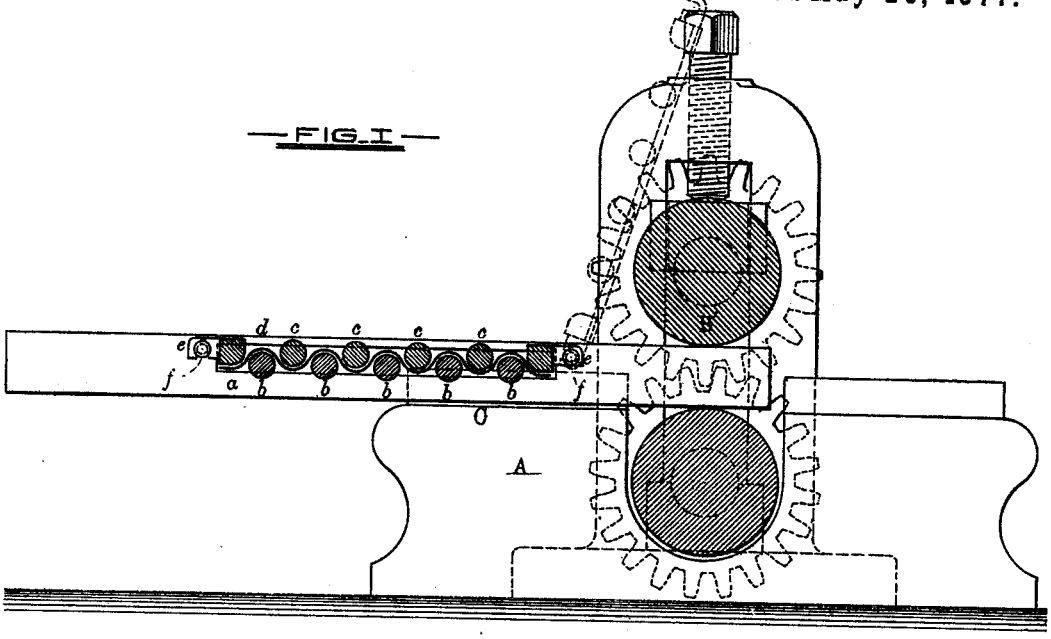
2 Sheets—Sheet 1.

G. F. KISSAM.

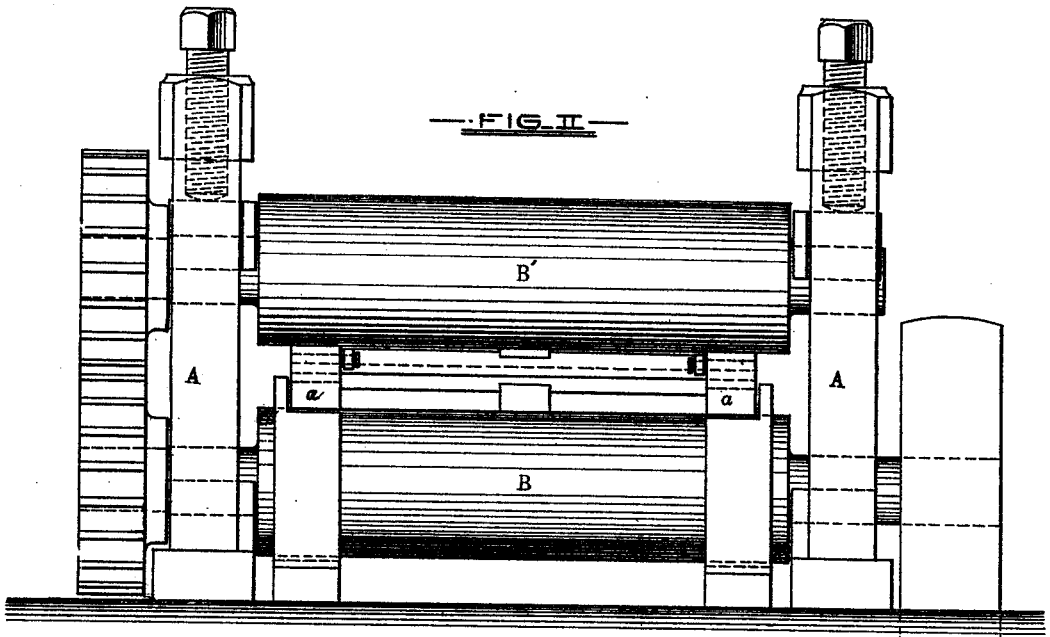
MACHINE FOR CORRUGATING SHEET METAL.

