

No. 646,831.

Patented Apr. 3, 1900.

R. E. HOLDER & J. W. ADNEY.

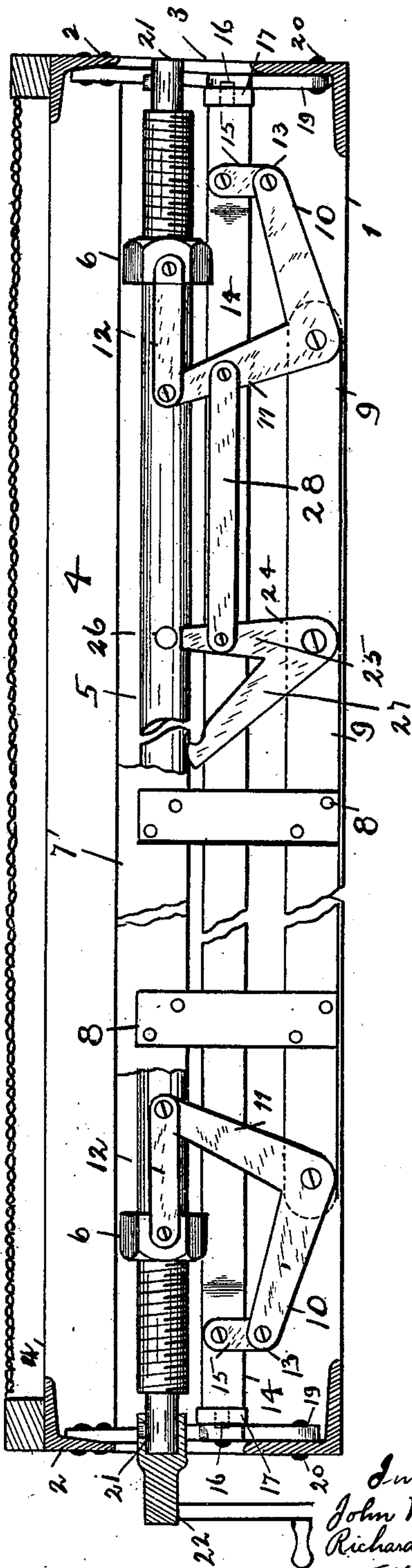
ADJUSTABLE BED SPRING.

