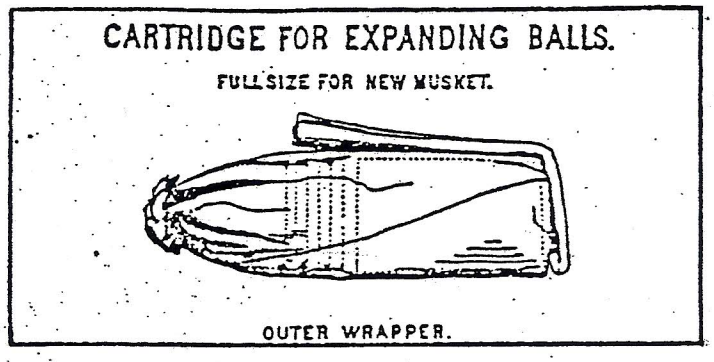
To make an Authentic Cartridge



By DAVID S. STIEGHAN

Taking the time and care to produce authentic cartridges should be just as important to the purist as wearing the correct pattern uniform. Many people refuse to "waste" time producing proper ammunition, because they feel it takes far too much time to make good rounds when they'll only use them once. Perhaps those folks should stop making hardtack, too. I believe that those who will not take the time to roll their own are as much "mannequin soldiers" as those who will not attempt First Person portrayals.

This article is an attempt to aid the modern Living Historian in making proper blanks to simulate original cartridges. Upcoming articles will discuss the original methods of manufacture in their entirety, including the bullets, charges, buck and ball, buckshot, bundling, packing, issue, and proper use. The instructions in this particular article are to aid in making of blanks for our simulations, adhering mainly to the original appearance of the round.

Before starting, one must be careful to obtain the proper materials. The first consideration is the "former", or dowel rod. The simple original rule for size still holds; the former should be the size of the ball for smoothbores (spherical ball) or the size of the bore for rifles, rifled muskets, or rifle muskets (elongated balls). Until someone markets dowel rods of the proper sizes, 1/2" and 5/8", dowels may be swelled to the proper size by wrapping with paper or tape, or reduced from 5/8" or 7/8" by sanding. One end of the former should be roughly shaped to imitate the ball (round or cone shaped) just like the originals. The other end should be concave, but this is only necessary when making live smoothbore ammunition.

Common brown wrapping paper was, and is, the proper material for the tubes. A few guidelines should be used, however. The paper should be strong, thin, with a slightly glossy appearance. Mailing paper, which comes in 30" tubes, is the closest that may be found today. Dennison Kraft Paper for example. Grocery sack paper will not do, as it is too thick, too weak, will not fold well, and gets "fuzzy" on the outside very quickly. slick brown paper sacks like you get in department stores are ok. NOT IN 2007

Almost all musket ammunition used during The War, were tied with flax thread. Through close examination of numerous originals, flax thread seems to predominate, though cotton thread may have seen limited use. Check local shoe or leather repair shops for flax thread. "Penn's Hand Shoe Thread" is one example of many. You would be surprised how common flax thread still is. If flax thread is unavailable unbleached or natural cotton thread could be used (Cotton Quilting Thread is probably the closest)

The ball can best be simulated with cotton balls. They can be bought cheaply in large quantities - get the small or regular sizes rather than the enormous facial sizes. Two to four balls, depending on the projec-

tile, will do well. Toilet paper, 3-5 sheets, may also be used, but it doesn't work as well and doesn't make me feel too authentic.

Optional items include: a pair of scissors, a needle and a choking string. These items will be discussed when appropriate.

The following description of fabrication is written for a right hander, lefties may of course, reverse the instructions. First place the former (dowel rod) in the right hand and with the outer wrapper trapezoid in the left hand (or place flat on the table) 1/2" or 5/8" from the end of the longest side (see Figure 1). Turn the paper around the dowel once, and check to make sure the paper is going on tightly. Finish rolling on the paper, & hold the tube and dowel firmly in the left hand with the thumb extended & holding down the end of the "point" (see "X" on Figure 1).

