(No Model.) 2 Sheets—Sheet 1.

J. T. OBENCHAIN.

MACHINE FOR FACING MILLSTONES.

No. 282,761. Patented Aug. 7, 1883.

Fig. 1.

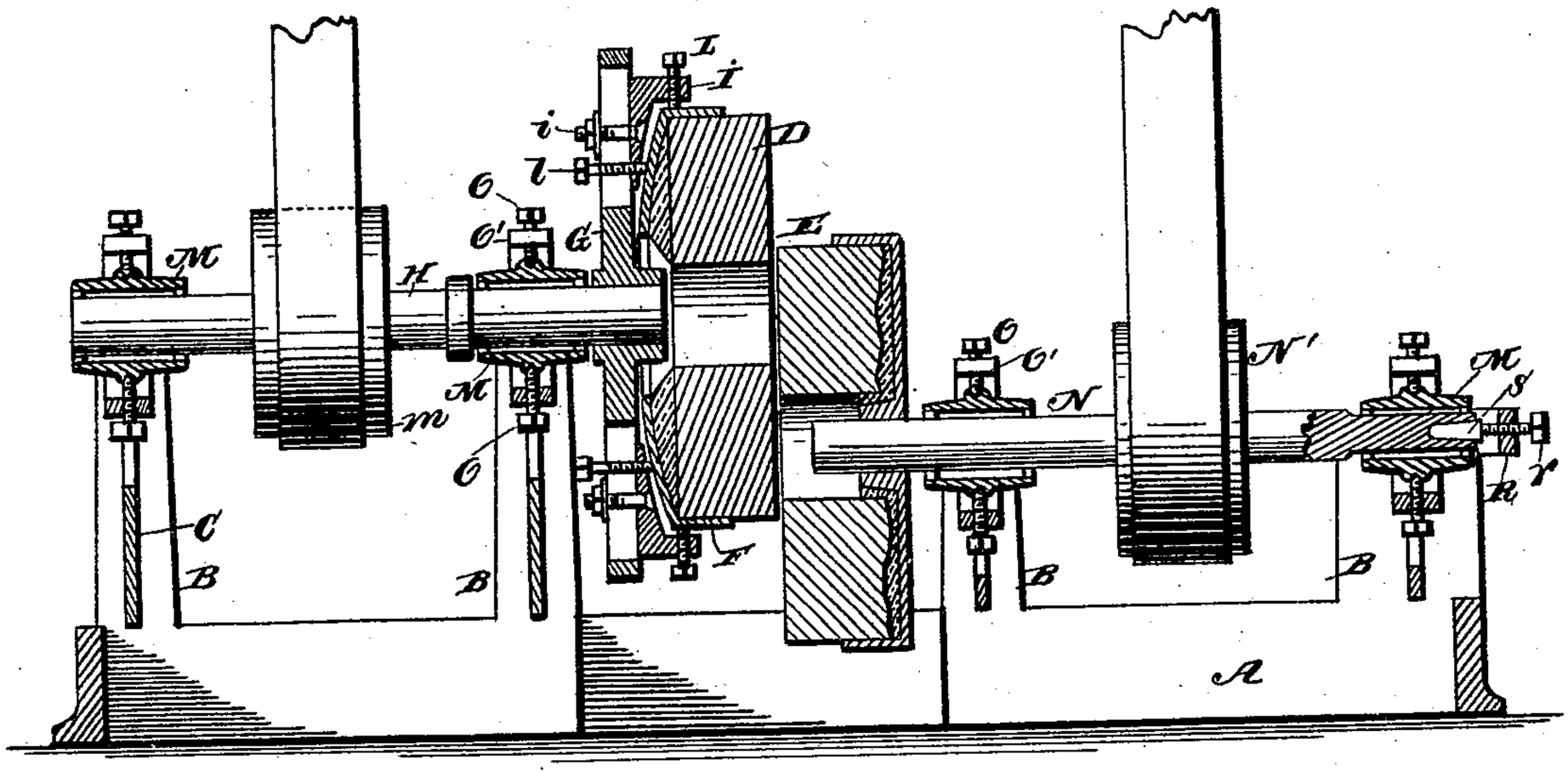


Fig. 2.

