June 17, 1958 G. M. TURNER 2,839,309

TRUSSED SKIDS FOR KNITTING MACHINES, OR THE LIKE

Filed June 27, 1951 4 Sheets-Sheet 1

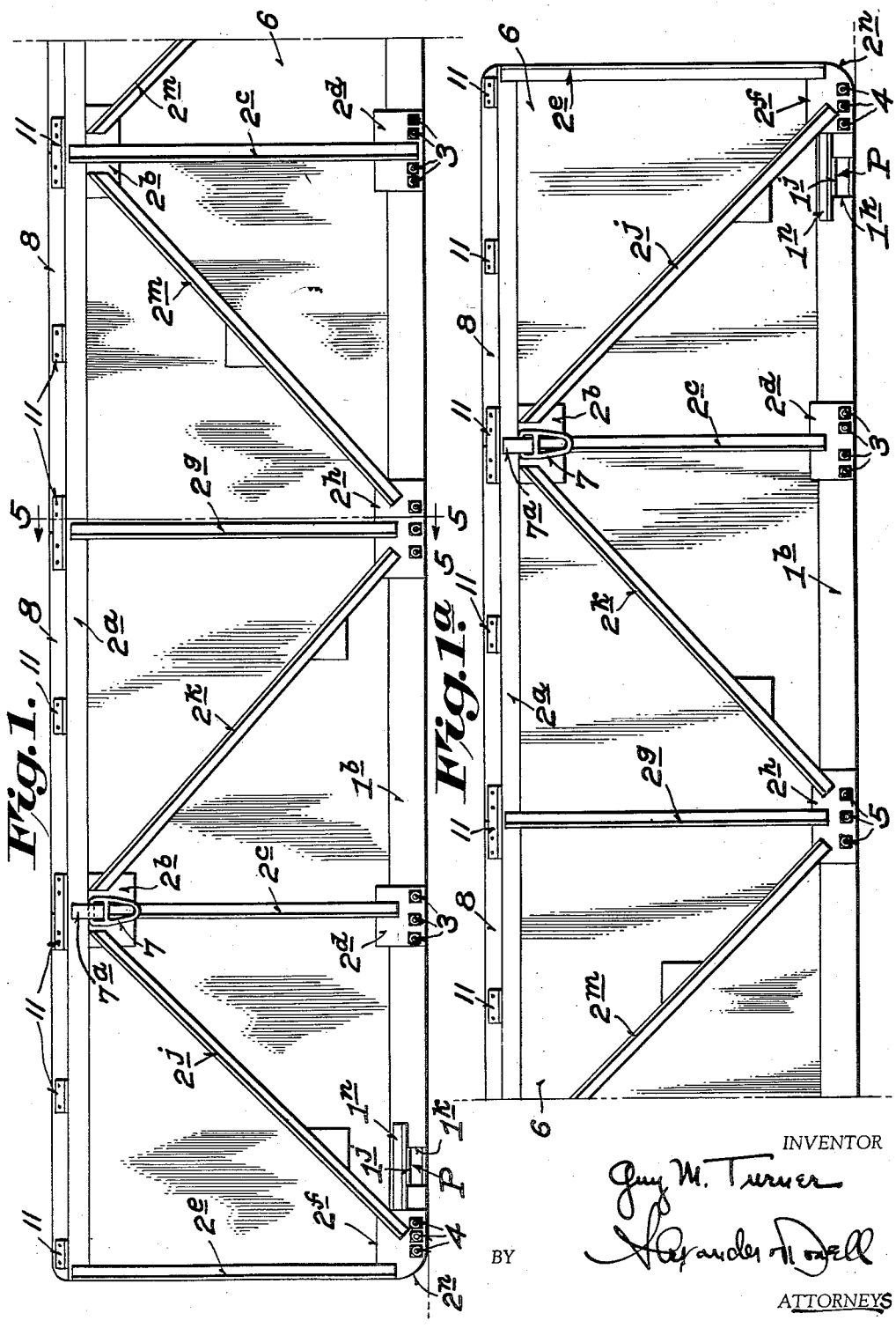


Fig. 1.

Fig. 1a.

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Fig. 2.

