

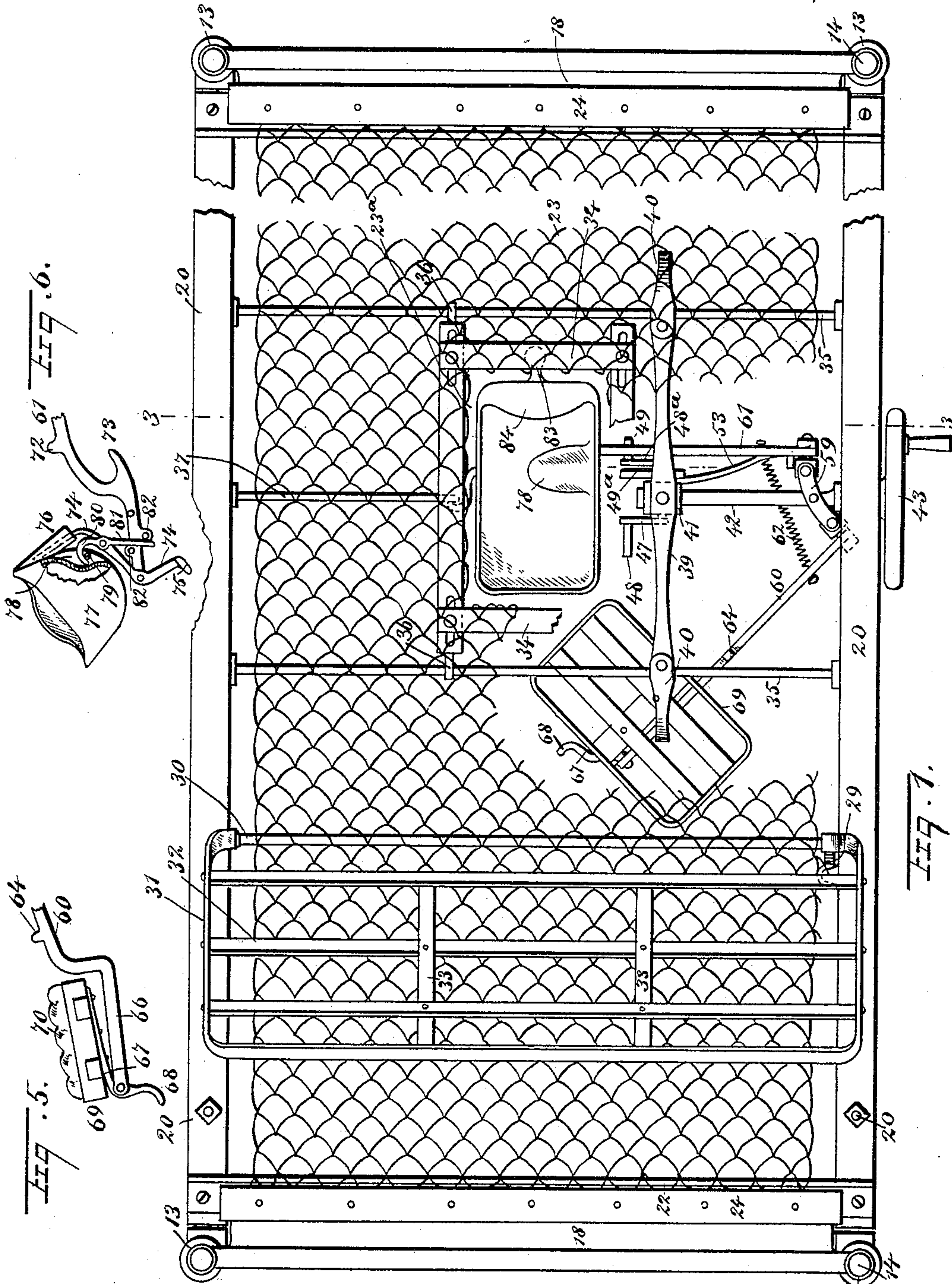
(No Model.)

3 Sheets—Sheet 1.

C. OLSEN.
INVALID BED.

No. 467,017.

Patented Jan. 12, 1892.



