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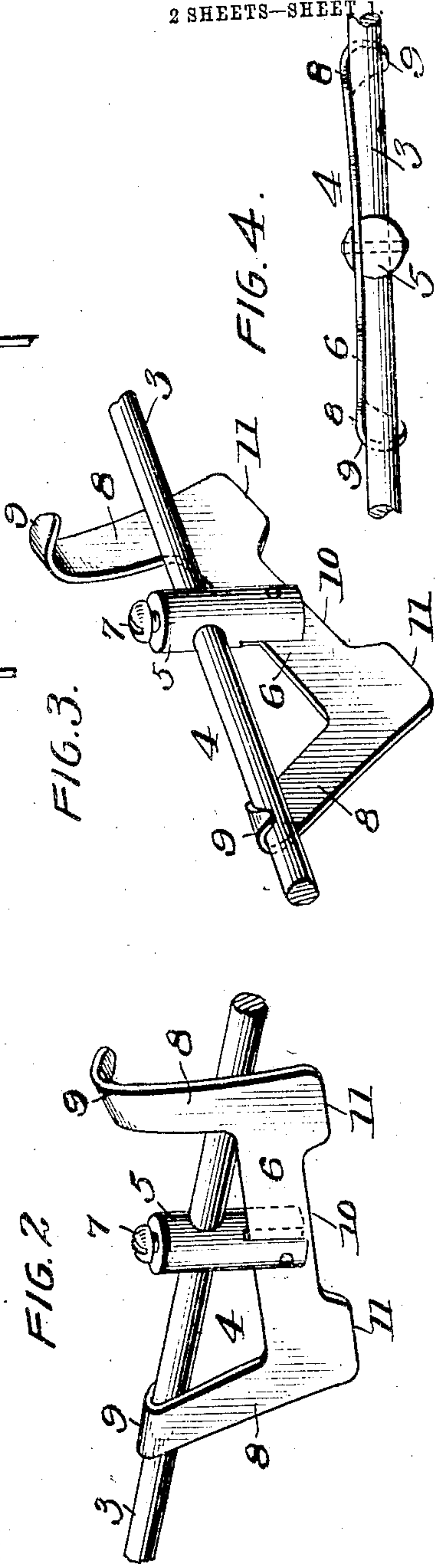
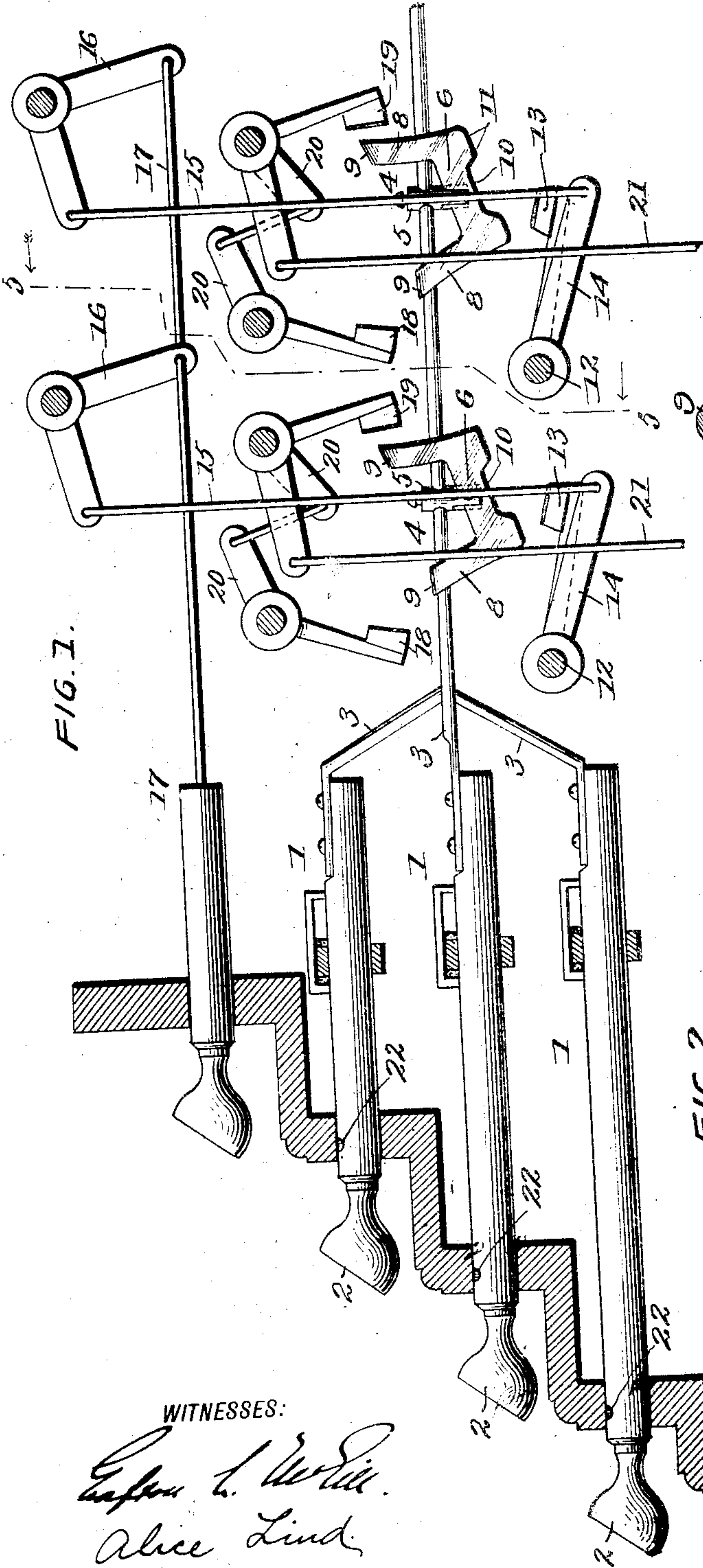
PATENTED APR. 16, 1907

