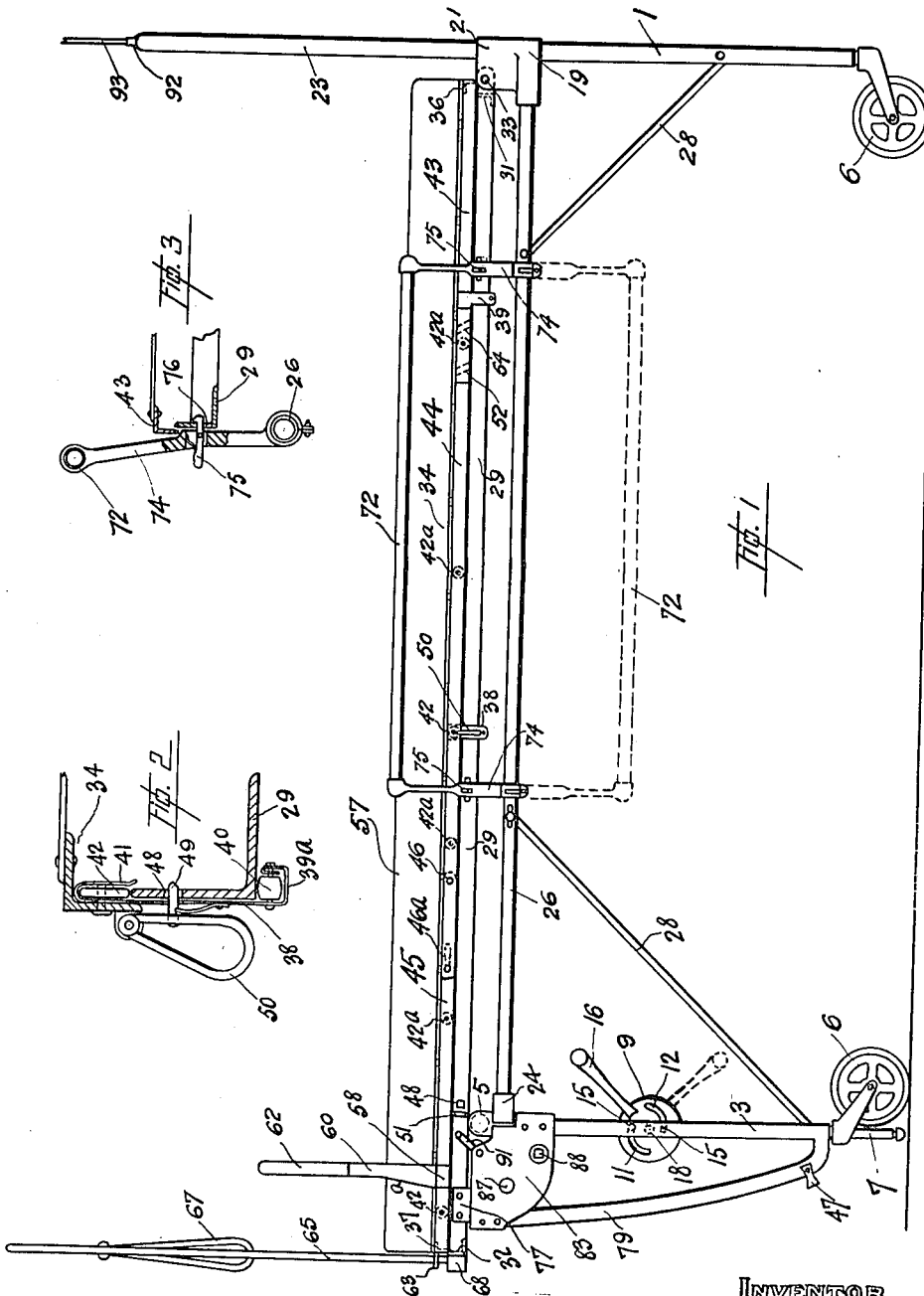


M. T. MACEACHERN.
OBSTETRICAL BED.
APPLICATION FILED FEB. 4, 1918.

1,280,792.

Patented Oct. 8, 1918.
5 SHEETS—SHEET 1.

