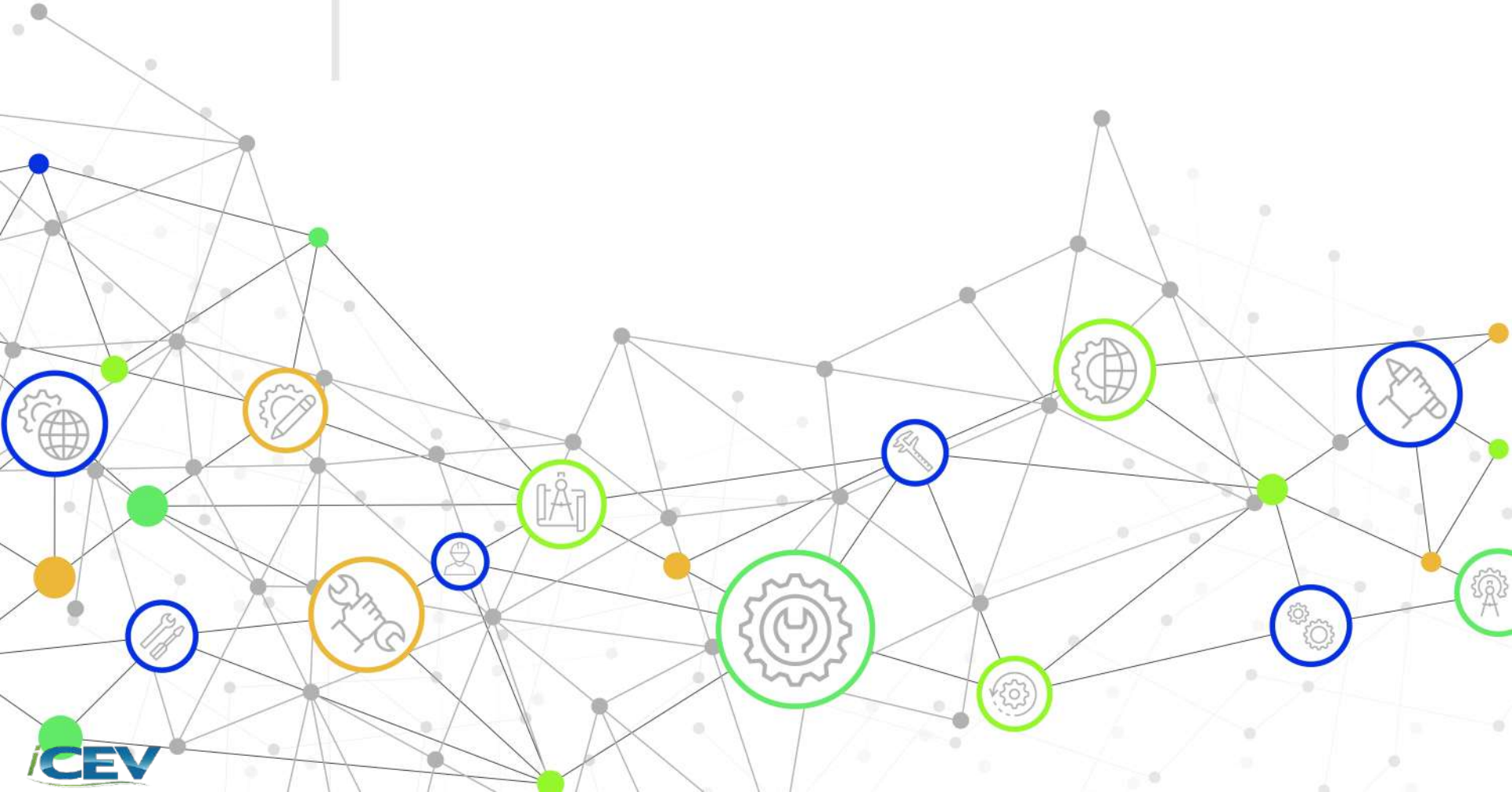
PROFESSIONALISM IN THE SCIENCES:
APPLIED ENGINEERING



Professionalism

- Is the conduct, behavior and attitude of someone in a work or business environment which includes:
  - interpersonal skills
  - time management
  - professional appearance
  - communication
  - collaboration

