

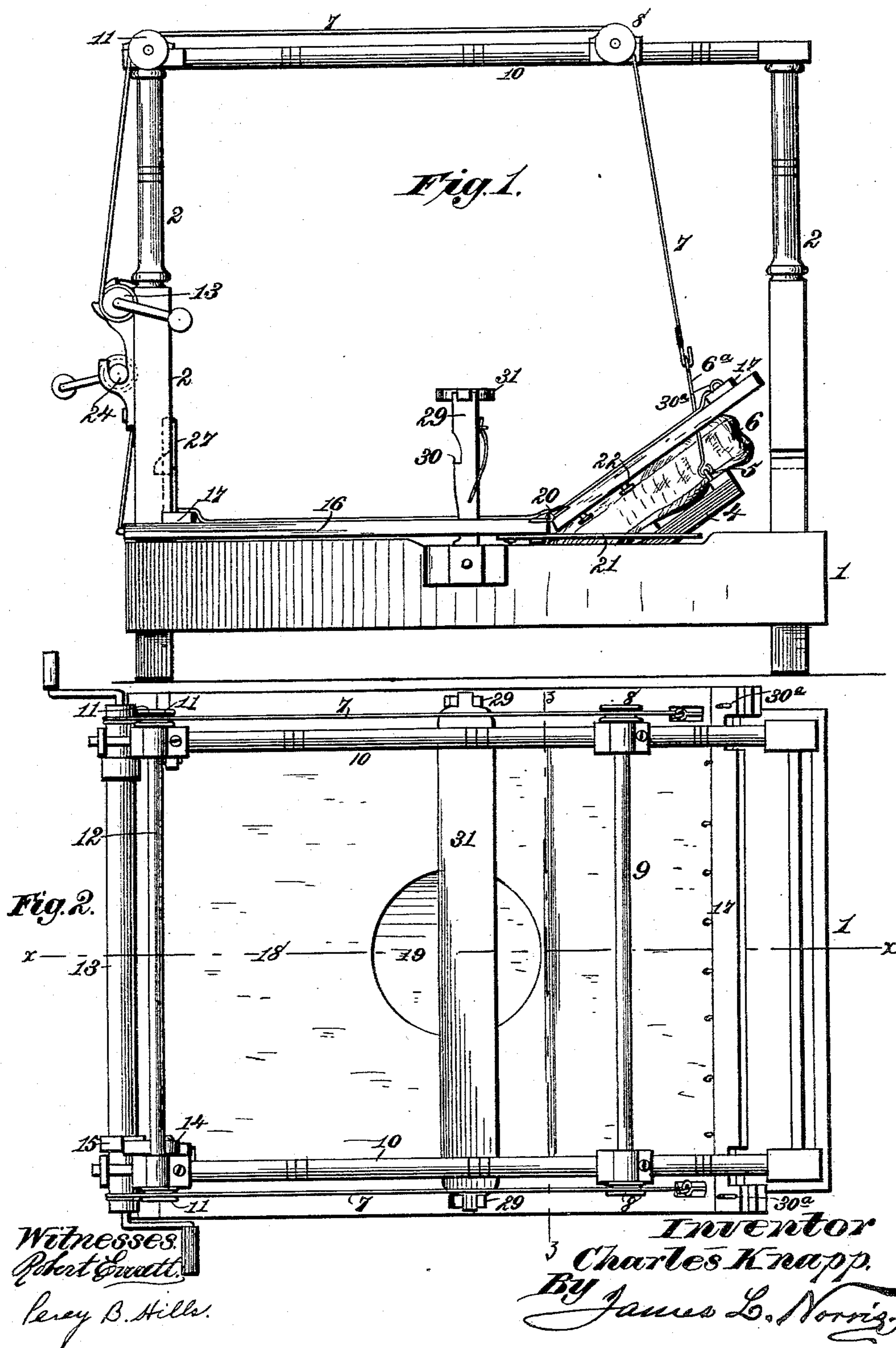
(No Model.)