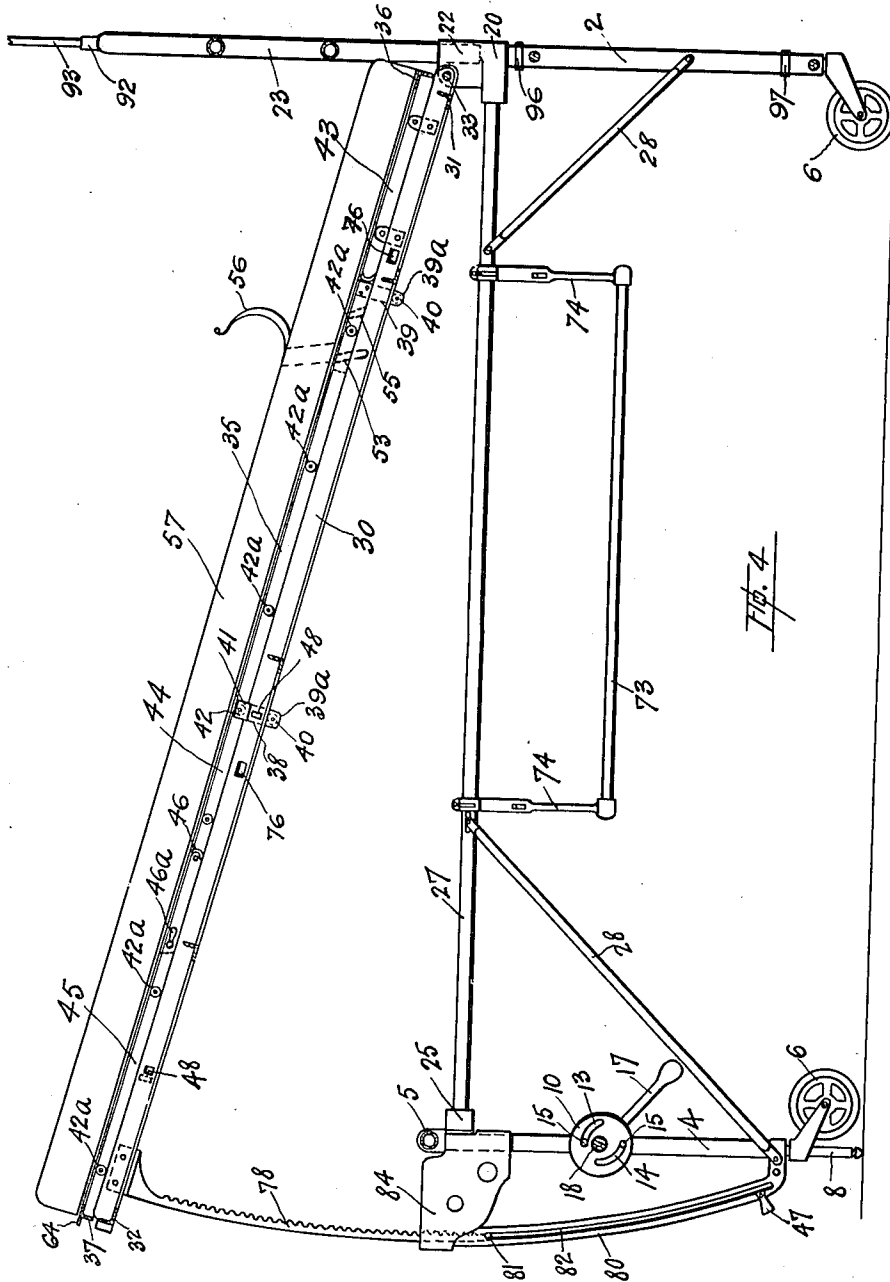


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