Honesty

- Is telling the truth and being sincere
- Examples include:
  - admitting to mistakes made in production
  - presenting ALL survey findings, including those which critique the equipment
  - speaking up with questions or concerns
  - completing procedures precisely as documented

Dependability

- Is the quality of being trustworthy and reliable
- Examples include:
  - completing assigned tasks in a reasonable amount of time
  - working carefully and fixing mistakes when they occur

Patience

- Is the capacity to accept or tolerate delay without becoming angry or upset
- Examples include:
  - performing the same inspection or test many times
  - redesigning prototypes repeatedly

Willingness to Learn

- Is the desire or readiness to acquire new knowledge and develop skills
- Examples include:
  - electrical engineers being able and willing to learn how to properly use new equipment
    - some brands of equipment are slightly different
    - new technology is constantly emerging

Continuing to learn keeps our brain working optimally and limits cognitive and memory decline as we age.

Enthusiasm

- Is intense and eager enjoyment or interest in performing tasks
- Examples include:
  - finding enjoyment in work which contributes to a positive work environment

Tact

- Is the sensitivity in dealing with others or difficult issues
- Examples include:
  - contributing to a positive work environment

Competence

- Is the ability to complete a task successfully or efficiently
- Examples include:
  - engineers must be skilled in operating a variety of electrical equipment
  - engineers must have the ability to complete a multitude of tests to identify flaws in electrical products

Responsibility

- Means maintaining a commitment to accomplishing a task
- Examples include:
  - engineers must ensure all projects comply with safety codes

Self-Motivated Professionals

- Possess the motivation to complete a task due to their own interest, without pressure from others
- Examples include:
  - engineers compile data and write reports on their own potential studies or projects

Time Management

- Is managing events and priorities to make the best use of the limited time in a day
- Results in:
  - more productive days
  - feeling less stressed
  - feeling more positive about accomplishments

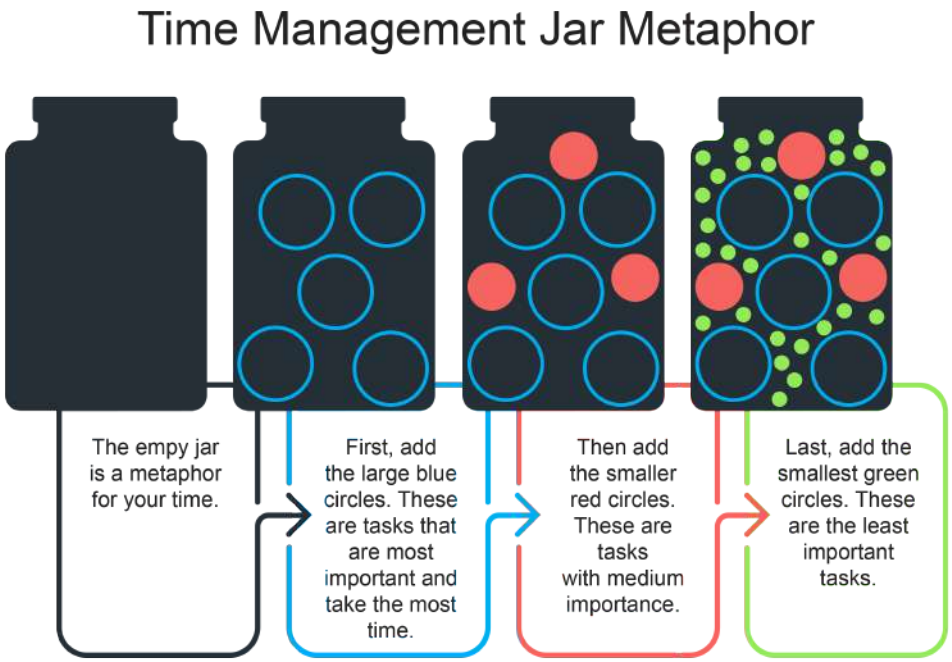
On average, two hours of an employee's day is spent recovering from distractions

Distractions

- Take away from the limited time in the day
- May include:
  - internet
  - phone
  - video games
  - social media
  - co-workers
  - emails

Prioritizing Tasks

- Is an excellent time management tool
- Ensures there is enough time to complete important tasks



The Empty Jar Metaphor can be used when thinking about which tasks to prioritize and how to fill our time. Large, important tasks should be completed first to ensure there is enough time for them.

