

Mistake-Proofing Everyday Activities

Can You Mistake-Proof Your Wife?
Life?



by
Dr. Neal Jeffries

Osher Lifetime Learning Institute

Reminders for your Automatic Memory

such as where you put your keys, glasses, wallet or purse, watch, phone, etc..

**These Reminders are called “Poka-Yokes”
or “Mistake-Proofing Devices”**

Example: I had dinner out with a friend and she took home about half of her dinner in a carry-out box. Then we stopped by my condo to watch a show I had recorded on my DVR. While she was there, I went to the fridge and discovered the carry-out box, along with her keys on top of it, right there in the fridge.

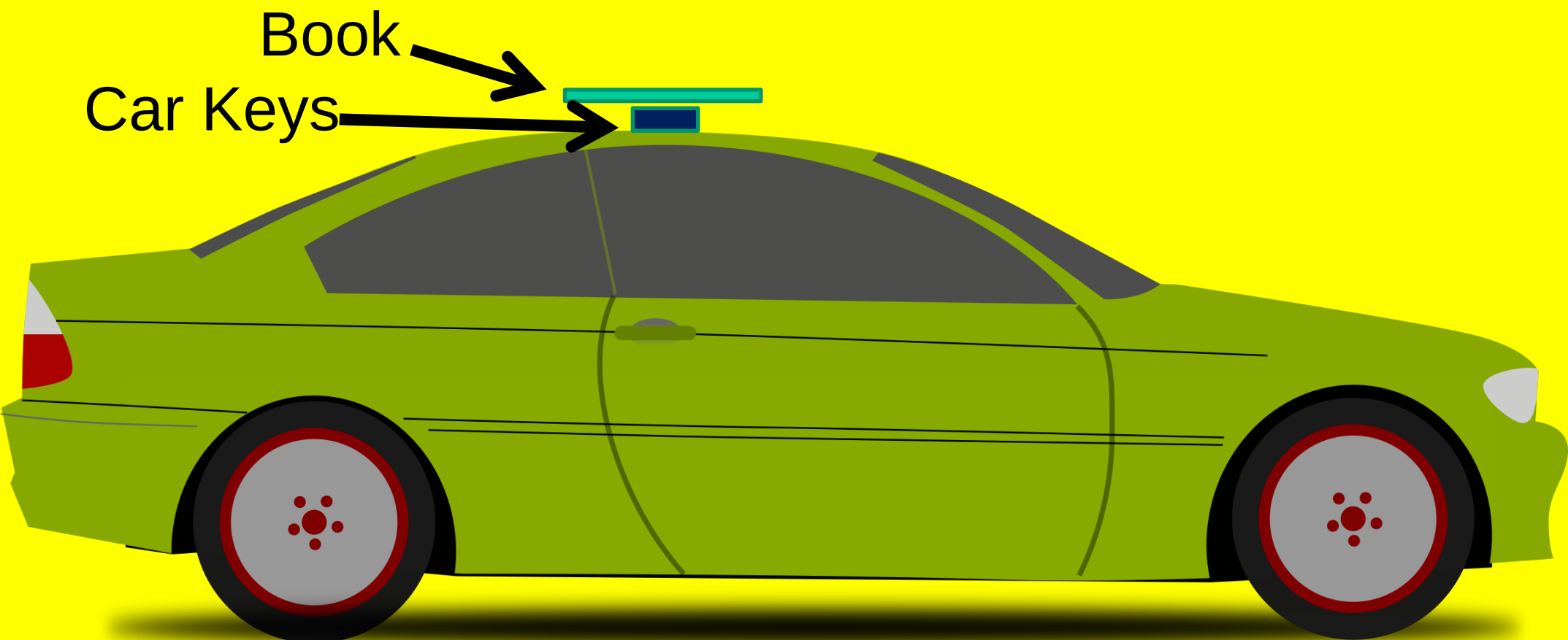
What was her purpose?

Is there any way to improve on this Poka-Yoke?

My Short-Term and Long-Term Memories are not too bad, but my Automatic Memory is constantly giving problems, such as “Where are those keys”.(or Hammer & Nails)

But fortunately, these problems can be managed by extensive use of Poka-Yokes or Reminders, such as Check Lists, Visible Reminders, and especially Preventative Reminders.

Here’s a Preventative Poka-Yoke if you leave items on top of your car :



Do you sometimes make simple, irritating little mistakes such as:

Misplacing keys, glasses, wallet, purse, etc.?

Forgetting to take the important mail with you when you went to the P.O.?

Leaving credit card, license, other important items, where they should not be?

Forgetting why you went into the bedroom, bathroom, or workshop, etc.?

Setting something down for just a moment and then not being able to find it?

Putting something important in a special place just so you won't forget it, and then forgetting where was the special place?

IF SO, THIS CLASS MAY HELP YOU!

Examples: Recent Lunch

Credit Card

- Leave wallet out

Wallet

- On top of keys

Sunglasses

- in pocket, attached to hat, extras

Gloves

- in coat pocket

Jacket – Sleeve tucked into pocket

Hat – in coat pocket or on top of keys or have extras

Some other methods that have worked:

Post it notes on something I always take with me such as wallet, pocket calendar, keys, folder for meeting, etc.

Put change for parking meter in glove to transfer to cup holder in car

My parents had their own methods to reduce mistakes:

When Mom called me, it was usually,
“DonRexNeal...”
which became, for all of us, just, “Boy”

My Dad called all of his granddaughters, “Suzie”

My Journey with Poka-Yoke

I used the Zero Defects Program, devised by the Air Force, at General Electric. It did not work.

Then in 1985 I heard about the Mistake-Proofing System invented by a Japanese engineer, Shigeo Shingo, and called Poka-Yoke. It accepted the fact that people do make mistakes, but it is possible to keep them from going out the door.

Similarly, you and I make many mistakes such as forgetting things, but if we have systems to remind us, we can avoid many problems

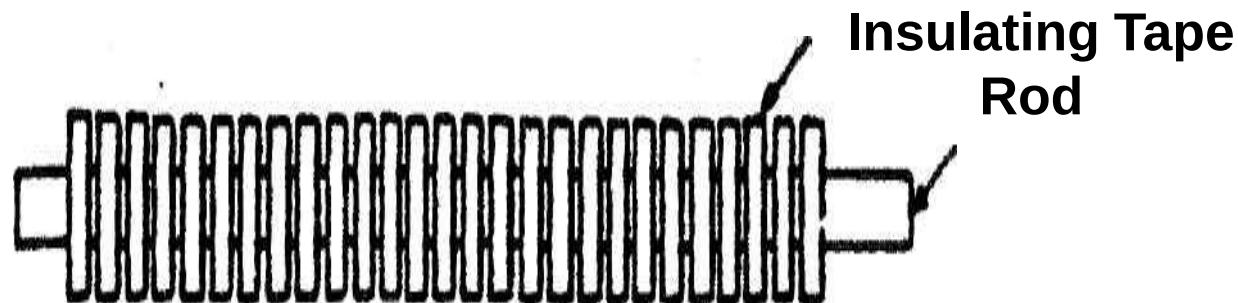
So I studied Mistake-Proofing and started teaching classes for the Society of Manufacturing Engineers, and later for Saddle Island Institute and then for National Business Institute. Shigeo Shingo, who wrote the first book on it, personally taught me some things about it also when he visited Cincinnati, and also when I took a group to Japan.

So I had a chance to see it in action in Japan, and then later in many plants in the U.S.

