June 11, 1957 H. SMITH 2,795,325

SHIPPING CARTON

Filed Jan. 11, 1955 2 Sheets-Sheet 1

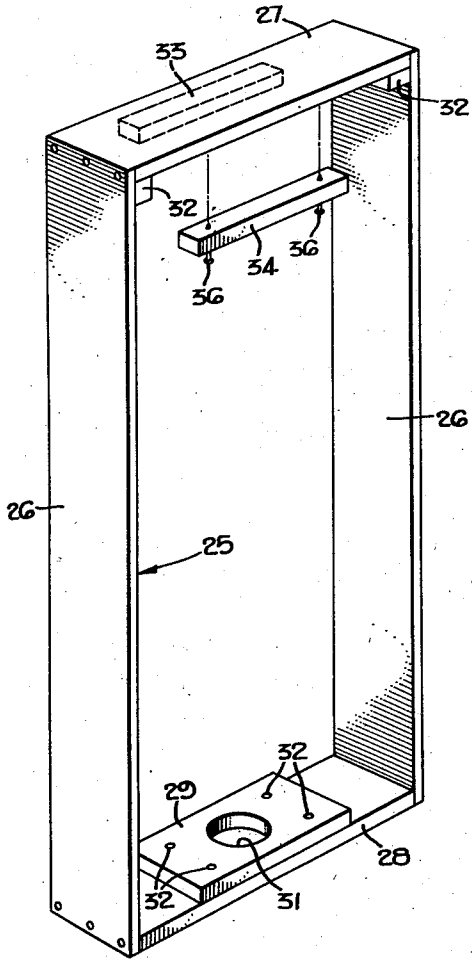
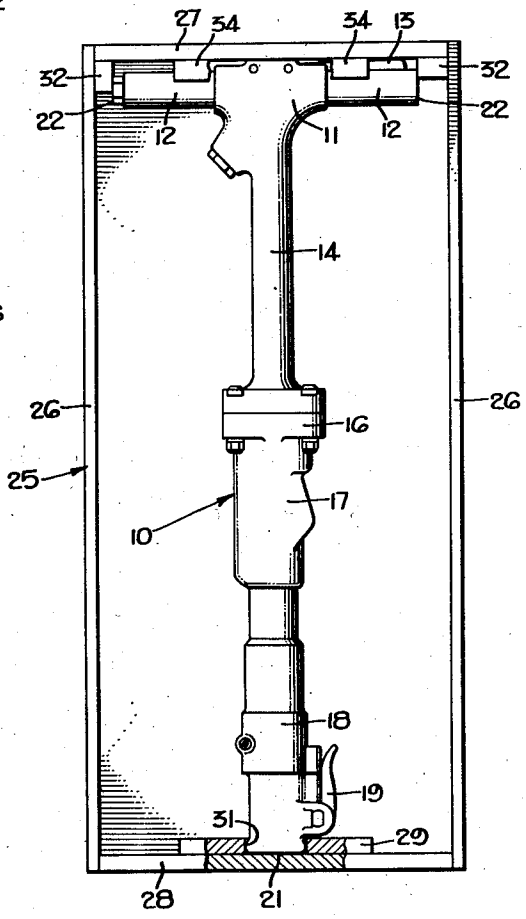


FIG. 1.

FIG. 2



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Filed Jan. 11, 1955 2 Sheets-Sheet 2

