

No. 838,568.

PATENTED DEC. 18, 1906.

I. W. NUMAN.
SHEET METAL CORRUGATING MACHINE.

APPLICATION FILED OCT. 2, 1905.

2 SHEETS—SHEET 1.

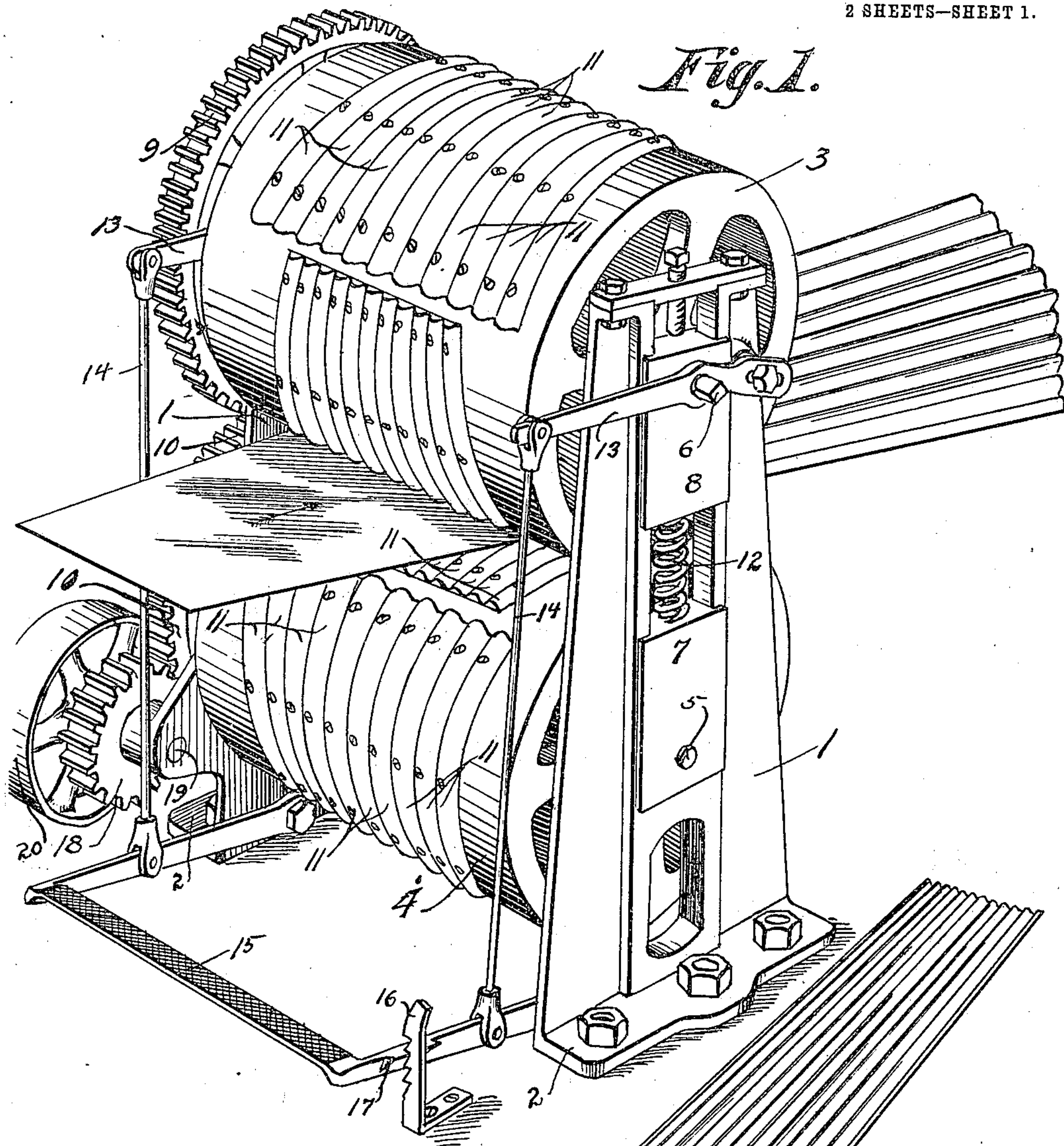


Fig. 2.

