

(No Model.)

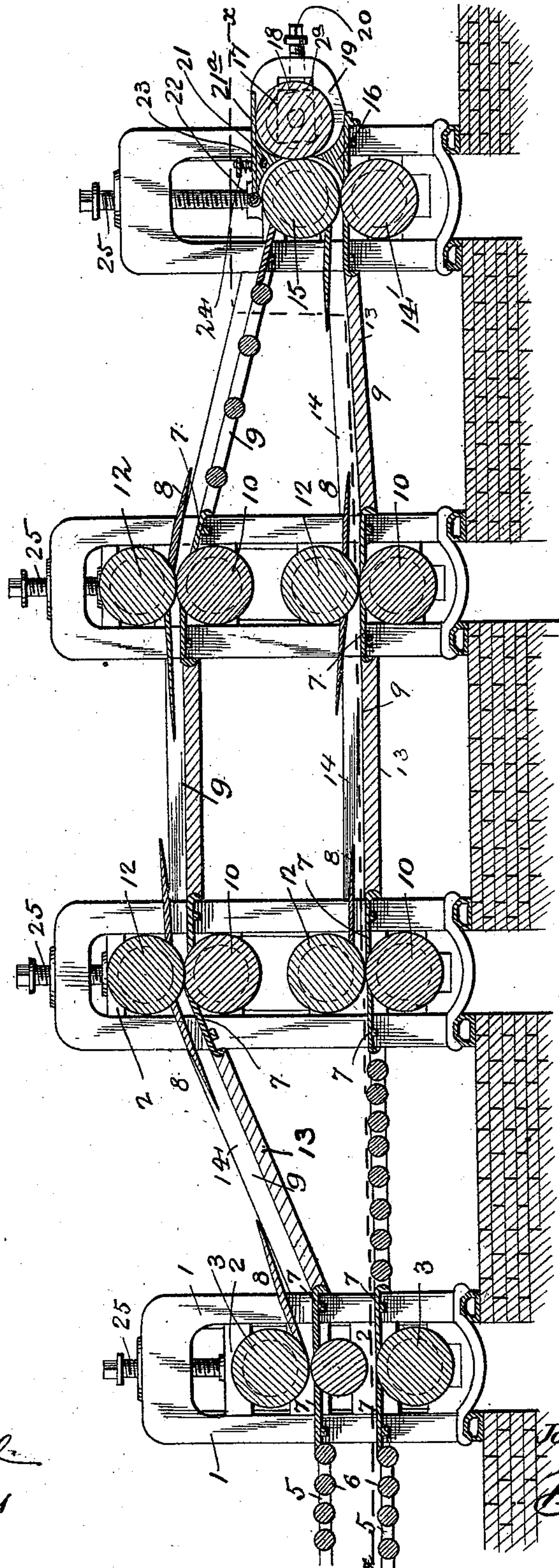
2 Sheets—Sheet 1.

J. MATTHEWS.  
SHEET METAL ROLLING MILL.

No. 556,193.

Patented Mar. 10, 1896.

Fig. 1.



Witnesses:

*H. L. Ouraud*  
*J. L. Coombs*

Inventor:

*Joseph Matthews*  
*James P. Baggett & Co.*  
Attorneys.

