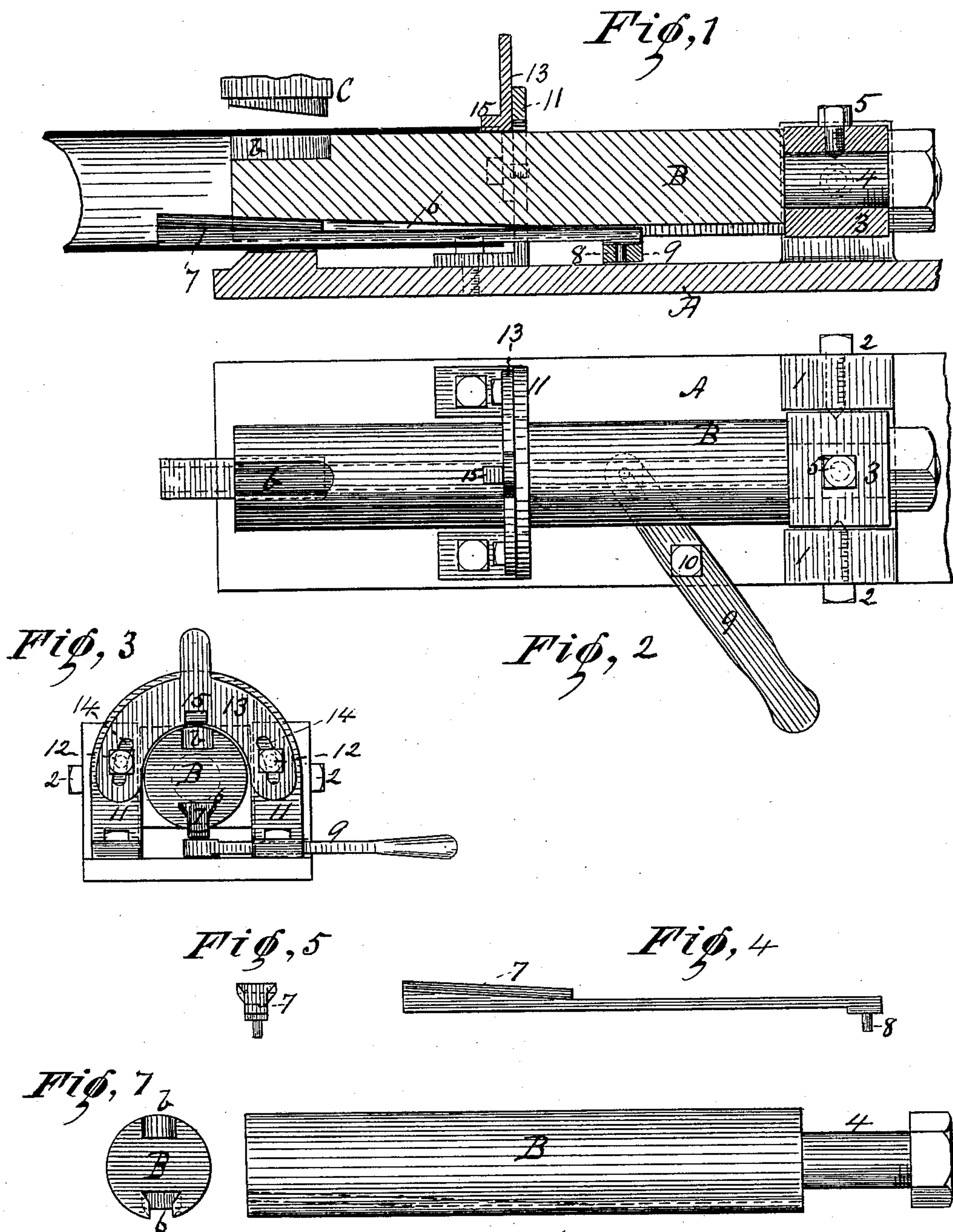


(No Model.)

