No. 683,801. Patented Oct. 1, 1901.

J. REIMAN.

APPARATUS FOR STEP ROLLING TUBES.

(Application filed July 8, 1901.)

(No Model.)

Fig. 1.

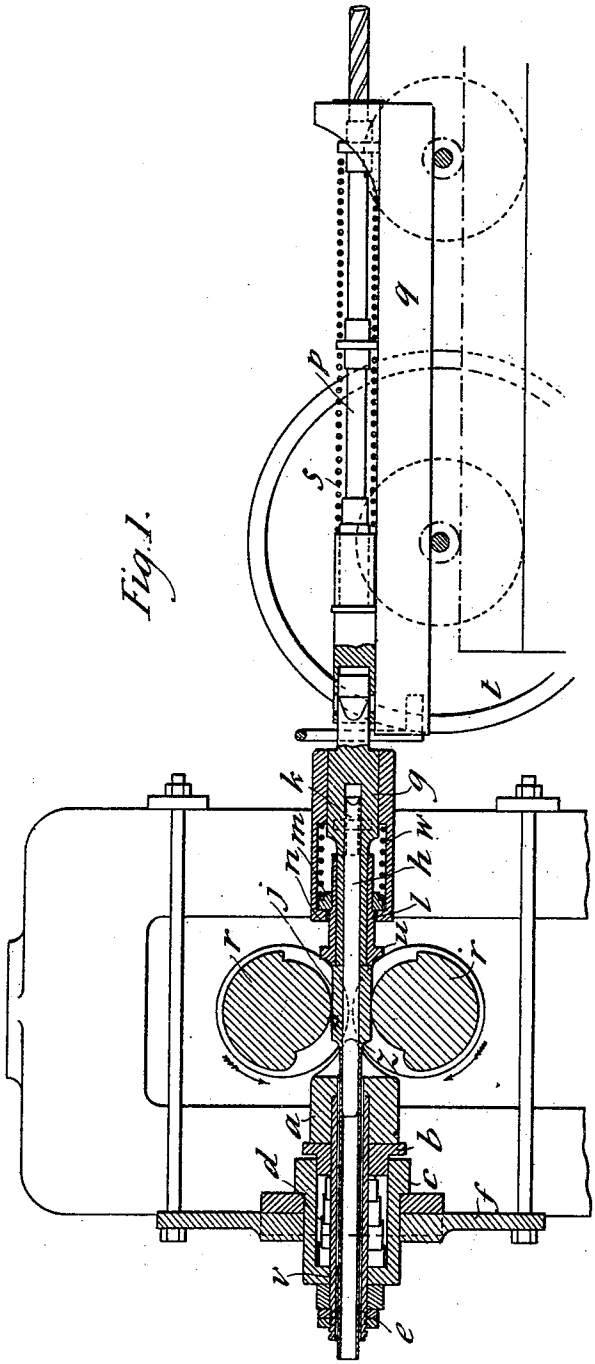
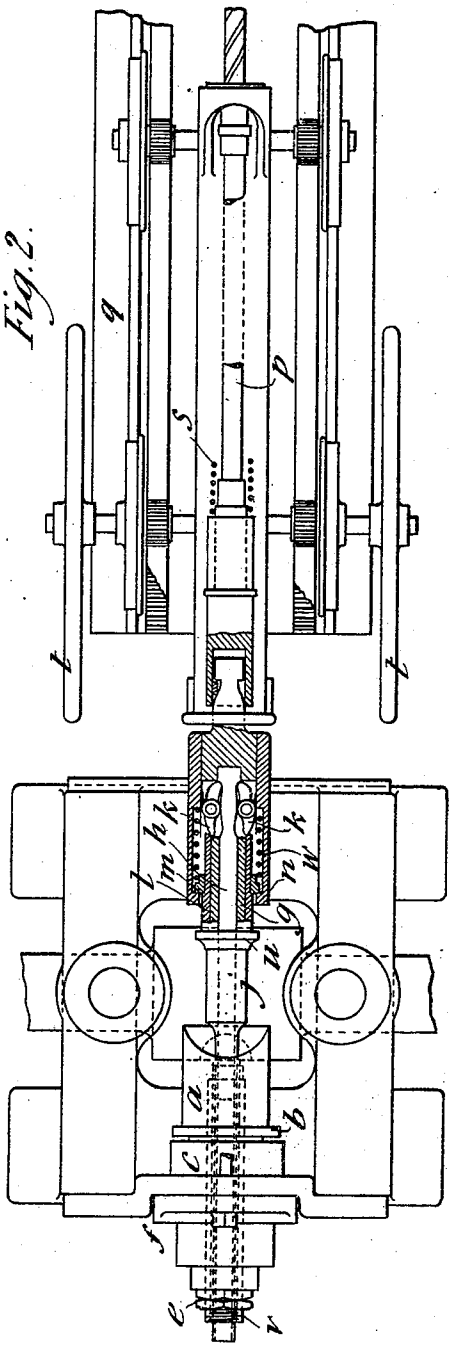


Fig. 2.