3 Sheets—Sheet 1.

C. KNAPP.
INVALID BEDSTEAD.

No. 359,728.

Patented Mar. 22, 1887.



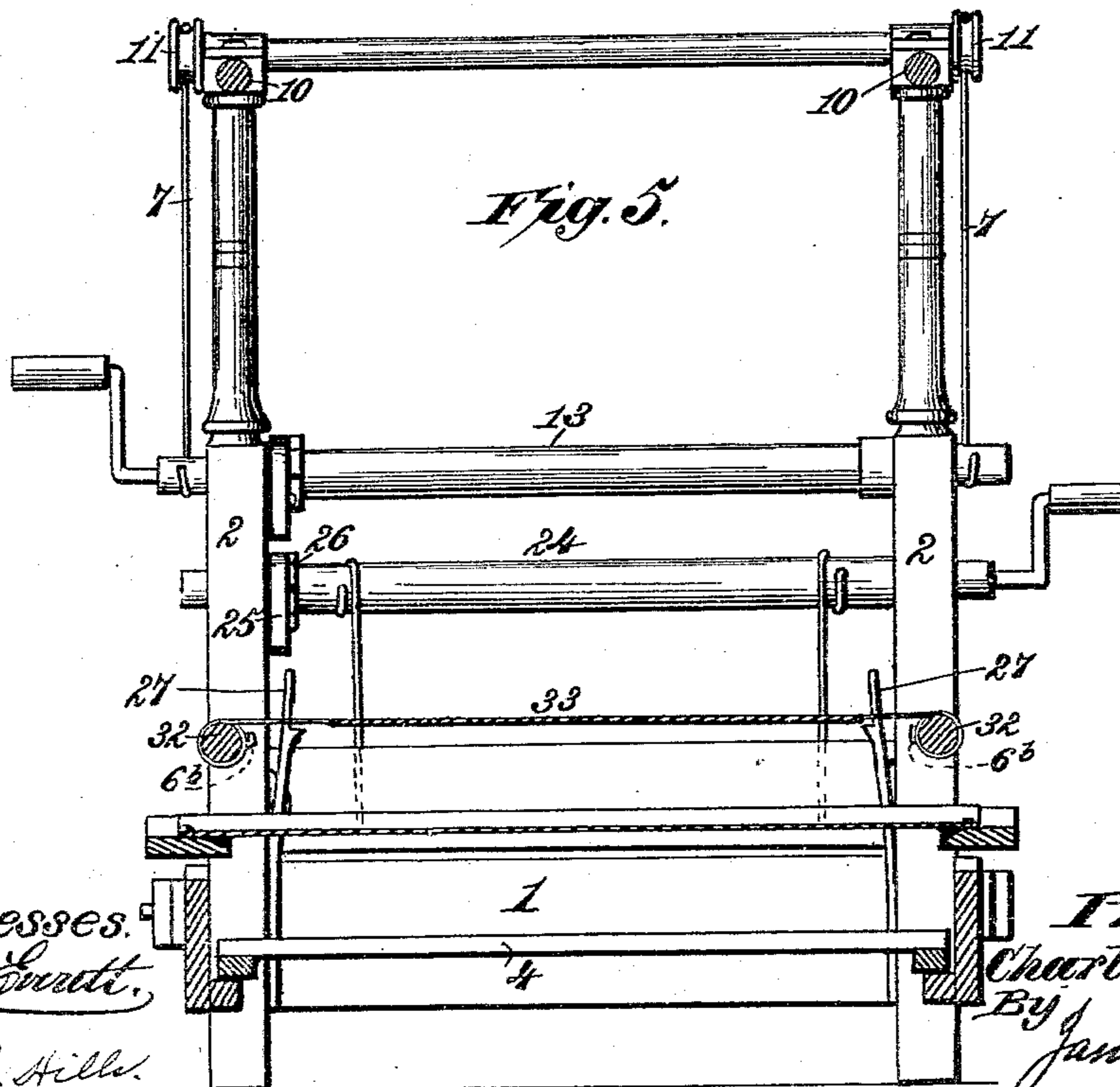
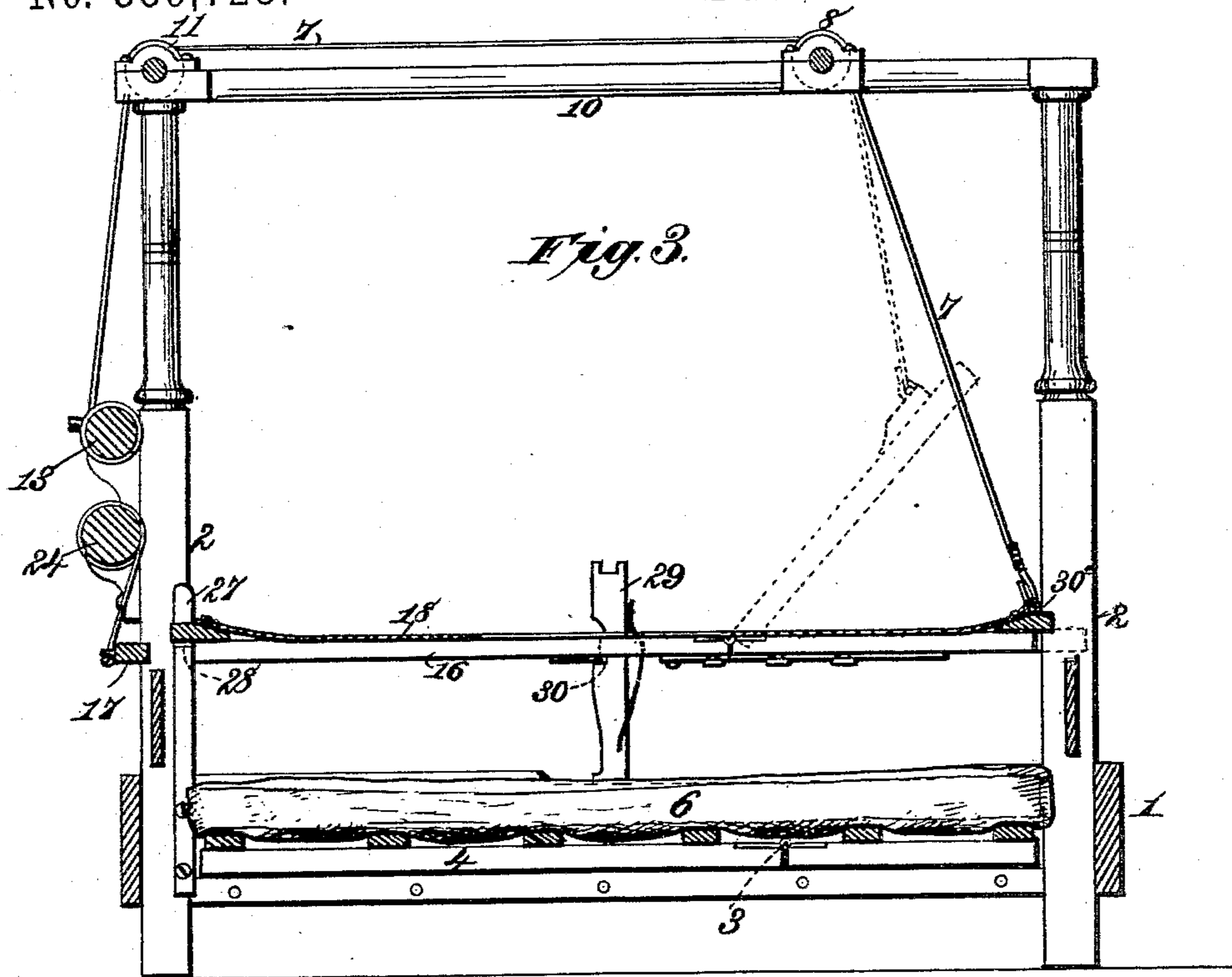
(No Model.)