H. B. ROBISCHUNG.
SLOTING MACHINE.

No. 452,482.

Patented May 19, 1891.



Witnesses
E. Warner
J. H. Goodenough

Fig. 6
Inventor
Henry B. Robischung
By his Attorney
F. W. Rutter Jr.

UNITED STATES PATENT OFFICE.

HENRY B. ROBISCHUNG, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO THE
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SLOTTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 452,482, dated May 19, 1891.

Application filed September 5, 1890. Serial No. 364,039. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. ROBISCHUNG, a citizen of the United States, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Slotting-Machines; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal central section of apparatus embodying my invention, showing a tube in position to be slotted. Fig. 2 is a plan view of the bed-block, lower die or mandrel, and slotting-gage. Fig. 3 is an end view of the lower die or mandrel and front elevation of the slotting-gage. Fig. 4 is a side view of the sliding wedge or incline for adjusting the mandrel. Fig. 5 is an end view of the incline or wedge. Fig. 6 is a detached side elevation of the mandrel or lower die, the dotted line indicating the position and form of the wedge-slot therein. Fig. 7 is an end view of the mandrel or lower die.

Like symbols refer to like parts wherever they occur.

My invention relates to the construction of that class of tube or cylinder slotting machines wherein is combined with the usual plunger or upper die a mandrel-shaped lower die to preserve the form of the tubular or cylindrical structure to be operated on, and has for its objects, first, the provision of an expansible mandrel-die adapted for use in slotting different-sized cylinders or tubes, and, second, the provision of a gage whereby the position of the slot to be made in the tube or cylinder operated on may be accurately determined and fixed with relation to any other fixed point on the said tube or cylinder.

In apparatus of this class as commonly constructed, in order to prevent flattening or distortion of the tube or cylinder operated on, the mandrel in which the lower or female die is formed must be of an external diameter substantially the same or slightly less than the inner diameter of the tube or cylinder to be slotted, allowance for the insertion and removal of the mandrel of course being made, and as a consequence several of such mandrels adapted to different-sized work are re-

quired with each machine, and in such machines where the slot has to bear some definite relation to a given point on the cylinder or tube the eye of the operator has, so far as I am aware, been the usual means of gaging the position of the apparatus to secure the desired result.

The preferred construction adopted by me in carrying out the first part of my invention—an expansible mandrel-die—consists in combining with a mandrel having a longitudinally-inclined dovetailed slot opposite the die-cavity thereof, of a movable dovetailed incline or wedge corresponding to the slot in the mandrel, and the preferred construction adopted by me in carrying out the second part of my invention—a gage—consists in combining with the mandrel an arc-shaped gage-plate whose center of motion corresponds with the axis of the mandrel.

There are other minor features of invention, all as will hereinafter more fully appear.

I will now proceed to describe my invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings, A indicates the bed-block, B the mandrel or lower die, and C the upper or plunger die of a tube or cylinder slotting machine of any approved form. Erected on or formed with the bed-block A are pillow-blocks 1 1, through which pass the adjustable pivot-screws 2 2, whose points support and form bearings for a rocking block 3, having a central opening to receive the cylindrical end 4 of the mandrel B, and said rocking block 3 is provided with a binding or set screw 5 to hold the mandrel B securely when adjusted. By means of the adjustable pivot-screws 2 2 and the rocking block 3 the mandrel B can be laterally adjusted, and by means of the rocking block and set-screw 5 the mandrel can be rotated on its axis to adjust the lower die, or the mandrel can be withdrawn and replaced at will.

