P. R. HAHNEMANN.

METAL WORKING MACHINE.

APPLICATION FILED JUNE 7, 1920.

1,406,004.

Patented Feb. 7, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

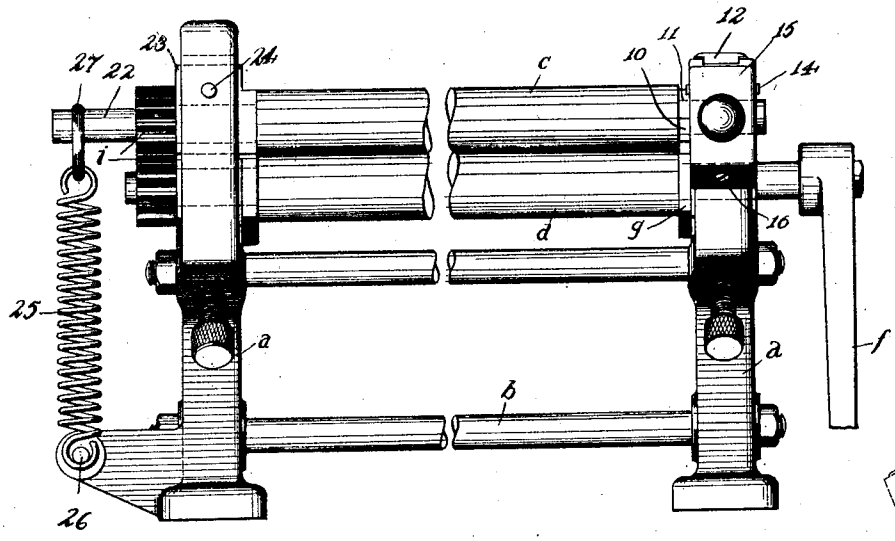


Fig. 2.

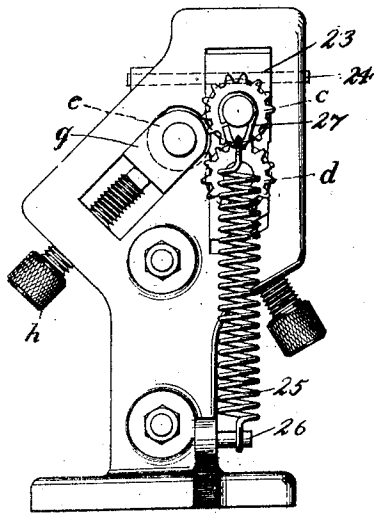
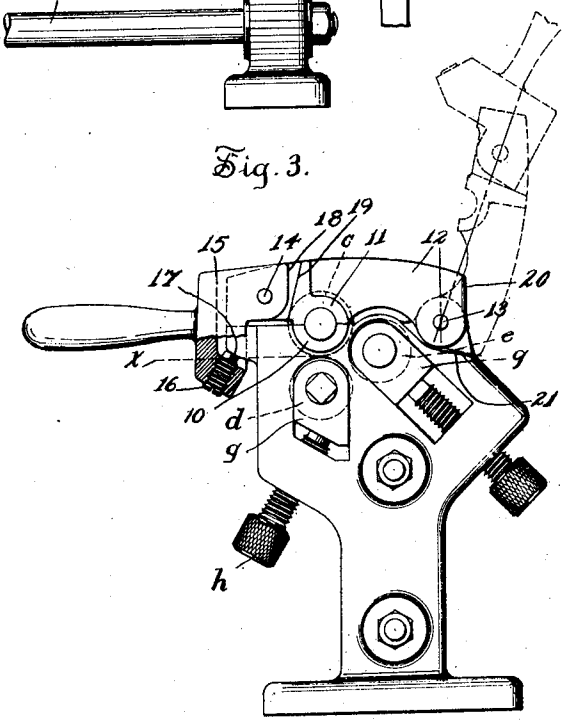


Fig. 3.



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2 SHEETS—SHEET 2.

