(No Model.) 2 Sheets—Sheet 1.

G. T. REISS.

METAL SCREW MACHINE.

No. 273,313. Patented Mar. 6, 1883.

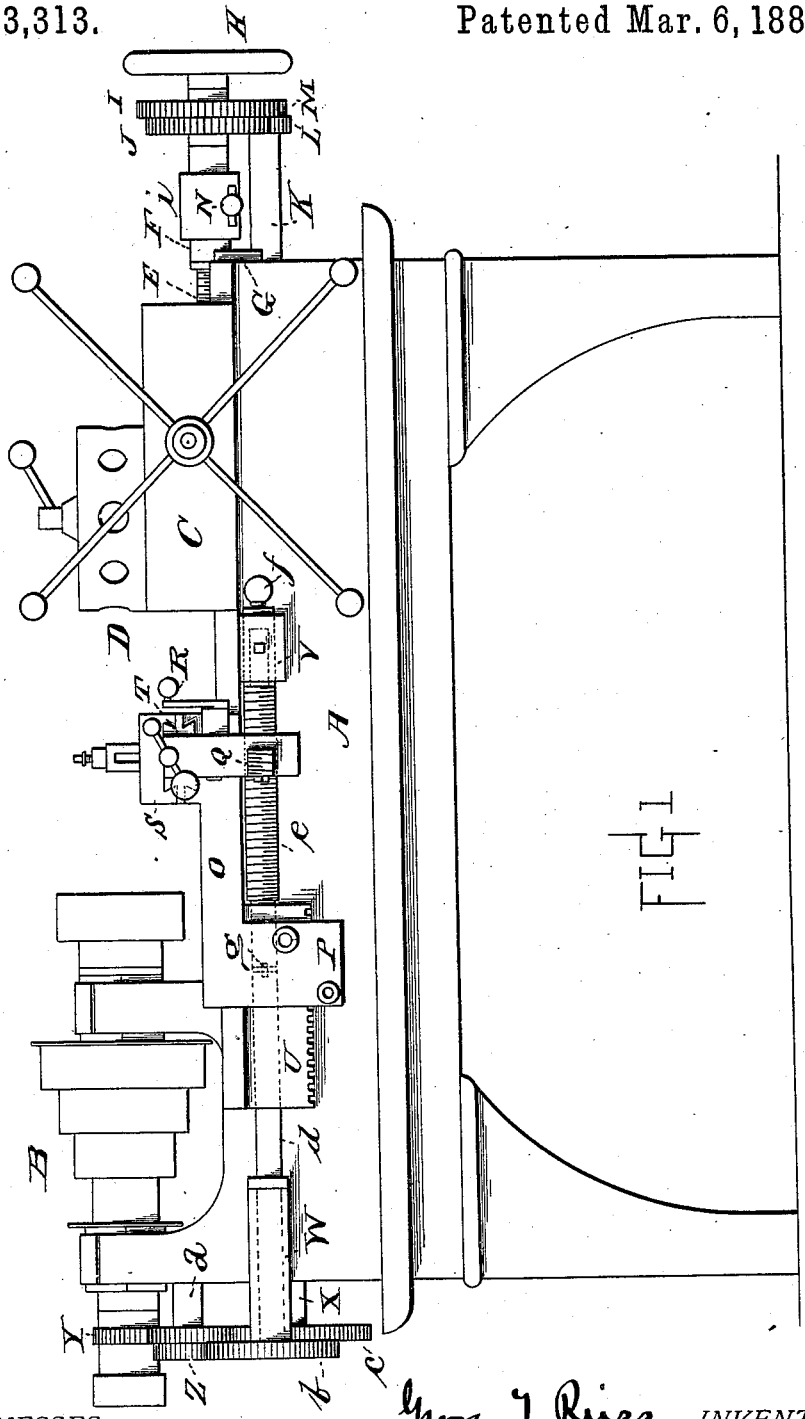

FIG 1

WITNESSES:

John R. Woods.