WITNESSES

Jos. J. Hosler.
Sylvia Boron,

INVENTOR
Isaac W. Numan.

BY *F. W. Bond*
ATTORNEY

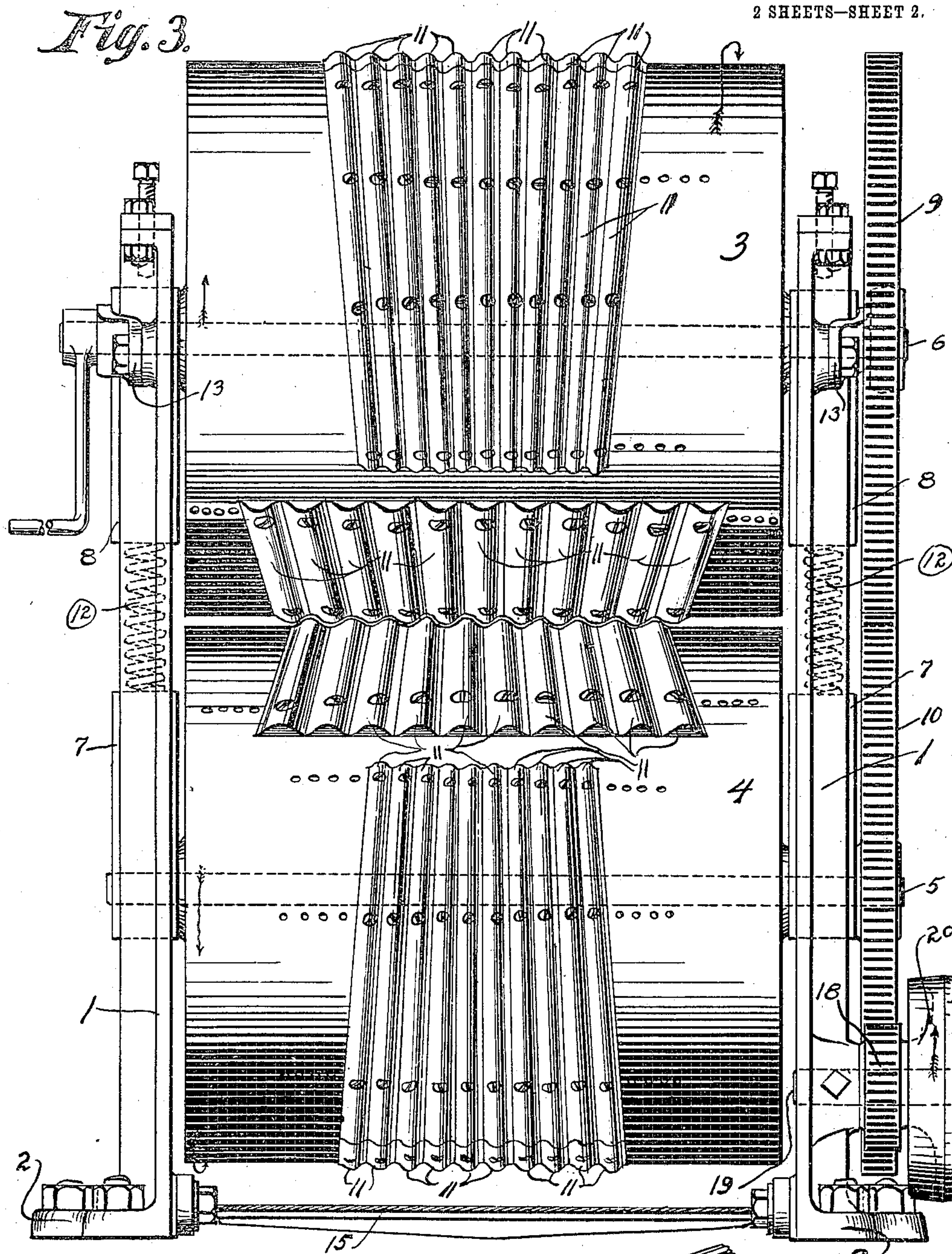
