(No Model.) 2 Sheets—Sheet 1.

W. WESTLAKE.

MACHINE FOR MILLING OR CORRUGATING SHEET METAL.

No. 533,977. Patented Feb. 12, 1895.

FIG:5.

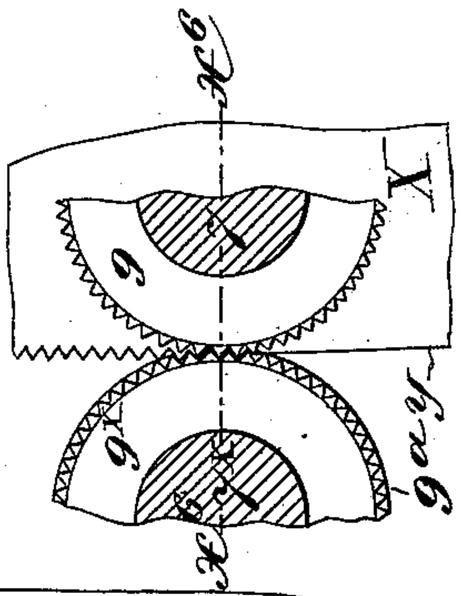

FIG:6.

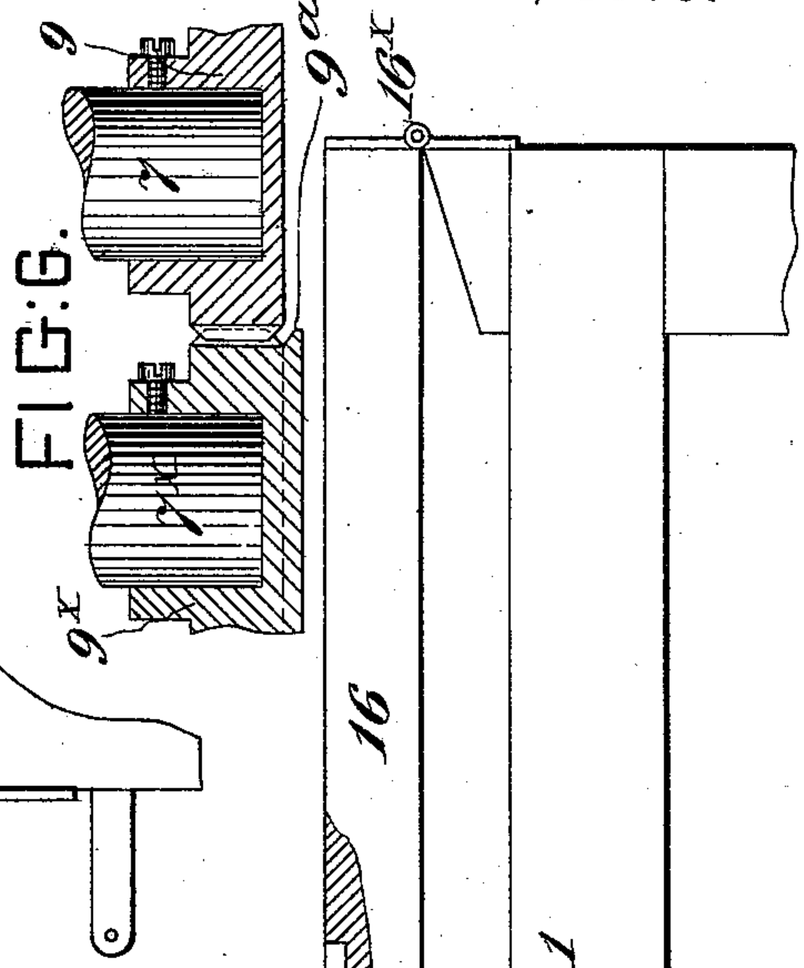

FIG:4.

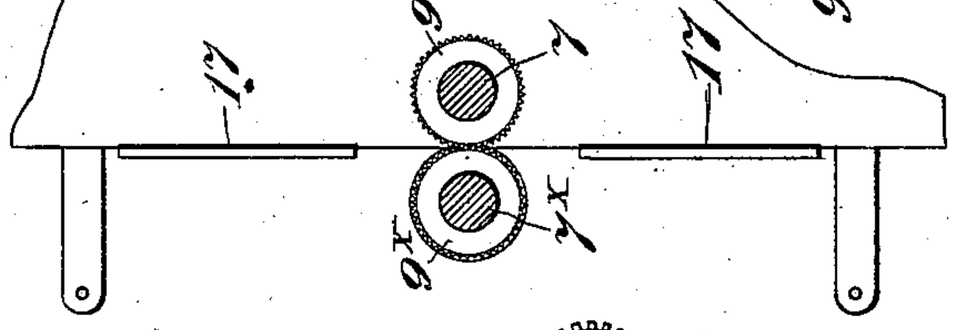

FIG:2.

