(No Model.) 2 Sheets—Sheet 1.

# J. WHITE.

## CORRUGATING MACHINE.

No. 483,192. Patented Sept. 27, 1892.

Fig 1

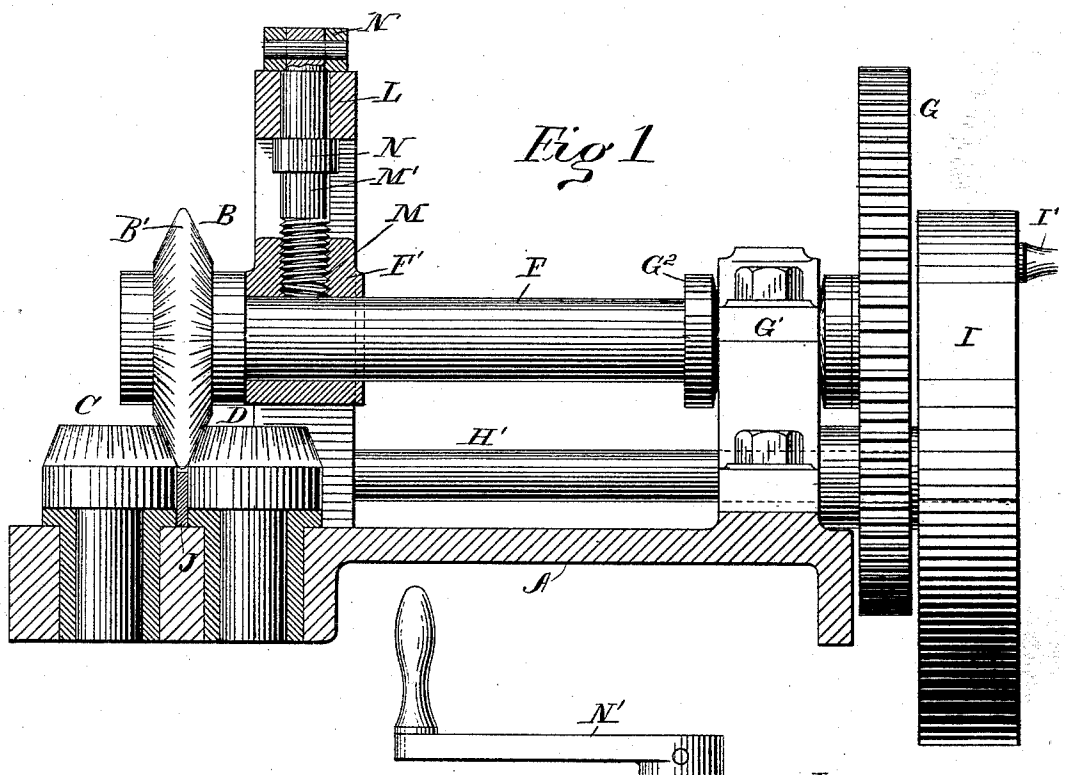
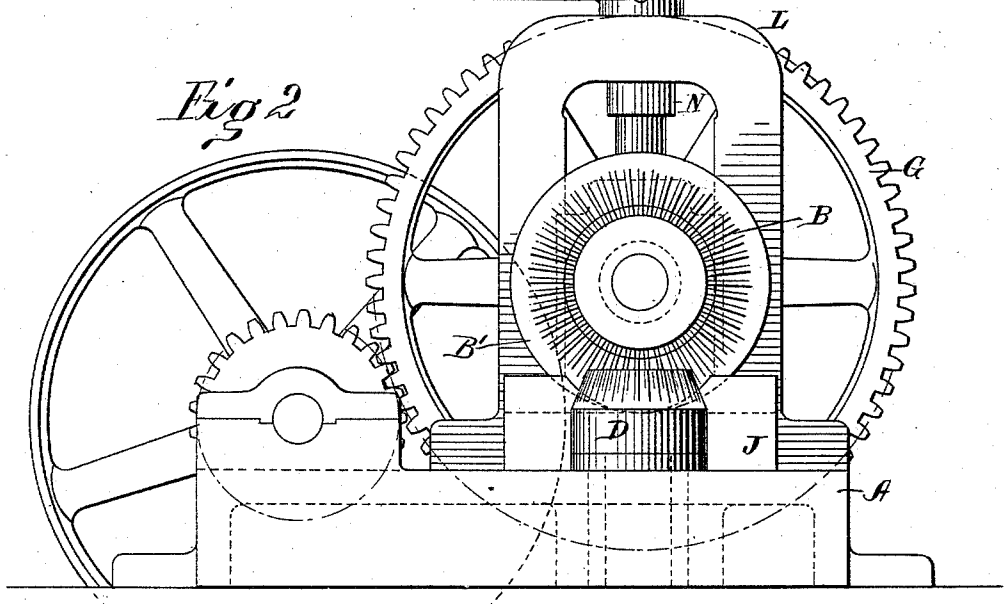