Communication

- Is essential for successful team collaboration
- When developing a team, consider:
  - agreed upon channels for communication
  - how to maintain frequent communication

Non-Verbal Communication

- Adds meaning to the conversation without using words
- Includes the following types of body language:
  - gestures
  - posture
  - eye contact
  - facial expressions
  - proximity
  - voice

The handshake dates to ancient Greece and was used as a gesture of peace to ensure no weapons were brought to the meeting.

Obstacles with Collaboration

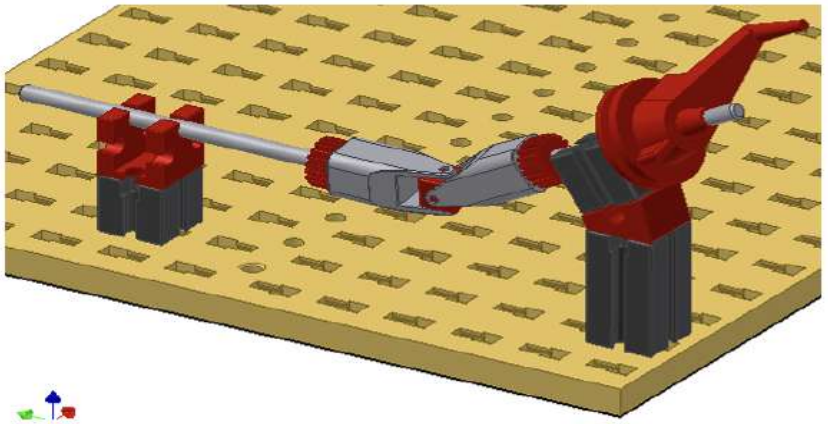
- Can often occur when working with others, some common obstacles include:
  - poor planning
  - lack of clarity or focus
  - incapable of managing conflict

