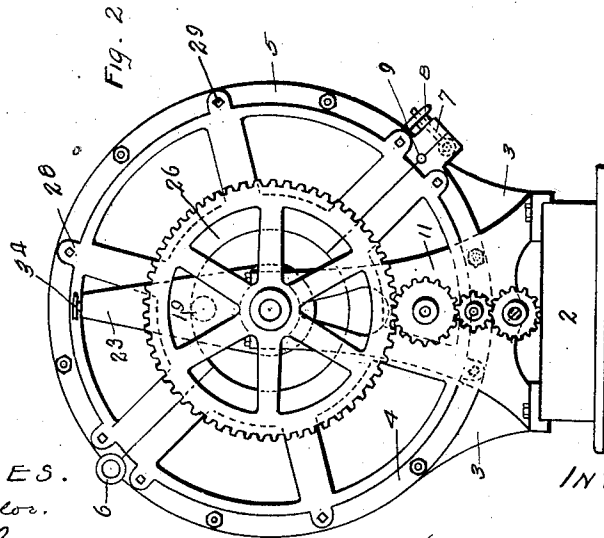
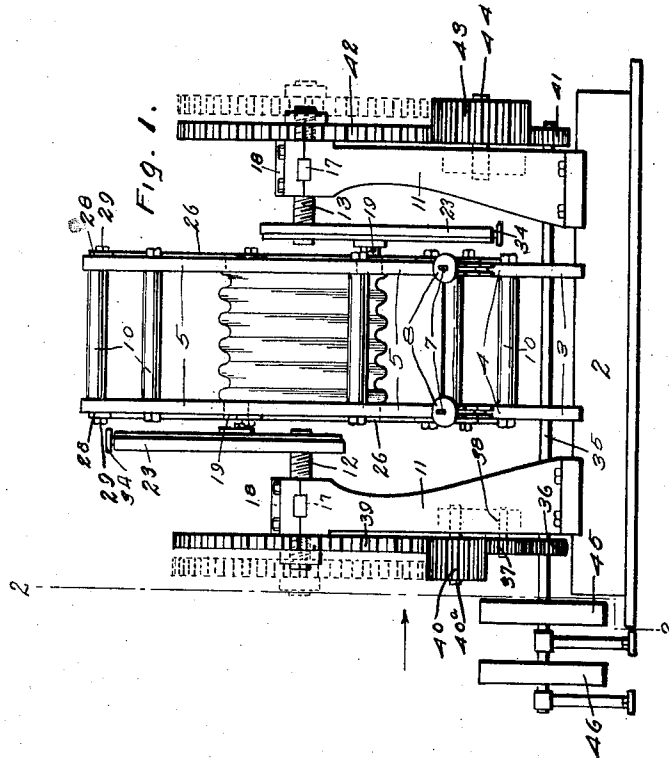


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JOINT FORMING DEVICE FOR SHEET METAL TUBING.
APPLICATION FILED JULY 20, 1911.

1,050,766.

Patented Jan. 14, 1913.

2 SHEETS—SHEET 1.



WITNESSES.

J. W. Taylor.
Mary E. Conner

INVENTOR.

