Sept. 24, 1963 F. L. DAVIS 3,104,401

LITTER AND STACKING COT

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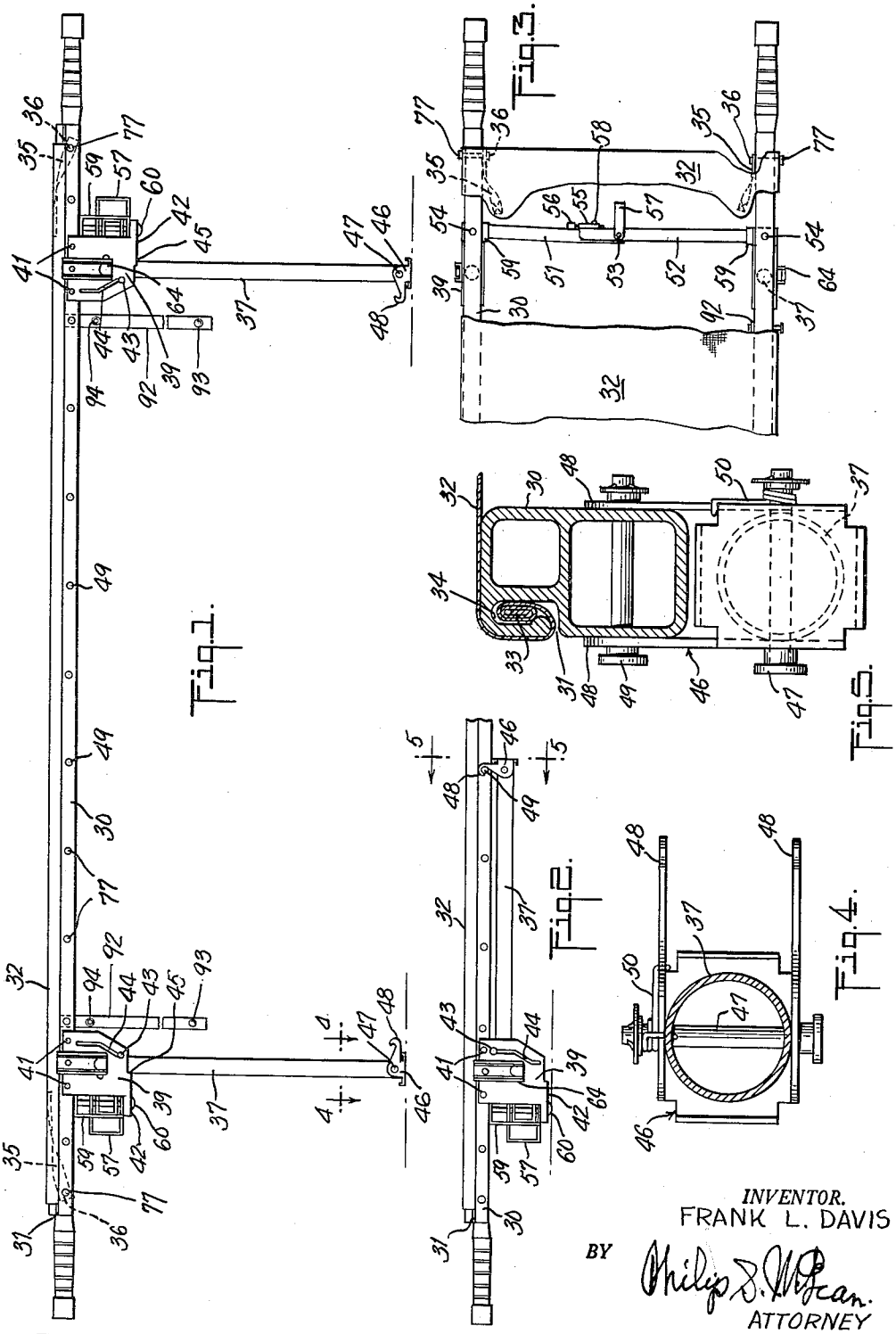


Fig. 1.

Fig. 3.

Fig. 5.

Fig. 2.

Fig. 4.

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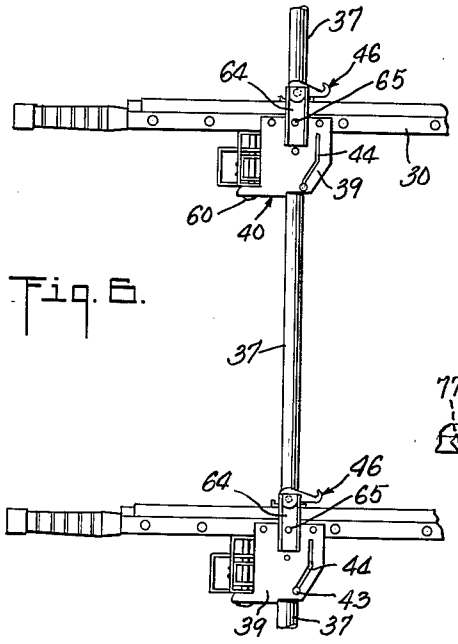


Fig. 6.

