

No. 610,605.

Patented Sept. 13, 1898.

E. HERZOG.

APPARATUS FOR APPLYING COP TUBES TO SPINDLES.

(Application filed Apr. 15, 1897.)

(No Model.)

FIG. 1.

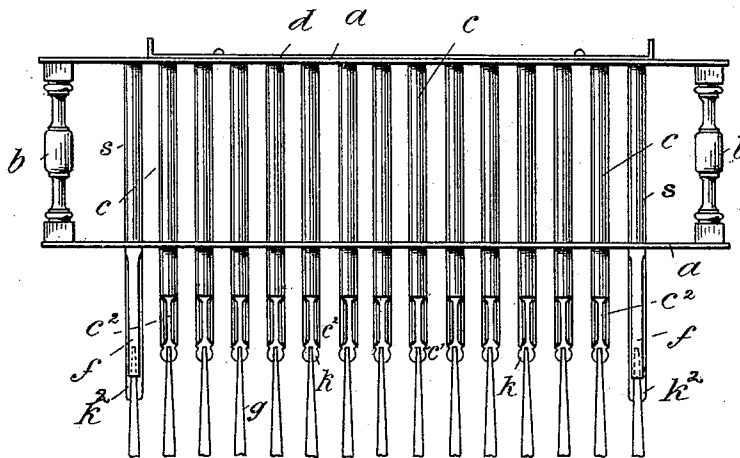


FIG. 2.

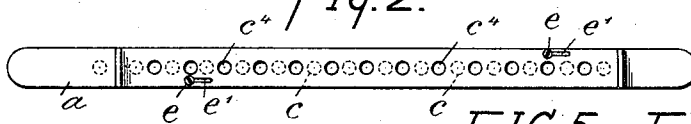


FIG. 5. FIG. 5a.

FIG. 3.

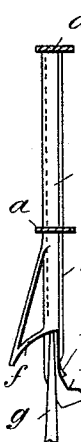


FIG. 4.

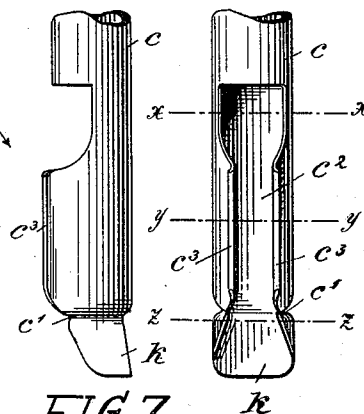
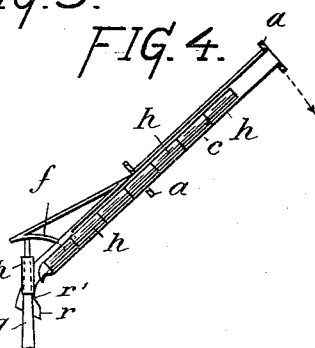
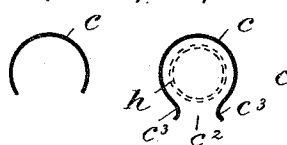


FIG. 6. FIG. 8. FIG. 7.



Attest
Notary Public
R. H. Kelly.

Inventor
Edward Herzog
By *[Signature]*

UNITED STATES PATENT OFFICE.

EDUARD HERZOG, OF ERLACH, AUSTRIA-HUNGARY.

APPARATUS FOR APPLYING COP-TUBES TO SPINDLES.

SPECIFICATION forming part of Letters Patent No. 610,605, dated September 13, 1898.

Application filed April 15, 1897. Serial No. 632,263. (No model.) Patented in England June 22, 1896, No. 13,777, and in Germany June 25, 1896, No. 91,637.

To all whom it may concern:

Be it known that I, EDUARD HERZOG, of Erlach, Austria-Hungary, have invented an Improvement in Apparatus for Applying Cop-Tubes to Spindles, (for which I have obtained Letters Patent in Great Britain, No. 13,777, dated June 22, 1896, and in Germany, No. 91,637, dated June 25, 1896,) of which the following is a specification, reference being had to the accompanying drawings.

It is the object of my invention to provide an apparatus for facilitating the application of cop-tubes to the spindles of self-actors, whereby such cop-tubes may be easily and quickly applied without liability of the tubes becoming broken or misplaced and to embody these features in an apparatus of simple construction which may be easily operated and will not be liable to get out of order.

In carrying out my invention I employ a frame provided with a series of tubes, each adapted to receive the cop-tubes and provided with lateral openings through which the lowermost cop-tubes may pass laterally upon the spindles of the self-actor (which are inserted within them while supported within the feeding-tubes) when the frame is moved or rocked laterally.

In the accompanying drawings, Figure 1 is a front elevation of my improved apparatus for applying cop-tubes to the spindles of self-actors. Fig. 2 is a top plan view of the same. Fig. 3 is a side elevation of the same. Fig. 4 is a vertical sectional view through one of the cop-feeding tubes with the apparatus bent back on the spindles to illustrate the operation thereof in delivering the cop-tubes to the spindles. Fig. 5 is a side elevation, enlarged, of the end of one of the cop-feeding tubes. Fig. 5^a is a front view of the same. Figs. 6, 7, and 8 are transverse sectional views of the same on the lines *x x*, *z z*, and *y y* of Fig. 5, respectively.

c c are a series of tubes mounted transversely in a suitable frame *a a b b* and projecting beyond the front *a b* thereof and open at their rear ends preferably through the rear of the frame. The tubes *c* are located at a distance apart corresponding with that of the spindles to which cop-tubes are to be applied.

