

Nov. 28, 1944.

D. H. DUFFY ET AL

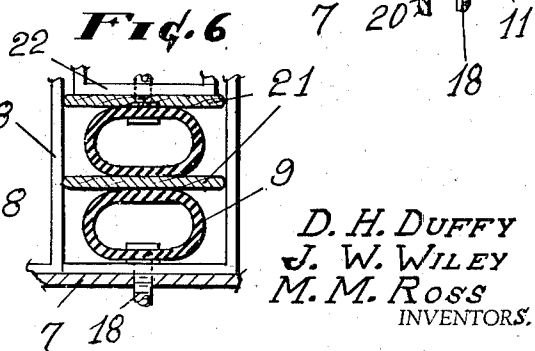
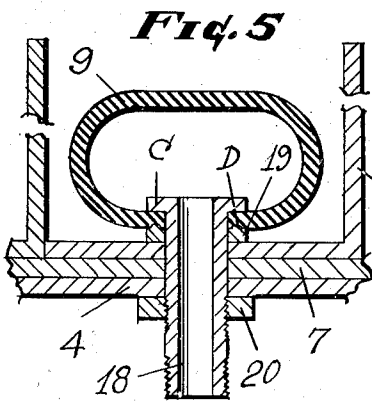
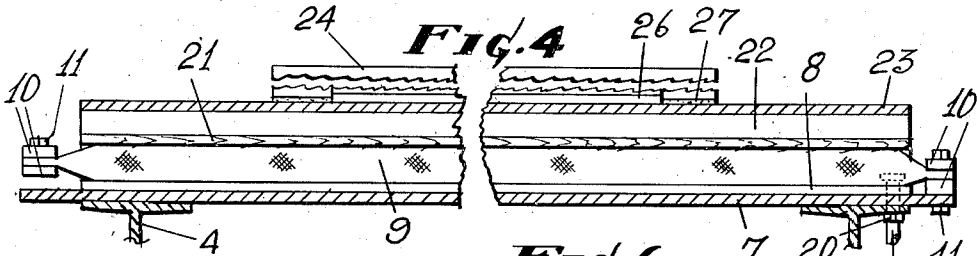
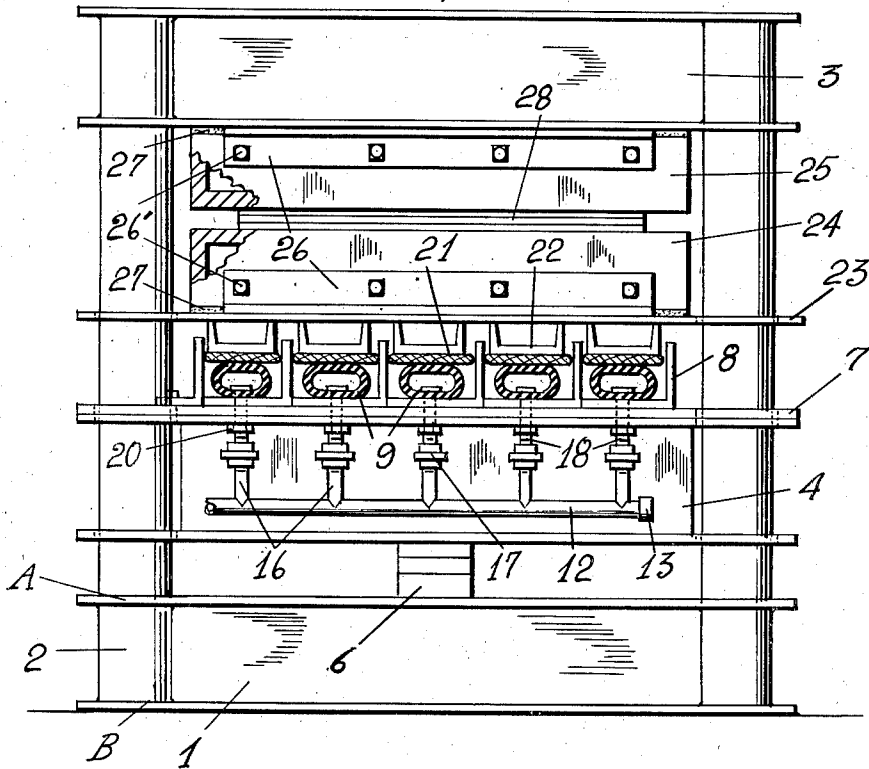
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4 Sheets-Sheet 2