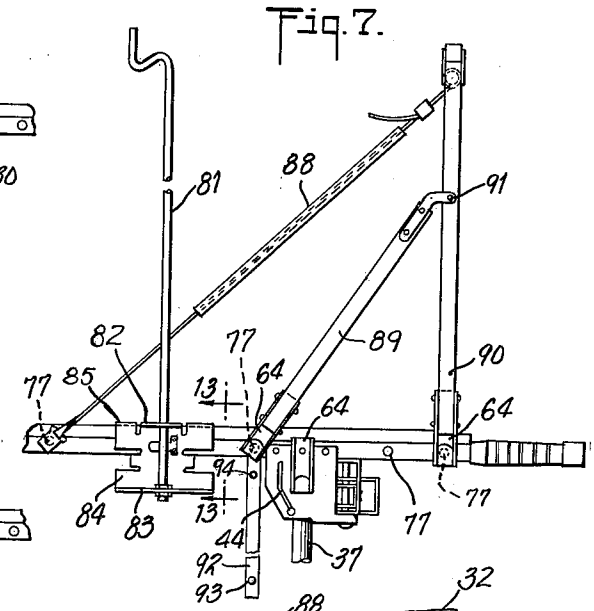


Fig. 7.

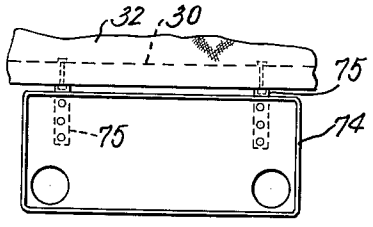


Fig. 8.

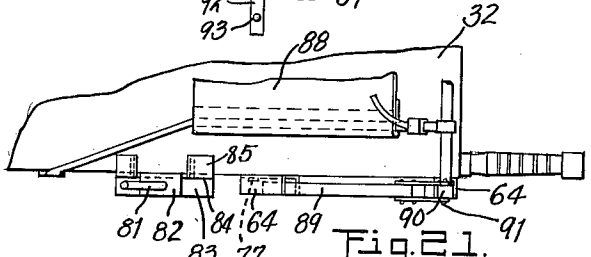


Fig. 21.

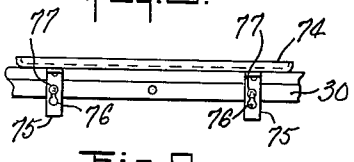


Fig. 9.

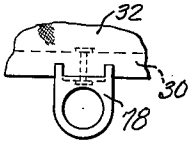


Fig. 10.

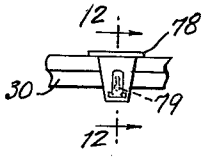


Fig. 11.

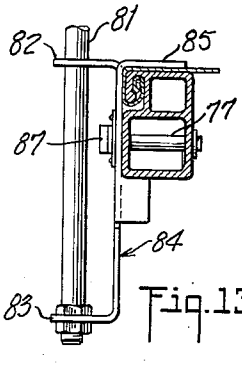


Fig. 13.

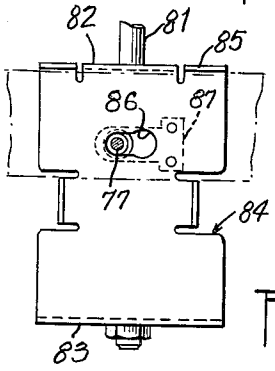


Fig. 14.

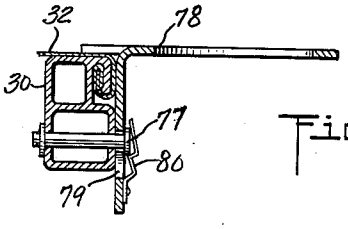


Fig. 12.

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LITTER AND STACKING COT

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Fig. 15.

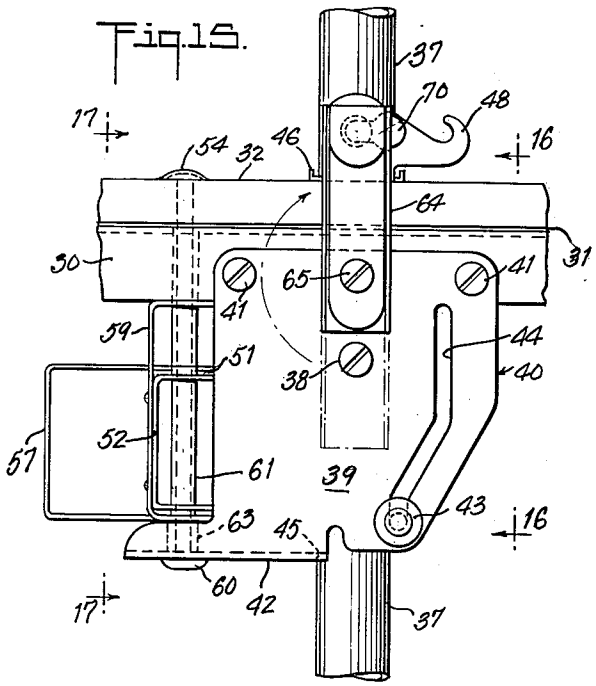


Fig. 16.

