

Sheet.

*J. Freeland & D. Ward's Machine for coiling Springs.*

75405

D<sup>3</sup>

D<sup>1</sup>

b

B

I

I<sup>1</sup>

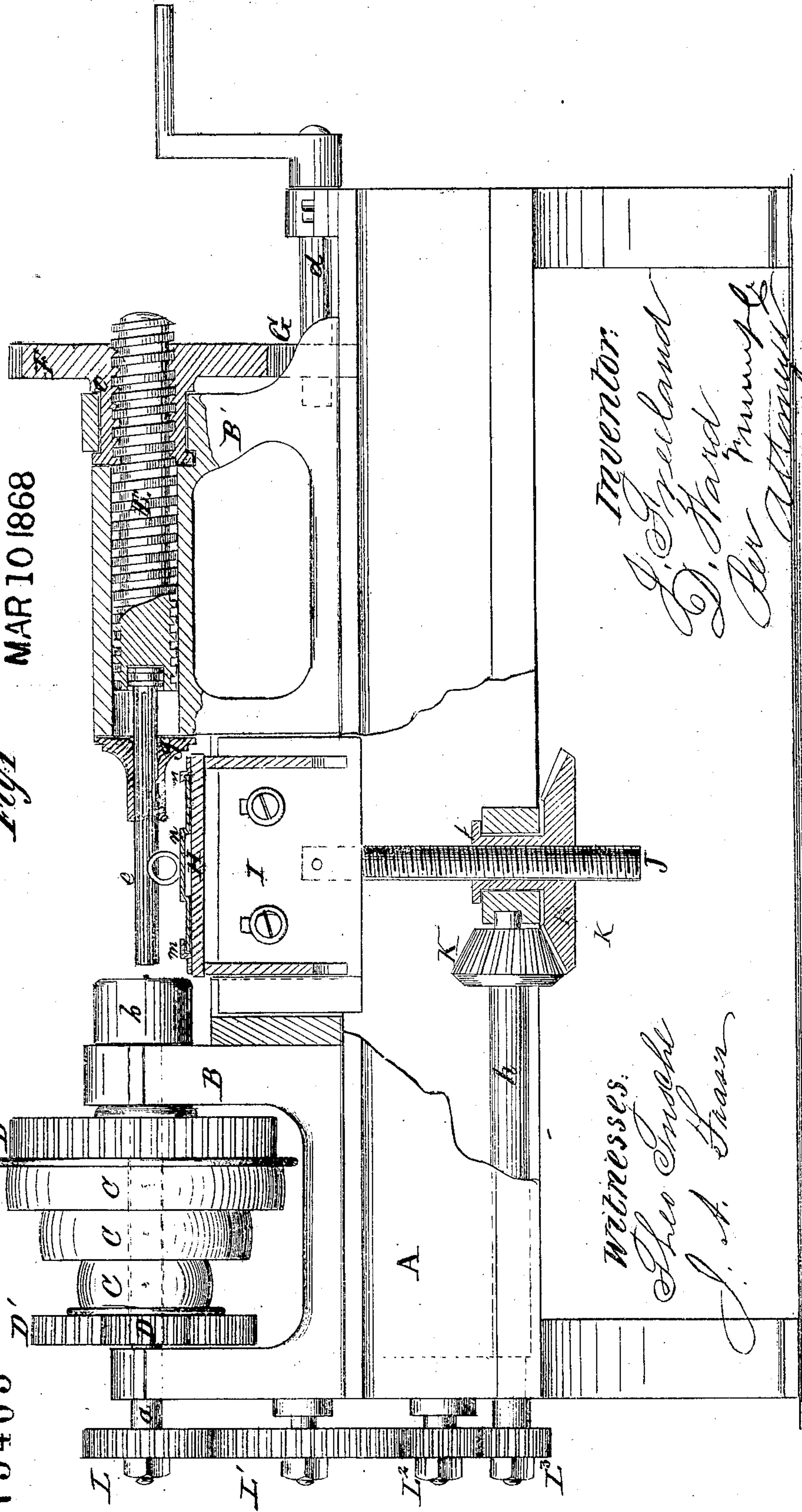
I<sup>2</sup>

I<sup>3</sup>

Fig 1

PATENTED

MAR 10 1868



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Specs 132