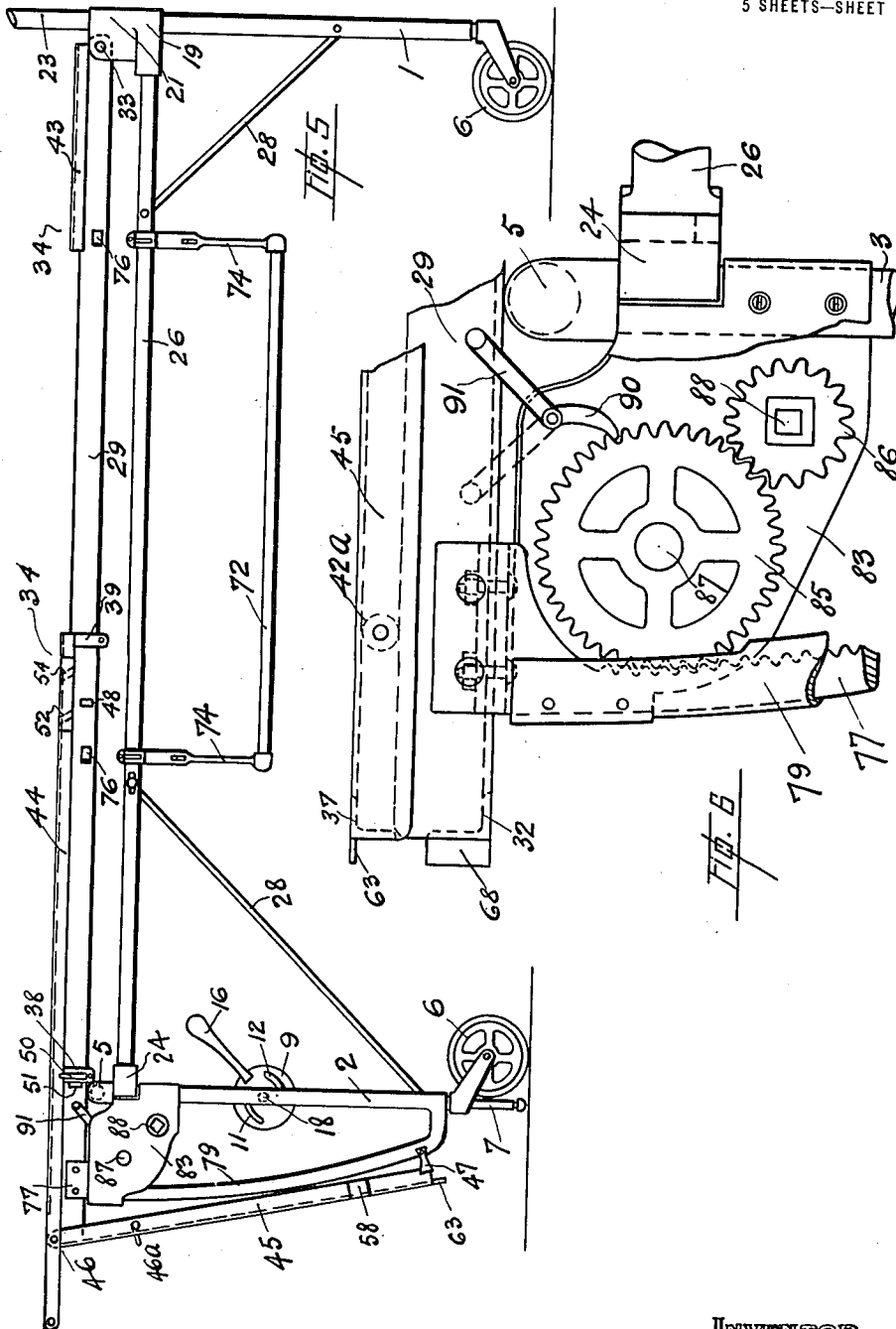
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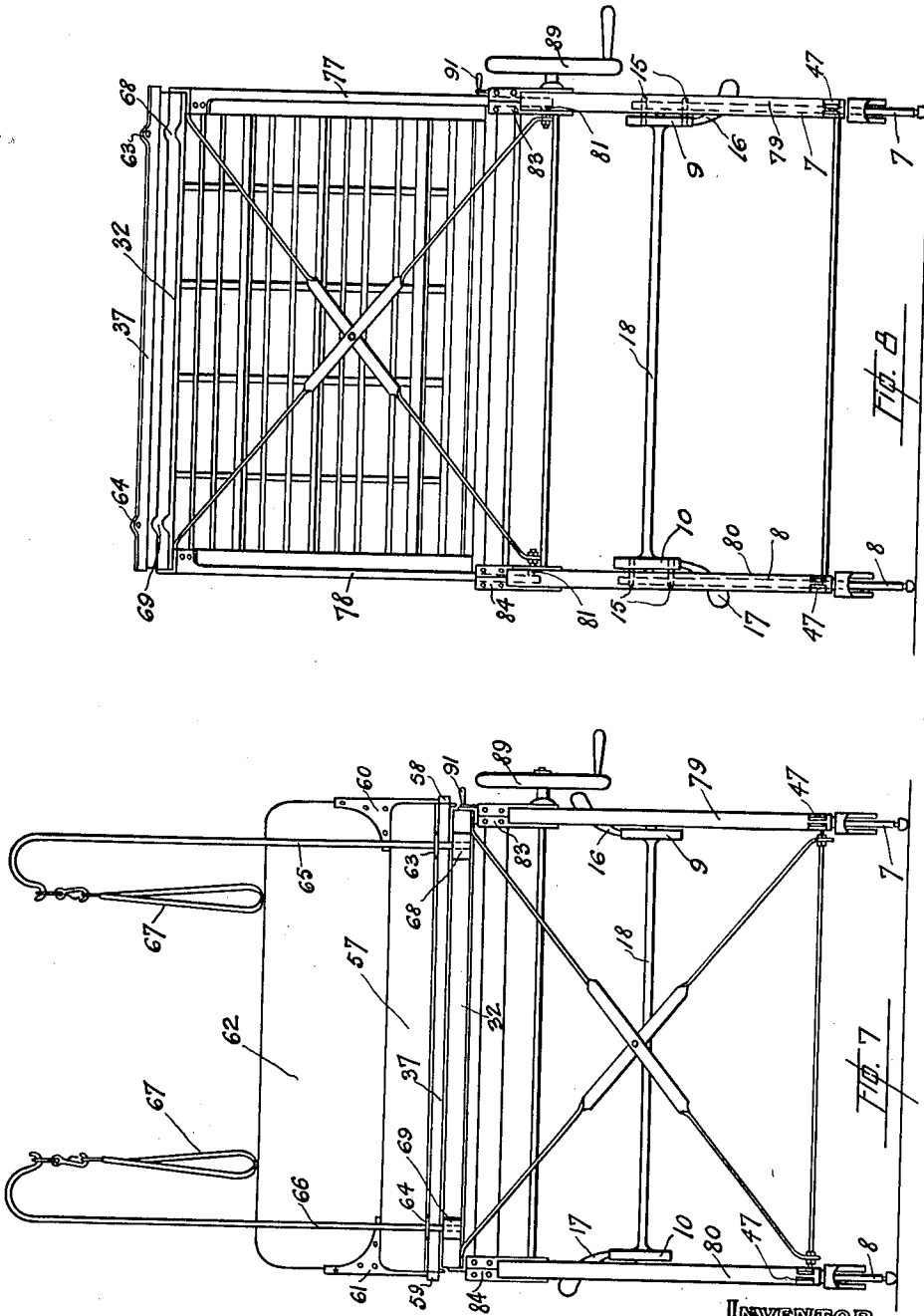