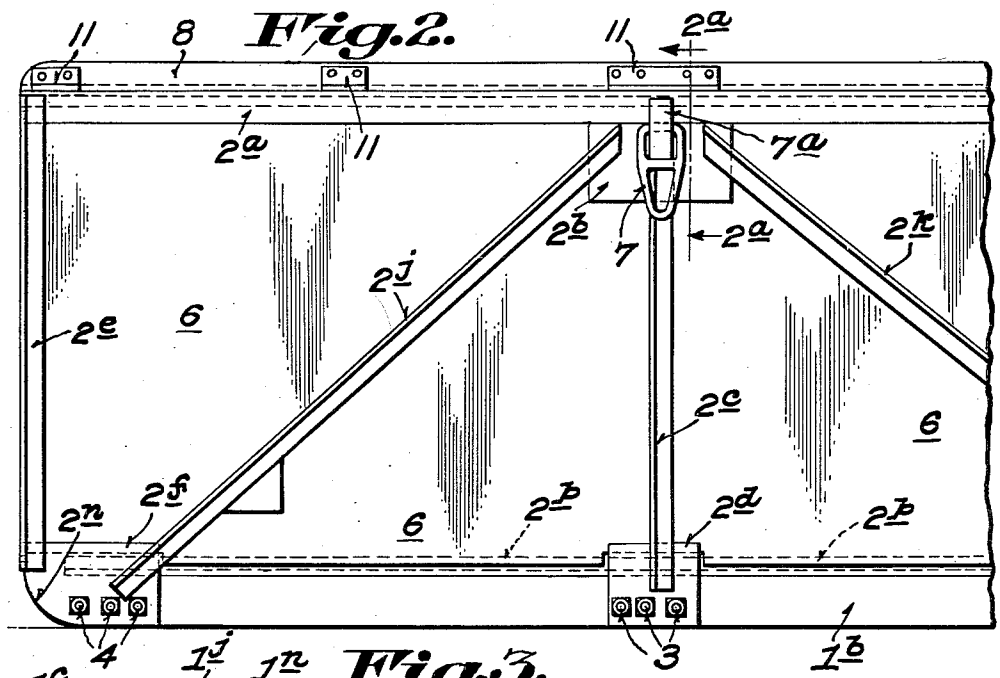


Fig. 3.

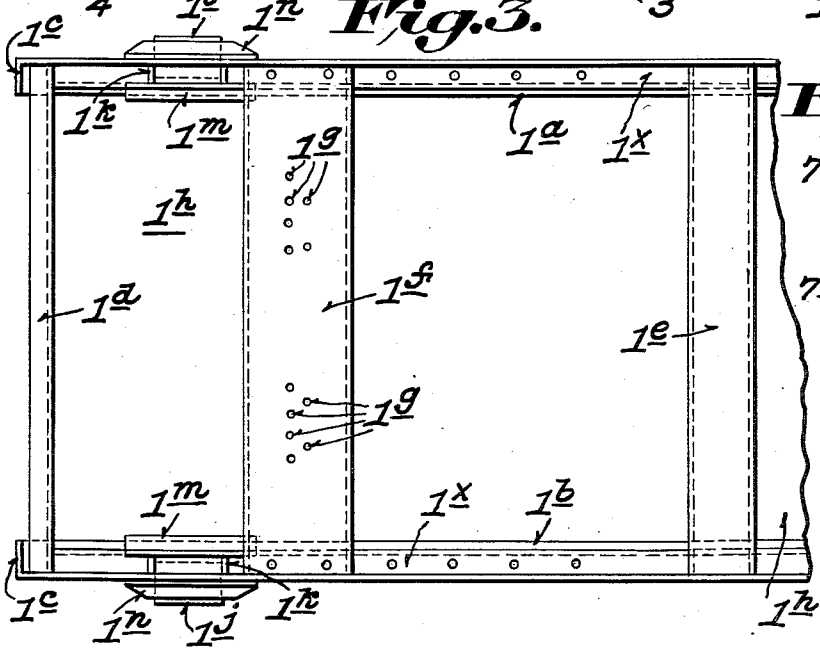


Fig. 2a

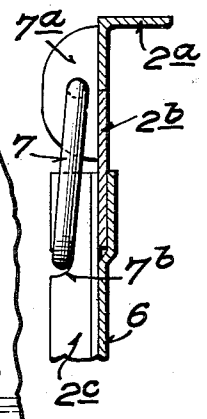


Fig. 4.



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Fig.5.