Sheet 11

# J. Freeland & D. Ward's Machine for coiling Springs.

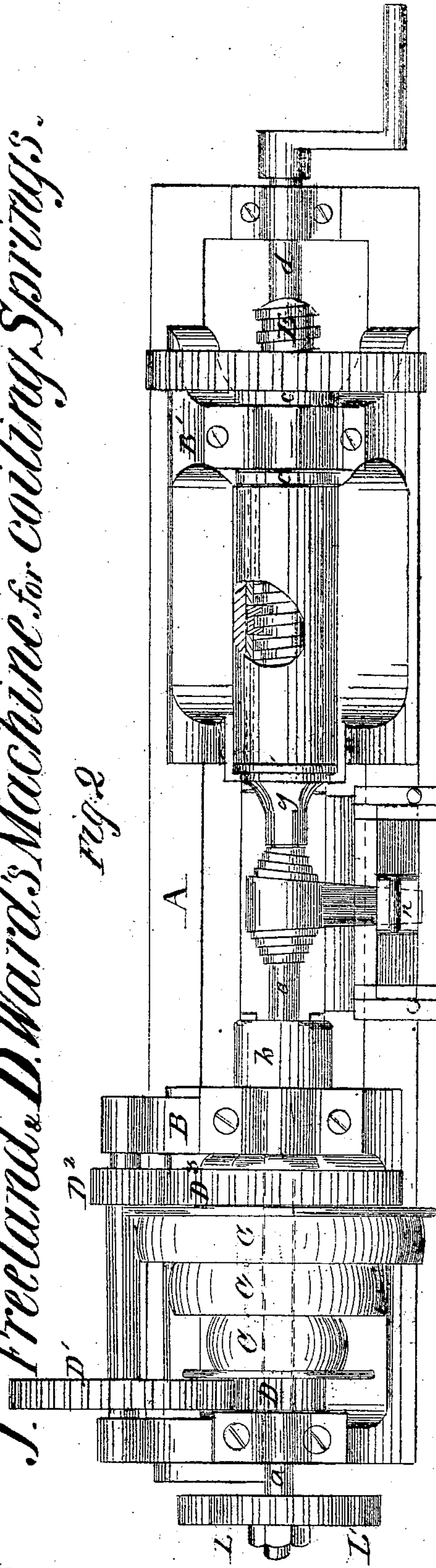


Fig. 2

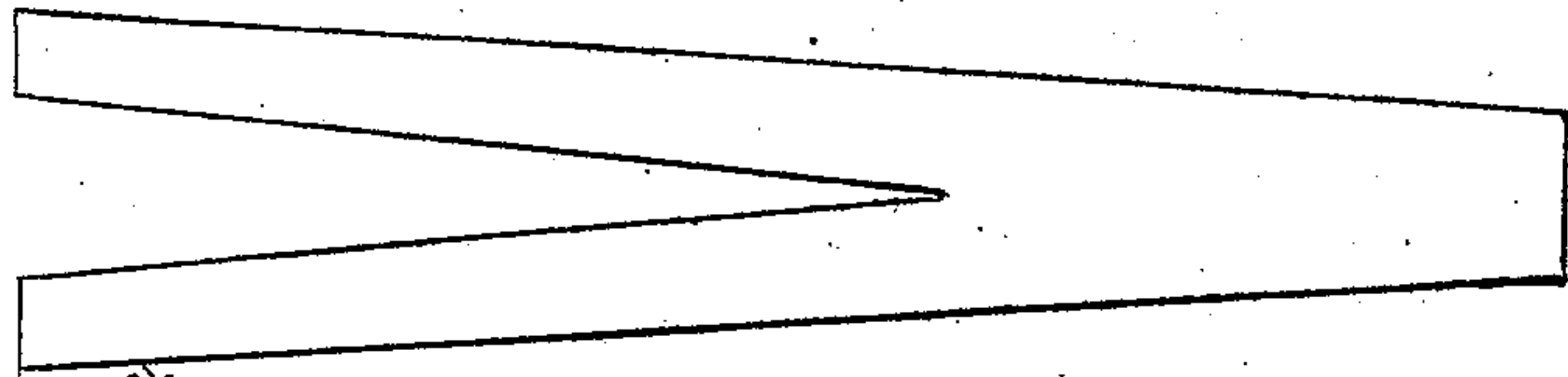