1st Assignment – Mini Builds

Lesson 2.2 Build Sheets

Parts List

Universal Joint



1X 

2X 

1X 

1X 

1X 

1X

1X 

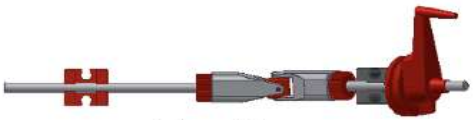
1X

1X 

1X 80 mm 

1X 60 mm 

Isometric View

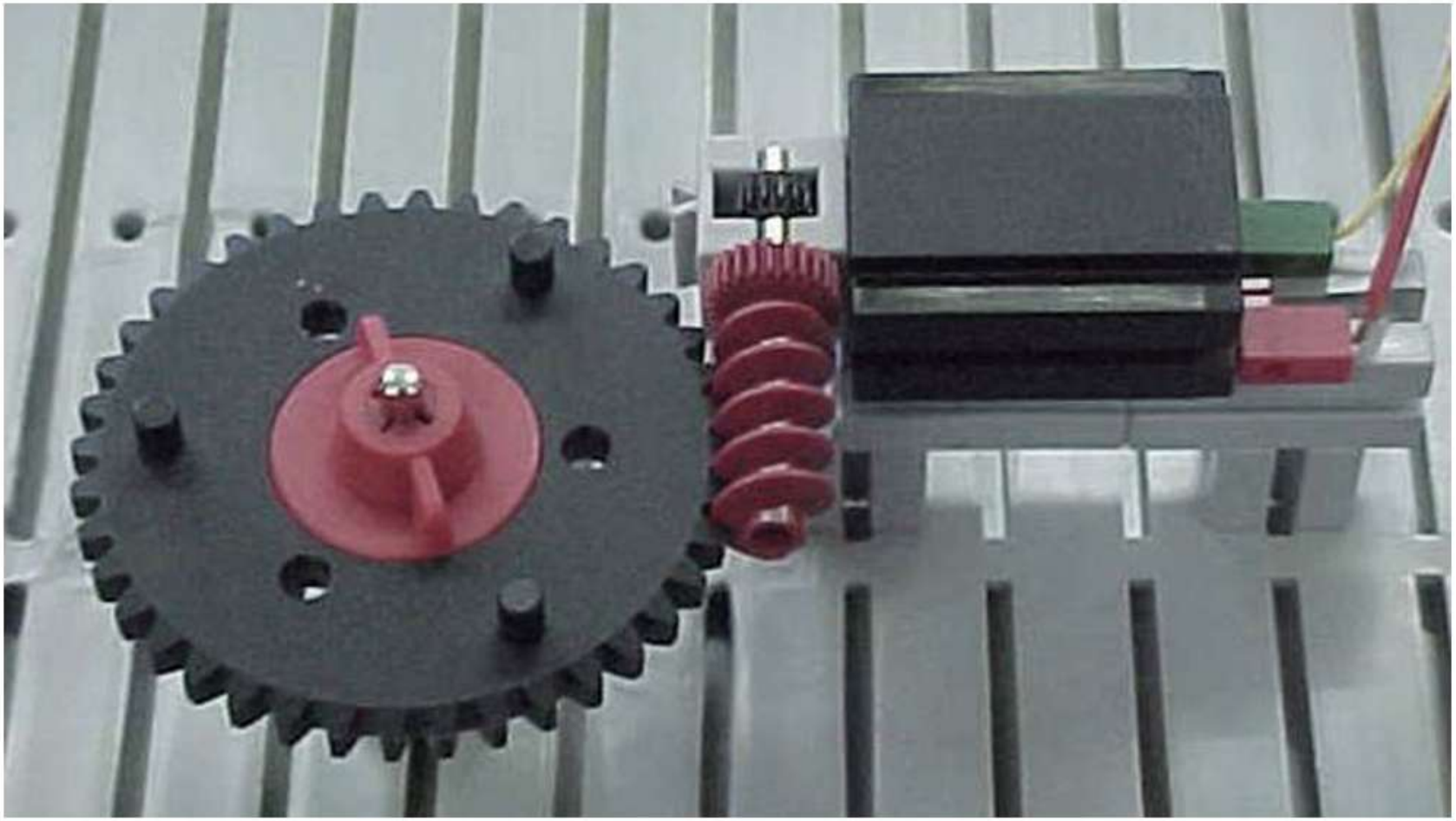


Top View