3 Sheets—Sheet 2.

C. KNAPP.
INVALID BEDSTEAD.

No. 359,728.

Patented Mar. 22, 1887.



Witnesses.
Robert Emmett.
Lucy B. Hills.

Inventor:
Charles Knapp.
By James L. Norris
Atty.

(No Model.)

3 Sheets—Sheet 3.

C. KNAPP.
INVALID BEDSTEAD.

No. 359,728.

Patented Mar. 22, 1887.

Fig. 4.

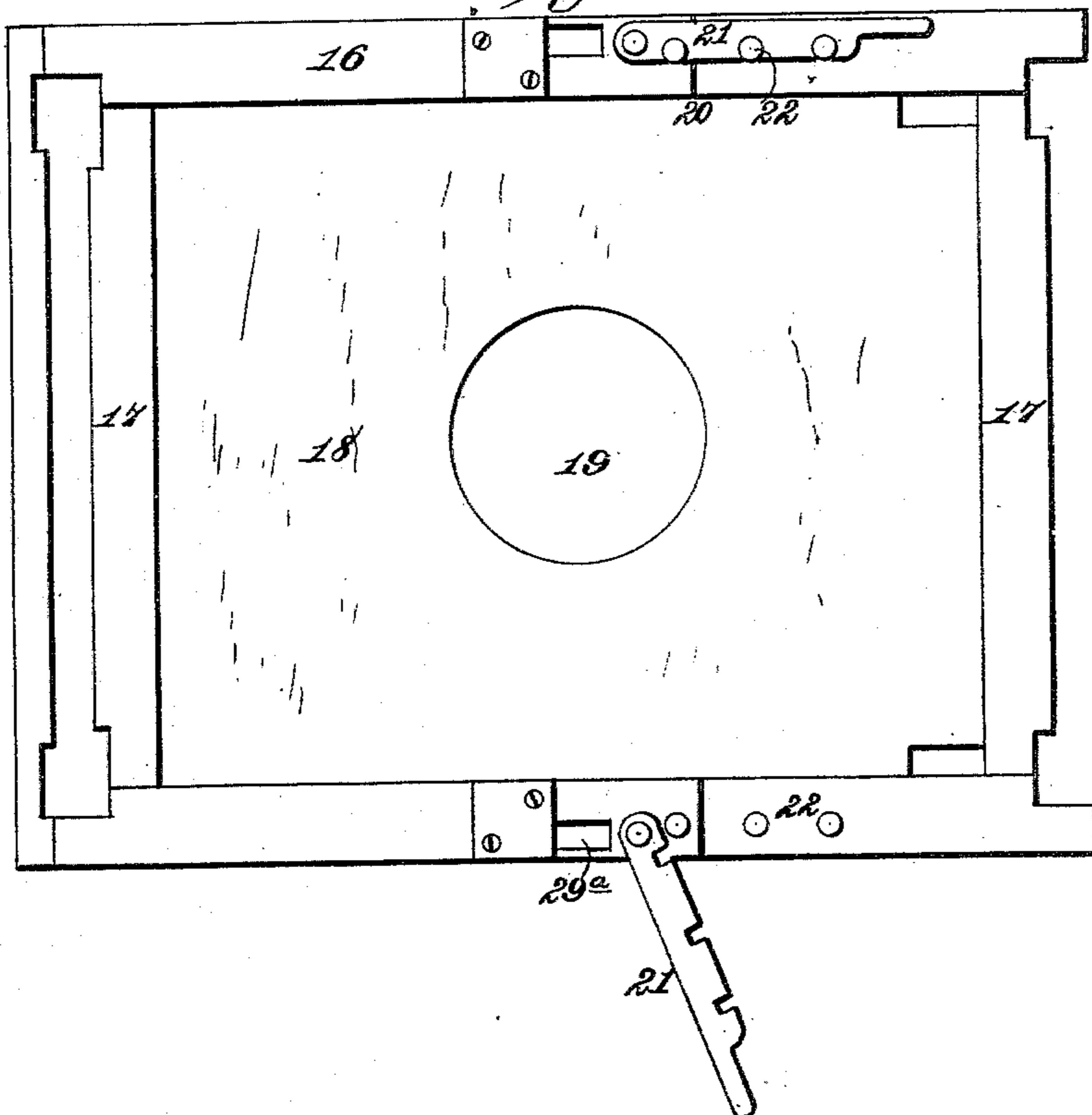
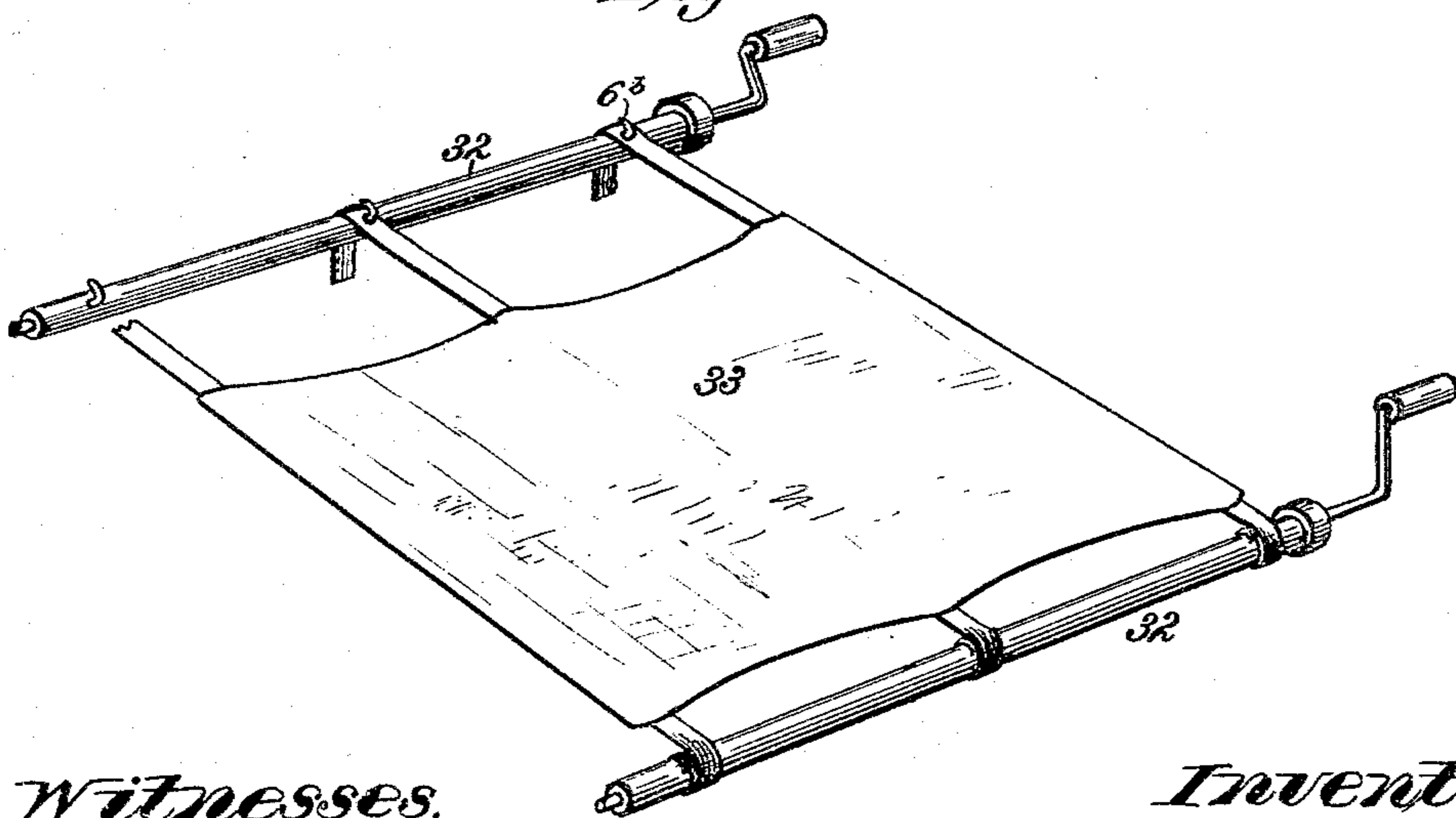