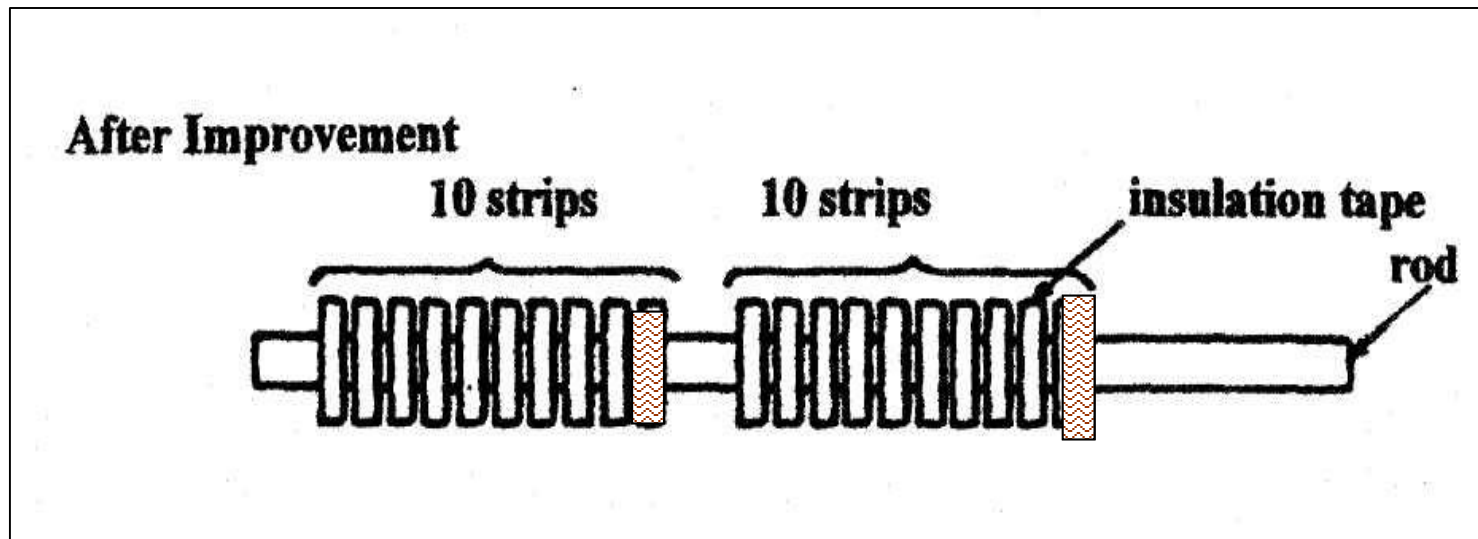
Mistake-Proofing Example

At a television assembly plant, workers applied strips of insulating tape to ten connections on the chassis. The strips were attached to a rod just over the chassis.

Occasionally, a worker would make a mistake and miss applying the tape to one of the connections. This caused rejects and rework. How could this problem be eliminated?



The solution chosen was to arrange the insulating strips in groups of ten, so that the worker would be sure to complete the entire group of insulating strips before moving on to the next chassis.



OTHER SOLUTIONS?

Colors : Different color or different fabric at end of group.

Last one in group rings a bell, etc.

What is the best solution?

Three Methods for Mistake-Proofing

1. Warning Method: lights, bells, colors, appearance of something unexpected or disappearance of something expected to be there, anything that gets your attention.
2. Control Method: the system corrects mistakes automatically such as drain holes to prevent overflowing, pen with retracting point, etc.
3. Prevention Method: electrical cord with plug that cannot be inserted incorrectly, camera cord with notch in corner, diesel gas nozzles, etc.

Which System was used for the insulating tapes?

Which System is the Best?

Example of Different Methods for Mistake-Proofing

Problem: Have to remember to take a book to the library, when I go out in the car. (I sometimes forget)

No Method:

Leave book where it is and try to remember to take it.

Warning Method:

Put book on table near door or hang it in a bag on the door handle.

Control Method:

Put book in front of door, so you can't open the door without moving it.

Prevention Method:

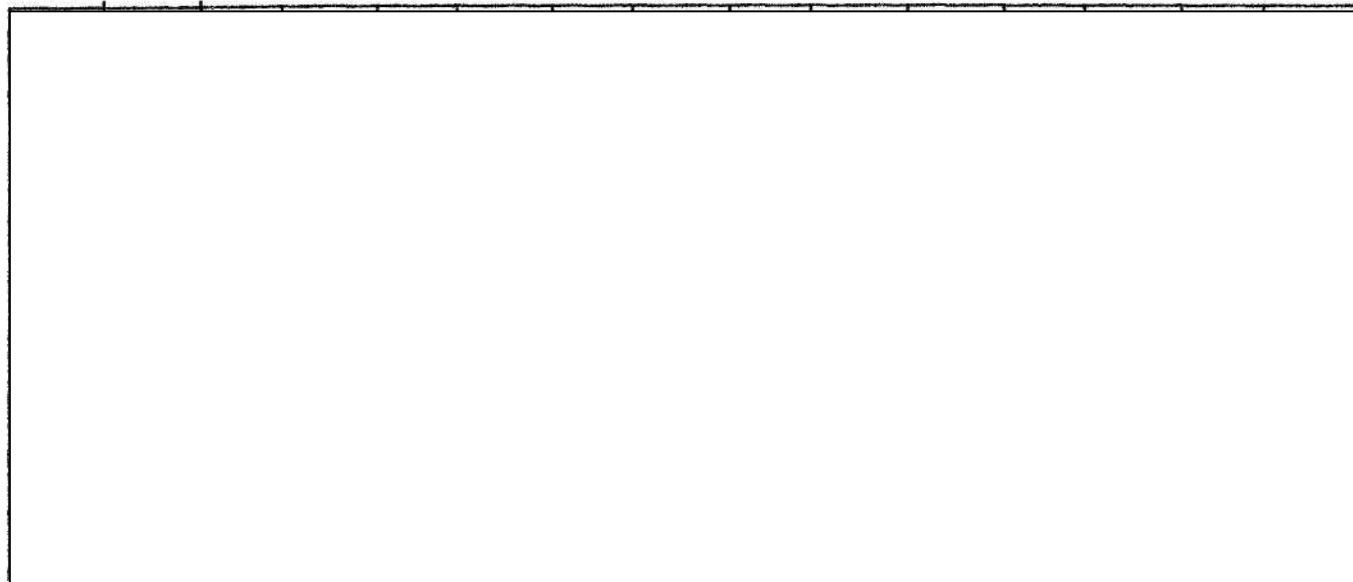
Put book in car right now.

Why Use a Template?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
48 49 50 51 52 53 54 55 56 57 58 59 60 61 62
63 64 65 66 67 68 69 70 71 72 73 74 75 76 77
78 79 80 81 82 83 84 85 86 87 89 90 91 92 93
94 95 96 97 98 99 100

Can you find the omission in the top set of numbers?

Can you find the omission in the bottom set?

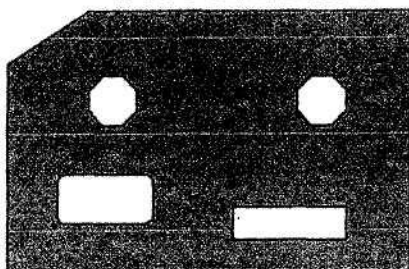


FORM #1 - MISTAKE PROOFING DEVICE PERMANENT RECORD

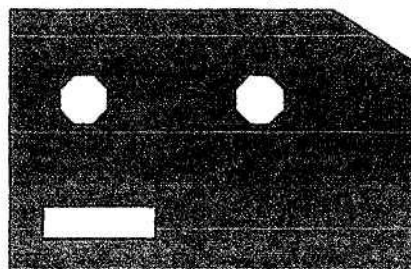
MISTAKE PROOFING TYPE	REGULATIVE METHOD	SETTING METHOD	DATE
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INSPECTION MODE: ● Self-Check System	Warning Method	Constant Number Method	Dept. No.
INSPECTION MODE: Successive chck Sys.		Action Step Method ●	Prepared by

Theme

Before: Patterns for Left and Right side Car Door Seals were similar and were often confused.



Left Side

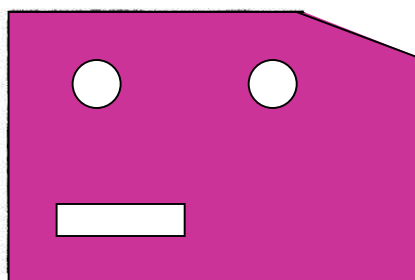


Right Side

After: Color-Coding solved the problem.