The cop-tubes may be supplied to the tubes *c* through the rear openings, and a slide *d*, provided with openings *c*⁴, adapted to register with the openings in the rear ends of the tubes and movable longitudinally on the rear frame through the medium of slots *e*¹ and pins *e*, may be used to close the openings and prevent the cop-tubes from falling out. The projecting front ends of the tubes *c* are provided on the front face each with a longitudinal slot or opening *c*² of a length slightly longer than that of the cop-tube through which the cop-tube may pass laterally, and the side walls of the tube *c* adjacent to the slot may be turned out, as at *c*³ *c*³, to form spring-walls. The tubes *c* are provided at their lower ends with a stop to arrest the front cop-tubes in their descent and support them while in line with the slots *c*². In my preferred construction these stops are formed by contracting the ends of the tubes *c* at *c*¹. The slots *c*² may be enlarged at a portion of their length, as shown in Figs. 5, 5^a, and 6, to enable the cop-tubes to be removed by hand, if required. The extremities of the tubes *a* beyond the stops *i* are formed with flaring guides *k*, open at the front.

s s are guides carried by the frame *a a b b* and located at the ends beyond the series of tubes *c c*. These guides are provided adjacent to their ends each with an outwardly-projecting guide-finger *f*, having a more or less curved face, and with open guideways at the front below the guide-fingers *f* to receive the outer spindles *k*³ *k*² of the self-actor, and to facilitate the movement of the apparatus upon the spindles in the manner hereinafter described the outer ends of the guides *s s* may be bent backward, as shown at *r*, to form fulcrums or bearings *r*¹.

A series of cop-tubes *h* are placed in each guide-tube *c*, arranged one above the other, as shown in Fig. 4. They descend by gravity until the lowermost cop-tube in each guide-tube *c* is supported by the stop *c*¹ adjacent to the lateral openings *c*². The apparatus is then placed vertically upon the spindles *g*, the two outer spindles *k*³ *k*² entering the guides *s s* and extending up to the inner ends of the fingers *f*, and the intermediate spindles en-

tering the tubes *c* and each passing within the lowermost cop-tubes therein. The apparatus is then turned back, as indicated in Fig. 4, on the two outer spindles as a fulcrum, the guides *f f* moving over the points of the spindles *k² k²*. This operation causes each of the intermediate spindles *g* to pass laterally through the lateral openings *c²* in the guide-tubes *c*, carrying with them the lowermost cop-tubes, one on each of the spindles, as shown in Fig. 4. The spring edges *c³ c³* of the openings *c²* serve to compress the cop-tubes slightly as they pass between them. By these means the cop-tubes may be easily and quickly applied to the spindles, and when the lowermost tubes are removed the series will descend in the tubes *c*, bringing another cop-tube at the bottom of each guide-tube, which may be applied to the spindles in the same manner.

As the apparatus is free from moving parts and as the cop-tubes are fed in the feeding or guide tubes *c* simply by gravity, the apparatus is firm and not liable to get out of order, and there is no liability of the cop-tubes being forced down upon one another and bent or injured.

If desired, two frames may be united together to form a single frame adapted for supplying two rows of spindles.

The details of construction shown may be varied without departing from the invention.

What I claim as new, and desire to secure by Letters Patent, is as follows:

- 35 1. An apparatus for applying cop-tubes to the spindles of self-actors, consisting of a frame provided with a series of feeding-tubes, adapted to receive the cop-tubes, having supports adjacent to the ends thereof, and lateral openings in their faces, through which the cop-tubes may pass laterally, when received on the spindles of the self-actor inserted in the ends of said feeding-tubes, when the frame is moved laterally.
- 40 2. An apparatus for applying cop-tubes to the spindles of self-actors, consisting of a frame provided with a series of feeding-tubes, adapted to receive the cop-tubes, having supports adjacent to the ends thereof, and lateral openings in their faces, through which the cop-tubes may pass laterally, when received on the spindles of the self-actor inserted in the ends of said feeding-tubes, when

the frame is moved laterally, and guides carried by said frame for supporting it and guiding it on spindles of the self-actor when it is moved laterally.

3. An apparatus for applying cop-tubes to the spindles of self-actors, consisting of a frame provided with a series of feeding-tubes, adapted to receive the cop-tubes, having supports adjacent to the ends thereof, and lateral openings in their faces provided with spring-walls, through which the cop-tubes may pass laterally, when received on the spindles of the self-actor inserted in the ends of said feeding-tubes, when the frame is moved laterally.

4. An apparatus for applying cop-tubes to the spindles of self-actors, consisting of a frame, and a series of feeding-tubes carried thereby and provided with supports adjacent to their ends, lateral openings in their faces, and guide projections *k* on their extremities, substantially as and for the purposes described.

5. An apparatus for applying cop-tubes to the spindles of self-actors, consisting of a frame, a series of feeding-tubes carried thereby and provided with supports adjacent to their ends and lateral openings in their faces, and guiding-fingers *f* carried by the frame adjacent to the ends of the feeding-tubes.

6. An apparatus for applying cop-tubes to the spindles of self-actors, consisting of a frame, a series of feeding-tubes carried thereby and provided with supports adjacent to their ends and lateral openings in their faces, and guides *s s* carried by the frame adjacent to each end and provided with projecting guiding-fingers *f*.

7. An apparatus for applying cop-tubes to the spindles of self-actors, consisting of a frame, a series of feeding-tubes carried thereby and provided with supports adjacent to their ends and lateral openings in their faces, and guides *s s* carried by the frame adjacent to each end and provided with projecting guiding-fingers *f* and with guides *r* on their extremities.

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

EDUARD HERZOG.

Witnesses:

HARRY BELMONT,
KARL ROCH.