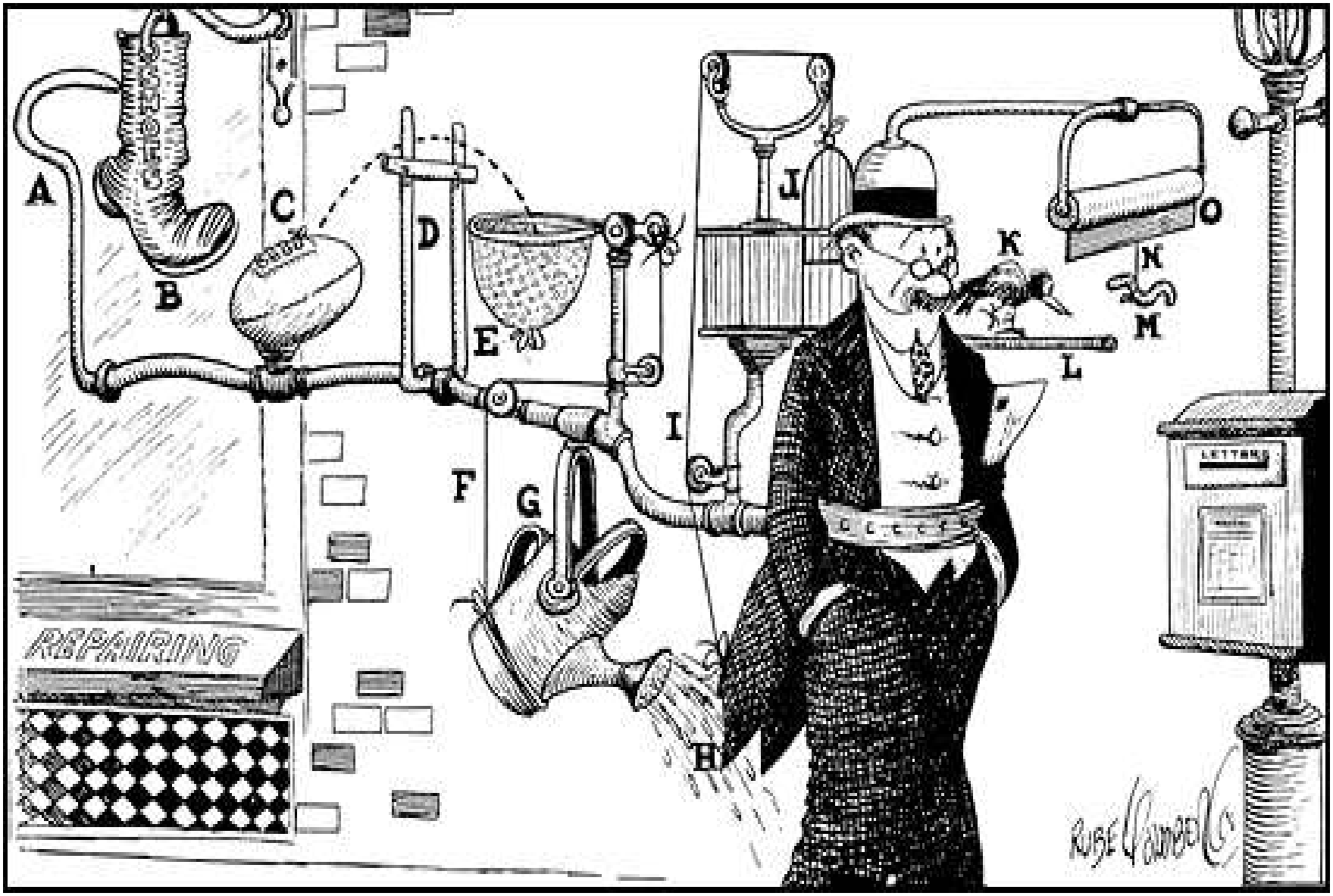
Side View

10 Daily Grades!

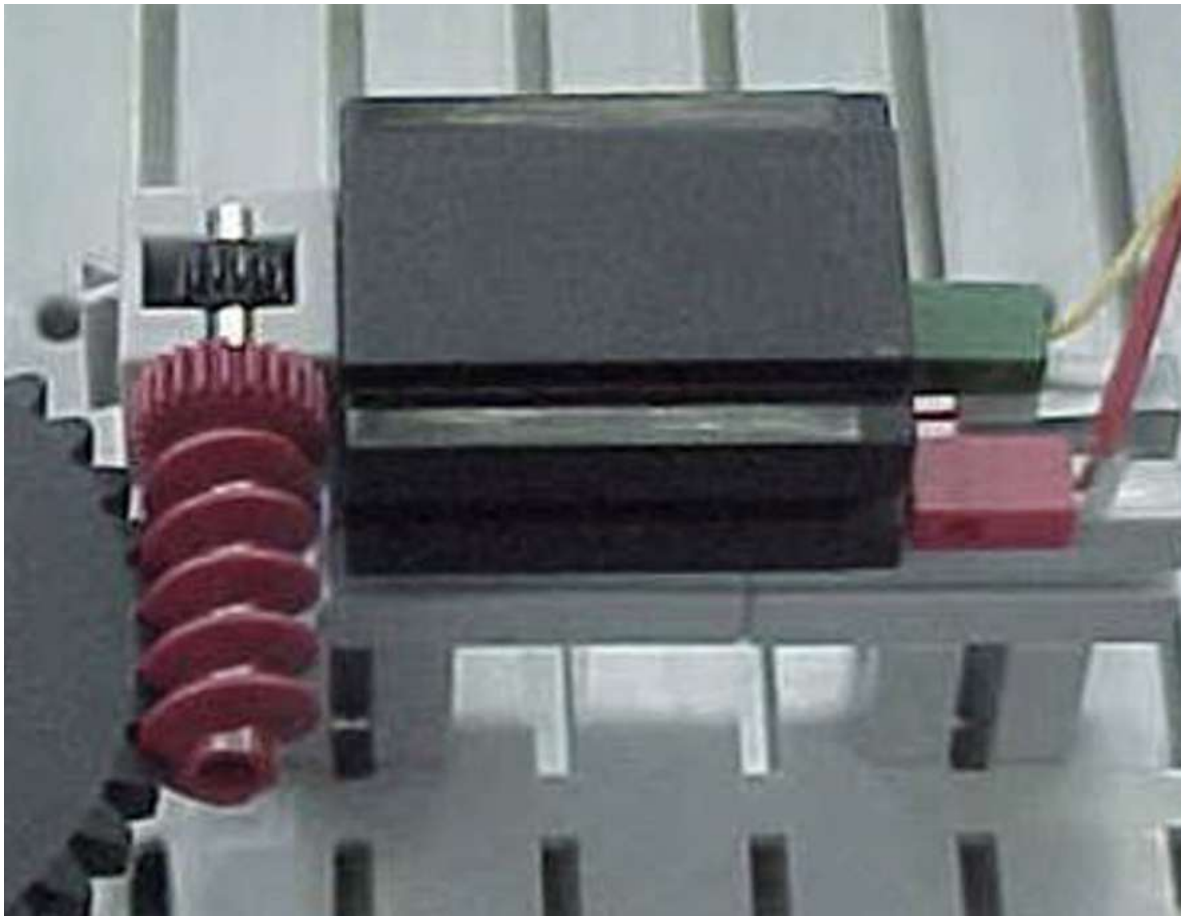
Motor Driven Worm Gear



Rube Goldberg – Test Grade

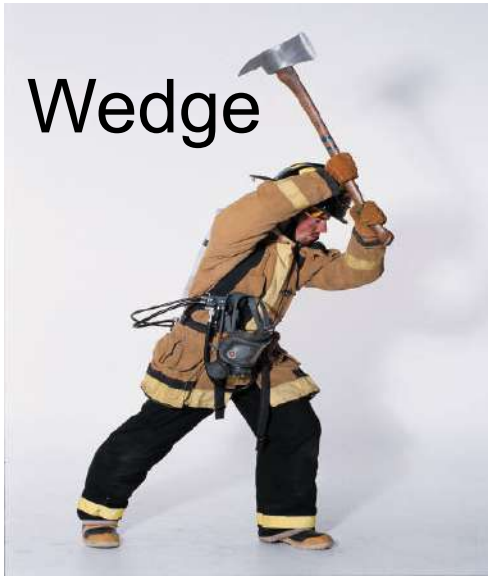


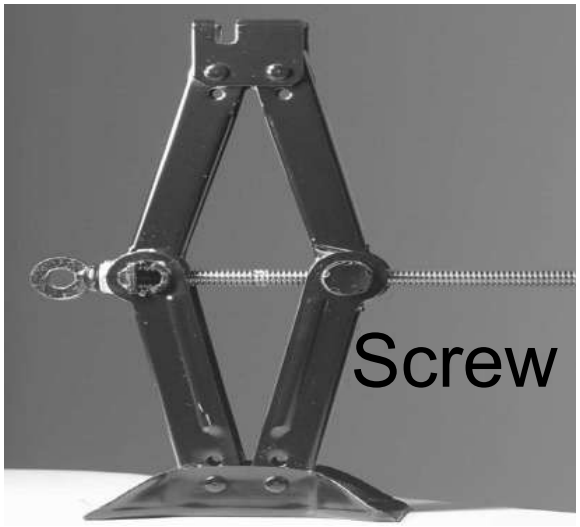