Fig. 3

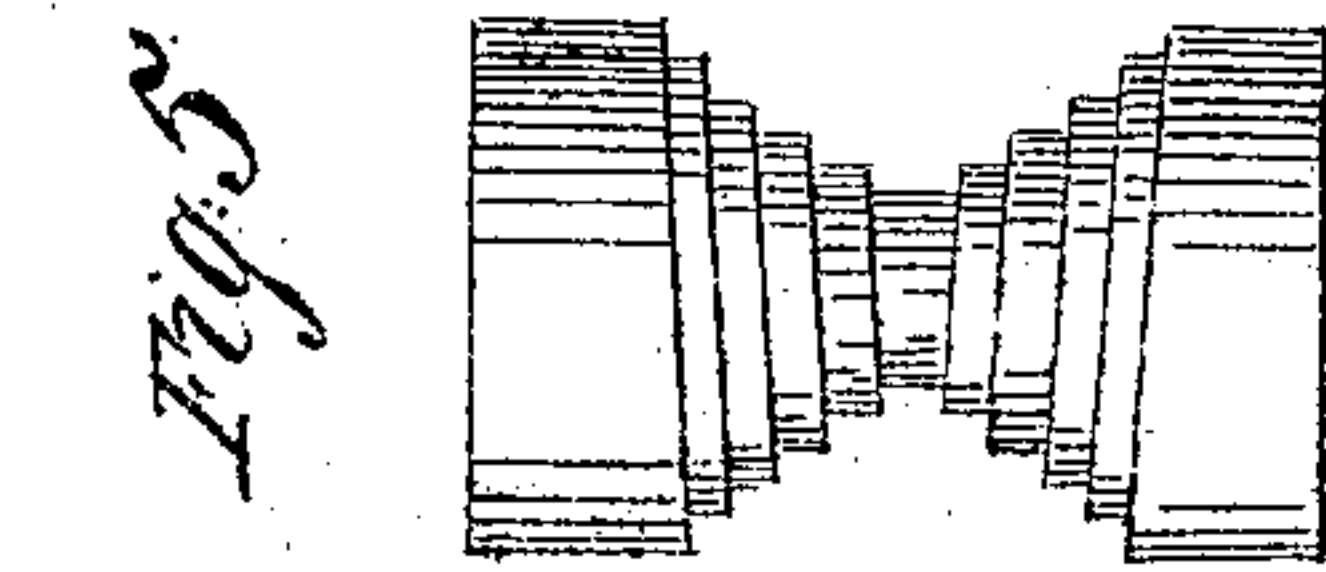


Fig. 4



Fig. 5

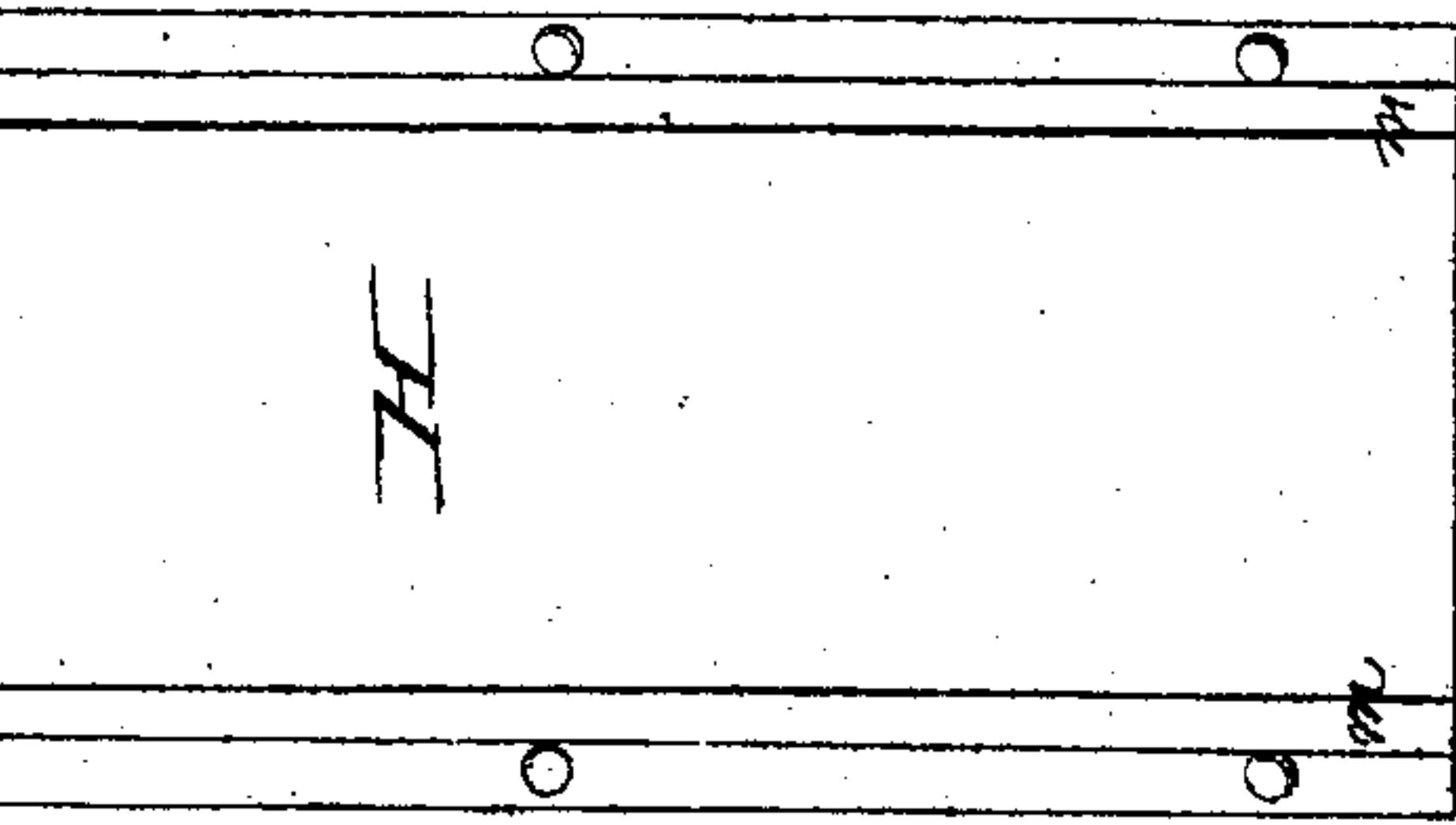


Fig. 6

