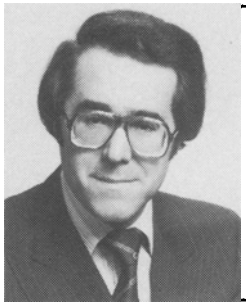

Bar Soap Packaging

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ABSTRACT

Bar soap shapes have been classified into two main types and four categories or a total of eight possible variations. Bar soap packages were divided into mass market and specialty types each in single and multipack variations and in turn, each category having different styles. An update summary of bar soap transfers, soap wrappers, and soap cartoners completes the description. Finally, for the present and immediate future, one can assume that high speed lines will gain steady acceptance as the new packaging machines become more popular. Specialty soap packaging machines should be made faster and new models are much needed since hand wrapping or manual and semi-automatic machines are the norm today. New wrapping materials, foam polypropylene, pearlescent coated papers, foil laminates will be used more, and new cartons with special protective inner coatings will be offered more widely. Very close cooperation and development work between the finishing line supplier (specifically the soap press supplier), the packaging machine, and packaging material suppliers and the customer should increase. This long overdue cooperation has been seen lately and more of it will play a key role to an active and progressive bar soap industry.

INTRODUCTION

The first recorded reference to what we today call soap predates the Egyptian pyramids by more than 1,500 years. Probably the oldest literary reference to soap is found on a 4,000-year-old clay tablet, uncovered at Tello, a small settlement of ancient Mesopotamia. This tablet with a soap recipe of the day is now in the Museum of Constantinople in Istanbul.

In contrast, automatic stamping and packaging of bar soaps is rather recent. It was only in 1912 that the first automatic Jones soap press was built and placed in service, and the first wrapping machines were introduced about 1915.

How much have soap shapes and packaging changed since the turn of the century? Which are the most widely used mass marketed and specialty soap packages? Which are the latest wrapping and cartoning machines and what are the future trends?

Procter & Gamble's famous Ivory floating soap first went on sale in October, 1879. It was handwrapped. Soap packaging changed much over the years. The "Pulse," a magazine published by Colgate employees in the U.S., described in their February, 1931 issue, the hand wrapping procedure used until 1917 for Palmolive soap. Twelve wrapping girls were seated on each side of a long table, the wrapping of each bar involved the work of two girls. The first girl placed the green crepe wrapper about the bar and then inserted the semi-finished bar in a device which held it snugly. The second girl, sitting to the left of the first one, drew the bar from this device, placed the black band around it, and glued it, applying the glue with a small rubber cork. The red seal was then drawn across a seal moistener and applied to the back. Other Colgate brands were also hand wrapped like this.

Packaging is intimately related to advertising. You may remember the soap cartoon entitled "The Day a Cake of Ivory Soap Sank at Procter & Gamble," created by the well-known artist of the day, G. Williams.

Seemingly there are hundreds of soap shapes and soap packages, but a close look allows us to classify them into a limited number of easily identifiable types.

BAR SOAP SHAPE CLASSIFICATION

It is important to classify bar soap shapes before classifying the packages and the packaging machines. There are two basic soap shapes: banded and bandless. Each in turn can come in four variations: rectangular, oval, round, and irregular. Any soap shape will fall into one of the eight types shown (Fig. 1).

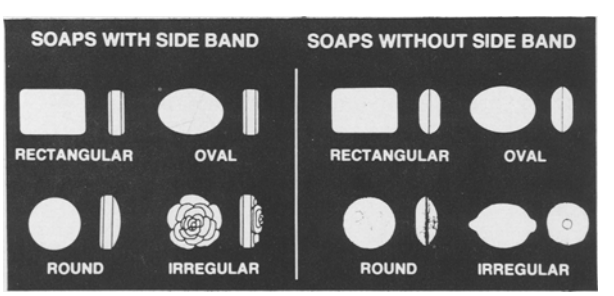

FIG. 1. Bar soap shape classification.

FIG. 2. Bar soap package classification: mass market single packs.

