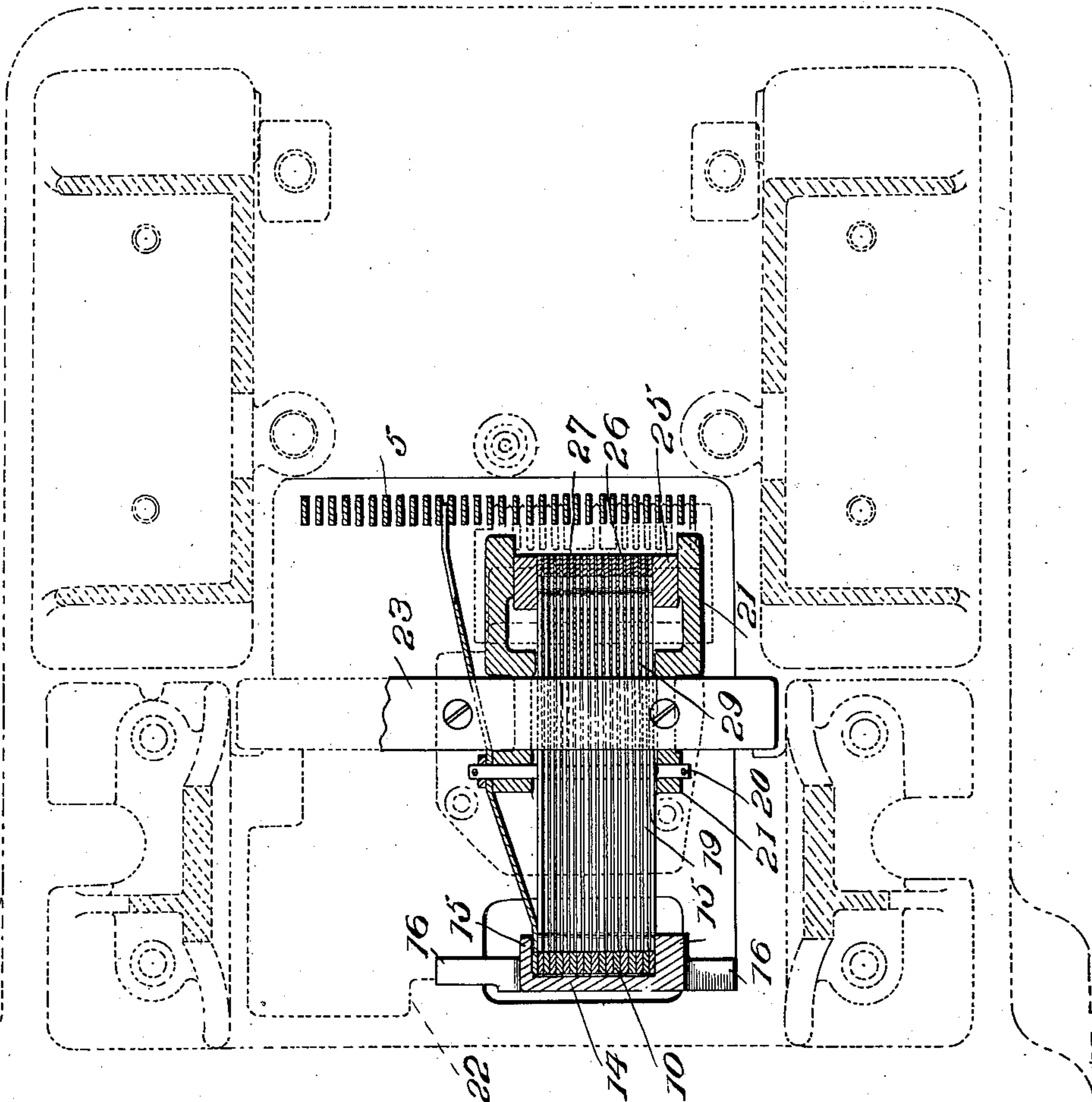
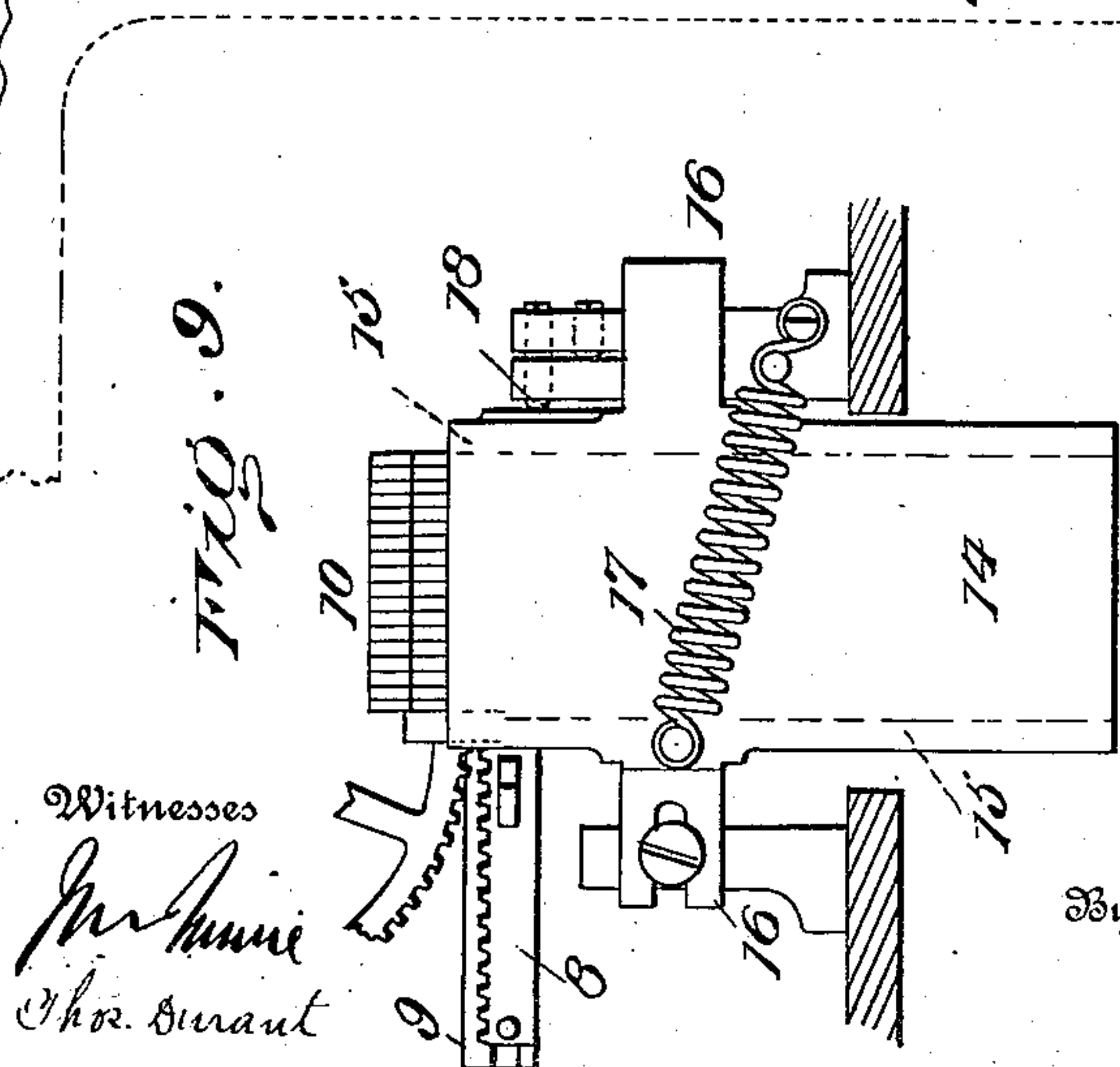