The tube can be choked two ways; the original way, with a chocking string & toggle, or by twisting. The choking string may be "...made by twisting 4 or 5 cartridge threads; fastened to the edge of the table, at the right hand of the workman."[5] The chocking string is given one turn around the projecting end of the cylinder and pull on the choke string to choke the cylinder between the top of the former and the fingertip. Before removing the fingertip, use it to fold down the projecting paper inside-out, flat upon the top of the former. (see Figures 1 & 2). Remove choking string. Next place about an inch of the cartridge thread under the extended left thumb leading toward the choked end. Take two complete turns around the chocked "neck" with the string, carefully pull taut, and tie in a single half hitch (overhand knot, or, the first half of a square knot or a shoe knot). If you are making an elongated ball cartridge (mini'eball), cut the thread, if any other type go to the next step.

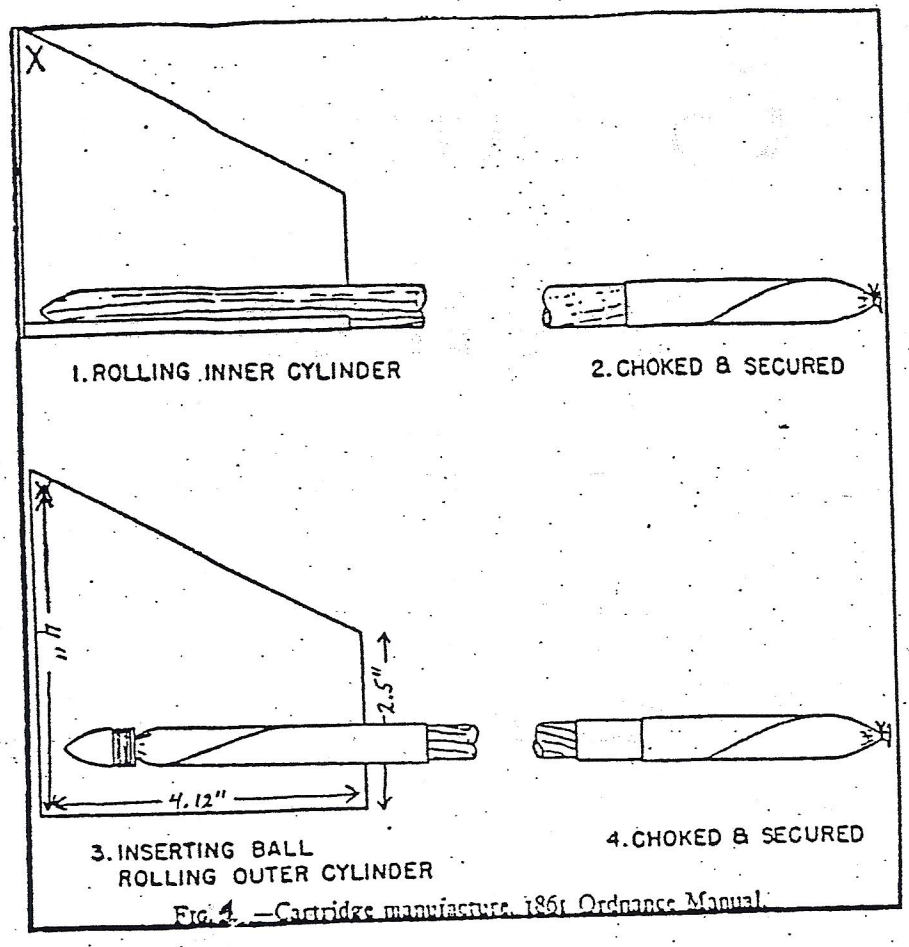


Fig. 1.—Cartridge manufacture, 1861 Ordnance Manual.

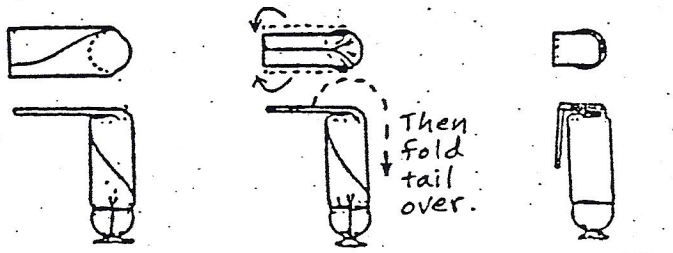
If the tube is to be choked by twisting, do so in a careful manner in a clockwise direction, after smashing the top of the extended tube flat (in the direction of the "point" to keep the paper from unrolling). Tie the same as the choked method. Using a fingernail, knife, scissors tip, or needle, separate the flattened twisted part beyond the choke first by untwisting and dividing the sheets. Push up the former against the thumb or you may strike end on a table to flatten the tied end.