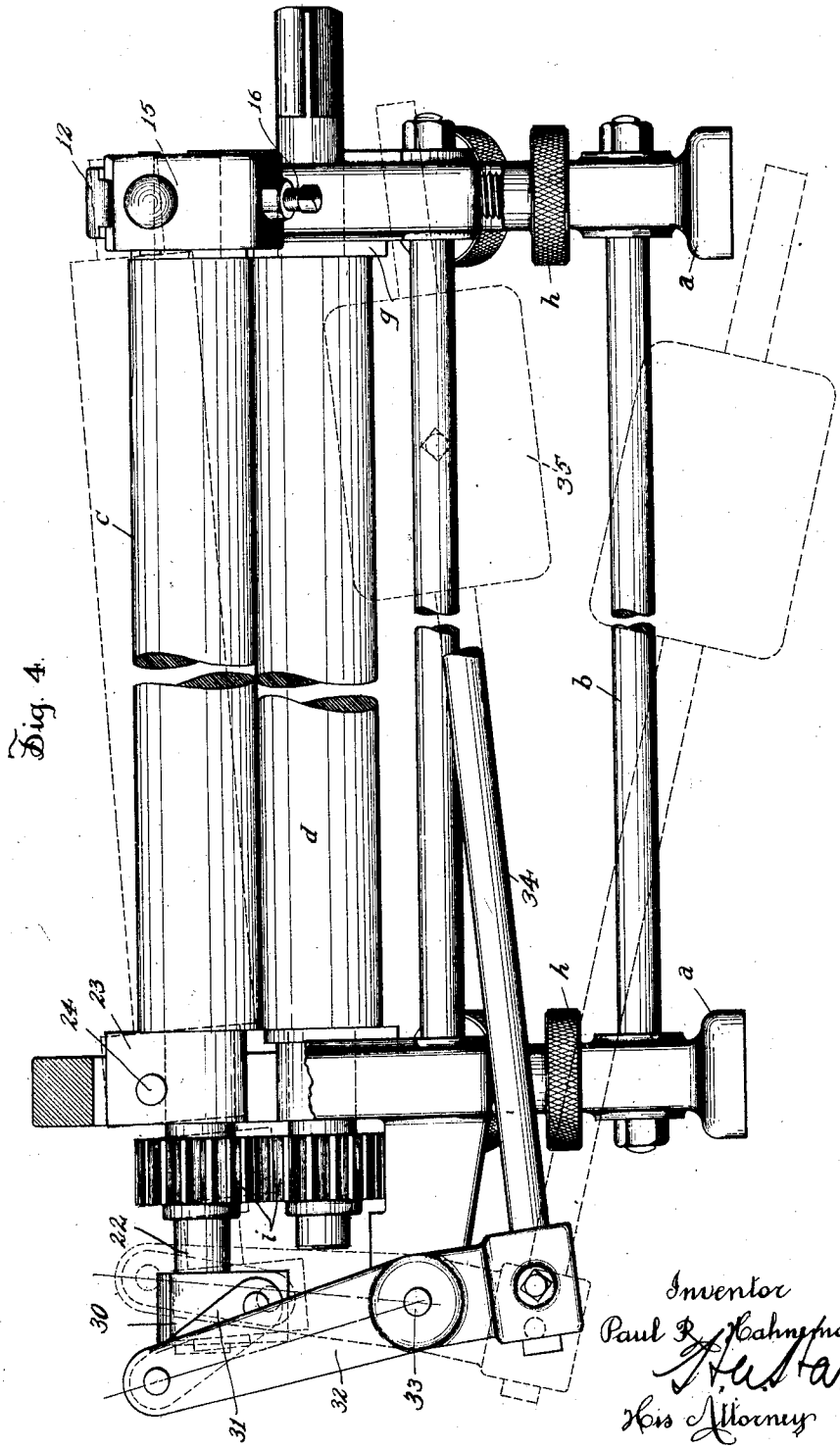


Fig. 4.

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UNITED STATES PATENT OFFICE.