Fig. 9.



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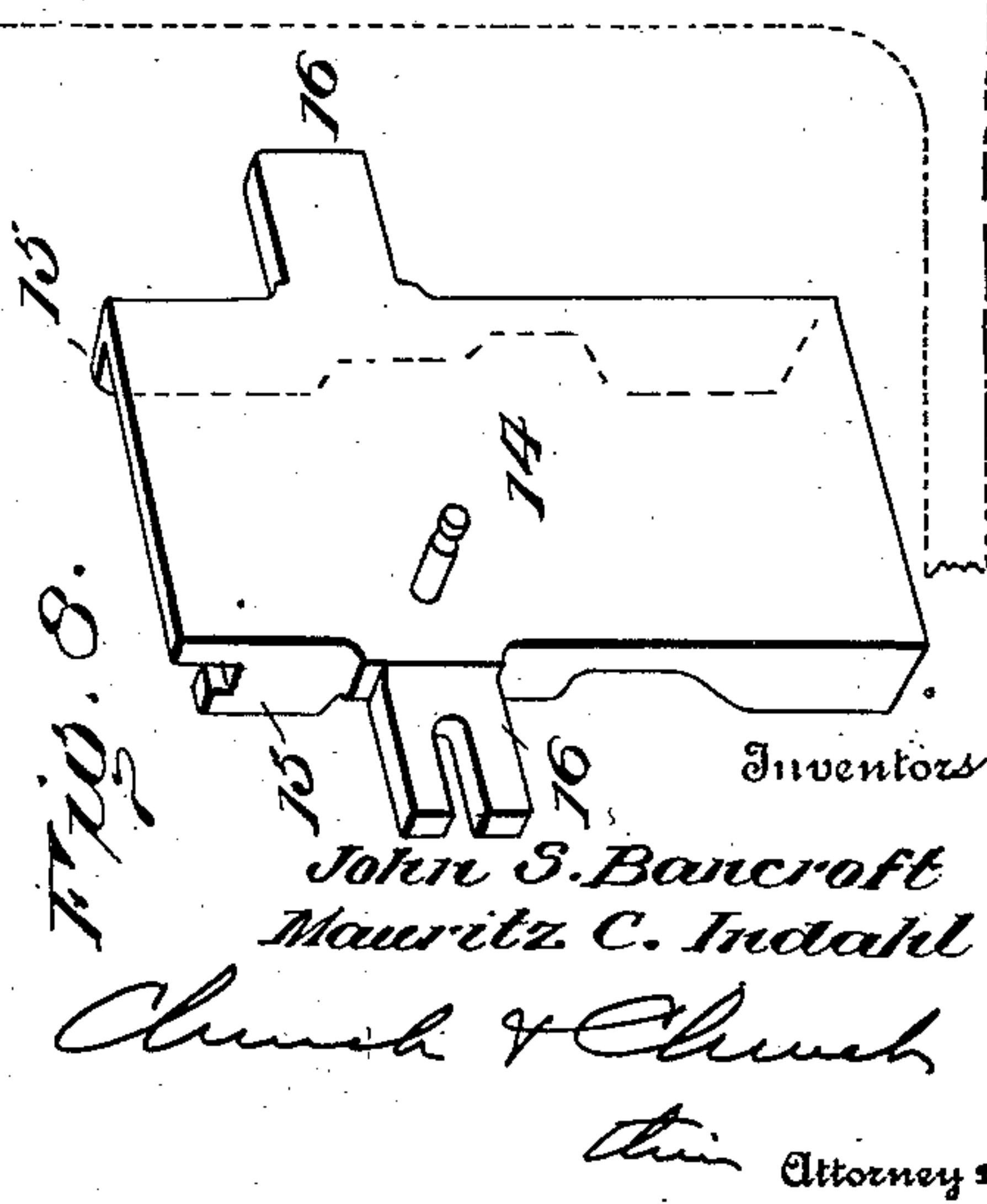


