

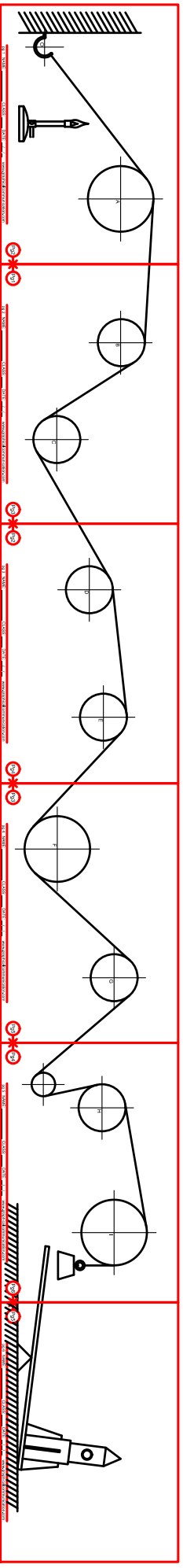
Rube Goldberg Machine

A Rube Goldberg machine is a machine intentionally designed to perform a simple task in an indirect or overly complicated method.

Complete this six page wide machine by constructing tangents to draw the missing string. Finish off the machine by drawing and rendering an object at the end of the springboard so that when the weight falls it will be thrown upwards!

To complete this project, you need to follow through the following steps:

1. Construct a tangent from point O to circle center A;
2. Construct a tangent internally between two circles of same diameter; B and C;
3. Construct a tangent touching externally between two circles of same diameter; D and E;
4. Construct a tangent touching internally between two circles of different diameter; F and G;
5. Construct a tangent touching externally between two circles of different diameter; H and I.



You can check out the following construction methods:

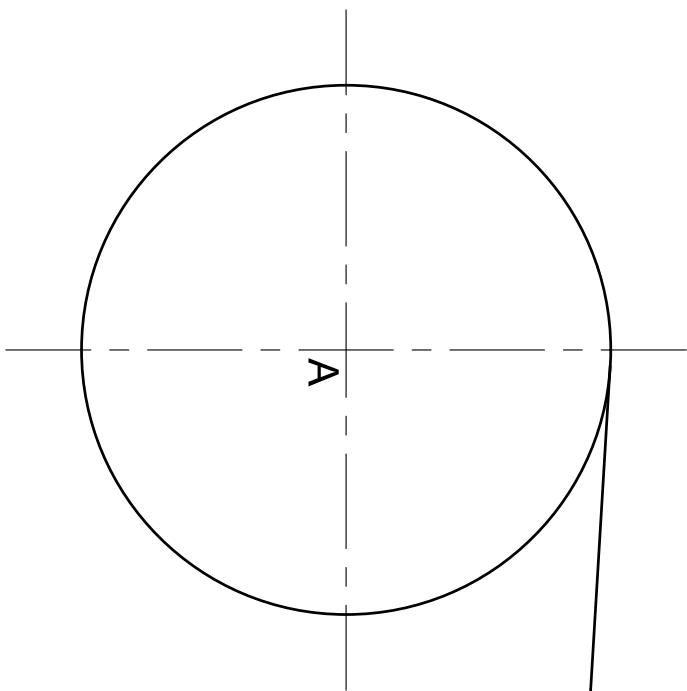
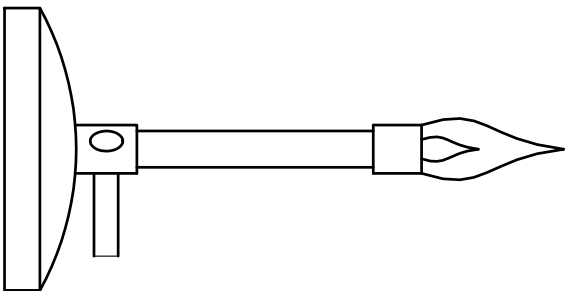
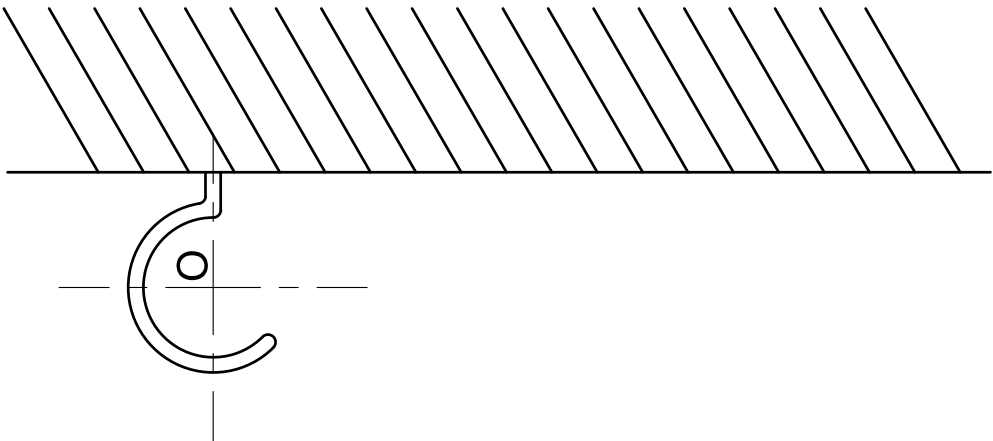
<https://youtu.be/bnLHwtEXXA> for a step by step video of the tangent from a point.