Fig. 3



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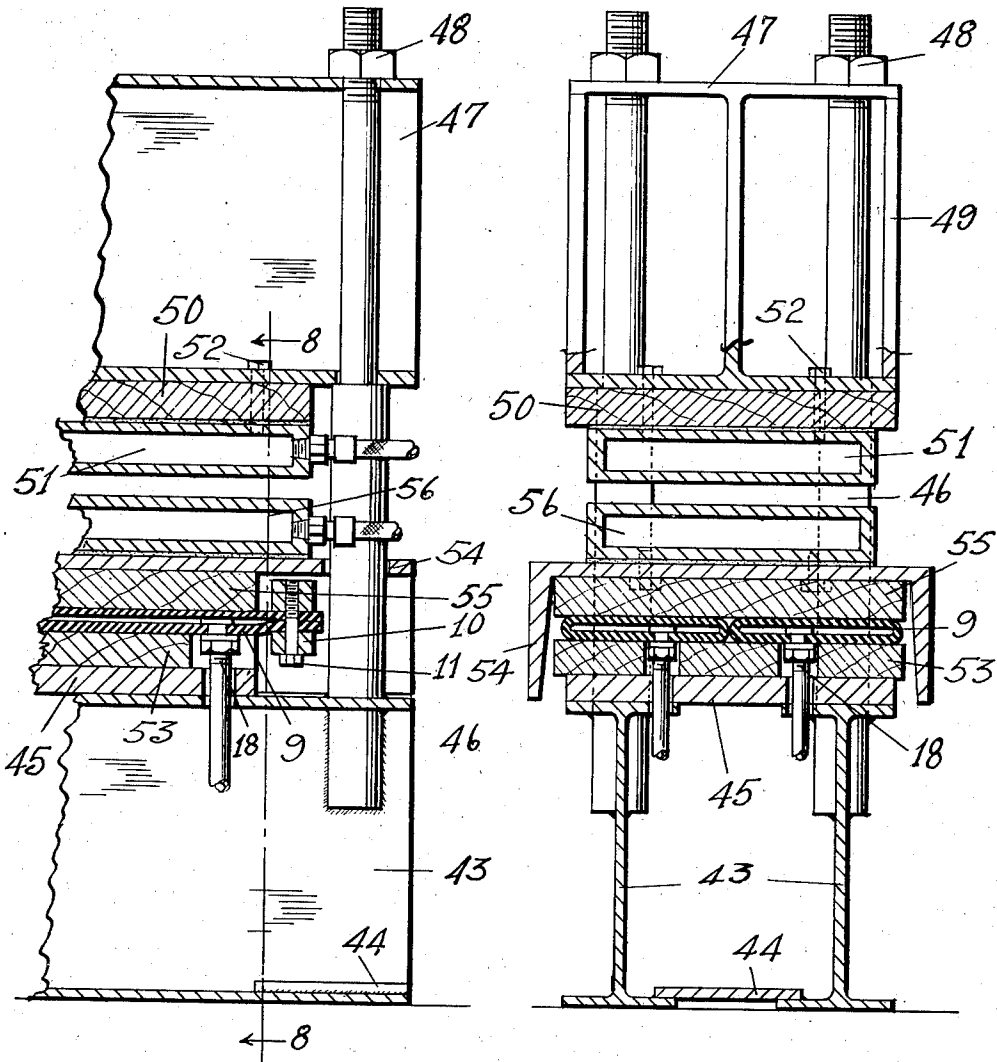
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FIG. 7