J. O. FUNKHOUSER.

ADJUSTABLE COMBINATION ACTION FOR ORGANS.

APPLICATION FILED JULY 11, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

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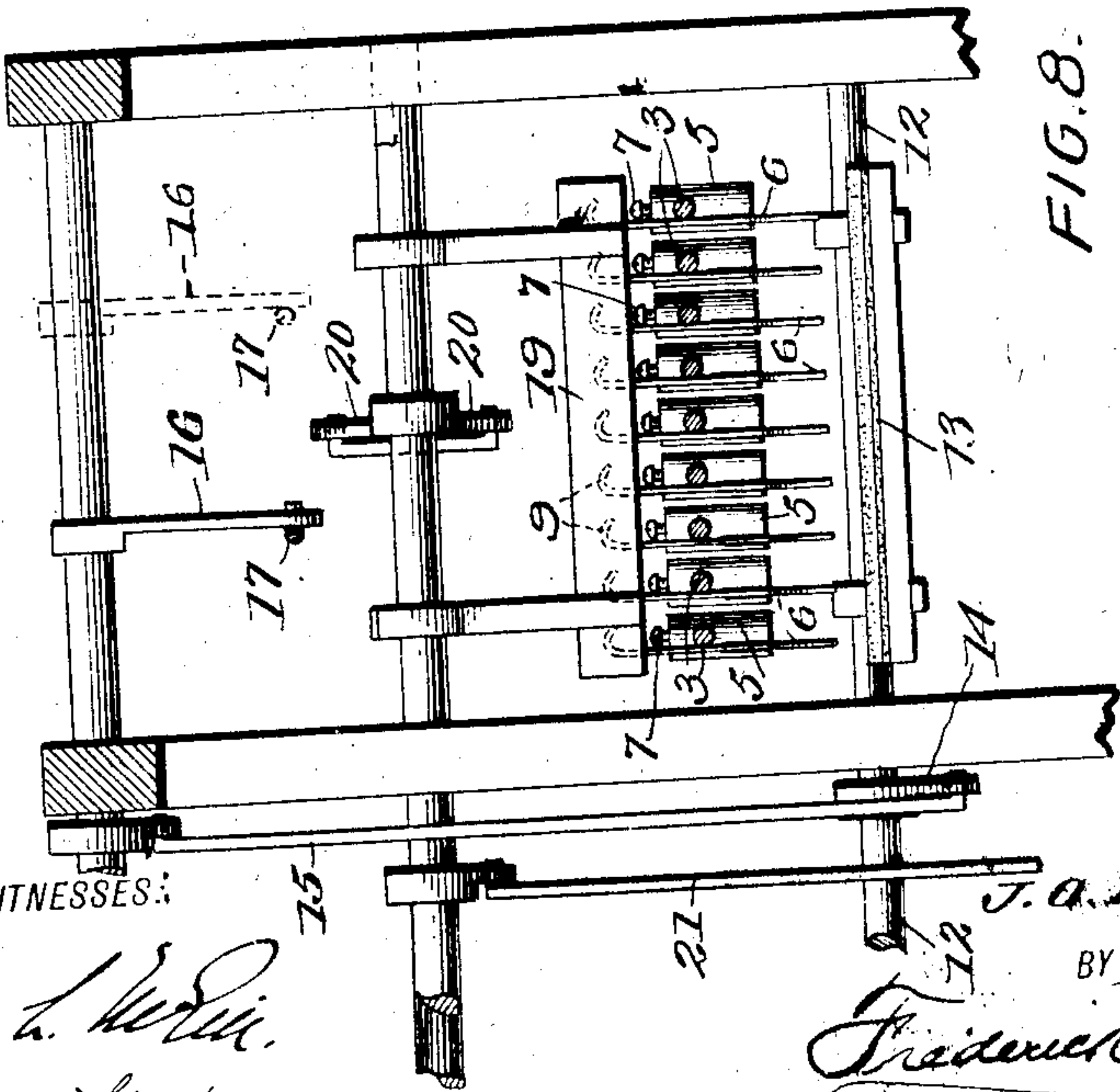