<https://youtu.be/VXqULStfMWak> for a step by step video of the tangent to equal circles.

https://youtu.be/pmqcdL_MVko for a step by step video of the tangent to unequal circles.

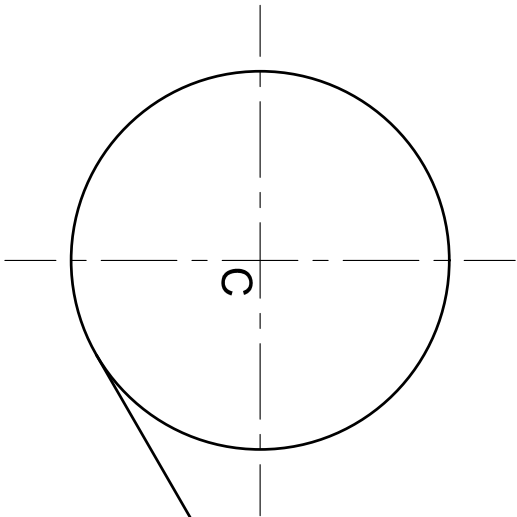
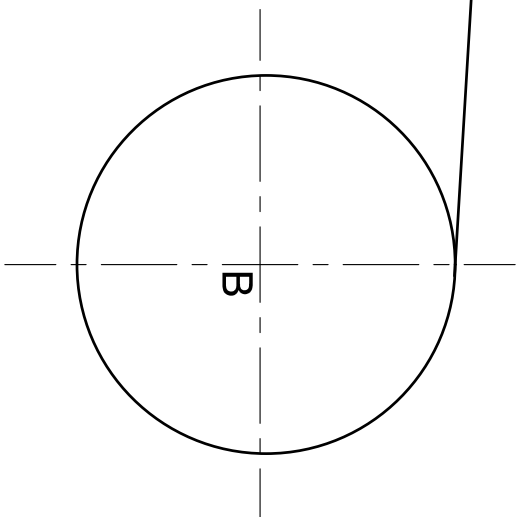
Rube Goldberg Machine - STARTER SHEET

Construct a tangent from point O to circle center A.



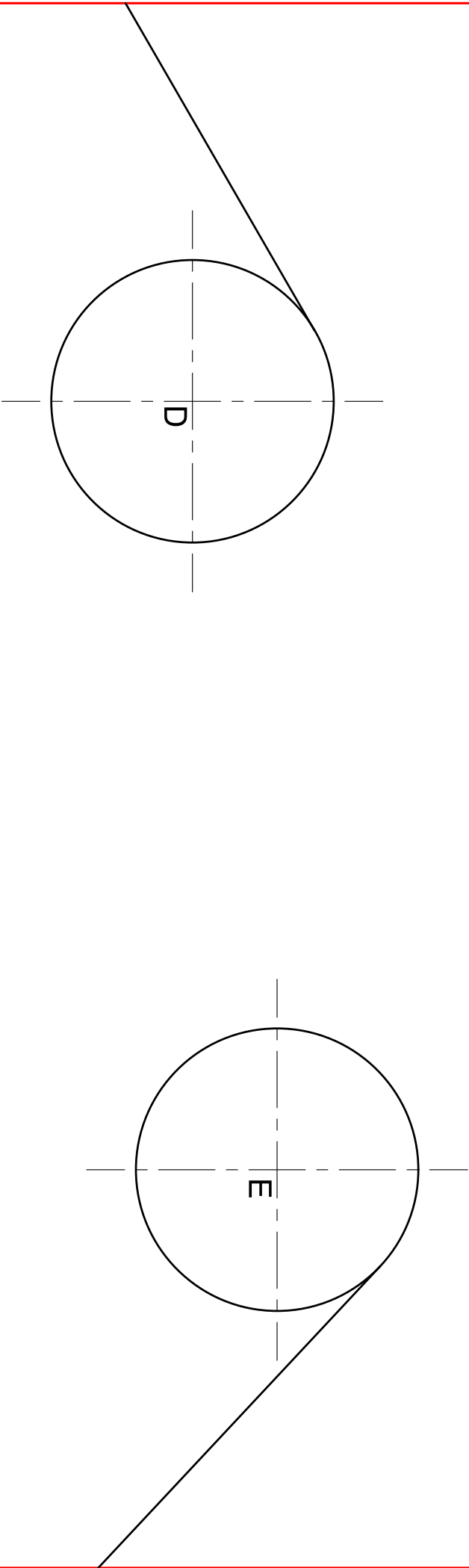
Rube Goldberg Machine - STARTER SHEET

Construct a tangent touching internally between two circles of same diameter; B and C.



Rube Goldberg Machine - STARTER SHEET

Construct a tangent touching externally between two circles of same diameter; D and E.