Fig. 6.



Witnesses.

Albert G. Smith.

Percy B. Hills.

Inventor.

Charles Knapp.

By *James L. Norris*
Atty.

UNITED STATES PATENT OFFICE.

CHARLES KNAPP, OF MOUNT PLEASANT, TENNESSEE, ASSIGNOR OF ONE-HALF TO LUTHER L. FRIERSON, OF SAME PLACE.

INVALID-BEDSTEAD.

SPECIFICATION forming part of Letters Patent No. 359,728, dated March 22, 1887.

Application filed July 8, 1886. Serial No. 207,480. (No model.)

To all whom it may concern:

Be it known that I, CHARLES KNAPP, a citizen of the United States, residing at Mount Pleasant, in the county of Maury and State of Tennessee, have invented new and useful Improvements in Invalid-Bedsteads, of which the following is a specification.

This invention has for its object to provide an invalid-bedstead having novel means whereby the person can be conveniently brought to a sitting or inclined position, or lifted bodily in a horizontal position, to enable a vessel to be placed thereunder to receive evacuations.

The invention also has for its object to provide novel means for supporting the arms of the person while reading, or a tray while eating meals.

The invention also has for its object to provide novel means for bodily moving the sheet on which the invalid rests transversely across the bed in either direction for changing the position of the invalid on the bed.

The invention has other objects, all of which will be hereinafter set forth.

The invention consists in the features and construction of parts hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 represents a side elevation of an invalid-bedstead embodying my invention; Fig. 2, a top plan view of the same; Fig. 3, a longitudinal sectional view taken on the line *x x* of Fig. 2; Fig. 4, a bottom view of the secondary frame; Fig. 5, a transverse sectional view taken on the line *z z* of Fig. 2; Fig. 6, a perspective view of the sheet and sheet-adjusting rollers for moving the invalid bodily across the bed.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, where—

The numeral 1 indicates the bed-frame, and 2 the corner-posts, which may be of any suitable or ordinary construction.

The bed-bottom is hinged at 3 to provide a head-section, 4, which may be brought to any desired inclination, and adjacent to each side of this section is attached an eye or hook, 5. The mattress 6 is supported by the bed-bot-

tom, and its head end rises and falls with the hinged head-section. To the eyes or hooks 5 are connected, by eyes or hooks 6^a, what I term the "head-cords," 7. They extend upward to and around the pulleys 8 on the ends of a head-shaft, 9, supported by bars 10, extending from the head to the foot-posts, and the cords then extend horizontally to and around pulleys 11 on a foot-shaft, 12, also supported by the bars 10. The cords then extend to a rotary shaft, 13, journaled on the foot-posts and provided with a pawl and ratchet, 14 15, all in such manner that by rotating the shaft the cords are wound thereupon to raise the head-section of the bed-bottom, and thereby bring the invalid to an inclined position.

