

2 Sheets--Sheet 1.

D. M. SOMERS.

Improvement in Tube-Making Machines.

No. 130,758.

Fig: 1 Patented Aug. 20, 1872.

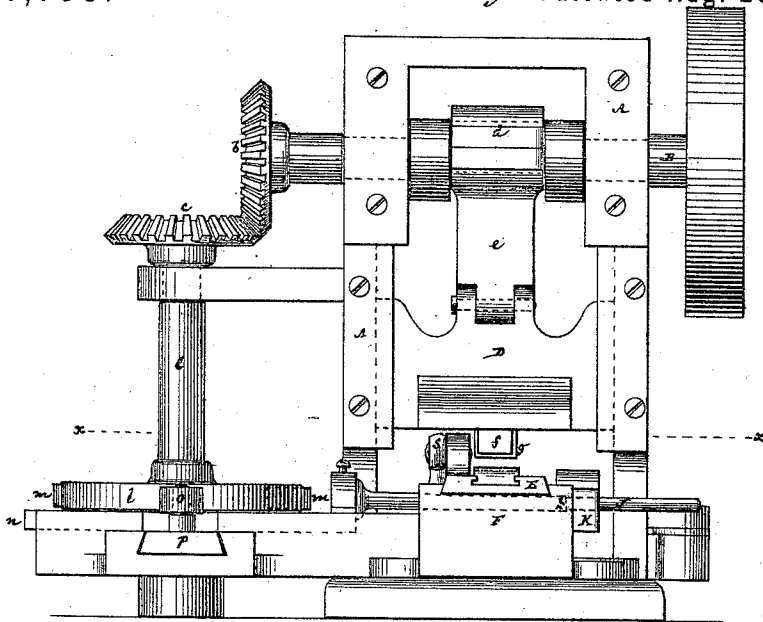
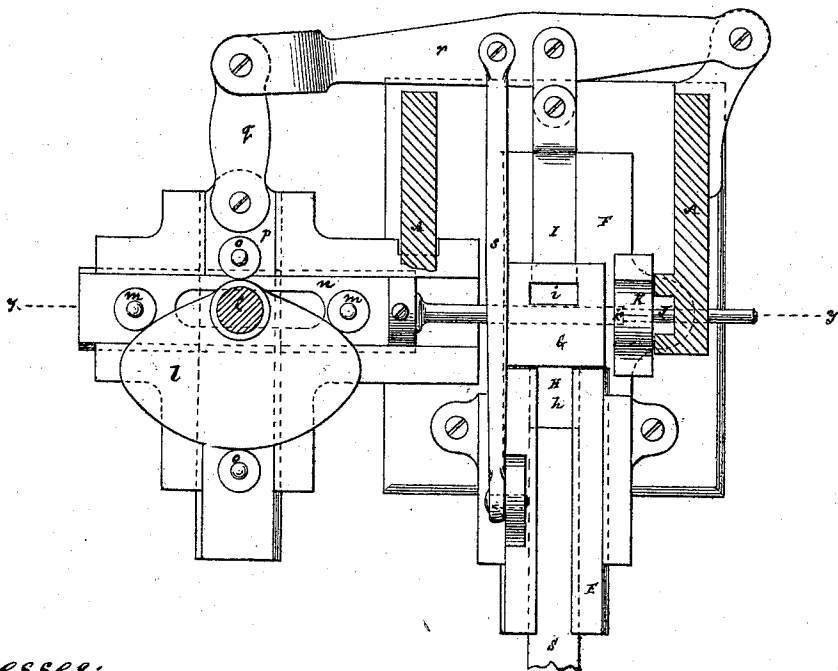


Fig:2



Witnesses:

Fr. Haynes
Ford durch

D. M. Somers.

D. M. SOMERS.

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Fig. 4

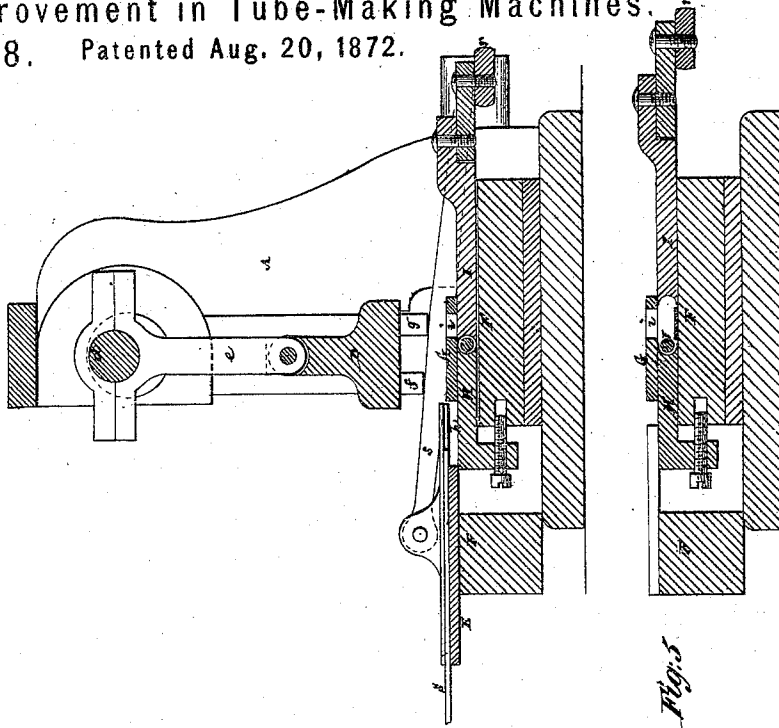


Fig. 5

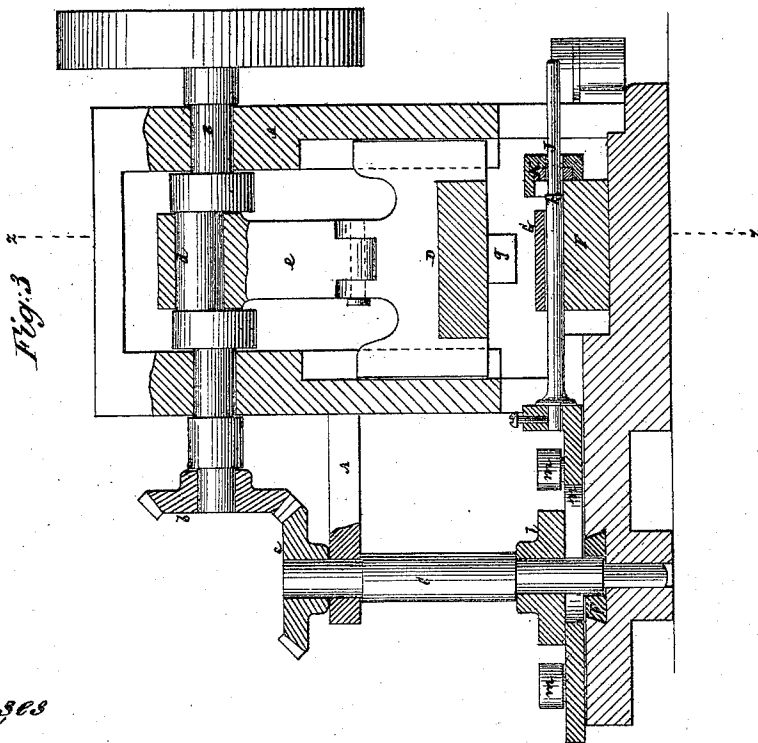


Fig. 3

Witnesses
Fred Hume
Fred Busch

D. M. Somers.

UNITED STATES PATENT OFFICE.

DANIEL M. SOMERS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN TUBE-MAKING MACHINES.

Specification forming part of Letters Patent No. 130,758, dated August 20, 1872.

To all whom it may concern:

Be it known that I, DANIEL M. SOMERS, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Making Split-Metal and other Tubes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents an end elevation of a machine embracing my improvements; Fig. 2, a horizontal section of the same at the line $x x$; Fig. 3, a vertical transverse section at the line $y y$; Fig. 4, a vertical longitudinal section at the line $z z$; and Fig. 5, a like section to Fig. 4 through the forming-dies.

Similar letters of reference indicate corresponding parts.

My invention consists in certain combinations of devices whereby perfectly-closed and truly-finished split-metal tubes, suitable for pen-holders and other purposes, may be produced, the same being made out of or from a strip of sheet metal in rapid succession as the strip is fed along or through the machine.