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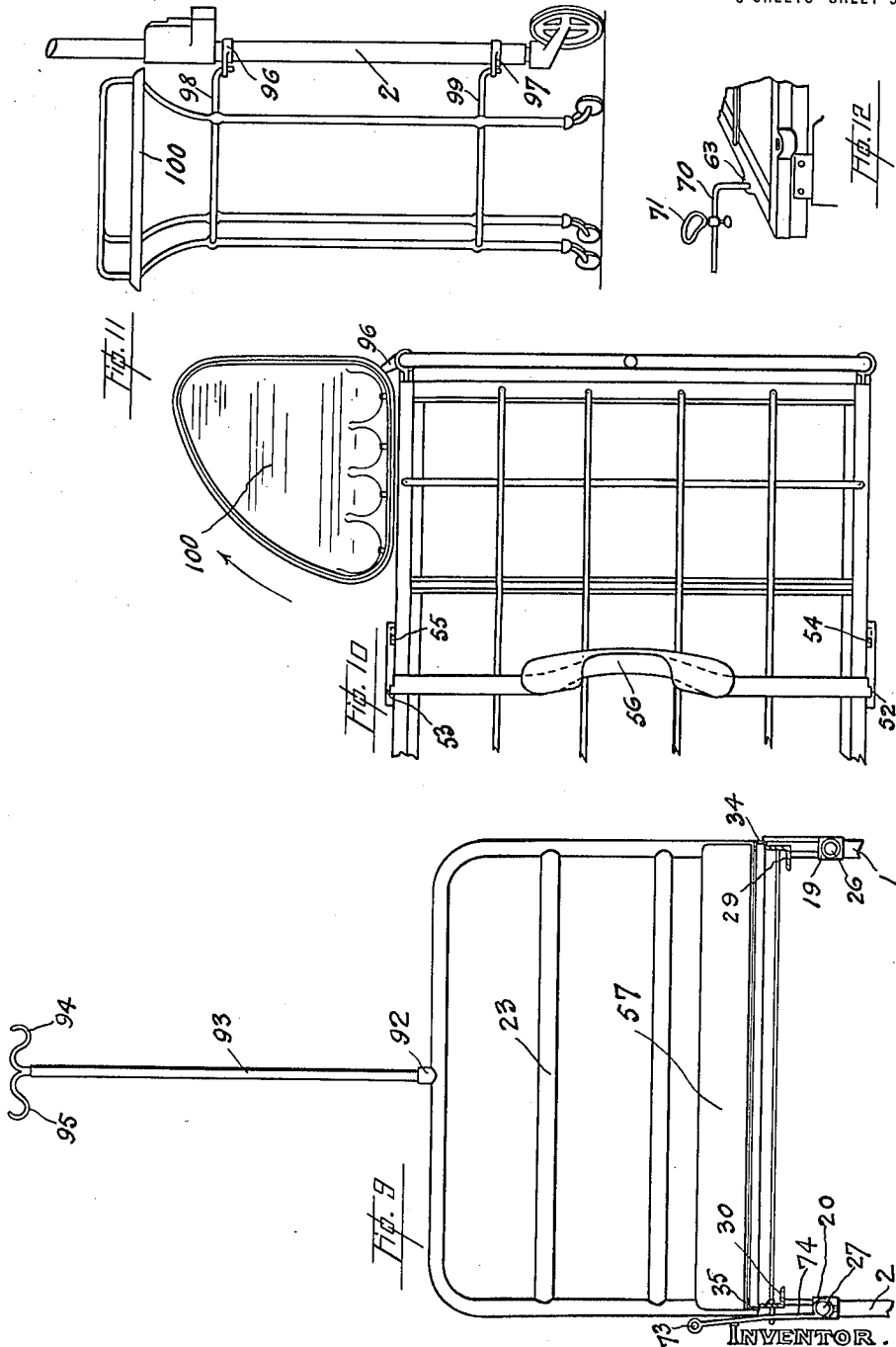
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UNITED STATES PATENT OFFICE.