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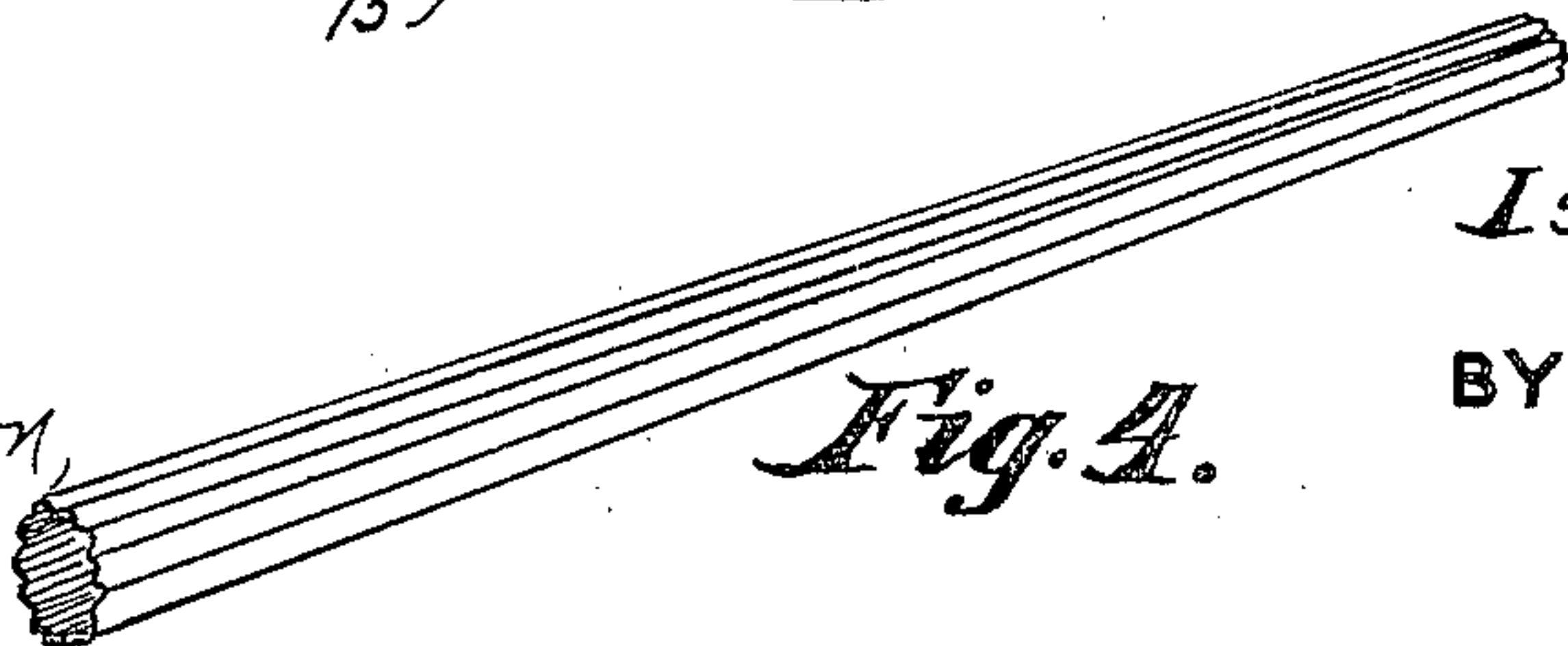
INVENTOR

Isaac W. Numan.

