March 5, 1929. W. C. SPECK ET AL 1,704,109

LOAD SUPPORT FOR HOISTS

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Fig. 1.

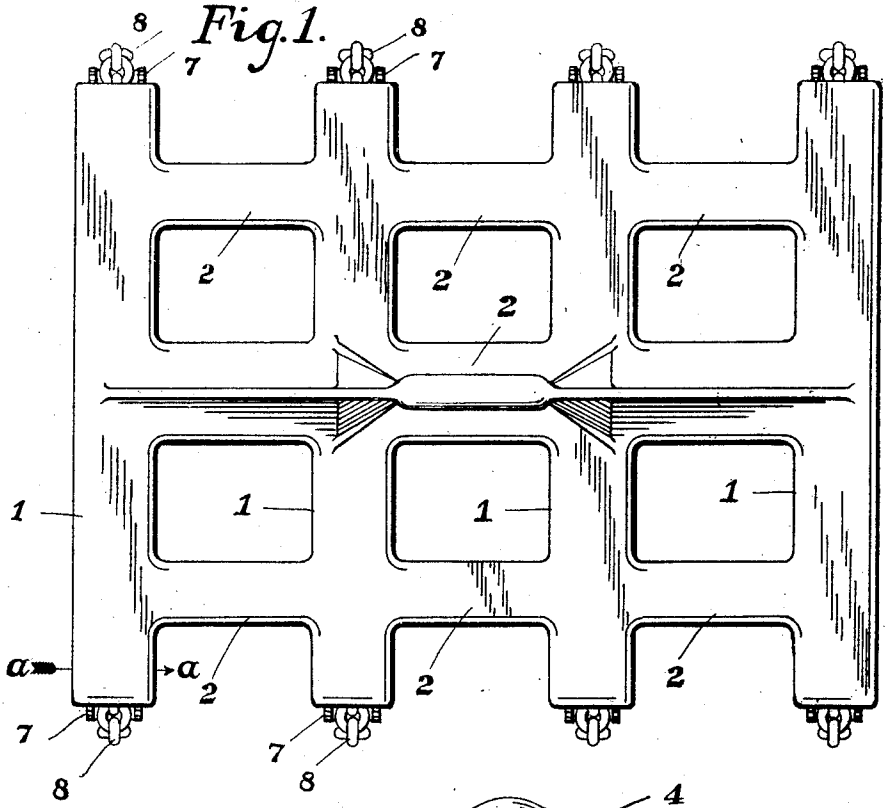
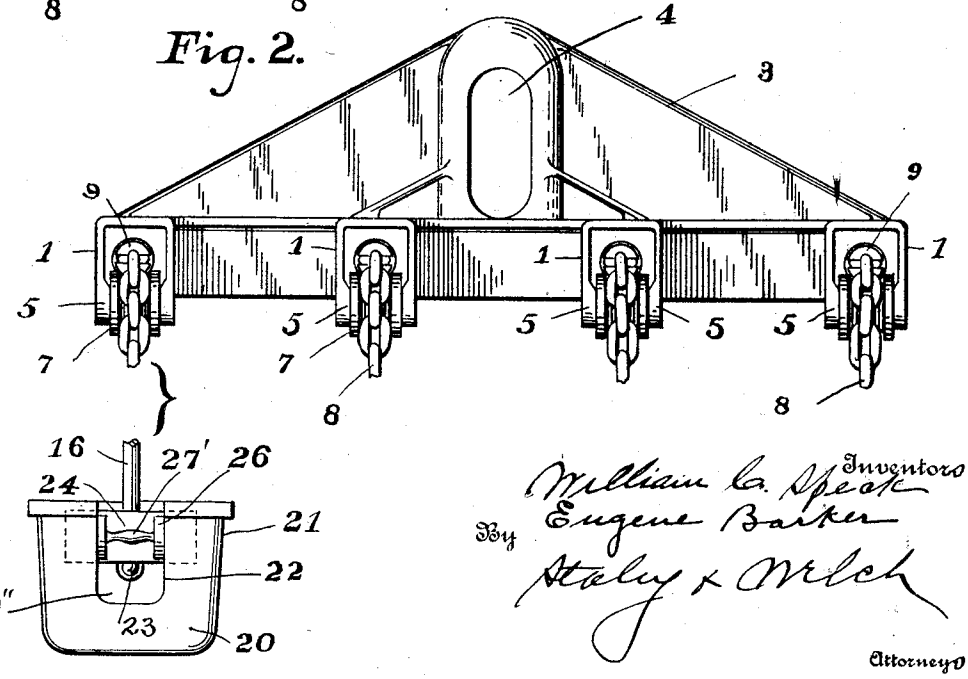


Fig. 2.