Above the mattress is arranged a secondary rising and falling frame, comprising side rails, 16, notched at their ends to fit and be guided upon the bed-post, and transverse foot and head rails, 17, connecting the said side rails. This frame carries a sheet, 18, of any suitable material, secured at its edges by hooks and eyes, and having an enlarged central orifice, 19, and the frame is hinged at 20 directly above and in line with the hinges of the head-section of the bed-bottom, so that when the latter is raised the head-section of the secondary frame is also raised. To make this secondary frame rigid, I pivot under the side rails, 16, at one side of the hinges 20, the locking-plates 21, having notches which engage studs or screws 22 on the side rails opposite the said hinges, so that by swinging the plates to engage the studs or screws the secondary frame becomes rigid, while by swinging the plates from engagement with the studs the head-section of the secondary frame can be raised independently of its foot-section.

To the foot-posts of the bed is also journaled a rocking shaft, 23, carrying foot-cords 24, which are connected with the foot-rail 17 of the secondary frame for raising and lowering the foot end of such frame. This shaft is also provided with a pawl and ratchet, 25 26. To the inside of the foot-posts are secured springs 27, having shoulders 28, which engage under and support the foot end of the secondary frame when the latter is elevated. The side rails of the bedstead-frame are provided with pivoted detachable spring-actuated standards

29, extending through slots 29^a in the side rails of the secondary frame, and having shoulders 30, which guide, engage under, and support the foot-section of the secondary frame when the latter is elevated. Either end of the secondary frame, when rigid, may be first elevated, and when elevated in a horizontal position and supported by the shouldered standards 29 and springs 27 the locking-plate can be released and the head-section of the secondary frame adjusted by the head-cords 7 to any desired position to suit the invalid. A vessel can then be placed under the person to receive the evacuations through the orifice 19 in the sheet 18.

It should be stated that to manipulate the head part of the secondary frame, as just above described, the head-cords 7 are detached from the head-section of the bed-bottom and engaged with hooks or eyes 30^a on the head-section of the secondary frame. The elevation of the secondary frame not only admits of the introduction of the vessel thereunder, but the hinged head-section enables the invalid to be brought to a sitting position, rendering it comfortable and easy for the desired operation.

It will be obvious that when the secondary frame is elevated the bed can be conveniently made up.

To the upper ends of the standards 29 is detachably secured a table or cross-bar, 31, which serves to support the arms of the invalid when reading, or a tray while eating meals. To the posts at each side of the bedstead is journaled a rotary crank-shaft, 32, having hooks or pins 6^b to engage tapes attached to the sides of the sheet 33, on which the invalid rests. By engaging the tapes at one or the other side of the bed with the hooks or pins on its appropriate shaft, and rotating such shaft to draw the tapes, the sheet can be moved across the bed in either direction, thereby changing the position of the invalid on the bed.

The cross-bar 31 serves another important function, as follows: When the secondary frame is elevated and the locking-plates are released to raise the head-section to elevate the head and body of the person, the frame then depends for its support at its middle on the standards 29, which engage and sustain its side rails. The tendency of the weight of the person on the sheet is to draw the side rails of said frame and the standards toward each other; but with the cross-bar in place on the standards this is prevented, and consequently the sheet cannot sag. If this cross-bar were not present, and the secondary frame were elevated and its head-section raised by releasing the locking-plates, as in Fig. 3, there would be a tendency on the part of the sheet to sag by drawing the side bars, as stated, thereby throwing the weight of the patient on the hinges, which is objectionable. The standards 29, however, support the secondary frame, and when the cross-bar 31 is engaged with the standards the sheet is prevented from sagging,

and the hinges of the secondary frame are released from undue strain.