Fig. 8.  
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4 SHEETS—SHEET 4.

Fig. 4.

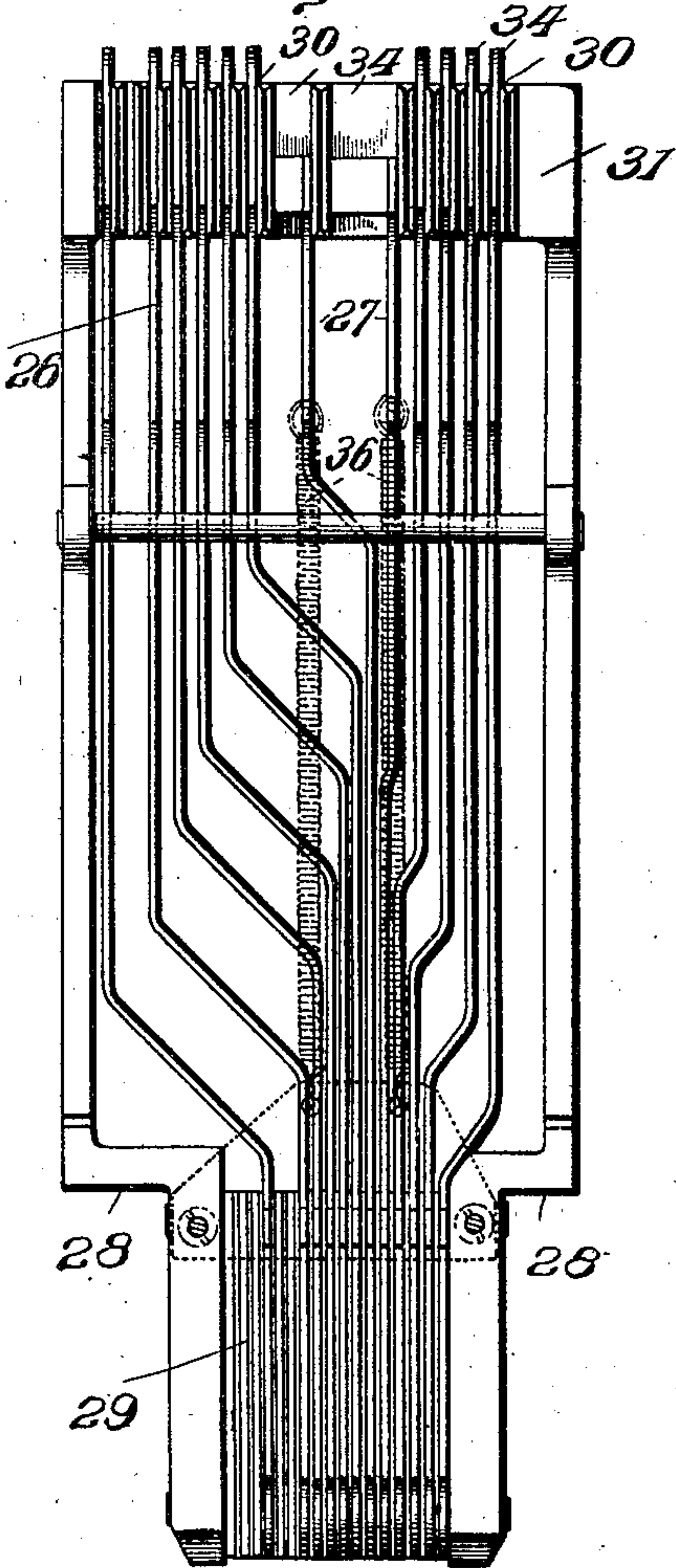


Fig. 5.