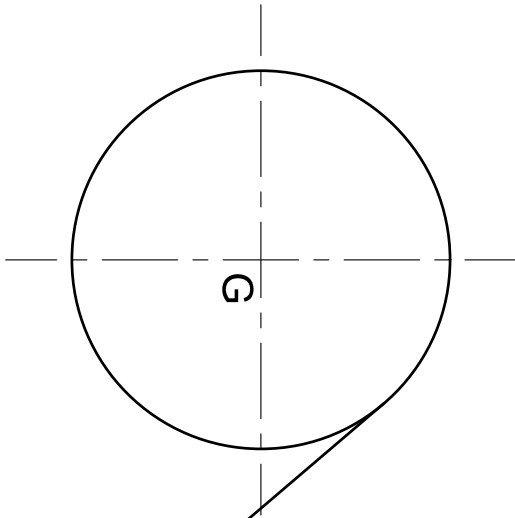
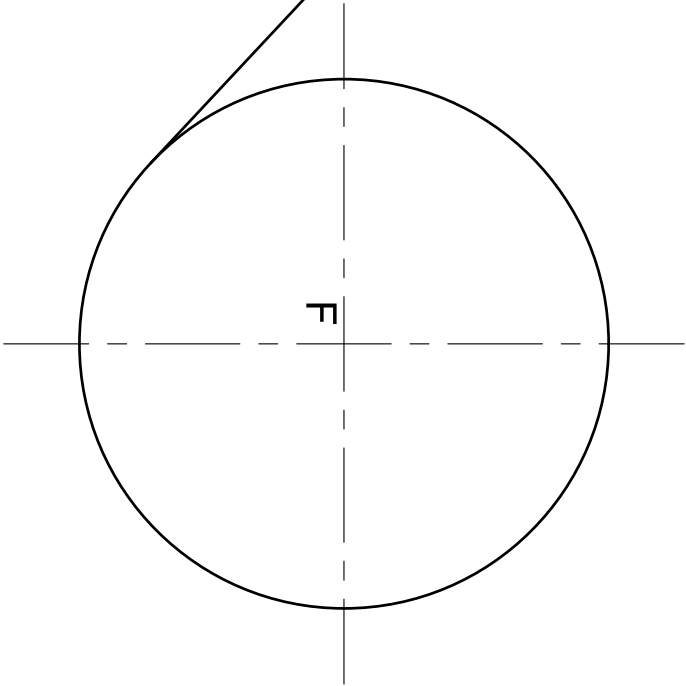


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Pg4

Rube Goldberg Machine - STARTER SHEET

Construct a tangent touching internally between two circles of different diameter; F and G.

