

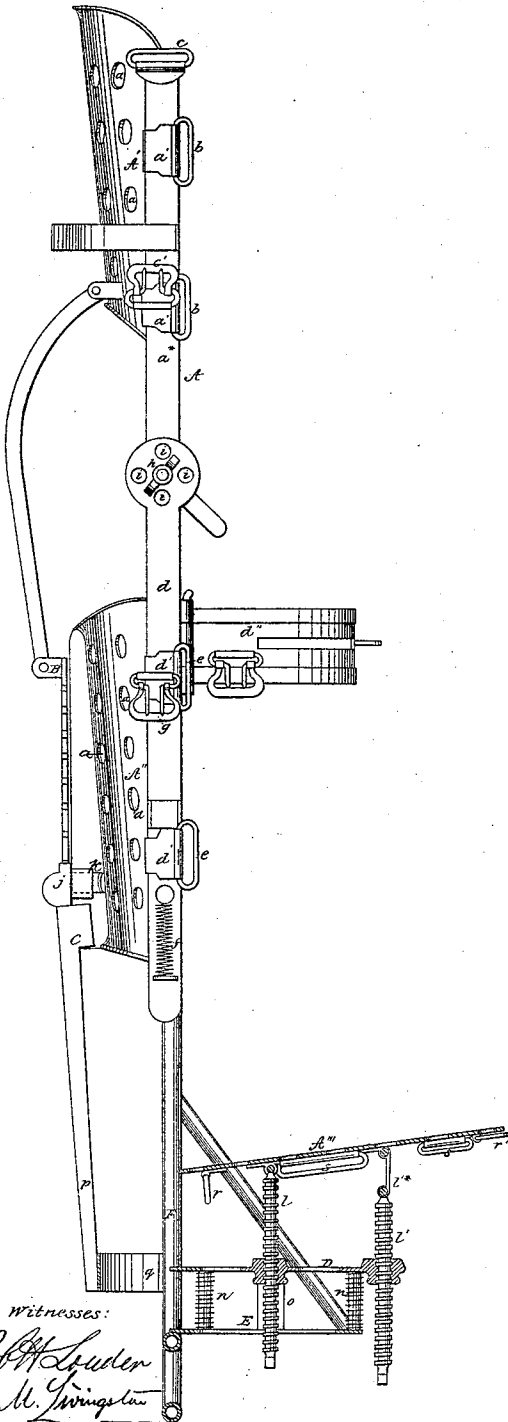
C. Wittman.

Fracture Apparatus.

No 40,071.

Patented Sep. 22, 1863.

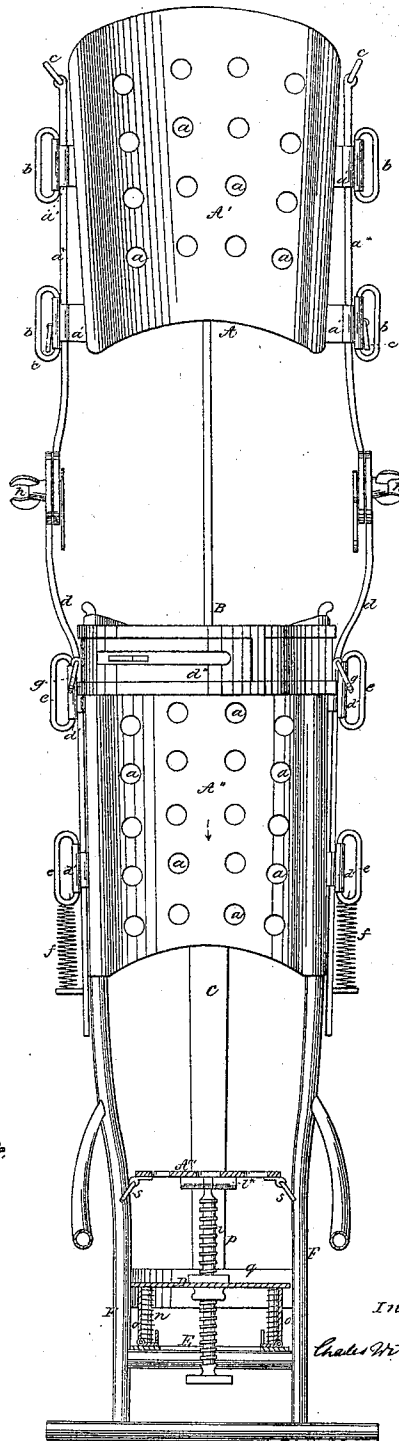
Fig: 1



Witnesses:

Robt. L. Linder
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Fig: 2



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UNITED STATES PATENT OFFICE.