Ferdinand J. Feldt

By

H. V. Piff

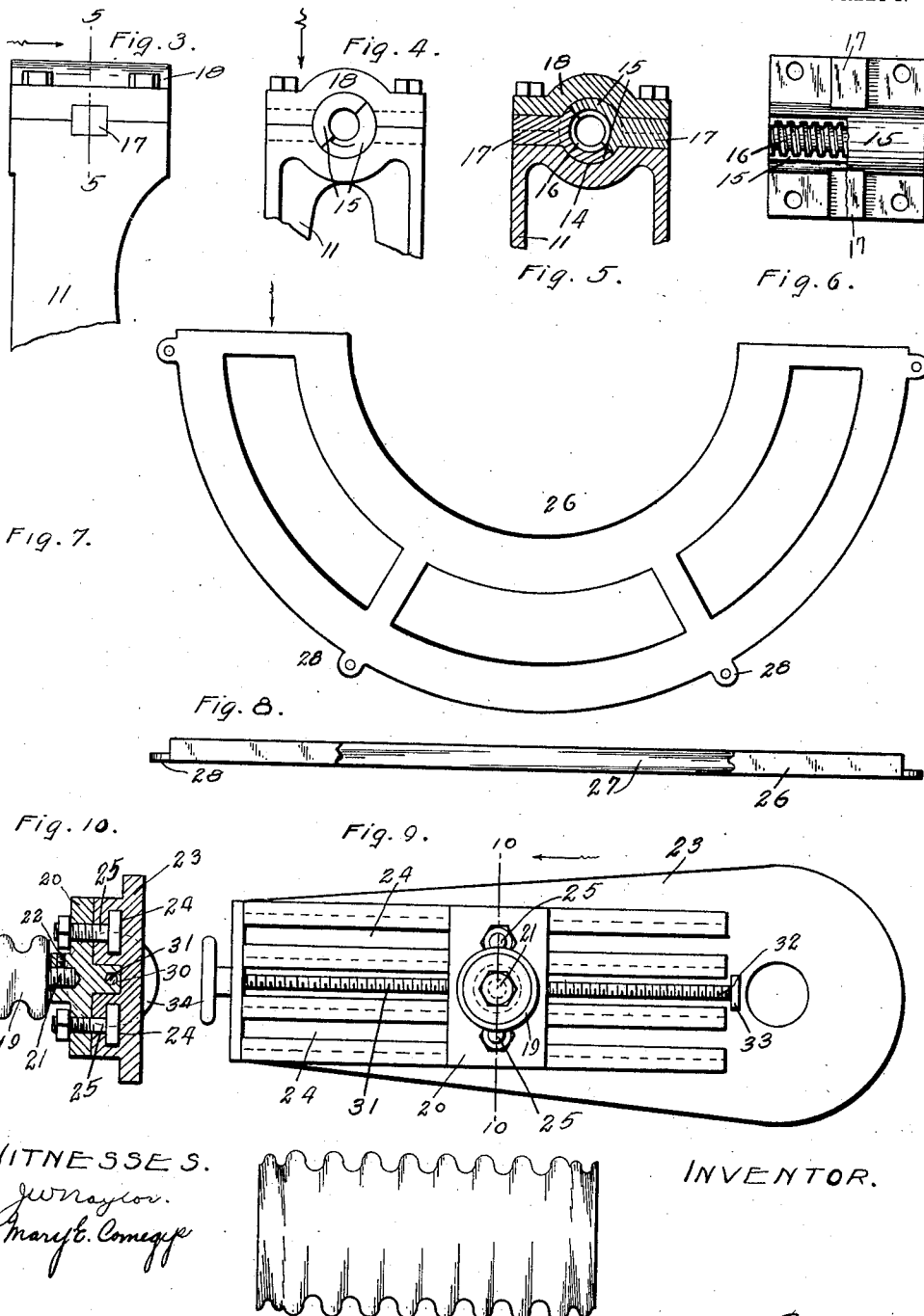
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WITNESSES.

J. W. Taylor.
Mar. 16, 1913.

INVENTOR.

Fig. 11.

Ferdinand J. Feldt

By

H. V. Deff

Atty.

UNITED STATES PATENT OFFICE.

FERDINAND J. FELDT, OF PEORIA, ILLINOIS.

JOINT-FORMING DEVICE FOR SHEET-METAL TUBING.

1,050,766.

Specification of Letters Patent.

Patented Jan. 14, 1913.

Application filed July 20, 1911. Serial No. 639,624.

To all whom it may concern:

Be it known that I, FERDINAND J. FELDT, 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 Joint-Forming Devices for Sheet-Metal Tubing, of which the following is a specification.

My invention relates to a joint former for corrugated culverts and the like.

The object of my invention is to form a thread upon both ends of a culvert or pipe section simultaneously and to provide means for supporting said sections in such a manner as to prevent any shifting of the metal section or parts thereof that would destroy or affect the exactitude that is necessary in such threaded formation to adapt it to be joined with similar threaded parts in the threads formed in the same machine.

My invention consists of a sectional frame adapted to be opened for the insertion of a culvert section and to be closed down in binding bearing relation with said culvert section for the purpose of holding the culvert section firmly in place; of threading dies adapted to be supported in a frame and in relation to the culvert section to bear over end portions adapted to be threaded and of rotatable threader members adapted to engage the interior end portions of the culvert sections and to impress the metal into the dies to form the threads, and means for reciprocating said threader members relatively to simultaneously enter the culvert section and form the thread.

In the drawings—Figure 1 is a front elevation of my machine; Fig. 2 is a side elevation thereof taken on the line 2—2 of Fig. 1; Fig. 3 is a detail view showing a boxing in connection with the frame support; Fig. 4 is an end view of the same boxing associated with the frame support; Fig. 5 is a sectional view of the same subject matter as shown in Fig. 4, taken on the line 5—5 of Fig. 3; Fig. 6 is a plan view of a screw and boxing, portions of the boxing being broken away to show the structure; Fig. 7 is a side elevation of a threading die; Fig. 8 is a view of the same matter as Fig. 7, looking downwardly in the direction of the arrow; Fig. 9 is a front view of a threader arm; Fig. 10 is a sectional view of a threader arm and a threader member taken on the line 10—10 of Fig. 9, and Fig. 11 shows the product of the machine,

the same being intended to illustrate a sectional corrugated culvert provided with threaded end portions.