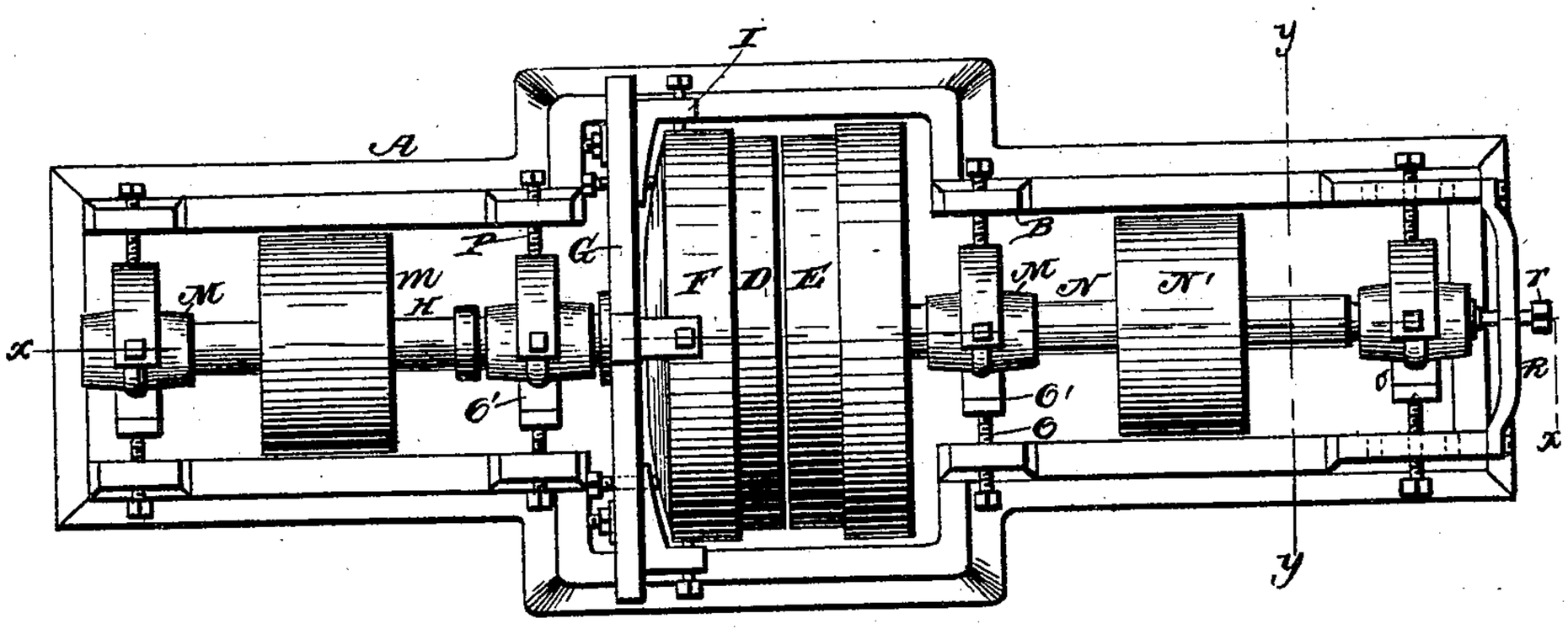
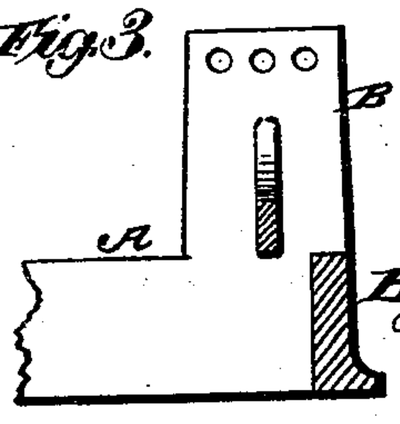


Fig. 3.



Witnesses.

Robert Everett.

J. A. Rutherford

Inventor.

John T. Obenchain.

By James L. Norris.