CHARLES WITTMANN, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN SURGICAL SPLINTS.

Specification forming part of Letters Patent No. 40,071, dated September 22, 1863.

To all whom it may concern:

Be it known that I, CHARLES WITTMANN, M. D., of Brooklyn, E. D., in the county of Kings and State of New York, have invented a new and useful Improvement in Surgical Splints; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a side elevation of my invention, partly in section. Fig. 2 is a front elevation of the same.

Similar letters of reference in both views indicate corresponding parts.

This invention consists in a surgical splint stamped or otherwise produced of sheet metal instead of wood, said metal being provided with a series of perforations, so that secretions or lotions which may come in contact with the splint will evaporate quickly, thus avoiding the necessity of frequent changes of the wadding, and producing by the evaporation itself a beneficial cooling effect on the limb. The metal is protected against oxidation by Japan varnish, and it is strengthened by curves or beads. This splint, according to the occasion for which it is to be used, is also provided with a peculiar device for the purpose of adjusting the same to the axis of the joint of a limb, and the foot-plate is set upon springs and provided with hinged screws, which allow of adjusting the same to the desired position of the foot.

To enable those skilled in the art to make and use my invention, I will proceed to describe it.

A represents a splint, made of sheet metal instead of wood, and adapted to the shape of the limb, to which it is to be applied by stamping or other means.

The advantages of a metal splint over an ordinary one made of wood or a dressing of plaster-of-paris are numerous. The metal splint is more durable than the wooden ones. It is not liable to crack or warp when exposed to heat and moisture. It is much lighter than a dressing of plaster-of-paris. It can be adapted to the shape of the limb, and in packing them up in large quantities the metal splints take less room than those of wood, which is of considerable importance, particularly for the army.

The metal splint A is perforated with a series of holes, *a*, sufficiently large and numerous to allow of a rapid evaporation of all moisture which may be brought in contact with the splint, whether caused by perspiration or by lotions that may be applied to the wadding. By this evaporation a cooling effect is produced, which is beneficial to the injured limb, and obviates that annoying heat which favors the formation of maggots, and, furthermore, the frequent changing of the wadding is rendered unnecessary. The solid portions of the splint between the holes may be raised and made to serve similar to truss-pads for the purpose of fixing the soft parts adjoining to the injured bone.

The metal splint is japanned with the proper varnish, to give to the whole a neat appearance and to protect the metal against the oxidizing influence of the moisture. Each splint, however simple it may be, is provided with buckles to allow of applying to the limb that extension which by surgeons is now considered indispensable. The splint can be secured to the limb by sticking-plaster, which holds firm enough, even under the wadding, on account of the coolness produced by the perforations in the metal previously explained.

In the preceding description I have pointed out the principal advantages inherent to all splints constructed according to my invention. I will now describe the application of my invention to splints constructed for particular occasions.

The splint which I have represented in the drawings consists of three parts—viz., the upper part, A', the lower part, A'', and the foot-plate A'''. The upper part, A', is attached to rods *a** by means of loops *a'*, so that it slides freely up and down on said rods, and it is secured to the thigh by strips of sticking-plaster drawn over the leg and through eyes *b*, which are hinged to the loops *a'*. After the part A' of the splint has been firmly secured to the thigh, a strain is exerted on the same in an upward direction, or in the direction of the arrow marked on the part A' in Fig. 2 of the drawings, by straps of muslin or other suitable material, which are secured in eyes *c* on the top ends of the rods *a**, and drawn through buckles *c'*, secured to loops *a'*.

The rods *a** are connected to rods *d*, which form the guides for the lower part, A'', of the

splint. This part is provided with loops d , similar to the loops of the part A' , and it is fastened to the leg below the knee by strips of sticking-plaster drawn through eyes e , that are hinged to the loops d' . It may be further secured by segments d'' , which are hinged to the sides of the part A'' . To the lower parts of the rods d springs f , of metal or other suitable material, are secured, and straps of muslin or other suitable material fastened to the ends of these springs and drawn through buckles g on the upper loops, d' , of the part A' , serve to exert an elastic strain on said lower part, A'' , in the direction of the arrow marked on it in Fig 2. Thus it will be seen each part of the splint is forced away from the connection between the rods $a^* d$, and by these means the desired extension and counter-extension is effected.

