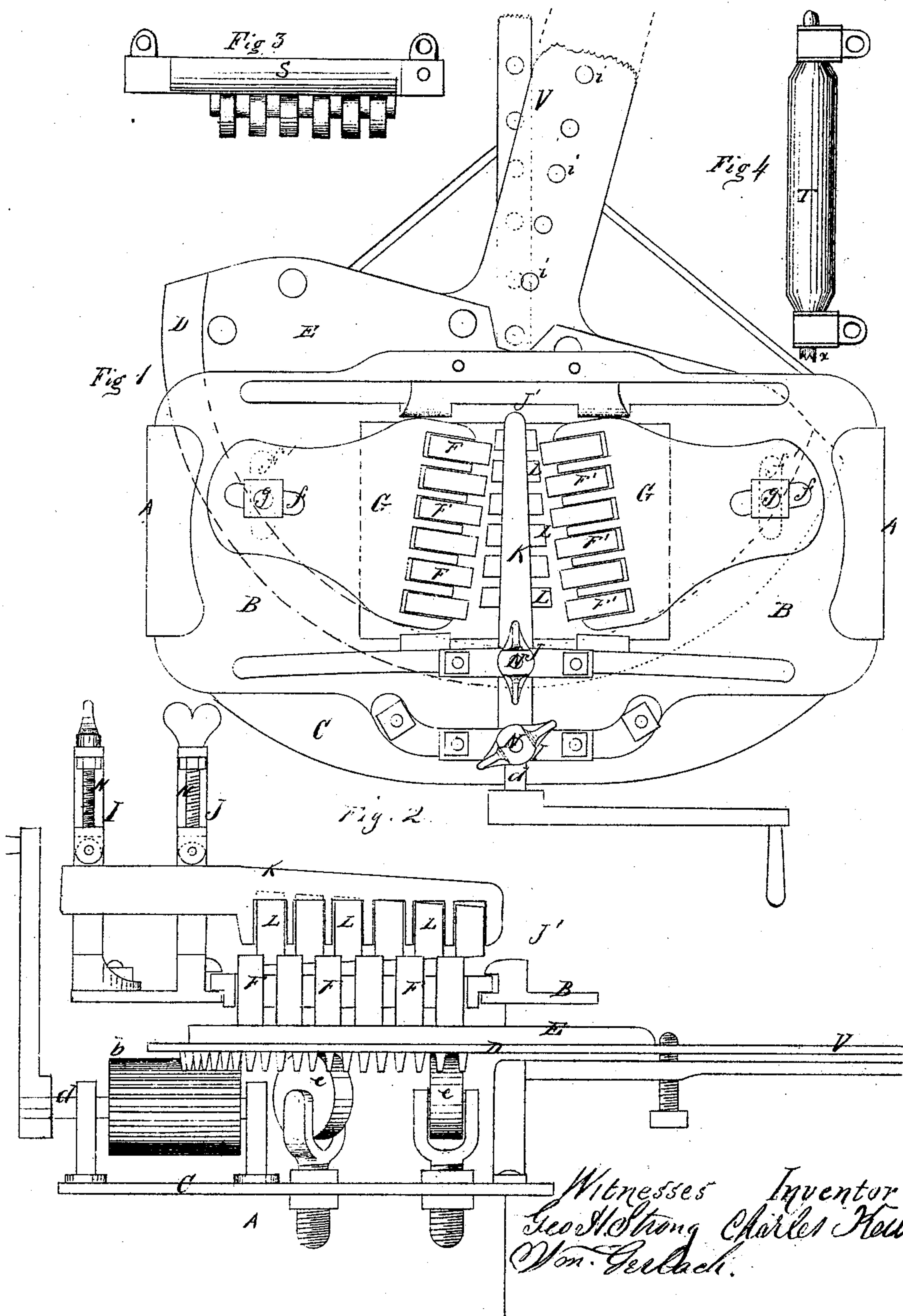


*C. Kewin.*

*Rolling Conical Tubes.*

*No. 102,130.*

*Patented Apr. 19, 1870.*





# United States Patent Office.

CHARLES KEWIN, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 102,130, dated April 19, 1870.

## IMPROVED MACHINE FOR ROLLING CONICAL AND OTHER TUBES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHARLES KEWIN, of the city and county of San Francisco, State of California, have invented an Improved Machine for Rolling Conical and other Tubes; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements without further invention or experiment.

My invention relates to an improved machine for rolling or forming conical tubes or funnels from sheet metal of any kind, and is more particularly useful for forming locomotive smoke-stacks, where they are made conical in form; and

It consists of two series of adjustable rollers, placed at a short distance apart, and a third series, also adjustable, which is placed above them, between the first two series.

The lower series of rollers are revolved at different speeds by the friction of a revolving elastic table underneath.

The sheet metal is placed so as to roll under the upper series, and over the two lower, its contact between them causing the upper series to roll also, and thus feed the sheet metal while it gives it the proper form.