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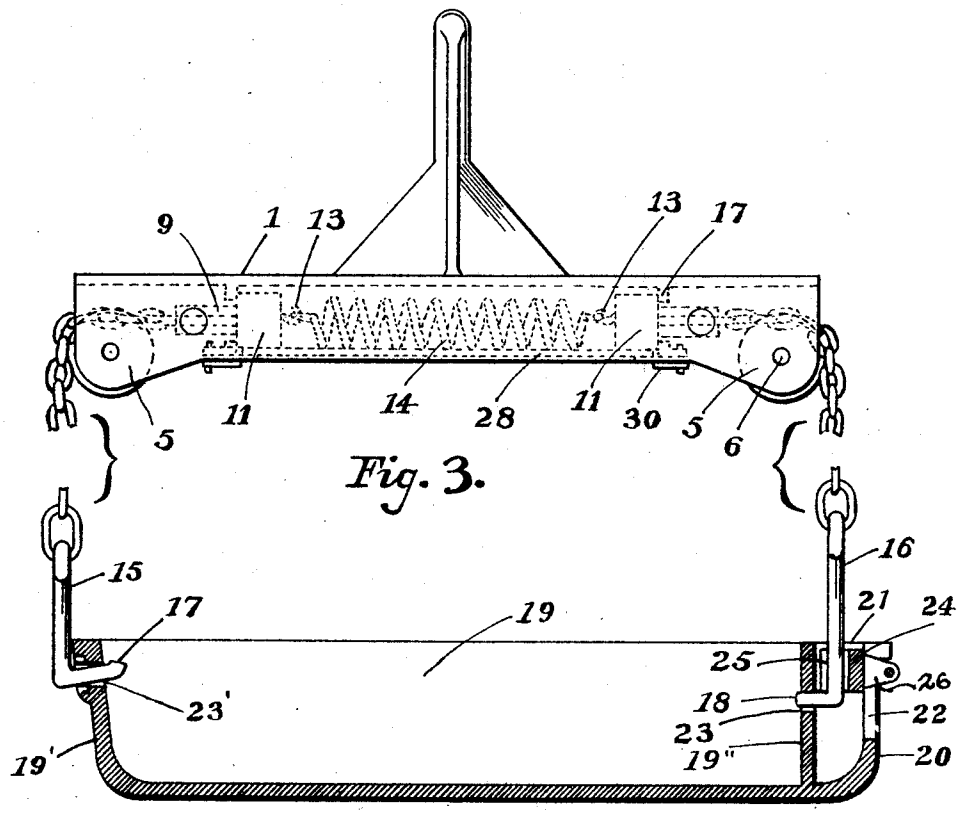


Fig. 3.

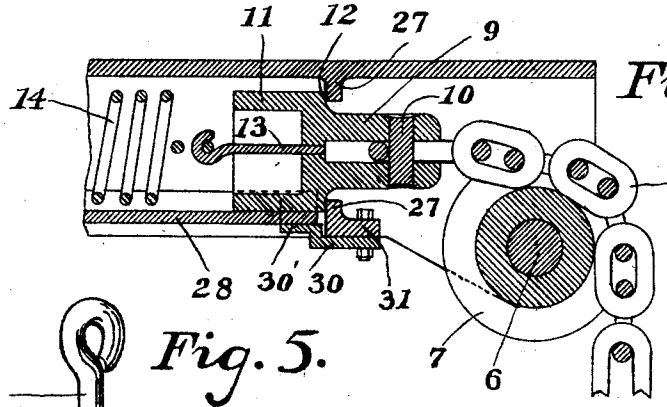


Fig. 4.

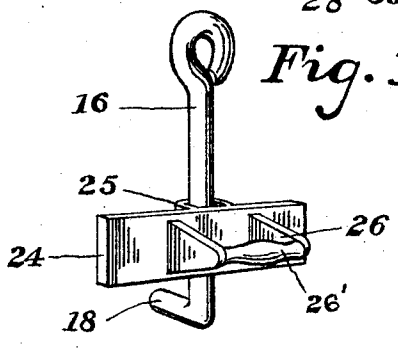


Fig. 5.

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UNITED STATES PATENT OFFICE.

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LOAD SUPPORT FOR HOISTS.

Application filed May 2, 1927. Serial No. 188,107.

This invention relates to improvements in load supports for hoisting apparatus of the portable traversing type, it particularly relating to a load support designed to carry a plurality of containers for the material to be transported.

