



The Binding Road

**THE 150-YEAR
JOURNEY AND
EVOLUTION OF SAMUEL
FAY'S CREATION.**



A letter from the publisher



Dear Reader,

This playful book-series is a publication of AlligatorZone®, where students meet startups, an impact initiative as well as a community of life-long learners who explore the world through the eyes of the entrepreneurial problem-solver.

AlligatorZone® is proud to present this series of stories and related playful explorations designed to surface the delightful conversationalist that lurks within each of us, and to shine a light on our charismatic side, while we explore the world of future careers, and perhaps find a calling, sooner than later. This activity book can be enjoyed by students of ages ten through the teens. In fact, any life-long learner will enjoy this booklet.

If you choose to read this book aloud, enunciate like your favorite TV newscaster, actor or YouTuber. If you post it online outside of AlligatorZone, tag @alligatorzone or even #alligatorzone. If reading aloud, slow down so that audiences of all backgrounds may understand you clearly. This exercise fine-tunes our personality, making people pause and listen when we speak. That's because the knowledge in this book series will appeal to most people, and this exercise powers up style with substance.

These stories and explorations will make you look at the world through the eyes of an entrepreneur and observe opportunities to solve problems everywhere around you. Included with this story, is a set of questions to jog your thinking, and an activity for you to go on a journey of discovery, somewhat like an investigative journalist. After you read this book, you can continue learning about more lessons drawn from this book through additional programs offered by AlligatorZone online.

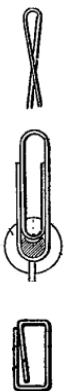
LIFE-LESSONS: With this exploration-book and program, readers will understand, among other things, that

- opportunities to improve things and make a difference exist all around us
- industries require a variety of skills
- there is something to learn even from the most mundane things around us
- the world is an encyclopedia, when we don't hesitate to ask questions
- with practice, one can learn to ask the right questions and solve problems
- persistent efforts can accumulate to grand outcomes despite humble beginnings
- your voice matters
- even learning to think like an innovator makes one a standout leader
- mindfulness is possible in everyday activities
- understanding a company and its leaders makes us better consumers and investors
- those who make a difference do it regardless of their circumstances, and
- curiosity, listening and observation are super-powers that we all have and can use everyday

Enjoy more advanced explorations and collaborative learning that we bring to you by extending stories from this book to an online environment as a member of AlligatorZone. Visit AlligatorZone.org for more.

Have fun with this story and exploration.

Ramesh Sambasivan
Instructional Designer
AlligatorZone® Academy
August 31, 2020



The Binding Road.

(To be read aloud to an audience at home, in school, or online)



This is as much a story of a remarkably simple invention of the late 1800's that we still use today, as it is of the many inventors who came up with various designs in search of success, including one inventor in Norway who was probably unaware that his invention was already available elsewhere and is still celebrated as a hero in his country.

It all began a long time ago, in the mid-1800's, in Franklin, Pennsylvania. There lived an inventor by the name of Samuel Fay, who observed that tailors and seamstresses used pins when they had to attach tags or tickets to pieces of fabric. By then, the safety pin had already been invented, which prevented seamstresses accidentally hurting themselves with the pins. However, the pins used to leave holes in the fabric, especially in delicate materials such as silks and lace. Samuel Fay wanted to solve this problem.

Luckily, he had a few things going for him. The technology that produced steel wires was already available at the time. The wires were strong, yet malleable — meaning, one could bend them without breaking them, and when a piece of wire was bent and twisted, it tried to snap back partially to its original position, and created a force which could grip thin pieces by pinching them, similar to pinching something with our fingers.

Samuel Fay took advantage of that elasticity of a wire, its torsion and friction, to invent a simple device that was a twisted piece of wire that could temporarily attach a piece of paper to fabric. In 1867, Samuel was granted a patent for his invention titled 'Ticket Fastener'. What is interesting is that Samuel describes the fabric pieces in the drawings in his patent as 'piece of goods', with a casual mention that 'piece of goods' could also mean paper. Thus Samuel B. Fay is considered the original inventor of the paper clip.