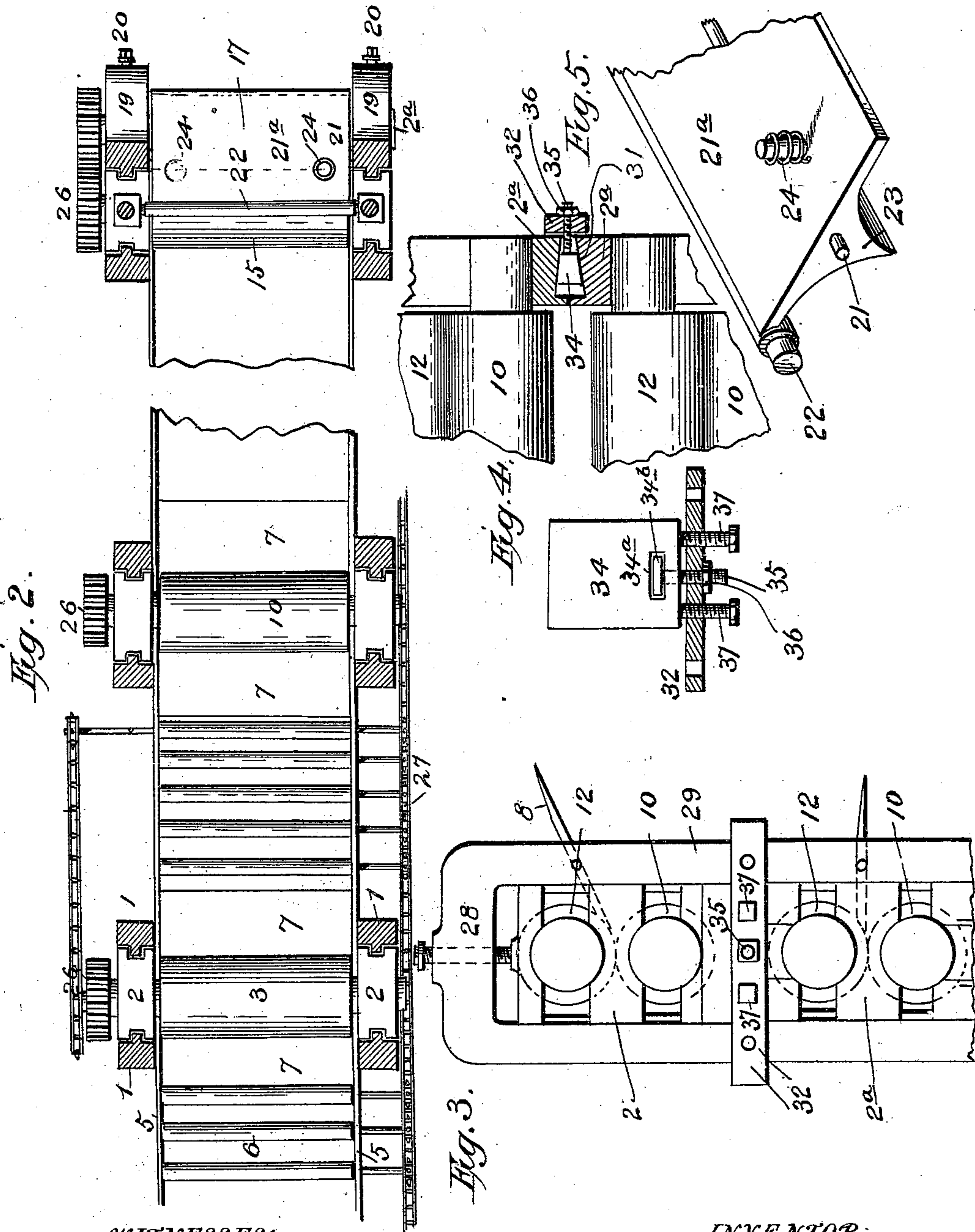
(No Model.)

2 Sheets—Sheet 2.

J. MATTHEWS.  
SHEET METAL ROLLING MILL.

No. 556,193.

Patented Mar. 10, 1896.



WITNESSES:  
A. L. Ourand  
H. L. Coombs

INVENTOR:  
Joseph Matthews,  
by Law, Rogers & Co.  
Attorneys



# UNITED STATES PATENT OFFICE.

JOSEPH MATTHEWS, OF WYANDOTTE, MICHIGAN, ASSIGNOR OF ONE-HALF  
TO ALONZO G. SHERMAN, OF CLEVELAND, OHIO.

## SHEET-METAL-ROLLING MILL.

SPECIFICATION forming part of Letters Patent No. 556,193, dated March 10, 1896.

Application filed May 20, 1895. Serial No. 549,996. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH MATTHEWS, a citizen of the United States, and a resident of Wyandotte, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Sheet-Metal-Rolling Mills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in sheet-metal-rolling mills, in which the metal is first passed between the center and bottom rolls of a three-high train, then between the bottom rolls of one or more four-high trains to a two-high train, when the sheet is turned or bent back and passes to and between the top rolls of the four-high trains, and from thence between the top and center rolls of the three-high train, thus enabling a continuous sheet to be rolled.