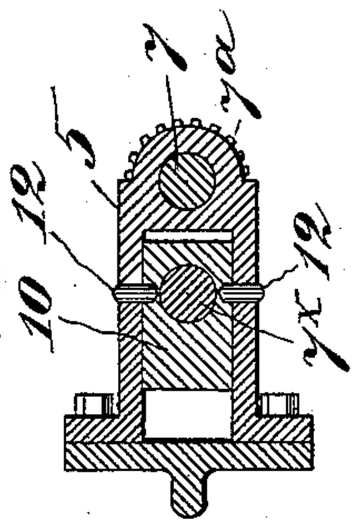

FIG:3.

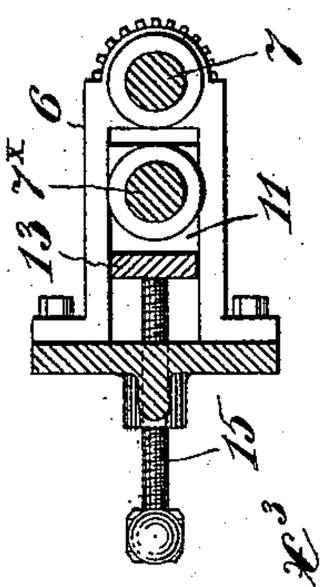

FIG:1.

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(No Model.) 2 Sheets—Sheet 2.

W. WESTLAKE.

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No. 533,977. Patented Feb. 12, 1895.

FIG: 8.

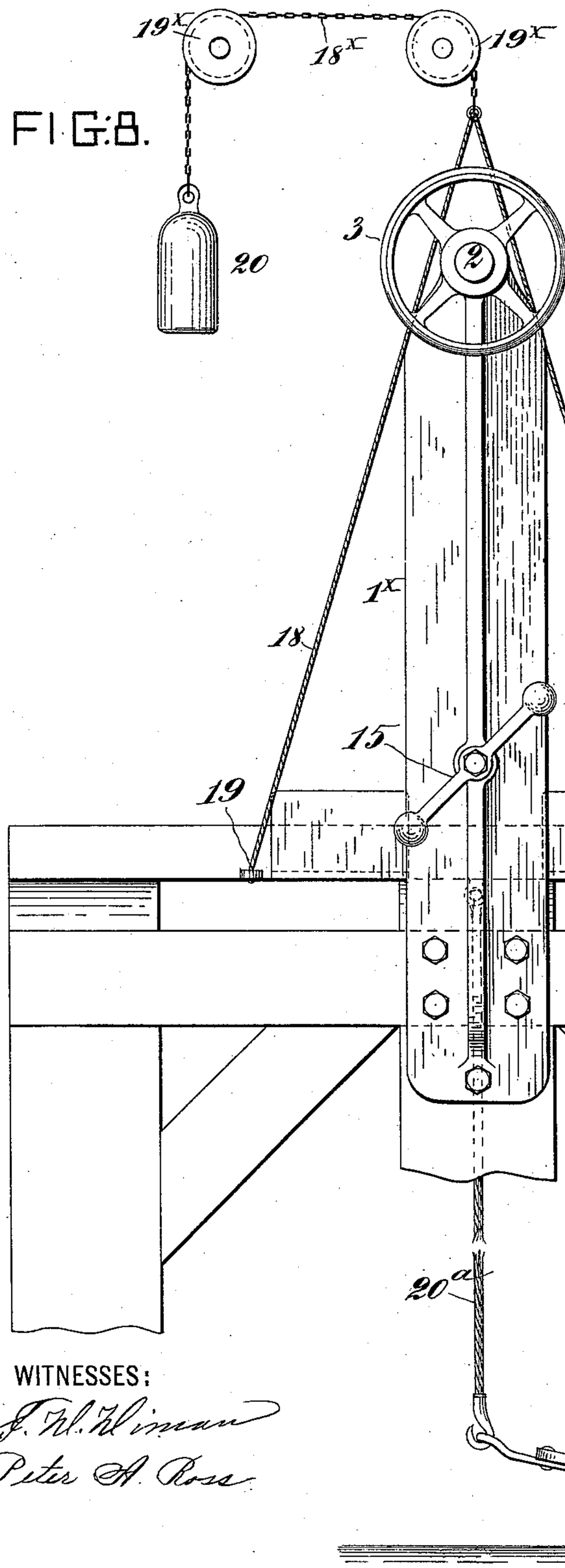
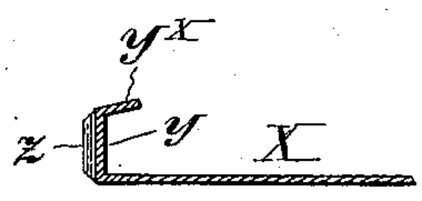


FIG: 7.