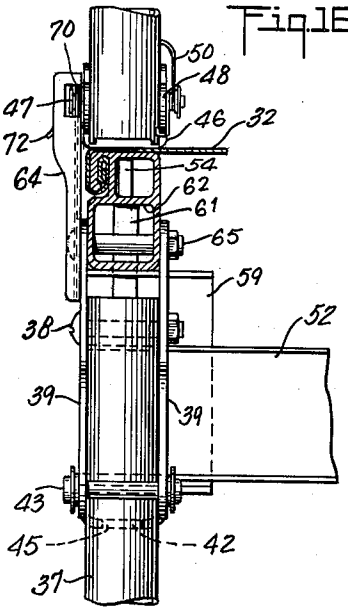
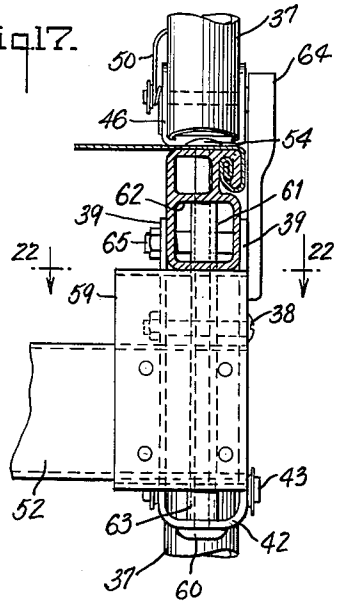


Fig. 17.



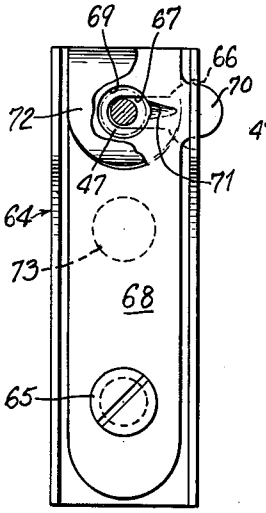


Fig. 18.

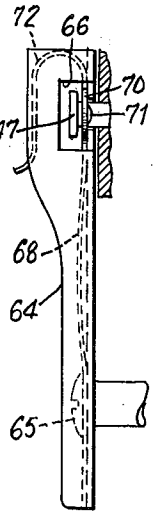


Fig. 19.

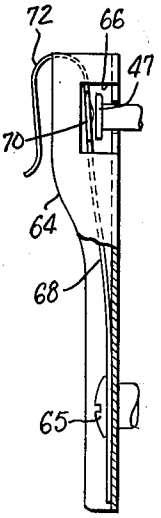


Fig. 20.

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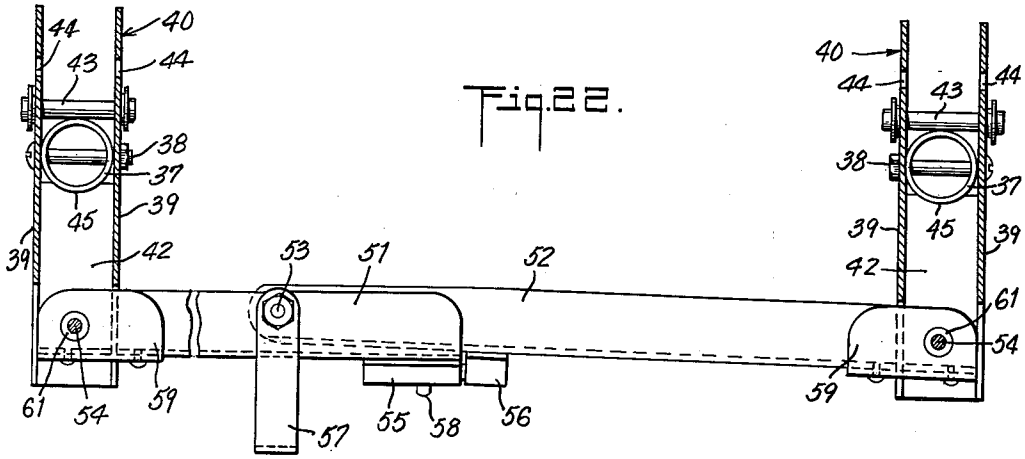


Fig. 22.

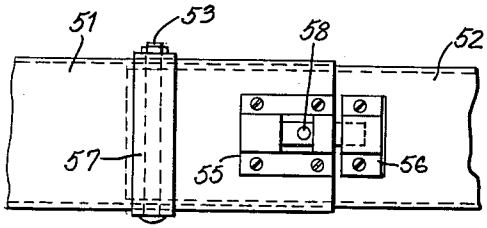


Fig. 23.

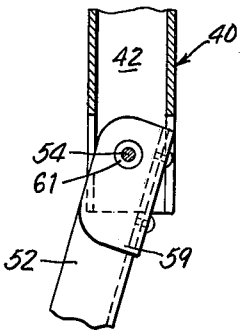


Fig. 24.