(Application filed Jan. 25, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



Witnesses  
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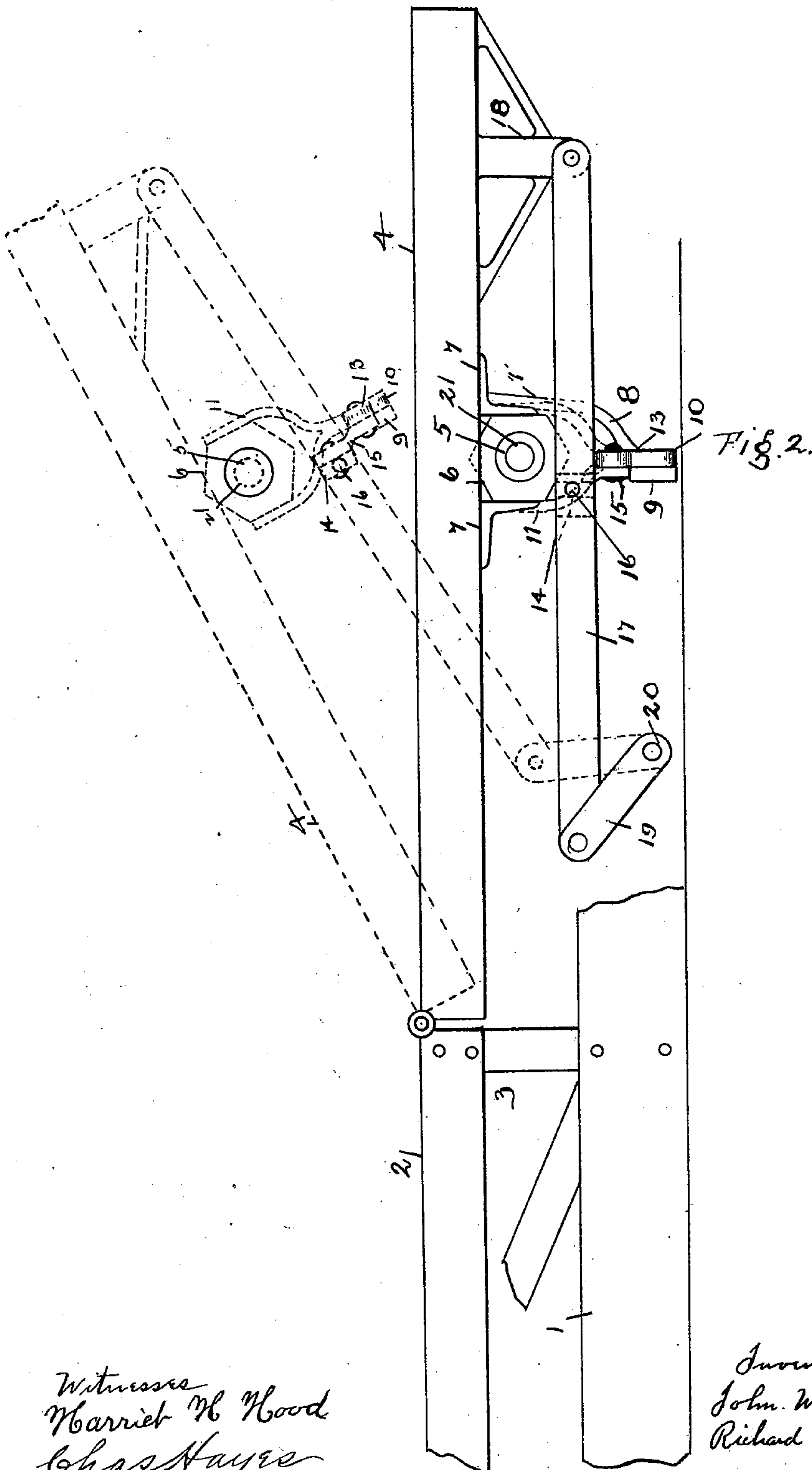
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(No Model.)

**3 Sheets—Sheet 2.**



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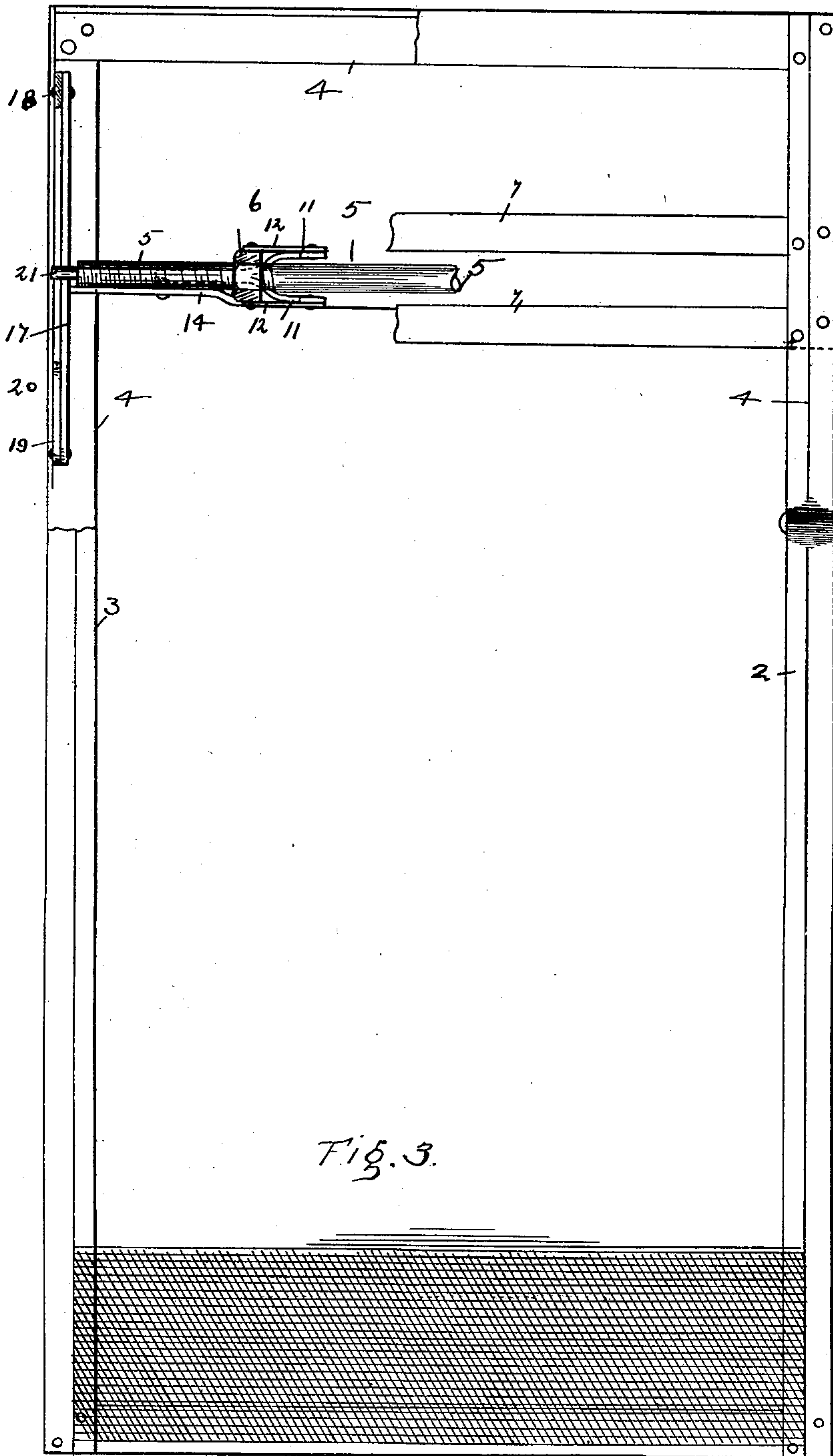