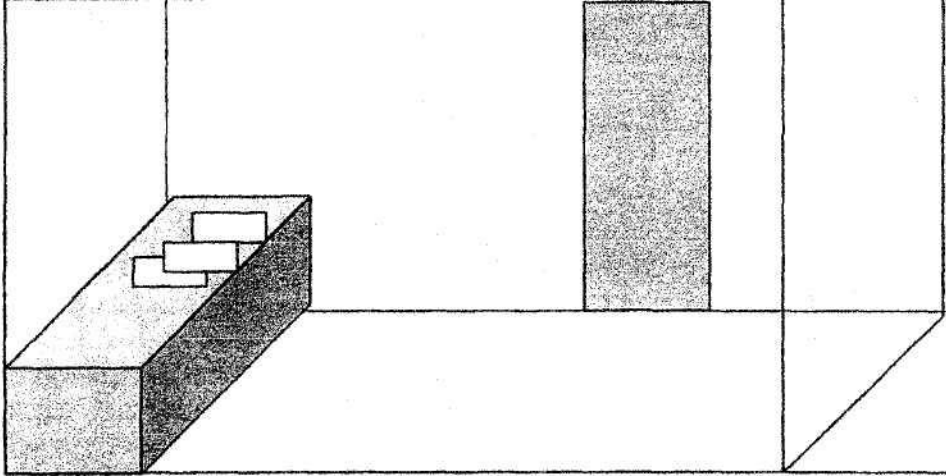
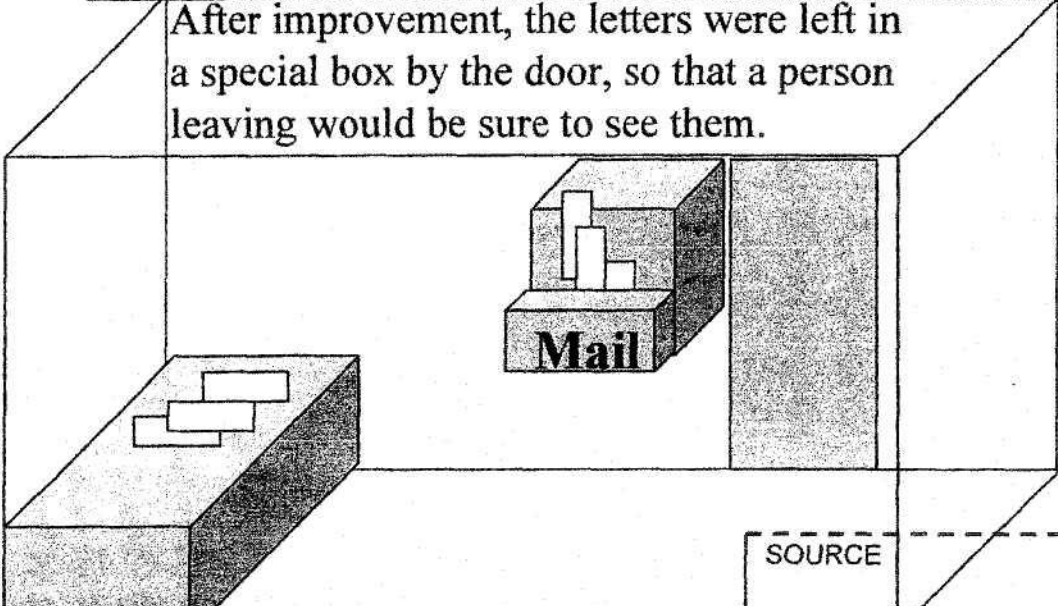
bLack



PuRple

EFFECTS	SOURCE
	INSTALLATION DATE

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Theme	Before, letters to be mailed were left on a desk and were sometimes forgotten.		
			
After improvement, the letters were left in a special box by the door, so that a person leaving would be sure to see them.			
			
SOURCE			

“Absolutely certain” method: In front of door.
Except with granddaughter and swimsuit; she just brushes it aside with her foot and goes on out the door.

This gas-cap design has three Mistake-Proofing ideas included:

1.The tether keeps the cap from getting misplaced.

2.The gas tank inlet is sized so that only the correct fuel nozzles can enter it. For example, diesel fuel nozzles are too large to fit in.

3.The gas cap has a ratchet such that the cap cannot be over-tightened.





Many gasoline hoses are designed with a break-away feature, so that if you forget and drive off before disconnecting, it won't cause a major spill and possible fire.

Philosophy of this Seminar:

“A Mistake is an Opportunity for Improvement”

When a Mistake is made, do you...

- Ignore it?***
- Hide it? (Comment by attendee in coffee shop)***
- Hope it isn't noticed or goes away?***
- Decide that you are going to concentrate more?***
- (Similar to the Seminar Speaker trying to be heard)***
- Complain about it?***
- Blame it on someone else?***
- Try to change things***
- so that it doesn't happen again?***

Count the E's and e's in this passage

Shockwatch – a series of products which measure shock. These are intended to reduce damage to equipment, packages, vehicles, etc., by monitoring the shocks that the item receives.

For example, when mounted on a forklift truck the device can be made to stop the vehicle when a certain level shock is received, such that it cannot be started again without a special key available from a certain supervisor.

In one company where this is used on all forklifts, because anyone is allowed to use them, it has resulted in about 50% decrease in accidents. This is because people are more careful about driving them, and also because the system requires the operator to sign in before using a truck. Thus, if there is a collision, not only is the current operator identified, but also the drivers have become more careful so that the truck will not be disabled while they are driving.

Another form of the product is labels on shipped packages which indicate if the package receives unusually rough handling. The label changes appearance if the package experiences shock of a particular magnitude.

Results: After about 10 years of experience with people counting the e's in a passage like this, the results for about 1000 participants were that less than 2% were able to count the correct amount.

In other words, **counting errors are almost everywhere!**

CALENDAR

KEYS

WALLET

SUNGLASSES

WATCH

CHANGE

Usually
Misplaced
Items:

Phone

Keys

Wallet or Purse

Watch

Purse
or
Wallet

Cell Phone

Keys

Watch

Pocket Calendar



This sensor at the door picks up a signal if something leaving the store has not been checked out correctly.



Some smoke detectors have ways of indicating if there is no or a low battery, by not snapping together or emitting a beep.



This cash-o-matic machine counts and dispenses the correct change every time. Some of them have a signal if the change is not collected?



This french fry scoop has been in use for many years, and it continues to give about the same number of french fries each time.