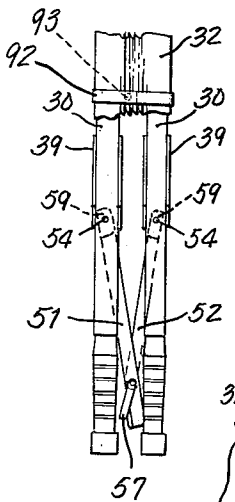


Fig. 25.

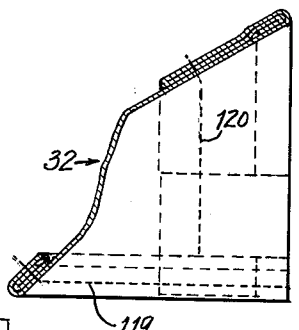


Fig. 26.

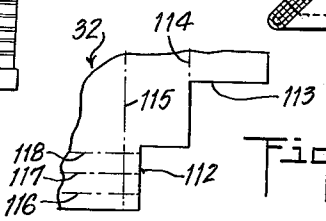


Fig. 26A.

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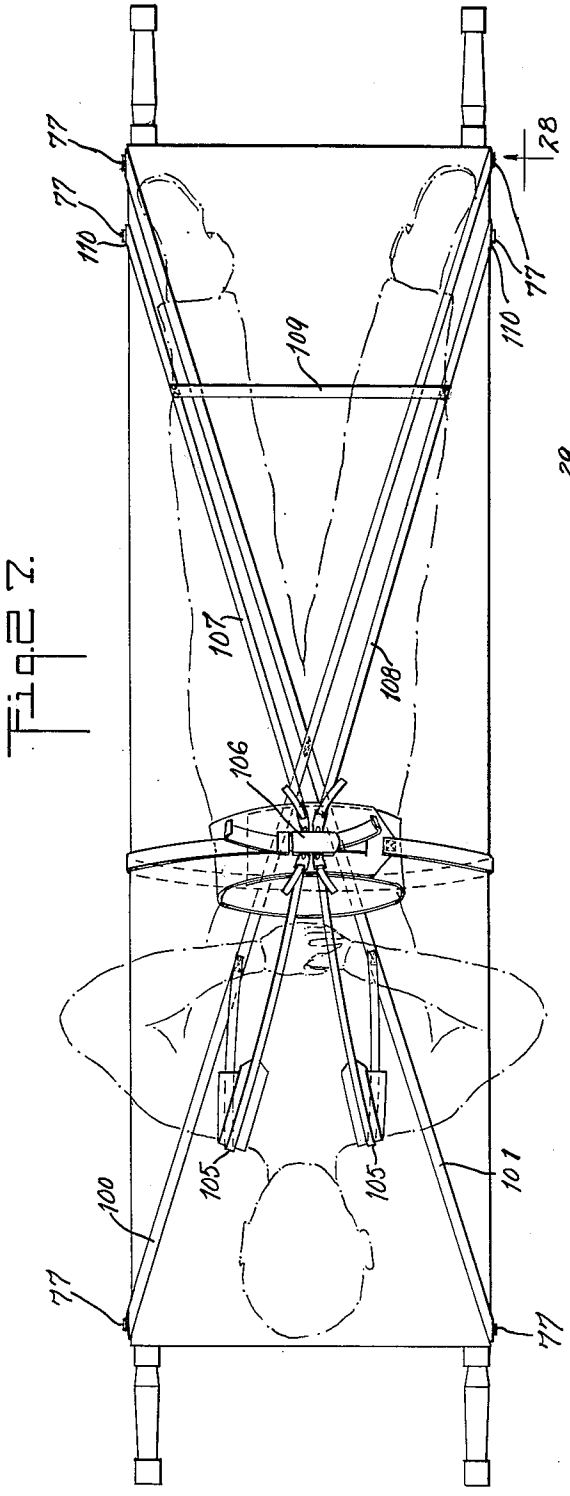


Fig. 2 7.

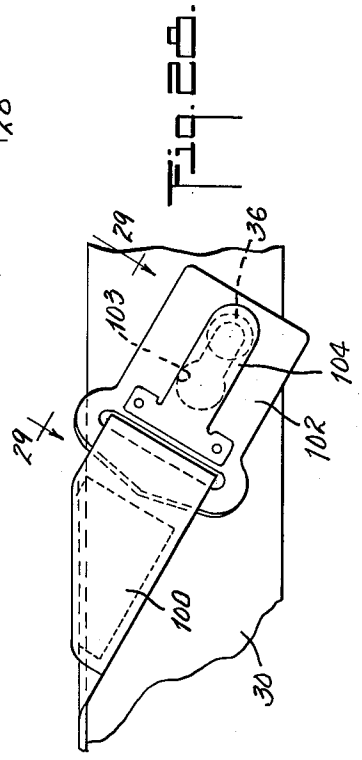


Fig. 2 8.

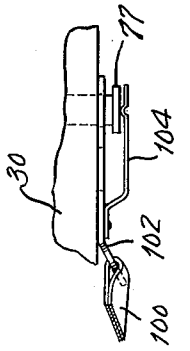


Fig. 2 9.