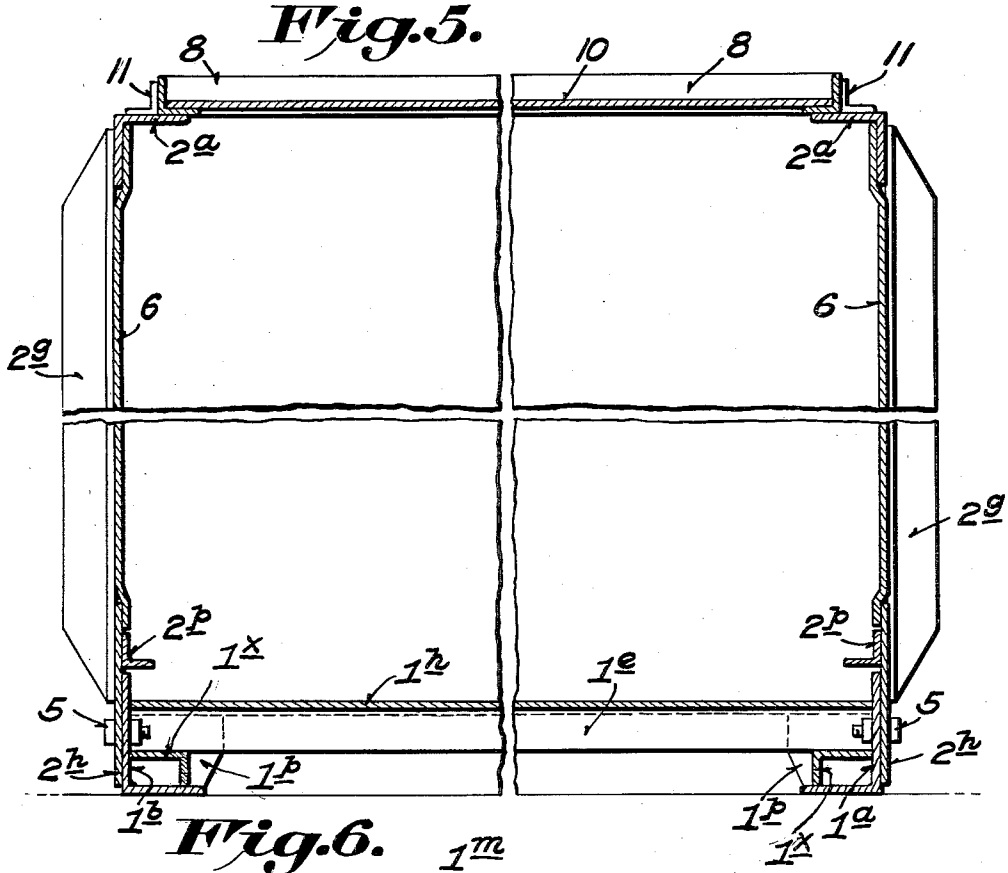


Fig.6.

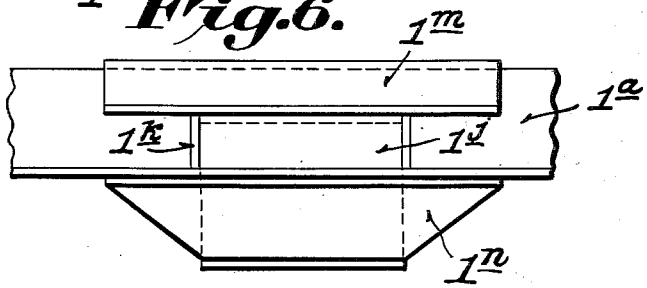


Fig.8.

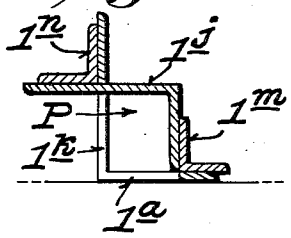
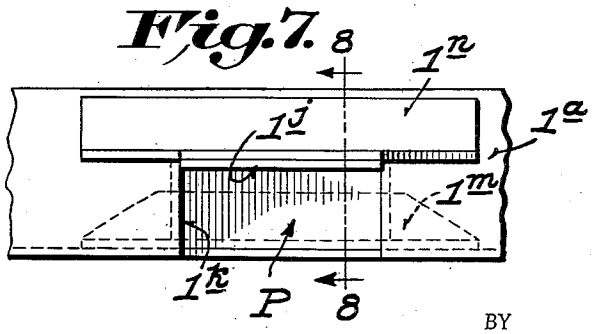


Fig.7.



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Fig. 9.