No. 191,441. Patented May 29, 1877.

—FIG. I—



—FIG. II—



—WITNESSES.—

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Wm. Glasgow

—INVENTOR.—

George F. Kissam,

by G. H. & R. F. Howard,

his Attys.

2 Sheets—Sheet 2.

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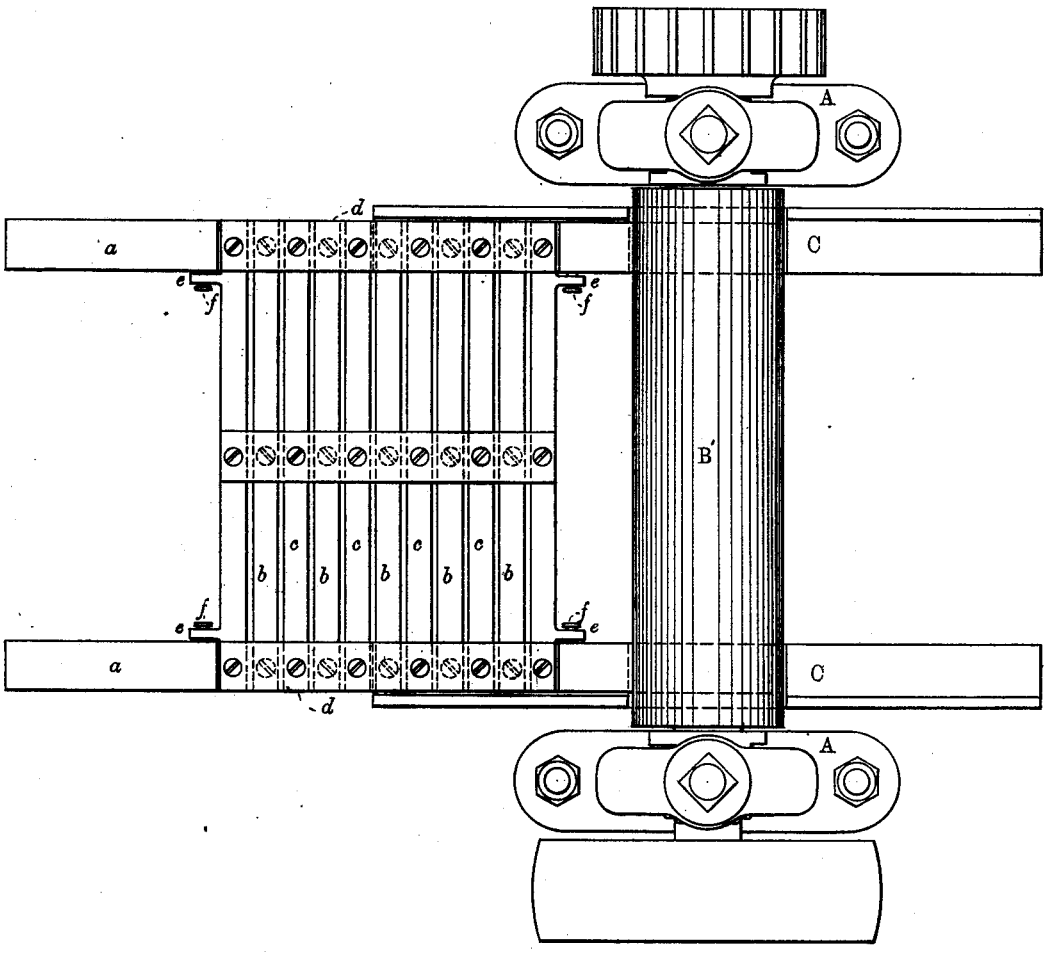
MACHINE FOR CORRUGATING SHEET METAL.

No. 191,441. Patented May 29, 1877.

FIG. III.



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UNITED STATES PATENT OFFICE.

GEORGE F. KISSAM, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF HIS RIGHT TO EDWARD L. BARTLETT, OF BALTIMORE, MD.

IMPROVEMENT IN MACHINES FOR CORRUGATING SHEET METAL.

Specification forming part of Letters Patent No. **191,441**, dated May 29, 1877; application filed April 17, 1877.