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Fig. 30.

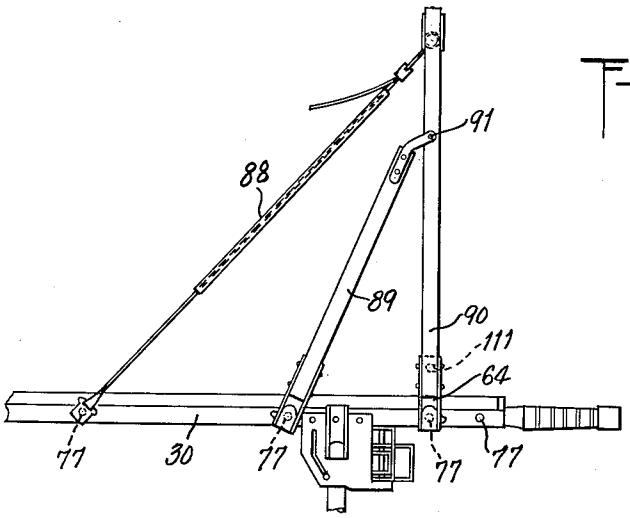


Fig. 31.

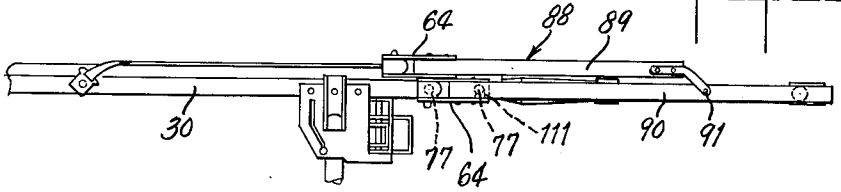
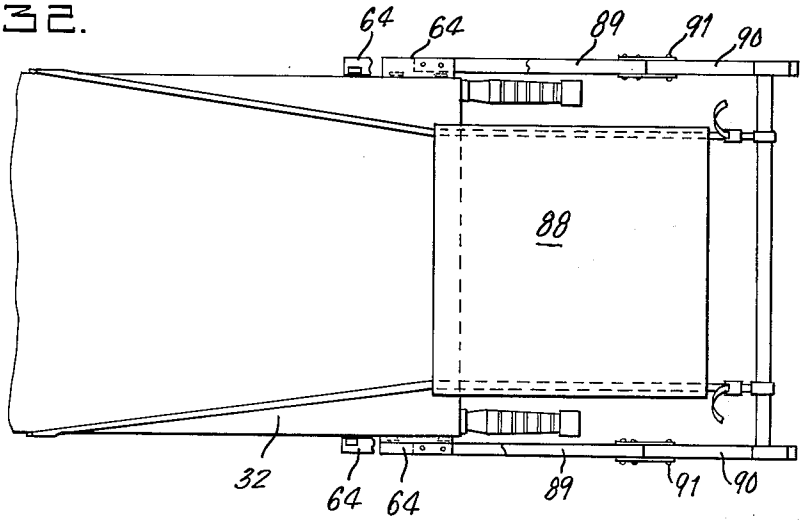


Fig. 32.



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United States Patent Office 3,104,401 Patented Sept. 24, 1963

3,104,401

LITTER AND STACKING COT

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Filed July 6, 1961, Ser. No. 123,380
6 Claims. (Cl. 5—82)

The invention herein disclosed relates to litter constructions.

Objects of the invention are to provide a litter of strong but light weight construction, foldable into compact form but readily unfolded and set up for use as a stretcher or a cot and which, in the form of a cot, may be stacked and secured one on top of another.

Special objects of the invention are to provide this combination structure in a safe, secure form which can be quickly folded and unfolded and which will be firmly and positively held in both the closed and the set up conditions.

Further special objects of the invention are to provide a litter having the advantages mentioned which will consist of but few sturdy parts which can be produced at low cost and which can readily be kept in clean sanitary condition.

Other special objects of the invention are to provide a litter construction to which various attachments, such as back rests, canopy covers, plasma holders, serving trays, restraining harness and the like, may be readily applied.

A further object of the invention is to provide simple, practical means for enabling the litter to be extended in length, if necessary, to accommodate a person of exceptional height, or the like.

The foregoing and other desirable objects have been accomplished by novel features of construction, combination and relation of parts as hereinafter set forth, illustrated in the accompanying drawings and covered in the claims.

The drawings accompanying and forming part of the specification are illustrative of present practical embodiments of the invention. Structure however may be modified and changed as regards the immediate illustration, all within the true intent and scope of the invention as hereinafter defined and claimed.

FIG. 1 is a side elevation of one of the litters with legs lowered, taking the form of a cot.

FIG. 2 is a broken side elevation of the left end of the litter, with legs folded and the leg supporting brackets serving as feet for supporting the litter as a stretcher on the ground.

FIG. 3 is a plan view of the right end of the litter with cover broken away to show the hinged spreader.

FIG. 4 is an enlarged cross sectional detail on line 4—4 of FIG. 1 of the leg with the hinged foot forming latch on the end of the same.

