A. W. GILLESPIE.

FORMER OR SHOE FOR TUBE FORMING MACHINES.

APPLICATION FILED JULY 23, 1915.

1,319,862. Patented Oct. 28, 1919.

Fig. 1

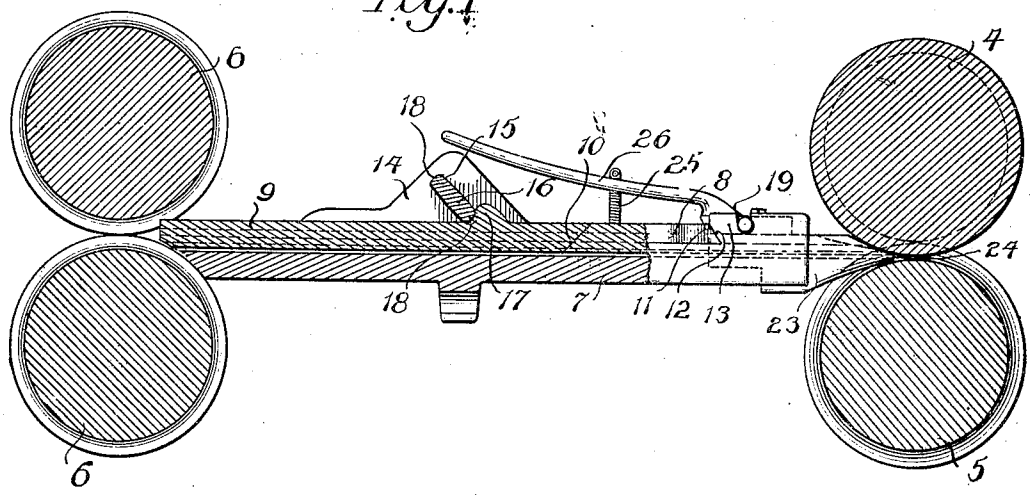


Fig. 2

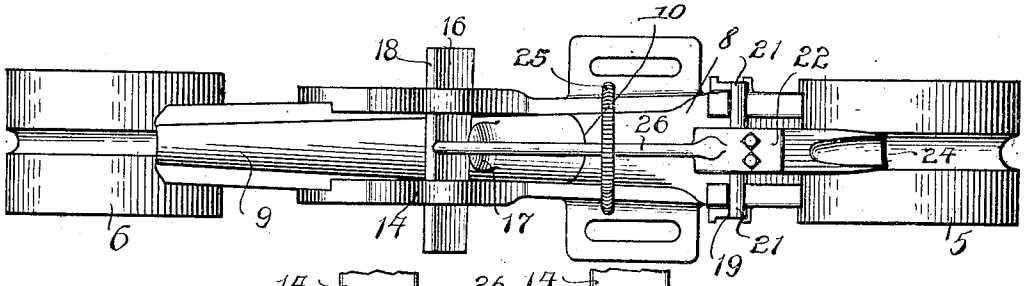
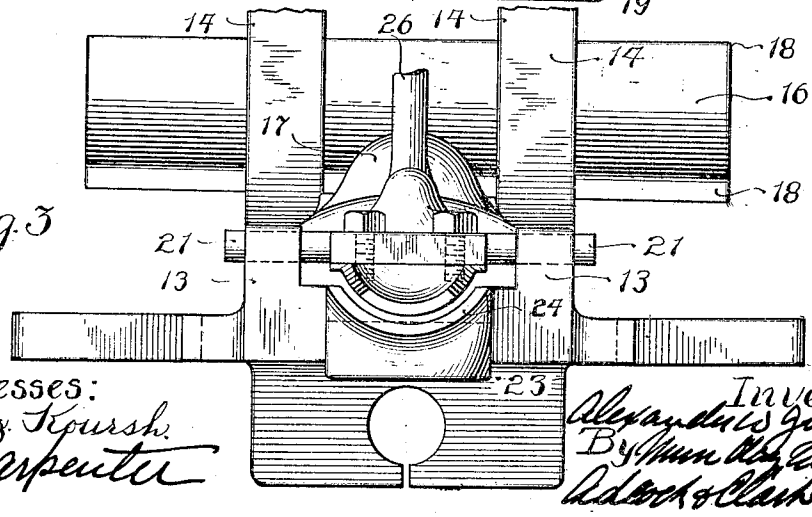


Fig. 3



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UNITED STATES PATENT OFFICE.

ALEXANDER W. GILLESPIE, OF CHICAGO HEIGHTS, ILLINOIS, ASSIGNOR TO CALUMET STEEL COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

FORMER OR SHOE FOR TUBE-FORMING MACHINES.

1,319,862. Specification of Letters Patent. Patented Oct. 28, 1919.

Application filed July 23, 1915. Serial No. 41,467.

To all whom it may concern:

Be it known that I, ALEXANDER W. GILLESPIE, a citizen of the United States, residing in Chicago Heights, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Formers or Shoes for Tube-Forming Machines, of which the following is a specification.

My present invention relates to mechanism for forming metal tubes and has more particular reference to certain features of construction of the shoe or former in a machine of the type of tube-forming machine or apparatus described in my earlier Patent No. 1,124,221 granted January 5, 1915.