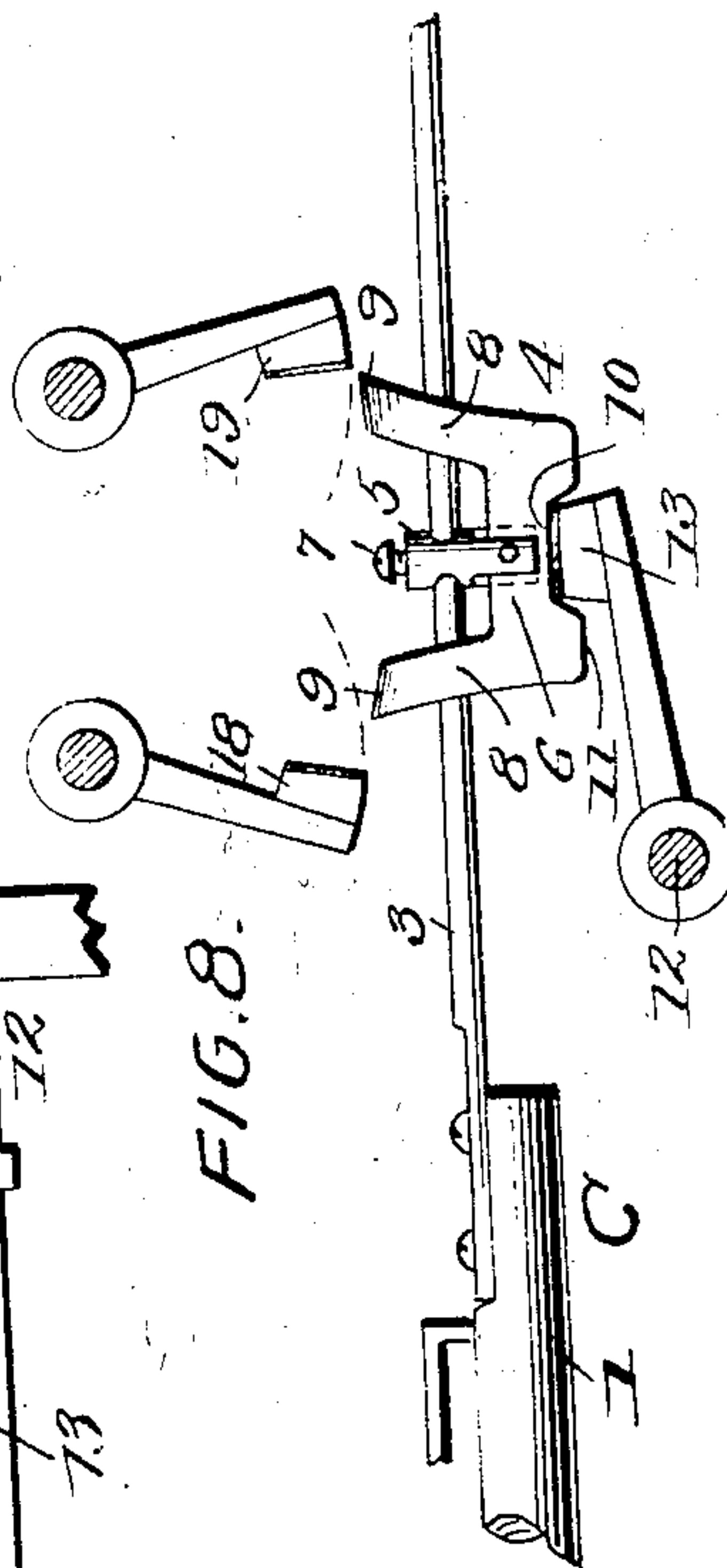
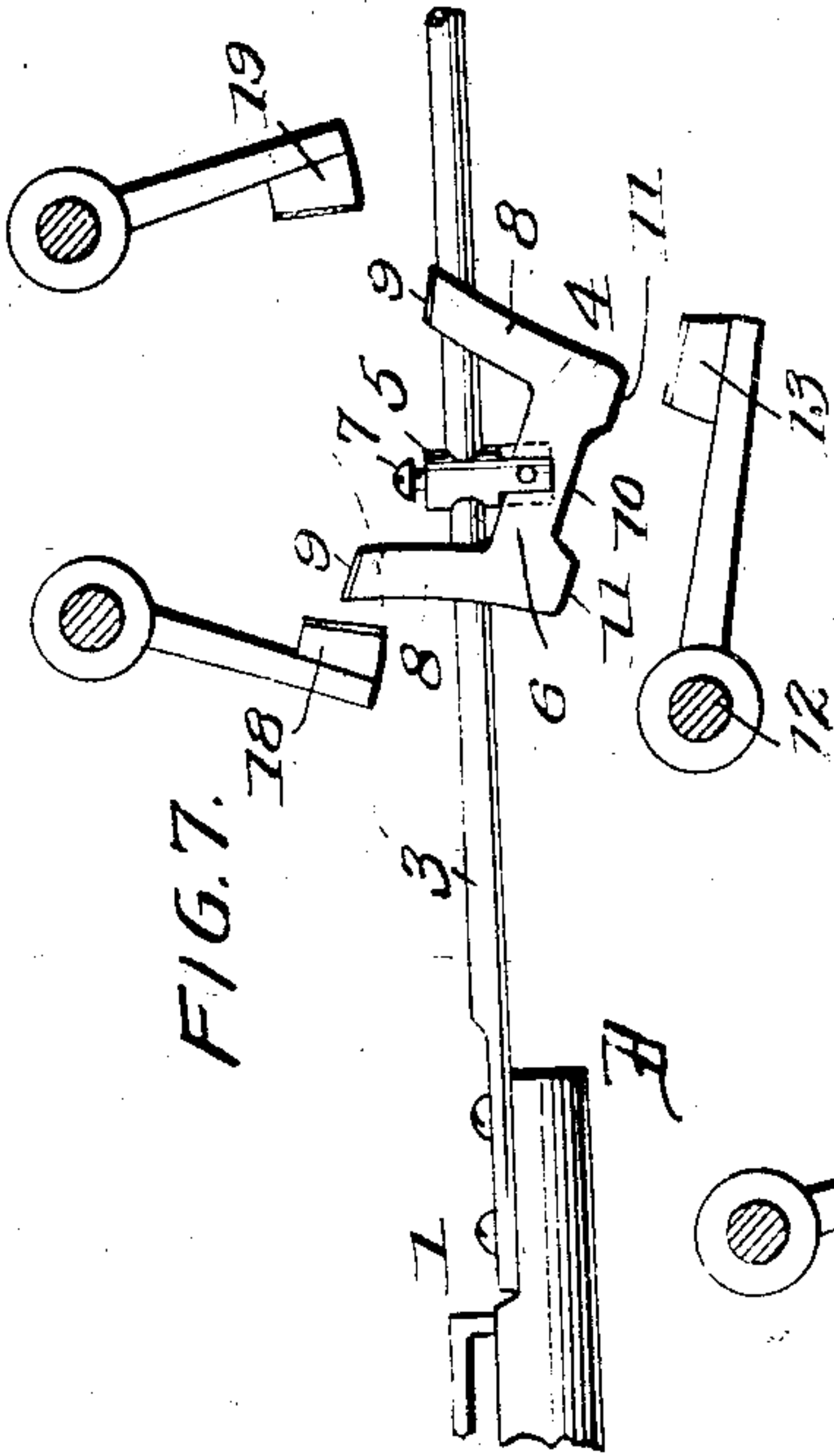
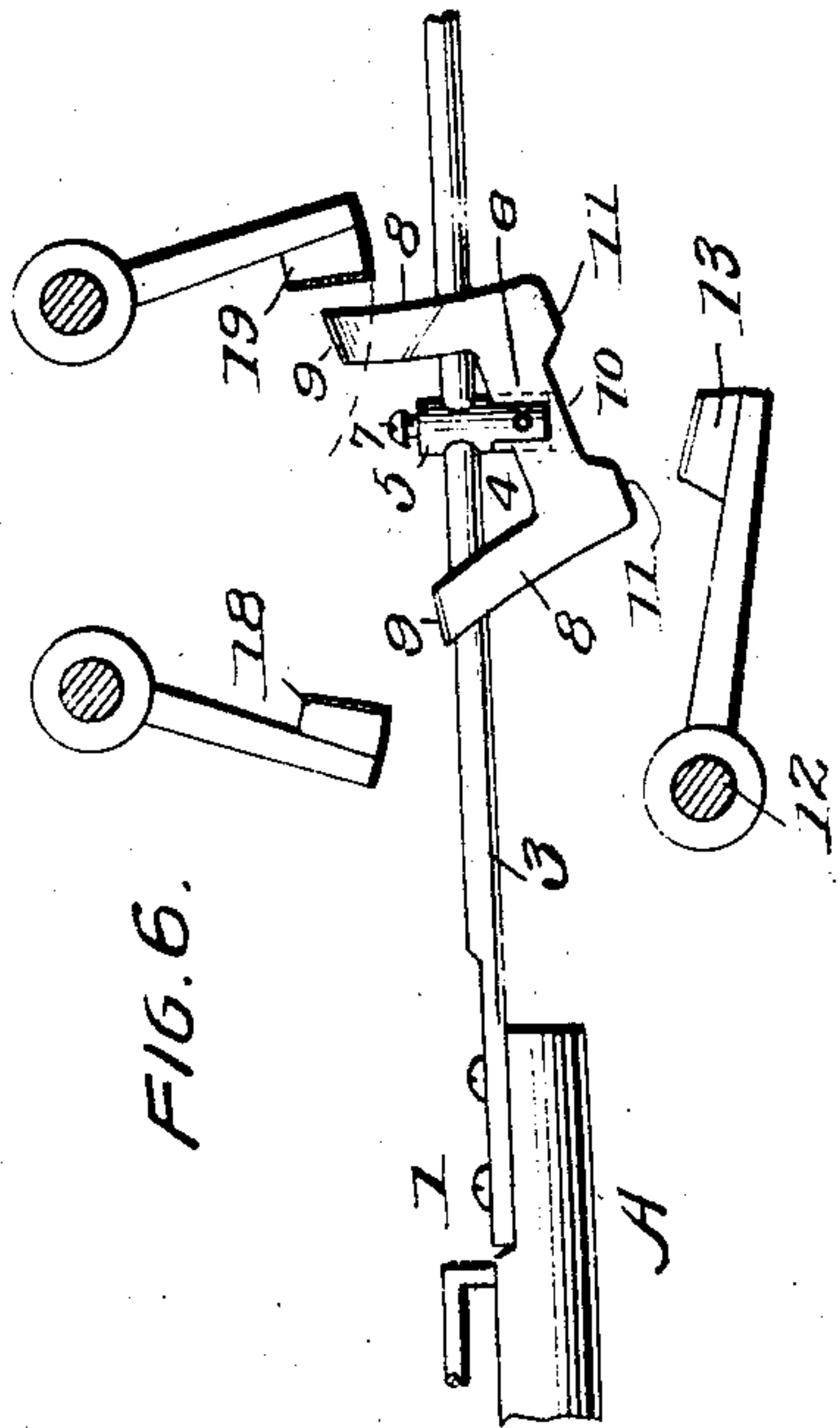
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2 SHEETS—SHEET 2.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