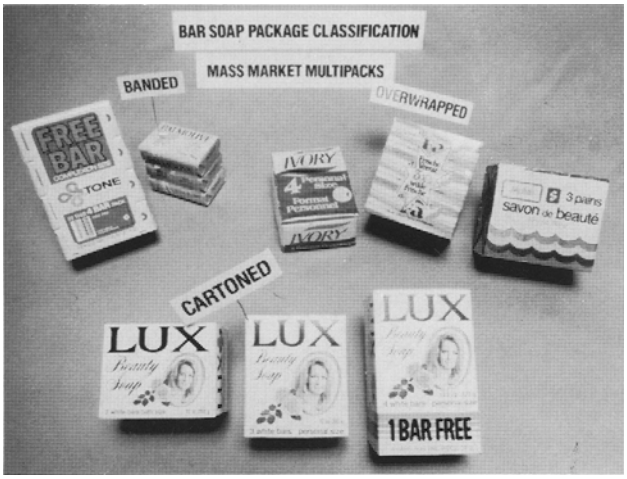

FIG. 3. Bar soap package classification: mass market multipacks.

FIG. 4. Bar soap package classification: specialty single packs.

BAR SOAP PACKAGE CLASSIFICATION

The many soap packages can be best classified by grouping them into two main categories: mass market and specialty packages, and by subdividing them into single and multipacks.

Mass Market Single Packs

There are five different types of which three represent the majority of all mass marketed soaps (Fig. 2).

Double-point end fold: Since the appearance of wrapping machines, most soaps had to become more or less "brick" shaped or, using our shape classification, "rectangular without side band." This shape permits trouble-free automatic wrapping of soaps in the "double-point end fold" style. Even today this is the most widely used soap package style worldwide. It is the one by which a bar of soap is most easily recognized and identified. This package allows the use of a maximum of three papers: innerwrap, stiffener, and outerwrap. Most of the miniature or hotel-size soaps are packaged in this style too. A certain quantity of hotel soaps are hand packed in plastic containers and others are cartoned. The main changes for this popular wrap over the last years have been the quality of paper, the graphic treatment, and the wrapping speeds. Lately, very attractive foil laminates and polypropylene wraps are used by some companies. Wrapping speeds have reached 300 bpm with the new high speed units.

Printed carton: This is the fastest growing category today. Its growth and popularity are due to the flexibility in

FIG. 5. Bar soap package classification: specialty multipacks.

FIG. 6. Unique soap packages.

TABLE I

Bar Soap Packaging Machines

Wrappers	Bundlers
Cartoners	Palletizers
Overwrappers	Pleat wrappers
Case packers	Fine crease wrappers
Case sealers	Pouch wrappers
Case opener positioners	

permitting the packaging of soaps of all shapes and of displaying well in the supermarket shelves.

Soaps without side bands are gaining over side-banded soaps. Most new soap entries are bandless, also called pillow shape, cushion shape, or pin die shape.

There are three basic carton closures: reverse tuck, straight tuck, and glue seal. In Europe and elsewhere, most soap is packaged in reverse or straight tuck cartons, while in the U.S., due to declared net weight regulations, most are of the sealed type or the next category, overwrapped carton.

Overwrapped carton: Just like the printed cartons, this style is used for all shapes but mainly for bandless soaps. An overwrapped carton assures minimized moisture (weight) losses and permits a different esthetic treatment due to the use of printed overwrap material.

Wrapped and cartoned: This style allows the use of unsealed cartons while the soap is protected against moisture losses and damage by being wrapped first and then cartoned.

Skillet wrap: This is a roll fed pre-cut, harder than standard wrapping paper material, which gives somewhat of a carton-like look. The importance of this style is that bandless soaps can be wrapped in it. The skillet wrap prevails

TABLE II

Bar Soap Transfers

Make	Type	Infeed: Single lane / Double lane	Infeed: In line / Right angle	Coupled to model	Operating speed (bpm)
ACMA	1 Reciprocating mechanical pusher	Single lane	In line or right angle	761/V Wrapper	110
				761/OA Cartoner overwrapper	110
	4 Rotary suction cups	Single lane	In line or right angle	711 Wrapper	200
	12 Rotary suction cups	Single lane	In line		
	14 Rotary suction cups	Single lane	Right angle		
	8 Double rotary suction cups	Double lane	In line	791 Wrapper	300
	2 Reciprocating suction cups	Double lane	In line or right angle		
Carle & Montanari	5 Rotary mechanical fingers	Single lane	Right angle	P-22 Wrapper	240
	8 Rotary mechanical fingers	Single lane	Right angle	V-33 Wrapper	300
G.D.	1 Reciprocating mechanical pusher	Single lane	In line or right angle	4000/S Wrapper	110
				4000/LO Wrapper	110
	2 Reciprocating suction cups	Double lane	Right angle	6000/Box cartoner overwrapper and wrapper	300
Höfliger & Karg	24 Rotary suction cups	Single lane	In line or right angle	CAR-8 Cartoner	300
IWKA	1 Reciprocating mechanical pusher	Single lane	Right angle	CP-120 Cartoner	120
				CP-160 Cartoner	160
	24 Rotary suction cups	Single lane	In line or right angle	CP-220 Cartoner	200
				CP-400 Cartoner	300
Jones	4 Rotary suction cups	Single lane	Right angle	CMC-400 Cartoner	240