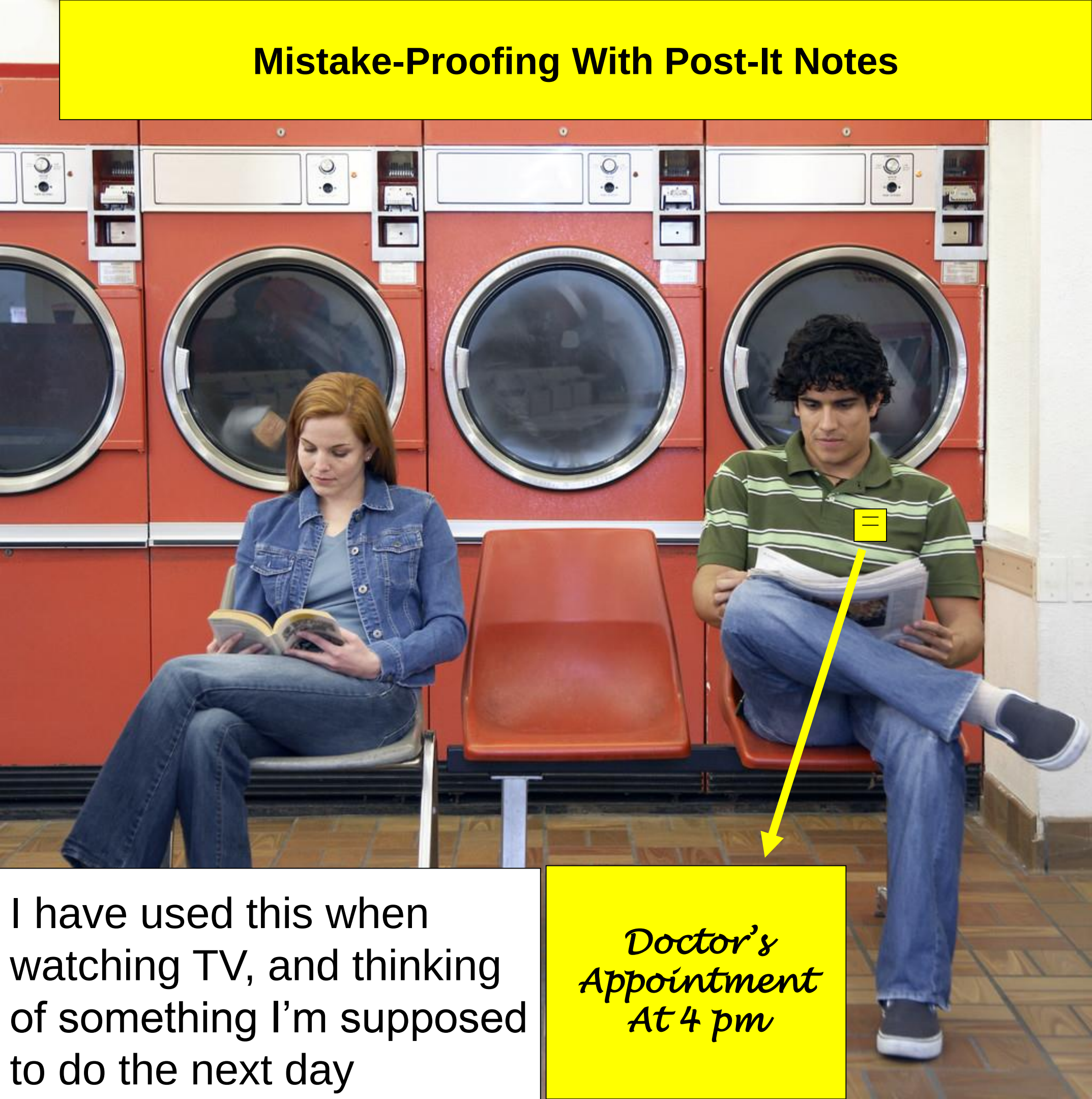


If Ketchup is stored upside-down, then the water comes to the top. So when you squeeze the bottle to get some ketchup, you get the viscous fluid you want instead of the water. These bottles are designed to be stored upside-down.



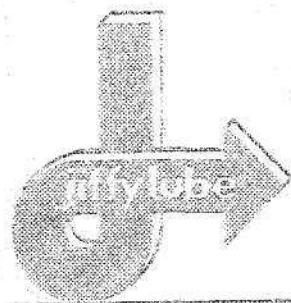
These school buses are equipped with a wire structure around the front bumper. This causes the children to pass in front of the bus at a distance where the bus driver can see them at all times.

Mistake-Proofing With Post-It Notes



I have used this when watching TV, and thinking of something I'm supposed to do the next day

*Doctor's
Appointment
At 4 pm*



jiffy lube

Jiffy Lube # 1289
CINCINNATI LUBE, INC.
5913 CORDER ROAD
BLUE RICH, OH 45242
(513) 831-4828

Signature

DATE 02/18/22 09:13 AM
INVOICE NO. 1289 001574 3012
TRANSACTION NO. 00010000001574
EMPLOYEES DM1 DM1

CUSTOMER INFORMATION		VEHICLE INFORMATION	
10755 HUNTERS CREEK DR CINCINNATI, OH 45242		YEAR 2019 MAKE LEXUS MODEL LX 570	LICENSE PLATE ALTERNATE ID 22,582 MILEAGE 117,000

FLIGHT

SERVICE CHECKLIST	
* Change Oil	OK
* Change Oil Filter	OK
* Check Air Filter	OK
* Check Wiper Blades	Completed
* Vacuum Floors	Completed

Additional Services Performed as Needed:	
Lubricate Chassis	Sealed
Check Transmission/Transfer Fluid	OK
Check Differential Fluid	N/A
Check Power Steering Fluid	OK
Check Windshield Washer Fluid	Added
Check Battery Water	OK
Inflate Tires to Proper Pressure	F32 R32

SEE YOU IN 3000 MILES !!
THANK YOU HAVE A NICE DAY !!
BUT NOTICE FRAME OIL DRIPS !!

SERVICE CHECKLIST

Change Oil	Changed
Change Oil Filter	OK
Check Air Filter	OK
Check Wiper Blades	Completed
Vacuum Floors	Completed
Wash Exterior Windows	
Additional Services as Needed:	
Lubricate Chassis	Sealed
Check Trans. Fluid	OK
Check Diff. Fluid	N/A
Check Pwr. Ster. Fluid	OK
Check Wind. Wash Fluid	Added
Check Battery Fluid	OK
Inflate Tires to Prop. Pres	F32 R32
Breather Element	N/A
PCV Valve	N/A
Check Brake Fluid	OK
Window Sticker	Completed
Lights	OK

SALES
TRANSFER
NOTRANSFER
SALES TAX
TOTAL
MASTER CARD

Checklist for Mistake-Proofing

Another Template



5-26

KARLSTAD

SWEDEN

Supermarket Shopping List, by Aisle

ISLES 1-3 UTTER HEESE RANBERRY SAUCE GGS RULT COCKTAIL ARGARINE ILK EACHES INEAPPLE UMPKIN -8	AISLES 4-5 BEANS CHESTNUTS COOKING OIL CORN MIXED VEGETABLES OLIVE OIL PEAS POTATOES RATIONS TOMATOES	AISLES 6-7 COOKIES CRACKERS ELBOWS, MACARONI LASAGNE MARSHMALLOWS NOODLES SPAGHETTI SPAGHETTI SAUCE VERMECELLI	AISLES 8-9 BAND AIDS ENVELOPES GAUZE Q TIPS RAZOR BLADES SHAVING CREAM VITAMINS TOOTH PASTE	AISLES 10-11 COFFEE COFFEE FILTERS DIJON MUSTARD EVAP. MILK KNORR SOUP MAYONNAISE OLIVES PICKLES SOUP TEA VINEGAR	AISLES 12-13 BISQUICK CAKE MIX CHOCOLATE CHIPS DRESSING EQUAL HERBS HONEY JELLO MARMALADE MARSHMALLOW CREAM MUFFINS RICE SHAKE & BAKE SODA SUGAR YEAST	AISLES 14-15 BIRD SEED OATMEAL TOTAL BARLEY
ISLES 16-17 CUNTY TOWELS ARBAGE BAGS LAD BAGS LAD WRAP LEENEX IAPKINS OILET PAPER	AISLES 18-19 AMMONIA CASCADE COMET DASH FANTASTIK GLOVES IVORY LIQUID IVORY SOAP PERMAPRESS SNO BOL WISK X-14	AISLE 20-21 BATTERIES BULB	AISLES 24-25 BEANS PEAS MIXED-VEG.	AISLES 26-27 BREAD HERSHEY SYRUP ICE CREAM	AISLES 28-29 BEEF ROAST CHICKEN FLOUNDER LIVER PORK CHOPS SAUSAGE STEAK TURKEY	AISLE 30 APPLES BANANAS CABBAGE CABBAGE, RED CANTELOPE CARROTS CELERY CRANBERRIES CUCUMBERS GARLIC GRAPES GREEN PEPPERS LEMON JUICE LEMONS LETTUCE ONIONS POTATOES RED ONIONS ROMAINE SQUASH STRAWBERRIES WALNUTS

Aisles 2-3

Butter
 Cheese
 Eggs
 Milk
 Etc.

Would this help you to remember to ask for your Senior Discount?

GET YOUR SENIOR DISCOUNT

With The Cap That Saves You Money!



**WEAR IT WITH
SENIOR PRIDE!**

**Handsome!
Comfortable!
Adjustable Fit!**

as low as
\$7.95
each

**COLORFULLY
EMBROIDERED
– Not Just A Patch!**

**Double-Stitched
For Strength!**

Pays For Itself Again And Again With The Savings You'll Get!

Wear this great-looking Cap with pride to get the money-saving SENIOR DISCOUNT you're entitled to at restaurants, movies, stores, the golf course and more! Humorous baseball-style cap reads loud and clear: DON'T FORGET MY SENIOR DISCOUNT! It's

Visit Us At: WWW.DIRECTSOURCEINC.COM

Mail To: **Direct Source**, Dept. SDH-143,
P.O. Box 161, Orangeburg, NY 10962

- ☐ One **SENIOR CAP** only \$9.95.
☐ **SAVE!** Two or more **SENIOR CAPS** only \$7.95 each.

Add \$3.95 postage & handling no matter how many you order.