In order to more fully illustrate and explain my invention, reference is had to the accompanying drawing forming a part of this specification, in which—

A A are the two sides of my machine, and B and C two metal plates secured to them, one above the other, so as to provide two tables.

The entire machine can be secured to the floor, if intended for large and heavy work, or upon a table, if intended for tinsmiths' or light work.

A turn-table, D, is arranged just under the upper table B, so as to be revolved by the pinion *b* on the shaft *d*, the outer rim of the circular table being provided with teeth, so as to engage with the pinion.

The upper surface of the turn-table is covered with a rubber or other elastic cushion, E, which is firmly secured to it.

Underneath the turn-table are arranged two or more pressure-rollers, *e e*, which can be elevated or depressed at pleasure, in order to adjust the movement of the table.

The upper plate or table B has a portion cut out from its center, sufficient to allow the series of rollers F and F' to project through and bear upon the upper elastic surface of the circular table D.

These rollers are secured at the ends of the plates G, so as to be revolved by the friction of the elastic surface of the rotating table D.

The plates G are provided with a slot, *f*, at their

opposite end, and transverse slots, *f'*, are made through the plate B, at the proper points through which the bolts which secure the plates G pass.

The plates G may be adjusted to any desired angle or position by loosening the bolts *g*, and setting the plates, so as to give the rollers both the proper angle and distance from each other necessary to form the tube desired.

The table D should have an extended portion or regulating-bar, V, provided with holes *i i* for the purpose of varying the position of its center of motion, and it should be so adjusted that the distance from this center of the outer edge of the sheet of metal passing over the rollers may bear the same proportion to the distance of the inner edge from the same center that the diameter (or circumference) of the larger end of the conical tube to be formed is to bear to that of the smaller end.

The rollers F and F' should also be adjusted so that the axes in each set may all correspond with or lie over the same radius drawn from the center of motion of the table D.

Moreover, to make the machine work to the best advantage, the rollers L should be so graduated that the diameter of the least roller may be to the diameter of the greatest as the distance of the former from the center of motion of D is to the distance of the latter from the same point; but, in practice, it is not essential that these conditions should be exactly fulfilled.

Two pairs of vertical standards, I and J, are secured to the table, a short distance apart, each pair being set so as to leave a small space between them in a line with the space between the two adjustable series of rollers F and F'.

A bar, K, having a set or series of rollers, L, which gradually lessen in size toward the outer extremity of the bar, arranged along a portion of its length, has its opposite end secured between each pair of the two vertical standards, so that the end along which the rollers are arranged will extend across the same width as the rollers F and F', but set so as to stand above and between them.

For heavy work the standard I should stand at the end J' of the table, so as to support the extreme end of the bar K or of the double-ended bar S, fig. 3, which may be substituted for the bar K.

The bar K is adjustable by means of screws N, which are secured to it between the standards, and extend upward through the cross-bar at the top, having a nut above and below the cross-bar, by means of which the rollers may be set to any elevation or pitch required in forming the tubes.

When it is desired to turn out cylindrical tubes, a solid roller or cylinder, T, fig. 4, can be substituted



for the tapering rollers on the bar K, in which case the plates G will be set so as to bring the series of rollers F F' in a line with the roller, and the pressure-rollers are lowered, the table D not being used; but the roller T may be turned so as to feed the metal through by means of a crank on its shaft, z.

The sheet metal is first cut or stamped into the proper form for rolling into conical tubes. The edge which is intended to be inserted between the rollers is then turned, so as to pass under the upper or tapering rollers, and over the rollers F and F'. The shaft d is then turned by hand, or other convenient means; the pinion b, engaging with the teeth on the periphery of the circular table, causes it to revolve. The pressure rollers e e, which bear upon the under side of the circular revolving-table, force it upward, so that the friction of its elastic revolving surface against the series of rollers F and F' will cause them to revolve, and thus feed the sheet metal, the intervention and motion of which causes the upper series or forming-rollers L to revolve.

The rollers farthest from the central point, around which the circular table revolves, move faster than those nearest the center, thus causing the metal to assume a conical form, the shape or taper of the cone depending on the adjustment of the series of rollers, and the distance at which the table is pivoted from the rollers.

By the use of this machine, locomotive smoke-

stacks can be made with very little trouble, and for tinsmiths' use it will be of great value.

The several sets of rollers may be removed and replaced or adjusted with great facility, and thus adapted for rolling or forming tubes of almost every description, the shape of which depends on the radius given to the table D, and the consequent difference in the speed of the rollers, as well as on the position given to the several sets.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent, is—

1. The two series of rollers F F', mounted upon the adjustable plates G, in combination with the series of adjustable forming-rollers L, substantially as and for the purpose above described.

2. The circular revolving-table D, with its elastic upper surface for imparting frictional pressure for revolving the rollers F F', and its regulating-bar V, substantially as and for the purpose described.

3. The adjustable pressure-rollers e e, in combination with the revolving friction-table D, substantially as and for the purpose specified.

In witness whereof I have hereunto set my hand and seal.

CHARLES KEWIN. [L. S.]

Witnesses:

A. T. DEWEY,  
W. R. BOONE.