

No. 843,268.

PATENTED FEB. 5, 1907.

F. L. FULLER & C. S. BANGHART.
CHANGEABLE SIGN OR INDICATOR.

APPLICATION FILED NOV. 27, 1905.

2 SHEETS—SHEET 1.

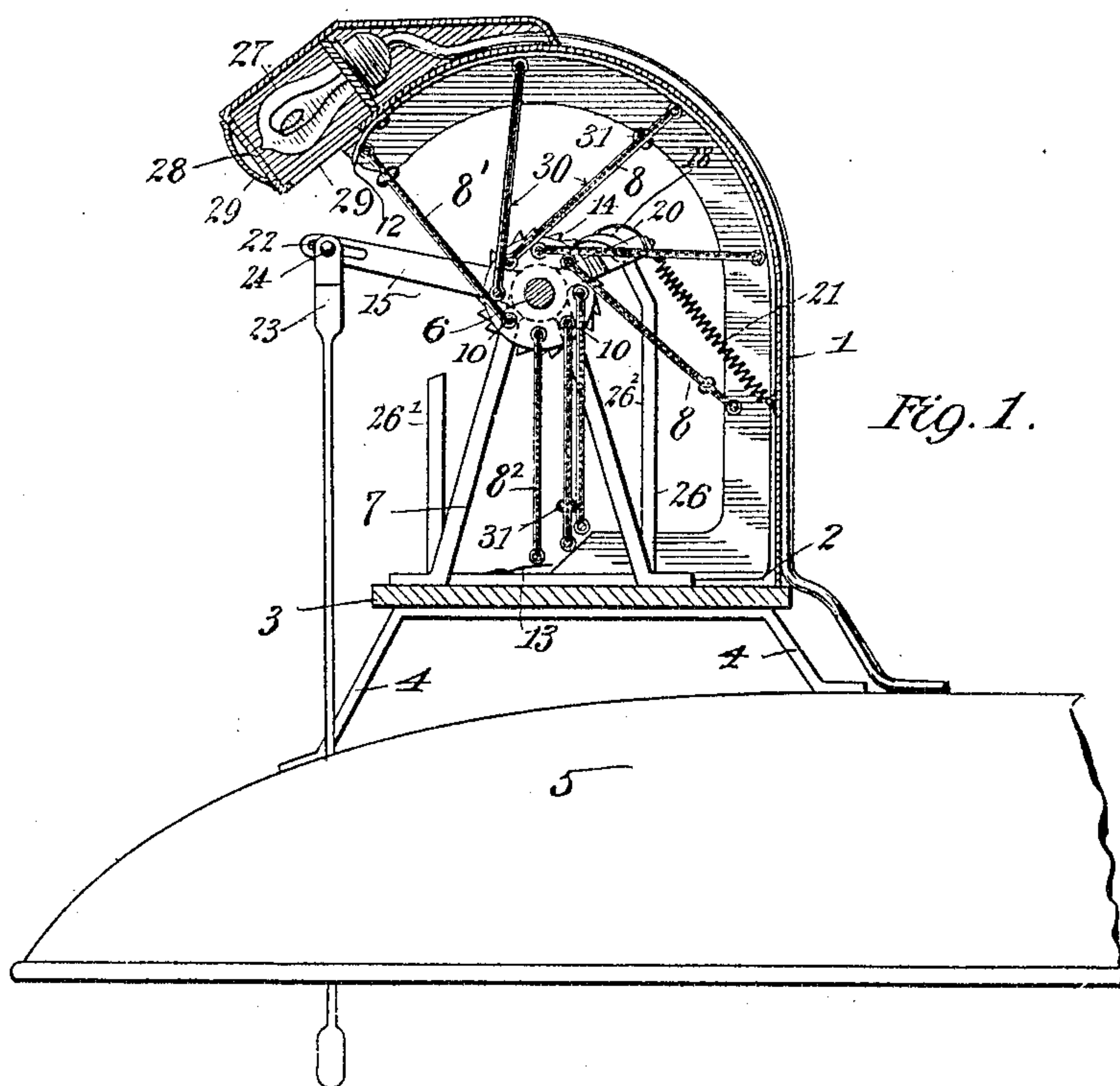
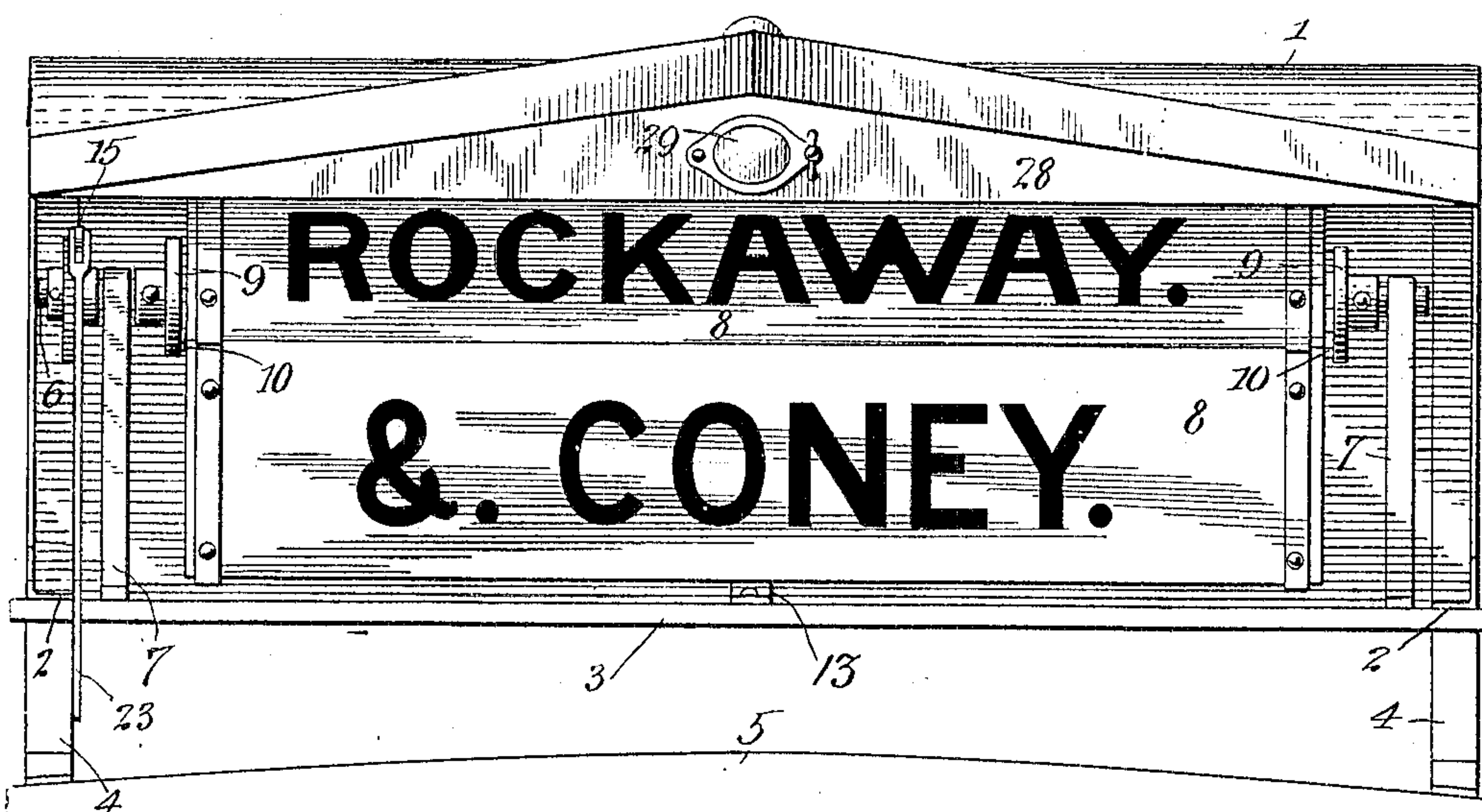