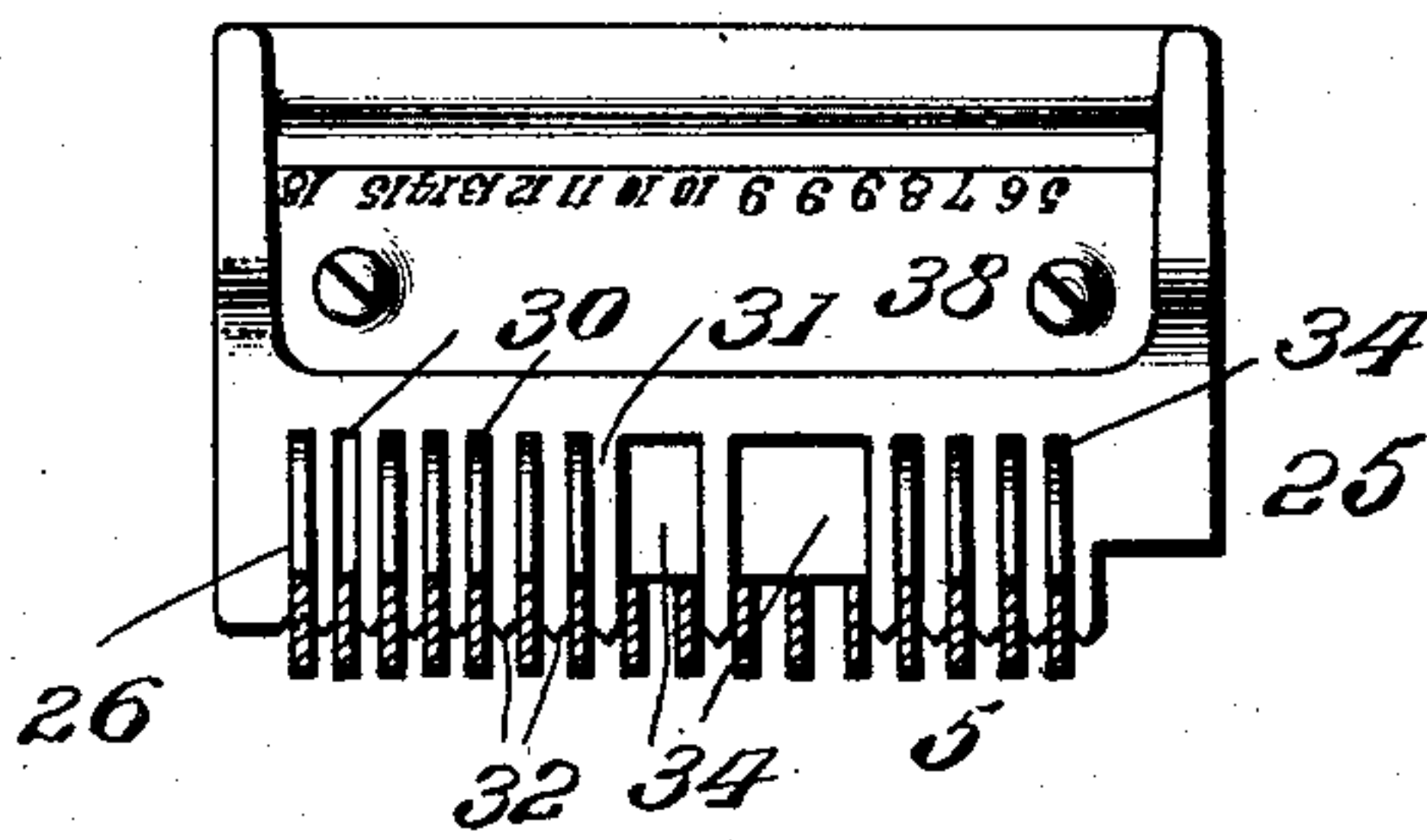
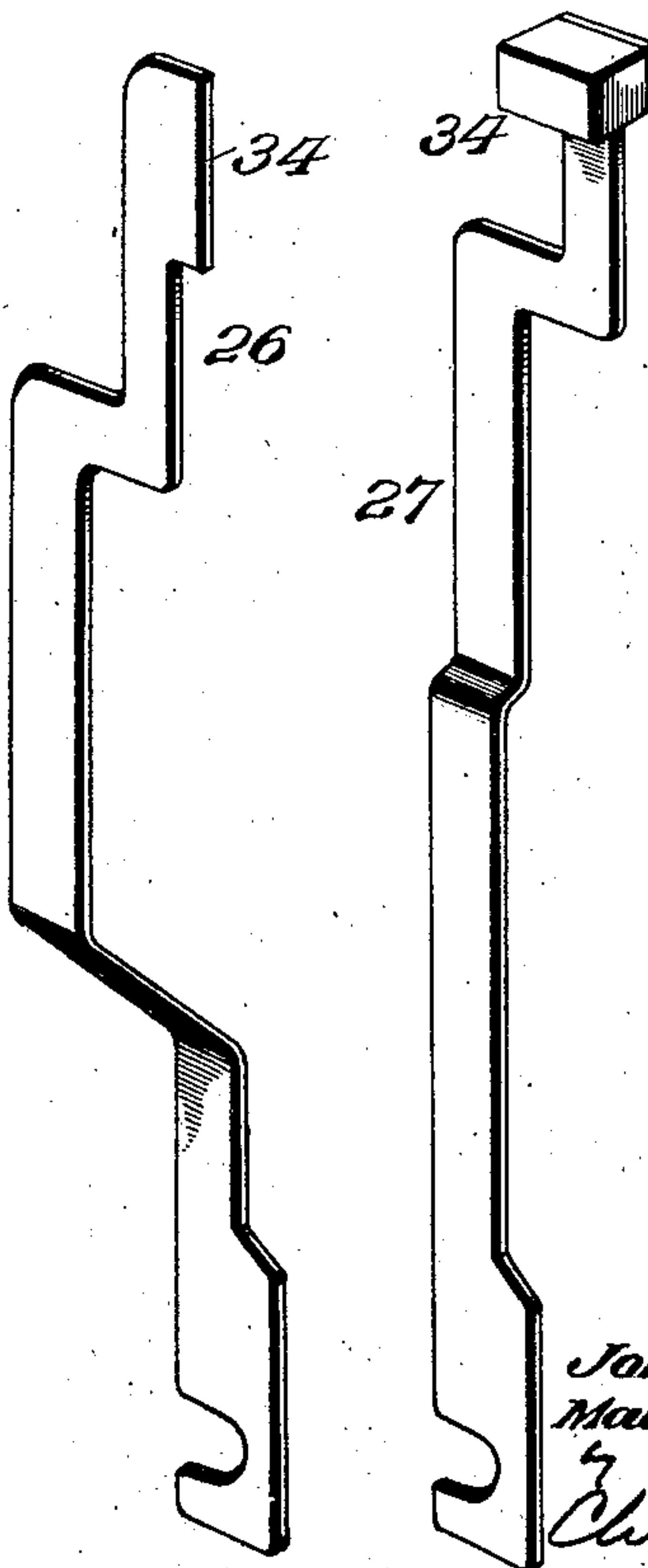