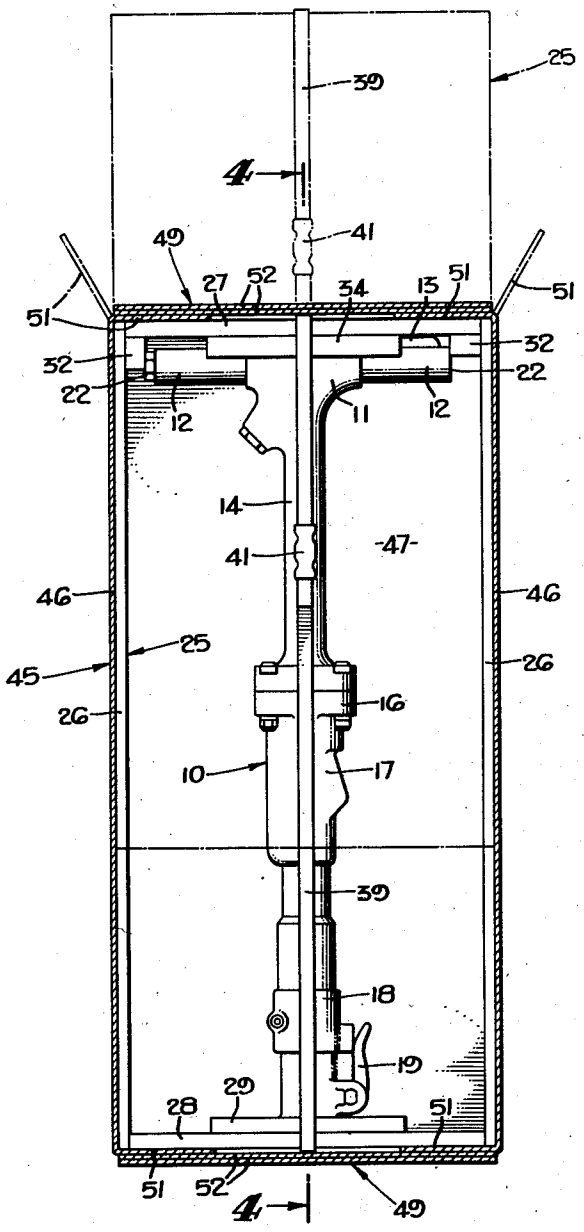
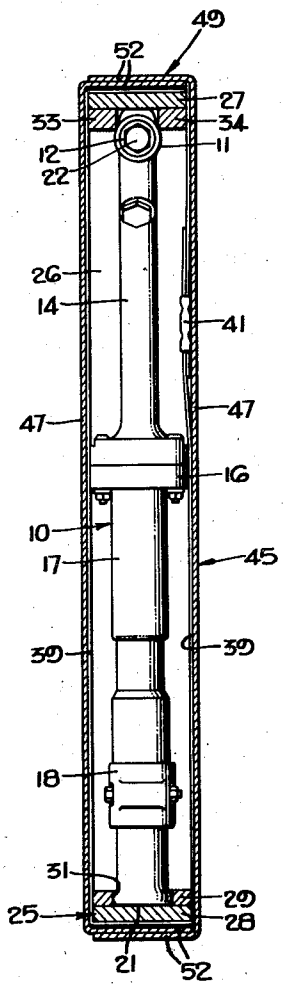


FIG. 3.

FIG. 4.



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SHIPPING CARTON

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Application January 11, 1955, Serial No. 481,169

1 Claim. (Cl. 206—46)

The present invention relates to shipping cartons in general and particularly to cartons for shipping heavy rigid tools such as pneumatically actuated trench diggers or paving breakers. More specifically, the invention comprises a new and improved shipping carton for rigid heavy tools in which use is made of the strength and rigidity of the tool itself to maintain the shape of the shipping carton which can include a container of relatively light inexpensive material such as corrugated cardboard conventionally viewed as inadequate for such use.

Goods shipped from one point to another must, if they are valuable, be packed and crated for their own protection and for the protection of other goods in transit. This is true whether the goods comprise light relatively fragile devices such as kitchen or home appliances, or whether they comprise rigid, strong and relatively heavy tools such as pneumatically actuated trench diggers. As a matter of fact, the latter devices are usually the most costly to crate for, because of their mass and value, they are boxed in wooden crates or boxes the cost of which, in the aggregate of many shipments, becomes an item of importance.

In the case of a pneumatically actuated trench digger, for example, a typical tool would be about four feet in length, eighteen inches across the handle, and could weigh approximately 35 or 49 pounds. The tool is relatively long, narrow, heavy and awkward, and its shape includes extremities which can readily pierce a thin protective enclosing casing or container unless the latter is strong and designed to receive just such contact. As a result tools of this type are conventionally boxed in individual wood shipping crates each of which includes a strong, rigid container having a removable cover or side. The container itself provides the rigidity and strength necessary to protect the tool which is suitably positioned therein and fixedly secured in place to prevent its being jostled about. Cardboard, paper and other relatively light and cheap materials have been considered as unsuitable for containers to be used in the shipping of such tools as lacking the requisite strength and also the ability to withstand the damaging blows which could be received from the tool itself as a result of the jostling and bumps inevitably encountered in shipping.