Since the patent was granted for such a simple design, others who wanted to manufacture paperclips started making their own designs. It is said that there were about 50 different designs of paper clips that were around. It is not known whether Fay was able to enrich himself much from his invention of 1867. It took a little over two decades after that for someone to obtain a patent for a machine that makes paperclips in a design that is closest to what we commonly use today. That someone was William D. Middlebrook of Waterbury, Connecticut. William's patent does not specifically describe the paperclip design, so it is assumed that the design already existed but did not yet have a machine designed for its mass production. William Middlebrook was awarded a patent for his machine in 1899 and the same year he sold the patent to a company called Cushman and Denison, who trademarked Gem paperclips five years later. Gem clips haven't changed much in design since that time. Interestingly, the Gem clip was never patented.

The plot twist in the story of the paperclip is that Johan Vaaler, a Norwegian inventor filed a patent for his square-shaped paper clip in Germany because there was no patent office in Norway. He was eventually granted a patent in the United States in 1901, during a time when the patent office granted patents for a variety of designs, but the Gem clip was already available in the U.S.A. Johaan is still celebrated in Norway as the inventor of the paperclip. There is a giant paperclip in Oslo, Norway, erected in his honor, though it is symbolic because it is in the design of the ubiquitous Gem paperclip. The paperclip was a symbol of resistance against occupying Nazi forces that the Norwegians wore on their lapels as a sign of solidarity.

The most recent attempt at designing an improved paperclip was by an engineering firm called Innoverce in the United Kingdom, who invented a device they called Klamt, aimed at replacing the stapler and the paperclip. Another brand Acco in the U.S. has a similar looking product called Klix. The one advantage of the traditional paperclip that they haven't been able to match is that the paperclip doubles as a versatile tool for us to Macgyver our way out of all sorts of mechanical troubles. The good old paperclip thus continues to be a part of our life. In the United States alone, 20 billion paperclips are said to be produced each year.

Remember that if you could go a hundred years back in time, you would find the same design of paperclips being used in offices and by seamstresses then, and when you are about to throw away a paperclip, pause for a moment to think of Kyle Macdonald who traded one red paperclip all the way up for an actual house.



Quiz your audience.

*This performance task is mainly for the younger members of AlligatorZone®.
(Your audience could be a family member, a classmate, a teacher or an observer).*



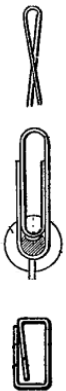
How many years ago was Samuel Fay granted a patent for his version of the paperclip? (Don't use a calculator)

What are the three physical characteristics of a single piece of wire that still make a paperclip so effective in gripping sheets of paper?

How many different designs of paperclips were said to be around?

Was the current design of a paperclip, commonly known as the Gem clip protected by a patent?

Next?



Continue to the next page for participating in an exploration, as part of the premium AlligatorZone plan or go online to our learning community and share your thoughts.

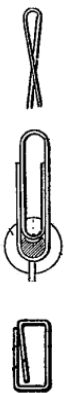


AlligatorZone[®] Exploration

*Note down your responses, start or join a discussion in our learners' online community.
(This performance task is for older students and life-long learners at AlligatorZone.)*



