

L. Southworth Jr. and Sewell G. Cushing's Machine for making screws.

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PATENTED JUL 11 1871

Fig. 1.

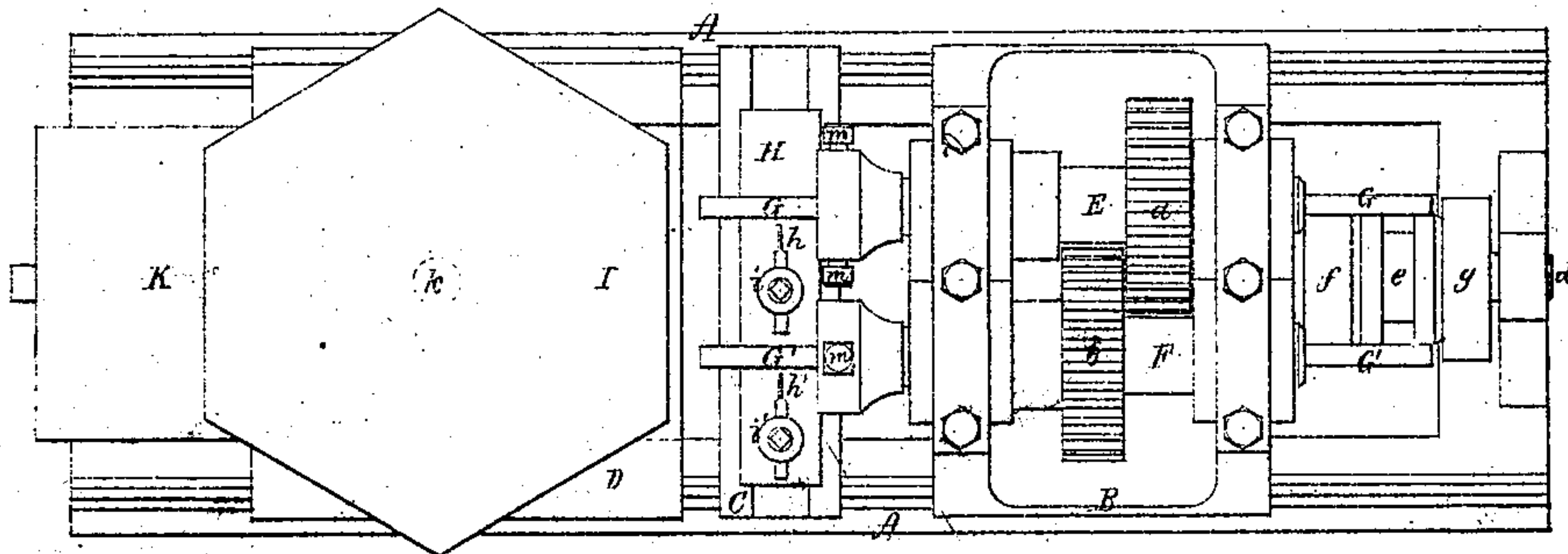


Fig. 2.

