

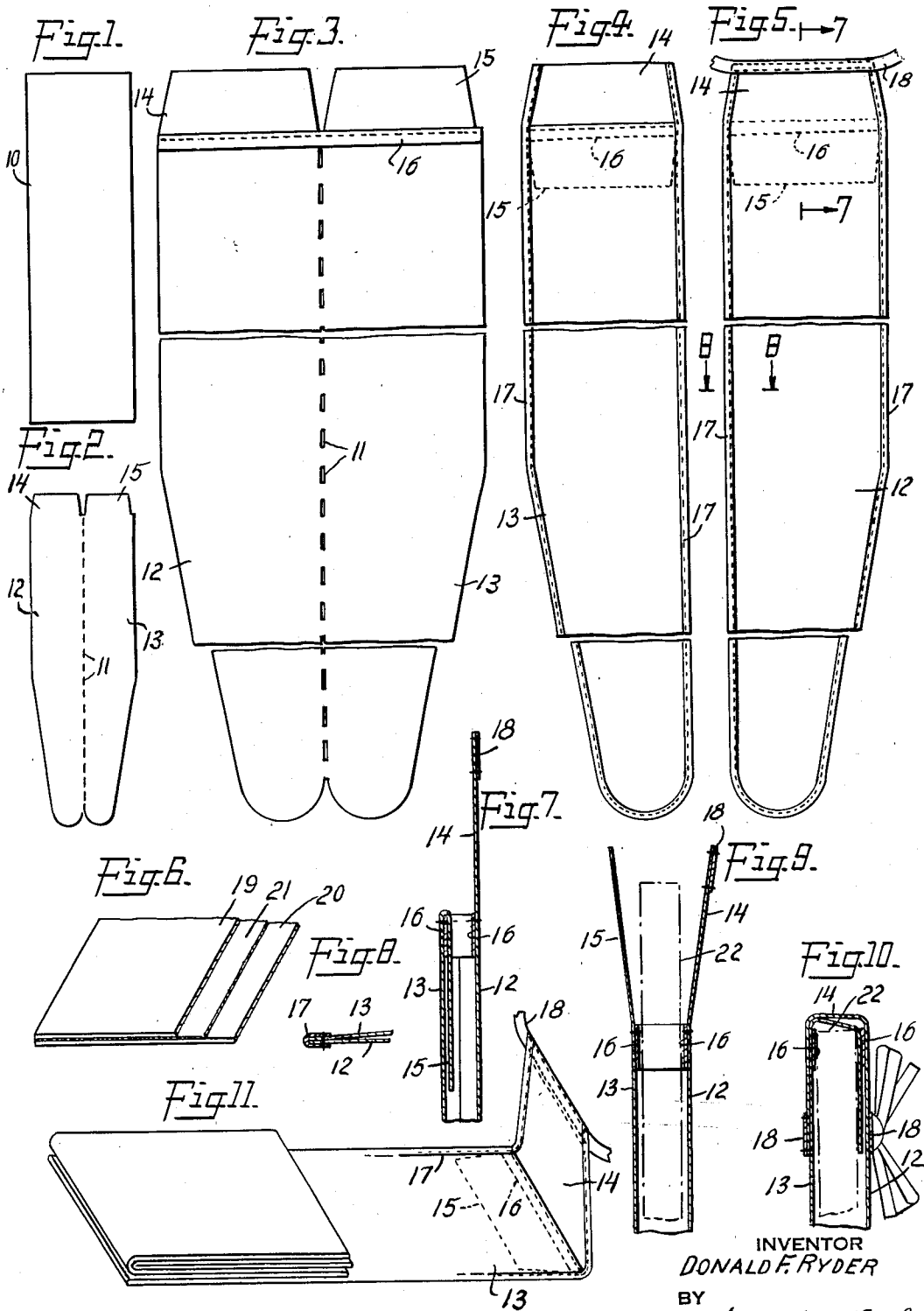
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PROCESS OF MAKING A PROTECTIVE GUN CASE

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PROCESS OF MAKING A PROTECTIVE GUN CASE

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1 Claim. (Cl. 112—262)

My invention relates to improved means for the care and protection of guns and sporting arms. Guns and sporting arms create a special problem in maintenance and care because they are ordinarily used only at relatively infrequent intervals and yet are peculiarly susceptible to damaging corrosion from atmospheric gases and condensed moisture from the air. I have devised a particular type of protective gun case which provides complete protection from corrosion in storage or as a traveling case. It may be used as an interliner for conventional leather gun cases or holsters which ordinarily are entirely without capacity for protecting the metal surfaces of the gun against atmospheric corrosion.