WITNESSES:

H. Walker
C. Sedgwick

INVENTOR

C. Olsen
BY Munn & Co.
ATTORNEYS

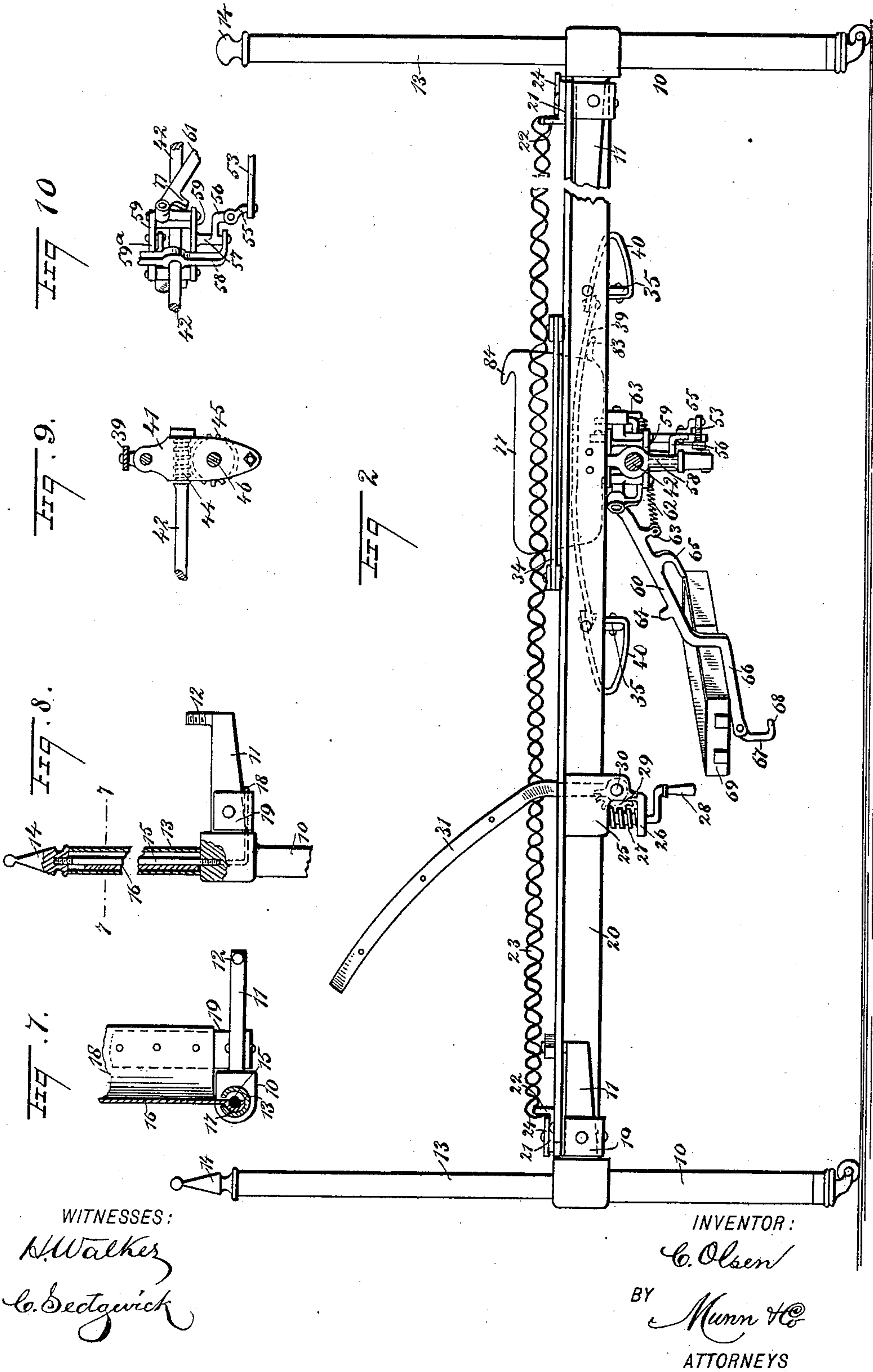
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