FIG. 5 is a cross sectional detail on line 5—5 of FIG. 2, showing the leg held up to the side bar by the hinged latch.

FIG. 6 is a broken side elevation showing one cot stacked on top of another and secured in such relation by hinged latches pivoted on the leg brackets.

FIG. 7 is a broken side elevation showing how accessory attachments such as irrigation rods and back rests may be mounted on the side bars of the litter.

FIGS. 8 and 9 are broken plan and side elevations showing another accessory, a serving tray, mounted on one of the side rails.

FIGS. 10 and 11 are similar views showing the mounting of another accessory, an ash tray or cup holder.

FIG. 12 is an enlarged cross sectional detail of the latter, taken on line 12—12 of FIG. 11.

FIG. 13 is a broken sectional detail of the irrigation rod support on line 13—13 of FIG. 7.

FIG. 14 is a broken detail viewing the inner side of the latter fixture.

FIG. 15 is a broken side elevation of the stacking latch in projected, holding relation.

FIG. 16 is a broken part sectional view of the same on substantially the plane of line 16—16 of FIG. 15.

FIG. 17 is a similar view on substantially the plane of line 17—17 of FIG. 15.

FIGS. 18, 19, 20 are enlarged front, side, and broken sectional views of the stacking latch.

FIG. 21 is a broken plan view of the back rest appearing in FIG. 7.

FIG. 22 is a broken part sectional plan on line 22—22 of FIG. 17, showing the spreader construction and the manner in which the spreader bars are hinged to the leg mounting brackets.

FIG. 23 is a broken detail of the latch and hand mechanism on the spreader bars.

FIG. 24 is a broken sectional detail showing how the spacer brackets on the ends of the spreader bars hinge on the mounted brackets 40.

FIG. 25 is a broken plan of one end of the litter in the folded or collapsed condition, secured thus by a confining strap wrapped about the side bars.

FIG. 26 is a detail of the nylon cover construction.

FIG. 26*a* is a broken plan showing how the cover is cut and folded to avoid leaving rough edges at the corners.

FIG. 27 is a plan view showing restraining harness attached to litter.

FIG. 28 is a broken detail of one of the clips for securing the restraining harness. This view taken looking in the direction of the arrow 28 in FIG. 27.

FIG. 29 is a broken plan as on line 29—29 of FIG. 28.

FIGS. 30, 31 and 32 are broken side elevations and plan showing how the back rest may be mounted so that it may be dropped down to form an extension of the stretcher.

The side bars 30 of the litter are shown of the special extruded tubular form disclosed in companion application Serial No. 92,242, filed February 28, 1961, now Patent No. 3,040,340 of June 26, 1962, slotted along the side at 31, FIG. 5, for passage of the nylon cover 32 having the triple folded seam 33 held in the confining chamber 34. These slots and connected chambers are open at opposite ends of the litter so that these covers can be quickly slipped into place or be removed from the side bars. Thus soiled covers can be quickly removed and be replaced by fresh covers.

In use the aprons or covers are held in place by tapes 35 attached to the undersides of the covers, FIG. 3, and having grommets buttoned over studs 36 on the inner sides of the rails. In addition to holding the covers in place against endwise slippage over the side bars these tapes are useful as handles in pulling the cover endwise into position over the side bars.

The legs 37 are shown as of tubular construction, pivoted on bolts 38 between the sides 39 of dependent U brackets 40 secured to the side bars at 41. These side portions are connected together in spaced apart relation at the bottom by cross connecting portions 42 which serve as feet for supporting the litter in folded condition, FIG. 2, on the ground.

The legs are secured in lowered extended relation by cross pins 43 which slide down through slots 44 in the side plates 39 into position holding the legs against the edges 45, FIG. 1, of the connecting portions 42. Slots 44 are shown as sloped at their lower ends so as to cam the holding pins into position securing the legs firmly against the stop shoulders 45.

When the legs are lowered the securing pins 43 will drop down automatically locking the legs in extended position where they be held until the pins are manually

raised to release positions at the upper ends of the slots, FIG. 2.

To secure the legs in the lifted folded position shown in FIG. 2 spring latches are provided, shown in FIGS. 4 and 5, as U-shaped members 46 pivoted on studs 47 in position closing the ends of the hollow legs and thus forming self-adjusting feet for supporting the legs on uneven surfaces, these members having hook extensions 48 engageable with projections 49 on the sides of the side bars.

The hooked feet 46 for securing the legs in up-raised relation are shown tensioned by springs 50 to automatically catch over the holding projections 49 when the legs are raised into position beneath the side bars.

The spreaders for the side bars are shown as channel cross section bars 51, 52, FIG. 3, pivoted together at their inner ends at 53 and pivoted at their outer ends on the side bars at 54. These spreader bars may be arranged to swing past dead center in the extended relation and they are shown as releasably secured in this relation by a spring latch 55 on one bar engaging the keeper 56 on the companion bar.

Handles 57 pivoted on the spreader hinges 53 provide means for pulling the spreaders into collapsed position after the securing latches 55 have been released. FIG. 3 shows how these safety latches are operable by finger buttons 58 located within reach of the hand operating the collapsing handle 57.