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WILLIAM WESTLAKE, OF BROOKLYN, NEW YORK.

MACHINE FOR MILLING OR CORRUGATING SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 533,977, dated February 12, 1895.

Application filed September 8, 1894. Serial No. 522,419. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WESTLAKE, a citizen of the United States, residing at Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Machines for Milling or Corrugating Sheet Metal, of which the following is a specification.

This invention relates to the class of machines which employ milling wheels or knurls for forming corrugations in sheet metal, and the object of the invention is to provide a simple machine adapted for milling or corrugating the turned-up marginal flange on a sheet of metal to be employed for a stove-board, or for other purposes.

The invention will be fully described hereinafter and its novel features carefully defined in the claims.

In the accompanying drawings which illustrate an embodiment of the invention—Figure 1 is a side elevation of the machine. Figs. 2 and 3 are horizontal sections, taken respectively, on the lines x^2 and x^3 in Fig. 1. Fig. 4 is a plan view of the front end of the sheet-supporting table, showing the milling wheels in plan. Fig. 5 is a fragmentary plan view of the milling wheels, on a large scale, and Fig. 6 is a section of the same on line x^6 in Fig. 5. Fig. 7 is a fragmentary view of a flanged sheet milled on the machine. Fig. 8 is an end view of the machine.

1 is the frame of the machine which may be constructed of metal or wood, or of both, in any form best suited to the purpose. In the upright portion 1^x of the frame is rotatively mounted a driving shaft 2 carrying tight and loose belt-pulleys 3 and a bevel-wheel 4. The shaft 2 may be driven in any convenient manner from any source of power. Mounted in brackets 5 and 6 on the upright part of the frame, is a shaft 7 on which is fixed a bevel-gear wheel 8 which gears with the wheel 4 on the driving shaft. On the lower end of shaft 7 is secured one wheel, 9, of a pair of milling wheels, the other wheel, 9^x, of the pair being secured on the lower end of a shaft 7^x. This shaft 7^x is mounted in two bearing-blocks 10 and 11. (See Figs. 2 and 3.) The upper block 10 is mounted pivotally in the upper bracket 5 on screws or pins 12, and is connected to the block 11 by a bar 13. The block 11 is mounted in a slot in the lower bracket 6 and has some play therein to allow the milling wheel 9^x to be moved into and out of gear with the wheel 9. Normally, the milling wheels are held apart, or out of engagement by some means, and preferably, by a spring. This may be a coil spring 14 arranged between the block 11 and the frame. In order to press the milling wheel 9^x forcibly into gear with the wheel 9 when a sheet of metal is interposed between the wheels, a screw 15 is employed, arranged as shown in Figs. 1 and 3. This screw is driven through the upright part of the frame and bears on the block 11. The shaft 7 drives the shaft 7^x through the medium of gear-wheels 7^a on the respective shafts.

On the frame 1 is mounted a sheet-supporting table 16 which will be hinged, for convenience, to the frame at 16^x. This table, as here shown, extends from the hinging point 16^x forward to about the point where the pitch circles of the respective milling wheels meet, as seen in Fig. 4, and will be provided at its front edge with a stop or guide 17 for the sheet of metal. Preferably, there will be two stops, one at each side of the milling wheels.

Means are employed for raising the front end of the table 16 and any suitable known means may be used for the purpose. The device herein shown comprises (see Fig. 8) a bridle, 18, secured to lugs, 19, on the table and connected at their upper ends to a cord or chain, 18^x, which passes over pulleys, 19^x, on a beam above and is provided with a weight 20. The table is drawn down by a treadle, 20^x, and cord, 20^a.

In operating the machine, the screw 15 is run back so as to permit the spring 14 to separate the milling wheels and the table is drawn down. A flanged sheet or "shell" of metal X (seen in Fig. 7) is placed on the table with the flange y thereon against the guide or guides 17 and projecting upward. The weight 20 is now permitted to draw up the table, the flange on the sheet passing up between the milling wheels. The screw 15 is now driven in until the teeth on the milling wheels clamp and indent the upright flange y on the sheet and the machine is set in motion, when the milling wheels will feed the sheet along and mill or corrugate the flange.

It will be understood that the milling wheels will have teeth of the size and form to produce the milling required and not necessarily of the form shown in Fig. 5.

