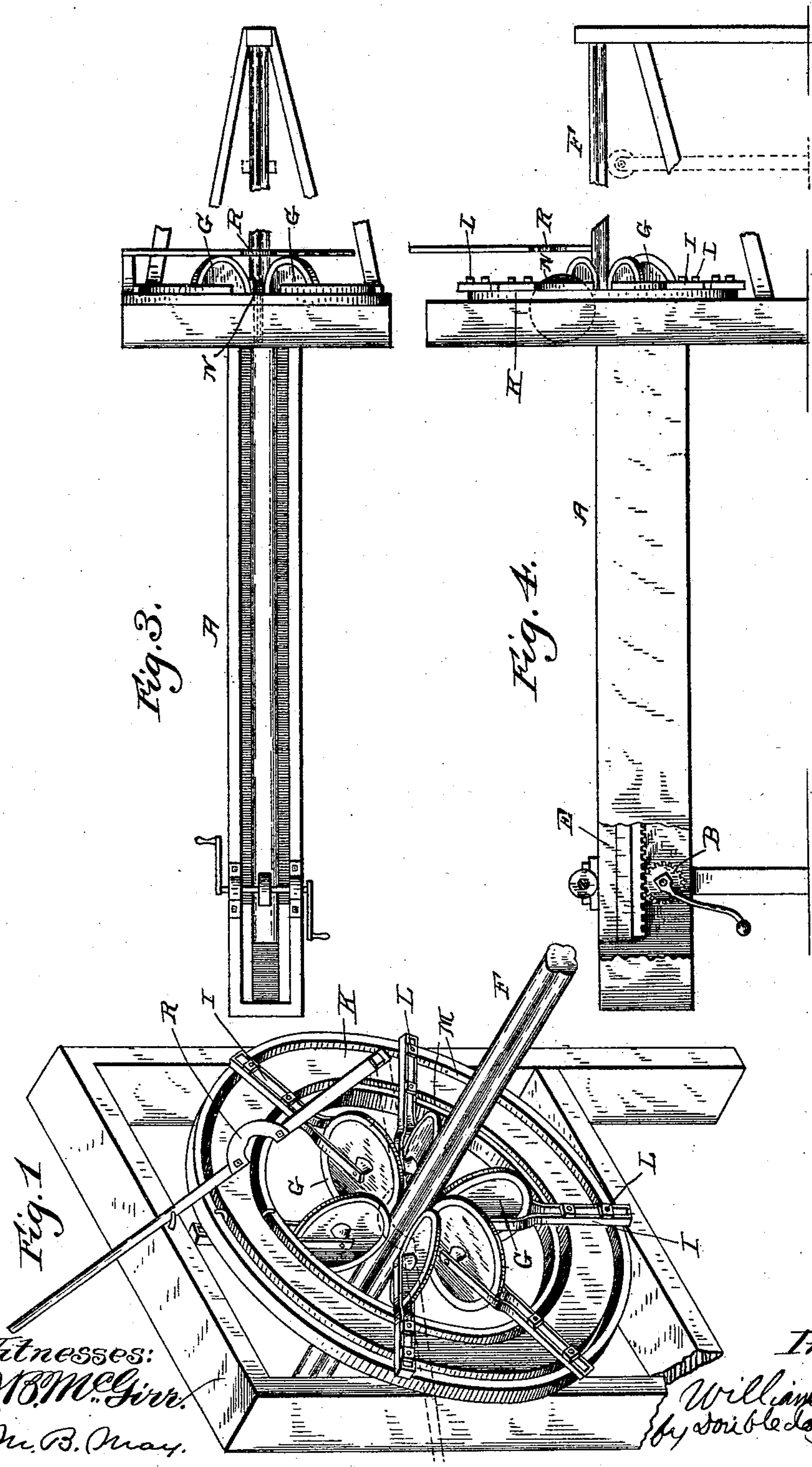
(No Model.) 2 Sheets—Sheet 1.

W. J. PLECKER.

METHOD OF CORRUGATING PIPES.

No. 473,020. Patented Apr. 19, 1892.



Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

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METHOD OF CORRUGATING PIPES.

No. 473,020. Patented Apr. 19, 1892.