Fig. 1.

Fig. 2.



Witnesses
James O. [unclear]
William Dorman Jr.

Inventors
Frank L. Fuller
Charles S. Banghart
By their Attorneys
Rosenbaum & Stockbridge

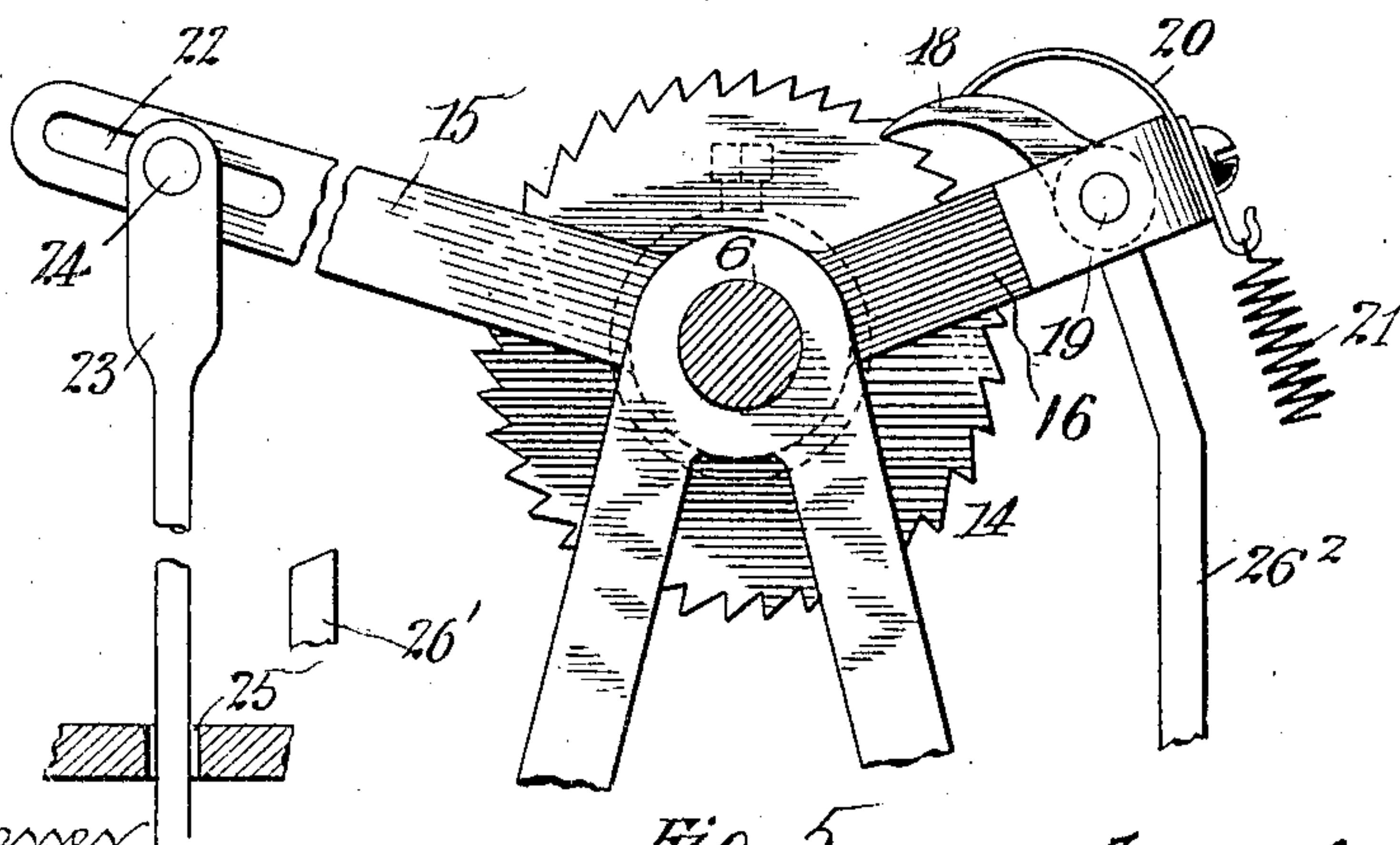
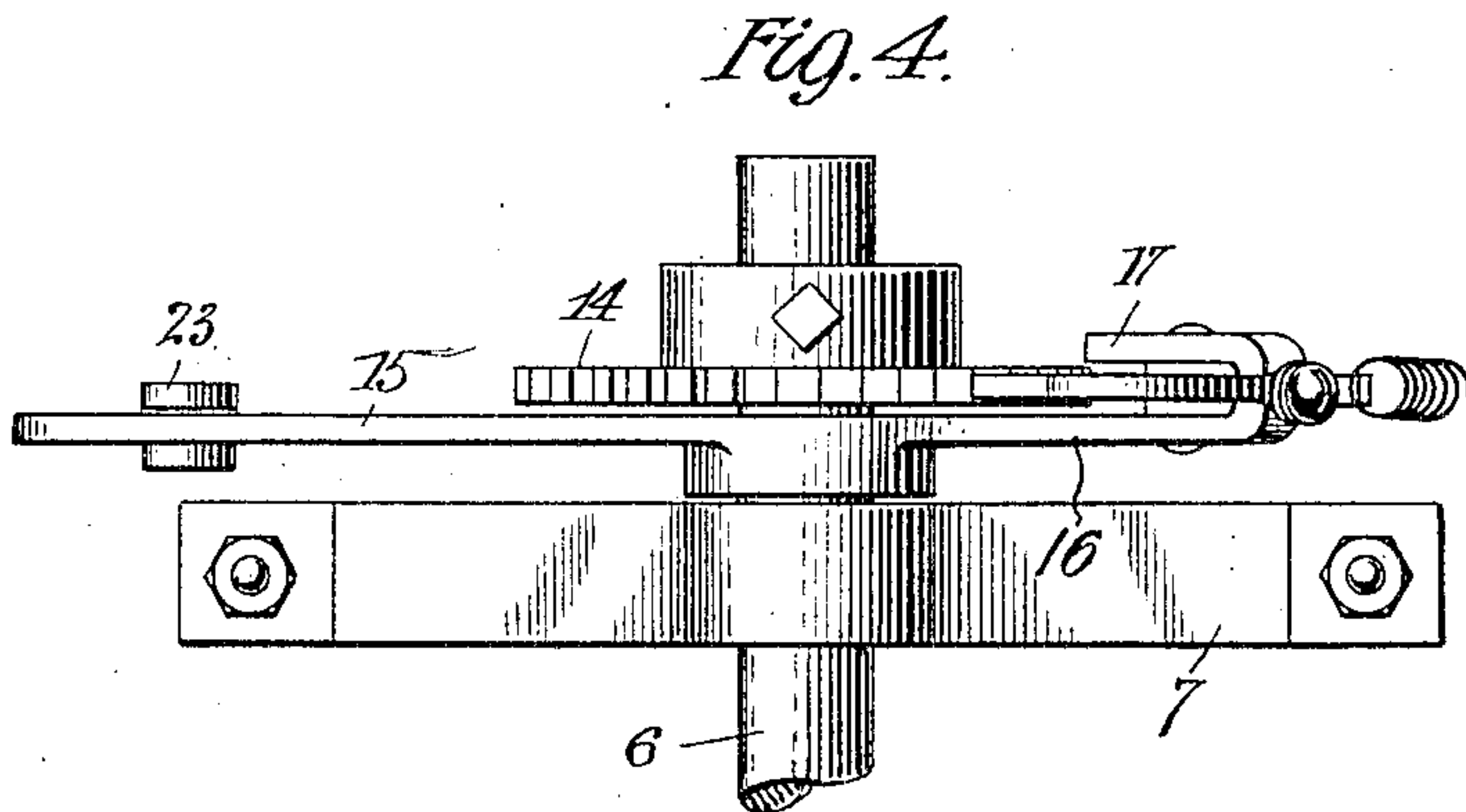
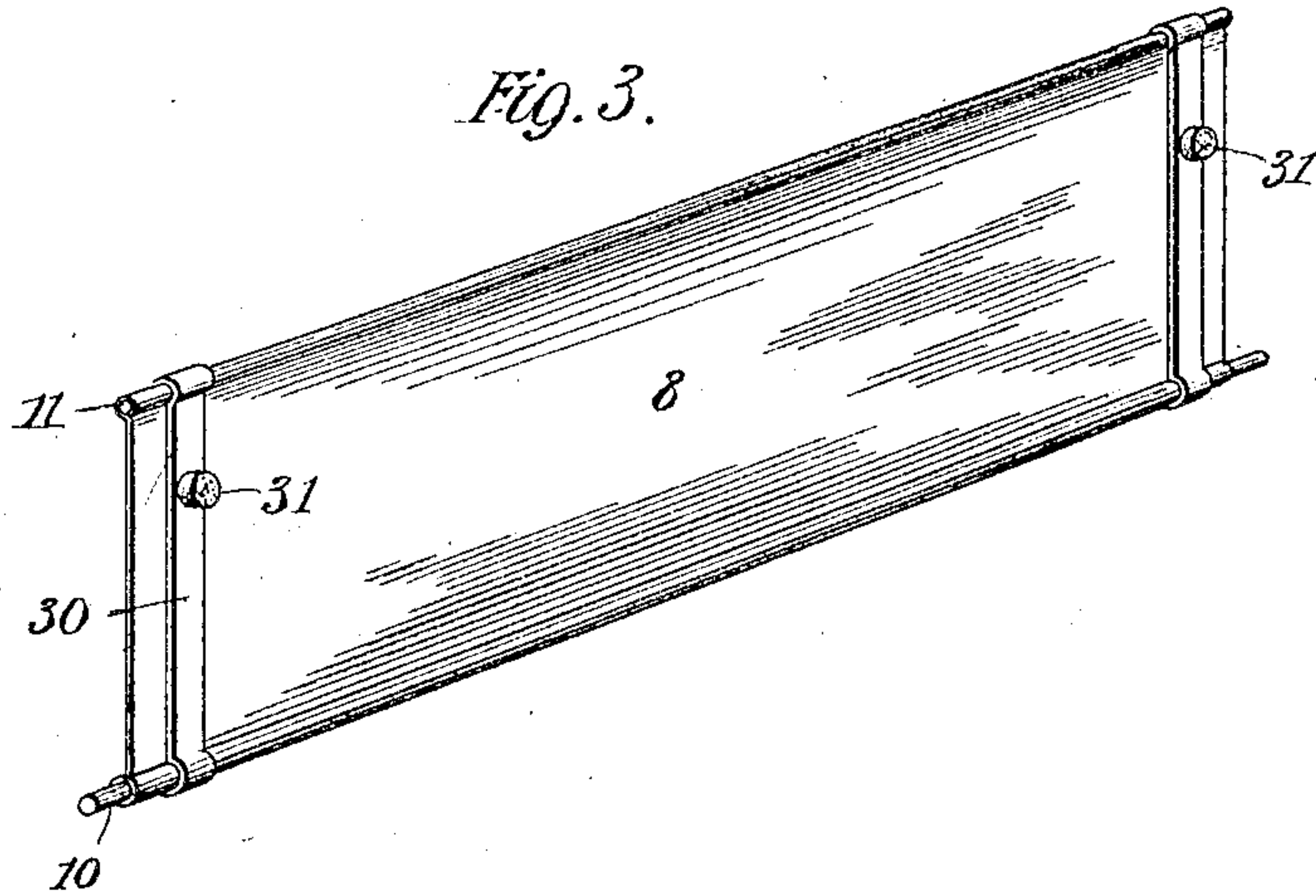
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2 SHEETS—SHEET 2.