Atty.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

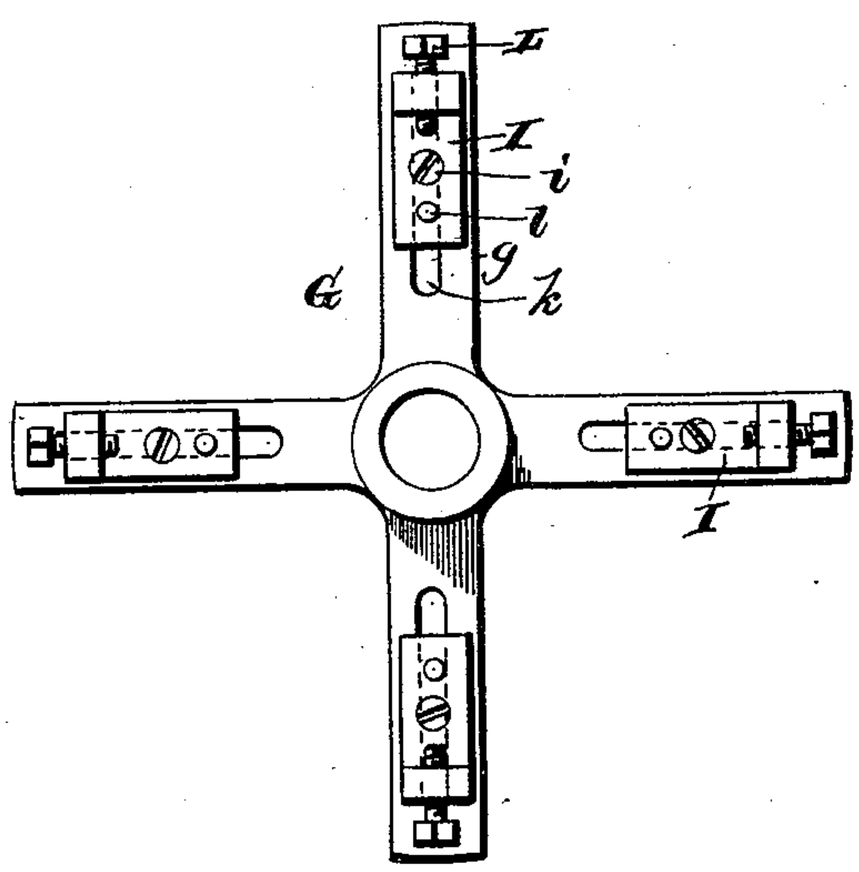
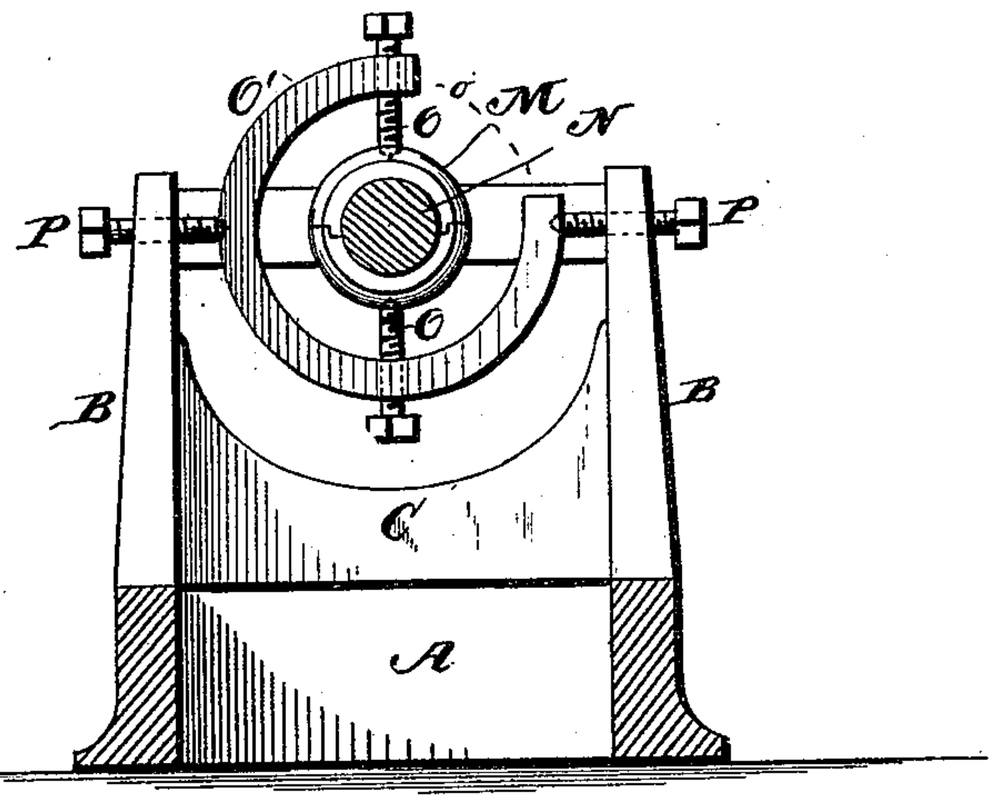