Enclosed is check or M.O. for \$ _____. (NY & PA res. add sales tax)

Charge my: ☐ VISA ☐ MasterCard ☐ Discover ☐ Am. Express Exp. Date ____/____

Account # _____

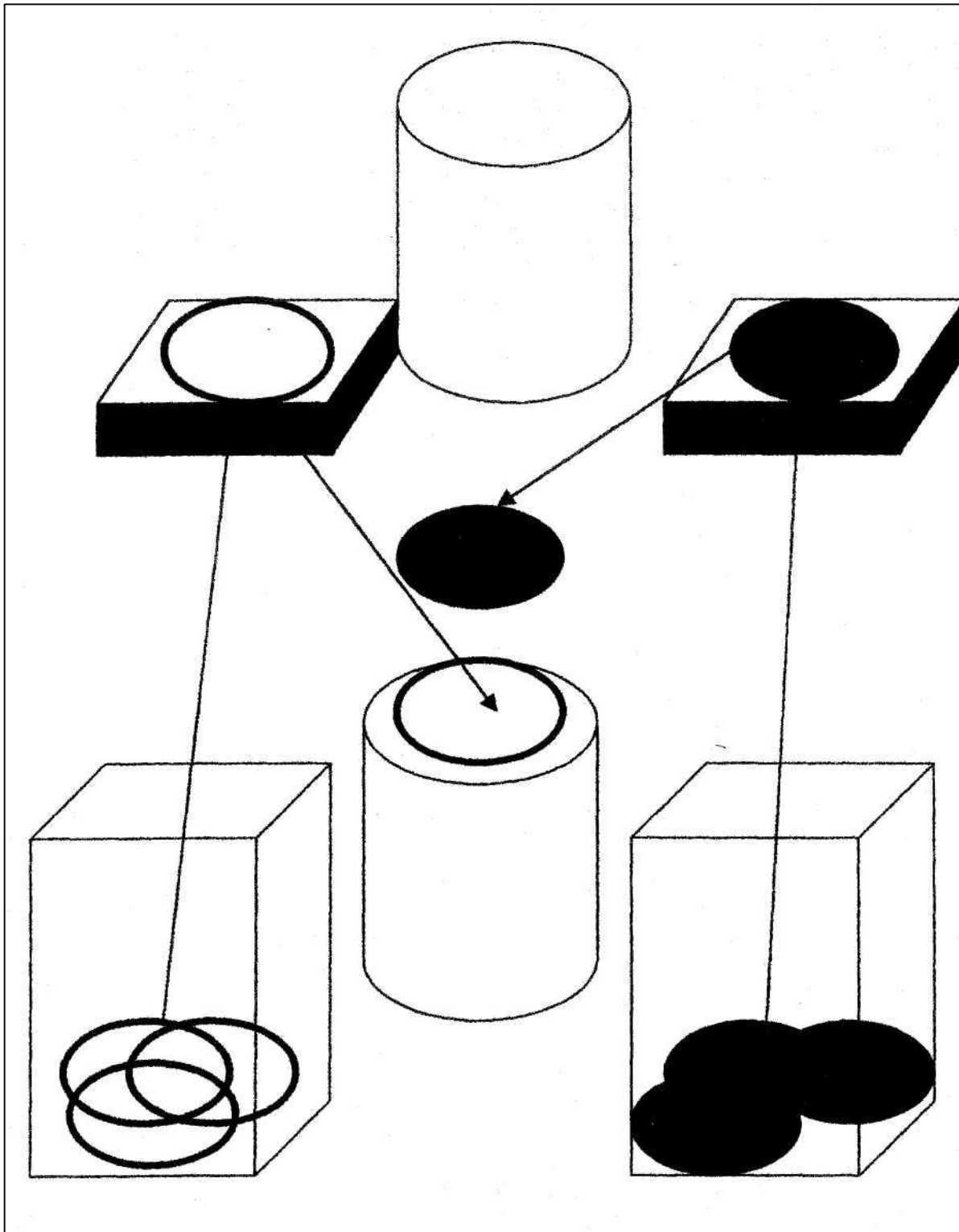
Examples Of Mistake-Proofing Systems

1. Calendars & Schedules.
2. Check Lists. including just lists, double and cross
3. Color-Coding to emphasize, differentiate, etc.
4. Reminder Signs: No Smoking, Take Laptops Out of Luggage, Rest Rooms, Names of Businesses.
5. Tie things together, such as a letter in the wallet or purse.
6. Visuals such as clothes, tools, food, etc. hanging in view
7. Clock, Alarms, Dates on Newspapers, etc.
8. Instructions on how-to, such as Recipes
9. Information on Food Packages: Ingredients, How to Prepare, Nutrition Information, Warnings about peanuts, etc.
10. Motivators such as slogans, songs, sayings, pictures, rewards, attaboys, etc.
11. All the many kinds of traffic signs: Stop, Speed Limit, Parking Hours, One-Way, Street Names.

SUMMARY OF MISTAKE-PROOFING

- 1. It is possible to Mistake-Proof many aspects of your life.**
- 2. It mainly requires the philosophy of trying to devise systems that work for you, be they warning, control or prevention.**
- 3. If at first you don't succeed, try again. Then give up for awhile, or ask someone else for their ideas.**
- 4. It's kind of fun to try it, and when something works it makes your life more enjoyable and less frustrating.**

The
End



Using a staging or template method,
mistakes were virtually eliminated.

COUNTING PROBLEMS

**Occurrences: Assembly, Order-Picking, Shipping,
Inventory, Financial Reports, etc.**

SOLUTIONS:

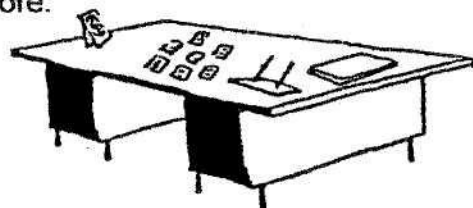
- 1. ~~Multiple Counts~~**
- 2. Computer Counter**
- 3. Automatic Counter**
such as on a machine, electrical,
mechanical, digital, bar code, vision, etc.
- 4. Weighing or Measuring for standard Parts**
- 5. Templates**

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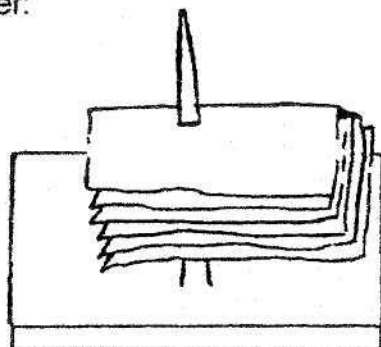
Theme Keeping Track of Telephone Messages

Before:



Telephone messages are neatly arranged on desk by Secretary in the morning, but by the end of the day they can be lost or misplaced due to the moving around of papers on the desk.

After:



A nail-peg is used to store messages in chronological order. This keeps them neatly stored until they are discarded.

EFFECTS

SOURCE

INSTALLATION
DATE

M-P Examples
from the Internet
from John Grout's site

(go to M-P Examples 1-10, under All Files)



Fast food restaurants have been using visual cash registers like these for years, so that the employee is more likely to ring up the correct sale. Notice the color-coding for types of products. Some software even has pictures of the products.