- 1) Observe a paperclip, flex it with your fingers gently and try to understand its physical properties. What would be a nice feature or quality to add?
- 2) Paperclips are used to temporarily attach or bind a few sheets of papers together? Can you name at least one other use to which a paperclip has been safely put?
- 3) What do you not like about a paperclip? In your observation, when does a paperclip fall short in its purpose of holding papers together?
- 4) A paperclip is not often used as a paperclip. It is like a Swiss Army Knife with many uses. If you could rename the paperclip, what name would you give it?
- 5) A paperclip is unsafe to leave in the hands of a child. How can you make it safer? [Hint: Think of all the qualities that make it unsafe.]
- 6) A paperclip has often been used for its symbolism. Think of at least one other simple product we use to signify our support for a movement or a cause? Think about what makes simple artifacts like the paperclip iconic.
- 7) Observe if a paperclip needs one hand or two to be used. Think if it can be used by the elderly who have arthritis.
- 8) Any product that tries to effectively replace the ubiquitous paperclip needs to be really inexpensive. In your view, what other qualities could help in making such a replacement possible?
- 9) Summarize your findings and observations, and post them on AlligatorZone's online learning platform. Share your findings and learn collaboratively with our online community of life-long learners. Visit AlligatorZone.org for more.



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Visit our website <https://alligatorzone.org>



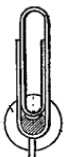
Tips for a Parent, Teacher or a Mentor

(For mentors and coaches using AlligatorZone's Premium Plans)



Here are time-tested tips for mentors who may want to steer the learning at home or in class.

- 1) **Keep it simple.** If the suggested activity calls for going to a specific location, try slipping the field activity into a routine trip to a store or a mall, and make it an 'oh-by-the-way-let-us-stop-and-look' kind of detour on an errand, rather than making a special trip for it. The idea is to remove any semblance of pressure to perform and focus purely on the joy of learning something new in a shared experience for a student and the teacher.
- 2) **Go Improv.** Avoid planning and scheduling in advance. Our goal with the activities is to help children make learning a life-long pursuit and a hobby, not a checklist item that will result in angst until it is completed and cleared.
 - Where an activity involves having a conversation with a stranger at a facility or a manager, consider making it a walk-in experience.
 - This improv-like approach, we believe, teaches the child to be comfortable with uncertain outcomes ("Sorry, the manager is out sick.") and improvise. They learn to play the hand they are dealt in the project (just like in life). They learn to find alternative sources of information and piece things together.
 - We believe it helps them learn how to focus on things they can control and not worry about things beyond their control.
 - We believe that it teaches them to find insights amid chaos and stay focused on the task at hand despite distractions.
- 4) **Learning, not shopping.** We strive to design activities that do not require making purchases. We strive not to make field activities specific to any particular brand. Use on-site observation to complete the learning with your student. Do not make a purchase for this purpose.
- 5) **Feel free to make a script, if it helps.** If you prefer to schedule a meeting in advance with a store manager or supervisor, prepare a script and encourage your student to be a part of the initial phone request while you stay on the call. Let the student own the process. In our recent summer workshop under the coach's supervision and guidance we had the 11-year old student conduct a market research. He told us later that it was the first time he had left a voice message and his first time on a business call. The sense of accomplishment and the confidence gained, were priceless.
- 6) **Let the child lead the conversation.** If the student is not yet ready to speak and start a discussion on topics in our activities, try making it a 3-way conversation and keep it casual, referring decision-making to the child ("What do you think?" or "Does that sound reasonable?") so everyone knows that the student is in charge of the discussion. After the first few times we often see kids lead and handle conversations with aplomb. Let there be no pressure on the student to produce a certain result. Let there be no pressure to use big words or business jargon. If a store owner or employee uses industry parlance or acronyms, seek clarification so the child knows there are no dumb questions.
- 7) **Going off-script is perfectly fine.** Allow the students to find alternative sources of information *under your supervision*, and let them piece things together for their learning. They might find something on TV or Netflix, Youtube, Pinterest or TikTok (if they already use those sites and apps) and be able to connect the dots to fresh insights for improved findings.



Last, but not the least, no matter what, keep it light-hearted and make it a spontaneous and shared experience for both, you and the student.

Sources

(These are the publicly available sources used to compile this story)

Sources:

Please visit AlligatorZone's online learning community to see links to the sources used to pull this story together.

You can also enjoy a curated collection of links to news reports, articles and videos for a deeper and wider understanding of the subject of the story.