Fig. 6.

Fig. 7.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## COMPOSING-MACHINE.

No. 828,451.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed June 28, 1905. Serial No. 267,354.

*To all whom it may concern:*

Be it known that we, JOHN SELLERS BANCROFT and MAURITZ C. INDAHL, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Composing - Machines; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures of reference marked thereon.

This invention relates to improvements in that class of composing-machines in which the unit values of the type-signals as produced are registered on a line-measuring mechanism through the medium of admeasuring devices, such as stop-bars, coupled with certain movable numbers of the signal-producing devices, such as the punch-actuating members.

As heretofore generally constructed and used, these machines are equipped with a plurality of punches divided into two or more groups, of which the members of two such groups designate different positions or degrees of motion on transverse lines representing column and line. The matrices comprising each column represent type of the same width, there being at least as many separate columns as there are widths of type in the particular set or font, and the column-designating punches are coupled up with the line-measuring device, so that in operating a punch to designate the column containing the desired matrix the space value thereof will be registered.

If the number of characters of a given width is in excess of the number of places provided in each column, they are distributed in two or more contiguous columns whose designating-punches are coupled with the same admeasuring device. The proportion between the number of characters and widths is not, however, a constant, but varies with different arrangements, fonts, and lay-outs. Hence a composing-machine adjusted for one arrangement of matrices is incompetent to deal with another employing a different allocation of units unless and until it has been taken apart and altered to accord with the new scheme of distribution.

Now this invention has for its principal object to so enlarge the capacity of the composing-machine that it can be almost instantly adapted for use in connection with any desired system or plan of distribution of units, to which end it consists in supplying it with detachable and interchangeable coupling units for connecting up the dimensioning and registering mechanisms according to any predetermined plan. It also comprises and includes minor features of construction and arrangements of parts, as hereinafter described, the novel features being pointed out in the claims.

In the accompanying drawings, illustrating a preferred form of embodiment, Figure 1 is a sectional view of a portion of a composing machine of well-known construction, showing one manner of applying the improvements thereto. Fig. 2 is a front elevation, partly in section, of the coupling unit as applied to the stop-bar levers and punch-bars. Fig. 3 is a horizontal section through the stop-bar housing and lever-frame, showing the manner of attachment to the main frame, the latter indicated in dotted lines. Fig. 4 is a rear view of the coupling unit. Fig. 5 is a top plan view of the same. Fig. 6 is a perspective view of a single connector. Fig. 7 is a perspective view of a multiple connector. Fig. 8 is a perspective view of the front guide or housing for the stop-bars. Fig. 9 is a detail showing the manner of adjusting and supporting said stop-bar housing.