JACOB OTT FUNKHOUSER, OF HAGERSTOWN, MARYLAND.

## ADJUSTABLE COMBINATION-ACTION FOR ORGANS.

No. 853,828.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed July 11, 1905. Serial No. 269,138.

*To all whom it may concern:*

Be it known that I, JACOB OTT FUNKHOUSER, of Hagerstown, in the county of Washington and State of Maryland, have invented certain new and useful Improvements in Adjustable Combination-Actions for Organs; 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.

This invention relates to that form or construction of adjustable combination-actions for organs by which the organist, by a pre-adjustment or manipulation of the stop-rods at the console, can by a single movement bring simultaneously into effect any set or combination of stops desired and previously selected, while at the same time all the other stops are drawn in or remain untouched; in which the operating mechanism visibly affects the draw-knobs when the various combinations are brought into effect, so that the organist may always see at a glance what combination is "on," and in which all the stops may be individually actuated in the usual way excepting at the time the adjustable combination mechanism is operating.

My present invention contemplates certain hereinafter-described improvements in combination-actions of this character whereby the action may be compactly constructed and will be durable and not liable to get out of order and whereby the parts may be cheaply constructed, expeditiously assembled, and easily adjusted.

In the accompanying drawings, Figure 1 is a side elevation illustrating the improvements. Figs. 2, 3, and 4 are two perspective and one plan view illustrating trip-shoes employed. Fig. 5 is a transverse section taken on a plane between the two series of combination mechanisms shown in Fig. 1, the section being designated by the line 5 5 on Fig. 1. Figs. 6, 7, and 8 are detail side views illustrating different operations of the mechanisms.

The sliding stop-rods 1 individually control the various stop-actions in the usual way, being drawn out by the draw-knobs 2 to bring the respective stop-actions into effect. Each stop-rod is provided with a preferably metallic portion 3 of relatively small diameter, and such portions are positioned to lie in the same plane, as will best be seen by reference to Fig. 5. To each one of the stop-rods