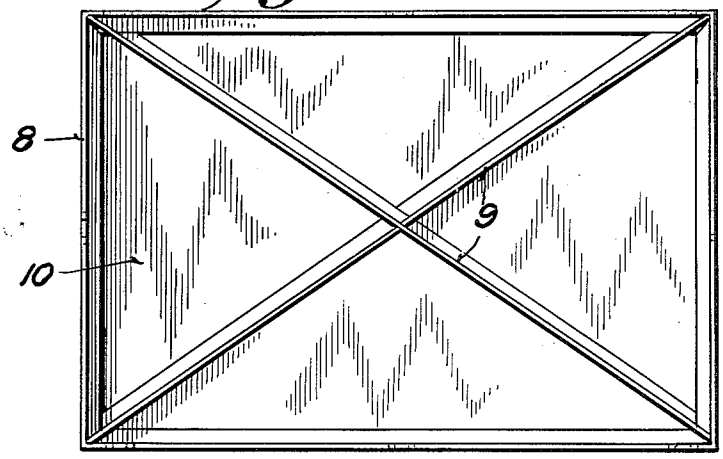
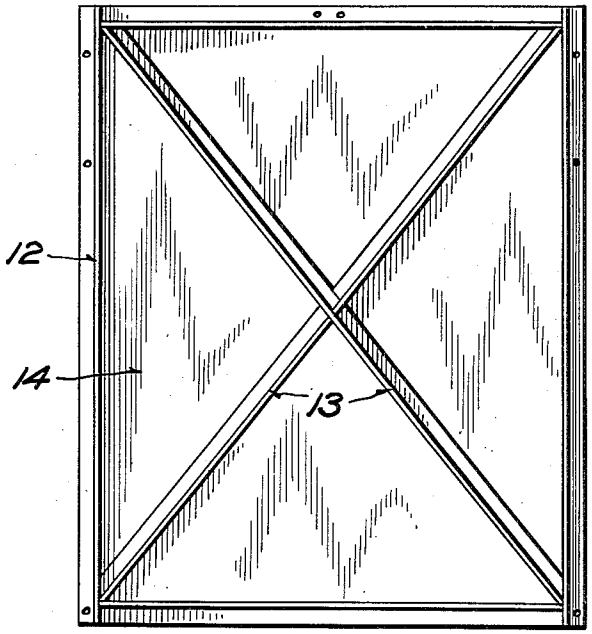


Fig. 10.



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United States Patent Office 2,839,309 Patented June 17, 1958

2,839,309

TRUSSED SKIDS FOR KNITTING MACHINES, OR THE LIKE

Guy M. Turner, Greensboro, N. C.

Application June 27, 1951, Serial No. 233,767

10 Claims. (Cl. 280—12)

This invention is a novel portable trussed skid box, particularly adapted for transporting machines, such as full-fashioned hosiery and similar machines without dismantling same; and the principal object of the invention is to provide a trussed skid of knock-down construction, certain parts of the skid being riveted and welded together and other parts removably bolted together to facilitate the assembly and disassembly of the skid, whereby a machine to be moved may be jacked up even when assembled in a factory with very limited aisle space between rows of such machines, and the trussed skid built-up around and under the jacked-up machine, and when the parts of the skid have been assembled with the machine thereon, the skid may be raised by any desired means and moved over the tops of the other machines in the factory and placed upon a suitable vehicle and transported to any new location, and by the reverse order of operations installed in such new location.

The present invention is an improvement upon my prior Letters Patent No. 2,500,718 issued March 14, 1950.

Another object of the invention is to provide a trussed skid box used for cocooning a package of heavy material for shipment abroad, particularly full fashioned hosiery knitting machines of the "textile" type of Lieberknecht machine, particularly the 30-section Reading machine or a 32-section Lieberknecht machine in which the machine is shipped completely set up, the case when packed for shipment in the U. S. or abroad being of dimensions such as 60' long, 50'' wide, 5½' high and weighing about 75,000 pounds. The skids, however, may obviously be used for packaging or cocooning other types of machinery.

Another object of the invention is to provide a trussed skid box consisting of two complete cases for framing one machine, each of which cases consists of one base, two sides, two ends and six covers, the machine being disconnected at its mid-point so that each section fits within one case, the cases being approximately 30' long.

A further object of the invention is to provide a trussed skid box of the above type in which each case comprises a base formed of angle iron and channels, all welded together; two sides made of angle iron and provided with pads and lifting rings, the sides being of all welded construction and having sheet metal plates riveted to the inside of the sides. The six covers are formed of angle iron, welded together, with the sheet metal plates riveted to the angle iron; and the two ends are constructed in the same manner.