Motor with a switch



The Six Simple Machines

Inclined Plane

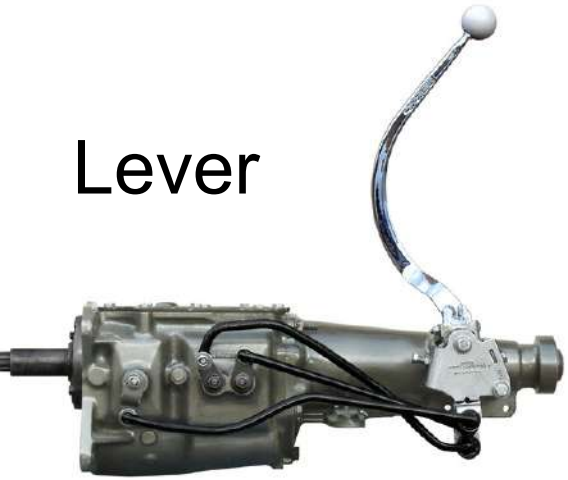




Wheel and Axle

Pulley

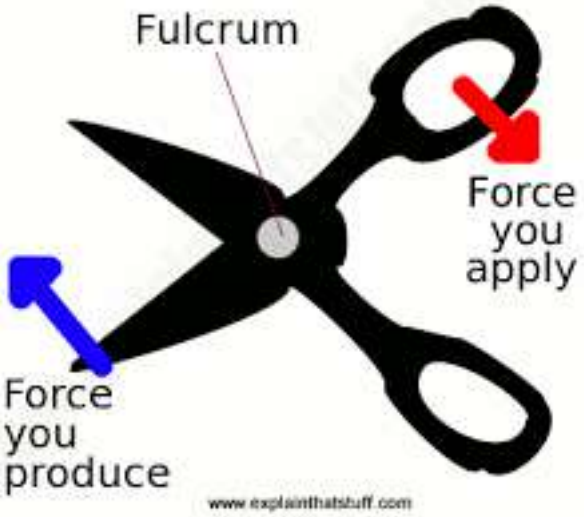
Lever



Lever


Effort
Force


VICTOR


Fulcrum
Force you apply
Force you produce