Witnesses
James Ober
William Dorman Jr

Fig. 5.

Frank L. Fuller Inventors
Charles S. Banghart
By their Attorneys
Rosenbaum & Stockbridge

UNITED STATES PATENT OFFICE.

FRANK L. FULLER AND CHARLES S. BANGHART, OF NEW YORK, N. Y.

CHANGEABLE SIGN OR INDICATOR.

No. 843,268.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed November 27, 1905. Serial No. 289,204.

To all whom it may concern:

Be it known that we, FRANK L. FULLER and CHARLES S. BANGHART, citizens of the United States, residing at the city of New York, in the boroughs of Manhattan and Queens, respectively, and State of New York, have invented certain new and useful Improvements in Changeable Signs or Indicators, of which the following is a full, clear, and exact description.

Our invention relates to a destination-indicator or display-sign particularly adapted for use on car-lines—as, for example, the ordinary changeable front or sign board of a trolley-car.

It is of the utmost importance to have a plain and legible inscription of the destination upon the front of every car, since persons are dependent upon this to know whether or not any particular car approaching is the one they desire. Since trolley-cars are now run at quite high speeds, it is necessary for the person to ascertain whether or not the approaching car is the one he wants when it is at a quite remote distance. The character of the sign used should be equally legible by day or by night, and, finally, it should be of a character permitting ready accessibility and change to accord with the different trips which the car makes.