A further object of the invention is to provide a knock-down portable skid of the above type which is exceedingly rigid so as to prevent hogging or sagging of the machine on the skid even when the skid with the machine thereon is lifted at its ends by a gantry or other crane for placement on or removal from the trailer or installation, thereby rendering it possible to transport the machines, which are of very delicate construction, without damage thereto in transit. These knitting machines are long and narrow, and have many longitudinal shafts carrying delicate gears and knitting mechanisms. The adjustments and gear

center spacings are pre-set at the factory and must not be warped or disturbed during shipment. It is, therefore, necessary that rather elaborate means be resorted to for the protection of the machines during moving thereof.

As a result of the expensive character of such skid boxes it is highly desirable that they be returned to the factory by the consignee so that they may be reused in the shipment of other machines. It is therefore an important object of my invention that the skid boxes be readily knocked down into a plurality of essentially flat panels which may be secured together for economical return to the shipper by the consignee.

Other minor objects of the invention will be herein set forth.

I will explain the invention with reference to the accompanying drawings, which illustrate one practical embodiment thereof, to enable others familiar with the art to adopt and use the same; and will summarize in the claims the novel features of construction and novel combinations of parts for which protection is desired.

In said drawings:

Figures 1 and 1*a* together show the side elevation of the assembled trussed skid.

Fig. 2 is an enlarged elevation of one end of a side of the trussed skid.

Fig. 2*a* is an enlarged vertical section on the line 2*a*—2*a*, Fig. 2.

Fig. 3 is an enlarged plan view of one end of the base of the trussed skid.

Fig. 4 is a side elevation of the end of the base shown in Fig. 3.

Fig. 5 is an enlarged section on the line 5—5, Fig. 1.

Fig. 6 is an enlarged top plan view of an end portion of the base, showing a jack well.

Fig. 7 is a side elevation of the parts comprising the jack well shown in Fig. 6.

Fig. 8 is a vertical section on the line 8—8, Fig. 7.

Fig. 9 is a top plan view of one of the cover sections, detached.

Fig. 10 is an elevation showing one end member of the skid box, detached.

As shown in the drawings (Figs. 3 and 5), the base of the trussed skid comprises faced angle bars 1*a* and 1*b* which extend the full length of the skid with their horizontal legs disposed lowermost and extending inwardly of the base, as shown in Fig. 5. The ends of the angle bars 1*b* are rounded upwardly as at 1*c* in Fig. 4 in order to permit the skid to be pulled readily along the floor without binding. The skid bars are connected at their ends by cross angle bars 1*d* which are welded to the angle bars 1*a*, 1*b*, and the angle bars 1*a*, 1*b* are further connected together by channel bars 1*e* which are bolted to angle irons 1*x* which have longitudinal series of holes therein to permit adjustment of the channel bars 1*e* to fit the legs of the machine.

Adjacent each end of the base is a relatively wide channel iron 1*f* which is likewise bolted to the vertical legs of the angle bars 1*a*, 1*b*, and the channels 1*f* are provided with holes 1*g* for receiving hold-down bolts for mounting the machine bed on the base.

By the above construction a very rigid non-warping base is provided extending the full length of the section of the machine.

Upon the tops of the channels and angles 1*e*, 1*f*, 1*d*, a galvanized metal covering 1*h* (Fig. 5) may be secured if desired, in order to protect the machine at the base from weather, dirt, or other undesirable conditions during shipment.

Adjacent the ends of each angle bar 1*a*, 1*b* and as shown in Figs. 3, 4, 6, 7, 8 are formed jack wells each of which has a rectangular opening 1*k* through the vertical and horizontal legs of the angle bar 1*a* and/or 1*b*,

the same extending from the heel of the angle and terminating adjacent the outer edges of the legs. Through the upper portion of the opening 1*k* extends an angle jacking plate 1*j* having its horizontal leg welded to the upper edge of the opening 1*k* and its vertical leg resting upon the horizontal leg of the angle bars 1*a*, 1*b* adjacent the end of the slot, the same being secured to the horizontal leg by an angle stiffener 1*m*, the horizontal leg of the jacking plate 1*j* being secured to the outer face of the vertical leg of the angle bar 1*a*, 1*b* by an angle stiffener 1*n*.

By an inspection of Fig. 8 it will be seen that a jacking pocket P is formed between the horizontal and vertical legs of the angle jacking plate 1*j*, the top of the pocket P being spaced above the floor and adapted to readily receive a jack or the like, whereby the end of the base may be raised or lowered, said pocket P being of very rigid construction.