Fig 2

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(No Model.)

2 Sheets—Sheet 2.

# J. WHITE.

## CORRUGATING MACHINE.

No. 483,192. Patented Sept. 27, 1892.

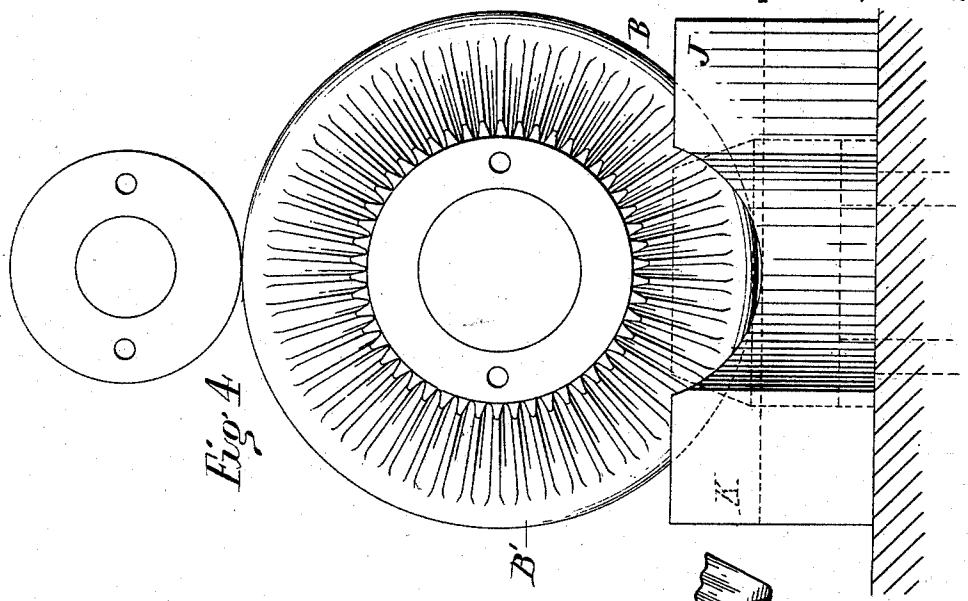


Fig. 4.

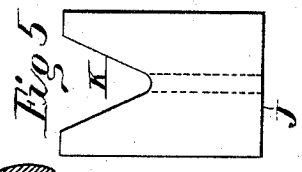


Fig. 5.

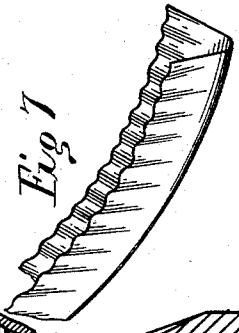

Fig. 7.