The shipping carton construction in accordance with the present invention does successfully make use of a light frangible enclosing container heretofore viewed as unsuitable and undesirable. The use of such container is made possible because each tool is securely positioned in and gives rigidity and strength to an enclosing frame which closely fits within and conforms to the interior dimensions of the container. The container, lacking in itself the strength and rigidity to support and protect the tool in the conventional manner, becomes in effect a skin dependent upon the enclosed frame and tool for its own rigidity and strength.

With an understanding of the problems characteristic of shipping tools and the like, and of the requisites of adequate strength, protection, and minimum costs, it is an object of the present invention to provide a new and improved shipping carton particularly adapted for the individual packaging and shipping of heavy, rigid tools.

Another object of the invention is to provide a shipping carton in which an enclosing casing is reinforced by a framework employing the strength of the tool it encloses for its own rigidity.

Another object of the invention is to provide a new and improved shipping carton for rigid elongated metal tools of relatively great weight in which a relatively fragile exterior container is reinforced around its marginal edges by a rigid frame which is itself fixed to the tool and acquires its strength and rigidity from the tool.

These and more specific objects will appear upon reading the following specification and claim and upon considering in connection therewith the attached drawings to which they relate.

Referring now to the drawings in which a preferred embodiment of the invention is illustrated:

Figure 1 is a view in perspective of the frame in which a rigid, heavy tool, such as a pneumatically actuated trench digger or paving breaker, is adapted to be positioned;

Figure 2 is a side view with certain parts broken away of the frame of Figure 1 with a tool positioned therein;

Figure 3 is a side view of the tool and frame assembly secured by an encircling tensioning strap and positioned within an enclosing container, the manner of assembly being illustrated in dotted lines; and

Figure 4 is a vertical section upon the line 4—4 of Figure 3.

Referring again to the drawings, a pneumatic tool commonly known as a trench digger is indicated generally by the reference character **10**. The exact construction, dimensions, and operating characteristics of tool **10** are not a part of the present invention, but certain of the parts of the tool will be identified for purposes of reference, it being understood that instead of a trench digger a paving breaker, or any other rigid, heavy, relatively flat, elongated tool, could be substituted. The tool **10** as illustrated comprises a backhead **11** from the sides of which extend hand grips **12** forming a handle over the top of which extends a throttle lever **13**. A hollow column extends downwardly from backhead **11** and may be viewed as a part of the handle together with the grips **12**. A valve chest **16** containing an unshown cycling valve is positioned at the lower end of column **14** adjacent a cylinder **17** in which is positioned a reciprocating air actuated piston adapted to reciprocate at high speed and with great force under the actuation of air under pressure received from a source suitably connected to the tool. The blows delivered by the unshown piston are transmitted to an unshown spade, pick or chisel the end of which extends upwardly into the fronthead **18** to be retained against displacement by means of the steel retainer **19**.

Considering the tool **10** as an entity it is seen to be a narrow, elongated element, rigid, relatively small at its working end **21**, with relatively small extremities **22** at the opposite end of its handle grips **12**. Assuming that the weight of the tool is within the range of 35–50 pounds it is clear that upon being bumped, dropped, or rapidly accelerated, considerable force could be exerted at one or more of the extremities **21** and **22**.

Referring now to Figures 1 and 2 in particular the skeleton frame in which the tool **10** is to be positioned is illustrated and indicated generally by the reference character **25**. Frame **25**, which in a preferred form is entirely of wood, comprises straight flat side members **26** between the extremities of which extend members **27** and **28** which will be designated as the top and bottom end

members, respectively. Bottom end member **28** has affixed to its inner surface a centrally positioned flat piece **29** formed centrally with a circular recess **31** sized closely to enclose the end **21** of tool **10**. Member **29** may be of the same stock as the side and bottom walls and is secured to bottom wall **28** by means of a plurality of nails or screws, preferably the latter, indicated by the reference character **32**.