Next, remove the former, insert the substance selected to simulate projectile. (Note: 2 cotton balls or three half sheets of toilet paper balled up).

NOTE: You will have to experiment with the number of cotton balls until you get the right size for a .577 ball - the simulated bullet should be 3/4 inch long. Roll another paper tube onto the former (you need two paper trapezoids for each cartridge) and tie it off. Reinsert the former with this tube into the first tube with the simulated bullet, ramming the simulated bullet down tight. Remove the entire cartridge from the former. The tail of the second tube should extend out of the first tube about 3/4 inch.

Insert the proper original pc charge (65-70 grains 2F) in the open end of the tube. Pinch the empty remaining tube shut between the forefinger and thumb and shake vigorously while squeezing down further on the trapped powder (much like prior to opening a Kool-Aid package!). Fold over the pinched end of the tube pressing down on the powder and

strike or smash this end flat on a table. The side with the "slant" of the trapezoid showing should be up. This, is the tricky part - holding the extention to the right, fold down the top "third" towards the body just over to the halfway point. Then fold the bottom "third" up to cover the other part, reducing the pinched tube extention to less than half of its original width. Carefully fold this "tail" over the end of the cylinder and fold down along the other side of the tube. It is best to again press this bottom part firmly on a flat surface to sharpen the creases. Also, pi back the "tail" as it beg to lay along the tube so th it will remain flush on t cartridge. Good paper wi allow very flat and secu folds, as per the origina The finished tube should strong, rigid, and must n flex at all. The cartric is now ready to bundle.



6. END BENT 90° 7. SIDES FOLDED IN 8. COMPLETED

Cartridges for Small Arms.

KIND OF CARTRIDGE.	EXPANDING BALL.			BLANK.	ROUND BALL.		ELONGATED BALL.			
Kind of Arm.	Musket of 1842.	Musket and Rifle, 1855.	Cadet Musket, 1857.	Musket and Rifle, 1855.	Musket, 1842.		Pistol Carbine.	Revolver, Army.	Revolver, Navy.	Sharpe's Carbine.
					Ball.	Buckshot.				
Caliber ..... in.	.69	.58	.58	.58	.69	.69	.58	.44	.38	.54
Ball. { Diameter ..... in.	.665	.5775	.5775		.65	.....	.5775	.440	.359	.56
Ball. { Weight ..... grs.	730	600	450		512	.....	450	216	145	475
Charge of powder ..... grs.	70	60	50	60	110	110	90	30	17	50
Trapezoid. { Height ..... in.	4.33	4.12	4.12	3.75	4.33	5.5	4.1	2.75	2.4	3
Trapezoid. { Long base ..... in.	4.5	4.0	4.9	4.16	5.25	5.0	4.0	3.25	2.5	3.25
Trapezoid. { Short base ..... in.	2.7	2.5	2.5	2.5	3.0	3.0	2.5	1.6	1.6	2.25
No. of trapezoids in 1 sheet	12	10	16	21	12	9.	16	30	40	24
Wrapper. { Length ..... in.	10.	9.	9.	.....	9.	.....	9.	8.	7.5	10.
Wrapper. { Width ..... in.	8.	6.5	6.5	.....	6.5	.....	6.5	6.5	4.9	6.8
Wrapper. { No. in a sheet	4	6	4	.....	6	.....	6	6	12	4
Wrapper. { Color	Ordinary color.	Ordinary color.	Red.	Ordinary.	Green.	Red.	Blue.	Ordinary.	Blue.	Ordinary.
Thread for 1,000 ..... oz.	0.5	0.5	0.5	.....	0.5	0.5	0.5	0.5	0.5	0.5
Weight of 10 cartridges ..... oz.	19.3	13.5	13.	.....	13.3	.....	12.5	6.	5.	13.5
Bundles of 10. { Length ..... in.	2.5	2.6	2.5	.....	2.6	3.1	2.4	2.3	2.20	2.6
Bundles of 10. { Width ..... in.	3.4	2.9	2.9	.....	3.1	3.1	2.9	2.0	1.9	2.5
Bundles of 10. { Depth ..... in.	1.45	1.15	1.15	.....	1.25	1.35	1.15	.85	.85	1.1
Size of packing-boxes for 1,000 cartridges. { Length ..... in.	14.3	14.75	.....	*15.5	15.5	15.	.....	†13.1	†10.5	14.75
Size of packing-boxes for 1,000 cartridges. { Width ..... in.	12.0	10.75	.....	11.0	11.75	10.75	.....	4.6	3.8	8.9
Size of packing-boxes for 1,000 cartridges. { Depth ..... in.	7.0	6.38	.....	6.25	6.75	6.38	.....	3.5	3.25	5.2
Weight of box packed ..... lbs.	135	98	.....	.....	107	.....	.....	25.5	14.5	78.
Color of box	Lead.	Olive	Gray.	Olive.	Blue.	Red.	Yellow.	Olive.	Blue.	Olive.
Packing-boxes for 1,000 balls. { Length ..... in.	9.75	8.25	8.25	.....	7.25	.....	5.25	.....	.....	.....
Packing-boxes for 1,000 balls. { Width ..... in.	9.75	8.25	4.25	.....	7.25	.....	5.0	.....	.....	.....
Packing-boxes for 1,000 balls. { Depth ..... in.	5.25	5.0	4.25	.....	5.0	.....	4.25	.....	.....	.....
Packing-boxes for 1,000 balls. { Weight ..... lbs.	107.	73.	59.5	.....	65	.....	59.5	.....	.....	.....