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OBSTETRICAL BED.

1,280,792.

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To all whom it may concern:

Be it known that I, MALCOLM T. MACEachern, a subject of the King of Great Britain, and a resident of the city of Vancouver, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Obstetrical Beds, of which the following is a specification.

My invention relates to improvements in obstetrical beds, and the object of my invention is to provide a bed of this character in which the foot end may be raised to drop the head of the patient when required quickly and with very little energy on the part of the attendant and in which easy change of the position of the patient may be effected without disturbance, such as, for instance, when the position has to be changed from the ordinary lying down dorsal to that of the lithotomy and the patient pulled to the foot of the bed, the return to normal position after completion of the operation being accomplished with the same ease and advantage. A further object is to devise an obstetrical bed in which provision is made to prevent the patient from slipping down when the foot of the bed is elevated as in hemorrhage and shock; in which suitable gripping means are provided for the patient during labor pains the use of which makes them more effectual; in which suitable stethoscope and watch or clock supporting means are conveniently placed so that the nurse or doctor can keep accurate observation on the pains and fetal heart—two observations of great importance in obstetrical cases; and in which the head piece is removable so as to permit the anesthetist to work with greater ease and facility. In brief, the object of the invention is to provide a bed which is easily and quickly adjusted to any requirements of the patient or doctor in obstetrical operations.

I attain these objects by the construction illustrated in the accompanying drawings in which—

Figure 1 is a side elevation of the bed closed.

Fig. 2 is a detail view of the movable frame traveling arrangement.

Fig. 3 is a detail view of the drop hand-rail supporting arms.

Fig. 4 is a longitudinal sectional elevation of the bed, inclined.

Fig. 5 is a side view of the bed, extended and the foot end dropped.

Fig. 6 is a detail view of the raising mechanism.

Fig. 7 is an end view of the foot of the bed.

Fig. 8 is an end view of the bed inclined, looking from the foot end.

Fig. 9 is a fragmentary view of the head end of the bed, showing the stethoscope support.

Fig. 10 is a fragmentary plan view of the head end of the bed, showing the shoulder support.

Fig. 11 is a view of the drug table and its connection to the bed.

Fig. 12 is a detail view of the single heel stirrup.

Similar figures of reference indicate similar parts throughout the several views.

Generally speaking, the entire bed is intended to be built in accordance with the most approved methods of bed construction.

The bed carriage proper consists of the head posts 1 and 2 and the foot posts 3 and 4, the latter being connected at their upper ends by a transverse tubular connection 5 on which the bed frame, hereinafter described, is supported. Each post is provided with suitable caster wheels 6, of large diameter, and vertically adjustable in the foot posts 3 and 4 are brake rods or supports 7 and 8 respectively, adapted to be raised or lowered by means of the rotatably mounted disks 9 and 10, which disks are provided with eccentric slots 11—12 and 13—14 respectively coöperating with pins 15 secured into the rods 7 and 8 so that the rods may be raised or lowered by the rotation of the disks 9 and 10 in either direction, as the case may be, suitable handles 16 and 17 respectively being secured to the disks so that they may be operated by the hand or knee of the attendant. The disks 9 and 10 are connected by a shaft 18 so that the operation of one of them operates the other simultaneously. The lowering of the brake rods by the operation of the disks raises the foot of the bed so that the casters on the posts 3 and 4 are clear of the floor, the bed being then steadied and held against movement, since it is supported by the lower points of the brake rods, while the raising of the rods lowers the foot of the bed so that it is supported by the casters and therefore free to be moved to any desired place. The head posts 1 and 2 are provided with cast shoes 19 and 20 respectively, on which

shoes are formed vertical socket portions 21 and 22 in which the head piece 23 is detachably supported, and extending between these shoes and socket members 24 and 25 secured to the foot posts 3 and 4 are the longitudinal connecting members of the bed carriage, 26 and 27 respectively, these members being braced by detachably connected braces 28, as shown in Figs. 1 and 4.