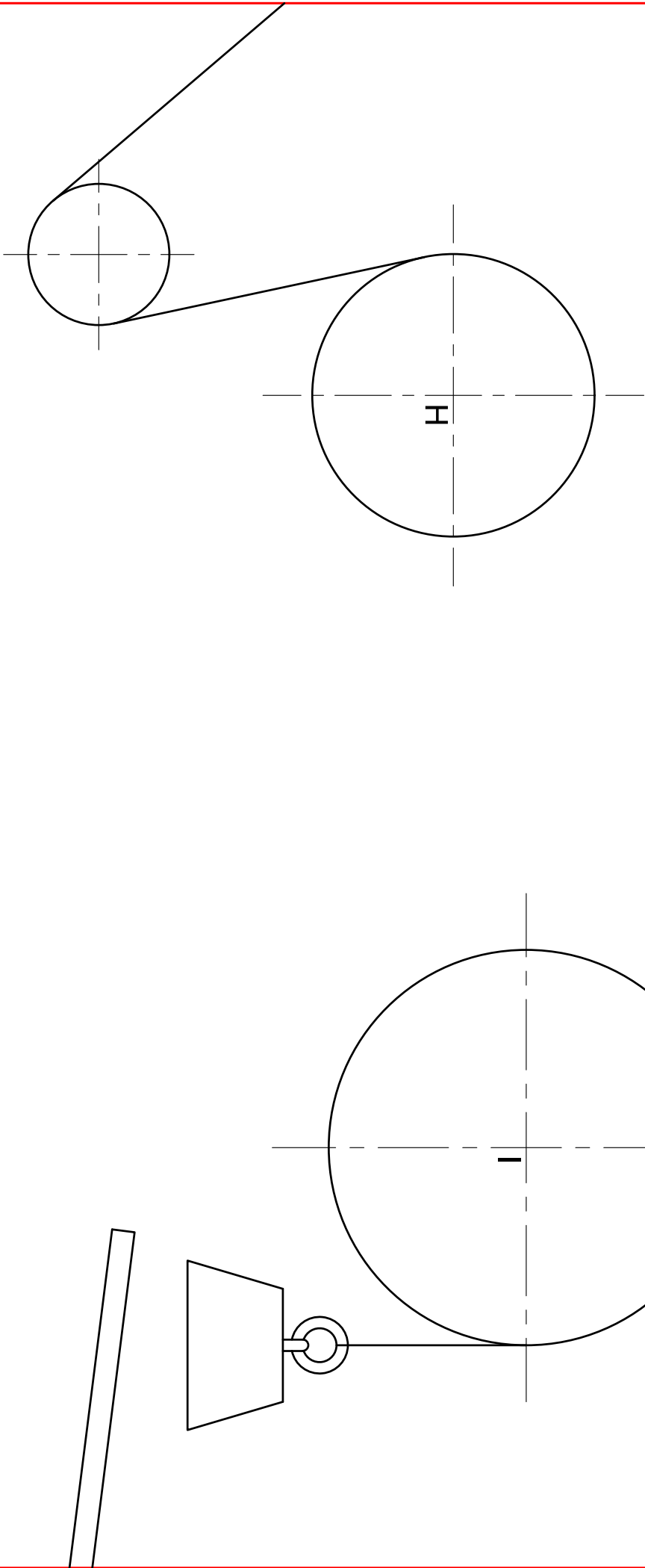


Pg3

Pg5

Rube Goldberg Machine - STARTER SHEET

Construct a tangent touching externally between two circles of different diameter; H and I.