The improved support is one which has been designated particularly for hoisting apparatus used for hoisting and transporting the charging boxes of furnaces filled with scrap metal, although not necessarily confined to that particular purpose.

One of the objects of the invention is to provide a support of the character referred to from which may be suspended for simultaneous hoisting and transportation a plurality of charging boxes or other containers; a further object in this connection, however, being to provide a support which is equally applicable to the hoisting and transportation of a single box or container when desired.

A further object of the invention is to provide a support of the character referred to which is equipped with suspension devices having means for engaging the containers of a character which will enable the operator to place an initial tension upon the devices for the purpose of maintaining the engaging means in engagement with the complemental parts of the container prior to the hoisting operation; a further and more specific object in this connection being to provide suspension means on the support in the nature of chains having hooks that engage eyes in the container, together with a spring device forming an initial support for the chains and hooks whereby when the hooks are placed in engagement with the eyes said hooks and chains will be under spring tension to thereby maintain the hooks in engagement with the eyes prior to the hoisting operation; and, further, to provide fixed means associated with the support for taking the load during the hoisting and transporting thereof.

In the accompanying drawings:

Fig. 1 is a top plan view of a support embodying the improvement.

Fig. 2 is a side elevation of the same showing a charging box in end elevation hanging from one set of the suspension devices.

Fig. 3 is a side elevation of the support showing in longitudinal section a charging box suspended therefrom.

Fig. 4 is a longitudinal section of a portion of the support, the section being on the line *a*—*a* of Fig. 1.

Fig. 5 is a detail in perspective of one of the suspension hooks and its lock plate.

In the handling of scrap metal for furnaces, it has been the practice to load the charging boxes in the foundry yards and transport such boxes by a portable traversing hoisting apparatus running on an over-head track to cars by which they are carried to the furnace. With the apparatus heretofore employed, it was necessary to transport the loaded boxes individually by the hoisting apparatus due to the fact that the load support of the hoisting apparatus was of a character which accommodated but one box. In order to provide for simultaneously carrying a plurality of such boxes by the hoisting apparatus, we have devised a load support so constructed that a plurality of charging boxes or other containers may be suspended therefrom, one embodiment of a support containing our improvements being constructed as follows:

The support embodying the improvement consists of a frame-like casting which in the present case embodies a series of four transversely arranged channeled members 1 of an inverted U-form, connected by integral longitudinally-extending T-shaped webs 2, the central series of T-shaped webs 2 having integrally cast therewith a longitudinally-extending rib 3, having a centrally-arranged eye 4 which receives the hook (not shown) of the hoisting cable. The sides of each channel member 4 are preferably enlarged at each end both downwardly and transversely to form supporting ears 5 for a stationary spindle 6 on which is journaled a grooved roll 7 about which passes a chain 8. The inner link of each chain is received in the bifurcated portion 9 of a cylindrical head 11 and connected therewith by a stationary cross pin 10 which is riveted or otherwise secured to the members 9. The head has a threaded opening to receive the threaded portion of the shank of a hook member 13 which is connected to one end of a coil spring 14; the other end of the spring being connected to a similarly formed head located in the opposite end of the channel, as shown in dotted lines in Fig. 3. Each chain has secured to its lower end the shank of a hook, one of which is indicated at 15 and the other at 16. The shank

15 has a pronounced angular hook-shaped portion 17, while the other shank 16 has its end bent at right-angles as shown at 18.

The body of the charging box is indicated at 19 and is of the usual form. One end 19′ of this box is provided with an eye 23′ which receives the hook 17. The other end 19″ of the box is enclosed by a pocket formed with an end wall 20 and side walls 21, the end wall being formed with a central open-top recess 22. This pocket is formed on these charging boxes primarily for the purpose of permitting attachment therewith of devices for the convenient handling of the box at the furnace and the wall 19″ is provided with an eye 23 to receive a hook associated with such connecting devices. The pocket is for the purpose of retaining in position a lock plate which is associated with such devices similar to the lock plate which is about to be described.

The eye 23 receives the hook 18 and slidably mounted upon the shank 16 of this hook is a lock plate 24. This plate has an integral sleeve to embrace the shank 16 formed by a pair of lips 25 which are bent about the shank so as to loosely embrace the same and the plate is also provided with outwardly projecting ears 26 carrying a handle 27. Before the hook 18 is inserted in the aperture 23 the plate is slid to the uppermost portion of the shank and then dropped down to the position shown in Fig. 3 to retain the hook 18 in position.