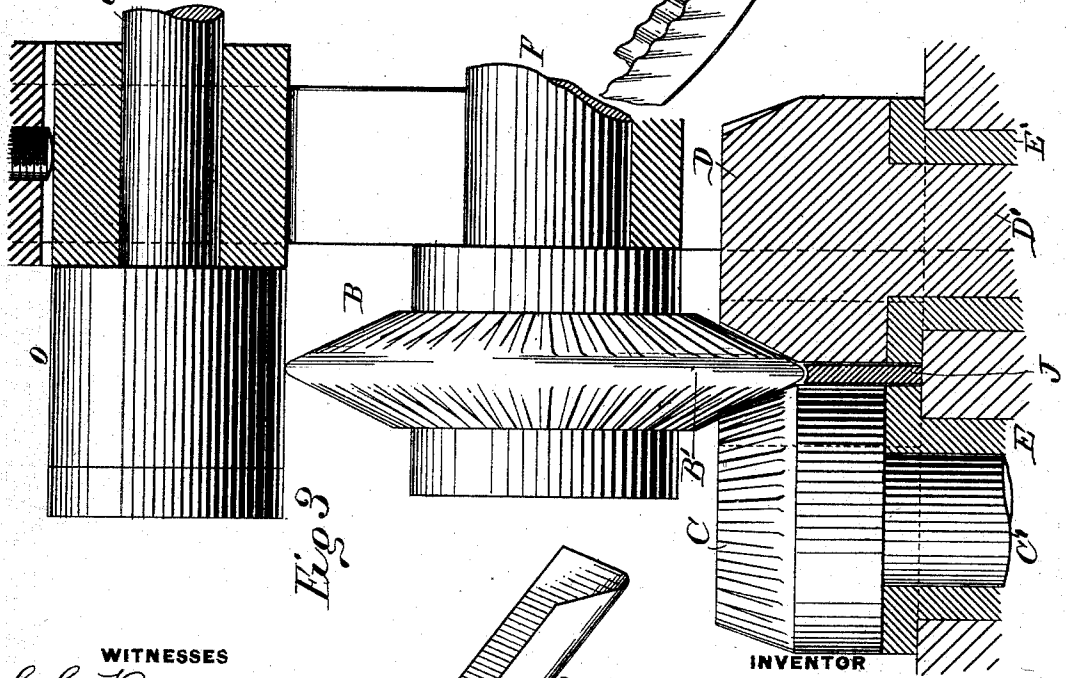


Fig. 3.

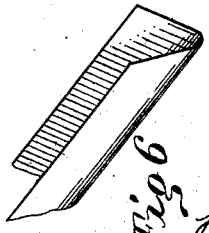

Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## CORRUGATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 483,192, dated September 27, 1892.

Application filed April 9, 1892. Serial No. 428,476. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WHITE, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Corrugating-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of machines used for corrugating strips of metal or other pliable material, and it is especially designed as an improvement on those machines in which a raised annular corrugated double-beveled male die is used in combination with a corresponding female die or dies, my object being to reduce friction and increase the durability and efficiency of machines of this class; and to this end my invention consists in the peculiar features and combinations of parts more fully described hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my invention, partly in section; Fig. 2, an end elevation; Fig. 3, an enlarged detail view of the corrugated rolls; Fig. 4, a detail end view of one of the corrugating-rolls and its immediate parts, the small roll being shown in dotted lines; Fig. 5, a detail view of the work-guide; Fig. 6, a detail perspective view of the material to be corrugated before operated upon, and Fig. 7 a similar view of the material after having passed through the rolls.

The rolls and their co-operating parts are supported or mounted in any suitable housing, such as A. The roll B, which may be called the "male" roll, is circular in shape and has a double-beveled corrugated edge B′, the corrugations or teeth of which, beginning with the smooth annular periphery, gradually increase in size as they approach the center of the bevel, where they develop into a size nearly equal to the standard gear. The double bevels on this roll mesh with the two rolls C and D, which are frusto-conical in shape and have teeth similar to those on roll B formed on their incline sides. These rolls are mounted side by side and revolve on the short vertical shafts C′ and D′, journaled in the housing A, flanged bushings E and E′, formed of antifriction metal, being used to reduce the friction. The two rolls C and D, taken together, form the female roll or element of the machine.

The roll B is given a rotary motion by means of the shaft F, journaled in boxes F′ and G′. A large spur-gear G is fixed to the outer end of this shaft and meshes with the pinion on shaft H′, power being applied to the last-named shaft by means of balance-wheel I and crank I′.

Situated between rolls C and D is a work-guide J, the greatest width of which being nearly equal to the diameter of one of the last-named rolls. This guide has formed in it a longitudinal trough-shaped slot K, conforming to the shape of the metal to be corrugated. Openings are made on both sides of the guide for the reception of the rolls C and D. These openings reduce the width of the guide to the size shown in Fig. 3. They also extend into the walls of the slot K in order to effectually engage with the roll B. The guide is mounted directly on the housing or body between the flanges of the bushings E E′ and extends upward on a plane with the top of rolls C and D. It will be necessary from time to time to vertically adjust the roll B, in order to compensate for wear due to friction and the differences in thickness of the material operated upon. Means have been provided for effecting this, which I will now describe.