When the secondary frame is elevated, as in Fig. 3, the springs secured to the standards 29 act to swing the latter, so that the notches 30 automatically engage the edges of the slots 29^a in the side rails, 16, to support the frame at its middle, similarly to the manner that the shoulders of the springs 27 support said frame at the foot end. A further advantage of the sheet 33 with its tapes resides in the fact that by placing the sheet under the patient and leaving it disconnected with the shafts 32, and then passing one side of the sheet over the patient and connecting such side with the shaft on that side of the bed to which the sheet has been turned, the patient can be rolled or turned upon one side with ease and comfort. It will be observed that when the locking-plates 21 are released the hinged bed-bottom section 4 and the hinged head-section of the secondary frame work in concert—that is, when the locking-plates are released, the secondary frame in no way interferes with raising the hinged bed-bottom section 4; but when the latter is elevated the head-section of the secondary frame moves in concert therewith. Besides, when the two sections of the secondary frame are rigidly locked by the plates 21, and the head-cords 7 are connected with the hinged bed-bottom section 4, both the latter and the secondary frame can be bodily elevated at one end into an inclined position for the inclination of the entire body of the patient.

The parts comprising the invention are useful for many purposes in the treatment, which will be obvious without special mention thereof.

Having thus described my invention, what I claim is—

1. The combination, with a bedstead having a bed-bottom provided with a hinged head-section, of the rising and falling frame composed of a head and foot section carrying a sheet having an orifice and hinged together above and substantially in line with the hinges of the hinged bed-section, substantially as described.

2. The combination, with a bedstead having a bed-bottom provided with a hinged head-section, of a secondary frame above the bed-bottom, comprising two sections hinged together above and substantially in line with the hinge-line of the bed-section, head-cords adapted to connect with either the hinged bed-bottom section or the hinged head-section of the secondary frame, and a shaft for raising the hinged bed-section or the hinged bed-bottom section, the foot-cords and a shaft for raising the foot-section of the secondary frame, and devices for rigidly connecting the sections of the secondary frame at their hinged line when said sections are in a horizontal plane, substantially as described.

3. The combination, with a bedstead, of a secondary frame comprising two hinged sec-

tions carrying a sheet having an orifice, cords and shafts for independently raising and lowering the head and foot ends of the frame, shouldered standards carried by the bedstead-frame and extending through slots in the foot-section of the frame, and shouldered springs for supporting the foot-section, substantially as described.

4. The combination, with a bedstead, of a secondary frame having side slots and comprising two hinged sections carrying a sheet having an orifice, devices for rigidly locking the said sections when in a horizontal plane, means for raising and lowering either or both ends of the secondary frame, a shouldered standard secured to each side of the bedstead and rising through the side slots of the secondary frame, and a cross-bar or table connected at its ends with said standards, and serving the purposes herein set forth.

5. The combination, with the bedstead comprising corner-posts, of the secondary frame composed of side rails notched to receive and move on the posts, the transverse head and foot rails, and the sheet having the central orifice, said side rails being hinged together to form a hinged head-section, devices for rigidly locking said section and head and foot cords, and shafts for independently raising and lowering the head and foot ends of the frame, substantially as described.

6. The combination, with the bedstead-frame, the corner-posts, and the vertically-movable frame comprising hinged head and foot sections and carrying a sheet having an orifice, of the longitudinal bars supported by the posts, the head and foot shafts having end pulleys, the two rotary shafts journaled on the foot-posts, the head-cords passing from the head-section of the former over the pulleys on the head and foot shafts to one rotary shaft, and the foot-cords passing from the foot-section of the frame to the other shaft, substantially as described.

7. The combination, with a bedstead having corner-posts 2, of the side bars, 10, extending, respectively, from the head to the foot posts, the head and foot shafts, 9 and 12, provided with pulleys 8 and 11 at their ends, the rotary shaft 13, journaled on the foot-posts, the bottom or frame having a hinged head-section, and head-cords 7, extending from the head-section upward to the pulleys on the head-shaft, thence horizontally to the pulleys on the foot-shaft, and then to the rotary shaft, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES KNAPP.

Witnesses:

JAMES I. WEST,
W. J. GUEST.