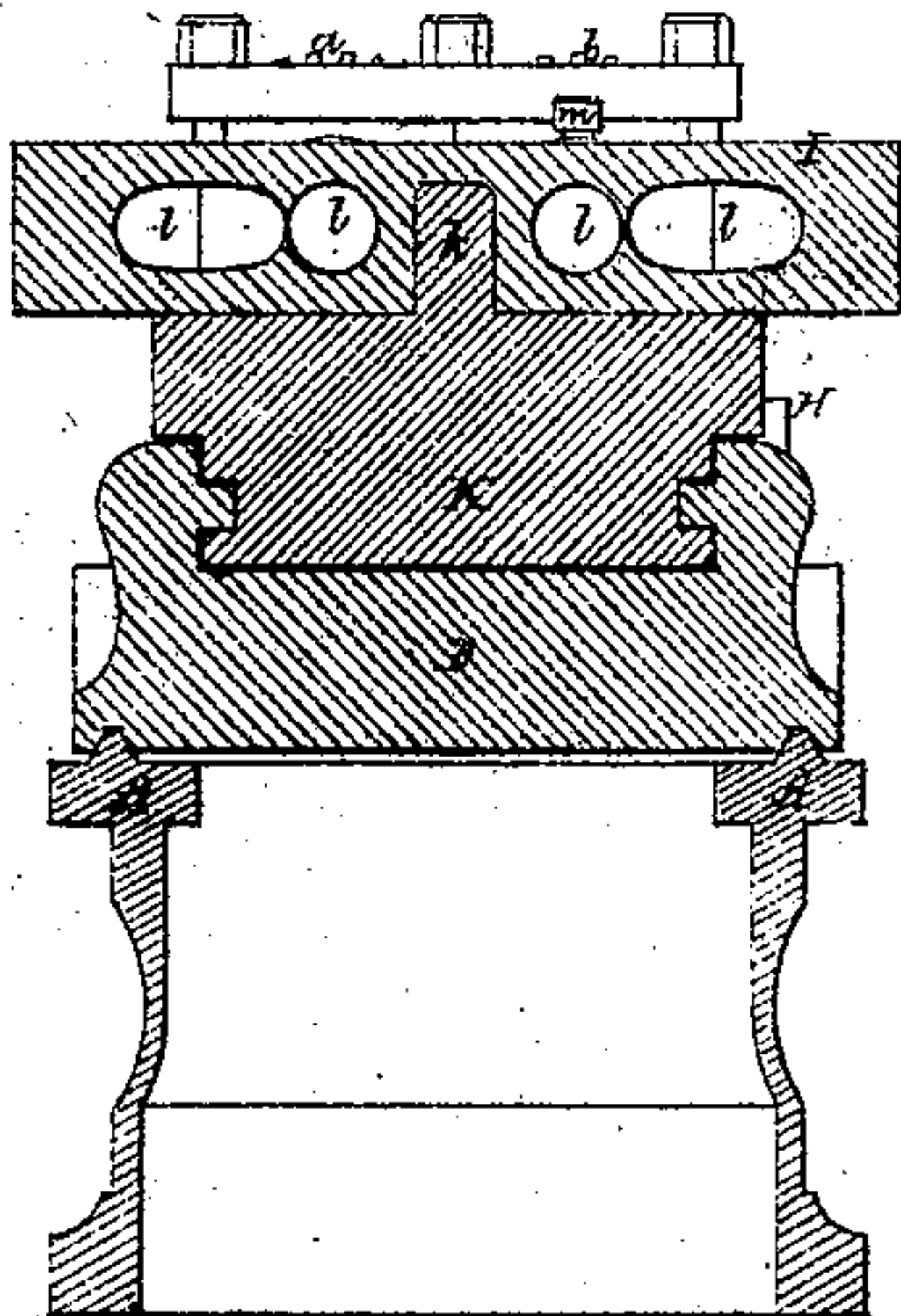