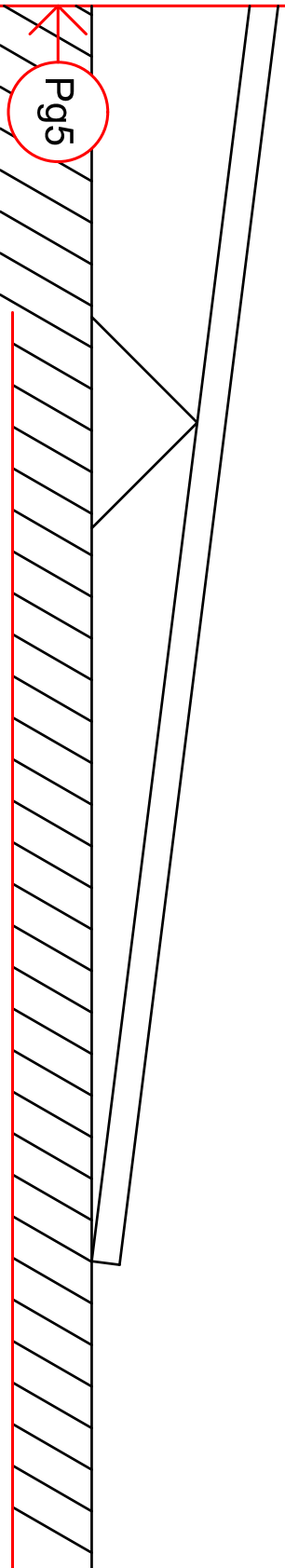


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Pg6

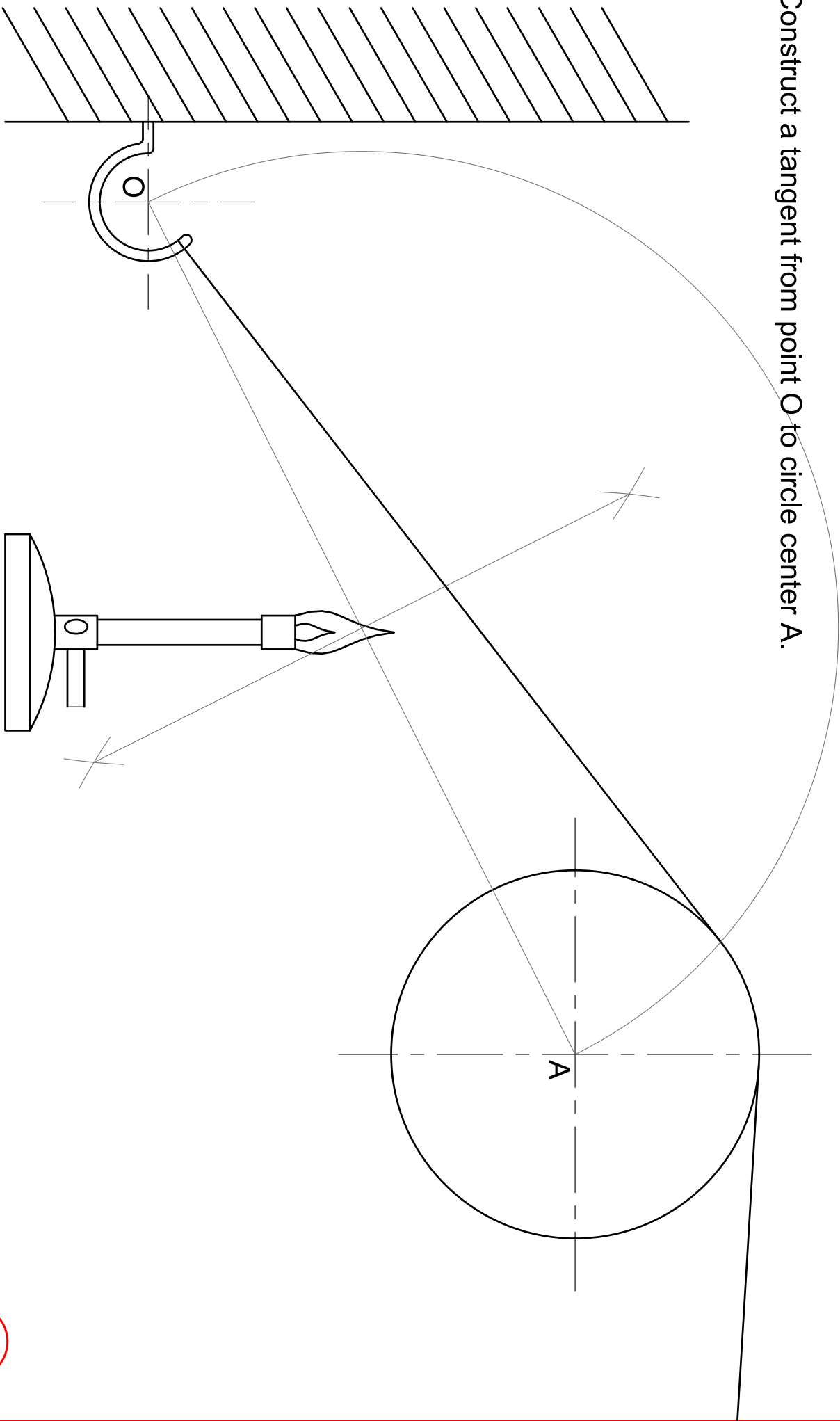
Rube Goldberg Machine - STARTER SHEET

Rube Goldberg, from San Francisco California, was an American cartoonist, sculptor, author, engineer, and inventor. He is most popular for his cartoon drawings of complex machines. Goldberg began sketching illustrations when he was just 4 years old, and at 11 he started attending professional drawing lessons!



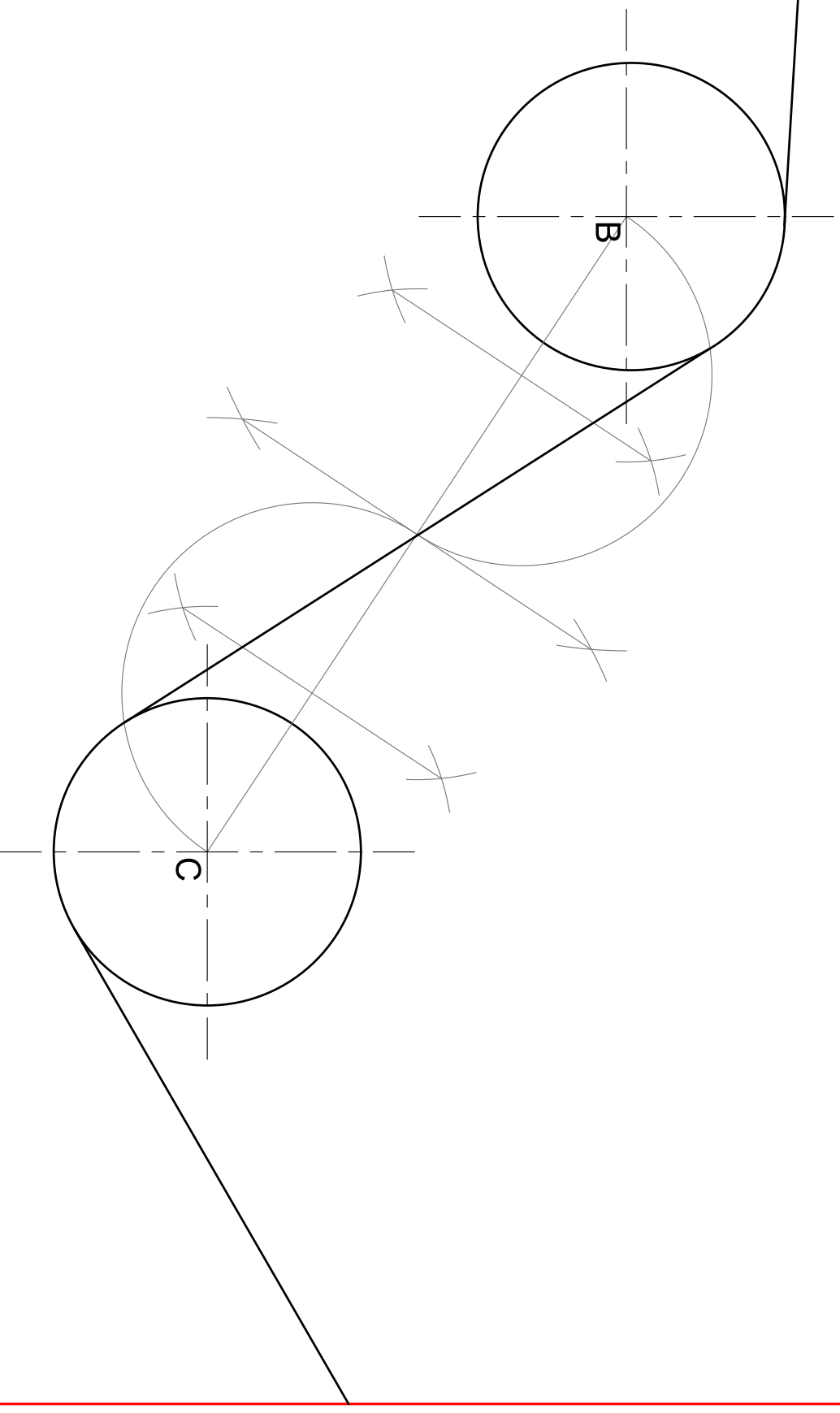
Rube Goldberg Machine - ANSWER SHEET

Construct a tangent from point O to circle center A.