Rising vertically from the housing or body portion A is a yoke L, which may be formed integral therewith or rigidly secured to it by bolts. Fitting in this yoke and capable of vertical movement therein is the bearing-box F′. In this box is formed a vertically-extending threaded opening M, into which works the threaded shaft or spindle M′. This spindle extends upwardly through an opening in the upper portion of the yoke and is held vertically immovable by means of the collar N and crank N′, which is keyed to its upper extremity and by which it is rotated. It will readily appear that upon rotating the spindle M′ in

either direction the box F′ will be raised or lowered between the vertical sides of the yoke, thereby adjusting it at will.

In order to admit of the vertical adjustment of the roll B, the bearing G′ will have to be constructed slightly adjustable also. This may be done by forming an elongated opening in the box G′ and fitting an adjustable block therein. Means for adjusting this block are provided, consisting of a threaded-spindle device similar to that shown in Fig. 1. This construction may, however, be varied at will without departing from the spirit of my invention. A variation or modification of this adjusting mechanism is suggested and illustrated by Fig. 3. It consists of a roller O, loosely mounted on a shaft O′, which may be journaled in the housing or any convenient part of the machine. This, however, is not deemed material and is not shown in detail. By pressing this roller down on the roll B it will readily appear that such roll B may be adjusted as before described. By reason of the roller O being loosely mounted on its shaft the roll B may revolve without any undue friction occasioned by the roller bearing upon it.

In using my machine a blank strip of metal (shown is Fig. 6) is placed in guide J and fed toward the revolving rolls. It will be immediately caught up by the vertical rolls and drawn through, coming out on the other side corrugated at the edges, which corrugations gradually decrease as they approach the center, and the strip is curved by reason of such corrugations. It will be readily seen that this peculiar corrugation or crimping is occasioned by the form of the rolls before described, and hence no further description will be necessary.

It may be well to state here that there will be no grinding of the teeth or unnecessary friction due to unevenness of parts or one portion running faster than the other, as the rolls operate on precisely the same principal as beveled gearing, all the teeth being size and ratio in relation to each other.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described rolls for corrugating or crimping metal, consisting of a double-beveled corrugated male roll operating in conjunction with a pair of corrugated single-beveled rolls forming the female element, substantially as described.

2. The herein-described rolls for corrugating or crimping metal, consisting of a double-beveled corrugated male roll operating with a pair of frusto-conical rolls corrugated on their inner faces and forming the female element, substantially as set forth.

3. The herein-described rolls for corrugating or crimping metal, consisting of a double-beveled corrugated male roll operating with a pair of single-beveled corrugated rolls, which revolve on parallel or oblique axis and form the female element, substantially as set forth.

4. The herein-described rolls for corrugating metal, consisting of a double-beveled male roll operating with a pair of single-beveled rolls forming the female element, all of said rolls having corrugations or teeth on their engaging surfaces which gradually increase in size as they approach the center, substantially as set forth.

5. In a corrugating-machine, the combination of a double-beveled male roll, a pair of single-beveled rolls operating therewith, and a work-guide fitting snugly between said single-beveled rolls, substantially as described.

6. In a corrugating-machine, the combination of a double-beveled male roll, a pair of single-beveled rolls operating therewith, and a work-guide fitting snugly between the said single-beveled rolls and having side recesses for their reception, substantially as described.

7. In a corrugating-machine, the combination of a double-beveled male roll, a pair of single-beveled rolls operating therewith, and a work-guide fitting snugly between the said single-beveled rolls and having a longitudinal groove formed therein for the passage of the work, substantially as described.

8. In a corrugating-machine, the combination of a double-beveled male roll, a pair of single-beveled rolls operating therewith, and a work-guide fitting snugly between the said single-beveled rolls and having side recesses and a longitudinal groove, substantially as described.

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

JOHN WHITE.

Witnesses:
JAMES L. BROWN,
JOHN GRIPP.