The connection between the rods $a^* d$ is effected by a screw-pivot, h , which is adjusted in several holes, i . By this arrangement the joint of the rods $a^* d$ can be made to correspond to the joint of the limb to which the splint is attached. This purpose is effected in the following manner: The upper part, A' , is first applied to the thigh, as above specified, and by a strain on the straps in the eyes e and buckles c' the rods a^* are brought in such a position that by a slight counter-pressure the joint is brought to a point from which a right line can be drawn through the bearings of the os femoris, the screw-pivot h being inserted into the middle hole. The lower part, A'' , of the splint is then applied as previously described, using the precaution to allow for the extension of the rods d . The joint of the splint is now adjustable in all directions, and it can be brought in perfect harmony with the knee-joint, and any change in the original position of the pivot h caused by the extension of the splint can thus be corrected. After the apparatus is once adjusted and fastened, no further change of the axis has to be made.

The parts A' and A'' of the splint are connected by the serrated bar B , which is hinged to the outside of the upper part near its lower edge, and which fits into a socket, C , attached to the outside of the lower part, A'' . If it is desired to secure the leg in a certain position and to prevent its motion, said serrated bar is locked by a spring-catch, j . If the leg is to have free motion at the knee-joint, the spring-catch j is released and held out of contact with the serrated bar by a slide, k .

The foot-plate A''' rests upon two screws, $l l'$, in the platform D . The screw l is connected to the foot-plate by a single hinge-joint, l'' , and the screw l' by a double hinge-joint, l''' , so that said foot-plate can be brought in any desired position without straining the screws. The platform D rests upon springs n , giving to the foot an elastic support when such is desirable. When the elastic support is not needed, the platform D is rendered rigid by hinged braces o . The springs n and braces

o are supported by the bed-plate E , which is rigidly attached to the rods F , that fit into sockets in the sides of the lower part, A'' , of the splint, being rigidly connected with the same by a shank, p , which extends from the under side of said plate A'' to an arched cross-bar, g , connecting the rods F .

The foot-plate is provided with two buckles, $r r$, which are hinged, one near to either end on its under surface, and a series of eyes, s , on the side edges of said foot-plate serve to fasten the foot down by sticking-plaster, or by plain strips of muslin or other suitable material. The foot is adjusted on the foot-plate by means of a strip of sticking-plaster, which is secured to the sole, and the ends of which are drawn through the buckles $r r$. By pulling either end the foot may be moved toward one or toward the other end of the foot-plate as much as may be desired.

My splint is adapted to fractures of any description, or to diseases of the legs, and in its simplest form it is nothing else but a piece of sheet metal formed to correspond to the limb to which it is to be attached, and perforated, as above described, and provided with buckles and eyes to fasten it to the limb and to exert the requisite extension. It can be made very light in most cases, even lighter than ordinary wooden splints. It is more durable than the wood. It holds the limb in a state of perfect rest. It is not injured by moisture, and it can be packed up in a small compass, which is of particular advantage for the army.

What I claim as new, and desire to secure by Letters Patent, is—

1. A perforated sheet-metal splint made in the manner and for the purpose substantially as herein shown and described.
2. The application of the buckles $c' g$ and eyes $e e$, with or without springs f , in combination with the two parts $A' A''$ of a splint, as described, for the purpose of effecting an elastic or unelastic extension and counter extension to the limb.
3. The double hinged serrated-bar B , with adjustable spring-catch j , in combination with the splint $A' A''$, constructed and operating in the manner and for the purpose substantially as shown and described.
4. The adjustable pivot h , in combination with the rods $a^* d$, carrying the parts $A' A''$, as described, for the purpose of accommodating the joint of the splint to the axis of the joint of the limb to be treated.
5. The application of the screws $l l'$ with hinges $l'' l'''$ to the foot-plate A''' , as and for the purpose specified.
6. The arrangement of the springs n in combination with the foot-plate A''' , constructed and operated in the manner and for the purpose substantially as set forth.

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Witnesses:

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