PAUL R. HAHNEMANN, OF SOUTHINGTON, CONNECTICUT, ASSIGNOR TO THE PECK, STOW & WILCOX COMPANY, OF SOUTHINGTON, CONNECTICUT, A CORPORATION OF CONNECTICUT.

METAL-WORKING MACHINE.

1,406,004. Specification of Letters Patent. **Patented Feb. 7, 1922.**

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To all whom it may concern:

Be it known that I, PAUL R. HAHNEMANN, a citizen of the United States, and resident of Southington, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Metal-Working Machines, of which the following is a specification.

This invention relates to machines for use in working sheet metal, for instance, rolling or curling sheets of metal into the form of a pipe or cylinder.

The aim of the invention is to provide in a machine of this sort certain novel feaures of construction which features are of advantage in that they facilitate the removal of the sheet of metal from the mandrel on which it is shaped.

In the accompanying drawings:

Fig. 1 is a front view of a machine in which one embodiment of the invention is incorporated,

Fig. 2 is a left end view thereof,

Fig. 3 is an elevation of the right hand or operating end of the machine, the clamp for securing the mandrel in position being shown by dotted lines in raised position, and

Fig. 4 is a front view of a machine of slightly different construction which is especially adapted for heavier kinds of work, the position which the parts assume when the mandrel is raised being indicated by dotted lines.

Referring to the drawings, the frame of the machine is shown as comprising a pair of spaced standards or columns *a* connected by braces *b*. *c* is a roll (supported at its opposite ends as hereinafter described) onto which the sheets of metal are curled. For convenience, only, this roll *c* will be referred to as the mandrel. The mandrel is cooperatively positioned relative to base rolls *d*, *e*. At the operating end of the machine, the roll *d* carries a crank *f* and at the other, or left hand of the machine, the projecting gudgeons of the rolls *c*, *d*, carry intermeshing gears *i* so that upon operation of the crank *f* these rolls will rotate in opposite directions. The sheet of metal, shown in dotted lines Fig. 3 and indicated by the letter X, is drawn in between the rolls as indicated. The arrangement of the rolls may, of course, be varied to suit requirements. The gudgeons of the rolls *d*, *e*, are supported in bearing blocks *g* adjustable in any suitable manner as by means of screws *h*.

To remove the shaped sheet of metal from about the mandrel *c*, it is necessary to free and raise one end of the mandrel and to this feature the present invention is particularly directed. In both of the embodiments herein illustrated, the mandrels *c* are supported in a similar manner by the standards *a*. One end of the mandrel *c*, preferably that end at the operating side of the machine, is supported in a quickly separable two-part bearing, one part 10 of the bearing being provided in the upper edge of the standard *a*, and the other part 11 being carried by a lever 12 pivoted, as at 13, to the standard *a*. Pivoted, as at 14, to the free end of the lever 12 is a clamp 15 of somewhat hooked shape and having a part 16 in the form of a set screw which when the clamp is in locking position engages the under face of a projection 17 on the standard *a*. The extent of pivotal movement of the clamp about its pivot 14 is limited by the engagement of the edge or shoulder 18 of the clamp against an abutment 19 on the lever 12 and the extent to which the lever can be thrown back out of operative position is limited by the engagement of the edge 20 of the lever against shoulder 21 on the standard *a*. With this arrangement it will be seen that but one movement on the part of the operator is necessary to swing the clamp out of clamping position and throw the bearing lever 12 backwardly when it is desired to release the right hand gudgeon of the mandrel *c*.

When the lever is in raised position as shown in dotted lines, Fig. 3, its center of gravity is but slightly back of a vertical line passing through the pivot 13 so that with practically no effort and with but a very slight movement the operator may throw the clamp forward into clamping position.

To permit the mandrel *c* to be moved into and out of operative position, the left hand gudgeon 22 thereof is supported in a bearing block 23 pivoted on a pin 24.