Corresponding numerals designate like parts in the several figures.

With the exceptions hereinafter noted the composing-machine illustrated is that of application Serial No. 179,049, filed October 29, 1903, by John Sellers Bancroft, and for purposes of identification it will suffice to designate some of the principal elements shown, such as the series of valved finger-pieces 1, pressure-chamber 2, punch-levers 3, punch-lever cylinders 4, punch-bars 5, rocking frame 6, overlying the punch-levers and connected with the paper-feed, (not shown,) units-wheel 7, controlling the line-measuring devices, units-rack 8, units-rack carrier 9, and series of stop-bars 10 for admeasuring the advance movements of the units-rack when in engagement with the units-wheel.

A change has been made in the stop-bars



and their supporting and actuating devices to adapt them to receive the new coupling unit. Instead of entering the path of the units-rack on the upward movement the stop-bars enter on the downward motion. Hence they are cut away or notched, as at 11, for the passage of the units-rack and provided with an overhang or lateral projection 12 for intercepting the units-rack when moved into the path of the latter.

The stop-bars are supported and guided between a back stop or bar 13 on the units-rack-carrier frame and a detachable housing or guide-plate 14, the latter provided with distance-pieces or gage-blocks 15, between which the series of stop-bars is fitted, and lateral extensions 16, fitted to guides on the units-rack-carrier frame. A spring 17 operates to hold the guide-plate 14 against a screw 18, whereby the series of stop-bars may be adjusted to position with relation to the units-rack, as before. Each of the stop-bars 10 is pivotally connected to one of a series of levers 19, fulcrumed upon a rod 20, carried by a frame 21, detachably secured beneath the frame 22 of the line-measuring mechanism in the open space in the main frame, as indicated in Fig. 3.

To afford a wider and more secure support, a cross-bar 23 with its ends resting in bearings formed in the main frame is bolted to the rear portion of frame 21, the latter being also bolted to the under side of frame 22, as indicated in Figs. 1 and 3. The arrangement is such that the stop-bars, housing, and levers may readily be substituted for the stop-bars and actuating devices of the prior machines. As the first of the series of stop-bars 10 or that pertaining to the justification-space and the punch-bar 5 for that signal are constants, the first lever 19 is connected directly with its punch-bar, as heretofore, while the other levers 19 are received and guided between plates 24, carried by frame 21, their rear ends being formed or adapted to become members of separable connections for receiving the transmitting members of the coupling unit.

In the preferred form illustrated the coupling unit comprises a frame or casing 25, open at the rear and carrying a series of transmitting members or bars 26 27 for coupling the punch-bars 5 and levers 19, as will be explained. At its lower end this frame 25 fits between the vertical faces of the rear extension of frame 21 and is shouldered, as at 28, to take a bearing upon the upper edges of said rear extensions. It is also provided with a series of spaced guide-plates 29, corresponding in position with the plates 24 for levers 19 and serving as guides for the lower ends of the transmitting-bars 26 27, whose upper ends are guided in slots 30 in a cross-piece 31, the latter provided with one or more, preferably a series, of beveled projections 32, adapted to enter between the punch-bars,

and thus assist in positioning the frame and transmitting-bars so as to bring and maintain the latter in alinement with the corresponding punch-bars.

The transmitting-bars are provided at their lower ends with open bearings 33 for receiving the ends of levers 19, and their upper ends are likewise equipped with separable connections in the form of angular offsets 34, adapted to enter notches 35 in the front edges of the dimensioning punch-bars, thus providing separable connections at opposite ends of the transmitting-bars of a nature to permit the entire series of bars to be manipulated as a unit for insertion, withdrawal, and substitution.

In the example illustrated two varieties of transmitting-bars are shown, of which one, 26, is for single transmission and the other, 27, for multiple transmission, the essential distinction between the two relating to the form and dimension of the offset 34.

When all the type of a given width are contained in any one column of the die-case, it is only required that the punch-bar 5 pertaining to that column should be coupled with that one of the series of stop-bars 10 corresponding therewith in value. For this purpose a transmitter-bar 26 is employed to connect the column-designating punch-bar 5 with the lever 19, controlling the desired stop-bar, the offset 34 fitting the notch 35, so that the stop-bar and connections will follow the punch-bar, thereby obviating the necessity of providing other means, such as springs, for returning the stop-bars to normal position, as would be the case if one-way connections were made between the transmitter-bars and the punch-bars or levers 19; but when two or more columns of the die-case are devoted to type of the same width and it is required that the several punch-bars designating such columns should be put in control of a single stop-bar representing the assigned dimension the coupling unit is equipped with one or more transmitting-bars 27, whose offset 34 is expanded laterally to cover and engage the several column-designating punch-bars. In this case the offset is made narrower than the recess or notch in a direction longitudinally of the punch-bars, so that the latter may be separately operated, and additional means, such as springs 36, are employed to insure the return of the parts to normal position when the punch-bar is retracted.