FIG. 8



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Fig. 3

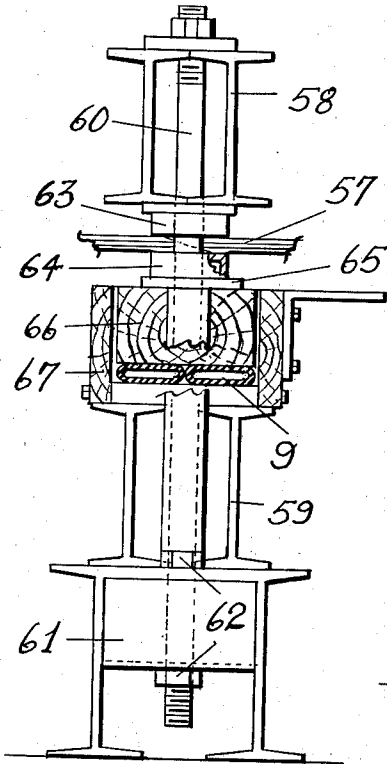


Fig. 10

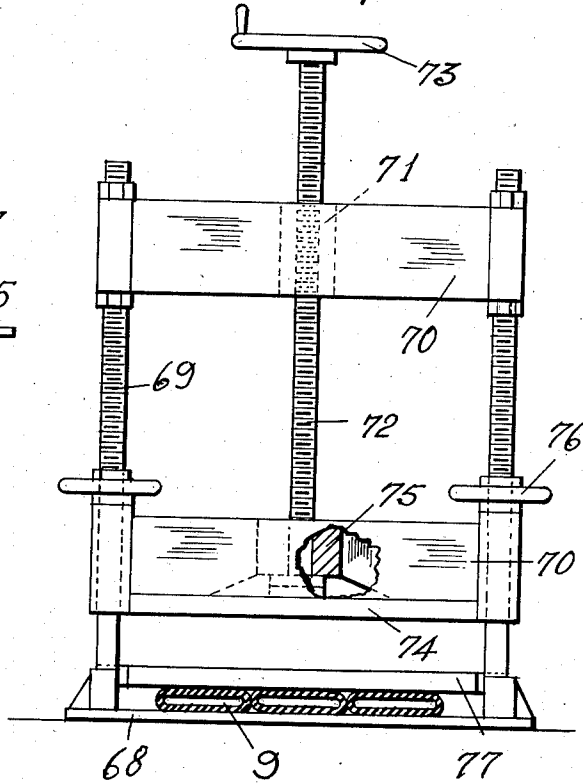
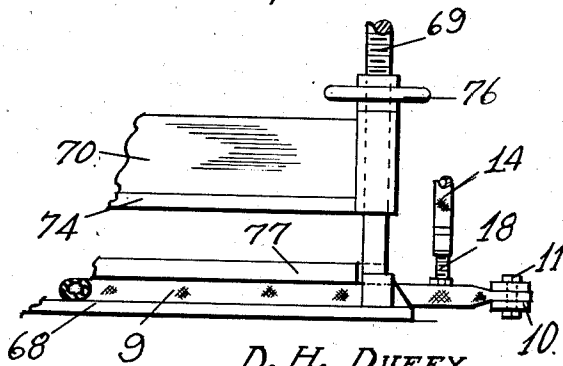


Fig. 11



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UNITED STATES PATENT OFFICE

2,363,779

HOSE ACTUATED PRESS

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5 Claims. (Cl. 144-281)

Our invention relates to a hose actuated press, and has for its principal object a means by which pressure is uniformly distributed over the pressing area of platens carried and exercised by the press.

A further object of our invention is to provide in the press a pair of platens horizontally disposed and vertically aligned with respect to their peripheral edges, and between which glue jointed work is placed to be pressed and heated when the power is applied to the press through the medium of fire hose sections distributed beneath the lower platen, the fire hose seating on a support adjustably arranged in the construction of the press, and means to inflate all of the fire hose sections simultaneously, hydraulically or pneumatically.

A still further object of this invention is to provide a channel for each hose to maintain straight alignment thereof, and an equal distribution of pressure across the platens, and furthermore each channel may be of sufficient depth to stack a plurality of hose therein; in this event the hose sections will be divided by a plate to float with the vertical movement of the hose and to avoid side displacement of the hose from vertical alignment with each other.

A further object of our invention is to provide a gauge to automatically control a predetermined pressure required for the work carried between said platens.

A still further object of our invention is to provide an efficient heating means for the press platens, said means to be optionally exercised with respect to heating the platens.

A further object of our invention is to provide a simple and efficient press whereby gluing together the components of wood structures is easily and quickly accomplished with respect to setting the glue rapidly and forcing the joints to snug engagement.

These and other objects will hereinafter be more fully explained, reference being had to the accompanying drawings forming a part of this specification, and in which like characters will apply to like parts in the different views.

Referring to the drawings:

Fig. 1 is a side view of the hose press, partly in section, showing a side of a hose.

Fig. 2 is an enlarged end view of Fig. 1.

Fig. 3 is a similar end view to that of Fig. 2, the fire hose being in cross section.

Fig. 4 is an enlarged side view of the hose and its channel, parts removed for convenience of illustration.

Fig. 5 is an enlarged cross section of the hose, its channel and hose pipe connection.

Fig. 6 is a modification to illustrate the stacking of the fire hose.

Fig. 7 is a sectional view longitudinally of the press modified to illustrate a different application of the hose.