is secured one or more tilting trip-shoes 4, the number of such shoes on each rod depending upon the number of combinations that may be brought successively into effect, and the said shoes are arranged in transversely-extending series, so that those on each rod lie alongside of and in transverse alinement with the corresponding shoes of the same series on all the other rods when the rods occupy the same relative longitudinal position. Each trip-shoe 4 comprises a preferably metallic binding-post 5, designed to be secured on the stop-rod, and a preferably metallic tilting member 6, which is pivotally mounted on and supported by said binding-post. The binding-post 5 in the present instance is bored transversely to accommodate the rod and is provided with a binding-screw 7 to hold it securely at the proper point on the rod, and said post is further slit longitudinally at one end to receive the tilting member 6. The tilting member 6 is supported by the post 5 to swing in a plane parallel with the longitudinal axis of the rod and is provided with two arms 8, curved at their ends to form hooks 9, designed to alternately engage with the rods so as to limit the tilting movement. It is also provided with a middle recess 10, forming two end lugs or projections 11. The said member 6 is constructed, preferably, of material sufficiently resilient and is otherwise so arranged that the two arms 8 bear with frictional engagement against the rod, whereby such member will remain at any angle to which it is tilted without the employment of any springs or other accessory frictional devices.

Mounted in the framework within which the stop-rods 1 are housed are transverse axes or spindles 12, each carrying an oscillating setter-bar 13, extending transversely along the transverse series of trip-shoes 4 in juxtaposition to the lugs 11 thereof, said setter-bars being actuated at the console in any preferred manner. In the present instance there are shown for this purpose levers 14, connected by link-rods 15 to bell-crank levers 16, in turn connected to and actuated by draw-rods 17, there being one of said draw-rods for each setter-bar. The setter-bars are designed to be swung against either one or the other of the lugs 11 of all of the trip-shoes of the same transverse series to tilt such shoes one way or the other or to enter the middle recess 10 of the shoes to move the shoes to a middle or neutral position, all de-



pending upon the longitudinal position of the respective stop-rods 1 at the time the setter-bars are actuated. This advance setting of the trip-shoes to either one of these three positions—that is, with one arm or the other extended beyond the stop-rod or with both arms level with respect thereto—determines the performance of the various stop-rods when they are subsequently acted upon by the mechanism that brings the several combinations into effect. This mechanism comprises pairs of oscillating transverse bars or wipers 18 19, arranged along either side of the arms 8 and designed to swing toward each other across the plane of said arms by being provided with link-connected fingers 20, projected on opposite sides of their axes, as illustrated in Fig. 1. These wipers may be actuated by a single movement by any preferred means, as by a link-rod 21, controlled by treadle, draw-knob, or piston actuated by pneumatic or electric motor. (Not shown.) When the wipers are thus actuated to swing toward each other, they will be brought against those arms 8 that project beyond the stop-rods and thereupon move such rods either in or out, according to which arm 8 thereon so projects and the position of the stop-rod at the time, or if any of the trip-shoes are in the neutral position before described such rods will not be affected, as both wipers will move across the plane of the arms 8 without touching the latter. In order to determine at the console the exact longitudinal position of the respective stop-rods necessary to bring their trip-shoes in such relation to the setter-bar that the latter when actuated will move it to the level or neutral position, I have in this instance provided each stop-bar with an indicator in the form of a small button 22, of contrasting wood or the like, so located that it will be just brought into view when the stop-rod has been drawn out to the proper position.

In the operation of this adjustable combination-action the organist having determined what combination of stops he desires to be brought into effect will draw out, by means of the draw-knobs 2, those stops which he desires to "speak" when the combination is on, will adjust to the neutral position those stops he desires to remain unaffected by the combination mechanism, and will push in those stops he desires such mechanism shall withdraw, so that the action thereof will remain silent. He will then operate the setter-bar for the first combination he has arranged for, which will result in tilting the trip-shoes to the proper position for the subsequent action of the wipers 18 19. Having done this, he is free to draw or withdraw any individual stops until he desires the previously-selected combination, at which time he actuates by a single movement the rod 21, which results in oscillating the wipers 18 19,

and the latter will thereupon simultaneously advance or withdraw or leave untouched the respective stop-bars, according as the same have been previously arranged, and will do this irrespective of the position in which the individual stop-bars happen to be at the time the combination is called for. As the draw-knobs 2 are visibly affected by the combination mechanism, the organist is able to always see at a glance the character of the combination that is on.