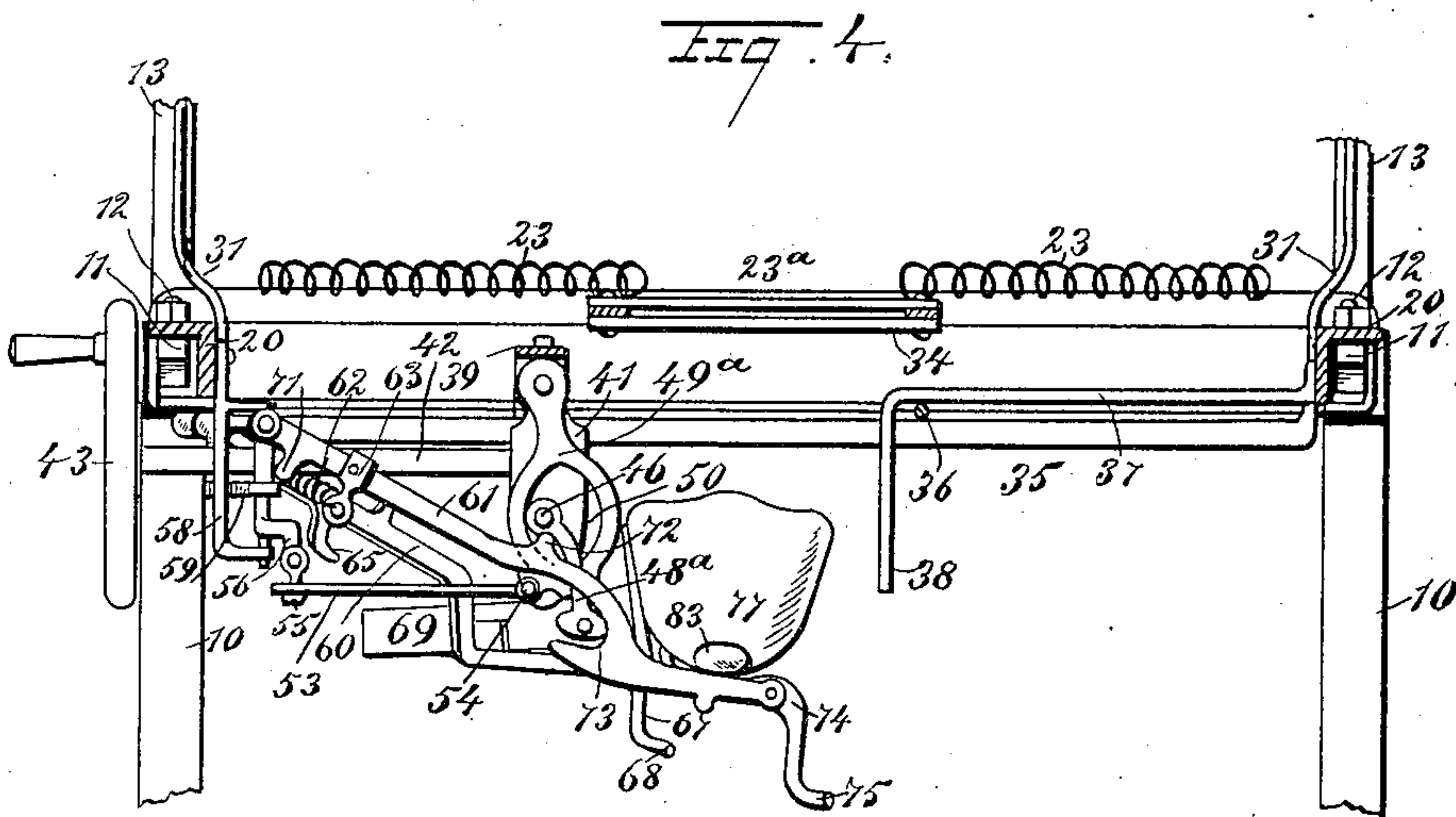
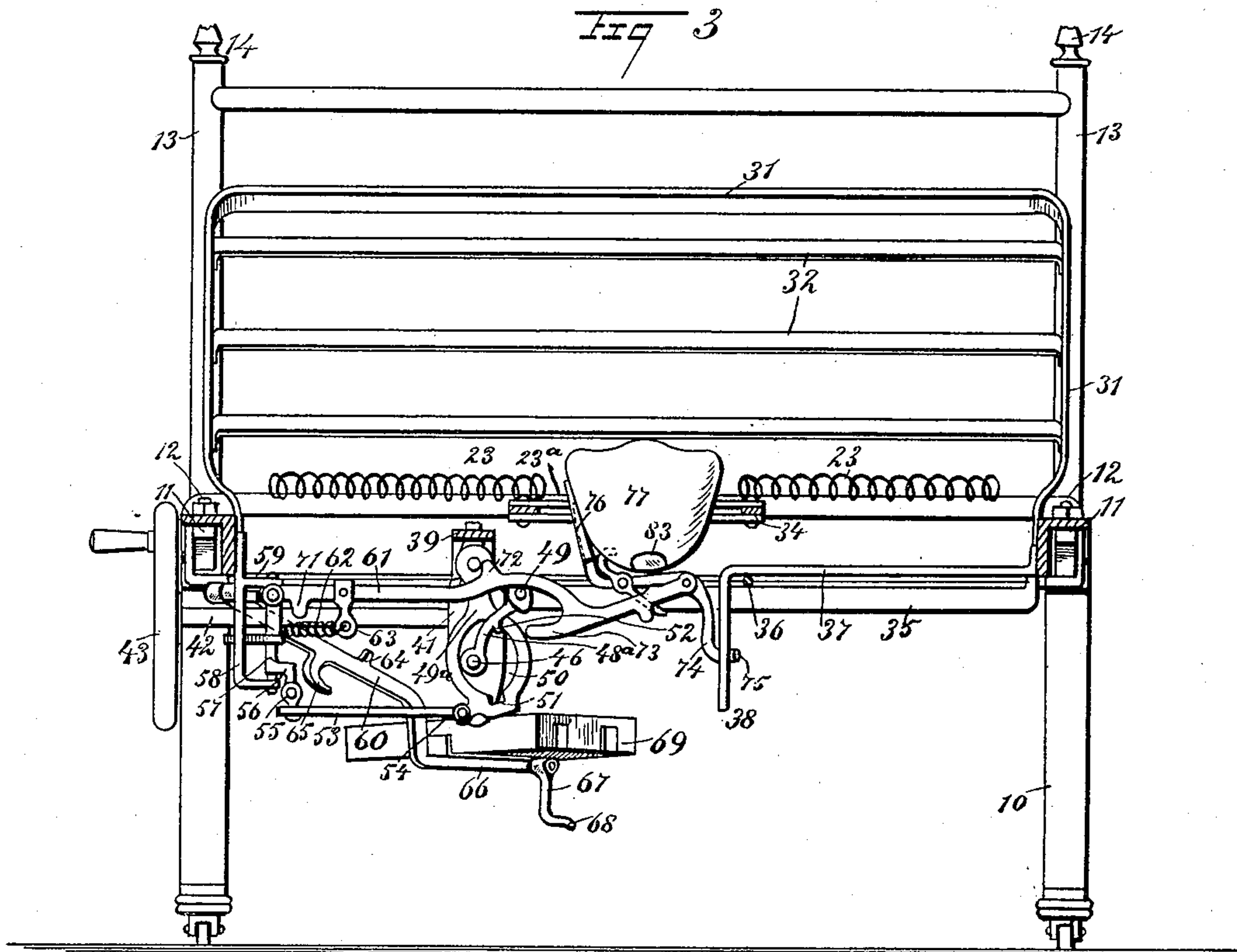
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UNITED STATES PATENT OFFICE.