In the figures, 2 is a base support for the complete machine.

3 are supports for and may be integral parts of die holder section 4.

5 is a die holding section hinged to section 4 as at 6.

7 are bolts pivoted to the forward end of section 4 adapted to be swung into and out of engagement with vertical slots in sections 5, and 8 are hand nuts adapted to draw said sections together and the dies into impinging engagement with the culvert section, and to release said dies from such engagement.

9 refers generally to transverse recesses, one in each face of the meeting portions of the forward end of sections 4 and 5 adapted to match when the sections are brought together to form the transverse circular opening. A pin corresponding in size to said opening is adapted to be seated in the lower opening for the purpose of forming a guide and stop for the upper section to insure a proper relative position of the two sections when drawn together to cause the threads of the die sections to coincide to form a perfect circle.

10 are spacer blocks interposed between sections 4—4 and 5—5 to space them apart and may be secured thereto respectively by means of rods, bolts and nuts, substantially as shown.

11 are supporting standards for screws 12 and 13, the former being supported upon and connected with base 2, substantially as shown, and the latter are formed with box seats as 14 (see Figs. 3, 4 and 5).

15 is a sectional boxing threaded interiorly as at 16 and provided with laterally extending lug portions 17 adapted to be seated in matching laterally extending openings in standards 11 and in similar openings in cap 18. The screws 12 and 13 are adapted to be reciprocated relatively with the required movement of the thread forming device to induce the proper travel of the latter in forming threads in the respective ends of corrugated sections.

19 are threading members pivoted to blocks 20 by means of bolts 21 upon which they are journaled, the entering end of said bolt being threaded and engaging a threaded opening in said blocks, said bolt being

adapted to be set in fixed position by means of set screws as 22.

23 are threader supporting arms having fixed connection with the outer ends respectively of screws 12 and 13 and are arranged to bear in opposite directions relative to a center line through their supports. Each arm is provided with T-slots 24 (see Figs. 10 and 11) within which a portion of the body and the heads of bolts 25 are adapted to be carried in a slidable relation therewith. The outer ends of bolts 25 are carried through perforations in blocks 20 adapting said blocks to be adjusted longitudinally of said threader supporting arms 23 in any desired position and to be fixed thereto.

26 are threader blanks or dies (see Figs. 7 and 8) provided with the threaded portion 27 adapted to be arranged relatively to form a complete circle to produce a continuous thread. Blanks 26 are provided with perforated lugs 28 adapted to overlie the edges of sections 4 and 5 and to be secured thereto by means of cap screws 29. Threader blanks or dies 26 may be made in sizes to suit the formation of threads in any desired size or sizes of corrugated tubular sections and this object is accomplished by varying the size of the arc described by the threaded portion of said blanks.

In order to meet the requirements of commercial use of corrugated culverts, it is necessary to produce different sizes of the same. To this end graded sizes of blanks are used that may be readily substituted one for another. The adjusting facilities connected with the association of thread former 19 with relation to arms 23 accommodate the proper relative positioning of said threader member with relation to threaded portion of blanks 26 and is such as to meet the requirements of the interchange of blanks to effect the threading of different sizes of culverts.

Blocks 20 are provided with the threaded openings as 30 adapted to be carried upon screws as 31 supported in arms 23 in the manner shown in Fig. 9, in which it is seen that the head portion 32 of said screws is carried in a seat 33 in the body of said arms and in a relation to permit turning of said screws. 34 are hand holds fixed upon the outer ends of screws 31 adapted to facilitate the turning of said screws to move blocks 20 into desired positions of adjustment upon said arms 23.