* For 2,000 cartridges. † Contains 600 cartridges; box made of .75-in. boards. If the balls be packed in tow, add ½ in. to the depth of the box.
Burnside's Cartridges—Box 14.4 × 11.2 × 6.2. Weight, of 5 lbs.

FIGURE 1

BUNDLING

After 1845, 12 percussion caps were packaged inside each bundle of 10, thus guaranteeing the simultaneous issue of sufficient caps. To prepare "cap tubes", roll a regular cartridge tube and place twelve caps inside after tying off the end, as usual. Then twist the remaining tube shut down to the caps and fold the twisted part alongside the tube just like the normal folded "tail" of a ball cartridge. The resulting "cap tube" should be included inside each bundle as told in the following sequence. (NOTE: make sure the cap tube is emptied into the cap box instead of the muzzle of the gun!)

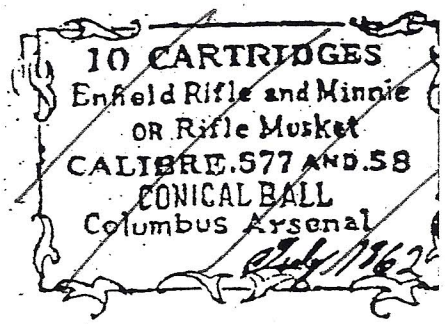
The most important tool is the bundling or folding box. The 1841 Ordnance Manual states simply "1 folding box for each calibre, made with only two sides: width equal to 5 times the diameter of the ball, height equal to twice that diameter. Two strips of wood nailed on the table will answer the same purpose."[3] Page 268 of the Ordnance Manual states further "It is tacked to the table,...the sides parallel to and near the edge of the table [facing you]."[4] Three pieces of 1" x 4" pine may be screwed together to form a portable box that will work almost as well (use screws; as nails will pull out).