Fig. 8 is a sectional view taken on line 8-8 in Fig. 7.

Fig. 9 is an end view of a narrow press partly in section.

Fig. 10 is an end view of a narrow press modified for a greater width than that shown in Fig. 9.

Fig. 11 is a fragmentary side elevation of Fig. 10.

The press disclosed in Figs. 1, 2, and 3 consists of a lower frame 1 rectangular in form and consisting of I-beams for the sides and ends of the frame, said beams being welded together where they meet at the corners, the upper leg A at each corner being drilled to receive a corner post 2 slidable therethrough and seating on the lower leg as at B, said corner posts being tubular and upwardly extending a suitable length and being connected at their upper extremity by a frame 3 similar to that of the lower frame, said frames and corner posts being secured rigidly by welding the same together.

Slidably mounted on the corner posts is another similar frame 4 to that above described, said frame being drilled at its corners to slidably engage on the said corner posts whereby a bed is formed for vertical adjustment to carry the load of compression when the press is energized, the last said frame to be secured a predetermined spaced distance from the lower frame by suitable blocking 5 and 6 as shown, or otherwise, spaced along the sides and ends of the said beam elements.

Upon said adjustable frame is mounted a floating frame, said frame comprising a plate 7 seating on the upper side of said adjustable frame, the corners of said plate being drilled in like manner to engage on the corner posts whereby a continuous bearing is provided across the adjustable frame, and upon which lengths of L-shaped members 8 are placed in juxtaposition to form a plurality of channels extending from end to end of the press frame and of sufficient number to fill the space from side to side of the press substantially as shown in Fig. 3. Seating in each channel is a length of fire hose 9, the terminating ends of which extend outward a short distance from their respective chan-

nels as shown in Fig. 4, said terminal ends being collapsed and clamped together simultaneously by a pair of bars 10 transversely to the fire hose lengths, said bars being secured together by bolts 11 spaced along said bars, extending therethrough and between the ends of the hose whereby said fire hose sections are sealed air and liquid tight.

As a means to inflate the hose lengths simultaneously there is provided a pipe line 12 extending across one end of the press, externally positioned, and carried by the movable frame, one end of the said pipe line being closed by a cap 13 while the other end has a flexible hose 14 connected thereto by a coupling 15, the flexible hose being means to permit vertical movement of the movable frame, said flexible hose extending to and being connected to a source of supply later described. The said pipe 12 has a plurality of laterals 16 extending therefrom to communicate with the corresponding ends of the hose as shown in Figs. 2 and 4, the laterals each having a union 17 whereby a defective hose length may be removed for repairs or replacement by a new length of hose. The connection of the hose from the union upward is through the medium of a nipple 18, the upper end of which is provided with an annular flange C to bind the hose seating on an annular washer 19, the latter having an abrupt upper extension D to embed in the hose to avoid expansion from its aperture through which the nipple extends, said washer seating on the said leg of the said L-shaped member 8 that rests on the plate 7, said leg, plate, and leg of the I-beam 4 being drilled in registry and through which the nipple extends and being tensioned by a nut 20 threadedly engaging thereon to secure the nipple air and liquid tight where it engages with the hose. It will now be seen how the hose lengths are removably connected to the press and communicating with the source of supply, pneumatically or hydraulically.

Each fire hose has a plate 21 positioned thereon to slidably engage vertically in the channel thus provided, and each plate has a channel 22 lying thereon with its legs upwardly extending, and on which is secured a metallic sheet 23 to cover the area between the corner posts. It will be seen that the legs of the channels thus formed will function as a stop to carry the load of the sheet 23, and a platen later described when the hose sections are collapsed by disengaging the pressure; furthermore there is provided short lengths of pipes 8' vertically secured to plate 7 to coact with the channel legs to carry the weight of said sheet and platen when released by collapsing the hose. Each corner of said sheet is drilled to likewise slidably engage on said corner posts, whereby lateral movement of said plate is obviated and adapted to carry a hollow platen 24 seated thereon, said platen being in vertical registry with another platen 25 that is secured to the upper frame, the platens being secured to their respective carrying members by an L-shaped member 26 positioned at each end of each platen through the medium of bolts 26' whereby the platens are likewise secured against lateral movement when functioning as compressing elements, both of said platens being insulated from the elements of the press by an asbestos sheet 27 to avoid free transmission of heat to the hose whereby excess expansion of air compressed will be eliminated when the platens are heated.