In order to strengthen the base, I preferably provide blocks or plates 1*p* (Fig. 5) between the horizontal flange of the angle bars 1*a*, 1*b* and the under sides of the channels 1*e*, 1*f*, the blocks being welded into position and further supporting the ends of the cross channels 1*e*, 1*f* at the angle bars 1*a*, 1*b*.

Each side of the skid box comprises a frame comprising an angle bar 2*a* (Figs. 1, 2, 2*a* and 5) extending the full length of the base angle bars 1*a*, 1*b* and parallel thereabove, the bars 2*a* forming the top member of each side frame of the trussed skid, and the horizontal leg extending inwardly and the vertical leg downwardly.

At intervals approximating ⅙, ⅜ and ⅝ of the length of the angle bars 2*a* are bracket plates 2*b* secured to the vertical legs of the channels 2*a* (as shown in Figs. 1, 1*a* and 2*a*) from which depend angle irons 2*c* respectively, the same carrying at their lower ends terminal plates 2*d* which are provided with holes for receiving bolts 3, which bolts transfix the vertical flanges of the bars 1*a*, 1*b* of the base, as shown, so that the sides may be removably fixed to the base.

At each end of the side members are angle irons 2*e* having their upper ends welded to the angle bar 2*a* and carrying at their lower ends terminal plates 2*f* which are likewise provided with holes for bolts 4 which are used in the same manner as the bolts 3 to connect with the ends of the angle bars 1*a*, 1*b* of the base.

Intermediate the angle irons 2*c* are vertical angle bars 2*g* having their upper ends welded to the angle bars 2*a* and their lower ends carrying terminal plates 2*h* provided with holes for receiving bolts 5, which pass through the vertical leg of the angle bars 1*a*, 1*b* of the base in the same manner as the bolts 3 and 4 for the same purpose.

Withing the angle bars 2*e*, 2*c* and 2*g* is riveted a galvanized sheet-metal plate 6 extending from the bend in the angle bars 2*a* and terminating below the tops of the terminal plates 2*f*, 2*d* and 2*h* respectively, the same being riveted thereto so as to form an integral unit.

Between each terminal plate 2*b* and the adjacent terminal plates 2*f*, 2*h* are diagonal angle irons 2*j* and 2*k* respectively, the same being welded to the terminal plates and riveted to the sheet metal plate 6, while between each terminal plate 2*h* and terminal plate 2*b* are diagonal angle irons 2*m*.

As shown in Figs. 1, 1*a* and 2, the outer lower corners of the terminal plates 2*f* are rounded as at 2*n* to the same curvature as the rounded end 1*c* of the angle bars 1*a*, 1*b* of the base over which the terminal plates 2*f* lap.

Across the bottom of the plate 6, as shown in Figs. 2 and 5, is a horizontal stiffening angle iron 2*p* which extends substantially the full length of each side from one terminal plate 2*f* across the terminal plates 2*d* and 2*h*, across the bottom edge of plate 6, to and across the terminal plate 2*f* at the opposite end of the side, the angle iron 2*p* stiffening the lower edge of the plate 6 and serving to render the side assembly more rigid.

On the end bracket plates 2*b*, as shown in Fig. 2*a*, is hinged a lifting ring 7 having its upper end pivoted in a lug 7*a* welded on to the bracket plate 2*b* and to the vertical leg of the angle iron 2*a* as clearly shown, the lower end of the ring 7 normally seating in a recess 7*b* formed in the leg of the angle iron 2*c* adjacent its upper end so that when the ring 7 is normally positioned as shown in Fig. 2*a*, no portion of the ring will extend beyond the recessed leg of the angle bar 2*c*. The lifting ring 7, however, can be pivoted upwardly from the position shown in Fig. 2*a*, and may receive the hooks on a lifting or hoisting crane so that the entire trussed assembly with the machine mounted therein can be raised or lowered for purposes of placement and transportation.

Across the tops of the horizontal legs of the opposed angle bars 2*a* of the sides are removable cover sections (six being used), each section being shown more particularly in Fig. 9, the same comprising a rectangular frame formed of angle irons 8 with crossed angle irons 9 extending from the four corners thereof, a galvanized sheet metal plate 10 being riveted to the angle irons 8 and 9. The horizontal legs of the angle irons 8 of the cover frame extend inwardly and the width of the covers is less than the space between the vertical legs of the angle irons 2*a*, as shown in Fig. 5, so that the covers 8 rest upon the horizontal legs of the angle irons 2*a* and are secured thereto by means of angle irons 11 securable to the angle irons 8 and adapted to be bolted to the horizontal legs of the angle irons 2*a*.

