

Stephan Weiss

Simulation of the Thomas Arithmometer 1820

This simulation is based on French Patent *Brevet N°1420 du 18 novembre 1820*.¹ As far as we know the machine described there has never been built. It seems that with this patent Thomas intended to claim only for the principle of his new invention. Nevertheless and in spite of unanswered questions that arose while having read the patent I tried to reconstruct Thomas' first ideas with the aim to see how one can work with it.

Some words about the design of the machine.

In comparison with later models of the arithmometer this type has no crank, the mechanism is driven by pulling a silk tape on the left side of the machine. During one single operation a number can be multiplied by 1, 2, up to 9. Later on Thomas added a crank on the right side and dropped this capability.²

The drawing of the whole machine appended to the named patent is without doubt only a sketch, at least the carriage is too small to cover the disks for the result.

Furthermore the machine shows disadvantages.

Instead of a reverser to switch between addition and subtraction the result register shows either normal (black) or complementary (red) digits.

The tens carry works only over five places - four places covered by the input device and the fifth place left to it. There is no signal if the highest place counts over 9.

The openings that show the result digits are not of circular shape and therefore hard to be cut. In all the following models of machines Thomas used round openings.

There are more inconsistencies and even errors inside the machine, in www.arithmometre.org they are discussed in detail.

1 Brevet N° 1420, pour une machine ou appareil appelé *arithmomètre*, propre à suppléer à la mémoire dans toutes les opérations d'arithmétique, Au sieur Charles-Xavier Thomas de Colmar, directeur et fondateur de la Compagnie du Phénix, à Paris.

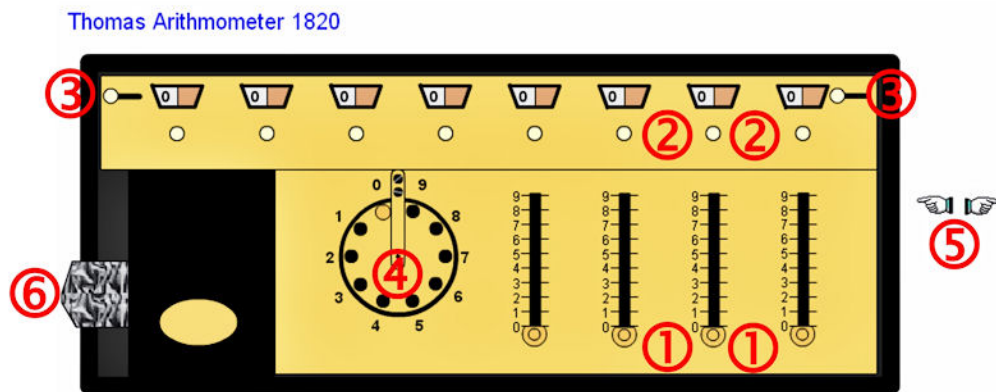
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<http://www.arithmometre.org/Brevets/PageBrevet1820FR.html>

2 The simulation of a later type arithmometer can be tried on my website <http://www.mechrech.info> at >Exhibition >Working Models.

The simulation is written for Adobe Flash® player vers. 8 or higher.
Controls for the simulation (see illustration below) are:

1. Knobs to set a number for input. Click, drag to and then drop at the desired position.
2. Knobs to rotate the disks that display the result or set them to zero, click on them.
3. Knobs to move a copper ribbon that shows respectively hides black or red numbers in the result register. Thomas uses two knobs. The only explanation is because a thin ribbon can only be pulled, not pushed.
4. The multiplier dial. To set the multiplier (a pin) from 1 to 9 click onto the appropriate hole. With multiplier 0 the system will lock.
5. Two virtual buttons that move the carriage to the left or to the right (an invention by me, otherwise the carriage cannot be handled), click on them.
6. The silk tape to drive the mechanism, click on it to pull.



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