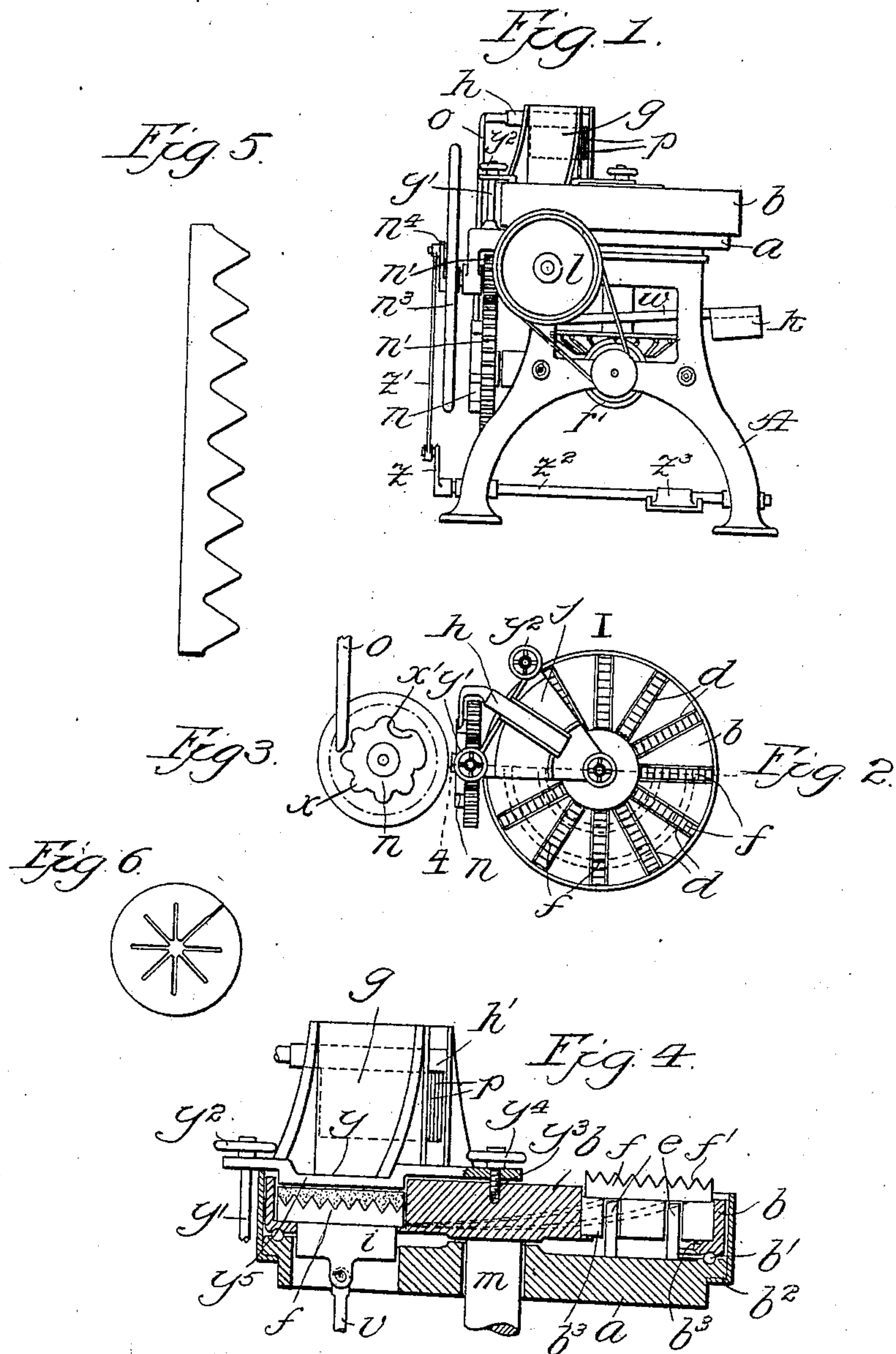


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H. VOGT.  
MACHINE FOR MAKING IGNITING BLOCKS.