The bed frame, or as it will be hereinafter termed, the raising frame, is formed preferably of angle iron suitably braced for lateral support as required. The frame is constructed as shown more particularly in Figs. 2 and 4, that is, in two parts, upper and lower, of which the lower part, formed by the longitudinal angles 29 and 30 connected together at their head and foot ends by suitable transverse members 31 and 32 respectively, is immovable longitudinally but is pivoted at the head end on a rod 33 secured to the shoes 19 and 20 and extending transversely therebetween so that it, the frame, may be raised to an inclined position, as shown in Fig. 4.

The upper part of the raising frame is formed of the longitudinal side angles, indicated generally by the numerals 34 and 35, connected together at their head and foot ends to form the frame by suitable transverse angles 36 and 37, these side angles being inverse to the side angles 29 and 30 of the lower part, and the downwardly extending legs of the angles 34 and 35 are spaced outwardly a short distance from the upwardly extending legs of the angles 29 and 30 so that suitable brackets 38 and 39 may be secured to the angles 34 and 35 at suitable points thereon, these brackets being extended downwardly clear of the outside of the angles 29 and 30 and provided at their lower ends with bearings 39^a carrying rollers 40 adapted to bear on the underside of the angles 29 and 30 while the upper ends of the brackets are formed as bearings 41 carrying rollers 42 adapted to roll on the upper edges of angles 29 and 30 which are suitably rounded to form tracks for the rollers and also for other rollers 42^a carried by the angles 34 and 35 at suitable points in their length.

The upper part of the frame just described is divided longitudinally into sections, of which the head end section 43 is immovable, being secured to the lower part, while the remaining section is further divided into intermediate and foot end sections 44 and 45 respectively, the section 44 being free of the section 43 and section 45 fitting within section 44 and being hingedly connected thereto, as indicated at 46 in Figs. 1, 4, and 5, and capable of being detachably locked to section 44 by means of suitable thumb latches 46^a on each side. As the intermediate and foot end sections are provided

with the rollers 42 and 42^a, as shown in Figs. 1 and 4, it will be seen that the intermediate section, with its hinged foot portion, may be moved longitudinally away from the head section 43 to leave a space therebetween and that the hinged portion 45 may be then swung downwardly, if desired, in which event it may be detachably held in the downswung position by means of suitable spring holders 47, all as shown in Fig. 5.

To lock the longitudinally movable section of the raising frame in its inmost position a slot 48 is provided in the angle 29 in which slot engages a spring latch 49 when the bed is closed, this latch being carried by a handle 50 swingably mounted on the intermediate section 44 of the upper part of the frame, as shown more particularly in Fig. 2, so that, by gripping the handle and swinging it up to raise the latch out of the slot, the section 44 is free to be moved toward the foot of the bed, which movement is accomplished by then pressing on the handle 50, the movement being limited by a buffer 51 secured into the angle 29 and against which the handle strikes when the designed travel is completed, as shown in Fig. 5, the latch 49 then engaging another slot 48 provided for the outmost position of the movable section, as shown in Figs. 1 and 5.

52—53 and 54—55 indicate two pairs of sockets formed on the sides of the section 44 of the upper part of the raising frame, each pair of sockets being adapted to detachably receive a shoulder support member 56, formed in approved shape and preferably as shown in Figs. 4 and 10 and adapted to lie flat on the bed mattress 57, the respective pairs of sockets providing for alternative positions of the support, and 58 and 59 indicate sockets formed on the sides of the hinged portion 45 adapted to detachably receive brackets 60 and 61, to which brackets is secured a foot rest 62, as shown in Figs. 1 and 7. Sockets 63 and 64 are also formed on the transverse connecting member 37 through which pass slidably supports 65 and 66 adapted to carry at their upper ends suitable leg stirrups 67, the lower ends of these supports extending into sockets 68 and 69 formed on the transverse connecting member 32 of the lower part of the raising frame to be detachably carried thereby. These sockets 63—64 and 68—69 are also adapted to receive the alternative supports 70 carrying suitable heel stirrups 71, as indicated in Fig. 12.