The new protective gun case comprises a flat elongated paper bag closed at one end and having an opening at the other end and which is constructed of laminated fibrous paper stock. The laminar sections are laminated together by means of a flexible moisture-resistant laminant and the internal wall surfaces of the bag are impregnated or coated with a vapor phase rust inhibitor. The construction of the case also is characterized by formation from two matching wall sections of the fibrous paper stock which are stitched together peripherally and provided with a peripheral reinforcing side binding which joins the two wall sections with an advantageous flexible, moisture resistant bond which is not subject to deterioration on aging and which retains its desirable properties over a wide temperature range. The end of one wall section at the open end of the case provides an overlapping flap closure. Advantageously a tie cord is associated with the flap closure allowing the flap end of the case to be folded snugly down over the gun stock simultaneously adjusting the length of the case to fit the length of the gun and providing an overlapping vapor and moisture tight closure through the double-folding of the case end. The end of the other wall section at the opening of the case is turned back inwardly to form an inner protective flap within the throat of the case. The construction of the case is further characterized by an internal reinforcing tape which is sewn around the throat of the case so as to prevent tearing when the gun is withdrawn from or replaced in the case. Advantageously, the reinforcing tape at the throat of the case is firmly stitched or bonded to the peripheral reinforcing tape and the flap tie cord is also firmly stitched to the peripheral reinforcing tape so that the mechanical strain of normal handling is borne by the tapes rather than the paper alone. Thus the area under strain is distributed more uniformly, and the possibility of tearing is reduced.

The new protective gun case is formed with special advantage from a single piece of impregnated and laminated fibrous paper stock. My invention also includes a method of manufacture which I have devised for producing the cases in quantity from flat sheets of the impregnated laminated fibrous stock. According to this aspect of my invention, flat sheets are first cut and roughly shaped to the desired size and form, approximately the shape of the gun or sporting arm. Because of the pres-

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ence of the adhesive binder between the laminar sections of the sheet and the characteristic tendency of the rough irregular surfaced creped fibrous paper stock to be bulky, compressible and to shift unevenly under knife edge pressure, it is necessary to employ die cutting means which handles each sheet separately and positively retracts or otherwise removes the sheet from the die cutting blades. For example, a rotating roll may be employed to draw sheets of the stock over the die cutting pattern, the blades of which are equipped with spring-tensioned or elastic rubber guards which are depressed under pressure of the roll while the sheet is die-cut and expanded to repel the sheet as the weight of the roll is lifted. The die cutting operation includes semi-perforation of the sheet down the center of the panel so that the matching wall sections are delineated and prepared for easy folding together in a subsequent operation. The internal reinforcing tape for the throat of the case then is sewn across the upper portion of the shaped panel, the wall sections are folded together, the side binding is stitched in place, and finally the tie tape is sewn across the outer face of the flap closure.

My invention will be further described with reference to the accompanying drawing.

Figs. 1 to 3 of the drawings illustrate in plan view the new protective gun case in various stages of the process of production. Figs. 4 and 5 represent plan views of the case from each side of the pair of wall sections of which it is constructed. Fig. 6 represents a partial sectionalized view of the laminated wall construction, while Figs. 7 and 8 represent partial sections across the indicated points of Fig. 5. Fig. 9 is a cut-away view from the side of the case with a gun stock indicated within the case and with the end flaps extended. Fig. 10 is a top plan view of a vertically positioned case indicating the manner of fastening the flap closure. Fig. 11 represents a view of the case in partially rolled up condition.

Referring to Figs. 1 to 3, it can be seen that a sheet of flat paper stock 10 is die cut and shaped to the desired shape and to provide a perforated center line 11 which facilitates folding so as to form two similar equi-sized wall sections 12 and 13. The end of the wall section 12 is die cut to form flap closure 14. The end of wall section 13 is die cut to form inner flap 15. Throat tape 16 is formed across the top of wall sections 12 and 13 immediately below flaps 14 and 15. The process of production is completed by folding wall sections 12 and 13 upon each other and applying a reinforcing tape of paper, fabric resinous film or other strong flexible sheet material 17 around the entire edge thereof except for the opening at the flap end. Tape 17 extends at its ends along the edges of wall section 12 which form the sides of flap closure 14. Reinforcing side tape 17 is then sewn in place. Until this stage of production, the stock is handled entirely in the form of flat sheets.

Referring to Figs. 4 and 5, reinforcing side tape or binding 17 can be seen around the periphery of the wall sections. In Fig. 4, the inner flap has been tucked into position and is indicated by the dotted line form 15. In Fig. 5, tie cord 18 is seen as sewn in place across the top of flap closure 14.