In practice the composing-machine is equipped with eighteen one-unit stop-bars, of which the first or justification-space stop-bar is located four units distant from the units-rack, and with fifteen column-designating punch-bars, of which the latter right hand or fifteenth may or may not be provided with a punch. The coupling unit shown is provided with transmitter-bars adapted to connect the first column-designating punch-



bar with the first or five-unit stop-bar, the second with the six-unit, the third with the seven-unit, the fourth with the eight-unit, the fifth, sixth, and seventh with the nine-unit, the eighth and ninth with the ten-unit, the tenth with the eleven-unit, the eleventh with the twelve-unit, the twelfth with the thirteen-unit, the thirteenth with the fourteen-unit, the fourteenth with the fifteen-unit, and the fifteenth with the eighteen-unit.

It is obvious that it should be desired to change the allocation of units it could be accomplished by removing the coupling unit and inserting another properly equipped with transmitting-bars to effect the desired connections between the punch-bars and stop-bars either singly or in multiple, as required.

The coupling unit may be retained in operative position by a detachable latch—such, for example, as the spring 37, secured to the frame and carrying a pin on its free end engaging a socket in frame 25, as seen in Fig. 2. When it is desired to remove the coupling unit, the latch is withdrawn and the upper end of frame 25 tilted forward until the connections at opposite ends of the transmitter-bars are separated, when the entire coupling mechanism can be lifted out without further manipulation or interference with the remainder of the machine.

It is obvious that by making the cross-piece 30, containing the guides for the upper ends of the transmitting-bars, removable and providing substitutes therefor equipped to accommodate different sizes and dispositions of multiple transmitting-bars 27 a single frame 25 might serve for different lay-outs; but as this would involve delay and afford opportunity for errors it is preferred to provide separate coupling units for each lay-out and to mark thereon the allocation of units. This can be conveniently done by securing a registering-plate 38 to the frame, as indicated in Fig. 5. The offsetting or bending of the transmitting-bars 26 27, as shown, is merely for purposes of accommodation, due to the fact that the stop-bar levers are brought together in a narrower compass than their actuating punch-bars.

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

1. A composing-machine such as described provided with a detachable coupling unit for separably connecting a plurality of designating and admeasuring members.

2. A detachable coupling unit for connecting the signal-producing and line-measuring mechanisms of a composing-machine such as described, the same including a plurality of transmitting members mounted in a frame and each provided with separable connections for engaging corresponding members of the signal-producing and line-measuring mechanisms.

3. In a composing-machine such as described provided with a plurality of designating members and a series of admeasuring devices and in combination therewith a detachable coupling unit provided with a plurality of transmitting members each separably connected to and interposed between one or more designating members and an admeasuring device.

4. In a composing-machine such as described, the combination with a plurality of designating punch-bars and a series of stop-bars permanently mounted upon the frame, of a detachable and removable coupling unit provided with a plurality of transmitting members for the punch-bars and stop-bars separably connected therewith, to permit the insertion of interchangeable units.

5. In a composing-machine such as described, the combination with a plurality of designating members and a series of admeasuring stop-bars of a removable coupling unit comprising a frame and a series of transmitting members, each of the latter connected with a stop-bar and one or more designating members in a manner to permit the withdrawal and insertion of said coupling unit.

6. In a composing-machine such as described, the combination with the series of designating punch-bars, the series of stop-bars and the actuating-levers for the latter, of the series of transmitting-bars each coupled with one of said actuating-levers by a separable connection, and with one or more of the punch-bars.

7. In a composing-machine such as described the combination with the units-rack-carrier frame provided with a guide-surface and bearings, of the series of stop-bars supported between gages in a housing forming the front guide therefor, with guiding extensions engaging the bearings on the carrier-frame.

8. In a composing-machine such as described the combination with the line-measuring devices including a series of stop-bars, of the series of actuating-levers engaging said stop-bars and supported in a frame detachably secured to the frame of the line-measuring devices.

9. In a composing-machine such as described provided with signal-producing and line-measuring mechanisms including a series of stop-bars and in combination therewith an actuating attachment for said stop-bars including a series of levers supported in a frame detachably secured to the frame of the line-measuring mechanism and to a cross-bar mounted in bearings on the main frame.

10. In a composing-machine such as described provided with a plurality of designating members or punch-bars and measuring devices including a series of stop-bars and in combination therewith a series of stop-bar-actuating levers, a detachable coupling unit



provided with transmitting-bars for engaging some or all of said levers, and means for gaging the position of said coupling unit, to insure the engagement of the transmitting-bars and stop-bar levers.

11. In a composing-machine such as described provided with a plurality of designating members or punch-bars and measuring devices including a series of stop-bars and actuating-levers therefor, and in combination therewith a detachable coupling unit provided with a plurality of transmitting elements located in predetermined relation and each provided with an open bearing to receive one of the stop-bar levers, and means for gaging and guiding said coupling unit, to effect engagement and disengagement of the transmitting elements and stop-bar levers.