Rube Goldberg Machine - ANSWER SHEET

Construct a tangent touching internally between two circles of same diameter; B and C.

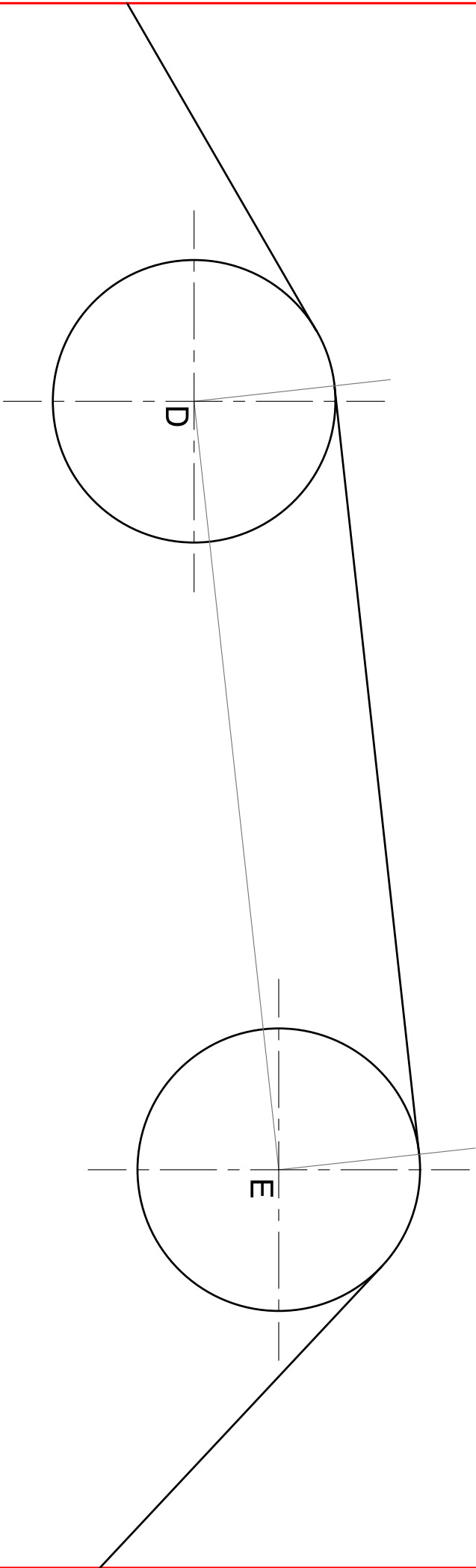


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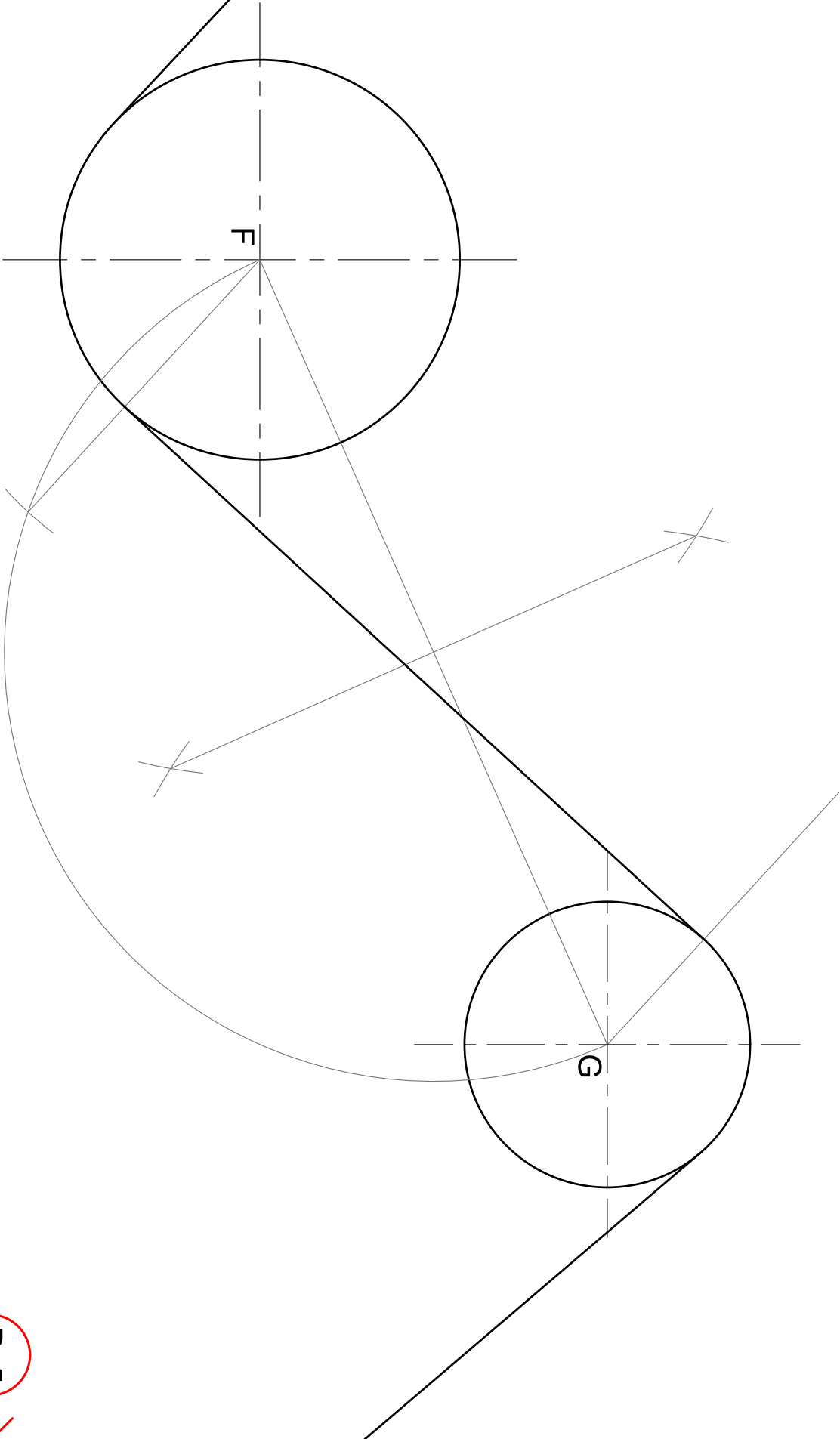
Rube Goldberg Machine - ANSWER SHEET