The new protective gun case is constructed from a laminated paper stock of good strength and quality. Advantageously, a crepe style kraft paper stock is employed for good flexibility. The stock consists of at least two sections 19 and 20 laminated together by a material such as asphalt which provides a tough adhesive barrier 21 (Fig. 6) to prevent moisture and vapor penetration. The side of the sheet or flat stock 10 which is to provide the inner surface is impregnated with a vapor phase rust inhibitor, advantageously of the organic nitrite type. A particularly useful vapor phase rust inhibitor, dicyclohex-

ylamine nitrite known commercially as VPI, is disclosed in U. S. Patent 2,449,962 to Aaron Wachter and Nathan Stillman. One gram of this inhibitor is sufficient to permeate 16,000 cubic feet of air so that only a very small quantity of concentration of inhibitor is required. The VPI inhibitor is usually applied to the paper in large excess in the form of a slurry of fine crystals admixed with a binder so that the crystals coat the surface of the paper and are held in place by adhering to projecting paper fibers and by the irregularities and interstices of the paper surface. Other useful inhibitors are the various nitrite salts of organic amines and nitrogen bases disclosed in U. S. Patents 2,432,839; 2,432,840 and 2,484,395 to Wachter and Stillman. Other vapor phase rust inhibitors may be employed however, for example the lower alkylamine types disclosed in U. S. Patent 2,512,949 to Eugene Lieber. When an organic nitrite is employed, it is desirable to employ a paper stock having a low acidity specification commonly termed a "semi-chemical kraft" or "neutral kraft" in view of the sensitivity of the organic nitrites to acids. Other laminants providing the desired adhesive quality combined with establishment of a flexible vapor resistant barrier may be employed, e. g. micro-crystalline wax, known resinous type laminants and modified waxes. In a particularly advantageous modification of my invention the strength of the laminated paper stock is reinforced by providing a fibrous net or fibre glass net work between the laminated paper sheets.

In Fig. 7, the relationship of the tie tape 18 to the throat tape 16 is illustrated by means of the section taken across 7—7 of Fig. 5. In Fig. 8, the section taken across 8—8 of Fig. 5 illustrates the reinforcing side tape 17 which is closely stitched in place by means of a strand of flexible moisture resistant material or thread. In Fig. 9, the gun stock indicated at 22 is almost inserted into position in the case, and inner flap 15 and flap closure 14 are shown in extended state. In Fig. 10, inner flap 15 has been tucked into the case so as to enclose protectively its upper portion and gun stock 22. Flap closure 14 has been pulled down around the outside of the upper end of the case and tied snugly in place by means of tie cord 18. Although a tie cord or tape is illustrated as a simple practical means of securing the flap closure in place, obviously other closure means, e. g. snap closures may be employed. The new protective gun case can be readily folded into a small easily packaged form by reason of its flexibility, as is indicated in Fig. 11. Shipping, storage and handling in manufacture and sales are thus facilitated. The new protective gun case can be made in various sizes, e. g. of size and length accommodating various models of rifles, shotguns and pistols.

Hence my protective gun case provides convenient and inexpensive means for improving the care of guns and for protecting guns from harmful corrosion. In use, the gun need only be inserted into the case to start the corrosion preventive action. Areas of contact where protective grease coatings previously applied may have been rubbed off are fully protected. Sharp edges of the mechanism

are fully protected, where natural capillary action causes greases or oils to creep away and expose these edges making them particularly susceptible to corrosion, by the inhibitor vapors permeating the interior of the case, contacting at all times the exposed metal surfaces. Corrosive residues left by finger prints from handling the gun are neutralized by the vapor inhibiting action eliminating this common troublesome source of corrosion. Advantage may be taken of the protective action for short or long storage as the action is initiated immediately and tests indicate safe storage for years under normal storage conditions.

A further advantage of my case is that there are no greasy or otherwise troublesome residues remaining on the gun when it is removed from the case. The gun is ready to use without cleaning and may simply be reinserted in the case to continue the corrosion protection. This is important in permitting inspection of guns in storage or during shipping for long periods of time.

The sewed construction is important because stitching provides the only means of bonding the laminated paper stock to obtain a bond which is independent of aging effects, temperature changes, humidity changes as well as a bond which is moisture and vapor tight. Animal or vegetable adhesives might be employed but such bonds are weakened by moisture and also deteriorate through temperature changes and by aging. Water insensitive adhesives are generally resinous in character, and therefore are plasticized by migration of the asphaltic center ply of the case. The bond is weakened and softened by this migration to an extent that mechanical strength is lost, and the moisture and vapor seal is broken. The use of metal clips or stitching stiffens the case structure undesirably and tends to scratch the gun. Also clips themselves are subject to corrosion and deterioration.

I claim:

A process for manufacturing a protective gun case which comprises cutting flat sheet material to overall size and shape, including a pair of notched end portions, perforating the sized and shaped sheet down its center line, sewing a strip of reinforcing tape across the upper end of said perforated sheet below said notched end portions, folding the sheet along the perforated center line, and stitching a reinforcing tape around the periphery of the folded sheet except for an opening at the end having the notched end portions, the ends of the reinforcing tape being extended beyond the opening and along the edges of the sheet forming the sides of one of the notched end portions.

References Cited in the file of this patent

UNITED STATES PATENTS

1,091,280	Brauer	Mar. 24, 1914
1,274,268	Hermann	July 30, 1918
1,886,464	Bright	Nov. 8, 1932
2,521,311	Schwoegler	Sept. 5, 1950