It is the object of our invention to provide a changeable sign for cars and the like which shall have the foregoing characteristics, which shall be particularly legible at all times, and which shall permit of ready access and convenient change.

A further object of the invention is to provide a changeable sign which shall be simple and easy to construct and having a minimum number of parts liable to disarrangement or failure.

With these and other objects in view our invention consists in the construction, combination, location, and arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally particularly pointed out in the appended claims.

In the drawings, Figure 1 is a transverse sectional view of a changeable sign embodying the principles of our invention. Fig. 2 is a front elevation of the same. Fig. 3 is a perspective view of one of the sign elements. Fig. 4 is a top view showing a detail of the ratchet mechanism. Fig. 5 is a side view of the same.

In carrying out our invention we make use of a revoluble sign-carrier, from which the individual sign-plates or elements are suspended, and we employ means for rotating the sign-carrier and guiding the individual sign elements, so that they are presented in proper and legible relation when in use. We also make use of a source of illumination and provide reflecting means in conjunction therewith, which gives a perfect and uniform illumination of the entire surface of the exposed sign elements.

Referring now to the drawings and to the various views and reference-signs appearing thereon, in which like parts are designated by the same reference-sign wherever they occur, 1 indicates the main frame or housing, which may be made in any convenient way, but which I prefer to form of sheet metal bent into a generally C-shaped outline.

2 indicates supporting fixtures or brackets of bar-iron bent to correspond to the outline of the housing 1 and forming internal ribs or supports therefor. The lower ends of the supports 2 are made flat and horizontal and are secured to a base-board 3, which is in turn supported from legs 4 from the car-roof 5. In this way the housing 1 is rigidly supported in proper relation above the car-roof or other place where it is to be used.

The upper part of the housing 1 is bent into a curved outline, so as to form a roof or hood for the sign, and beneath this roof or hood and generally coaxial with its curved outline we support the rotatable sign-carrying shaft 6, which is conveniently journaled in standards or brackets 7 upon the base-board 3 for this purpose.

The sign plates or elements are designated at 8 upon the drawing and are supported from the rotatable shaft 6 in a manner which will be clear from Figs. 1, 2, and 3 of the drawings. In the practical construction shown we provide a pair of perforated collars 9, which are secured to the shaft 6, so as to have the perforations of their faces opposite or in alinement with one another. Between corresponding holes of such perforated collars we suspend the sign elements, as shown in Fig. 3, which preferably comprise sheet-metal plates having a rod or wire 10, forming a strengthening-rib and projecting slightly beyond each end of the sign, so as to enter and be supported by the holes of the perforated plates 9.

11 indicates a second wire or rod which

may be incorporated into the sign elements for the purpose of imparting additional strength thereto.

As many sign elements are provided as are desired in practice. We have shown eight such sign elements in the drawings, all equally spaced around the shaft 6 and supported between equispaced and aligned openings in the end collars 9; but it is evident that any number of plates can be used, and we do not desire to be limited or restricted to any particular number.

The method of supporting the sign elements 8 is such that they freely depend from their supporting-rods 10 unless otherwise prevented. We provide means, however, by which only the desired sign elements are enabled to depend in this way, certain other sign elements being constrained in a position by which their reverse side is exposed. For this purpose we have shown springs 12, attached to and forming a continuation of the supports 2 or of the housing 1, and the arrangement of these springs is such as to engage and hold against movement each of the successive sign elements as they rotate toward the front of the housing. The arrangement is clearly illustrated in Fig. 1, in which the sign element 8' is so held by the springs 12 against movement. Should it now occur that a forward rotation were given to the shaft 6, the sign element 8' would be forcibly disengaged from its springs 12 and would fall freely into the position now occupied by the sign element 8², whereupon its opposite side would be exposed to view over that previously presented. In practice it is merely necessary to successively rotate the shaft 6 through a predetermined part of a revolution in order to expose the different sign elements, each presented two at a time, and in no case the same sign face or surface successively appearing. As the sign elements 8 successively drop into the position now occupied by the element 8² they are caught and retained against movement in such position by resilient springs 13, projecting upward from the base-board 3 of the housing. As the shaft 6 continues its rotation the sign elements hang freely within the housing until the continued rotation finally brings them into such a position of tangency that further rotative movement is precluded, after which they rotate in fixed relation to the driving-axle or shaft.