BY *H. W. Bond*

ATTORNEY

Fig. 4.



UNITED STATES PATENT OFFICE.

ISAAC W. NUMAN, OF CANTON, OHIO.

SHEET-METAL-CORRUGATING MACHINE.

No. 838,568.

Specification of Letters Patent.

Patented Dec. 18, 1906.

Application filed October 2, 1905. Serial No. 281,089.

To all whom it may concern:

Be it known that I, ISAAC W. NUMAN, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Sheet-Metal-Corrugating Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the numerals of reference marked thereon, in which—

Figure 1 is a perspective view showing the machine applied to use and illustrating a sheet of metal partially corrugated. Fig. 2 is a view of a finished corrugated sheet. Fig. 3 is a rear elevation showing the corrugated rolls in proper relative position. Fig. 4 is a detached view of a completed column.

The present invention has relation to machinery specially designed to corrugate or flute sheets of metal which are afterward to be brought into a cylindrical form to produce a tapered column and at the same time taper the flutes or corrugations in such manner that after the corrugated sheet has been brought into a cylindrical form the flutes or corrugations will conform in a geometrical sense with the taper of the column.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawings, 1 represents the roll-housings, which housings may be supported upon any suitable foundation or base 2 and of course are to be held in a true upright position or in such a position that the corrugating-rolls 3 and 4 will be held in proper relation with reference to each other. The rolls 3 and 4 are properly mounted upon suitable shafts or axles 5 and 6. The shaft 5 is properly journaled in the stationary bearings 7 and the shaft 6 in the adjustable bearings 8, by which arrangement the rolls 3 and 4 can be brought to and from each other a sufficient distance to properly regulate the pressure necessary to produce the corrugations or flutes in the sheets of metal as they are passed between the peripheries of the rolls 3 and 4. For the purpose of causing the rolls 3 and 4 to rotate in proper unison the shafts 5 and 6 are provided with the gear-wheels 9 and 10. The teeth of said wheels should be so formed that they can come and go to and from each other without throwing said gear-wheels out of mesh. Upon the pe-

ripheries of the rolls 3 and 4 are located the ribs 11, which ribs are tapered, and of course by reason of their taper said ribs are spiral concentrically to the peripheries of the rolls. The center or intermediate rib of each roll is not located spirally upon the peripheries of said rolls; but the remaining ribs must necessarily be located spiral upon the peripheries in order that they may be perfectly parallel throughout their entire lengths. By reason of the taper of the ribs 11 the distance between the extreme outer ribs is greater at their large ends than it is between the outer ribs of the small ends of said ribs, and in feeding the sheets they are started so that the large ends of the ribs 11 will press the corrugations or flutes in the sheets, and of course as the sheets are fed through the proper taper will be given to the corrugations or flutes designed to be formed in the sheet.

It will of course be understood that the rolls 3 and 4 should be formed of such a diameter that one revolution of each roll will corrugate the sheet throughout its entire length, or, in other words, if the sheet designed to be corrugated is nine feet long the circumference of the ribs should be nine feet, or of sufficient length to act upon the entire length of the sheet. It will be understood that in some instances it may be desired or become necessary to rotate one of the rolls independent of the other, and when this is desired the upper roll can be elevated so as to bring the gear-wheels 9 and 10 out of mesh, at which time the rolls can be adjusted with reference to each other so as to produce the proper corrugations or flutes in the sheets designed to be passed through.

For the purpose of giving a slight yielding movement as between the two rolls 3 and 4 the springs 12 are interposed between the bearings 7 and 8; but when it is desired to set the rolls so that there can be no relative movement as between the rolls 3 and 4 the levers 13 are provided, through which levers the shaft 6 is journaled, and to the free ends of said levers are pivotally connected rods 14, which rods extend downward and are connected to the foot-levers 13, which foot-levers are held in a lowered position or fixed adjustment by means of the rack-bar 16, which rack-bar is so located that the lip 17 will engage a tooth of the rack-bar 16. It will be understood that the levers 13 should be so connected at their pivotal points that sufficient lateral movement can be given to

said levers to disengage the lip 17 from the rack-bar 16. For the purpose of connecting the levers 13 so as to operate said levers properly the foot-treadle 15 is provided.