The adjacent edges of the covers are similarly pulled together by bolts to form a rigid structure.

The trussed skid box is further provided with two end members, shown more particularly in Fig. 10, the same being constructed similarly to the cover members shown in Fig. 9 and consisting of rectangular frames formed of angle irons 12 with cross angle irons 13 extending from the galvanized sheet metal corners thereof, the end members being covered by four plates 14 securely riveted to the angle irons 12 and 13 to form a rigid structure. These ends are secured to the transverse flanges of the angle bars 2*e* of the sides by bolts to complete the enclosing of the machine, and are readily removable.

In using the above structure, after the machine is jacked up, the skid base is rolled under it, and when the base is in position, the machine is lowered thereon and is fastened down by means of bolts and tie-down plates. Then the machine is sprayed with a protective coating which forms a sort of cocoon thereabout. After this coating is sprayed on, the sides of the skid box are fastened at their lower edges by bolts to the base. Then the covers are secured across the tops of the two sides by means of bolts. After the covers are bolted down, the ends of the skid box are fastened on by bolts.

When the machines reach their destination, this procedure is reversed. The boxes are disassembled and their skid bases are fastened together with the box ends packed between them to form a flat package. The sides and covers are packed and fastened together along with the bases by bolts, and are then returned for reuse in the shipment of other machines.

The galvanized iron sheets protect the cocoon coating on the machine and by using this trussed skid box the cubic size of the package is reduced to a minimum, thus lowering shipping costs. The skid can be returned to the sender and used over and over again, thus reducing operating costs to a minimum, the skid being of knock-down construction so that it may be conveniently packaged for return to the shipper. Also by the use of the trussed skid box the knitting or other machine may be shipped completely set up with the cocoon applied thereto. Obviously, my trussed skid may be used for shipping machines other than the knitting machines herein referred to.

When not in use the skid box may readily be dismantled, and the parts stored in relatively small space for convenience, it requiring only a short time to secure

the various parts together or to dismantle the same. Owing to the knock-down feature my skid box may be readily used for removing machines of the above type from closely adjacent rows in factories or the like, since the truss may be built up around the machine which is to be removed after the same has been jacked up above the floor level by any suitable jacking means sufficient to permit the assembling of the parts of the skid around and under the machine.

I do not limit my invention to the exact forms shown in the drawings, for obviously changes may be made therein within the scope of the claims.

I claim:

1. A knock-down portable skid box for transporting machinery, comprising a base including opposed parallel angle-bar skids having upturned ends, said skids being rigidly spaced apart by a plurality of longitudinally adjustable structural members secured therebetween; a pair of detachable side members each including a plate, vertical and diagonal truss reinforcing members secured on said plate, and terminal plates secured on the first plate and spaced along the bottom of the first plate to overlap the skids, the terminal plates and skids having registering holes adapted to permit bolting of the sides of the base; a plurality of covers adapted to overlie the upper edges of the sides and to be removably secured to each other and to the sides, each of said covers including a frame and having diagonally crossed reinforcement bars; and removable means to secure the said base, side members and covers together; said angle-bar skids having at spaced intervals elongated cuts; a jacking pocket at each cut comprising a length of angle-bar fixed in the cut with its bend diagonally opposite and parallel to the bend in the skid bar; and reinforcing members strengthening the bond between the edges of the cut and the inserted length of bar.

2. A knock-down portable skid box for transporting machinery, comprising a base; detachable side members each including a plate, vertical and diagonal truss reinforcing members secured on said plate, and terminal plates secured on said first plate and spaced along the bottom of the first plate to overlap the base, the terminal plates and base having registering holes adapted to permit bolting of the sides to the base; a plurality of covers adapted to overlie the upper edges of the sides and to be removably secured to each other and to the sides; and removable means to secure the said base, covers, and side members together; said base having angle-bar skids, and said skids having at spaced intervals elongated cuts, a jacking pocket at each cut comprising a length of angle-bar fixed in the cut with its bend diagonally opposite and parallel to the bend in the skid bar; and reinforcing members strengthening the bond between the edges of the cut and the inserted length of bar.