only in Europe and a few other countries and it is not used by any firm in the U.S.

Mass Market Multipacks

Multipacks are offered mainly for promotional purposes and they can be "banded" with a sleeve, overwrapped with polypropylene or paper, or cartoned. Multipacks usually do not exceed four bars (Fig. 3).

Specialty Single Packs

The popularity of specialty soaps has been increasing steadily over the last years and many interesting, well-established, and some new packages are offered (Fig. 4).

Portfolio wrap: Before wrapping machines were introduced, several mass marketed brands were wrapped in portfolio style. This elegant style is used today by very few firms due to cost and the availability of only slow speed automatic wrapping machines that portfolio fold and automatically place and glue a band around the soap. Only 100 bpm speeds can be attained, which only brings the speed to 1/2 to 1/3 of mass marketed soap packaging speeds.

Fine crease wrap: Also referred to as stretch film wrap because cellophane moistened on one side is stretched around the soap which can be of any shape. As the film dries (shrink tunnels can be used to speed up drying), a skin tight wrap results, The excess so called "pigtail" material resulting from the twisting operation is cut, and the stump is covered by a pressure sensitive label.

Manual machines reach 6 bpm speeds, semi-automatic units, 12 to 15, and one automatic machines reaches a maximum of 40 bpm. Practically all cosmetic companies offer as part of their soap line the fine crease wrap style.

Pleat wrap: The "luxury" pleat wrap with a band or a label is used by and identified with such brands as Roger & Gallet, Maja, Mouson, and a few others. Pleat wrap looks good and works well only for round side banded soap. Pleating is done with manual or some newly introduced automatic machines capable of a maximum pleat wrapping and labeling speed of 60 bpm. Precut discs of tissue type paper are formed around the product by a pleating head assembly. Labels or bands are applied manually or automatically.

Pouch wrap: Lately some pouch wrap or what is called fin seal wrapped soaps appeared on some markets, either individually offered or placed into a carton. This is the first and only use so far of a packaging style and packaging machines from another industry, namely the food industry.

Specialty Multipacks

The most important area in specialty soap packaging is the multipack sector. There are five basic multipack variations of which the "tray and lid" and the "tray with sleeve" are the most widely used styles. They accommodate both nude and wrapped soaps of all shapes (Fig. 5).

This year in the U.S., Avon introduced the "clam shell in carton" package. The specially designed clam shell made from polystyrene conforms to the soap shape and offers excellent product protection.

Unusual Soap Packages

There are very many unusual and interesting soap shapes and packages. Many soaps are hand stamped and hand packaged. Others are made with different degrees of automation, a few of which are shown in Figure 6.

BAR SOAP PACKAGING MACHINERY

The soap industry uses the machines listed in Table I for

TABLE III

Bar Soap Wrappers

Make & model		Operating speed (bpm)	Package type	Soap shape handled
ACMA	721	70	Double-point end fold	Banded
	761/V	110	Double-point end fold portfolio	Banded & bandless
	761/OA	110	Overwrapped carton	Banded & bandless
	711	200	Double-point end fold skillet	Banded & bandless
	791	300	Double-point end fold	Banded & bandless
	731	300	Double-point end fold	Banded (miniature)
Carle & Montanari	P-22	240	Double-point end fold skillet	Banded & bandless
	V-33	300	Double-point end fold	Banded & bandless
D & M	507	70	Double-point end fold	Banded
	633	110	Double-point end fold	Banded
G.D.	4000/S	110	Double-point end fold	Banded
	4000/LO	110	Double-point end fold skillet	Bandless
	6000/BOX	300	Overwrapped carton Double-point end fold	Banded & bandless

TABLE IV

Bar Soap Cartoners[a]