The spring 14 normally holds the chains and their hooks in retracted position so that it becomes necessary, for the purpose of engaging the hooks with the eyes, to draw the hooks downwardly against the tension of the spring, which places a sufficient tension upon the hooks to retain them in position in the eyes until the beginning of the hoisting operation, this arrangement being more particularly applicable to the hooks 17 in this particular embodiment of the invention, since the plate 23 answers the purpose of retaining the hook 18.

So soon as the load is placed upon the chains this load is taken by the abutment 27 which is located in the path of movement of the shoulders 12 of the head 11. This abutment is formed in the nature of an interior wall cast integrally with the channel, and apertured to receive the reduced bifurcated portion of the head.

Each channel has a floor 28 to sustain the spring. This floor consists of a concavo-convex strip which has each end seated on and secured to a concave saddle 30′ projecting from an integral plate 30, which in turn is bolted to an outturned flange 30″ projecting from the wall 28.

From this construction it will be seen that a plurality of containers such as charging boxes for furnaces may be suspended from a support which in turn is suspended from a single point by a hoisting cable and that these containers may be so disposed as to maintain the support in horizontal position. If but a single container is to be transported, the ends are preferably connected with the suspension devices of the two inner channels so as to preserve the equilibrium of the support. By the arrangement which maintains a tension upon the suspension devices before the load has been brought thereon, a single workman may make the connections between the suspension devices and the containers by placing the hooks in the eyes, and by reason of the spring tension these connections will be maintained until the load is placed upon the devices, after which the weight of the load serves to keep the hooks in the eyes.

Having thus described our invention, we claim:—

1. In a load support for hoists, a load supporting member, together with means for attaching the same to hoisting apparatus, and a plurality of suspension devices carried by said member to suspend therefrom a plurality of loads, each device including a resilient element yieldable by manual effort to permit the device to be attached to the load, having no load supporting capacity.

2. In a load support for hoists, a load supporting member, together with means for attaching the same to hoisting apparatus, and a plurality of suspension devices carried by said member to suspend therefrom a plurality of loads, each device including a resilient element yieldable by manual effort to permit the device to be attached to the load but having no load supporting capacity and an abutment to sustain the load when hoisted.

3. In a load support for hoists, a load supporting member having means for attaching same to the hoisting apparatus, and a suspension device carried by said member comprising a hook, a head, a flexible connection between said hook and head, a spring attached to said head, a grooved wheel about which said flexible connection passes, and a fixed abutment for said head to take the load.

4. In a load support for hoists, a load supporting member having means for attaching same to the hoisting apparatus, a plurality of channels formed in said member, and suspension devices for suspending loads from said member supported in each channel, each of said devices including a resilient element and an abutment, said spring being of a character to permit manual distortion to allow the suspension devices to be manually engaged with the load and retained in engagement therewith until the weight of the load is placed thereon.

5. In a load support for hoists, a load supporting member having means for attaching same to the hoisting apparatus, a plurality of parallel spaced-apart channels of inverted

U-form forming a part of said member, together with connecting webs between said channels integrally cast therewith, and suspension devices supported in each channel for suspending loads from said supporting member.

6. In a load support for hoists, a load supporting member having means for attaching same to the hoisting apparatus, a channel forming a part of said supporting member open at each end, a coil spring mounted in said channel, and flexible load suspension devices connected with each end of said spring, and a fixed abutment in said channel for each of said suspension devices.

7. In a load support for hoists, a load supporting member having means for attaching same to the hoisting apparatus, a channel forming a part of said member, a coil spring in said channel, a head in each end of said channel connected with said spring, a chain connected with each head having a hook at its lower end, a pulley for each chain carried by said member, and a fixed abutment at each end of said channel for said heads.

8. In a load support for hoists, an integrally-formed frame-like member consisting of a plurality of parallel spaced-apart chambered portions connected by webs, and load suspension devices supported in said chambered portions to suspend loads from said member.

9. In a load support for hoists, an integrally-formed supporting member consisting of a plurality of transversely-extending parallel spaced-apart chambered portions and a plurality of longitudinally-extending webs connecting the same, and load suspension devices supported in each chambered portion.

10. In a load support for hoists, a supporting member, a series of flexible suspension devices carried by said member, with each end of each device hanging from said member, each device including a resilient element to initially support the hanging portions in retracted position, said spring being of a character to permit manual distortion to allow the suspension devices to be manually engaged with the load and retained in engagement therewith until the weight of the load is placed thereon, and fixed abutments carried by said member to relieve the resilient elements of the weight of the loads during the hoisting operation.

In testimony whereof, we have hereunto set our hands this 27th day of April, 1927.

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EUGENE BARKER.