3. A knock-down portable skid box for transporting machinery, comprising a base including opposed parallel angle-bar skids having upturned ends, said skids being rigidly spaced apart by a plurality of channel irons secured therebetween; detachable box side members; a plurality of covers adapted to overlie the upper edges of the sides and to be removably secured to each other and to the sides; sheet-metal lining plates fixed within each of said box members to enclose the box and protect its contents; and removable means to secure the said box members together; said angle-bar skids having at spaced intervals elongated cuts extending therethrough; a jacking pocket at each cut comprising a length of angle-bar fixed in the cut with its bend diagonally opposite and parallel to the bend in the skid bar; and reinforcing members strengthening the bond between the edges of the cut and the inserted length of bar.

4. A knock-down portable skid box for transporting machinery, comprising a base including opposed spaced parallel angle-bar skids; a pair of detachable side members each including a plate, truss reinforcing members secured on said plate, and terminal plates secured on said first plate and spaced along the bottom of the first plate to overlap the skids, the terminal plates and skids having registering holes adapted to permit securing of the sides to the base; a plurality of covers adapted to overlie the upper edges of the sides and to be removably secured to each other and to the sides, each of said covers including a frame and having reinforcement bars; a pair of end members adapted to be removably secured to the sides, covers, and base, each end member having a frame and reinforcement bars; sheet-metal lining plates fixed within each of said frames and within the base to enclose the box and protect its contents; and removable means to secure the said box members together; said angle-bar skids having at spaced intervals elongated cuts extending therethrough; a jacking pocket at each cut comprising a length of angle-bar fixed in the cut with its bend diagonally opposite and parallel to the bend in the skid bar; and reinforcing members strengthening the bond between the edges of the cut and the inserted length of bar.

5. A knock-down portable skid box for transporting machinery, comprising a base including opposed parallel angle-bar skids having upturned ends, said skids being rigidly spaced apart by a plurality of channel irons secured therebetween; a pair of detachable side members each including a plate, vertical and diagonal truss reinforcing members secured on said plate, and terminal plates secured on said first plate and spaced along the bottom of the first plate to overlap the skids, the terminal plates and skids having registering holes adapted to permit bolting of the sides to the base; a plurality of covers adapted to overlie the upper edges of the sides and to be removably secured to each other and to the sides, each of said covers including a frame and having diagonally crossed reinforcement bars; a pair of end members adapted to be removably secured to the sides, covers, and base, each end member having a frame and diagonally cross reinforcement bars; sheet-metal lining plates fixed within each of said frames and within the base and attached to the cross members to enclose the box and protect its contents; and removable means to secure the said box members together; said angle-bar skids having at spaced intervals elongated cuts extending inwardly from the bend in the angle-bar part way therethrough; a jacking pocket at each cut comprising a length of angle-bar fixed in the cut with its bend diagonally opposite and parallel to the bend in the skid bar; and reinforcing members strengthening the bond between the edges of the cut and the inserted length of bar.

6. A knock-down portable skid box for transporting machinery, comprising, in combination, an elongated, rectangular, substantially flat base arranged to be inserted beneath the machinery, said base including parallel, structural-element side members, and structural-element transverse members integrally and permanently interconnecting said side members; transverse machinery support and tie-down structural elements detachably secured in supported relation to said side members for adjustable positioning longitudinally of the base; a pair of side frames detachably securable to said base, each side frame comprising a structural element truss including parallel, elongated, upper and lower chord members having lengths substantially equal to that of said base and integrally and permanently interconnected by vertical and diagonal web members, the lower ends of said web members being integral with gussets integral with said lower chord member and projecting therebelow for detachable securement to a side member of said base; said gussets and the base side members having registering bolt holes to facilitate interconnection of said side frames to said base and said side frames rigidizing and stabilizing said base against vertical deflection when attached thereto; and structural element truss structures detachably secur-

able between the ends and top chords of said side frames to complete said box.

7. A knock-down portable skid box as claimed in claim 6 including sheet metal plates integrally secured to each side frame to form side closures for the machinery.

8. A knock-down portable skid box as claimed in claim 6 including sheet metal plates integrally secured to each side frame to form side closures for the machinery; and sheet metal plates integrally secured to said truss structures to form end and top closures for the machinery.

9. A knock-down portable skid box as claimed in claim 6 in which said base side members are angle iron members having horizontal and vertical webs.

10. A knock-down portable skid box as claimed in claim 9 in which said support and tie-down members are inverted channels securable to horizontal webs of said base side members.

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