When bundling, place the two short upright sides of the folding box parallel to the line of your shoulders. Next, place a piece of twine (the length depends on practice) across the folding box, also parallel to your shoulders (from left to right). See figure 3-A. Next, center the wrapping paper in the box over the twine--the short sides toward and away from you, the long sides on the left and right. Place five cartridges on top of the wrapper pointing from left to right and push these down into the bottom of the box. These should all be "pointing" the same direction and must fit tight--otherwise the box is too big. Place five more cartridges in the box on top of the first five pointing in the opposite direction. The manuals say "the balls alternating" and original specimens show this to be the method used (see fig. 3-B). If the box was constructed properly, the cartridges should be a tight fit and should stay put through friction. Take the short side closest the body and fold this over the cartridges and then take the other short side and fold it over towards you. Pull these two sides as tight as possible over each other and fold them as crisply as possible while holding them down with one hand (see figure 3-C). Now, the remainder of the wrapping is almost identical to wrapping a box for a present or mailing, with a few changes. After folding over the left hand side, fold over (and in) the excess with folds as wide as the bundle is thick. In other words, there should be no excess paper from this fold on the side facing upward (see fig. 3-D). Crease all folds tightly. Before folding on the right side, place the cap tube into this last opening perpendicular to your body and the ball cartridges (up and down, see figure 3-E). Then fold this remaining side in the same fashion as the left side making sure th resulting paper "box" i square and tight, and tha all the creases are as clos to right angles as possible The bundle is now ready fo tying.

All Federal, and most Con federate, muzzle-loadin ammunition was tied wit twine using no glue. The 186 Ordnance Manual states tha "Twine should be strong smooth, and well twisted- 0.03 inch thick for bundlin cartridges, etc..."[2] In othe words, don't skimp on th quality (use packing twin instead of kite string). pair of scissors or shar knife will be necessary t cut the twine after tying.

Cross the twine over th top of the bundle to opposit sides and give a half-twis of 90 degress up and down just like tying a package Pull the twine as tightl as possible without makin a deep crease (see figur 3-F). Place a finger wher the twine crosses and hol the string tightly while th bundle is removed from th box (see figure 3-G). Ti the twine in a square kno on the other side.

Paste the label on the smoot side of the bundle, over tc of the twine. The bundle i now finished, and is ready t be placed in an ammunitic box, your cartridge box tins or your haversack.



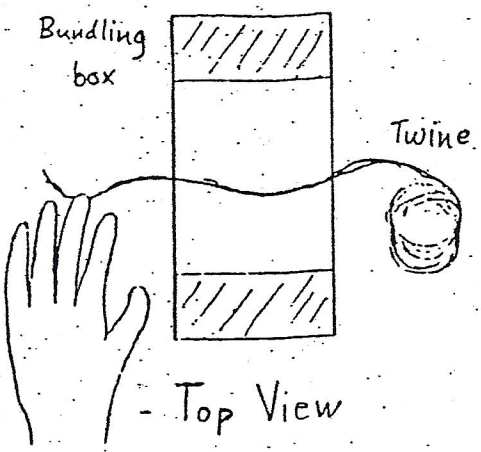


FIGURE 3-A

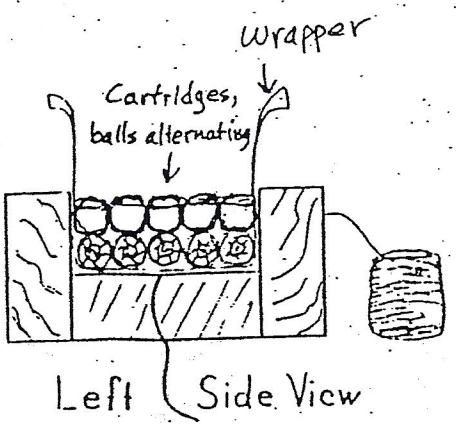


FIGURE 3-B

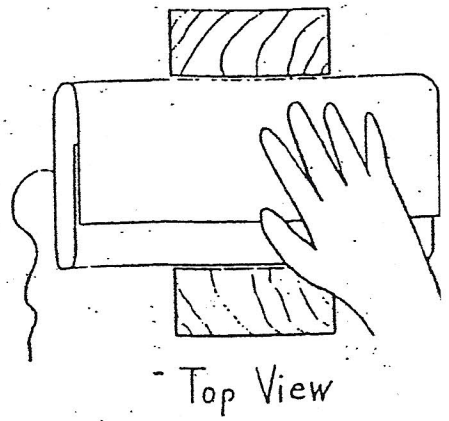


FIGURE 3-C

paper to protect cartridges from moisture. The 1840 Ordnance Manual states: "Wrapping paper is but slightly sized, with a view to its being immersed before using it, in a varnish made of bees-wax 4 lbs., linseed oil 1 gill, spirits of turpentine 2 gals., for the purpose of making the paper water proof" The 1849 Ordnance Manual was more specific: 1,000 lbs. of paper require:

Bees-wax.....133 lbs.
Spirits Turpentine...135 gals
Linseed oil [boiled]..10 gals

Page 173 of the 1861 Ordnance Manual instructs: "All the ingredients should be pure and of the best quality. Heat them together in a copper or earthen vessel, over a gentle fire, in a water-bath, until they are well mixed." This "Lacker for Small Arms, or for Water-Proof Paper" was also used to preserve the "armory bright" on arms while in storage. This formula may, of course, be reduced into fractions of ounces, tablespoons, or fluid ounces for individual or unit use. See also Lewis, p. 181 (see bibliography).

2/ 1861 Ordnace Manual, p. 264.

3/ See Lewis, pp. 178-179.

4/ 1861 Ordnance Manual, p. 268; see also Lewis, p. 187.

5/ Huntington, plate 35, p. 236 (see bibliography); Lewis plates 45 a, b, c, d, and 46 d, e, f.

6/ (by date) Small Arms, 1856 (see Lewis, pp. 182-183); Gibbon, Artillerist's Manual (see bibliography), p. 371 (essentially); Gilham, Manual (see bibliography), p. 70, art. 63; Scott, Military Dictionary, P. 24; Manual of Instruction, C.S.A. (see bibliography), p. 70.

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1/16 oz. - Wax - 3/4 oz.
1 pt. - Turp. - 1 gal.
1.3 oz. - Oil. - 10 1/2 oz. (2/3 pt.)