The pivots for the outer ends of the spreader bars are provided, in the illustration, by long bolts at 54 which extend down through the side bars, FIG. 15, and through spacer brackets 59 and the spreader bars 51, 52, these bolts being headed over extended washers 60 at their lower ends after passage through the connecting foot portions 42 of the dependent brackets, to serve in the nature of casters.

The spacer brackets 59 are rigidly attached to the spreader bars. Spacer tubes 61 extend from the bottom portions 42 up to the internal walls 62, FIG. 17, of the side bars so that the bolts can be set up tight, leaving the spacers 59 and spreader bars free to swing on the spacer tubes. At the bottom these parts pivot on a short spacer tube 63 surrounding the long spacer tube 61.

When the litters with legs extended are to be stacked one on top of another the foot forming brackets 46 rest on the side bars and are firmly secured in this relation by latch levers 64, FIGS. 15 to 20, pivoted on bolts 65 extended through the side bars.

These latch levers 64 are shown in the form of channels each having an opening 66 in one side extended into a narrower slot 67 in the back of the lever to receive the shank of the headed bolt 47 forming the pivot for the foot bracket 46 of the litter above.

Spring plates 68 secured in the channels by the pivot bolts 65 and provided with openings 69 to pass the heads of the bolts 47 serve to lock the latch levers in holding engagement over bolts 47 as shown in FIGS. 18 and 19.

To enable passage of the spring holding plates 68 over the heads of bolts 47 these plates preferably have extensions 70 projecting through openings 66 to ride over the heads of bolts 47 when the levers are rocked toward the holding position and these extensions are shown as having cam slopes 71 to cam the spring strips outward over the heads of bolts 47 as the holding levers are swung from the retracted position, FIG. 1, into the projecting holding relation, shown in FIG. 15.

In the locked relation, FIGS. 18, 19, the spring plate 68 engaged over the shank of bolt 47 prevents movement of the lever 64 in the release direction. To permit release movement of said lever the spring latch plate or lever 68 is withdrawn by means of handle extension 72, clear of bolt 47, FIG. 20, whereupon lever 64 may be turned back and downward into the inactive position shown in FIGS. 1 and 2.

In the latter relation the stacking lever 64 is releasably held by engagement of opening 73 in the back of the same over the head of the leg pivot bolt 38.

Projections for attaching various accessories are provided on the side bars by properly spaced through bolts having exposed heads spaced away from the sides of these bars.

These through bolts may be spaced substantially as indicated in FIG. 1 so that attachments may be mounted at different convenient points in the length of the litter.

Thus trays, such as illustrated at 74, FIGS. 8 and 9, may be mounted at the side of the litter by having dependent angle brackets 75 with keyhole slots 76 engaged over correspondingly spaced projecting bolt heads 77 on the side bars.

FIGS. 10, 11 and 12 show an ash tray or cup holder 78 of angular formation to seat on the side bar and having a keyhole slot 79 to drop down over one of the projecting bolt heads and there to be releasably held by an overstanding spring 80.

FIGS. 7, 13 and 14 show an irrigation rod 81 supported in the outstanding flanges 82, 83 of a plate 84 having an inturned flange 85 engageable over the top of a side bar, said plate having a keyhole slot 86 engageable over the head of one of the through bolts 77, releasably held there by an overstanding spring 87.

A back rest such as shown at 88 in FIG. 7 may be detachably connected with the side bars by having spring latches 64, similar to that shown in FIGS. 18, 19, 20, secured to the slanting and upright arms 89, 90 of such support, engageable over properly located projecting studs or bolts 77 on the side bars.

To extend the length of the litter the back rest may be folded down from the position shown in FIG. 30 to the position shown in FIGS. 31 and 32.

To make this change the upright posts 90 are hooked onto bolt heads 77 inward from the end of the litter and the inclined braces 89 are disconnected. Then, as appears in FIG. 31, the upright and angled supports may be lowered to substantially horizontal position with back rest 88 forming an extension of the cover 32. The clasp 64 by which the upright 90 is pivoted has a notch 111 in the side of the same to engage over the stud 77 which is nearest the end of the litter so that it will be supported in this extended horizontal position.

A belt or harness for holding or restraining a patient on the litter may have end fittings engageable with different bolts or studs projecting from the sides of the side bars. The restraining harness may be similar to that in copending patent application Serial No. 57,178, filed September 20, 1960, now Patent No. 3,046,982 of July 31, 1962, having straps which, by the provision of end fittings to engage the projections on the side bars, may be extended diagonally across the litter from one end to the other, imparting a certain bracing effect to the litter.

A strap or straps for confining the litter in the fully collapsed condition shown in FIG. 25 may be attached at one or both ends of the side bars, as shown at 92, this being long enough to wrap about these bars and carrying a spring socket 93 to snap over a mating projection 94 on the fastened end portion of the strap.

FIGS. 26 and 26*a* show how the nylon cover may be cut at the corners, folded and stitched so as to leave no raw edges which might interfere with sliding the cover in place in the extruded litter rails.