The plates above referred to are the elements between which glue joined work 28 is placed,

similar to that shown in Fig. 3, said work being pressed for tight engagement of the glued joints as well as being heated by the platens for quick setting and hardening of the glue, the platens being heated by steam injected therein through a supply pipe 30. There is also provided an exhaust through pipe 31 whereby the steam is free to circulate through the platens. Inasmuch as platen 24 is arranged to move vertically for clamping purpose there is provided a flexible pipe 32 for the supply and the exhaust, while the upper platen 25 being stationarily secured to the top frame has a rigid pipe connection 33.

Positioned in working relation to the fire hose sections is a compression tank 34 vertically disposed, said tank having a supply pipe 35 communicating therewith at its upper end, the pipe connecting the tank with a source of supply and having a valve 36 therein as controlling means for the supply. There is also provided a supply pipe 37 for the fire hose, said supply extending upward from the tank and communicating with a pressure regulator 38, the pressure flow being controlled by a T-element 39 as adjusting means for the pressure, said pressure being recorded by a gauge 40 to ascertain pressure imposed in the fire hose. There is also provided a three-way valve 41 to make and break the flow leading to the fire hose and also as an exhaust for the hose through pipe 42.

The fire hose sections may be stacked plurally similar to that shown in Fig. 6, the hose sections being separated by a plate 21 heretofore described, the purpose of which is for the advantage of a greater vertical movement of the lower platen whereby the space between the stationary platen and the movable platen may be increased for the convenience of installing work between said platens that may vary in height without change of the blocking 5 and 6 to vary the space between the platens.

The press actuated by the fire hose sections may vary in size and construction to accommodate for special kind of work, for example, we have illustrated modifications in Figs. 7 to 11 inclusive.

The structure of Figs. 7 and 8 consists of a pair of I-beams 43 spaced apart in parallelism to function as a base for the press, said I-beams being secured in spaced relation at their lower extremity by a plate 44 adjacent each end of the beams while the upper extremity thereof is secured together by a plate 45 extending longitudinally of the beams terminating a spaced distance inward from each end thereof. The said I-beams each are bored through their upper legs a spaced distance inward from their outer ends to receive corner posts 46 insertible therein, and secured by welding, each post being shouldered a spaced distance upward by reducing the same in diameter as shown in Fig. 7, and upon which the lower legs of I-beams 47 will seat, it being understood that the upper and lower legs of said beams are bored in vertical registry for the corner posts and slidable thereon but removably secured by nuts 48 threadedly engaging on their respective posts that extend through the upper leg of the I-beam, each side of the last said I-beam being enclosed by a plate 49 fitting between the outside portion of the legs and secured thereto by welding, whereby an upper portion of the press frame is formed and secured in spaced relation from the base. Said upper portion has a spacing plank 50 and a hollow platen 51 secured at its lower extremity by bolts 52.

Positioned on the base is a wood plank 53, and upon which a pair of fire hose sections 9 will rest as hoisting means for a channel 54, the latter having a wood plank 55 as carrying means for the channel, the plank fitting between the legs thereof by which means the channel may be adjustably raised or lowered by varying the thickness of one or both said planks, and likewise the plank carried by the upper frame portion. The said channel is bored adjacent each of its corners to slidably engage on the posts when vertically moved by inflation or deflation of the fire hose. Secured to the upper side of the channel and movable therewith is a hollow platen 56 that registers in vertical alignment with the first said platen and between which glue jointed work may be placed to clamp the joints to snug engagement and cause the glue to set quickly by heat dispensed from the hollow platens, it being understood that the platens and fire hose have similar supply and exhaust arrangement to that described for the hose and platens in Figs. 1 and 2.

A modification of the press shown in Fig. 9 is adaptable for pressing glued feathered jointed plies of wood 57 together, and in this instance, the upper and lower frame members 58 and 59 respectively are secured in spaced relation by a post 60 at each end of the frame members, the lower portion of the frame seating on a suitable base 61, the end elevation of which is shown in Fig. 9 and to which the posts are attached, each post being secured by nuts 62, one being above and one below the base. A pair of platens 63 and 64 are suitably secured to the upper and lower portions of the frame respectively, said platens confronting each other, the lower platen seating on a metal plate 65 to which it is secured, the ends of which extend outward from the platen and being bored to slidably engage on the posts, the plate being carried by a timber 66 as an adjusting element by varying the thickness thereof vertically, said timber to move vertically in a channel 67 formed on the top of the frame member 59 as actuated by a pair of fire hose 9 seated in the channel beneath the timber, and the said hollow platens and fire hose sections being energized for their respective service similar to that described for Figs. 1 and 2.