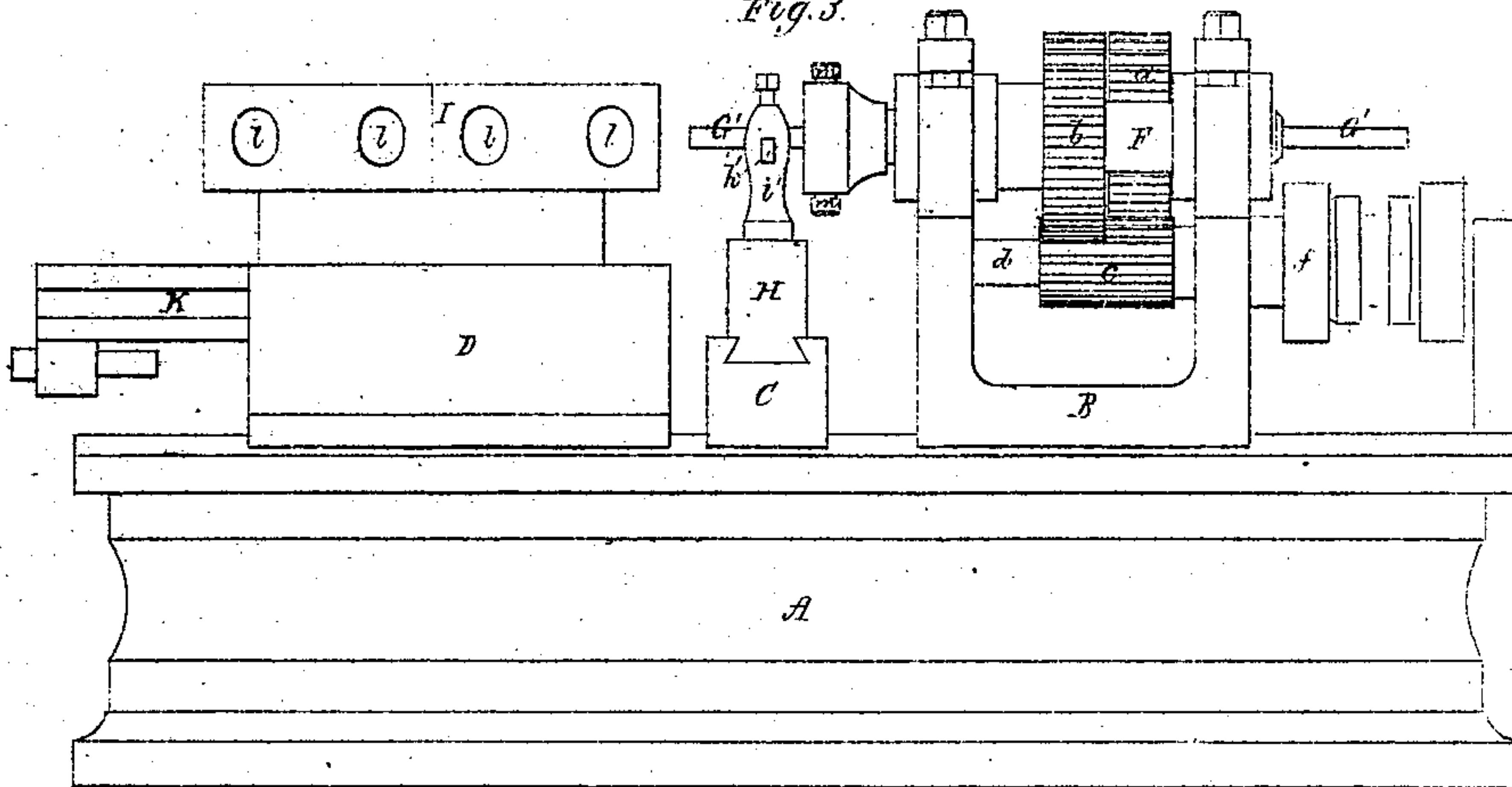