A principal object of this invention is the provision of a former or shoe, the parts of which will be firmly secured in operative relation through means so constructed and arranged as to prevent breaking of the shoe or of the means holding its parts together under substantially all working conditions and which at the same time may be readily removed or loosened to permit disconnection of the parts of the shoe or tube-former as occasion may require.

A further object of the invention is the provision of such structure which, while possessing the foregoing and other advantages, will be light in weight and require in its construction a minimum amount of material.

In the construction of metal tubes in the manner described in my earlier patent to which reference has already been made, long pieces of flat stock or skelp are fed through rolls which give them a form tending toward the form of the finished tubes. This partially formed skelp then enters the shoe. A decidedly important object of this invention is the provision of means for permitting an imperfectly formed or defective piece of skelp to leave the rolls mentioned without entering the shoe, thereby eliminating or at least minimizing damage to the rolls or shoes through catching or jamming of the skelp in passing from the rolls to the shoe.

A further object of this invention is the provision of means for accurately directing perfect stock or stock sufficiently perfect to be usable into the shoe or former from the rolls.

Other objects and advantages of the invention will be apparent from the following description when considered in connection with the accompanying drawing illustrating a preferred embodiment thereof.

On the drawing,

Figure 1 is a partial section taken vertically through the former or shoe;

Fig. 2 is a top plan view of the same with the upper rolls removed; and

Fig. 3 is a front end view of the former or shoe with the rolls removed.

For the purpose of illustrating my invention, I have shown on the drawing a single pair of forming rolls 4 and 5, although it will be manifest that a greater number of rolls may be used if desired. I have also shown a single pair 6 of finishing rolls, of which of course the same is true. Between these two pairs of rolls is positioned the tube former or shoe in which my present invention is embodied.

This former or shoe consists in the present instance of a lower or female part 7 and two upper or male parts 8 and 9, the two parts together forming what may be termed the upper member or half of the shoe. When in position they are arranged end to end with inclined faces 10 in contact. The forward end of the forward part 8 is beveled at 11 for engagement beneath the undercut face 12 of lugs 13 on the forward end of the part 7. The lugs 13 extend up on each side and provide stops against which the upper half of the shoe is wedged through means to be now described.

A pair of lugs 14 located one on each side and opposite the position of the part 9 of the upper half extend upwardly from the lower half or part 7. As shown on the drawings, these lugs are each of triangular form and they are provided with registering apertures 15 through which a key 16 may be inserted above the part 9 and behind a suitably positioned shoulder or upwardly extending projection 17 on the part 9. The key 16 is substantially of rectangular cross section, except that the narrower sides 18 are preferably rounded somewhat. The key tapers in width from end to end as may be seen by viewing Fig. 2 and the aperture in one lug is of the same dimension as the aperture in the other, so that the top edge of the key is substantially horizontal when the machine is arranged as shown in the drawing. The key is inserted in place and driven

tightly into engagement with the part 9, thereby producing a binding engagement between the forward end of the part 8 and the lugs 13 and a second binding engagement between the contacting ends of the parts 8 and 9 of the upper half of the tube.

The lugs 13 are provided with alined recesses 19 for the reception of outwardly extending pivot studs 21 of a pivotally mounted stripper or guide 22, which, with a companion stripper or guide 23, serves to direct the skelp from the rolls 4 and 5 into the shoe. The stripper or guide 23 extends between the rolls and rests on the bottom roll 5 at one end. This guide has a tongue 24 extending into a suitably formed recess in the forward end of the part 7. The stripper or guide 22 extends between the rolls also and coöperates with the upper roll 4. This last mentioned guide is held in contact with its coöperating roll by a spring 25 embracing an extended stem or arm 26 and secured at its ends to a suitable part of the former. The width of both guides or strippers is substantially equal to or greater than the width of the pass between the rolls, so that any tube skelp at all straight or usable which issues from the rolls, will be directed accurately into the shoe. The forward end of each guide is relatively narrow or thin and is of shape substantially that of the operating face of the roll with which it cooperates.

The lower guide rests at its forward end upon the lower roll and the upper guide is loosely mounted through its pivot stud in the recesses 19. Any misformed or twisted or defective skelp coming from the rolls in such shape that it cannot enter the shoe or former will lift the studs out of the recesses 19 against the force of the spring 25 moving the stripper or guide 22 upwardly and out of the way and pass forwardly above the shoe.

It will be manifest that all parts of the shoe are of simple and readily constructed form, utilizing a minimum amount of material consistent with the required strength. It may be mentioned, however, that the arrangement of the key 16 in the lugs 14 disposes the forces felt by it in a central plane extending parallel with its wider faces.

It is thought that the invention and its attendant advantages will be understood from the foregoing without further description and it will be manifest that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing any of its material advantages, the form hereinbefore disclosed being merely a preferred embodiment thereof.

I claim:—

A former or shoe for a tube-forming machine, comprising a male and female member, and a yielding guide for directing skelp between said members, said guide having oppositely extending pivot lugs resting in open top recesses of the male member, and yielding means for holding the forward end of said guide elevated, the connection between the guide and male member being such that defective skelp passing into the former may lift the guide from the male member and permit the skelp to pass out of the former.

Signed in the presence of two subscribing witnesses.

ALEXANDER W. GILLESPIE.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."