CARL OLSEN, OF LONG ISLAND CITY, NEW YORK.

INVALID-BED.

SPECIFICATION forming part of Letters Patent No. 467,017, dated January 12, 1892.

Application filed April 15, 1891. Serial No. 388,960. (No model.)

To all whom it may concern:

Be it known that I, CARL OLSEN, of Long Island City, in the county of Queens and State of New York, have invented a new and Improved Invalid-Bed, of which the following is a full, clear, and exact description.

My invention relates to improvements in invalid-beds; and the object of my invention is to produce a bed which is especially adapted for use in the sick-room and which may be used as an ordinary bed.

To this end my invention consists in certain features of construction and combinations of parts which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken plan view of a bed embodying my invention, a portion of the spring being broken away to show the operative parts. Fig. 2 is a side elevation of the bed. Fig. 3 is a cross-section on the line 3 3 in Fig. 1, showing the commode raised into the central opening in the spring. Fig. 4 is a similar view, but with the commode lowered. Fig. 5 is a broken enlarged detail view of the pad and its support. Fig. 6 is a broken enlarged detail view of the commode and its support, showing also the means of tilting it. Fig. 7 is a broken sectional plan on the line 7 7 in Fig. 8, showing one corner of the bedstead and the manner in which the parts are secured together. Fig. 8 is a broken detail view, partly in section, of one of the corners of the bedstead. Fig. 9 is a broken detail view of the central hanger beneath the bed and the worm-and-gear mechanism in the hanger, and Fig. 10 is a broken detail perspective view of the swinging frame which carries the pad and commode.

