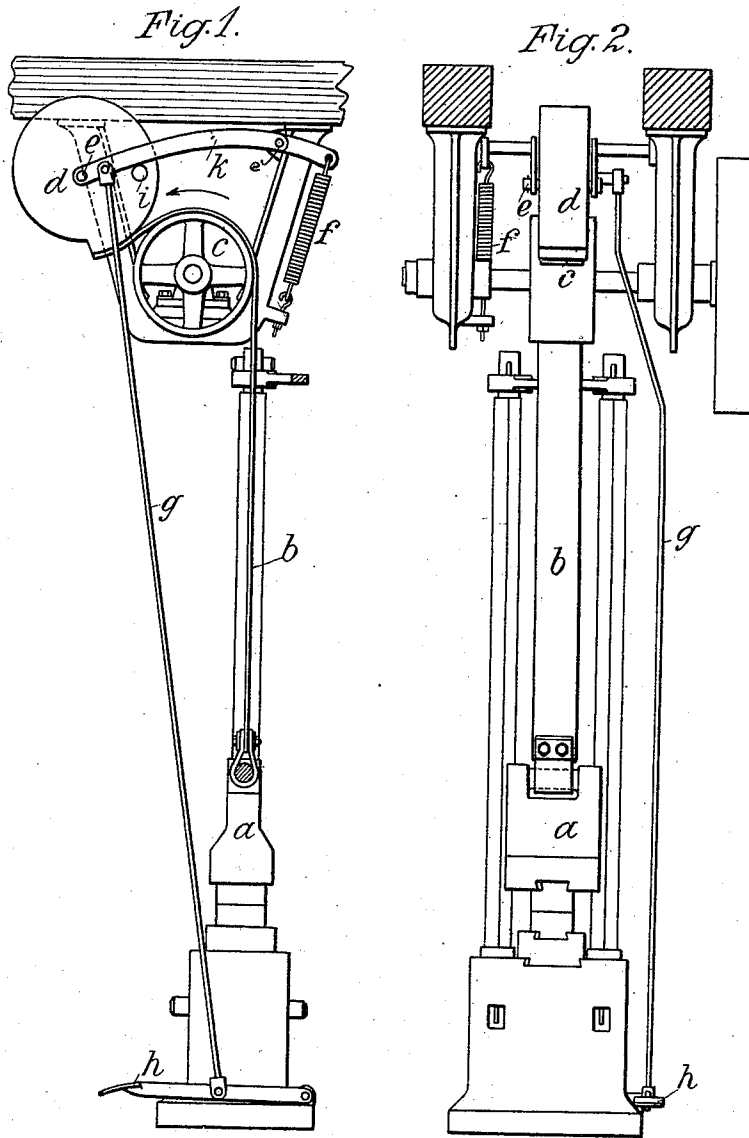


A. KOCH.  
DROP HAMMER.

APPLICATION FILED JAN. 24, 1911.

994,936.

Patented June 13, 1911.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

ADOLF KOCH, OF REMSCHEID-VIERINGHAUSEN, GERMANY.

## DROP-HAMMER.

994,936.

Specification of Letters Patent. Patented June 13, 1911.

Application filed January 24, 1911. Serial No. 604,467.

*To all whom it may concern:*

Be it known that I, ADOLF KOCH, manufacturer, a subject of the King of Prussia, residing at Lösenbüchelerstrasse 40, Remscheid-Vieringhausen, Kingdom of Prussia, German Empire, have invented new and useful Improvements in and Relating to Drop-Hammers, of which the following is a specification.

Drop hammers are known in which the hammer head or block is secured to the end of a belt which passes over a belt pulley (lifting pulley) arranged above the hammer and is adapted to rotate continuously, the lifting of the hammer being produced by the frictional engagement of a loose cylindrical roller with the said pulley. So long as the engagement continues the hammer is lifted. Now it is very difficult to adjust the mechanism so that the hammer will reach the desired height at the right moment it being hardly ever possible for the smith to do so as his attention is necessarily mainly directed to the work. Even when a special workman is intrusted with the actuation of the pressure roll, great care and attention on his part is necessary.

Now in accordance with the present invention the cylindrical roll referred to above is replaced by a cam-shaped roll, that is to say a roll in which the various portions of the periphery are not all equidistant from the axis the radii gradually decreasing from a certain maximum. The result is thereby attained that the height to which the hammer can be lifted is in proportion to the amount by which the shaft on which the pressure roll rotates freely is caused to approach the lifting pulley. The lift is therefore no longer dependent upon the time during which the belt is pressed against the cam pulley but upon the extent to which the pressure roll is caused to approach the cam pulley. The certainty of the operation of the hammer is thereby so much increased that in most cases its operation need not be intrusted to a special workman as the smith himself is well able to attend thereto.

An embodiment of the invention is illustrated by way of example in the accompanying drawing in which:

Figure 1 is a front elevation and Fig. 2 is a side elevation of a hammer comprising the novel lifting mechanism.

The belt *b* is secured to the hammer *a* which moves vertically upward and downward between the guide pillars; it is carried over the lifting pulley *c* which rotates in the direction indicated by the arrow, its end being secured to the point of maximum radius of the cam *d*, the periphery of which is somewhat greater than the maximum lift of the hammer. The said cam rotates loosely on a bolt *e* which is mounted on a lever mechanism *k* rotatable on *e'*, it is held away from the cam pulley by a spring *f*. The lever is connected with the operating handle or pedal *h* by means of a rod *g*. By acting upon this operating handle or the like the shaft of the pressure roll or cam *d* is caused to approach the lifting pulley, the hammer rises gradually and in exact correspondence with the movement of the operating handle as the distance of the periphery of the pressure roll from its axis gradually decreases. Upon the movement of the operating handle in the opposite direction the hammer will of course move downward to a corresponding extent. It is therefore possible to lift the hammer to any desired height with certainty and to allow it to fall from this height either freely or to fall gradually.

When the hammer drops the pressure roll is returned by the belt into its initial position; a stop *i* prevents the cam from rotating retractively to an excessive extent. It is not absolutely necessary to secure the belt to the pressure roll or cam but its end can be fixed at any other suitable place; in this case, however, a spring or the like must be provided for automatically returning the pressure roll to its initial position when the hammer drops.

I claim:

1. A device of the character described,

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comprising a pulley, a belt engaging the same, a hammer suspended from the belt, a cam in proximity to the pulley, and means for setting the cam against and away from  
5 the pulley.

2. A device of the character described, comprising a pulley, a belt engaging the same, a hammer suspended from the belt, a spring controlled lever mounted in proxim-

ity to the pulley, a cam pivoted to the lever, 10 and means for actuating the lever.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ADOLF KOCH. [L. s.]

Witnesses:

ALFRED HENKEL,  
WALTER VONNEGUT.

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