Fig. 3.



Witnesses
S. U. Popen
L. N. Miller

L. Southworth Jr. & S. G. Cushing
by their attorney
R. H. Eddy

UNITED STATES PATENT OFFICE.

LUTHER SOUTHWORTH, JR., AND SEWELL GIBSON CUSHING, OF STOUGHTON,
MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING SCREWS.

Specification forming part of Letters Patent No. 116,880, dated July 11, 1871.

To all whom it may concern:

Be it known that we, LUTHER SOUTHWORTH, Jr., and SEWELL GIBSON CUSHING, of Stoughton, of the county of Norfolk and State of Massachusetts, have invented a new and useful Machine for Making Screws; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a top view, Fig. 2 a transverse section, and Fig. 3 a front elevation of the said machine.

The machine is designed to operate on two rods or bars at one and the same time, and, by so doing, to accomplish with one attendant nearly if not quite double the work that it would were it made with but one arbor. It has two arbors to carry and revolve two separate rods, from which the screws are to be made; and, furthermore, it has a hexagonal rotary socketed head or tool-carrier, having in each face or side two tool-sockets.

In the drawing, A denotes the bed-frame of the machine, the same being provided with three puppets, B C D, arranged on it, as represented. The puppet B supports, in suitable bearings or boxes, two arbors, E F, which are disposed horizontally and parallel, each having a prismatic bore or hole made through it axially to receive and carry a rod, G or G', from which the screws are to be cut. Spur-gears *a b* fixed on the two arbors engage with a pinion, *c*, fastened to a driving-shaft, *d*, such shaft being provided with a friction-clutch, *e*, to operate with two loose pulleys, *f g*, arranged on the shaft. When these pulleys are revolved in opposite directions by bands going around them, by moving the friction-clutch up against either pulley the driving-shaft may be put in revolution, it being revolved in one direction by one and in the opposite by the other of such pulleys. From the above it will be seen that when the driving-shaft is in revolution both the arbors will be revolved simultaneously in the same direction, their gears *a b* being alike in size or diameter. To the puppet C there is affixed a cutter-carrier, H, which is to be so applied to the puppet as to be capable of being moved in directions at right angles with the axes of the two arbors. This cutter-carrier supports two cutters or chisels, *h h'*, which are arranged in posts *i i'* in manner and with respect to the ar-

bors as represented. In advance of the said cutter-carrier is the hexagonal rotary tool-stock or head I, which is pivoted to a slide-plate or carriage, K, supported and guided by the puppet D in a manner to enable such carriage, with the rotary head I, to be moved toward and away from the next adjacent ends of the arbors. The pivot of the head I is shown at *k*, such head being revolvable horizontally on such pivot. In each side of the head are two socket-holes, *l l*, which may be extended parallel to each other through the head from the said side to its opposite, the two holes having their axes at the same distance apart as are those of the two arbors. The tool-sockets of one side of the head are to carry tools for turning the screw-bars cylindrically; the tool-sockets of the next side are to be provided with other tools, viz., for tapering the ends of the bars; and the tool-sockets of the next side of the head are to bear cutters for forming screw-threads on the cylindrical parts of the bars. The three sides of the head being so furnished with cutters to act in succession on the two bars, the other three sides of such head are to be similarly supplied with such cutters.

In operating with the machine the bars from which the screws are to be made are to be introduced into the two arbors and extended beyond their inner end the requisite distances; after which they should be clamped to the arbors by set-screws *m m* applied to such arbors. This having been accomplished, and the arbors having been put in revolution, the head I is to be moved up to the bars, and such movement should be continued until both bars may be rounded the proper distance. Next, the head should be retracted from the bars and be revolved sixty degrees, so as to bring the cutters for tapering the ends of the bars into proper positions to be advanced to the bars. The work of tapering the ends of the bars having been next carried on and completed, the head I should be again withdrawn and revolved sixty degrees, and moved up to the bars so as to cause screw-threads to be cut on them. Next, the arbors should be revolved in the opposite directions, so as to free the screw-cutters from the bars, which having been effected, the separating-cutters *h h'* are to be brought up and forced against the bars, so as to sever from them two screws having prismatic heads.

We are aware that a single rotary arbor has been arranged and combined with a rotary cutter-head, and with a single separating-cutter, the rotary head being provided with tools for rounding a bar, tapering it at its inner end, and making a screw-thread on it; and, therefore, we make no claim thereto.

Our invention is not a simple duplication of such a machine, for we have combined with the two arbors a driving-shaft and a train of three gears, as described, whereby we are enabled to revolve both arbors simultaneously in the same direction; and, furthermore, we have added to the separating-tool carriage a second tool and tool-post, and have provided the rotary head with two tool-

sockets in each side, they being arranged as and for the purpose described.

We therefore claim—

The combination of the driving-shaft *d*, the train of three gears, *a b c*, the two arbors *E F*, the separating-cutter carriage *H* and its tool-posts *i i'*, and the rotary cutter-head *I*, all constructed, arranged, and applied to a supporting-frame, *A*, substantially in the manner and so as to operate as and for the purpose as described.

LUTHER SOUTHWORTH, JR.
SEWELL GIBSON CUSHING.

Witnesses:

R. H. EDDY,
S. N. PIPER.