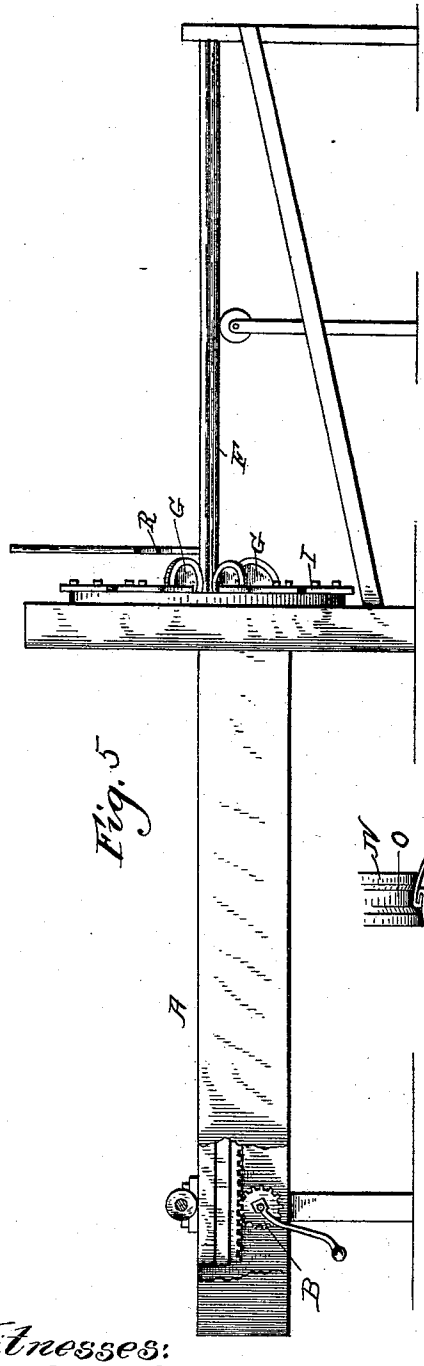

Fig. 5

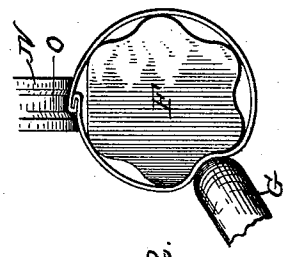

Fig. 2.

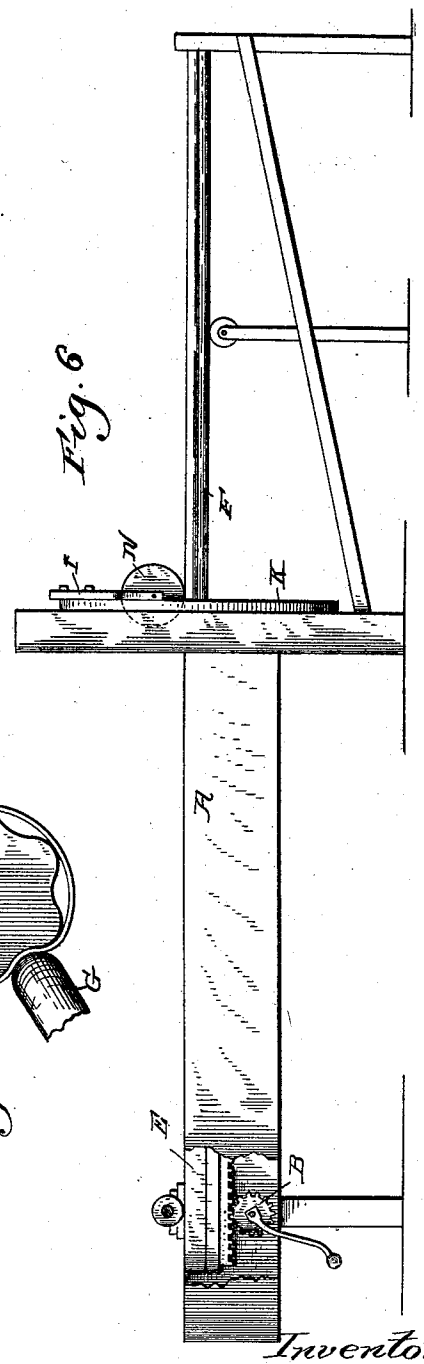

Fig. 6

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UNITED STATES PATENT OFFICE.

WILLIAM J. PLECKER, OF PEORIA, ILLINOIS.

METHOD OF CORRUGATING PIPES.

SPECIFICATION forming part of Letters Patent No. 473,020, dated April 19, 1892.

Application filed February 17, 1892. Serial No. 421,309. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM J. PLECKER, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Methods of Corrugating Pipe, of which the following is a specification, reference being had therein to the accompanying drawings.

In order that my process may be understood, I will first call attention to the earlier devices that have been used for corrugating pipe, as the modes of operation followed in using said machines will assist in bringing out the essential features of the present process.

Machines of several sorts have heretofore been constructed for corrugating pipe, and they may be divided into three classes: first, those in which the mandrel and the pressing devices are both relatively stationary while the skelp is drawn between them; second, those in which the mandrel and the skelp therein are stationary, the pressing devices being movable relatively thereto, and, third, those having a movable mandrel and a stationary set of pressing devices; and to this third class my invention belongs.

In the first class the skelp must be seamed and folded before it can pass through the machine, and it can be readily seen that this has many drawbacks, for the seam will tend to unfold, and thereby undo the work of the locking devices, or if the edges remain tightly locked the metal will be cracked from the strain.