Fig. 3.

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# UNITED STATES PATENT OFFICE.

RICHARD E. HOLDER AND JOHN W. ADNEY, OF COLUMBUS, INDIANA.

## ADJUSTABLE BED-SPRING.

SPECIFICATION forming part of Letters Patent No. 646,831, dated April 3, 1900.

Application filed January 25, 1900. Serial No. 2,704. (No model.)

*To all whom it may concern:*

Be it known that we, RICHARD E. HOLDER and JOHN W. ADNEY, citizens of the United States of America, residing in the city of Columbus, county of Bartholomew, and State of Indiana, have invented certain new and useful Improvements in Adjustable Bed-Springs, of which the following is a specification.

It is well known in medical and surgical practice that the moving of an invalid by lifting in the ordinary manner often produces dangerous relapses which detract materially from desired effects of medicines or operations. With most patients it is necessary to raise them to a sitting position several times a day for the purpose of eating, administering medicines, &c.

The objects of our invention are to provide an adjustable bed-spring capable of being manipulated easily and without jar to the patient, to provide an adjustable bed-spring which will have the outward appearance of the ordinary spring, but which will always be ready for instant use, and, further, to produce an efficient device.

Our invention consists in the combination and arrangement of parts hereinafter described and claimed.

The accompanying drawings illustrate our invention, in which—

Figure 1 is a cross-section of the spring, showing the head-elevating mechanism; Fig. 2, a side elevation, partially broken away; and Fig. 3, a plan, partially broken away.

The numeral 1 represents a frame, preferably constructed of angle-irons in a rectangular form; but this is entirely optional with the user of the device, as the same results can be obtained by using a frame of any other material. Mounted above this frame is a spring-carrying frame 3, having a stationary part 2 and a hinged head part 4, which is adapted to be raised and lowered by the following novel method, which constitutes a part of our invention: Mounted on the under side of the head portion 4 in suitable bearings is a screw-shaft 5, extending transversely across the said head portion and provided at one end with a right-hand-threaded screw and at the other with a left-hand-threaded screw. Mounted on these screw-threads are nuts 6, which move

along the said shaft when it is rotated either toward or from each other, according to the direction in which the said shaft is rotating.