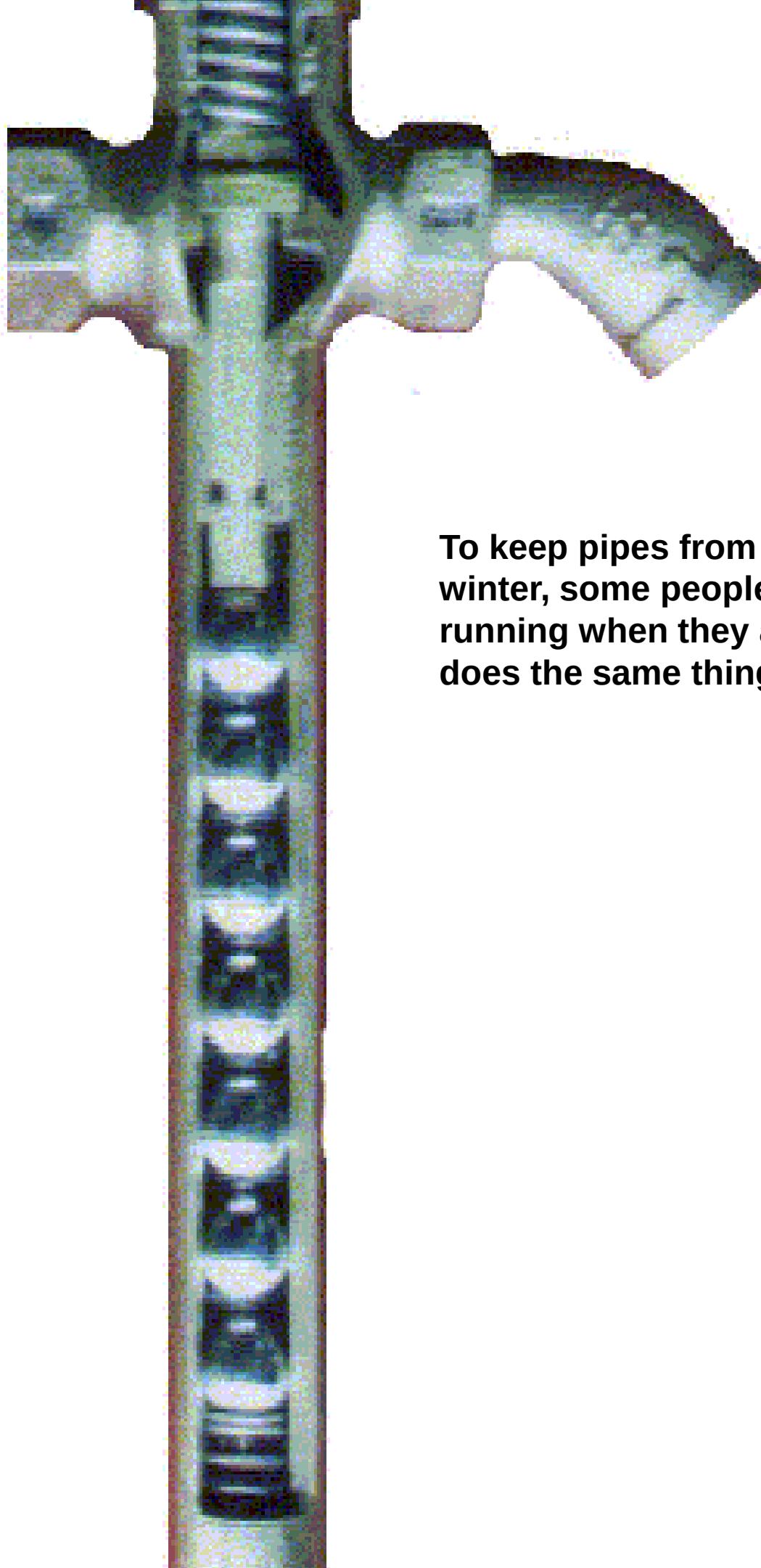
Some drills have a sensor such that, if you hit a wire or cable, they will stop automatically

With this ATM, you don't have to insert your card. You merely swipe it through a slot and the transaction can proceed. No more forgotten or impounded cards.





Most, *but not all*, elevators have sensors to prevent the doors from closing when someone is in the way. Also, they often are prevented from operating if the maximum weight is exceeded.



To keep pipes from freezing during a cold winter, some people let a little water keep running when they are gone. This pipe does the same thing automatically.

These shower heads are equipped with an anti-scald sensor, which turns off the flow if the water is too hot.



Some wallets are now equipped with a bell that rings if a credit card is removed and not returned before the wallet is closed.



Synopsis: Improving Your Memory

1. Recall from Long-Term Memory:

Prompts - "FLIP PART"

2. Short-Term Memory Retention and Recall:

Pegs (One=Gun, Two=Shoe, etc.)

3. "Automatic Memory" Lapses:

Poka-Yokes (Letter in front of door)

4. Names & Faces: Repetition, Pictures

5. Mnemonic Devices: Poems, Sayings, etc.

(Spring ahead; fall back)

6. General Helpers:

Diet: "What's good for the heart is good for the brain"

Supplements: Antioxidants - Vitamins C and E; B12

Physical Exercise: Regular, Not too strenuous, such as 3X weekly walk of 45 min.

Mental Exercise: Puzzles, Memorizations, Math & Logic Problems, Scheduling, Cooking, Bridge

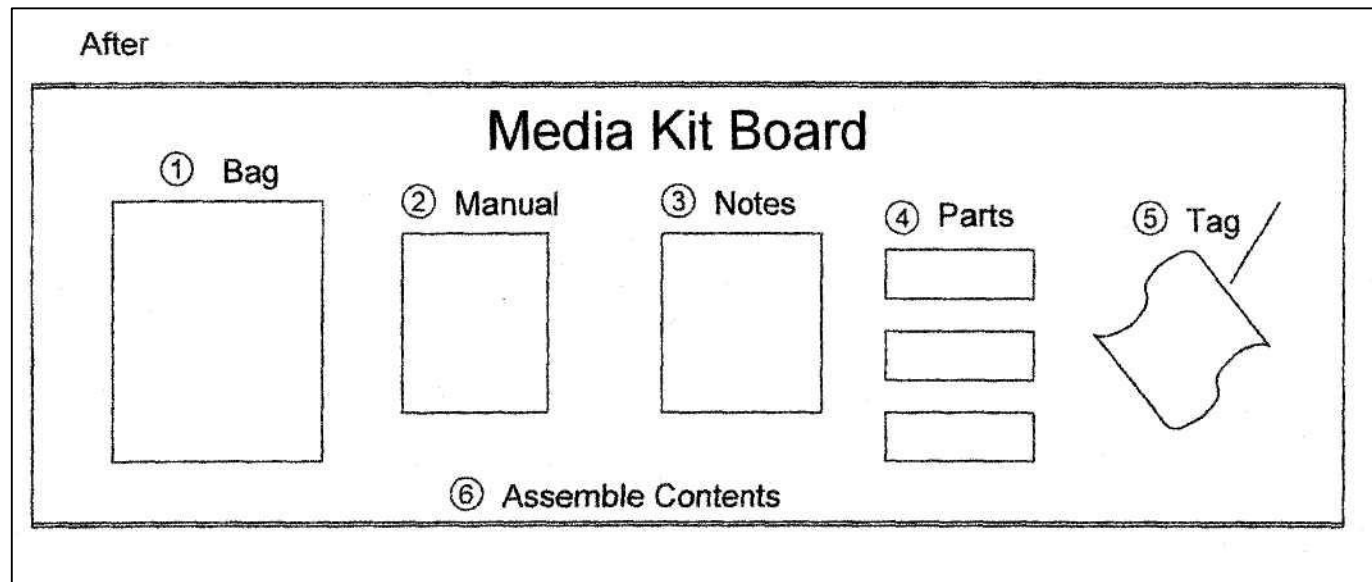
Meditation: Breathe in for 7 sec, out for 7 sec, Rep 7X

Prayer, if it works for you.

7. Chunking and Linking:

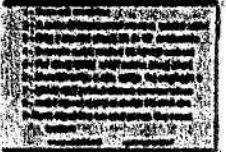
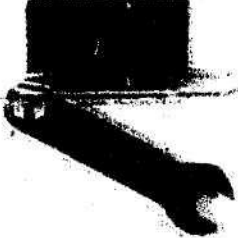
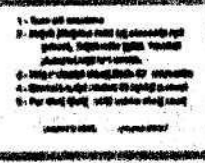
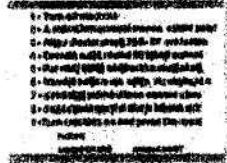
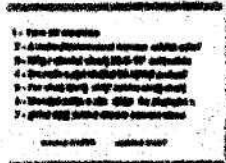
Chunk couples you wish to remember, link friends or those with similar interests

Templates for Mistake-Proofing



CHANGE-OVER INSTRUCTIONS

W. C. 23

MACH. 19	PROCEDURE				
PART NO. 47AG6		USE THE BRASS 4" RING COLLAR- SNUG BUT NOT TOO TIGHT		When Removing Grease, Loosen Screw From Bottom & Lift Straight Up	
26AG3	15 MIN. MAX				Color Spec #291
MACH. 20 PART NO. 61BX10		RECYCLE HYDRAULIC FLUID	Call Engineering for Current Spec's	 SETTLE AT LEAST	
23BX43		 POSITIVE AIR FLOW		See J.P. Before Start Up	NOTIFY: FACILITIES WHEN COMPLETE

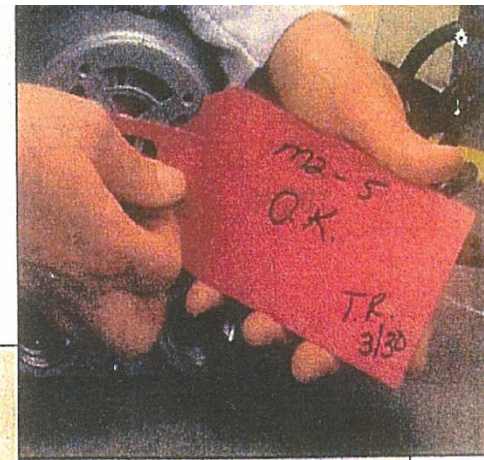
Pictures for Mistake-Proofing

Colors for Mistake-Proofing

Clear the clutter and identify items needing to be saved (green tag), tossed (red tag), or assessed (yellow tag).