12. In a composing-machine such as described, the combination with the frame of the stop-bar-actuating levers provided with guiding-surfaces, of a coupling unit carrying a plurality of transmitting members for engaging said levers and adapted to cooperate with the guiding-surfaces on the lever-frame, as and for the purpose specified.

13. In a composing-machine such as described, provided with a plurality of punch-bars and a measuring mechanism including a series of stop-bars and actuating devices therefor, and in combination therewith, a plurality of transmitting-bars interposed between the punch-bars and stop-bar-actuating devices, each of said transmitting-bars engaging one or more punch-bars and the actuating device of a single stop-bar.

14. In a composing-machine such as described the combination with a plurality of designating punch-bars of a coupling unit equipped with a plurality of transmitting-bars the latter provided with offsets or projections adapted to enter notches in the punch-bars, whereby by a lateral movement of said coupling unit the transmitting-bars may be coupled with or disconnected from the punch-bars.

15. In a composing-machine such as described the combination with the series of notched or recessed punch-bars of a detachable coupling unit for connecting the punch-bars with the controlling elements of the line-measuring devices provided with a plurality of transmitting-bars each equipped with an offset or projection for entering a notch or recess in a punch-bar and with means for operating a control element, the offset or projection on one or more of said transmitting-bars being extended laterally to engage a plurality of punch-bars thereby coupling the latter with a single stop-bar.

16. In a composing-machine such as described provided with a plurality of designating punch-bars and a measuring mechanism including a series of control elements and in combination therewith a detachable coupling

unit comprising a frame carrying a series of transmitting elements and provided with bearings engaging the punch-bars to position the transmitting elements.

17. In a composing-machine such as described provided with a series of notched or recessed punch-bars and a measuring mechanism including a series of control elements whose actuating devices are arranged in series between opposite guiding-surfaces and in combination therewith a coupling element carrying a series of transmitting members each equipped with means for entering the notch in a punch-bar and engaging the actuating device of a control element, said coupling element being provided with bearings for said guiding-surfaces and with gaging devices registering with the punch-bars.

18. A transmitting-bar for the coupling unit of a composing-machine such as described provided at one end with an offset or projection for entering the recess in a punch-bar and with an open side bearing at the opposite end to receive the end of a stop-bar-actuating lever.

19. A transmitting-bar for the coupling unit of a composing-machine such as described provided at one end with an open side bearing to receive the stop-bar-actuating lever and at the other end with an offset or projection extended laterally to enter the notches in two or more punch-bars.

20. A detachable coupling unit for connecting a plurality of designating punch-bars and a series of admeasuring devices in a composing-machine such as described the same comprising a series of transmitting-bars supported in parallel relation at opposite ends between guides on a frame, each transmitting-bar provided at opposite ends with one member of a separable connection for the designating and admeasuring devices, and the frame provided with projections for entering between the punch-bars to gage the position of the transmitting-bars.

21. A coupling unit for the designating punch-bars and series of admeasuring devices of a composing-machine such as described the same comprising a frame and a plurality of transmitting-bars supported in parallel relation at opposite ends in guides and provided with offsets or projections for entering recesses in the punch-bars, said offsets or projections being of various widths, to engage one or more punch-bars.

22. A detachable coupling unit for the designating punch-bars and admeasuring-stops of a composing-machine such as described the same comprising a series of transmitting-bars mounted in a frame with their opposite ends supported in parallel relation in guides, a part of said transmitting-bars being equipped with offsets or projections extending longitudinally thereof and of a width or thickness approximating that of the



bar, while one or more of said transmitting-bars is equipped with a shorter offset or projection extending laterally of its bar the narrower offsets coupling with individual punch-bars, and the wider ones with two or more punch-bars.

23. In a composing-machine such as described the combination of the following elements, to wit; a series or punch-bars provided with opposite engaging surfaces; a series of actuating devices for the admeasuring elements and a coupling unit detachably interposed between the punch-bars and admeasuring-actuating devices, said unit comprising a plurality of transmitting-bars mounted in guides upon a removable frame, certain of said transmitting-bars bearing connecting members adapted to enter between the engaging surfaces of individual punch-bars, and others to enter between the engaging surfaces of a plurality of punch-bars to couple two or more punch-bars with a single admeasuring device.

24. In a composing-machine such as described provided with a plurality of dimen-

sioning punch-bars and a series of admeasuring devices and in combination therewith a detachable coupling unit for connecting the punch-bars singly or in multiple with different members of the admeasuring devices, the same comprising a plurality of transmitting-bars guided and supported in a frame and provided with separable connections for the punch-bars and admeasuring devices, the connections for single punch-bars being formed by transmitting-bars with narrow projections fitting between shoulders on the punch-bar while the connections for multiple punch-bars are formed by transmitting-bars with wider projections and of a length less than the interval between the shoulders on the punch-bars, to permit the latter to operate separately and at the same time register its value.

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