E. B. Rogers.

George T. Reiss INVENTOR.

by James W. See

ATTORNEY

(No Model.) 2 Sheets—Sheet 2.

G. T. REISS.

METAL SCREW MACHINE.

No. 273,313. Patented Mar. 6, 1883.

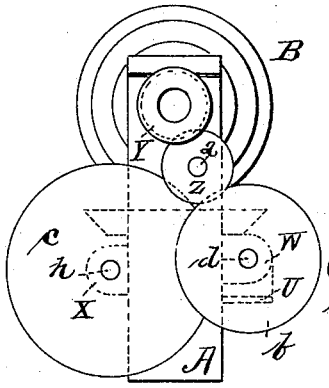

Fig 2.

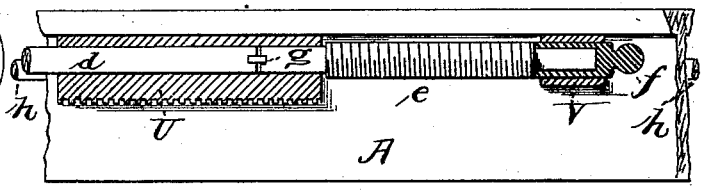

Fig 3

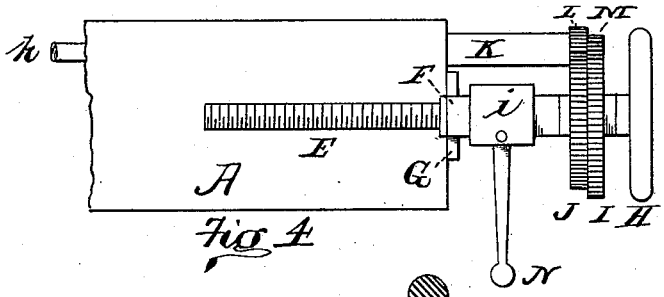

Fig 4

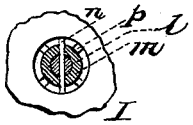

Fig 6

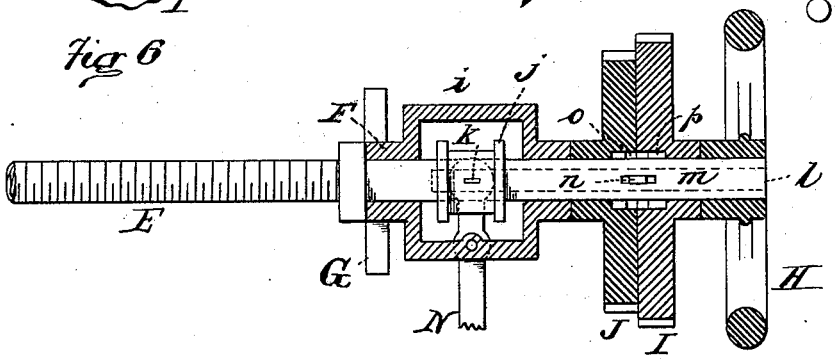

Fig 5

WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE T. REISS, OF HAMILTON, OHIO, ASSIGNOR TO THE NILES TOOL WORKS, OF SAME PLACE.

METAL SCREW-MACHINE.

SPECIFICATION forming part of Letters Patent No. 273,313, dated March 6, 1883.

Application filed August 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE T. REISS, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Metal Screw-Machines, of which the following is a specification.

This invention relates to improvements in the details of construction of screw-machines or turret lathes, as hereinafter specified. In the drawings the improvements are shown as applied to an ordinary screw-machine or turret-lathe, and in this specification it is assumed that the reader is familiar with such machines.

In the accompanying drawings, Figure 1 is a front view of a screw-machine with my improvements; Fig. 2, an end view of the head; Fig. 3, a front view of a part of the bed, with details in section; Fig. 4, a plan of the foot of the machine; Fig. 5, a sectional plan of feed-work at the foot of the machine, and Fig. 6 a front view of part of gear I.