5 When power other than hand is to be applied, the gear-wheel 18 is provided, which is mounted upon the shaft 19, which power-shaft is provided with the power-wheel 20.

For the purpose of producing corrugations, 10 flutes, or other impressions designed to be produced or pressed in the sheets of metal and at the same time, if so desired, to give the entire surface of the sheets the desired formation the rolls 3 and 4 should be so ad- 15 justed that when the sheets enter between the rolls the large ends of the ribs should be exactly opposite or adjacent each other—that is to say, the large ends of the ribs of the upper roll and the large ends of the ribs of 20 the lower roll should be in such a position that they will coact to produce the proper configuration upon the sheets. It will, however, be understood that if the sheets are tapered and in the event the large ends of the 25 sheets are so entered then in that event the large ends of the ribs should first act; but I do not desire to be confined to this particular manner of feeding the sheets between the rolls, as it will be readily seen that if the nar- 30 row or small end of the sheet is first entered then in that event the rolls 3 and 4 should be so rotated that the small ends of the ribs 11 will first act and the large end finally cor- 35 rugated as the sheets leave the rolls.

I do not desire to be confined to the manu- 35 facture of tapered columns; but by the use in my improvement I am enabled to first pro- 40 duce tapered corrugations, fluted, or other formations which taper in size from one end of the sheet to the other, which sheet when 45 so formed can be used for any purpose wherein it is desired or found convenient to use in the construction of buildings sheet metal wherein the flutes or corrugations taper.

For the purpose of allowing the sheets to 45 pass from the rolls after they have been cor- rugated throughout their entire length the large ends of the corrugations or ribs are spaced from the smaller ends, by which ar- 50 rangement the sheets are free to pass from between the rolls before the second revolution of the rolls will bring the ribs into contact with the sheets.

For the purpose of producing corrugations 55 of different shapes and of different spaces between the corrugations, the ribs 11 are so attached to the peripheries of the rolls that they can be moved to and from each other, thereby regulating the distance between any 60 two or more ribs.

It will be understood that the ribs 11 may be formed continuous throughout their en- 65 tire length, or they may be made in sections and the sections so located as to form continuous beads or ribs. This, however, is simply 70 mechanical, and does not enter into the invention in a sense, except that it is convenient in arranging the ribs upon the peripheries of the rolls wherein large rolls are employed.

Having fully described my invention, what I claim as new, and desire to secure by Let- 75 ters Patent, is—

1. In a corrugating-machine, the combi- 75 nation of rolls, a series of ribs located upon the peripheries of the rolls, said ribs spaced from each other and each rib adapted to form a corrugation or flute, said ribs tapered 80 throughout their entire length, and one rib of the series located in a plane at right angles to the axles of the rolls, substantially as and for the purpose specified.

2. In a corrugating-machine, the combi- 85 nation of rolls mounted upon shafts, said shafts located at right angles to the rotation of the rolls, a series of ribs spirally mounted upon the peripheries of the rolls, and an in- 90 termediate rib located at right angles to the rotation of the rolls, substantially as and for the purpose specified.

3. In a corrugating-machine, the combi- 95 nation of rolls mounted upon shafts, said shafts located at right angles to the rotation of the rolls, a series of ribs spirally mounted upon the peripheries of the rolls, an inter- 100 mediate rib located at right angles to the rotation of the rolls, and the ribs adjustable to and from each other substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ISAAC W. NUMAN.

Witnesses:

J. A. JEFFERS,
F. W. BOND.