

(No Model.)

W. SCHRANZ.  
CRUSHING MACHINE.

No. 461,050.

Patented Oct. 13, 1891.

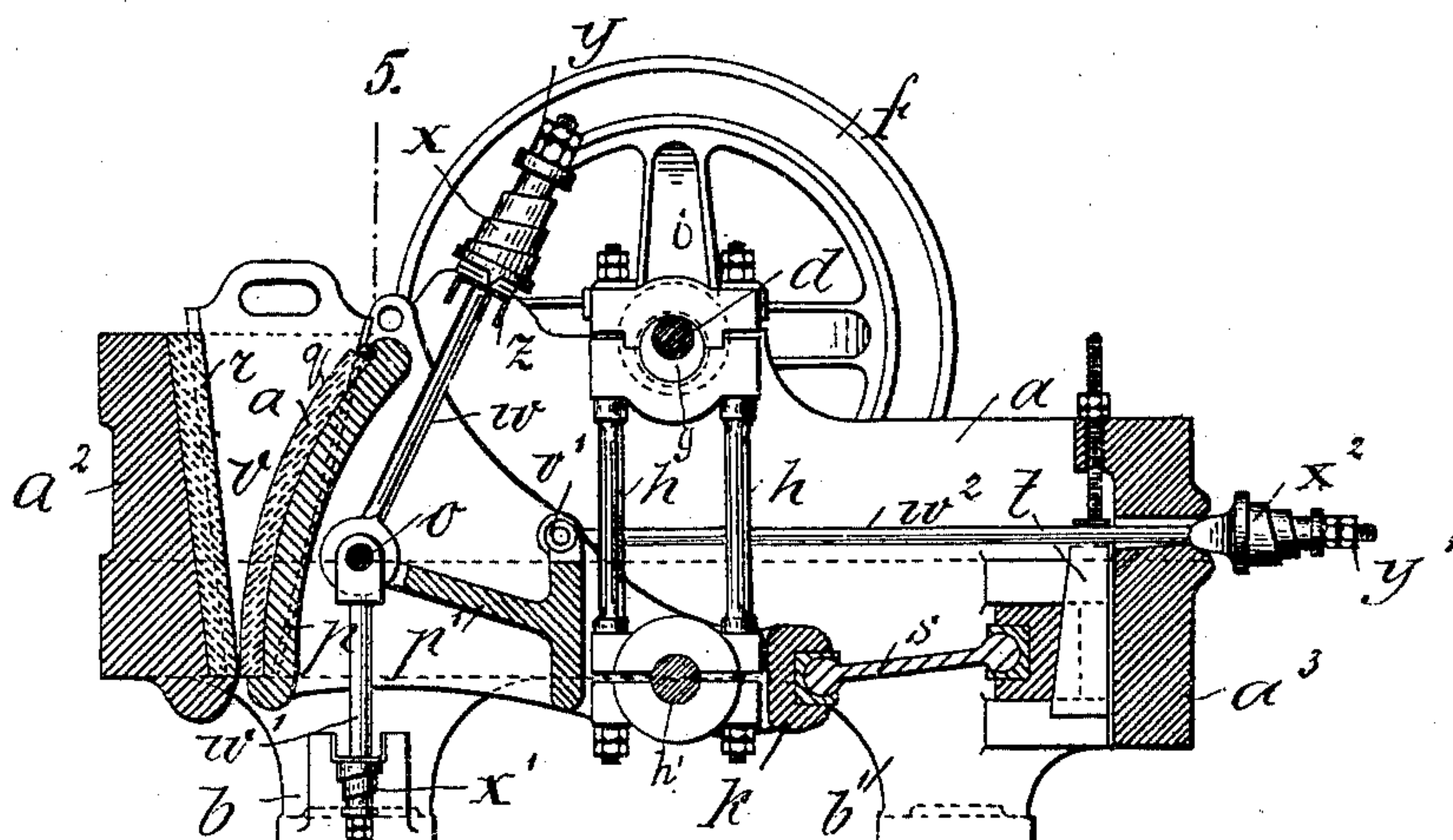


Fig. 1

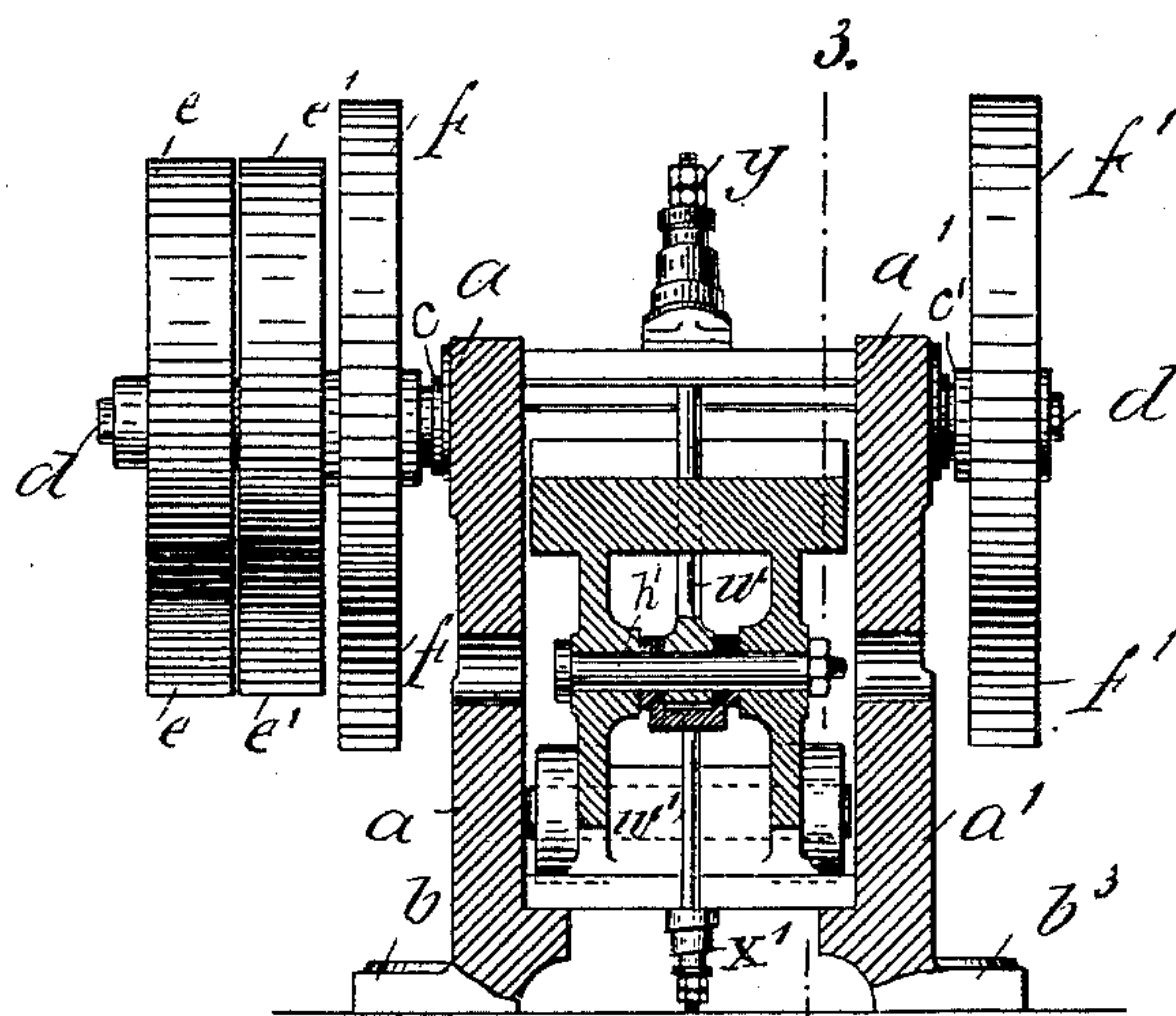


Fig. 2

Witnesses:  
Gly. Roedker  
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Inventor:  
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Attorney.



# UNITED STATES PATENT OFFICE.

WILHELM SCHRANZ, OF LAURENBURG, GERMANY.

## CRUSHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 461,050, dated October 13, 1891.

Application filed September 20, 1890. Serial No. 365,694. (No model.) Patented in Germany August 19, 1884, No. 30,477; in England August 3, 1886, No. 9,930, and in Italy December 14, 1886, No. 20,893.

*To all whom it may concern:*

Be it known that I, WILHELM SCHRANZ, a subject of the King of Prussia, German Emperor, and a resident of Laurenburg-on-the-Lahn, in the Province of the Rhine, Germany, have invented certain new and useful Improvements in Crushing-Machines, (for which I have obtained patents in Germany, No. 30,477, dated August 19, 1884; in England, No. 9,930, dated August 3, 1886, and in Italy, No. 20,893, dated December 14, 1886;) and I do hereby declare that the following is a full, clear, and exact specification.

