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START WITH A GOOD IDEA

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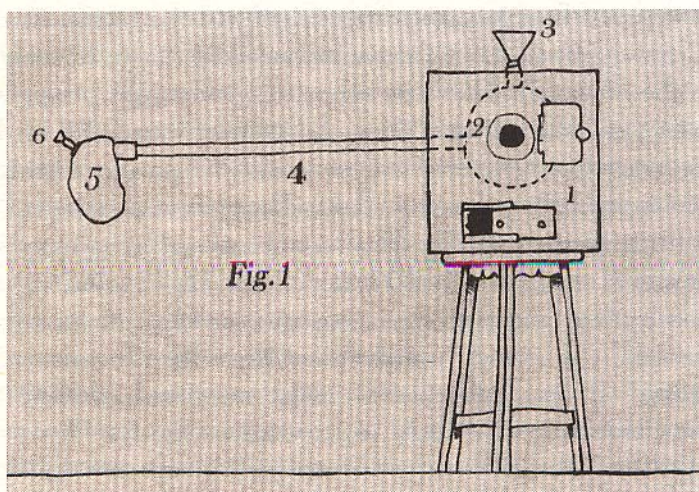
# JAMES WATT'S

## APPARATUS

FOR

## ADMINISTERING

## MEDICINAL AIRS



*Fig. 1*

*This artist interpretation of Watt's apparatus features a furnace for heating up materials. The patient would inhale the airs through a bag on the end of a long tube. (See endnote.)*

**1736-1819**

most important being the rotating engine, which could turn a wheel. All previous models drove a lever up and down, which had limited applications, such as pumping water out of mine shafts.

Watt was an instrumental cog in the wheel of the industrial revolution, but his creative genius had broader scope. At age 43, when he grew tired of copying out business letters by hand to send them to more than one person, he invented a copying machine. The machine worked by applying pressure to the writing against a dampened sheet of paper. Selection of the right types of ink and paper were important to the device's operation. A press took the copies off the device. This form of offset printing was a tremendous success, furnishing Watt with an income while the steam engine was in its infancy.

Watt also had a lifelong interest in the technical aspects of art and invented a tool for drawing in perspective, as well as another for making duplicates of sculpture or any other three-dimensional object. The latter he worked on in his later years, and he was still making improvements to it at the time of his death. He made contributions to civil engineering, including survey instruments and a jointed, flexible pipe to move water from a natural spring across the River Clyde to supply the houses of Glasgow. He was a decent scientist as well, and there is an argument to be made that he was the first person to work out the composition of water.

Watt did have some failures, though they were few and far between. He described the nature of failure in his profession in conjunction with a new idea thus, "I have been turning some of my idle thoughts lately upon an arithmetical machine. I intend to make an attempt to make it; I say an attempt, for though the machine is exceedingly simple, yet I have learnt by experience that in mechanics many things fall out between the cup and the mouth." Another early idea for a circular engine — "a wheel with a hollow rim which could be filled with steam, and three steam-pipes acting as spokes" — was also a dead end.

Much has been said about the personality of the successful inventor: their drive to create, their tenacity in the face of adversity, and