72 and 73 indicate handrails provided on each side of the bed respectively and carried by arms 74 swingably mounted on the longitudinal connecting members 26 and 27 so that the rails may be supported in their upmost position to be gripped by the pa-

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tient, as shown in Figs. 1 and 3, or lowered out of the way to the position indicated by the dotted lines in Fig. 3 and in full in Fig. 4. Each arm is provided with a spring latch 75, and suitable slots 76 are provided in the longitudinal angles 29 and 30 with which the latches cooperate to detachably lock the arms in their utmost positions, as it will be seen, referring particularly to Fig. 3, that when the arms are swung upwardly, each latch will pass through its respective slot and spring upwardly so that its head will engage the inside of its respective angle, the freeing of the arms to swing the rails downwardly being effected by pressing the outer end of the latch upwardly so that its head may be withdrawn through the slot.

The raising the lowering of the raising frame is accomplished by means of racks 77 and 78, the upper ends of which are secured to the angles 29 and 30 and which racks are vertically adjustable in pipe casings 79 and 80, being provided with pin guides 81 movable in slots 82 formed in the casings, as indicated in Fig. 4. The lower ends of the casings are secured to the foot posts 3 and 4, while their upper ends are connected to gear casings 83 and 84 respectively also secured to the foot posts adjacent their upper ends.

Inclosed within each gear casing is a compound gear consisting of large and small spur gears, indicated more particularly in Fig. 6 by the numerals 85 and 86 respectively, the gears on one side of the bed being connected to their respective gears on the opposite side by the shafts 87 and 88, the shaft 88 being adapted to receive on either end a detachable handwheel 89 by means of which the shaft may be rotated. As the larger gears are in mesh with their respective racks and also with the smaller gears it will be seen, referring particularly to Fig. 6, that rotation of shaft 88 by handwheel 89 will move the racks to raise or lower the raising frame according to the direction of rotation of the shaft. A pawl 90 is provided normally engaging the teeth of gear 85, which pawl is arranged to permit of the operation of the gear to raise the racks but prevents the dropping of the racks and raising frame until the pawl is swung clear of the gear by means of the handle 91 with which it is provided, the provision of the pawl rendering the operation of the raising frame safe in any hands, since it cannot inadvertently drop from its inclined position as long as the pawl is maintained in operative engagement.

The head piece 23 of the bed carriage is, as hereinbefore mentioned, detachably supported in the sockets 21 and 22 so that it may be readily removed from place to allow of the unobstructed operations of the anesthetist, and on the upper rail of the head

piece 23 is formed a socket 92 in which is removably supported a vertical rod 93 provided at its upper end with a pair of hook members 94 and 95, these members being adapted to carry respectively a watch or clock and a stethoscope so that the nurse or doctor is enabled to keep accurate observations of importance during an operation. Brackets 96 and 97 are secured to the head post 2, as indicated in Fig. 11, these brackets being adapted to detachably and rotatably receive the arms 98 and 99 respectively of an anesthetic table 100, which may thus be swung to accommodate the anesthetist whether giving an anesthetic over the end or over the side of the bed.

Having thus indicated and described the principal parts of my invention its operation and utility will be apparent, as it will be seen that, in the case of hemorrhage or shock, where it is very essential to drop the head of the patient without loss of time this can be done by simply raising the foot end of the raising frame by the rotation of the gears 85 and 86 to elevate the respective racks 77 and 78, which movement is effected with very little energy on the part of the attendant, thereby relieving nurses of heavy lifting which is so often the cause of lame backs, ruptures, and the like and which frequently occur under the present practice in which it is usual for one person to lift the foot of the bed manually while another places blocks beneath it. Such a practice takes up valuable time and also renders proper adjustment impossible besides causing grave disturbance to the patient, these defects being eliminated, however, by means of the pivoted gear-operated raising frame herein described. The lowering of the frame is accomplished with the same ease and facility, the pawl 90 being, of course, thrown out of engagement to permit reverse operation of the gears.

Again, by withdrawing the latch 49 and pressing on the handle 50 the longitudinally movable section of the raising frame may be moved toward the foot of the bed to change the position from the ordinary lying down dorsal to that of the lithotomy, the patient being then pulled to the bottom of the bed as in such cases as forceps—version and extraction—breech extraction—induction labor—cervical repair—such change of position being accomplished easily and with no disturbance to the patient, obviating the necessity of having two persons lift the patient manually, as at present required, and eliminating the risk of disturbing the aseptic technique. When the movable section is fully extended it is automatically locked by the latch in the same manner as when closed, and when in this position the hinged portion 45 may be dropped, if required, by releasing the thumb latches 46^a.

The provision of the shoulder support 56 prevents the patient from slipping down when the raising frame is inclined to elevate the feet, as in hemorrhage and shock, while the adjustable handrails 72 and 73 afford a grip for the patient during labor pains, helping to make them more effectual.