Make & model		Operating speed (cpm)	Single lane infeed: In line / Right angle	Bar soap transfer model & type
CAM	"PS"	240	Right angle	CMT-90D 5 Rotary Mechanical Fingers
Höfliger & Karg	"CAR-8"	300	In line or right angle	PUG-S 24 Rotary suction cups
IWKA	"CP-220"	200	In line or right angle	– 24 Rotary suction cups
	"CP-400"	300	In line or right angle	
Jones	"CMC-400"	240	Right angle	– 4 Rotary suction cups

aSeveral companies offer slow speed (about 100 cpm units) with one reciprocating mechanical pusher transfer.

packaging the previously classified products. Due to time limitation it is beyond the scope of this paper to describe them all. Since the most important and most widely used machines are the wrappers, cartoners, and bar soap transfer units and where most of the new advances have been made, I will limit the rest of my presentation to describe these units only.

To simplify matters and to avoid some of the present confusion about line speeds, it is best to differentiate between three distinct bar soap line speeds: up to 100, 200, and 300. While presses and packaging machines do not run at these exact speeds, the actual average production speeds vary little from these numbers.

"Slow Speed Lines" can be called those producing up to 100 bpm. Specialty soaps are produced on these lines, but only the portfolio style wrap can be packaged automatically at 100 bpm. All the other specialty styles are produced at lower speeds, as mentioned before, pleat wrap at 60 bpm maximum, fine crease wrap at 40 bpm maximum.

"Medium Speed Lines" at 200 bpm speeds are used for mass marketed soaps by all the major soap producers. The line speed actually varies from 180 to 220 bpm depending on the soap shape, soap press, and packaging machine used.

"High Speed Lines" at 300 bpm speeds are new and very few have been installed and even fewer are operating at full speed. Naturally these lines are for mass market soap only.

Since Mazzoni introduced the STUF press which, when set up in its STUF-QUATER version can stamp 400 banded or bandless bars, 400 bpm line-speeds can be achieved, but in this case the press must feed two complete separate packaging lines.

Up to now, no 400 bpm line operates anywhere in the world, but it is a feasible and attainable line speed.

Bar Soap Transfer Units

The lack of adequate and fast bar soap transfer units limited line speeds to an average maximum of 200 bpm for decades. This speed barrier started to be broken only the last 4-5 years, and especially the last 2 years.

The function of a bar soap transfer unit is to interphase the press with the subsequent packaging machine. Normally the stamped soaps leave the press on a continuously running flat belt conveyor. The soaps leave at random with irregular spacing. The transfer unit will pick up or push the product and place it in phase with the timing belt of a wrapping machine or the continuously running and equally spaced buckets of a cartoner.

As a note of interest, Mazzoni has built a few STU type presses with a special long pocketed intermittent discharge conveyor for Avon's specialty soap operation. The new G.D. 6000/Box high speed wrapper has been interlocked with a Mazzoni STUF-Quater press so that both units are driven jointly. The most favored solution is to leave the press and the transfer independent from each other, each having its own drive.

The summary of all presently available transfer units (Table II) shows that reciprocating mechanical pushers are used for about 100 bpm speeds because at higher speeds they will damage the product. All the 200 and 300 bpm transfers use mechanical fingers or vacuum suction cups. Carle & Montanari is the only one using mechanical fingers. Some of the 300 bpm transfers are only two years old and

the others about a year old.

When laying out soap lines and especially high speed lines, the choice of the soap press and the soap shape necessitates a close study of the transfer unit and its infeed options. The single, double lane, and in line vs. right angle configurations are important variables.

Bar Soap Wrappers

The most important and widely used bar soap wrappers, including the new high speed ACMA 791, Carle V-33, and G.D. 6000/Box are listed in Table III. When choosing a soap wrapper besides the listed specifications of operating speed, package type, and soap shape handles, it is important to study the minimum and maximum size ranges and the paper roll feed options and possibilities of each model.

Bar Soap Cartoners

There are many firms offering cartoning machines, but only four listed alphabetically have them for the bar soap industry. CAM uses the Carle CMT-90D transfer, a unit sold independently by Carle & Montanari. The other firms developed their own transfer units but in the past some IWKA cartoners also used Carle transfer. The Hofliger & Karg and the IWKA 300 cpm cartoners are new and some are operating already in Europe (Table IV).

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