FIG. 26*a* shows a corner of the cover cut in from the side with one indentation 112 and cut in from the end with a second indentation 113. The end is folded under first on line 114 and then on line 115, after which the side edge is folded under successively on lines 116, 117 and 118 and then secured together by a single row of stitching 119. The end folds also are secured by a single row of through stitching 120, FIG. 26.

FIG. 27 shows how a restraining harness similar to that of Patent No. 3,046,982, may be made fast to the

litter by straps having end fitting to engage the studs projecting from the side bars.

This harness is shown as made up of diagonally extending straps **100**, **101** at the back connected where they cross and having clips **102** at the ends provided with keyhole slots **103** engageable over the projecting heads of bolts **77** on the side bars, releasably held so by overstanding spring retainers **104**, with shoulder straps **105** attached to these back straps and extended to the quick release buckle **106**. Front straps **107**, **108** are shown extending from this same buckle, connected together by cross strap **109** and provided with similar spring clasps **110** engaged with other studs on the side bars.

What is claimed is:

1. A litter as herein disclosed comprising the combination of side bars, body supporting material attached thereto, spreaders for holding said side bars in spaced parallel relation, U-shaped brackets dependent from said side bars, said brackets having spaced parallel side portions secured to said side bars and connected at the bottom by portions forming feet for supporting the litter on the ground, legs pivoted between said side portions and foldable up against the undersides of the side bars, and means for securing said legs in the up folded position or in the downwardly extended relation, including spring latches for releasably securing the legs beneath the side bars and stop shoulders on said connecting portions at the lower ends of the brackets engageable by the pivoted legs in the lowered position of the same, limiting movement of the legs in the lowering direction and stop pins engageable with the legs in lowered position, said side portions of the brackets having slots for guiding and holding said stop pins in engagement with the legs after the legs have been lowered into engagement with said stop shoulders.

2. A litter as herein disclosed comprising the combination of side bars, body supporting material attached thereto spreaders for holding said side bars in spaced parallel relation, U-shaped brackets dependent from said side bars, said brackets having spaced parallel side portions secured to said side bars and connected at the bottom by portions forming feet for supporting the litter on the ground, legs pivoted between said side portions and foldable up against the undersides of the side bars, and means for securing said legs in the up folded position or in the downwardly extended relation, said legs having self-adjusting pivoted shoes on the lower ends of the same to rest on the side bars of a litter below the same and latches on said brackets engageable with said shoes for securing litters in stacked relation.

3. A litter comprising side bars connected by body supporting medium U brackets dependent from said side bars and having side portions affixed to said side bars and connecting portions at the bottom of said side portions forming feet for supporting the liters on the ground, legs pivotally supported between said side portions, said connecting portions having stop shoulders limiting downward pivoting movement of said legs and members slidingly mounted between said side portions for holding the legs in engagement with said stop shoulders, said members comprising elements engageable with said legs and said side portions having slots receiving said members and disposed to guide the same into holding engagement with the legs and extended to release said members from engagement with the legs and means for releasably securing the ends of said legs in unlifted engagement with said side bars when said elements are freed from holding engagement with the legs, the extended portions of said slots being inclined to drop said members into holding engagement with said legs when the legs are lowered after releasing the same from the side bars.

4. A litter comprising parallel side bars connected by body supporting medium, drop legs pivotally connected with said side bars and foldable up into position beneath said side bars, holding abutments on said side bars and supporting feet pivoted on said legs and having hook elements spring tensioned into holding engagement with said abutments on said side bars for releasably securing the legs in raised relation.

5. A litter comprising parallel side bars connected by body supporting medium, tubular supporting legs pivotally connected with said side bars, U-shaped brackets pivoted over the lower ends of said legs in position covering the ends of said legs and forming foot pads, abutments on said bars, hook formations on said foot pad brackets engageable with said abutments and spring means yieldingly urging said hook formations into engagement with said projections for releasably securing the legs in upwardly pivoted position beneath the side bars.

6. A litter comprising parallel side bars connected by body supporting material, headed studs projecting in spaced relation from the sides of said side bars and litter accessories detachably and interchangeably engageable with said headed studs, including a folding back rest pivoted to headed studs on said side bars to swing from an upstanding back rest forming position to a lowered position over the side bars and forming a longitudinal extension of the litter.

References Cited in the file of this patent

UNITED STATES PATENTS

989,867	Palmer	Apr. 18, 1911
2,361,328	Springer	Oct. 24, 1944
2,377,940	Hughes	June 12, 1945
2,601,365	Carpenter	June 24, 1952
2,640,996	Davis	June 9, 1953
2,675,564	Hughes	Apr. 20, 1954
2,722,690	Donargo	Nov. 8, 1955
2,761,153	New	Sept. 4, 1956
2,899,693	Stollenwerk	Aug. 18, 1959
3,007,180	Zaugg	Nov. 7, 1961

FOREIGN PATENTS

61,516	Norway	Oct. 9, 1939
232,777	Switzerland	Sept. 1, 1944
1,011,606	France	Apr. 2, 1952