A is the bed of the machine; B, the head-stock; C, the sliding turret-block; D, the turret; E, the foot-screw for feeding the turret-block along the bed; F, the bearing for screw E; G, a flange on bearing E for attaching it against the foot end of the bed; H, a hand-wheel fast on screw E; I and J, spur-gears of different size, loose on screw E; K, a bearing bolted to the rear of the bed at foot end; L and M, pinions of different size, fast on a shaft journaled in bearing K, and gearing into spur-gears I and J; N, a lever for shifting a clutch device to fasten and loosen either of the spur-gears I and J to the screw E; O, the tool-carriage of the machine; P, the apron of the carriage; Q, the carriage-nut; R, a lever for simultaneously withdrawing the tool from the work and the carriage-nut from the lead-screw; S, the tool-block; T, a dovetailed slide carrying the nut Q, and moved a fixed distance across the carriage by the lever R, the tool-block S being adjustable on this slide by screw-crank, as usual; U, a bearing fixed against the front of the bed; V, a similar bearing nearer the foot of the bed; W, a similar bearing at the head of the bed; X, a bearing at the head of the bed, on the rear side, in line with bearing K at the foot of the bed; Y, a gear on the spindle of the machine; Z, a wide gear engaging with gear Y and running on a stud, *a*, fixed in the face of the head-stock; *d*, a shaft carried in bearings U and W; *h*, a shaft carried behind the bed in bearings K and X; *b*, a gear on shaft *d*, and engaging with wide gear Z; *c*, a gear on shaft *h*, and engaging with wide gear Z; *e*, a short lead-screw carried by bearings U and V; *f*, a bushing in bearing V; *g*, a clutch in the end of shaft *d*, and engaging with the contiguous end of the bearing of lead-screw *e*; *i*, a box or case formed on bearing F; *j*, a clutch-collar sliding on screw E within box *i*; *k*, a cotter or pin through collar *j*, and through a mortise in screw E; *l*, a clutch-pin fitted to slide in a longitudinal hole in screw E, and operated by collar *j* and lever N; *m*, the foot end of screw E; *n*, a cotter or clutch fast in pin *l*, and projecting out therefrom through a mortise in screw-shank *m* to engage with either of the gears I J; *o*, a counterbore in the abutting faces of gears I J to permit the gears to revolve without hinderance from cotter *n*; *p*, notches in the bottoms of counterbores *o*, into which cotter *n* may engage.

The apron P of the carriage is to have the usual hand-crank to operate a pinion for moving the carriage by hand.

The gearing Y Z *b*, which actuates the lead-screw *e*, is unalterable in its relation. Hence changeable lead-screws must be provided for cutting different pitches of screws.

The bushing *f* is of such outside diameter as to permit the lead-screw to be withdrawn and removed through the hole in bearing V. Bushing *f* may be fixed in place by a set-screw, or otherwise.

A set of lead-screws is to be provided having different threads, but uniform otherwise, so that any one of the set may be put in place and properly engage with clutch *g* and fit properly in bearing U and bushing *f*. The carriage-nut Q must be changed when lead-screws are changed. In some screw-machines these nuts are double-ended and bolt into place, so that only half as many are required as there are lead-screws in a set.

Gears Y Z *c* drive shaft *h*, pinions L M, and

consequently gears I and J. The gears I and J are of course revolved at different speeds, and the screw E may thus have either of two speeds of rotation imparted to it, according to the position of cotter *n*. When cotter *n* is not engaging with either gear the screw E may be operated by hand-wheel H.

I claim as my invention—

1. The combination, substantially as set forth, of shaft *d*, bearings U and V, lead-screw *e*, clutch *g*, and bushing *f*.

2. The combination, substantially as set forth, of bed A, turret-block C, screw E, having a clutching device, hand-wheel H, gears I J, pinions L M, and shaft *h*.

GEORGE T. REISS.

Witnesses:
J. W. SEE,
NELSON WILLIAMS.