Referring now more particularly to Figs. 4 and 5 of the drawings, we have illustrated a preferred form of ratchet mechanism by which the shaft 6 is periodically turned. 14 denotes a ratchet-wheel fixed upon the shaft 6 and having a number of teeth which is a multiple of the number of sign elements used. 15 denotes a swinging lever freely journaled upon the shaft 6 and having a pawl-carrying arm 16, the end of which is bent over, as at

17, so as to provide two parallel walls between which the pawl 18 is pivoted at 19. 20 indicates a spring secured to the pawl-carrying arm and bearing against the pawl 18, and 21 indicates an additional tension-spring which is secured to the arm at any convenient place for returning it after feeding movement. The arm 15 is slotted at 22 and has depending therefrom a link 23 by means of a sliding-stud engagement 24. The link 23 is guided by hole 25 through the car-roof, and its vertical movement is effective to oscillate the swinging arm 15 and feed the ratchet-wheel. In this action the slot 22 permits the requisite play to allow for the rectilinear movement of the link 23. We also provide stops for limiting the movement of the pawl-carrying arm, and a convenient construction comprises a U-shaped rod 26, having upwardly-projecting ends 26' and 26², against which the arms 15 and 16 impinge in action. While we have set forth this particular form of ratchet mechanism, we do not desire to be limited or restricted to this form, since any mechanism for feeding the shaft 6 rotarily through predetermined distances could be substituted in lieu thereof.

An important feature of the invention relates to the illumination of the sign elements. We have found by practical experiment that a very uniform and sufficient illumination is secured by a single incandescent lamp 27 within a triangular box 28, having its lower side 29 open, through which the light may be directed. While the two upper faces of the illuminating-box are straight plane surfaces, their general outline with the lamp at the center of the angle is substantially the same as that of the very flat paraboloid, so that light from the source of illumination 27 is reflected almost uniformly against the sign elements throughout their length. It will be observed that the sign element 8', which is exposed to the source of illumination, is at a less advantageous angle than the sign element 8², which is a greater distance, so that the intensity of illumination of both is equal and uniform throughout their superficial areas. We regard this as a very important feature of our invention for the reason that the signs hitherto employed have been difficult to read on account of irregular illumination, the excessive illumination in spots having a blinding effect and serving to obscure the whole inscription. With our apparatus this defect is overcome.

29 indicates a cover-plate which may be located opposite the incandescent lamp or illuminating source 27, so that it may be removed or adjusted.

An incidental feature of our invention relates to the cushioning of the sign elements 8, by which they are prevented from injuriously rubbing against one another. We conveniently cushion these plates by strips 30, of

leather or packing material, which, however, need only be placed on alternate sign elements. If desired, yielding stops 31 may also be added. The particular cushion ; means employed is, however, not important.

While we have described the invention with particular reference to the display of two signs simultaneously upon opposite faces of the sign elements, in certain cases it is only necessary to use a single sign which may be placed on either one of the sign elements.

What we claim is—

1. In a changeable sign, a sign-carrier having a plurality of sign elements suspended therefrom, a ratchet-wheel having a number of teeth which is a multiple of the number of sign elements, a pawl-carrying arm movable over said teeth, adjustable stops whereby the throw of said arm is controlled, a link depending from said arm for moving the same, a housing having springs for engaging the sign elements and holding them in exposed relation, alternate elements having yielding

stops upon their surfaces so as to prevent injurious wear and friction thereof. 25

2. A changeable sign, comprising a shaft having a pair of perforated collars thereon, sign elements having rods passed through the perforations of said collars and having packing strips or buffers upon alternate elements, a ratchet-wheel keyed to said shaft, an arm concentrically movable with respect to said shaft and having a pawl thereon, means for swinging said arm to rotate the ratchet-wheel and successively present new sign elements in sign-exposing relation, means for adjusting the throw of said arm, and means for preventing swinging movement of the sign elements in sign-exposing relation. 30 35 40

In witness whereof we subscribe our signatures in the presence of two witnesses.

FRANK L. FULLER.

CHAS. S. BANGHART.

Witnesses:

ROE S. JOHNSON,

I. M. TRITT.