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UNIVERSAL ARM SUSPENSION.

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This is composed of a movable wooden top and a fixed wooden perpendicular.

The lower perpendicular pole, L.P. (2 in. by 2½ in.), 5 ft. in length, is fastened to the top of the bed by means of a flat bit of timber, F (4 in. by 1 in.), 2 ft. 4 in. long, and bolted with two bolts to the pole with the bed headrail between them on the extreme right or left of bed.

The pole, L.P., has two sets of hinges, anterior and posterior, to enable it to be used for right or left arm, anterior for left and posterior for right. These hinges are set at 16 in. apart, the upper hinge being 4 in. from the top of pole, L.P. They also allow the top to swing 180°.

The hinges are composed of two parts—

![Hinge Diagram]

thus allowing the top to be easily moved, when the suspension is required for right or left arm as the case may be. By this method two male parts are fixed to the upper perpendicular, U.P., and four female parts to the lower perpendicular, L.P. In alternate suspensions, male and female parts are reversed. The top has a perpendicular part, U.P., and carries two fixed horizontals, L.H. and U.H., and a movable arm, M.A., which is hinged to the upper perpendicular, U.P. This top can be completely removed from the pole by pushing the top upwards, and thus separating the male from the female hinges. This renders it applicable to right or left arm. The upper perpendicular, U.P., is made of the same material as the lower fixed perpendicular, L.P. (viz. 2½ in. by 2 in.) and is 3 ft. 2 in. in length. The two fixed horizontals, L.H. and U.H., are set at right angles one above the other. They are 2 ft. 8 in. in length, the material is 3 in. by 1 in. They extend 2 ft. in one direction and 8 in. in the other.

The upper U.H. rests on the horizontal L.H., which in turn rests on a block of wood, X, all three being screwed to the upper perpendicular, U.P. From the end of the shorter pieces of these two horizontals, two stays, S. (3 in. by 1 in.), are fixed to the top of the upper perpendicular to counteract the weight that has to be applied to the longer ends. No
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Showing arm suspension applied.

Arm suspension, showing details.
dovetailing is done so far to avoid any weakening of the superstructure. The ends of the longer pieces of the two horizontals are joined by a piece of wood, T.S. (3 in. by 1 in.), and, in order to keep this level, it is let in at the end which is in contact with the higher of the two horizontals and rests on the top of the other horizontal. At each end of this transverse stay, T.S., is a flat iron upright (4½ in. by 1 in. by ½ in.) projecting upwards to act as a check, K., to the movable arm and at the same time give more strength to these joints.

The movable arm, M.A. (3 ft. by 1 in.), is hinged to the upper perpendicular, and the upper edge 4 in. from the top of U.P. moves through an angle of 90°. It is for the attachment of a block when the arm is extended, as in an arm "Thomas" splint. When the arm is extended (as in the photograph) in an arm "Thomas," there are three eyes of wire fixed to the splint, two at the ring (one on each side of the iron bars of the splint), and the third at the middle of the transverse bar at the hand end. Three cords, C1, 2, 3, are attached to these eyes—watch-chain hooks are very convenient—and each passes through its respective two blocks, while a suitable weight is attached to the other end.

For a right arm the cord C1 from the hand end passes through block B4 which is attached to the end of the M.A., then passes to block B1, which is fixed to horizontal L.H.

It has been found since this photograph was taken that block B1 is better fixed at the other end of lower horizontal L.H., so as to immobilize the arm, M.A., and a weight (sandbag) of about 2 lb. is attached at the other end. The cord C2 is attached to the outer eye at the ring end of the splint, passes through block B5 which is fixed at the junction of T.S. and U.H., then through block B2 on L.H. and carries a weight of about 4 lb. Cord C3 passes from the inner eye of the splint through the other block B6, fixed at the junction of T.S. and U.H., thence to block B3 on L.H. and carries a weight of about 6 lb. The blocks B1, 2, 3, should be so placed on L.H. as to allow free play of the weights without touching.

In the accompanying photographs, the irrigator rubber tube and two cords supporting the tubing which is leading to a wound that is being treated by continuous irrigation are not lettered to avoid confusion. A gutter of perforated zinc is fixed to the sides of the "Thomas," and holes are burned in the zinc opposite any drainage-tubes. To prevent tissues herniating through these exits, the holes should not be too large. The whole is sterilized by flaming, and the arm with wounds is laid directly on this bed of zinc.

This form of suspension of the splint conforms to all permissible movements of the limb, and is a great comfort to the patient, who is free to move at his will or to sit up by his bedside if he wishes. Wounds so treated, drained freely, are readily dressed and are open to inspection at all times.
By redistribution of the weights and blocks this suspension can be adapted to a rectangular wire splint or a square wire frame, both of which are filled in with perforated zinc, for use with the flexed elbow.

**Wire splint.**

**UNIVERSAL LEG SUSPENSION.**

The suspension consists of a fixed frame carrying a travelling cradle from which the limb in its splint is suspended by a system of weights and pulleys.