The removable head piece 23 permits the access of the anesthetist to the head of the bed and allows the work to be done with greater ease and facility than where the head piece is an integral part of the carriage, while the hooks 94 and 95 of the rod with which the head piece is provided give convenient locations for a watch or clock and also a stethoscope and enable accurate observations to be kept on the pains and fetal heart, which observations are of great importance in obstetrical cases.

From the foregoing it will be seen that I have devised an obstetrical bed which affords a great measure of safety to patients in the case of emergency, in which obstetrical operations may be carried out with facility and convenience, and which is of great advantage and benefit alike to the doctor, nurses, and patient during the progress of an operation.

As changes could be made in the construction described, and different embodiments of the invention, within the scope of the claims, constructed without departing from the spirit thereof, it is intended that all matter contained in the accompanying specification and drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim as my invention is:—

1. In an obstetrical bed, a traveling bed carriage, and a patient-supporting frame mounted on said carriage, said frame being in sections including a movable section by means of which the patient may be moved longitudinally of the bed, said section having a hinged foot end portion adapted to be lowered from the horizontal plane in which it is normally supported.

2. An obstetrical bed comprising, a bed carriage having head and foot posts and longitudinal connecting members therebetween, a raising frame comprising upper and lower parts, the lower part being pivotally connected at its head end to the carriage and the upper part being in sections including a head section secured to the lower part and a longitudinally movable section, means for locking said movable section in place, vertically movable racks secured to the foot end of the said lower part, and mechanism for operating said racks.

3. An obstetrical bed comprising, a bed carriage having head and foot posts and longitudinal connecting members therebetween, a raising frame comprising upper and lower parts, the lower part being provided with

side slots and pivotally connected at its head end to the said carriage and the upper part being in sections including a head section secured to the lower part and a longitudinally movable section provided with latches co-operating with the said side slots to detachably lock the said movable section in place, and mechanism for operating said frame.

4. An obstetrical bed comprising, a bed carriage having head and foot posts and longitudinal connecting members therebetween, a raising frame comprising upper and lower parts, the lower part being pivotally connected at its head end to the carriage and the upper part being in sections including a head section secured to the lower part and a longitudinally movable section divided into intermediate and foot portions hingedly locked together, and mechanism for operating said frame.

5. An obstetrical bed comprising, a bed carriage having head and foot posts and longitudinal connecting members therebetween, a raising frame comprising upper and lower parts, the lower part being pivotally connected at its head end to the carriage and the upper part being in sections including a head section secured to the lower part and a longitudinally movable section divided into intermediate and foot portions hingedly locked together, said foot portion being adapted to be swung downwardly when unlocked and the intermediate portion is at the limit of its outward longitudinal movement, means for securing said hinged portion in its down-swung position, and means for operating said frame.

6. An obstetrical bed comprising, a bed carriage having head and foot posts and longitudinal connecting members therebetween, a raising frame comprising upper and lower parts, the lower part being pivotally connected at its head end to the carriage and provided at its foot end with stirrup-support sockets and the upper part being in sections including a head section secured to the lower part and a longitudinally movable section provided at its foot end with stirrup-support sockets registering with the sockets aforesaid, and mechanism for operating said frame.

7. An obstetrical bed comprising, a bed carriage having head and foot posts and longitudinal connecting members therebetween, a raising frame comprising upper and lower parts, the lower part being pivotally connected at its head end to the carriage and the upper part being in sections including a head section secured to the lower part and a longitudinally movable section, upper and lower rollers carried by the movable section operating on the upper and lower edges respectively of the lower part, means for locking the movable section against movement, and means for operating said frame.

8. An obstetrical bed comprising, a bed carriage having head and foot posts and longitudinal connecting members therebetween, a raising frame comprising upper and lower parts, the lower part being pivotally connected at its head end to the carriage and the upper part being in sections including a head section secured to the lower part and a longitudinally movable section, brackets secured to said upper part having their upper and lower ends adapted to form bearings, rollers in said bearings operable on the upper and lower edges respectively of the lower part, rollers carried by the upper part operable on the upper edge of the lower part, means for limiting the travel of the movable section, means for locking the movable sec-

tion against movement, and means for operating said frame.

9. An obstetrical bed comprising, a traveling bed carriage having head and foot posts and longitudinal connecting members therebetween, a body-supporting frame mounted on said carriage, and provided in its side members with slots, and arms in pairs swingably mounted on each longitudinal connecting member and connected with each other by a rail, said arms being provided with withdrawable spring latches adapted to co-act with said slots and lock said arms in a vertical position.

Dated at Vancouver, B. C., this 16th day of January, 1918.

MALCOLM T. MACEachern.