Referring to the accompanying drawing, A represents the frame of the machine, which may be of any suitable construction, and which serves to carry an upper horizontal driving-shaft, B, that is connected by bevel-gear $b c$ with a vertical shaft, C. The shaft B is provided with a crank or eccentric, d , which gives up-and-down motion, by or through a pitman, e , to a vertically-guided plunger, D, that is furnished on its lower face with one, two, or more stamps or punches, $f g$, two here being shown, the one arranged in advance of the other, for a purpose that will be hereinafter explained. The strip S of sheet metal, to be worked up into tubes, is fed from a reel or otherwise into and along a grooved intermittently-reciprocating feeding-slide, E, arranged over a bed, F, and cut away or formed with an opening, h , through its bottom in front, over which the portion of the strip under operation lies. Arranged upon the top of the bed F, underneath the stamps or punches $f g$, is a die-plate, G, against or in proximity to which the forward end of the slide E comes each advance stroke of the slide, and over which the forward portion of the strip that covers the opening h in

the slide projects, so that when the stamps or punches $f g$ come down the die-plate G becomes a bed for the strip. The width of the groove in the feeding-slide E corresponds with the length of the tube to be made, and the stamp f operates to produce any desired impression or mark—such, for instance, as the maker's name—upon the strip or each portion thereof required to form a tube, while the punch g subsequently acts, in conjunction with a die, i , formed in the plate G, to detach in succession, each intermittent forward feed of the slide, pieces from the strip S of a width corresponding with the circumferential measurement of the tube to be made. Underneath that portion of the die-plate G over which the strip passes to the die i is an adjustable stationary bending or half-forming die, H, of a hollow curved or semicircular shape at its forward end, and in front of which, upon a depressed portion of the bed F, each blank, in succession, as it is punched from the strip, drops. The blank to be bent into a split tube having been thus deposited, an intermittently-reciprocating half-die or slide, I, of a reverse hollow shape at its forward end to the die H at its front, comes forward over the depressed portion of the bed F and underneath the die i , toward the stationary die H, and, catching the one edge of the blank, moves the latter up against the die H, and, as the die I closes on the die H, bends the blank up within the die H and over or around a mandrel, J, that is arranged to occupy a concentric position within the dies H I when closed, and which corresponds with the interior diameter of the tube to be made, while the closed dies H I correspond with the exterior circumference thereof. The mandrel J is of an enlarged diameter, or has a shoulder, k , equal, or nearly so, to the interior of the closed dies H I, in rear of that portion of the “former” around which the blank is bent by the closing action of the dies H I, so that, after the blank has been formed, by the united action of the dies H I and mandrel J, into a split tube, with its closing edges approximating one another, the mandrel J, in being shoved forward or through the closed dies H I—that is, in an axial direction to the mouths of said dies—carries the split tube out through the off side of such dies by reason of the shoulder k on the mandrel pressing against the back end of the

tube. To insure, however, the perfect closing of the tube and to give it a neat or draw finish, as well as a true or cylindrical shape, the mandrel J, when carrying the tube through the off side of the dies H I, as described, is caused to force said tube through a steel or hard draw-die, K, arranged outside of the dies H I, and of a shape or size corresponding with that of the required tube in its finished state. After this the mandrel J retires to its normal position, slipping the finished tube from off it, and the slide I moves back to make room for the deposit of a succeeding blank through the die *i*, for a repetition on it of the tube-forming or closing-and-finishing action by the dies H I, mandrel J, and draw-die K, as before. The intermittently-reciprocating strip-feeder E, die I, and mandrel J are suitably guided or steadied in their actions, and are timed to work in proper relation with each other and with the plunger D, which latter should be provided with a spring-clamp on its lower surface, so that when down it holds the strip from being drawn back during the back action of the feeder E, but afterward, or during the rising stroke of the plunger, frees itself from hold on the strip and allows of the feeder, in its next forward stroke, projecting a fresh portion of the strip beneath the plunger.

Fig. 4 represents the dies H I as closed, and Fig. 5 the same in their open condition, and with a blank in position for bending. If preferred, the die H, instead of being stationary,

may be intermittently reciprocated without changing its function or principle of action.

The mandrel J, die I, and feeder E may be actuated as required by any suitable means; but the following forms a very simple combination of devices for the purpose: On the shaft C is a cam, *l*, which acts against studs or rollers *m m* on a slide, *n*, to give the necessary movements to the mandrel J, and which also, in due course, acts against other rollers *o o* upon a slide, *p*, to communicate motion, through a rod, *q*, and lever *r*, to the die I, and, by means of a connecting-rod, *s*, to the feeder E. It may here be observed, in conclusion, that it is desirable to support the mandrel J so that it is capable of revolving, to facilitate the bending of the metal around it.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination of the bending or forming dies H I and mandrel J with the die *i* and punch *g*, substantially as specified.

2. The draw-die K, in combination with the shouldered reciprocating and revolving mandrel J and opening-and-closing bending-dies H I, substantially as described.

3. The strip-feeding slide E, in combination with the punch *g*, the dies H I, and the mandrel J, essentially as specified.

D. M. SOMERS.

Witnesses:

FRED. HAYNES,
FERD. TUSCH.