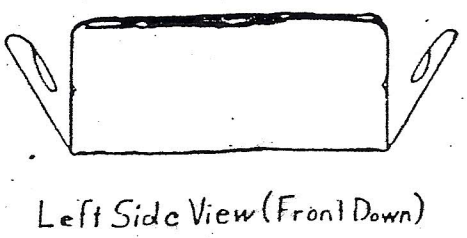

FIGURE 3-D

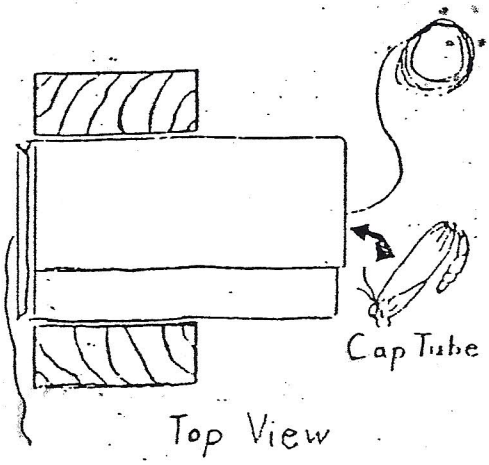

FIGURE 3-E

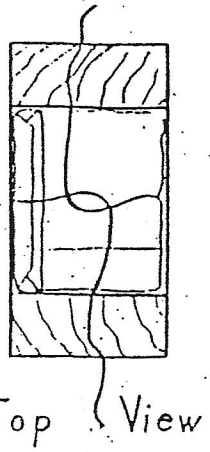

FIGURE 3-F

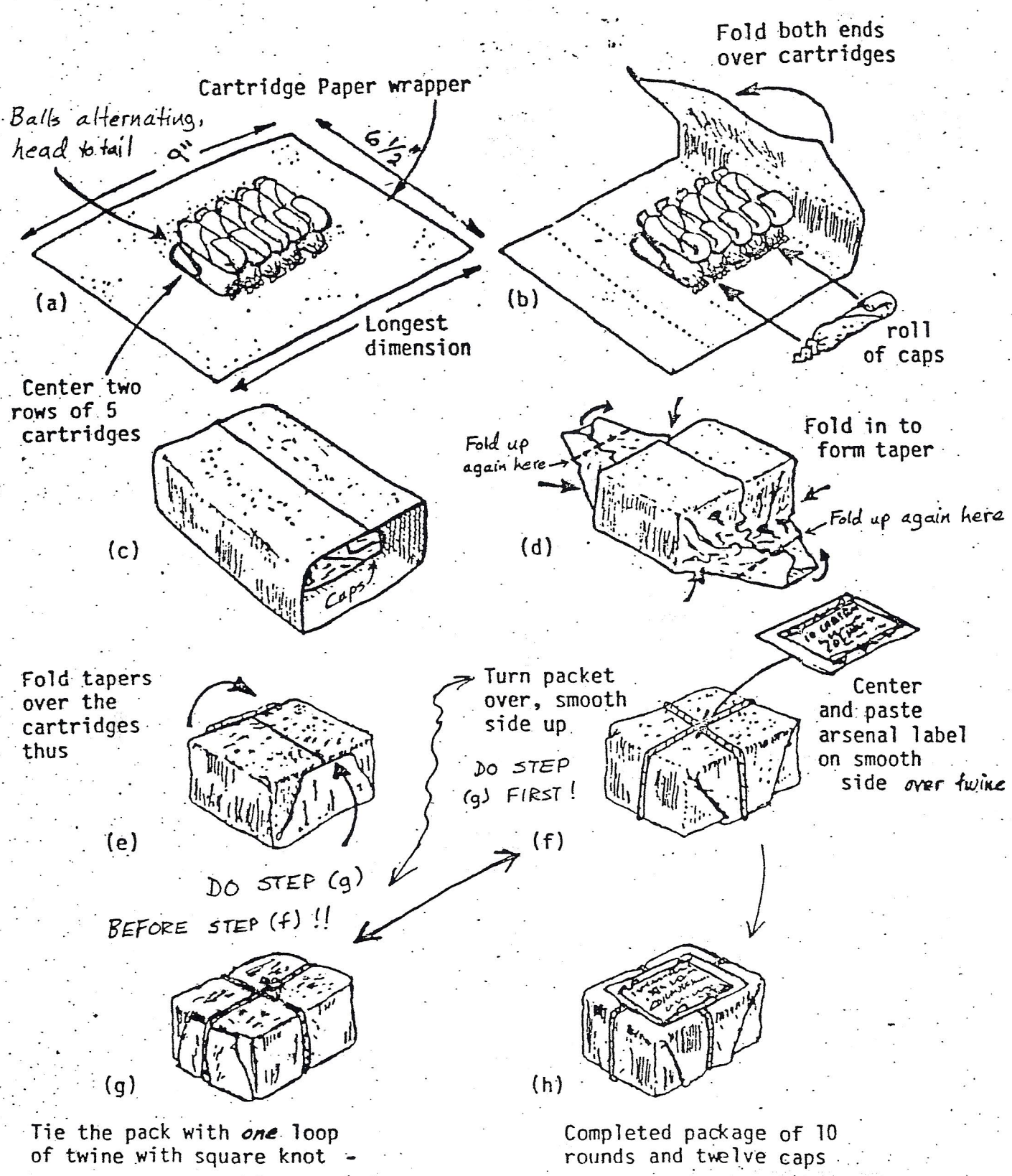

Fig. 2 - Wrapping ten cartridges and twelve percussion caps in Arsenal Configuration

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Richmond Arsenal, VA.

..........................1861

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Richmond Arsenal, VA.

..........................1861

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Richmond Arsenal, VA.

..........................1861

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Richmond Arsenal, VA.

..........................1861

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Danville Arsenal, VA

.........................1861

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Danville Arsenal, VA

.........................1861

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Danville Arsenal, VA

.........................1861

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Danville Arsenal, VA

.........................1861

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Danville Arsenal, VA

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TEN CARTRIDGES,

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or Rifle Musket

Cal. .57 & .58.

Danville Arsenal, VA

.........................1861

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Danville Arsenal, VA

.........................1861

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Fayetteville Arsenal, NC

..........................1862

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Fayetteville Arsenal, NC

..........................1862

TEN CARTRIDGES,

for

Enfield Rifle and Minnie,

or Rifle Musket

Cal. .57 & .58.

Fayetteville Arsenal, NC

..........................1862

TEN CARTRIDGES,

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