**Leg suspension applied.** P.z., perforated zinc.

**Frame.**—Material, 3 in. by 2 in.
A length of T section iron rail is screwed to the upper surface of an 8-ft. wooden bar for a distance 5 ft. 6 in. from the foot end.
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Two such bars are supported at their extremities by 6-ft. uprights placed so that the rails are 3 ft. 3 in. apart and parallel to each other.

The uprights are firmly fixed to the floor by suitable stays, and the pair at the head end are joined by a transverse bar.

Cradle.—Material, 3 in. by 1 in.

All dimensions are outside measurements.

The travelling cradle is rectangular with sides F1 and F3, 4 ft. in length, carrying two window-sash pulleys, each let in 4 in. from the extremity R1, 2, 3, 4.

The ends F2 and 4 are 3 ft. 4 in. in length.

This rectangle is divided by a transverse stay T. at 1 ft. 5 in., and the two smaller rectangles thus formed have diagonal stays, D1 and 2, to prevent tacking and give rigidity. On F2 and T. iron checks, X2 and 1, (6 in. by 1 in. by ½ in.) project vertically downwards, just clearing the horizontals B.H.1 and 2. Strong 2-in. screws are fixed half-in into the inner sides of B.H.1 and 2 to engage with these checks.

These are best adjusted experimentally. Sixteen round-headed 2-in. screws are fixed half-in into the upper edges of F2, T. and F4 in the following way (diagram of suspension). On F2 four screws at the sixth and fifteenth inch from each side.

On T. four screws at the second and eleventh inch from each side.

On F4, eight screws at the fourth, ninth, fourteenth, nineteenth, twenty-first, twenty-sixth, thirty-first and thirty-sixth inch.

There are now sufficient for a right and left leg and are for the attachment of the single blocks of the Hodgen’s splint (1½-in. block is the best size).

In slinging a right fractured femur in a Wallace’s splint, as in photograph and figure, blocks are attached to screw S1, 2, 3, 4, 5, 6, 13, 14, 15, 16.

There are 4 eyes of wire fixed to the splint: 2 on the ring (1 on each side below the bars of the splint), and the other 2 to the transverse bar carrying the foot piece.

Four cords, C1, 2, 3, 4, are attached to these eyes—watch-chain hooks are very convenient—and each passes through its respective two blocks, while a suitable weight is attached to the other end.

Cord C1 from outer foot attachment passes through block B1 which is attached to screw S5 on T., then through block B5, which is attached to screw S13, and carries a weight of about 7 lb.

Cord C2, from inner foot attachment, passes through B2, which is attached to screw S6 on T., then through block B6, which is attached to screw S14, and carries a weight of about 7 lb.

Cord C3 from outer ring attachment passes through block B3, which is attached to screw S1, then through block B7, which is attached to screw S15, and carries a weight of about 14 lb.

Cord C4 from inner ring attachment, passes through block B4,
Showing patient raising pelvis unaided four days after injury.

Diagram of suspension.
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which is attached to screw S2, then through block B8, which is attached to screw S16, and carries a weight of about 14 lb.

This suspension allows the patient very free movement, is a great comfort to him, and nursing is made comparatively simple.

The second photograph shows the patient, who has a fractured femur and ulna, raising his pelvis unaided four days after injury.

REMOVAL OF A SHRAPNEL TIME-FUSE FROM THE LEFT SHOULDER. DESCRIPTION OF A SPLINT.

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In removing foreign bodies from various parts of the body, I have often noticed the rarity of finding a piece of shell of any considerable size. Quite large wounds may be caused by a projectile of astonishingly small dimensions. Previously to this case the largest piece of shell I have removed had penetrated the knee-joint, completely severing the internal condyle of the femur from the rest of the bone. In this case the portion of shell did not measure one cubic inch. The lodgment of a complete shrapnel time-fuse in almost perfect condition is an event of such rare occurrence that it seems to be worth while placing it on record.

The patient was wounded on May 25, at about 2.30 p.m. He is a stretcher bearer and was going up to the trenches to collect wounded. He advanced to within about four yards of his destination when he heard the shriek of a shell approaching. He turned his back on the trenches and almost immediately felt a severe blow on the back of the left shoulder. The blow did not knock him down, but caused him to stagger and then, as he somewhat naively expressed himself, "it set me running." He reached a ditch about one hundred yards away, where he fell down and in about twenty minutes was removed to the dressing station, where his wound was dressed and painted with iodine. That night he was taken to the clearing station, where, under an anaesthetic, a tube was inserted. On the following day he was sent to another clearing station and then despatched on the train, arriving at a General Hospital at the base three days after the reception of the original injury.

On admission, the patient was in considerable pain, much more so than is usually the case. There was a wound over the posterior border of the deltoid about one and a half inches long, through which a tube had been inserted. The other end of the tube appeared through a much smaller wound situated over the pectoro-deltoid interval. This wound looked like an operation incision, and the patient thinks was not caused by the original injury.