In the operation of threading the ends of the culvert sections, it is necessary that the threader members 19 shall be moved in the opposite direction simultaneously in their circumferential travel of the culvert sections in forming the thread and to reciprocate relatively in opposite directions during such formation of the thread to cause a si-

multaneous projection longitudinally of the culvert in entering the same and similarly in being withdrawn therefrom. To meet this requirement, screws 12 and 13 are oppositely threaded to accomplish the proper travel of the threader members about their axes of support. To effect the proper revolution of the threader members 19 I have provided the common driving shaft 35 for driving both screws and have provided intermediate gear connection between said shaft and the respective screws to accomplish such opposite direction of turning. The means for driving screw 12 is through cog wheel 36 fixed on shaft 35, cog wheel 37 on stud 38 supported in one of the standards 11, cog wheel 39 fixed on screw 12 and the cog wheel 40 carried on stud 40^a and meshing both with cog wheels 37 and 39, said cog wheel 40 having a wide face adapted for sliding relation with cog wheel 39, as the latter is moved inwardly and outwardly with relation to the end of the culvert section being threaded. The maximum movement of cog wheel 39 toward the center of the culvert section is shown in solid lines and the maximum position of its outward movement therefrom in dotted lines in Fig. 1.

The connection for driving screw 13 from shaft 35 comprises cog wheel 41 fixed on shaft 35, cog wheel 42 fixed on screw 13 and the intermediate cog wheel 43 on stud 44 intermeshing with cog wheels 41 and 42. Cog wheel 43 has a wide face facilitating lateral movement of cog wheel 42 thereon for the same purpose as described in connection with cog wheel 39 in its relation to cog wheel 40.

Shaft 35 may be driven from any suitable power and in opposite directions through and by means of belt wheels 45 and 46 to accomplish the projection of the threader members 19 into the culvert section or the withdrawal of the same in the course of the threading operation.

In the operation of the device, the culvert blanks or cylindrical sections are adapted to be positioned with relation to sections 4 and 5 by first raising section 5 sufficiently to admit said culvert blank and by placing flat portions at the ends of said sections upon the screw thread portions of dies 26, then section 5 is lowered into bearing relation with said culvert section, the pivoted bolts 7 are swung upwardly into slots in the ends of said sections 5, and nut 8 is turned to draw the two sections together to effectually lock the culvert section in position. The threading operation is effected by the proper turning of screws 12 and 13 to project the threader members 19 simultaneously into culvert sections and as they are gradually advanced on a helical line, the threads will be formed in the ends of the

sections. The reverse movement of screws 12 and 13 will similarly cause the threaded members to be withdrawn and in being so withdrawn, further operate to effect the threading of the sections.

The sections threaded in the manner above described may be readily joined as in the formation of the cylindrical section blanks the opening at one end is made smaller than at the other so that when the small end of one section is brought to the larger end of a similar section, it will readily enter the latter and the sections may be screwed into each other to form a tight joint effective against longitudinal and vertical strain.

My machine may as readily be applied for threading the ends of any sheet metal section, whether corrugated or plain pipe and the sections 4 and 5 may be spaced apart to accommodate the threading of sections of any desired length, therefore I do not desire to limit myself to the use of the machine in making threaded joints for corrugated sections only but any other sections of any particular length, furthermore my invention may be embodied in different form, and the parts thereof differently arranged relatively to accomplish the same result, therefore do not desire to limit myself to the particular form disclosed herein but claim as my invention any and all structural combinations to effect the same result that may fall legitimately within the principle thereof.

What I claim is:—

1. In a device of the class described, the combination of a pivoted sectional die holding frame, the meeting edges of which are inclined from the pivoting point to the openable portion thereof to facilitate the insertion of metal blanks, sectional dies having their meeting edges similarly inclined with that of the frame and having oppo-

sitely directed threads, a pair of coincidentally reciprocating screws in axial alignment with reference to the dies supported in the frame and disposed one on each side of said frame, an arm upon the inner end of each screw, a threader member upon each arm adjustable lengthwise of the latter and means for simultaneously turning the screws relatively in opposite directions, whereby oppositely directed threads will be formed in the respective ends of a metal section and the reverse turning of the threader member will balance the pull upon the metal section and prevent its turning in the dies.

2. In a device of the class described, the combination of a pivoted sectional die holding frame, the meeting edges of which are inclined from the pivoting point to the openable portion thereof to facilitate the insertion of metal blanks, sectional dies having their meeting edges similarly inclined with that of the frame and having oppositely directed threads, a pair of coincidentally reciprocating screws in axial alignment with reference to the dies supported in the frame and disposed one on each side of said frame, an arm upon the inner end of each screw, a threader member upon each arm adjustable lengthwise of the latter and means for simultaneously turning and projecting the screws relatively in opposite directions whereby oppositely directed threads will be formed in the respective ends of a metal section, and the reverse turning of the threader member will balance the pull upon the metal section and prevent its turning in the dies.

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

FERDINAND J. FELDT.

Witnesses:

MARY E. COMEGYS,
W. V. TEFFT.