APPLICATION FILED DEC. 27, 1904.



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# UNITED STATES PATENT OFFICE.

HEINRICH VOGT, OF LEOPOLDSHÖHE, GERMANY.

## MACHINE FOR MAKING IGNITING-BLOCKS.

No. 832,281.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed December 27, 1904. Serial No. 238,552.

*To all whom it may concern:*

Be it known that I, HEINRICH VOGT, manufacturer, a subject of the German Emperor, residing at Leopoldshöhe, Germany, have invented an Improved Machine for Making Igniting-Blocks, of which the following is a specification.

My invention relates to the production of igniting material for kindling fires in furnaces and the like; and it consists in the apparatus, process, and product substantially as herein-after set forth and claimed.

My invention will be more fully described in connection with the accompanying drawings.

In the drawings, Figure 1 represents a machine embodying the main features of my invention. Fig. 2 is a plan view thereof. Fig. 3 is a detail view of one of the actuating devices of my improved machine. Fig. 4 is a sectional view on line 4 4 of Fig. 2. Fig. 5 is an elevation of the product as formed by my improved machine. Fig. 6 is a view in elevation of the finished product.

Like characters of reference designate similar parts throughout the different figures of the drawings.

Referring now in detail to the drawings, there is shown a machine consisting of a base or frame A, carrying a stationary supporting-disk *a*. Upon the disk *a* is rotatably mounted a second disk *b*, the said disks being grooved on their adjacent faces to form a ball-race for antifriction-balls *b'*. An annular flange *b*<sup>2</sup>, secured to the disk *a*, projects upwardly about the periphery thereof to a point slightly above the disk *b*, preventing the latter from being thrust out of operative alinement with the disk *a*. Rotative movement is imparted to the disk *b* by means of a shaft *m*, which projects downwardly through the disk *a* and carries on its lower end a beveled gear *s*. A second gear *r*, meshing with the gear *s*, is carried by a shaft *r'*, the latter being belted to a pulley *l*, which is given an intermittent rotary movement.

The disk *b* is provided with a plurality of radial slots *d*, having inwardly-projecting lugs *b*<sup>3</sup>. In each of said slots there is seated a mold-bar *f*, desirably coextensive in length with the slot and adapted to rest upon the projecting lugs *b*<sup>2</sup>. Said bars *f* are relatively narrow in depth and when seated upon the lugs *b* leave a considerable vacant space with-

in the molding slot or cavity. Each of said bars *f* are provided on their upper margins with a plurality of V-shaped recesses extending throughout the length of each bar and forming a plurality of projecting teeth *f'*.

A supporting-plate *y*, carrying a suitable stamping mechanism and a forming or compressing surface, as shown, is mounted near its outer end upon the flange *b*<sup>2</sup> and is clamped in place thereon by bolts *y'*, which project up through the plate *y* and which carry threaded hand-wheels *y*<sup>2</sup>, constituting tightening-nuts. The plate *y* is secured at its opposite end to the plate *b* upon a threaded stud *y*<sup>3</sup>, which projects upwardly through the plate *y* and is provided with a threaded hand-wheel *y*<sup>3</sup>. In practice the hand-wheel *y*<sup>4</sup> will not be turned down to impinge tightly upon the plate *y*, inasmuch as the threaded stud *y*<sup>3</sup> serves the purpose of centering the plate *y* to bring the stamping mechanism in lateral alinement with the slots *d*. Said stamping mechanism consists of vertically-disposed parallel guides *g*, desirably formed integral with the plate *y*. A stamping-block *h* is provided to reciprocate between said guides, which consists of a body portion *h'* and one or more downwardly-projecting plates *p*. The stamping-block *h* is reciprocated by means of a cam *n* and rod *o*, as shown in Fig. 1. The cam *n* is provided with a plurality of irregular portions *x*, which serve to raise the rod *o* and the knife-block *h* (the latter falling by gravity) rapidly while one of the slots *d* is in register with the stamper. The cam is also provided with a concentric portion *x'*, which engages the rod *o* and holds the same in an elevated position while the disk *b* is rotating to bring a succeeding slot into register with the stamper. The cam will be driven at a relatively high rate of speed, so that the stamper will complete a number of reciprocations while one of the slots *d* is in register with the stamper, resulting in effectually packing the material in place. The cam *n* is mounted on a gear *n'*, Fig. 1, which is driven by a pinion *n*<sup>2</sup>. When the machine is designed for foot-power, as shown, the shaft on which the pinion *n*<sup>2</sup> is mounted carries a balance-wheel *n*<sup>3</sup>, which is connected by crank-arms *n*<sup>4</sup> *z* and a link *z'* with a manually-operating shaft *z*<sup>2</sup>. Said shaft, as shown in Fig. 1, is provided with a foot-lever *z*<sup>3</sup>. The plate *y* is provided with a downwardly-pro-