Secured to the hinged head portion 4 are two transverse angle-irons 7, which carry downwardly-projecting braces 8, which in turn support a transverse supporting-bar 9. Mounted on each end of this supporting-bar 9 is a bell-crank lever 10, pivoted at its angle and provided with an upwardly-projecting bifurcated end 11, straddling the screw-shaft and connecting with the nuts 6 by means of links 12. It will here be noted that the free ends of the bell-crank levers will be raised or lowered simultaneously when the screw-shaft is manipulated. The free ends 13 of the bell-crank levers are connected with a transverse bar 14 by means of link 15. This transverse bar 14 is provided with a trunnion 16 on each end thereof, which pivots in a side bar 17. Said side bar is pivoted at one end to a depending projection 18, rigidly secured to the head part 4 and pivotally secured at the other end to a link 19, which is in turn pivoted to the main frame 1 at 20.

The outer end of the screw-shaft 5 is shouldered, as shown at 21, which is adapted to receive an operating-crank 22.

The operation of the device thus far is as follows: Assuming the spring in a perfectly-flat position, now by revolving the screw-shaft in the proper direction the nuts 6 are caused to move along the said shaft and through the connecting-links 12 the bell-crank levers 10 are rocked, causing end 13 to lower, thus pulling down on the side bars 17. This in reality causes the hinged head and screw-shaft to rise, as the pressure due to the longitudinal movement of the nuts on the screw-shaft is transmitted through the system of levers to the links 19, which allow of the raising of the head portion. This will readily be seen by reference to the drawings, Fig. 2, wherein the relative position of the parts can be noticed when the spring is in a depressed or elevated position. This above system of levers is very powerful, and with the proper screw-thread a child could raise the heaviest patient with ease and without jar or jerk.

For stopping and locking the parts when



the head has been moved to either limit I provide the following:

Mounted on transverse bar 9 is a forked stop 24, provided with a straight end 25, which 5 strikes a pin 26 in a screw-shaft 5 when the latter is rotated in one direction to its limit of movement, and an end 27, which engages with the said pin when the screw-shaft is rotated in the opposite direction to its limit of 10 movement. This forked stop is moved in time with the screw-shaft by means of a link 28, connected to one of the bell-crank levers.

It will be noticed that the head portion will remain in any position in which it is left 15 without the aid of ratchets and the like and that there is no danger of falling.

Having described our invention, we claim—

1. The combination in a bed-spring, of a stationary part, a head part hinged thereto, 20 links pivoted to the stationary part, connecting-bars, pivoted to said links and to the said hinged part, bell-crank levers carried by said hinged head part, and linked to said connecting-bars, and means for actuating said bell- 25 crank levers, so as to raise or lower said head part, substantially as and for the purpose set forth.

2. The combination in a bed-spring, of a stationary part a head part hinged thereto, 30 links pivoted to the stationary part, connecting-bars pivoted to the said links and to the said head part, bell-crank levers carried by said head part and linked to said connecting-bars, a screw-shaft having a right-hand and 35 a left-hand threaded part, and nuts carried by said threaded parts and connected with

the bell-crank levers, substantially as and for the purpose set forth.

3. The combination in a bed-spring, of a stationary part, a head part hinged thereto, 40 links pivoted to the stationary part, connecting-bars, pivoted to the said links and to the said head part, bell-crank levers carried by the said head part and linked to the said connecting-bars, a screw-shaft provided with a 45 right-hand and a left-hand threaded part, nuts on said threaded parts and connecting with the said bell-crank levers, a pin in said screw-shaft, a stop-lever, carried by the head part and actuated to engage with said pin 50 when the head part has been moved to its limit in either direction substantially as and for the purpose set forth.

4. In an adjustable bed-spring, stop mechanism consisting of a bifurcated lever, 24, a 55 pin, carried by a screw-shaft, 5, a link 28, connected with the said bifurcated stop, and one of the parts actuated by said screw-shaft, all timed so that the pin in screw-shaft, 5, will strike one end of the bifurcated stop 60 when the screw-shaft has been rotated a certain number of revolutions in one direction, and the other end of the stop when rotated a certain number of revolutions in the other di- 65 rection, substantially as and for the purpose set forth.

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Witnesses:

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