My invention relates to crushing-machines having a fixed and a movable jaw; and it consists in the construction and combination of parts, as hereinafter described and claimed; and in order to make my invention more clear, I refer to the accompanying drawings, in which similar letters denote similar parts throughout the different views, and in which—

Figure 1 is a longitudinal section through the machine, taken on the line 3 4 of Fig. 2. Fig. 2 is a cross-section through the same machine, taken on the line 5 6 of Fig. 1.

The machine is constructed as follows: The frame, made in one casting and consisting of the two sides  $a a'$ , of the front  $a^2$ , and of the rear  $a^3$ , is supported by four standards  $b$ . The sides  $a a'$  are provided with bearings  $c c'$ , in which a crooked shaft  $d$  may be turned by means of pulleys  $e e'$ , said shaft  $d$  also having two fly-wheels  $f f'$ . The crooked shaft  $d$  bears on its midst an eccentric  $g$ , serving for raising and lowering the downwardly-extending connecting-rods  $h h$ . The sector  $p p'$  is held in position at its front end by a rod  $w$  and at its rear end by the under cross-blocks of the rods  $h h$ . Said blocks are connected with the two vertical ribs of the sector by a short axle  $h'$ , and the rod  $w$  above mentioned is fastened to the sector by another short axle  $o$ . Rod  $w$  is at its upper end provided with a spring  $x$ , which is held in position by two female screws  $y$ , and rests upon a cross-piece  $z$ , connecting the sides  $a a'$  of the frame.

The working face  $q$  of the movable jaw, as well as the working face  $r$  of the stationary

jaw opposite thereto, may be made of either metal or stone, according to the character of the ore to be crushed.

Another elastic rod  $w'$  is also attached to the axle  $o$ , and is at its under end provided with a spring  $x'$ , tending to draw the sector  $p p'$  downward, but being hindered therefrom by the reaction of the upper spring  $x$  at the top of rod  $w$ . A third elastic rod  $w^2$  is attached to part  $p'$  of the sector by an axle  $v'$ , and extends horizontally through the rear  $a^3$  of the frame. Said rod  $w^2$  is furnished at its rear extremity with a spring  $x^2$ , pressing at one side against the rear  $a^3$  and at the other against two female screws  $y'$ , fastened to rod  $w^2$ . The sector  $p p'$ , thus elastically suspended and guided, is perfectly prevented from being injured by harder pieces of ore than the machine is intended to work.

For compensating any undue pressure upon the moving parts of the machine a strong spring  $s$  of sheet-steel is inserted between the rear cross-piece  $k$  of the sector and an adjusting device  $t$  at the rear  $a^3$  of the frame. Said device  $t$  serves for regulating the tension of the spring  $s$ , according to the pressure the spring is intended to resist.

The machine works as follows: The ores to be crushed are thrown into the space  $v$ , between the stationary straight plate  $r$  and the sector-plate  $q$ . The crooked shaft  $d$ , turned by the pulleys, causes the eccentric  $g$  to move within the head  $i$  of the rods  $h h$ . The head  $i$ , with rods  $h h$  and cross-piece  $k$ , are thus moved up and down, and the sector  $p p'$  is pressed against the plate  $r$ . By the peculiar method of holding and supporting the sector it is forced to unroll upon plate  $r$  in cradle-like manner, and space  $v$ , containing the ores, is decreased and again increased. The ores are thus crushed, and leave the space  $v$  when the sector rolls upward.

Having thus fully described the nature of my invention, and in what manner the same is to be performed, I declare that what I claim is—

In crushing-machines, the combination of a stationary jaw  $r$ , fixed to the frame of the machine, and of a movable jaw  $q$ , fixed to a

sector  $p\ p'$ , with an oscillating rod  $h$ , hang-  
ing from the cranked main shaft  $d$ , said rod  
 $h$  holding the rear part of the sector, the front  
part of said sector being connected with one  
5 or more rods  $w\ w'\ w^2$ , having springs or the  
like at their other ends and imparting a  
cradle-like movement to the movable jaw, as  
described.

In testimony whereof I have signed this  
specification in the presence of two subscrib- ing  
ing witnesses.

WILHELM SCHRANZ.

Witnesses:

JACOB SCHAEFER,  
GEORG M. AYRESEN.