To facilitate the removal of the pipe or cylinder of metal curled about the mandrel *c*, there is provided means for raising the right hand end of the mandrel when the clamp is thrown back. In the embodiment shown in Figs. 1 to 3, this means comprises

a tension spring 25 connected at its lower end to a fixed part or lug 26 and at its upper end to a ring 27 positioned in an annular groove in the gudgeon 22.

In machines where heavier kinds of work are to be done, the mandrel is usually larger and heavier and such a machine is shown in Fig. 4. In this embodiment the means for raising the mandrel *c* is in the form of a system of levers and links preferably operable from the operating side or end of the machine. Referring to this embodiment, upon the gudgeon 22 of the mandrel *c* is an arm 30 which is loose in that the gudgeon may rotate independently of the arm but it is fixed against longitudinal movement on the gudgeon. This arm is connected by a link 31 to an arm 32 of a lever pivoted as at 33 to the standard *a*. The other arm of this lever comprises a rod 34 preferably extending across the face of the machine to the operating side thereof so that the operator need not shift his position to raise and lower the mandrel *c*. The end of the gudgeon of the roll *d* constitutes a stop against which the lever 32 engages when the mandrel *c* is raised, as shown in dotted lines. Preferably, the rod 34 carries a weight 35, the avoirdupois of which is such that little or no effort on the part of the operator is required to raise and lower the mandrel *c*.

It will be seen from Fig. 4 that when the rod 34 is lowered to raise the mandrel *c*, the point of pivotal connection between the link 31 and the arm 30 is moved past dead center, that is slightly beyond the line passing through the pivot 33 and the pivotal connection between the lever 32 and the link 31. Thus, after the mandrel *c* has been raised, it will remain in raised position until the operator raises the rod 34 and but a slight movement of the rod is necessary to start the downward movement of the mandrel under its own weight.

It is of course evident that my invention is susceptible of various modifications and changes which are within the spirit of the invention without departing from the scope of the following claims, it being understood that the present disclosure of my invention is by way of illustration only and it is not to be taken as restrictive of my conception.

I claim as my invention:

1. In a machine of the character described, a frame, a base roll mounted therein, a mandrel cooperating with said base roll, means for rotating said mandrel, means for detachably clamping one end of said mandrel in operative position, a pivoted bearing block supporting the other end of said mandrel, an arm on said mandrel beyond said bearing block, a lever pivoted to the frame, and a link between said lever and arm, the point of connection between said link and arm being moved from one side to slightly beyond the other side of a line passing through the pivot of said lever and the point of connection between said lever and link when said mandrel is raised.

2. In a machine of the character described, a frame, a base roll mounted therein, a mandrel cooperating with said base roll, means for rotating said mandrel, means for detachably clamping one end of said mandrel in operative position, a bearing block supporting the other end of said mandrel for rocking movement, an arm on said mandrel beyond said bearing block, a lever pivoted to said frame, and a link between said lever and arm, the length of said lever between its pivotal point and its point of connection with said link being greater than the length of said link between its respective points of connection with said lever and arm.

3. In a machine of the character described, a frame, a mandrel therein, a divided bearing supporting one end of said mandrel and including a bearing part pivoted to said frame, a clamp pivoted to the free end of said bearing part and having an integral handle, an abutment on said frame with which said clamp cooperates, interengaging means on said bearing part and frame for holding said part when thrown into inoperative position slightly inclined to a vertical line passing through its axis, and interengaging means on said clamp and bearing part for holding the clamp with the handle in substantially longitudinal alinement with said bearing part when the latter is thrown into inoperative position whereby said handle, when the bearing part is in inoperative position, may be readily grasped.

4. In a machine of the character described, a frame, a mandrel therein, a divided bearing supporting one end of said mandrel and including a bearing part pivoted on said frame, a clamp pivoted to the free end of said bearing part and having a hooked end, an abutment on said frame having its under face curved substantially concentric about the axis of the clamp when said bearing part is in operative position, and an adjustable screw carried by the hooked end of said clamp and adapted for automatic engagement with the under face of said abutment when said bearing part and clamp are thrown into operative position.

PAUL R. HAHNEMANN.