When the upright marginal flange about the sheet shall have been milled the machine

will be stopped, the milling wheels opened, the table drawn down and the sheet removed.

This machine is designed for milling flanged sheets in general, but particularly for milling rectangular sheets with rounded corners with the stops 17 placed as represented in Fig. 4. If circular sheets are to be milled, the table 16 will be provided with an adjustable and removable pin, 17^a, mounted on the table and adapted to pass through a central hole in the sheet. Such a pin is shown in Fig. 1.

The milling wheels may be wide enough on their faces to take in and mill the entire width of the flange on the sheet or only a part of the width thereof. Fig. 7 shows a "shell" for a stove-board; that is, a sheet with a box flange turned on its edge, the free portion y^x, of which is turned inward nearly at a right angle to the upright part. This view shows the milling at z. Fig. 5 shows a flanged plate in the grasp of the wheels 9 and 9^x, and being milled. I prefer to provide the wheel 9^x with a flange, 9^a, to take under the sheet being operated on. This flange is best seen in Fig. 6.

As represented in the drawings, the shafts of the milling wheels are vertical and the table horizontal, and this arrangement is the preferred arrangement, but I do not wish to limit myself in this respect.

The usual devices for stopping and starting the machine may be employed. As these devices will vary according to the mechanism employed for driving the shaft 2, I have not shown any for the purpose.

Having thus described my invention, I claim—

1. In a machine for milling the turned-up flange on a sheet of metal, the combination with a pair of milling wheels, one of which is adapted to be moved into and out of gear with the other, and mechanism for driving said wheels, of a sheet-supporting table adapted to be moved toward and from the milling wheels for inserting and removing the flange to be milled, and means for operating said table, substantially as set forth.

2. In a machine for milling the turned-up flange on a sheet of metal, the combination with the frame, of a shaft 7 mounted rotatively in brackets thereon, mechanism for driving said shaft, the shaft 7^x mounted rotatively in blocks 10 and 11, the block 10 pivotally mounted in the upper bracket on the frame, the block 11 mounted and guided in the lower bracket on the frame, the bar connecting said blocks, the milling wheels and gears 7^a on the respective shafts 7 and 7^x, means for holding said milling wheels normally out of gear, means for putting said wheels forcibly into gear, and a sheet-supporting table, adapted to be moved in a direction substantially at right angles to the plane of its face, substantially as set forth.

3. In a machine for milling the turned-up flange on a sheet of metal, the combination with the frame, of a shaft 7 mounted rotatively in brackets thereon, mechanism for driving said shaft, the shaft 7^x mounted rotatively in blocks 10 and 11, the block 10 pivotally mounted in the upper bracket on the frame, the block 11 mounted and guided in the lower bracket on the frame, the bar connecting said blocks, the milling wheels and gears 7^a on the respective shafts 7 and 7^x, the spring 14, for separating the milling wheels, the screw 15 in the frame and bearing on the block 11 for forcing the milling wheels into gear, and a sheet-supporting table, adapted to be moved in a direction substantially at right angles to the plane of its face, substantially as set forth.

4. In a machine for milling the turned-up flange on a sheet of metal, the combination with a pair of milling wheels, one of which is adapted to be moved into and out of gear with the other, and mechanism for driving said milling wheels, of the table 16 hinged at one end and provided at its other free end adjacent to the milling wheels, with a stop or stops 17 and means for elevating the free end of said table, substantially as set forth.

5. In a machine for milling the turned-up flange on a sheet of metal, the combination with a pair of upright shafts, milling wheels mounted on the lower extremities of the said shafts, means for driving said shafts, and means for moving one of the milling wheels into and out of gear with the other, of a sheet-supporting table 16, having its free, front edge arranged under the said milling wheels, and a stop 17 on the front edge of said table, the stop co-inciding substantially, with the point where the pitch circles of the milling wheels come together, substantially as set forth.

6. In a machine for milling the turned up flange on a sheet of metal, the combination with a pair of milling wheels, one of which is provided with a marginal flange to take under the sheet, and means for moving one of said wheels into and out of gear with the other, of mechanism for driving said wheels, and a movable supporting table for the sheet, substantially as set forth.

7. In a machine for milling the turned up flange on a sheet of metal, the combination with a pair of milling wheels, one of which is adapted to move into and out of gear with the other, and mechanism for driving said milling wheels, of a sheet-supporting table adapted to be moved toward and from the said wheels in a direction substantially at right angles to the plane of its face, and a stop or stops on the said table to properly guide the sheet during the milling operation, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM WESTLAKE.

Witnesses:
HENRY CONNETT.
J. D. CAPLINGIR.