Construct a tangent touching externally between two circles of same diameter; D and E.



Rube Goldberg Machine - ANSWER SHEET

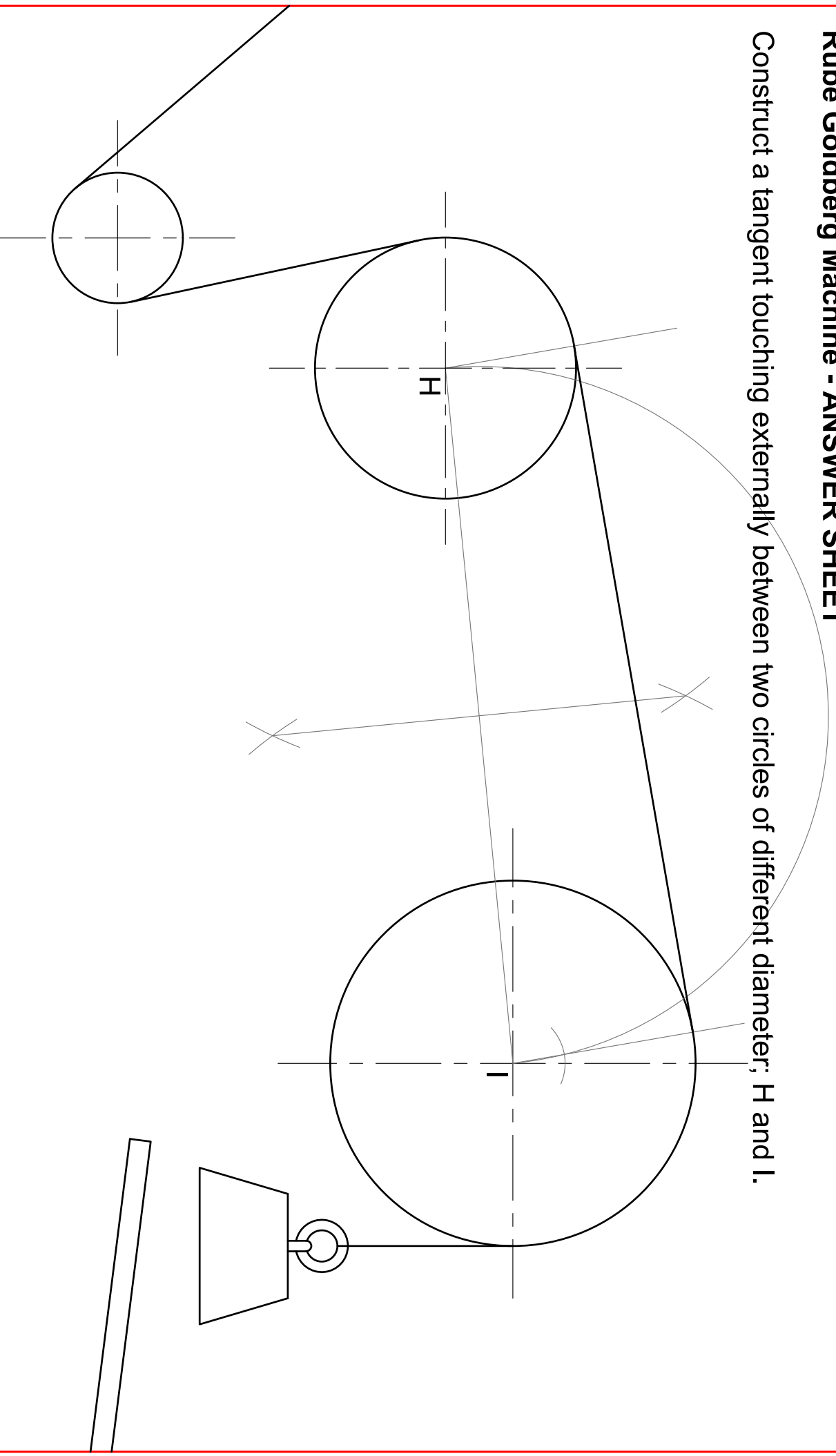
Construct a tangent touching internally between two circles of different diameter; F and G.