At the inner corners of the frame formed by the junction of the side walls **26** and the top wall **27** there are inserted corner members **32** which extend the width of the frame and have an extension toward each other such that the space between them is equal to the width of the tool handle. These members **32** abut the extremities of the handle grips **12**, as is clearly illustrated in Figure 2. To retain the handle in its mid-position in frame **25** when the lower end **21** of the tool is positioned in its seat **31** an abutment member **33** is secured to the underside of top member **27** and extends along the side of the tool handle in contact with backhead **11**. A second abutment member identical to the first is provided upon the opposite side of the backhead **11** and is adapted to be positioned after the tool **10** has been placed in the frame with its end **21** seated in the seat **31** and with its handle extended between the corner members **32** and in contact with fixed abutment **33**. Abutment **34** may be secured in place by nails or screws **36** to the inner face of the top wall **27** and when so positioned cooperates with member **33** to prevent any lateral displacement of the tool handle.

With the tool **10** positioned within the frame **25** and the abutment **34** in place a tensioning strap **39** of a common well known type is positioned around the tool overlapping the top and bottom walls **27** and **28** in the manner illustrated in Figure 3. Strap **39** is drawn taut and then has its opposite ends clamped together by a securing clamp member **41**. The exact manner in which the strap **39** is positioned and clamped is not of the essence of this invention and the tightening operation may be performed in any suitable manner so long as it accomplishes the result of drawing the top and bottom walls **27** and **28** hard against the opposite ends of the tool **10**. With the frame so clamped to the tool it is apparent that relatively longitudinal displacement of the tool and frame in the direction of the length of the side members **26** is prevented. Lateral displacement in the direction of the length of the end members **27** and **28** is also made impossible by the abutting contact of the tool with the seat **31** at one end and with the corner members **32** and the side abutment members **33** and **34** at the opposite end. The frame is rigid with and partakes of the rigidity of the tool **10**.

The frame **25** and the tool **10** after being assembled are adapted to be slid into the open end of an enclosing casing or container the interior dimensions of which conform exactly to the exterior dimensions of frame **25**. The container is indicated generally by the reference character **45** and is seen to include opposed end walls **46** which lie adjacent the outer faces of the frame side walls **26**, side walls **47** which extend between its own end walls **46** and top and bottom walls **49** formed by folding inwardly and securing, as by adhesive, flaps **51** and **52** comprising extensions of the walls **46** and **47**, respectively. Flaps **51** and **52** at the upper end of the casing or container are held in open position, as shown in Figure 3 in dotted lines, while the tool and frame assembly are being slid into the container. But when the frame and tool are completely within the casing the flaps are folded inwardly into overlapping relationship, in the manner of the bottom wall, and are secured by suitable adhesive means to form a closed packaged unit. The container **45** snugly encloses the frame **25** which in turn is in intimate contact with and tightly drawn to the rigid tool **10** forming a compact, rigid unitary construction in which relative movement between the tool and the frame, or between either or both of those parts and the enclosing casing is impossible, and the fact that the enclosing casing **45** is relatively weak and frangible becomes unimportant.

While the particular apparatus herein shown and disclosed in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claim.

I claim:

A composite shipping carton having a frame formed of wood and a part formed of flexible paper-like material providing a protective covering casing for said frame, said carton being adapted to enclose and protect a heavy T-shaped pneumatic power tool having an elongated main body and a pair of rigid hand grips projecting laterally from one end thereof, and said carton being further adapted to make use of the strength of the body of the power tool to reinforce and strengthen the same; said carton comprising a rectangular frame of wood snugly encircling said tool in the plane of said hand grips, a plurality of abutment elements secured to the opposite interior ends of said frame in positions closely against the adjacent sides of a pneumatic power tool positioned centrally of said frame, said abutment elements being adapted to hold said tool against movement relative to said frame, a high-strength band encircling said frame along the open sides thereof in a plane intersecting the main body of said tool, said band being tensioned to clamp the opposite ends of said frame rigidly against the ends of said power tool thereby utilizing said main body of said tool to reinforce said wooden frame, and a casing of flexible paper-like material having a closable end and an interior dimensioned to receive said frame with a snug sliding fit, said casing providing a continuous protective covering for said frame and its contents.

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