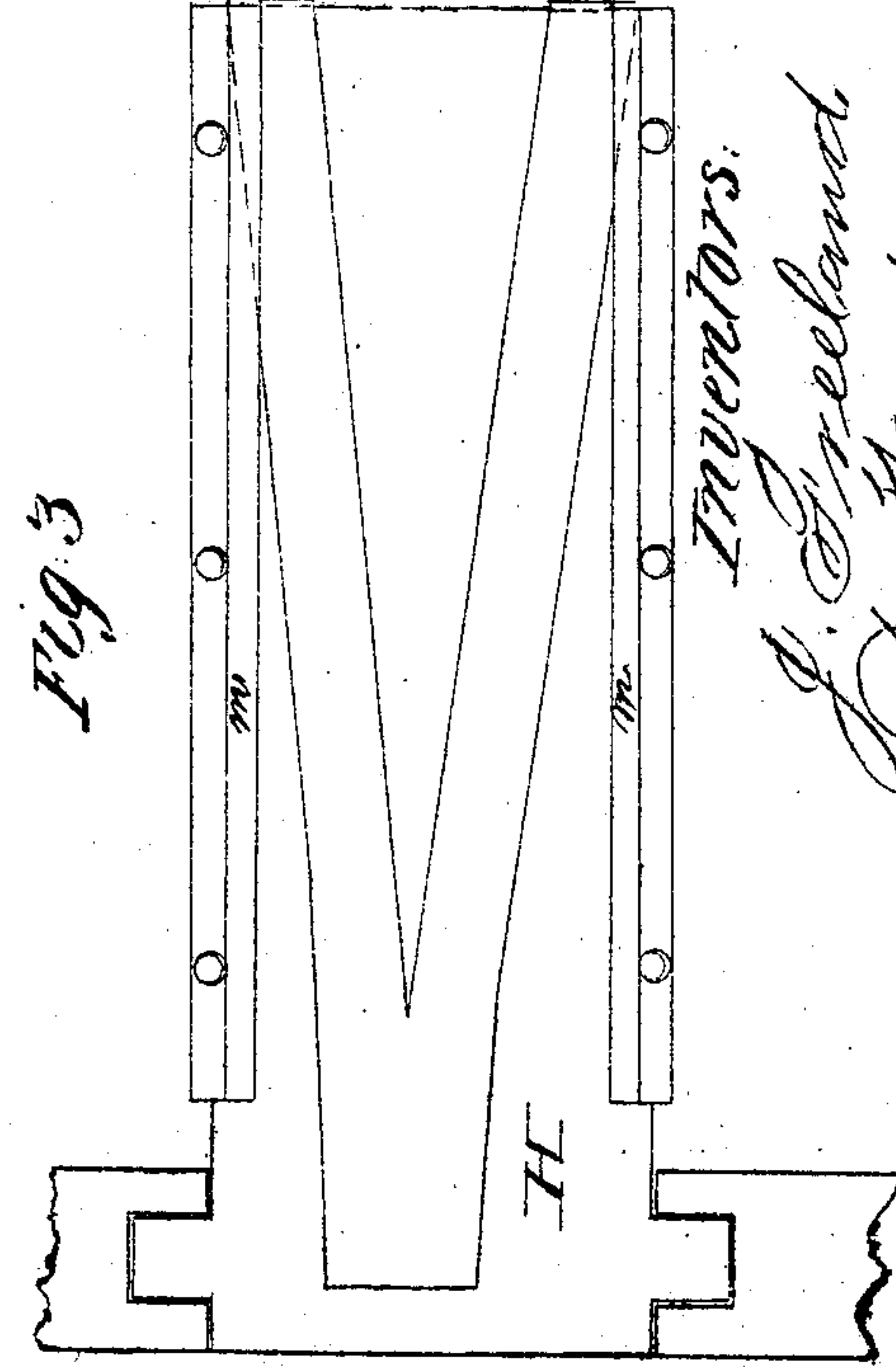


Fig. 7

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JOHN FREELAND AND DANIEL WARD, OF NEW YORK, N. Y.