jecting forming portion  $y^5$ , which is spaced apart from the stamper a sufficient distance to register with the next succeeding slot  $d$ .

In vertical alinement with the projection  $y^5$  there is formed slots in the disks  $a$  and  $b$ , in which a compressor-block  $i$  reciprocates. Said block  $i$  is connected by a link  $v$  and lever  $w$  with a weight  $k$ . The block  $i$  is adapted for engagement with the lower surface of the mold-bars  $f$  and recedes from the position shown in Fig. 4 downwardly during rotation of the disk  $b$ .

The plate  $a$  is provided with ejecting-rails  $c'$  and  $c^2$ , which desirably extend from a point adjacent the compressor-block  $i$  to a point opposite the same, the said rails being inclined upwardly from the compressor-block and terminating abruptly at their highest ends. Said rails occupy grooves formed in the disk  $b$  and project within the slots  $d$  during the operation of the disk  $b$ .

In the operation of forming a coal-igniter the material is loosely packed by hand or otherwise into slots which occupy positions between the ends of the ejector-rails and the stamping mechanism, the forming-bars in these slots resting upon the lugs  $b^3$ , leaving the normal depth and length of the slots open to receive the material. As the disk  $b$  rotates and the filled slots  $d$  are successively brought into alinement with the stamper the material is packed tightly in place by the rapidly-reciprocating plates  $p$ . After the material has been packed and the disk is rotated the slots will be brought into alinement with the compressor-block  $i$ , which will engage the bar  $f$ , as shown in Fig. 4, forcing the same upwardly against the forming-projection  $y'$  to compress the block and secure a smooth upper surface therefor. During this compression it will be understood that the stamping-knives  $p$  will be packing the material into the next rearmost slot, the two operations being carried on simultaneously. It will be understood that the compression by means of the block  $i$  may be manually effected by the operator should the weight  $k$  prove ineffective. The igniter, as shown in Fig. 4, is now finished, and as the disk  $b$  rotates the bar  $f$  will engage the ejector-rails  $c'$  and  $c^2$ , raising the bar and product to the position shown at the right of Fig. 4, whereupon the igniter may be removed by hand or by other means. When rotation of the disk  $b$  is continued, the bar  $f$ , as shown at the right of Fig. 4, riding over the abrupt ends of the rails  $c'$  and  $c^2$ , will quickly drop to the bottom of the slot  $d$  into engagement with lugs  $b^3$ , whereupon it will be ready for the reception of new material. When the igniter is removed from the machine, it consists of a straight smooth bar of tightly-packed material, as shown in Fig. 5, which is provided on one side with a plurality of V-shaped recesses. The bar in this form is bent to bring

its ends together, as shown in Fig. 6, forming a circular block provided with a relatively small central opening and a plurality of radial slots, one of which extends to the outer periphery. While it is not essential that the bar should be bent in the form shown in Fig. 6, it is obvious that this form presents many advantages over the others, inasmuch as it is a compact body easy to handle and ship. Furthermore, it is provided near and around its center with open spaces, thereby effectively promoting combustion.