For a specific example of the operation reference is to be had to Figs. 6, 7, and 8. Here the organist has, by the mechanism above described, tilted the trip-shoe of stop-bar A to one oblique position, that of stop-bar B to the opposite position, and that of C to the neutral position. Under these circumstances, it being understood that the shoes of A, B, and C are in transverse alinement to be acted upon by the same pair of wipers, the oscillation of the wipers will result in the wiper 19 moving the stop-bar A outward, while the opposite wiper 18 will move the stop-bar B inward, and the stop-bar C will remain unaffected.

While I have described the operation of the mechanism as applied to one combination after the stops have been "set," I have illustrated two that can be brought into effect in succession, and it is obvious that any number of combinations may be brought into effect one after the other. The entire series of combinations may be arranged for beforehand, and the character of each combination is only limited by the number of individual stops embodied in the organ. It is of course understood that a series of trip-shoes, a setter-bar, and a pair of wipers are required for each additional combination.

From the foregoing description, in connection with the accompanying drawings, it will be seen that I have provided an adjustable combination-action constituting a compact structure, as the metallic portions of the stop-bars are of relatively small diameter and the tilting members 6 of the trip-shoes may be made of comparatively thin sheet metal, taking up very little room. The construction of the trip-shoes enables them to be very quickly secured to and adjusted on the rods, and the construction and inherent nature of the tilting member 6 cause it to frictionally bind against the rod and remain in any position it is placed without the employment of springs, catches, or other devices, thereby effecting economies and providing a construction that is not liable to get out of order. The said member 6, with its lugs 11, arms 8, and hooked ends 9, is preferably an integral construction and may be cheaply stamped and struck up into shape.

I claim as my invention—

1. An apparatus of the character described, comprising a stop-rod, a trip-shoe mounted



on said rod and provided with a member arranged to tilt in a plane parallel with the longitudinal axis of the rod, said member having a face bearing with frictional contact against said rod, means for tilting said member, and means acting on said member to move the stop-rod.

2. An apparatus of the character described, comprising a stop-rod, a trip-shoe mounted thereon and provided with a tilting member bearing with frictional engagement against said rod and having two arms arranged to alternately project beyond the rod when said member is tilted to one oblique position or the other, means for tilting said member, and means for engaging the projecting arm of said member to move the stop-rod in one direction or the other.

3. An apparatus of the character described, comprising a stop-rod, a trip-shoe mounted on said rod and provided with a tilting member having two arms arranged to alternately project beyond said rod when said member is tilted to one oblique position or the other, the ends of said arms being provided with hooks extending over said rod whereby said hooks may alternately engage the same and limit the movement of said member, means for tilting said member, and means acting against one or the other of said arms for the purpose set forth.

4. A device of the character described, comprising a stop-rod, a trip-shoe mounted thereon and provided with a one-piece tilting member, said member bearing with frictional

engagement against the rod and being provided with two arms the ends of which constitute hooks to limit the movement, and said member also being provided with a middle recess producing two end lugs, a movable device in juxtaposition to said tilting member and arranged to be brought into operative contact therewith, the longitudinal position of the stop-rod determining the points of contact, as specified, and means for engaging said arms whereby to move said stop-rod.

5. In an apparatus of the character described, a trip-shoe comprising a binding-post arranged for attachment to a stop-rod and provided at one end with a longitudinal slit, and a tilting member pivoted in said slit and provided with a recess, producing two end lugs and also provided with arms whose ends are curved to form hooks, for the purpose set forth.

6. In an organ the combination of stop-bars, a swinging catch on one side of each of said bars, said catch having engaging ends and overhanging ears for limiting its swinging movement, and devices for engaging the ends of said catches for moving the bars, the catches being arranged to swing sufficiently to bring the ends into the paths of the device.

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

JACOB OTT FUNKHOUSER.

Witnesses:

RALEIGH S. WILLIAMS,  
GEORGE S. FUNKHOUSER.