Color-coding departments facilitates parts being returned to their proper locations.



LOCATION STANDARDS

THE FOLLOWING SIGNS INDICATE
THE COLOR ASSIGNED TO EACH
DEPARTMENT. WHEN YOU SEE A
WORK ORDER OR A PIECE OF
EQUIPMENT MARKED WITH ONE
OF THESE COLORS, YOU WILL KNOW
WHICH DEPARTMENT IT BELONGS TO.

ASSEMBLY

SHIPPING/RECEIVING

STOCK

INSPECTION

STEVE

EXT. 506

MIKE

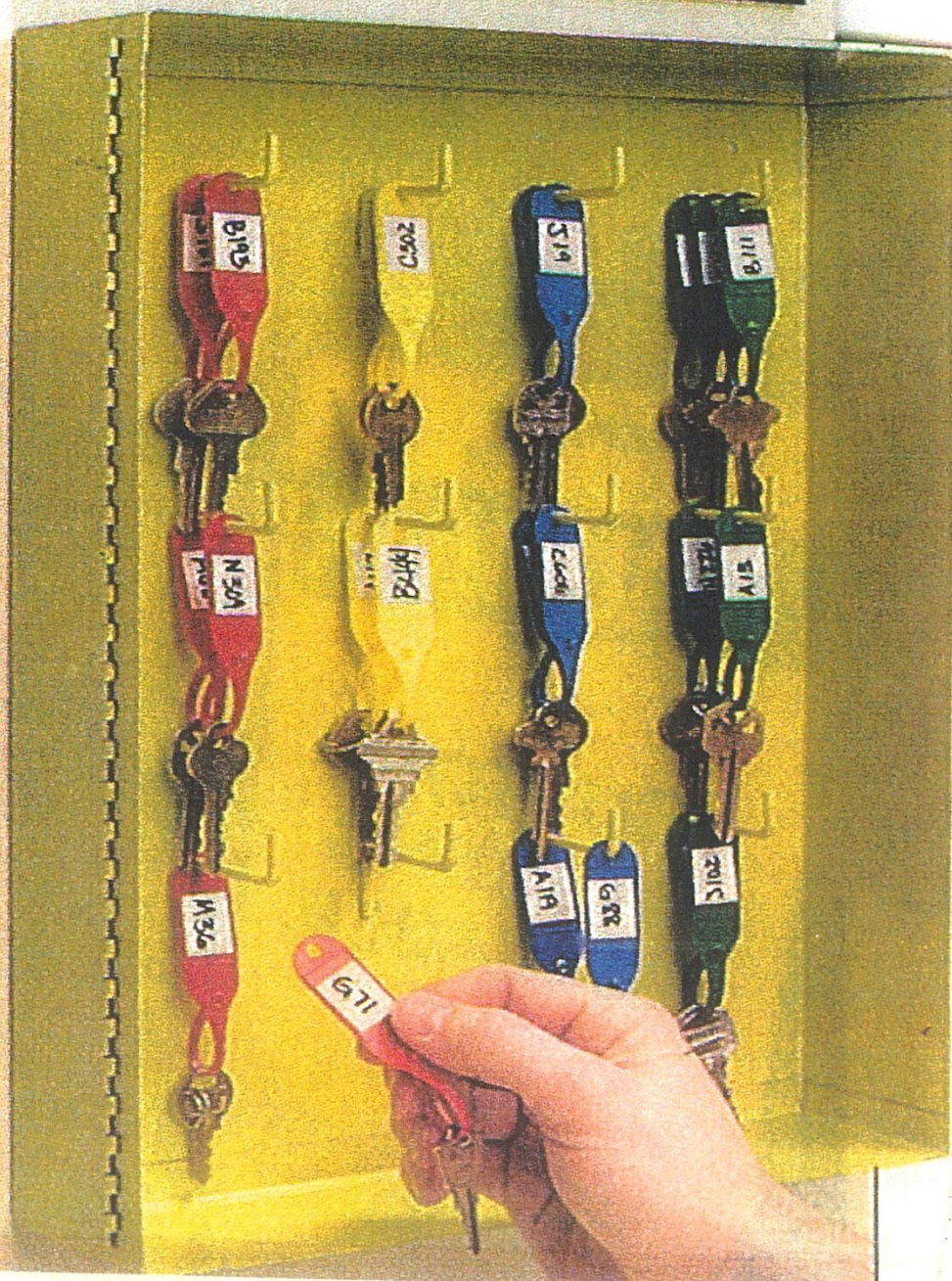
EXT. 504

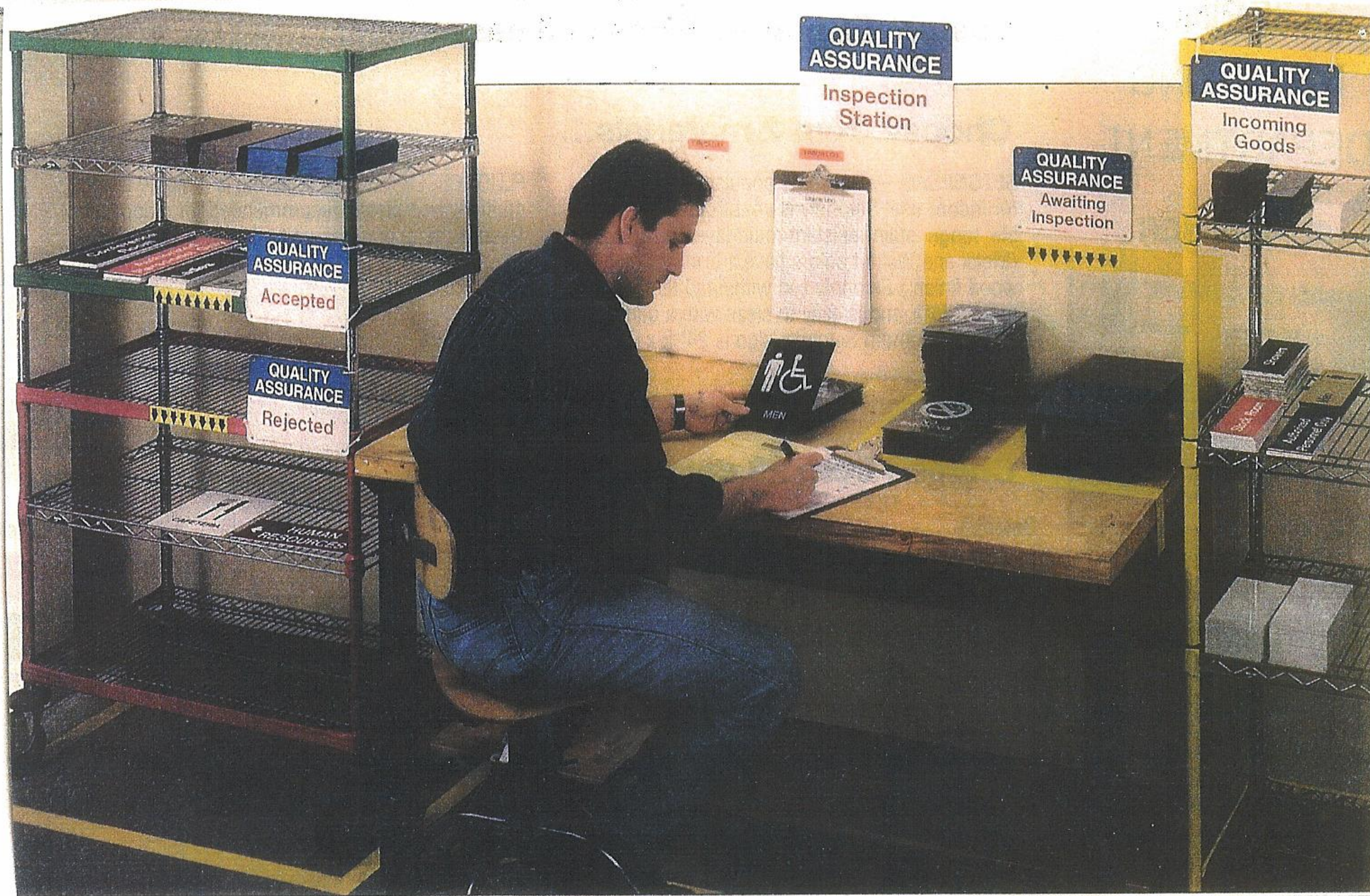
ANTON

EXT. 500

DAVE

EXT. 502





Color-Coding helps ensure
that similar items are not mixed up

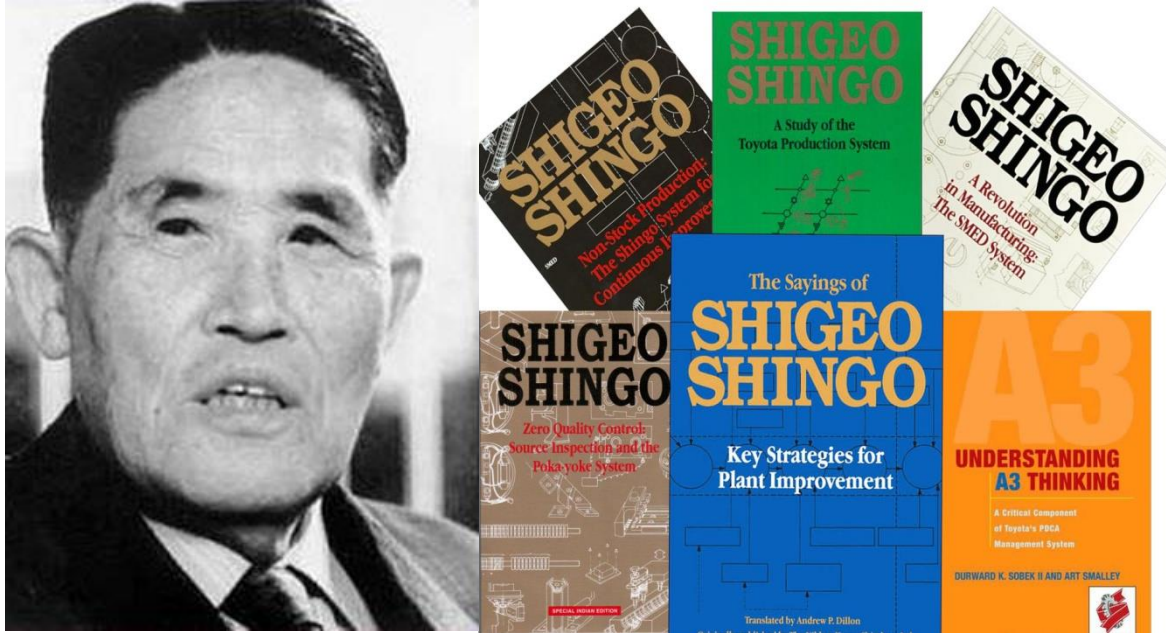


I taught Classes in Poka-Yoke for about 20 years. They were very popular and useful for most companies, in my experience.

I learned to use the mistake-proofing methods in my own work, and then in my personal life.

I have found that it does not eliminate all mistakes, but it does prevent most of them.

It shows me that perhaps all mistakes can be eliminated or reduced, if I take the time to implement the system completely.



Excerpt from Zero Quality Control by Shigeo Shingo

“In 1977 I hurried to Shizuoka Plant of Matsushita Electric’s Washing Machine Division when I heard that the facility had achieved a continuous record **of one month with zero defects** in a drainpipe assembly line operation **involving 23 workers**.

When I got there, I found that this significant goal had been attained by the use of source inspections, self-checks and by the installation of effective **poka-yoke devices – ingenious and relatively inexpensive mechanisms that everyone had cooperated in coming up with**.

Before the Matsushita's accomplishment, I had secretly been afraid that it might be impossible for a drainpipe assembly line employing so many workers and **handling 30,000 units each month** to actually go through an entire month with zero defects.