I prefer to operate upon the material when the same is hot, as it is then more easily packed and molded in the machine and can be more readily formed into a finished product after it is discharged from the machine.

The device of my invention may be used for making igniters of any kind of material capable of being molded into prescribed forms. It will be understood, however, that material must first be treated with a binding agent, so that it will adhere and remain intact after being formed into the finished product.

Processes and methods of treating pulverized coal, peat, or other volatile materials for fuel purposes with binding agents are well known and constitute no feature of the present invention, and therefore will not be herein more fully described.

What I claim, and desire to secure by Letters Patent, is—

1. A machine for the purpose set forth consisting of a movable slotted mold member, a plurality of loosely-mounted mold-bars carried in said slots, a stamping device for compressing the material within said slots and upon the mold-bars, and means raising said bars in the slots to eject the finished product.

2. A machine for the purpose set forth consisting of a movable slotted mold member, a plurality of loosely-mounted mold-bars carried in said slots, means for imparting an intermittent movement to said slotted member, a stamping device for compressing the material within said slots and upon the mold-bars, and stationary means projecting into said slots and engaging said bars to eject the finished product.

3. A machine for the purpose set forth consisting of a movable slotted mold member, a plurality of loosely-mounted mold-bars carried in said slots, a stamping device for compressing material within said slots and upon the mold-bars, means for ejecting the finished product from said slots, a compressor-block, and a forming-plate for compressing said material.

4. A machine for the purpose set forth consisting of a movable slotted mold member, a plurality of loosely-mounted mold-bars carried in said slots, means for imparting an intermittent movement to said slotted member, a



device for stamping the material within said slots and upon the mold-bars, means for ejecting the finished product from said slots, and means for pressing the material in the slots and upon the mold-bars.

5 5. A machine for the purpose set forth consisting of a slotted disk, a plurality of mold-bars carried in said slots, means for imparting to said disk intermittent rotary movement, stationary ejecting-rails projecting  
10 into grooves formed in said disk, mechanism for stamping the material within said slots and upon the mold-bars, and a compressor for engaging said mold-bars.

15 6. A machine for the purpose set forth consisting of a slotted disk, a plurality of mold-bars carried in said slots, means for imparting to said disk intermittent rotary movement, stationary ejecting-rails projecting  
20 into grooves formed in said disk, a reciprocating stamper for compressing the material within said slots and upon the mold-bars, and a reciprocating compressor-block engaging said mold-bars.

25 7. A machine for the purpose set forth consisting of a stationary supporting-disk, a radially-slotted disk rotatably mounted on said stationary disk, loosely-mounted mold-bars carried in said slots, ejecting-rails mounted  
30 on said stationary disk and projecting upwardly within grooves formed in said slotted disk, a reciprocating stamper, a cam for operating said stamper, and a reciprocating compressor-block acting on said mold-bars.

8. A machine for the purpose set forth consisting of a radially-slotted disk, mold-bars loosely mounted in said slots, and ejecting-rails projecting up within grooves formed in said disk and engaging said bars. 35

9. A machine for the purpose set forth consisting of a radially-slotted disk, mold-bars loosely mounted in said slots, and inclined ejecting-rails projecting into said slots and serving to raise said bars to the top of said slots. 40

10. A machine for the purpose set forth consisting of a radially-slotted disk, mold-bars loosely mounted in said slots, a stamper forcing material into said slots and upon the bars, a compressor-block engaging said mold-bars, and means engaging said bars to eject the finished product. 45

11. A machine for the purpose set forth consisting of a radially-slotted disk, a stamper forcing material into said slots and upon said bars, a compressing-plate registering with said slots, a compressor-block engaging said bars and forcing the bar and material thereon against said plate, and ejecting-rails raising said bars from the bottom to the top of said slots. 50 55 60

In testimony whereof I affix my signature in presence of two witnesses.

HEINRICH VOGT.

Witnesses:

MARIE WILRICH,  
LEONORE RASCH.