The legs 10 of the bedstead terminate at their upper ends in laterally-extending lugs 11, which lugs are turned up at the end and formed into threaded studs 12, as shown in Fig. 8, and the stud is adapted to be secured by a nut to one of the side pieces of the bed-frame. The head-posts and foot-posts 13 are made hollow and are provided with removable caps 14, which caps serve as nuts and are provided with threaded sockets, which fit the up-

per ends of the rods 15, which rods extend downward through the posts and are screwed into the upper portions of the legs, as best shown in Fig. 8. The head-board 16 is adapted to enter vertical slots in the inner sides of the head-posts, and the side edges of the head-board are formed into semicircular bends 17, which fit upon the rods 15, so that when the parts are secured together the head-board will be firmly held in place. The foot-board is also secured to the foot-posts in the same manner. The head-board and foot-board are bent inward at their lower ends, as shown at 18, and are secured to transverse bars 19, which bars at their outer ends are turned upward, as shown in Fig. 8, and are bolted to the lugs 11 on the upper ends of the legs. The side pieces 20 of the bed-frame are also bolted to the lugs by means of the studs 12 and suitable nuts, and the side pieces are further strengthened by the end strips 21, which are riveted to the upper portions of the side strips at the ends, and these strips 21 are turned up at their inner edges, as shown at 22, and the strips serve to support the bed-spring 23, which is held in place by means of clamping-bars 24, which bars are placed upon the ends of the spring and upon the strips 21, and the strips and bars are firmly riveted together.

In constructing the bed the side pieces 20 are preferably made of angle-iron or of some material made in the shape of angle-iron, as shown in Fig. 4, as when the frame is constructed in this way it is light and strong and the various parts may be easily secured to it.

On opposite sides of the bed-frame, near the head of the bed, are depending ears 25, which have arms 26 at their lower ends, and a vertical worm 27 is arranged in one of the ears and is provided with a crank 28, by means of which it may be turned. The worm meshes with a segmental gear 29 on the end of a shaft 30, and this shaft extends transversely beneath the bed-frame and turns in the ears 25. The shaft 30 carries a bolster-frame to support the pillows, and the said frame is formed by a bent rod 31, the ends of which are secured to the shaft, and the bolster-frame is bent so that it will extend diagonally upward and toward the head-board, as best shown in Fig. 2. The rod 31, forming

the frame of the bolster, is provided with longitudinal spring-bands 32 and with cross-bands 33, as shown in Fig. 3, although the cross-bands may be omitted. The bolster-frame 5 affords a convenient support for the pillows, and by means of the gear mechanism described it may be adjusted so as to lie nearly flatwise upon the bed, or it may be raised to any desired angle.

10 The bed-spring is cut away in the middle to form a central opening 23^a, and around this opening is an adjustable frame 34, which is secured to the edges of the spring, the said frame having its side pieces slotted at the 15 ends, as shown in Fig. 1, so that it may be adjusted to suit the size of the opening. Extending transversely beneath the bed-spring and near the ends of the opening are cross-bars 35, which are secured to the side pieces 20 of the bed-frame, and these rods are connected at one side of the opening by a rod 36, which supports a rod 37, one end of the latter rod being secured to a side of the bed-frame and the other end 38 being bent to extend 25 downward, as best shown in Figs. 3 and 4. This bent end serves to tilt the commode and pad into a horizontal position, as hereinafter described. On the opposite side of the opening 23^a and beneath the spring 23 is a longitudinal spring 39, which extends nearly to the 30 spring 23 and which is supported at its ends by bent U-shaped springs 40, the upper members of said springs being secured to the main spring 39 and the lower ends being secured 35 to the cross-bars 35; but the springs 39 and 40 may be made in a single piece, if desired.