Seeing this achievement gave me an unprecedented jolt, therefore, and I drew boundless confidence and courage from the realization that given the proper conceptual approach and appropriate techniques, and **given suitable leadership and general enthusiasm and cooperation**, people can in fact **achieve things that have been thought to be impossible.**

The Matsushita Washing Division's Shizuoka plant continued zero defect production for over six months, and I confidently appealed to a number of other plants with the assertion that they, too, could achieve zero defects for the space of one month.

Lo and behold, these plants began to achieve zero defects for one month, and even for several months running.“

So, Poka-Yokes
DO WORK!!

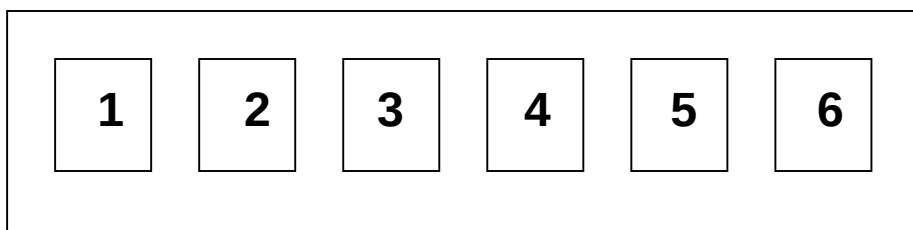
Possible Opportunities for Mistake-Proofing

(for trying to solve today)

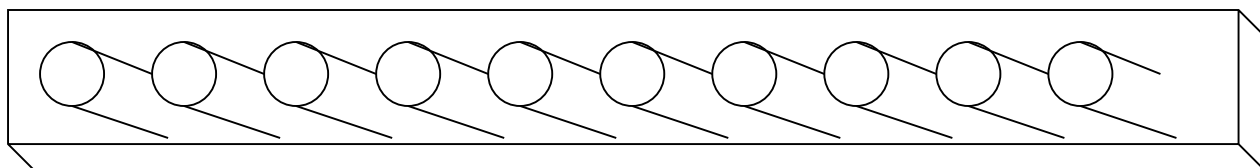
1. Forgetting *Names, Dates and Places.*
2. Forgetting *Passwords or Numbers (Pin, etc)*
3. Misplacing *Keys, Glasses, Wallet or Purse, Watch,* etc. Leaving items on *top of car.*
4. Taking *Medications* at the right time
5. Leaving *Gloves* on tables; leaving *Napkin* tucked into belt, failing to *Zip up pants*
6. Misplacing *Multiple Items*, such as tools or gift-wrapping items.
7. Leaving *Children or Pets* in wrong place.
8. Others?

SOME KINDS OF TEMPLATES

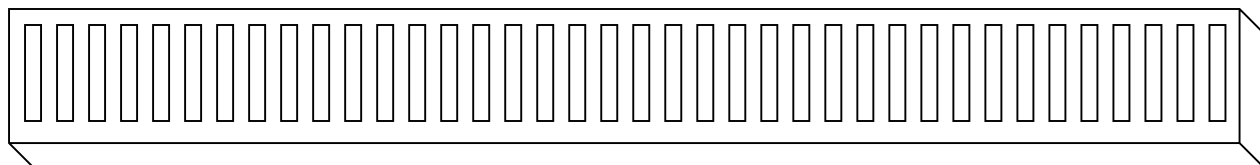
SPACES:



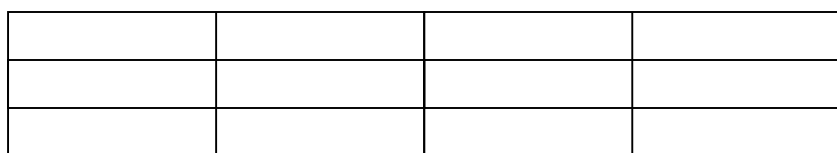
HOOKS OR PEGS:



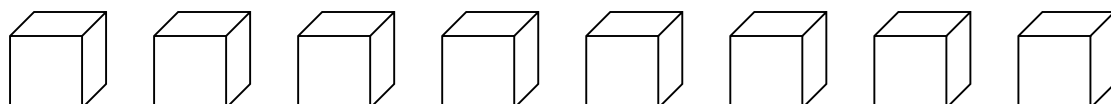
SLOTS:



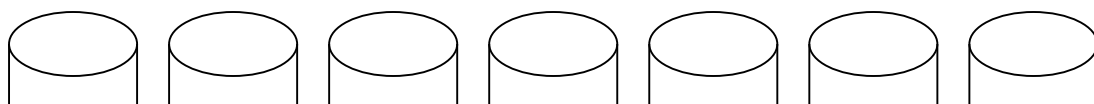
RACKS:



BOXES:



BOWLS:



**SHADOW BOX
OR INDENTATIONS:**