With the machines of the second class are used, also, those for binding down the folds or seams of stovepipes, cans, buckets, &c., and it is obvious that comparatively very little power can be applied with the machine of this class.

With the machines of the third class may be classed the machines for rolling and corrugating seamless metal pipes, as for girders, &c., and also those for rolling lightning-rods and corrugated wire, in which machines the pressing-rolls are so situated as to balance the pressure.

Referring to the drawings, Figure 1 shows a part of a machine of one of the forms that can be used for carrying out my process. Fig. 2 illustrates one way of carrying out that part of the process which relates to bending the metal in corrugations and binding down the joint-seam. Fig. 3 is a plan view of an entire machine adapted to be used according to my invention. Fig. 4 is a side view of the same. Figs. 5 and 6 show modified devices for working the process.

I will first describe an apparatus by which the several steps forming my process can be carried out, though it is possible to perform the process by any one of several mechanisms.

Referring first to Figs. 1 to 4, A is a frame mounted upon suitable supports and having a rearwardly-extending portion also suitably supported. Mounted in bearings in the rear end of the frame is a shaft carrying pinion B and rotated by a belt-pulley or, as shown in the drawings, by a pair of cranks. Sliding upon the frame is a carriage E, provided with a rack, with which the pinion engages and from which it receives its motion. Detachably secured to the carriage by any suitable coupling device and projecting forward therefrom is a mandrel F, conforming in shape and size to the inside measurement of the pipe to be formed. The mandrel is reciprocated through a set of pressing disks or rollers G G G. These rollers are mounted in a way to be hereinafter described.

K is a plate of the form of a ring, having two or more grooves or recesses M M concentric therewith. To this plate are secured the bifurcated arms I I, being bolted thereto by bolts L, passed through the grooves M M. These arms are adjustable toward and from the mandrel, and also laterally, so that it will be seen that any number of rolls may be used to correspond with the corrugations in the mandrel. (By "laterally" I mean adjustable in planes transverse to the faces of the pressing-rolls.) Mounted in the ends of these bifurcated arms are the rolls or pressing-wheels G G, the wheels being so formed on the circumference as to fit in the corrugations of the mandrel. On the side of the plate opposite to that on which the pressing-rolls are mounted is a roll N, having a grooved edge O, Figs. 2 and 3, which is designed to close the locked edges of the skelp after the other wheels have pressed the metal into the corrugations of the mandrel. Pivoted to the front face of the plate K is a detent-lever having a plate R,

adapted to engage the end of the finished pipe to draw it off the mandrel.

It will be readily understood how the machine is operated. The metal blank is cut to the desired size and has the locking edges bent over in a cornice-brake or in any other suitable way, and is then bent over until the edges are locked together. The mandrel being fed into the machine, the end of the skelp or unfinished pipe is rested against a stop-post T and the carriage is retracted by the rack and pinion, the mandrel entering the skelp until its limit is reached, thus sleeving the pipe on the mandrel. Then, the mandrel being fed forward into the machine, the pipe is firmly gripped between the rolls G and the mandrel and is carried by the mandrel through the said rolls, the metal being pressed into the corrugations. Then the carriage is fed back, and on being again reversed the detent-lever is held down, and, engaging with the end of the finished pipe, holds it stationary, while the mandrel is fed forward, thus removing the pipe from the mandrel. It will be noted that the disk N is placed on the rear side of the plate K, and for the following reason: I have found that if the edges of the pipe are firmly locked before corrugating the operation tends to unlock the seam or crack the metal on account of the strain. I, however, place the skelp with loosely-locked edges on the mandrel, and the metal is firmly pressed into the corrugations before the seam is finally closed. This is a very important feature of my machine, as I thereby make a much more durable pipe than one made as before described.

It will of course be understood that, while I have described my method of sleeving the skelp on the mandrel and removing it therefrom, yet I do not limit myself to these particulars, for there are many other ways that can be followed.

Referring to Figs. 5 and 6, in these two machines which I have shown for carrying out my process the pressing and corrugating rolls are mounted on one frame and the locking-roll on another and independent frame. The details of construction are similar to those illustrated in Figs. 1 to 4, that form of machine being the one which I prefer for carrying out my process. The skelp, after being corrugated in the machine shown in Fig. 5, is removed and placed on the mandrel of the machine in Fig. 6 and is passed under the pressing and locking roll N, which firmly locks the seam.

What I claim is—

The herein-described improvement in the art of manufacturing corrugated sheet-metal pipes, it consisting in first forming a tube with loosely-engaged joined edges, then compressing the metal into corrugations on longitudinal lines of the pipe while it is held under tension transversely, and finally tightening the seam or joint by bending the overlapping edges down upon the pipe, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM J. PLECKER.

Witnesses:
G. H. BRADLEY,
J. H. ROSS.