A hanger 41 is suspended from the central portion of the main spring 39, and the hanger supports the inner end of a transverse shaft 40 42, which extends outward beyond the edge of the bed-frame, and the outer end of the rod is mounted in a suitable hanger secured to one of the side pieces of the frame, as hereinafter described, and is provided with a hand- 45 wheel 43, by means of which it may be turned. The inner end of the shaft 42 is threaded, as shown at 44, and meshes with a worm-wheel 45, which is secured to an axle 46, extending through the hanger 41, and when the shaft is 50 turned the worm-wheel and axle will be also turned. The axle 46 projects from each side of the hanger 41 and is provided at one end with a crank 47, which terminates in a laterally-extending stud 48, which is adapted to 55 raise the pad, as hereinafter described, and the opposite end of the axle 46 is provided with a similar crank 48^a, which terminates at its end in a laterally-extending stud 49, which stud is adapted to raise the commode in the 60 manner described below. The crank 48^a turns in a stirrup 49^a, which stirrup is pivoted to the upper portion of the hanger 41, as best shown in Figs. 3 and 4, and the opening 50 of the stirrup is nearly circular, being slightly 65 elongated vertically, and in the lower extremity of the stirrup is a recess 51, which is adapted to receive a stud 52 on the crank 48^a,

and when the stud is in engagement with the recess of the stirrup it will swing the stirrup until the angle of the stirrup is such that the 70 stud slips from the recess. The lower end of the stirrup is provided with a pitman 53, which is pivoted to the stirrup, as shown at 54, and the outer end of the pitman connects by means of a link 55 with a crank 56 on the 75 vertical stud 57, which stud is pivoted in the lower bent end of the hanger 58, and the hanger is secured to one of the side pieces 20 of the bed-frame and forms a support for the outer end of the shaft 42. The upper end of 80 the stud 57 is secured to a frame 59, and the upper portion of this frame is connected by a link 59^a with the upper portion of the hanger 58, as best shown in Fig. 10. It will thus be seen that when the pitman 53 is moved back 85 and forth it will actuate the crank 56 and stud 57, and thus cause the frame 59 to oscillate horizontally.

Pivoted to one end of the frame 59 is an inwardly-extending arm 60, which is capable of 90 a limited vertical movement and which is adapted to carry a pad, and a similar arm 61 is pivoted to the opposite side of the frame and is adapted to support a commode. The two arms are connected by a spiral spring 62, 95 the ends of which are secured to depending links 63 on the arms 60 and 61, and it will thus be seen that when one arm is in position beneath the bed and the other is swung outward the tendency of the spring will be to 100 pull the outer arm inward, as the inward movement of the arms is limited. The arm 60 is provided on its upper side with a stud 64, which, when the arm is raised, strikes the main spring 39 and prevents the arm from being 105 lifted too high, and on the under side of the arm is a hook 65, which is engaged by the stud 48 on the end of the crank 47, and the movement of the stud operating on the hook serves to pull the hook and arm down 110 or to raise the hook and arm, according to the direction in which the crank is turned. The inner end of the arm 60 terminates in a flat and nearly horizontal portion 66, which forms a support for the pad-frame 69, and 115 this frame is of open-work and carries a pad 70, which is usually held in the opening 23^a of the bed-spring 23, and thus closes the opening. When the pad is in this position, the spring will be perfectly level and may be 120 used as an ordinary spring. A bent arm 67 is pivoted at its elbow in the outer end of the arm 60, the upper member of the bent arm being secured to the pad-frame 69 and the lower end being bent at an angle, as shown 125 at 68, so that when the pad is raised it will strike the bent end 38 of the rod 37, and this will tilt the arm and raise one side of the pad-frame, so as to hold the pad in a perfectly horizontal position, and it will thus be held 130 in a flexible manner, so that it will be as easy to lie upon as the bed-spring 23.

The arm 61 is provided near its outer end with a depending stud 71, which is adapted

to strike the frame 59 and limit the downward movement of the arm, with a stud 72 on the upper side, which is adapted to contact with the main spring 39 and prevent the arm from being raised too high, and with a hook 73, which is adapted to engage the stud 49^a on the end of the crank 48^a, and the stud will raise or lower the arm, according to the direction in which the crank is turned. The free end of the arm 61 has an elbow-lever 74 pivoted therein, the lower end of the lever being bent at an angle, as shown at 75, so that when the arm is raised the bent end of the lever will contact with the bent end 38 of the rod 37 and tilt the lever in the same manner that the arm 67 of the pad is tilted, as hereinbefore described. The upper end of the lever 74 enters a socket 76 on one side of the commode 77. The commode 77 is provided with a recess 78 in one side, and extending transversely across this recess is a pin 79, which engages a hook 80, which hook is pivoted to the upper portion of the lever 74, and the shank of this hook extends downward between two studs 82 on the arm 61, and the studs thus limit the movement of the hook. The commode 77 is adapted to be raised into the opening 23^a. It is provided at one end with a handle 83, by means of which it may be operated, and it is partially covered at the top and at one end, as shown at 84.