To all whom it may concern:

Be it known that I, GEORGE F. KISSAM, of the city of New York, in the county and State of New York, have invented certain Improvements in Machines for Corrugating Sheet Metal, of which the following is a specification; and I do hereby declare that in the same is contained a full, clear, and exact description of my said invention, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

This invention relates to a machine for the above-named purpose, in which the sheet metal to be corrugated is placed between a pair of dies or formers, having transverse bars of a size and shape corresponding to the size and shape of the corrugations to be imprinted in the metal; and which dies or formers, after the insertion of the sheet metal between them, are pressed or closed, and the corrugating operation completed, by their passage between or through plain cylindrical rolls revolving within a suitable frame.

In the further description of the said invention which follows, reference is made to the accompanying drawing, forming a part hereof, in which—

Figure 1 is a longitudinal section of the machine, showing a sheet of corrugated iron confined between the dies. Fig. 2 is an exterior end view of the machine. Fig. 3 is a plan of the same.

Similar letters of reference indicate similar parts in all the figures.

A is the frame or housing of the machine, and B B′ are plain cylindrical rolls revolving in bearing-boxes therein. The upper roll B′ is adjustable in height, in order to allow of the manipulation of sheet metal of various thicknesses. The lower die is formed of two longitudinal bars, *a*, with a portion of the same, practically at the center thereof, notched out to about one-half their thickness, and the transverse bars *b* secured thereto at their ends.

The spaces between the transverse bars *b* are of such width as will admit of the insertion thereto of the transverse bars *c* of the upper die, sufficient additional width of space, however, being allowed for the duplication of the sheet metal. The transverse bars *c* of the upper die are connected at their ends by connecting-pieces *d*, which pieces form a smooth or fair upper surface with the longitudinal bars *a*, when the upper and lower dies are closed.

The dies rest upon a track, C, corresponding nearly in height with the upper surface of the lower roll, and are of such length as to support the dies at either end thereof when clear of the rolls. Hooks *e* at the ends of the upper die, in connection with pins *f* on the lower die, serve as hinges, and permit the upper die to be elevated at either end thereof for the insertion of the sheet metal to be corrugated. The dotted delineation of the upper die shows the same in one of the above positions.

To corrugate a sheet of iron, the upper die is elevated at one end thereof, as described, and the said sheet placed upon the transverse bars of the lower die. The upper die is then lowered in contact with the sheet-iron and the rolls set in motion. The dies are thus drawn between the rolls and the upper one thereof forced down to the position which it is shown as occupying by its full delineation in Fig. 1 of the drawing. After the corrugated sheet is removed, another plain sheet is inserted between the dies, and the direction of the rolls reversed. By this method a sheet is corrugated at each passage of the dies through the rolls.

The advantages of my machine in the corrugation of sheet metal over those in which the result is obtained by means of corrugated or grooved rolls, consist in that one pair of plain cylindrical rolls only are used to effect the corrugating of metals in any desired shape or pattern, the said shape or pattern depending entirely upon the character of the transverse bars. The said bars being removable to admit of the substitution of others, a variety of changes therefore may be made, regular and complex shapes being given to the sheets with equal facility. The metal is also subjected to a less injurious strain during the corrugating operation described than when corrugated rolls are used—the pressure upon the iron is gradually applied thereto, the full or perfect shape not being attained until the iron is directly between the rolls. This grad-

uated pressure prevents to a great extent the stretching of the iron which necessarily takes place, unless it can be drawn over the bars as the length of the sheet is taken up or shortened in its change from a plain flat sheet to a corrugated one.

Having thus described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. In a machine for corrugating sheet metal, the combination of a pair of rolls and longitudinally moving upper and lower dies, the transverse bars of which are adapted to interlock and corrugate the sheet metal placed between them in and during their passage through and between the said rolls, substantially as herein set forth.

2. In a machine for corrugating sheet metal, the combination of the lower die composed of the longitudinal bars *a* and transverse bars *b*, and the upper die composed of the connecting pieces or bars *d* and the transverse bars *c*, substantially as and for the purpose herein specified.

In testimony whereof, I have hereunto subscribed my name this 27th day of February, in the year of our Lord 1877.

GEO. F. KISSAM.

Witnesses:
DAVID WOOD,
ELISHA COLE.