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN T. OBENCHAIN, OF LOGANSPORT, INDIANA.

MACHINE FOR FACING MILLSTONES.

SPECIFICATION forming part of Letters Patent No. 282,761, dated August 7, 1883.

Application filed November 14, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. OBENCHAIN, a citizen of the United States, residing at Logansport, Cass county, Indiana, have invented new and useful Improvements in Machines for Facing Millstones, of which the following is a specification.

This invention relates to a method of and means for facing millstones.

Heretofore it has been customary in facing the stones of a grinding-mill to employ a device designated as a "red-staff," which is passed over the face of the stone in such manner as to indicate any irregularities on the latter by leaving on any projection on the face of the stone a touch of paint or other coloring-matter with which the red-staff is provided. These projections are then removed by means of a pick or diamond stone-dresser or other analogous devices; but it has been found extremely difficult to give a perfectly true facing to the stone in such way from the fact that it is impossible to accurately "staff" the stone. In using these hand devices for facing millstones, the stone has been left with a sharp, cutting, and very finely corrugated face, which to a greater or less extent abrades the bran and tears off small particles which will pass with the flour through the bolting-cloth. For these reasons it has been found difficult in the late improved mode of milling to employ millstones in gradual reduction.

It is the object of my present invention to obviate all such defects, to reduce the face of the stone, so that it shall have a smooth surface which presents only the pores or natural grit of the stone, thereby adapting it for use in gradual reduction, and to provide means whereby the fixed and running stone to be faced can both be supported and rotated in a machine adapted for the purpose, with their opposing faces in frictional contact and parallel with each other. In attaining this object the fixed or stationary stone of a grinding-mill is placed in a rotary carrier in the facing-machine, and the running-stone with its spindle is also placed in said machine, with its axis in a different plane from that of the stationary stone of the grinding-mill, the machine being adapted to admit of the axes of the two stones being adjusted in parallel planes, so that the faces of the stones shall be ground to a true plane, and the running-stone be ground true upon its own spindle.

In the drawings, Figure 1 is a part section and part elevation taken on a plane indicated by dotted line *x x*, Fig. 2. Fig. 2 is a top or plan view. Fig. 3 is a detail part sectional view of one of the standards. Fig. 4 is a front elevation of the clutch. Fig. 5 is a section taken on a plane indicated by dotted line *y y*, Fig. 2.

The bed or base A of this machine consists of a substantial oblong metal frame. The standards B—preferably cast with the bed—are arranged in pairs and connected by transverse webs C, which serve to strengthen the structure.

In Figs. 1 and 2, D indicates the fixed or stationary and E the running stone of a grinding-mill, both supported in this machine in position for facing. The stone D is shown provided with a hood, F, which is permanently fitted to the stone, although in some cases the hood is dispensed with.

G indicates a chuck which constitutes a part of this machine, and which is secured upon a horizontal shaft, H, said chuck constituting a rotary carrier for the stationary or fixed stone D of a grinding-mill. The chuck consists of a central hub, provided with a set of radial arms, *g*, each carrying an angle-plate, I, which is adjustably secured upon its appropriate arm by means of a bolt, *i*, passing through a longitudinal slot, *k*, and having a nut which can be tightened up against the arm after the angle-plate has been properly adjusted. The lateral arms of these angle-plates are each provided with a set-screw, L, these set-screws being turned so as to clamp the stone and thereby firmly hold the same. In addition to these set-screws horizontal screws *l* pass through the said angle-plates and slots, and are adapted to bear against the hood of the stone or the stone itself, so as to enable the stone to be accurately adjusted with relation to the opposite stone to be faced.