Pg3

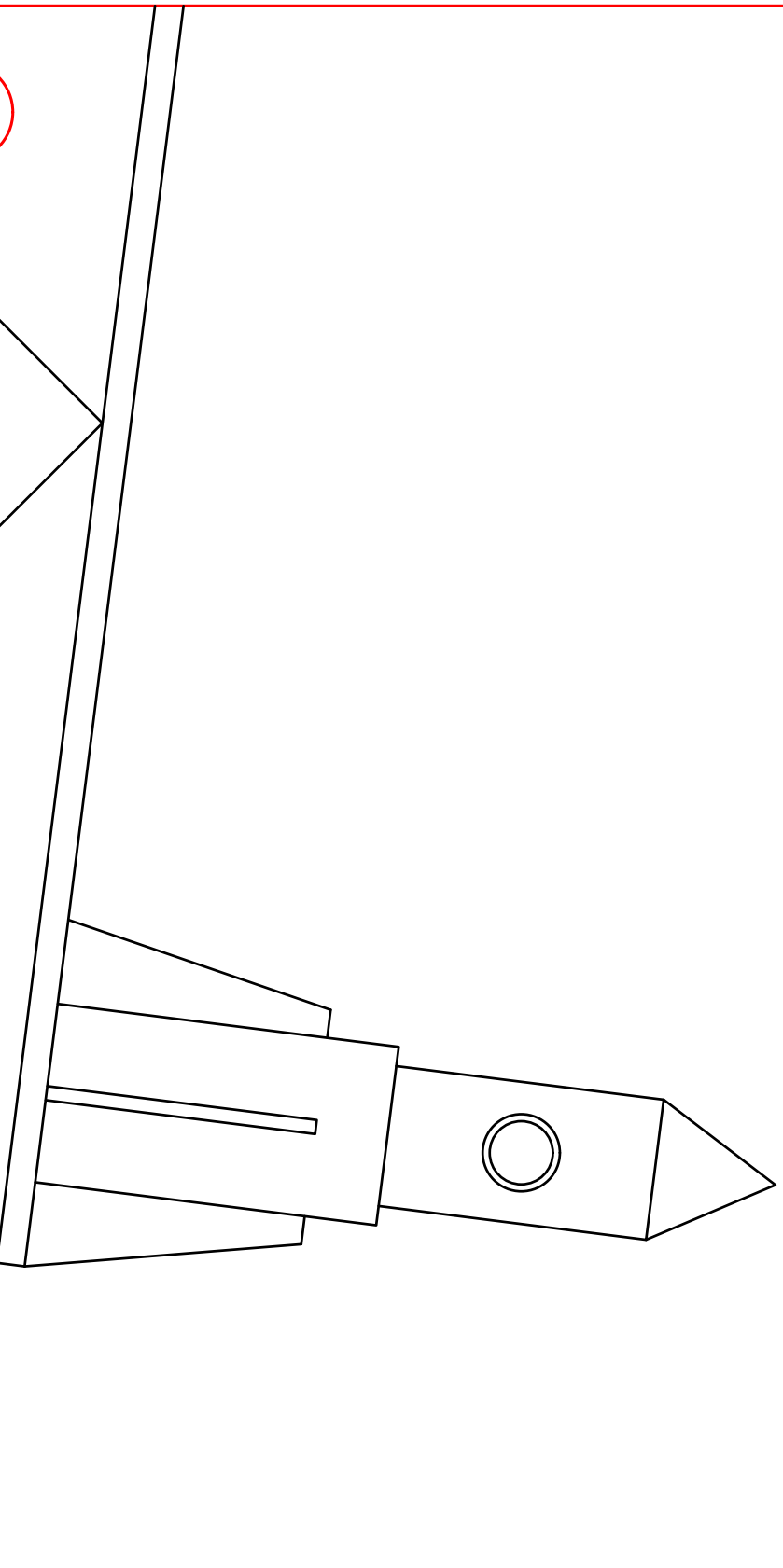
Pg5

Construct a tangent touching externally between two circles of different diameter, H and I.



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