The object of the present invention is to provide a rolling-mill of the above character which shall possess superior advantages with respect to efficiency in operation.

The invention consists in the novel construction and combination of parts herein-after fully described and claimed.

In the accompanying drawings, Figure 1 is a central longitudinal sectional view of a rolling-mill constructed in accordance with my invention. Fig. 2 is a horizontal section on the line  $x x$ , Fig. 1. Fig. 3 is a side elevation of one of the four-high trains, the gears being removed. Figs. 4 and 5 are detail views showing the manner of adjusting the rolls for the purpose of increasing the tension.

In the said drawings, the reference-numeral 1 designates the frame of the front or three-high train provided with brasses 2, which form the bearings of the top and bottom rolls 3 and center or middle roll 4. In front of these rolls are platforms consisting of side bars 5 and transverse rollers 6. In front of said frame and tangential to the center roll are guide-plates 7, the lower one of which receives the sheet as it enters between the center and bottom roll, while the other re-

ceives the sheet as it emerges from the center and top rolls after the rolling operation is completed. The inner ends of these plates are curved to conform to the shape of the rolls. Similar plates 7 are also secured to the frame in rear of the rolls. In rear of said train is a platform comprising side bars 5 and transverse rollers 6, which platform leads to a four-high train provided with upper and lower sets of rolls 10 and 12. These rolls are journaled in brasses similar to those before described, and are also provided with guide-plates 7 and guides 8, pivoted to the frame of the rolls. When two four-high trains are used, as in the present instance, they are connected together by a box 9, comprising the sides 14 and bottom 13. As said second four-high train is identical with the first one, a detailed description thereof is not necessary. In rear of said second four-high train is another box 9, which leads to a two-high or reversing set of rollers 14' and 15. In rear of these rolls is a curved turning plate 16, and in rear of the top roll 15 is a roll 17, journaled in bearings 18 in a frame 19, secured to the frame of said rolls. The bearings or brasses 2<sup>a</sup> of these rolls are movable horizontally, and by means of screw-bolts 20 the roll 17 may be pressed close up to the top roll 15.

Pivoted to the roll-frame is a transverse shaft 21, to which is secured a plate 21<sup>a</sup>, having a roller 22 at its inner end and is provided with a curved depending portion 23 and a coiled spring 24, by which said end is forced downwardly against the sheet being rolled. The upper rolls of the four-high and three-high trains are identical, and said trains are provided at the upper part with plates 7, pivoted guides 8, and boxes 9, similar to those above described. The upper bearings or brasses of the top rolls of all the trains are movable vertically, and screws bear against them, whereby the pressure may be regulated.

The rolls are provided with gears 26, by means of which they are rotated, and the rollers of the platforms are connected by endless chains driven by endless chains from the lower rolls: The numeral 28 designates the top of the roll-frames, and 29 the sides thereof.

For the purpose of increasing and decreasing the tension of the rolls I provide the fol-



lowing means. The brasses 2 of the four-high trains are formed with tapering recesses 31, in which is located a wedge 34, having a slot 34<sup>a</sup>, with which engages the head 34<sup>b</sup> of a screw-pin or bolt 35, said head being rotatable in the slot. This screw passes through a central hole in plates 32 secured to the machine-frame, and by means of which and nuts 36, on the ends thereof, the wedges can be forced outward and caused to bear with increased pressure upon the plate passing between the rolls. Set-screws passing through the plates 32 and engaging with corresponding recesses in the wedges hold the latter in place.

Having thus fully described my invention, what I claim is—

1. In a rolling-mill of the character described, the combination with the rear set of rolls, the curved plate and movable roll in

rear thereof, of the pivoted guide-plate having a roller at its inner end and a downwardly-depending curved portion and the coiled spring, substantially as described.

2. In a rolling-mill, the combination with the three-high and four-high sets, the rolls, platforms and boxes, the guide-plates and pivoted guides, of the reversing set of rolls, the curved plate, and movable roll in rear thereof, the pivoted guide-plate having a roller at its inner end and a downwardly-depending curved portion and the coiled spring, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOSEPH MATTHEWS.

Witnesses:

A. W. MILKINS,

JOHN F. MCINERNEY.