The operation of the device is as follows: We will suppose that the commode 77 is in position in the central opening of the bed-spring 23, as shown in Fig. 3. The hand-wheel 43 is then turned to the left, thus turning the shaft 42 and the worm-wheel 45. This will turn the axle 46 and the cranks 47 and 48^a. At the beginning of this movement the crank 48^a will be in the upper portion of the stirrup 49^a, as shown in Fig. 3, and the inner end of the arm 61, which carries the commode, will be supported on the stud 49 of the crank. As the wheel is turned to the left the crank 48^a will descend, and the arm 61 and commode 77 will also descend until the crank reaches the lower portion of the stirrup and the stud 52 on the crank drops into the recess 51 at the lower end of the stirrup. The commode will then have descended into the position shown in Fig. 4. The continued movement of the wheel and connected parts causes the stud on the crank to swing the stirrup forward, and the pitman 53, which is secured to the stirrup, oscillates the frame 59 and swings the commode horizontally to a point adjacent to the edge of the bed, where it may be conveniently reached. When the frame is swung, as described above, to bring the commode into this position, it also swings the arm 60 inward until the arm is above the stud 48 on the crank 47, and if the wheel is still turned in the same direction the crank will be raised, and the stud on the crank, striking against the arm 60, will raise the arm and pad until the pad fills the opening in the bed-spring, and about the time the pad reaches

the opening the bent end 68 of the arm 67 will engage the bent end 38 of the rod 37, and thus tilt the pad into a perfectly horizontal position. By reversing the movement of the hand-wheel 43 this movement is reversed, the stud 48 engages the hook 65 on the arm 60 and draws the arm downward, and it is obvious that the entire chain of movements would be reversed by the reverse turning of the wheel until the commode will be again brought back into the opening, and as the commode reaches the opening the bent end 75 of the lever 74 will engage the bent end 38 of the rod 37 and tilt the rod, so as to raise the commode into a horizontal position, its upward movement being limited by the hook 80, the shank 81 of which will strike against one of the studs 82 and check the movement of the hook and commode.

It will be noticed from the foregoing description that the bed will be extremely convenient for use in a sick-room, and it will be seen that the frame of the bedstead may be easily taken apart and packed into a small compass, or the bed-frame may be removed from the head-board and foot-board and applied to a bedstead of any other form.

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

1. In a bed of the character described, a bedstead comprising a series of legs having laterally-extending lugs at the top, which lugs terminate in vertical threaded studs, removable posts adapted to rest upon the legs, said posts being slotted vertically, screws extending downward through the posts and into the legs, said screws having cap-nuts at their upper ends, transverse boards connecting the posts and entering the slots, said boards having their side edges bent to fit the screws and having their lower edges bent inwardly, and cross-strips secured to the lower edges of the boards and to the lugs on the legs, substantially as described.

2. In a bed of the character described having a central opening therein, the combination, with the bed-frame, of a pad and commode adapted to swing horizontally and vertically, so as to alternately close the opening in the bed, and a lever mechanism for tilting the pad and commode as they enter the opening, substantially as described.

3. The combination, with a pad and a swinging arm which carries the pad, of a bent arm pivoted in the free end of the swinging arm, the upper end of the arm being secured to the bottom of the pad-frame and the lower end of the arm being bent slightly, as described, and a bent rod adapted to engage the bent end of the arm, substantially as described.

4. In a bed of the character described having a central opening therein, the combination, with a vertically-swinging arm and a commode carried by the arm, of a bent lever pivoted in the end of the arm, said lever having its upper end loosely connected with the

commode and its lower end bent laterally, a hook pivoted on the lever and having its upper end engaged by a pin on the commode and its lower end held between studs on the swinging arm, and a bent rod arranged to engage the bent end of the lever, substantially as described.

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10 5. In a bed of the character described having a central opening therein, the combination of a hanger suspended beneath the bed and adjacent to the opening, a revoluble axle pivoted in the hanger and provided with cranks at each end, one of the cranks having lugs thereon, a stirrup pivoted on the hanger

and arranged in the path of the crank-stud, 15
said stirrup having a recess at its lower end, an oscillating frame pivoted near the edge of the bed, a pitman connecting the lower end of the stirrup with a crank on the oscillating frame, and swinging arms pivoted on the ends 20 of the frame, one of the arms carrying a pad and the other a commode, substantially as described.

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Witnesses:

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