The press illustrated in Figs. 10 and 11 consists of a base plate 68 rectangular in form, and having secured thereto adjacent each of its corners a threaded post 69 extending upward therefrom, the top of the posts being connected by a frame comprised of bars 70 for the sides and ends thereof, also intermediate bars crossing the frame as supporting means for a hub 71 centrally disposed within the bar portions 70 of the frame, said hub being axially bored and threaded to carry a threaded screw element 72 on which is secured a wheel 73, the screw as pendent carrying means for the press floating head that is comprised of a similar frame to that above described but having a bearing plate 74 to close the lower portion of the frame. The said frame has a sleeve 75 at each corner thereof to slidably engage on their respective posts, and the said frame being secured against upward movement when located, selectively, at a desired point vertically of the press by a threaded wheel nut 76 for each post, whereby said plate 74 is secured a spaced distance upward from another floating plate 77, the corners of which are notched to slidably engage on said corner posts to avoid lateral displacement in its vertical movement, said move-

ment being actuated by lengths of fire hose juxtapositioned and in sufficient number to cover the inner confronting area of last said plate and base plate 68 on which said fire hose seats, said fire hose being connected to a source for compression similar to that heretofore described. It will now be seen the manner by which glue jointed work when placed between said plates 74 and 77 is pressed to cause snug engagement of the joints and retained the length of time required for cold hardening of the glue; furthermore the said floating plate may be substituted by hollow platens, steam heated, for quick setting or hardening of the glue.

Such modifications may be made as lie within the scope of the appended claims.

Having fully described our invention what we claim as new and desire to secure by Letters Patent is:

1. In a fire hose actuated press, in combination, a frame comprised of upper and lower rectangular members spaced apart and being connected by posts, a pair of rectangular members positioned in the frame between first said rectangular members, said pair of rectangular members adapted to slidably engage on the posts toward and from their respective upper and lower rectangular members, a plurality of fire hose sections arranged to move one of said second rectangular members toward the upper rectangular member, and means to inflate the plurality of fire hose sections simultaneously.

2. In a fire hose actuated press of the class described, comprising upper and lower frames, each of said frames being rectangular in form, and a post for each corresponding corner of the frames to secure the same in spaced relation vertically, and another rectangular frame positioned between the said upper and lower frames, said other frame adapted to move vertically and being guided by the corner posts, blocking positioned on the lower frame to adjustably carry the said other frame, a vertically floating frame positioned above said other frame, the floating frame being guided by the corner posts, a plurality of channels placed side by side between the said other frame and said floating frame, each channel having fire hose sections stacked therein to move the floating frame toward the upper frame, and pipe and valve means to connect the fire hose sections to a pressure supply to inflate and deflate said hose sections for the purpose specified.

3. In a fire hose actuated press, a lower frame and an upper frame horizontally disposed and spaced apart, said frames being secured together by vertically disposed posts extending through each frame and welded thereto, a rectangular frame having each corner bored to slidably engage on the corner posts, a rectangular plate positioned above last said frame and having its corners bored to slidably engage on the posts, a plurality of L-shaped members in juxtaposition to form a series of channels one way across the slidable rectangular frame and terminating the other way a spaced distance inward of the said frame, said channels each having a fire hose section positioned therein, extending therealong and outward from each end of the channels, channel means to carry the plate and being insertible in first said channels against which compression from the hose sections is impounded and to meet the hose sections prior to maximum inflation of said hose sections, means to clamp both ends of each fire hose section to-

gether air tight, pipe means to connect the fire hose sections simultaneously to a source of pressure to inflate the same and a suitable valve to inject pressure for the hose sections.

4. As an element of a hose actuated press, a channel comprising a web and legs extending outward from one side of the web, a plurality of hose sections vertically stacked in the channel and plates placed between the said hose sections, said plates adapted to float vertically between the legs of the channel as the hose sections are being inflated, and power means to inflate the hose sections for the purpose specified.

5. As elements of a hose actuated press, a

plurality of L-shaped elements of suitable lengths, one leg of each being vertically disposed, the other leg as spacing means for the first said legs and engaging there against to form a plurality of channels in parallelism, a plurality of hose sections vertically stacked in each channel and plates to separate the hose sections, said plate to float vertically as the hose sections are being inflated simultaneously, and channels seated on the uppermost plates to function as compressors for work placed thereon when the elements are installed in a press structure.

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