Witnesses:
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAQUES REIMAN, OF PLAS MARL, NEAR SWANSEA, ENGLAND, ASSIGNOR TO THE BRITISH MANNESMANN TUBE CO., LIMITED, OF LANDORE, R. S. O., ENGLAND.

APPARATUS FOR STEP-ROLLING TUBES.

SPECIFICATION forming part of Letters Patent No. 683,801, dated October 1, 1901.

Application filed July 8, 1901. Serial No. 67,407. (No model.)

To all whom it may concern:

Be it known that I, JAQUES REIMAN, tube-mill foreman, a citizen of the Swiss Republic, residing at Plas Marl, near Swansea, England, have invented certain new and useful Improvements in Apparatus for Step-Rolling Tubes, (for which I have applied for a patent in Great Britain, No. 753, dated January 11, 1901,) of which the following is a specification.

When tubes are rolled step by step by means of eccentric or gap rollers, the blank on which the rollers are to operate is placed on a mandrel and pushed forward by a spring through the gap of the rollers up against an adjustable stop. Then as the rollers revolve their prominent parts act on the blank, reducing the diameter and increasing the length of part of it until the gap of the rollers allows the spring to again push it forward, the reduced part passing through a hole of the stop until the shoulder formed by the rolling meets the stop. Further, when the rollers are acting on the last part of the blank they meet the socket which holds the mandrel, pushing it back. In both cases—that is to say, when the blank is pushed against the stop and when the rollers meet the socket—there is considerable shock, to deaden which buffer-springs are provided according to this invention, the buffer-spring in the socket also allowing the back-pressing action of the rollers to effect release of the mandrel from the socket when the extreme end of the blank is being rolled down, so that on the rolling of the tube being completed it, along with the mandrel, can be withdrawn. I shall describe the stop and socket with their buffer-springs and with the release-gear of the mandrel, referring to the accompanying drawings.

Figure 1 is a vertical section of the rolls, stop, and socket with the feed-carriage shown in elevation; and Fig. 2 is a plan, partly sectional, of the same parts.

r r are the gap-rolls, which revolve in the direction of the arrow acting on the blank *j*, which is shown partly reduced and elongated in its front part, being carried on the mandrel *h*, which is held in the socket *n* by two spring-catch levers *k*, engaging shoulders near the end of the mandrel.

a is the stop which fits on a sliding tube *v* and bears against a gland *b*, behind which is a buffer-spring *d*, within a socket *c*, carried on a plate *f*, secured to the housings of the rolls. When the blank is pushed forward, as will be presently described, its end, or when it has been partly operated on the rounded shoulder *z* left by the last action of the rolls, strikes against the front end of the stop *a*, pushing it back against the buffer-spring *d*, which takes off the shock of the blow and restores the stop to its former position. The tube *v* is screw-threaded at its end and is provided with adjusting-nuts *e*, by which the tube *v* and stop *a* can be pushed more or less to the right by the spring *d*. In this way the extent of the blank operated on at each revolution of the rolls can be varied, the greater being the length operated on the farther the stop *a* is adjusted to the left.

The socket *n*, in which the mandrel *h* is held, is itself attached to the end of a rod *p*, which can slide in eyes on the feed-carriage *q* and is urged to the left by a spring *s*. The feed-carriage has four wheels running on rails, and the axle of its front wheels has pinions gearing with stationary racks. On the front axle there are fixed hand-wheels *t*, by turning which, thus turning the pinions, the carriage can be advanced or retracted, or by holding these hand-wheels the carriage can be kept stationary. When the carriage is advanced until the end or shoulder of the blank meets the stop *a*, then the carriage is held while the rollers make a revolution, thereby elongating the blank and pushing it and the mandrel back toward the right in opposition to the spring *s*, which when the rollers present their gap to the blank pushes it again toward the left. When the rollers come to act on the last part of the blank, they encounter a collar *u* on the end of a tube *l*, which is inclosed in another tube *g*, fitted to slide in the socket *n*. This tube has a shoulder bearing against a ring *m*, which bears against one end of a spring *w*, inclosed within the socket *n*, when the prominent parts

of the rolls meet the collar u and push it back in opposition to the spring w, which yields to the shock. At the same time the end of the tube g, which has an inclined edge, acts on the left arms of the levers k, causing their right arms to open away from the shoulders of the mandrel, which is thus left free and is by the last part of the elongating action of the rolls upon the blank caused to move to the left free from the lever k, so that afterward it can be withdrawn, along with the rolled tube, through the stop a.

Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

1. In an apparatus for step-rolling tubes with fixed socket c, the combination of the stop a, the gland b and spring d with adjustable tube v and nuts e, substantially as and for the purpose set forth.

2. In an apparatus for step-rolling tubes in combination with the mandrel h and its socket n attached to the spring-rod p of the feed-carriage q of the tube l having collar u, ring m and spring w, tube g and spring-levers k arranged and operating substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAQUES REIMAN.

Witnesses:
H. ROBINSON,
W. J. WILLIAMS.