The horizontal shaft H, which is a part of this machine, is mounted in bearings M, and is provided with a belt-pulley, *m*, for a driving-belt, or with any other suitable driving mechanism. The shaft N, which is shown arranged in this machine in a different plane from the plane of the shaft for the upper stone,

is the permanent spindle for the running-stone of a grinding-mill. This spindle is provided with a belt-pulley, N′, or other driving device, and is supported in bearings M, which are in turn supported between the standards at this end of the machine. The bearings for the upper shaft, H, and the lower shaft or spindle, N, of the running-stone are each composed of a two-part box, as shown in Fig. 5, and are each adjustably supported as follows: The bearings are each maintained in position by means of set-screws O, which pass through an annular frame, O′, having a section thereof removed, so as to form a passage, *o*, for the purpose of allowing the spindle to be lifted out when it is desired to remove it from the machine, or to admit of the spindle being placed in position in the apparatus. These annular frames are supported between the standards by means of set-screws P, which pass through the standards and engage the said frames. By providing one of these supporting-frames O′ between each pair of standards, the shaft H employed for rotating the stone D can be readily placed in position in the machine or removed. The spindle of the running-stone can also be placed in position and removed with ease, and the said shaft and spindle both accurately adjusted so as to bring the axes of the stones in parallel planes, and thereby bring opposing faces of the stones parallel with each other. These millstones, when placed in the machine, rotate in vertical planes around horizontal axes which are on different planes, power being applied so as to rotate the stones in reverse directions.

R indicates a cross-bar connecting the upper ends of a pair of the standards employed for supporting the bearings of the running-stone spindle at one end of the machine. A set-screw, *r*, passes through said cross-bar, and has its inner end stepped in a steel plug, S, fitted in the end of spindle N, so that the spindle can be adjusted longitudinally by turning said screw in its bearing, and thereby bring the stone E as close up to the opposite stone as may be desired. The pair of standards at this end of the machine are also each provided with a horizontal line of perforations, T, so that the screws which support the annular frame between such standards can be shifted from one hole to another, according to the length of the spindle.

When the millstones are to be faced, the upper stone is placed in the clutch, and the spindle carrying the lower millstone fitted in its bearings, and centered on the annular frames by means of the set-screws hereinbefore described, the said bearings being adjusted so as to bring the axes of the stones in parallel planes. This method admits of the work being done with greater accuracy than would be possible if the running-stone were placed in the machine without its spindle. As the axis of one stone is on a different plane from the axis of the other stone, an eccentric grinding-power is attained, and the stones quickly faced, with a minimum of power, by revolving the two stones in opposite directions, in the manner hereinbefore stated.

I am aware that it is not new to dress stones with the aid of sand and water and power applied to a rotary grinder-box and a rotary carriage mounted upon different vertical centers, whereby an eccentric grinding-power is produced. A machine of this character is not adapted for facing millstones in the manner proposed by me, which consists in mounting the runner-stone with its spindle in a frame or holder and rotating it in contact with the stationary millstone held in a clutch device mounted on a second rotary shaft.

I make no claim for the broad idea of sharpening or facing millstones without removing them, or either of them, from the position in which they are placed for grinding by so adjusting the revolving stone with reference to the stationary one by means of screws or other suitable means that their inner or grinding surfaces shall come in contact with each other, and while in such relation causing the upper or revolving stone to rotate upon its axis, and thus sharpen itself, as well as the stationary one.

What I claim is—

1. In a machine for facing millstones, the combination of the horizontal revolving shaft H, carrying an end chuck or clutch device, G, the frame A, having standards B, and bearings for detachably holding said shaft, and provided with a second set of bearings, arranged on a different plane from the bearings of the shaft H, for receiving and supporting the runner-stone and its spindle and driving-pulley, substantially as and for the purpose set forth.

2. In a machine for facing millstones, the combination of the two sets of divided bearings M, and encircling frames O′, having openings *o*, and the frame A, having set-screws for holding said frames with the detachable shaft H, having a clutch device for holding the stationary millstone supported in one set of bearings, and the runner-stone and its spindle and driving-pulley held in the other set of bearings, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN T. OBENCHAIN.

Witnesses:
JAMES L. NORRIS,
J. A. RUTHERFORD.