www.explainthatstuff.com

Wheel and Axle

Pulley

Inclined Plane

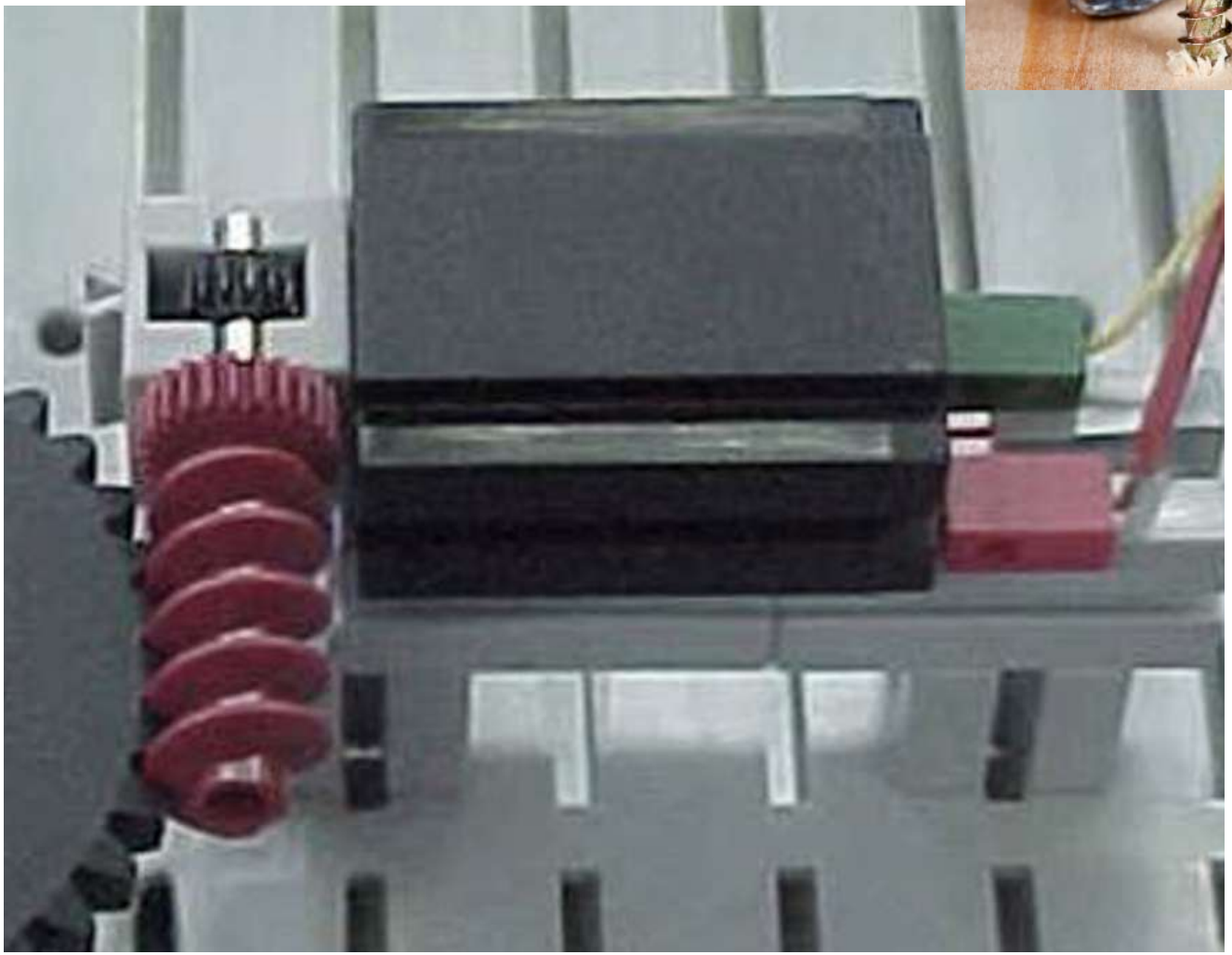
Ramp

Wedge

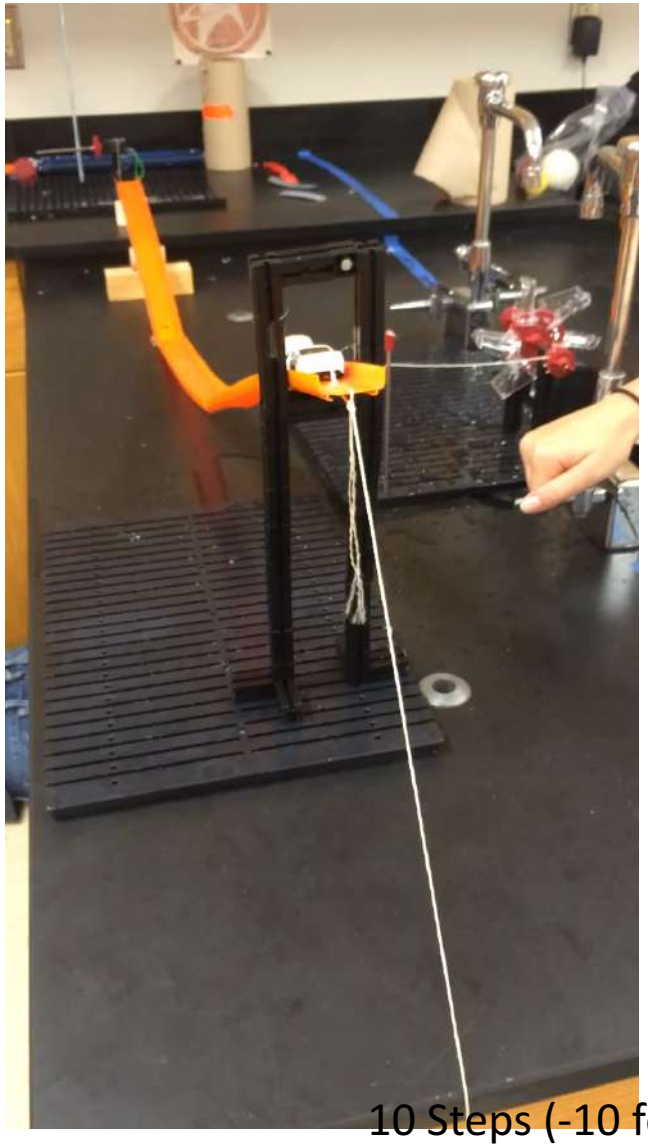
Axe

Knife

Screw



Rube Project - Test



- 10 Lever (see saw, mousetrap)
- 10 Pulley (cup and pulley)
- 10 Inclined Plane (ramp)
- 10 Wheel and Axle (hot wheels)
- 10 Wedge (razor, scissors)
- 10 Screw
- 10 Motor (with switch)
- 10 Step 8
- 10 Step 9
- 10 Step 10

10 Steps (-10 for each missing step)
Touch (-10 for each time you reach in and touch)