The mandrel B has at its free end the usual or any desired form of slot *b*, constituting the female die, and in the under surface of said mandrel opposite the die *b* I form a longitudinally-inclined slot or way 6 (see dotted line, Fig. 6) for the reception of a corresponding inclined slide or movable wedge 7. In form-

ing said inclined slide or wedge I prefer that its lower surface should be parallel with the bed-block A and with the upper surface of the mandrel B, and that its upper surface should be inclined to correspond with the inclined bottom of the slot or way 6 of mandrel B, as thereby the parallelism of the mandrel and cylinder and the due relation of the dies are maintained during the expansion of the mandrel. The rear end of the inclined slide or wedge 7 is provided with a pin 8, which engages in an elongated slot (see dotted line, Fig. 2) in one arm of an operating-lever 9, said lever 9 being pivoted, as at 10, on the bed-block A. By the foregoing or equivalent construction the vertical diameter of the mandrel, or the diameter in the line of force, can be increased or diminished to suit different sizes of pipe or cylinders of different diameters.

Erected on the bed-block A, surrounding the mandrel B and at the desired distance back from the end thereof, determined by the position of the slot to be made, is a gage-support 11, on the face of which is movably secured by bolts 12 or otherwise the arc-shaped gage 13, having elongated curved slots 14 for the passage of the bolts 12, and set so that its movement shall be one of rotation, having the axial center of the mandrel B for its center of motion. The gage 12 may have a scale marked on its face, and, if desired, corresponding scale-lines (or only a center point) may be formed on the mandrel B.

The apparatus chosen for purposes of illustration is one adapted to slotting hollow brake-beams, which have at the ends of the beams shallow slots to register with lugs in the cups of the brake-heads to prevent the rotation of the brake-heads, and such brake-beams are slotted farther back from the ends of the beam to permit the passage of a truss-rod, which second slot in different beams bears a different relation to the end slots of the beam. Consequently on the gage shown in the drawings a lug or projection 15 is shown on the face of the gage, which lug enters the slot on the end of the beam, and accordingly as the gage 13 has been set with relation to the die-cavity *b* of the mandrel will the second or truss-rod slot formed in the tube be positioned with relation to the end slot of the tube.

The upper or plunger die C may have the usual inclined face for obtaining a shear cut and can be secured to the head of the press in any suitable manner.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a slotting-machine, the combination,

with a plunger or male die, of a mandrel having a die-cavity which extends through the free end of the mandrel, an inclined dovetailed longitudinal groove opposite said die-cavity, and a dovetailed sliding wedge or incline arranged in the corresponding groove of the mandrel, substantially as and for the purposes specified.

2. In a slotting-machine, the combination, with a male die or plunger, of a mandrel having a die-cavity and provided on its under surface with a longitudinal inclined dovetailed groove, a dovetailed sliding incline or wedge arranged in the corresponding groove of said mandrel, and an operating-lever pivoted on the bed-block and having an elongated slot which engages a pin on the dovetailed sliding wedge, substantially as and for the purposes specified.

3. In a slotting-machine, the combination, with a plunger and a mandrel having a die-cavity, of a rotating arc-shaped gage arranged over the mandrel and having the axis of the mandrel for its axis of rotation, substantially as and for the purposes specified.

4. In a slotting-machine, the combination, with a mandrel having a die-cavity, of an arc-shaped movable gage having the axis of the mandrel for its center and provided with a lug or projection on its face, substantially as and for the purposes specified.

5. In a slotting-machine, the combination, with a mandrel, of a gage-support, an arc-shaped gage having elongated curved slots, and bolts which connect it with its support, substantially as and for the purposes specified.

6. In a slotting-machine, the combination, with a mandrel having a die-cavity, of a rocking block and means for adjustably securing the mandrel in said rocking block, substantially as and for the purposes specified.

7. In a slotting-machine, the combination, with a mandrel, of pillow-blocks and pivot-screws for adjustably connecting said mandrel with the pillow-blocks, substantially as and for the purposes specified.

8. In a slotting-machine, the combination, with pillow-blocks, of a rocking block adjustably supported by said pillow blocks, and a mandrel having a die-cavity, said mandrel adjustably connected to the rocking block, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 30th day of August, 1890.

HENRY B. ROBISCHUNG.

Witnesses:

E. B. LEIGH,

GEORGE W. RUSSELL.