*Letters Patent No. 75,405, dated March 10, 1868.*

## IMPROVED MACHINE FOR COILING SPRINGS.

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

### TO ALL WHOM IT MAY CONCERN:

Be it known that we, JOHN FREELAND and DANIEL WARD, of the city, county, and State of New York, have invented a new and useful Improvement in Machine for Coiling Springs; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, sheet 1, represents a side elevation of our invention, partly in section, to show interior parts.

Figure 2, sheet 2, is a plan or top view of the machine.

Figures 3, 4, sheet 2, are details.

Figure 5 exhibits a spring when coiled.

Similar letters of reference indicate corresponding parts.

This invention relates to a machine for coiling our patent volute and other similar springs, while hot, and consists in a frame constructed with head and tail-blocks like a turning-lathe, having suitable driving-gear and an adjustable spindle or mandrel, around which the spring is coiled, and connected therewith an adjustable self-regulating guide-rest or table, which holds the plate or bar of metal while it is being coiled to form the spring, as hereinafter more particularly described.

A represents the frame of the machine, B the head, and B' the tail-block. A set of graduated pulleys, C C, with a pinion, D, made fast to them, turn loosely on a shaft, *a*, carrying the chuck *b*. The pinion D gears into a spur-wheel, D<sup>1</sup>, that carries a small pinion, D<sup>2</sup>, gearing into the large spur-wheel D<sup>3</sup>, on the chuck-shaft *a*, to give it slow and graduated motion. The chuck *b* is secured to the shaft *a* by screws or otherwise, so as to be changeable to suit different-sized coiling-spindles, which are so constructed as to obviate the necessity of employing keys to hold them when set in the chuck for driving. On the tail-block B' is placed a sliding screw, E, which is moved by the revolving nut *c*, which forms the hub of the spur-wheel F, actuated by a pinion, G, on the crank-shaft *d*. The coiling-spindle, *e*, is attached to the end of the sliding screw E, by a neck or flanged ring, in such manner that it can revolve freely independently of the screw when it is held by the chuck *b*. The spindle is grooved or slotted on one side from end to end, so as to receive the end of a plate or bar to be coiled, and allow the spring, when coiled on it, to be slipped off by running the screw E back with the spindle to bear one side or end of the spring against a discharging-ring or thimble, *g*, which fits the end of the spring, and turns loosely with it.

On one side of the machine, opposite the coiling-spindle *e*, is placed an adjustable guide-rest or bed, H, for supporting the plate or bar when it is coiled. This guide-rest is secured to a sliding block, I, which is moved up and down by a screw, J, attached on the under side, that is actuated by a nut, *i*, on the bevel-gear wheel K. The match-gear, K', on the shaft *h*, takes its motion from the spur L on the chuck-shaft *a*, through the train L<sup>1</sup> L<sup>2</sup> L<sup>3</sup>, and the motion is so graduated that the sliding block I, with the guide-rest H, shall descend and recede from the coiling-spindle *e*, exactly in accordance with the spring as it is coiled, so that a uniform distance shall be maintained between the supporting surface of the guide-rest and the under side of the spring, from first to last, during the whole operation of coiling. The gears L L<sup>3</sup> are changeable to suit different-sized springs or plates, and bars of different thickness, according to fixed proportions.

For coiling a volute spring, the hot-metal plate or bar is laid on the guide-rest H, and one end is inserted in the slot in the coiling-spindle *e*, which, being set in the chuck *b*, revolves slowly, and the spring is wound upon it while hot, thus receiving a form of a coil, which it retains when the metal becomes cold. The coiling-spindle is withdrawn from the spring by running the screw E back with the crank.

For guiding and holding the plates or bars centrally on the guide-rest H, while they are coiled to form springs, the forks of single volute springs are slipped under side bars *m m*, as shown in fig. 3; and for coiling double volute springs, a movable guide, *n*, is slipped under the bars, and lies upon the butt end of the spring-plate, as shown in fig. 2.

Having described our invention, we claim as new, and desire to secure by Letters Patent—

1. The slotted coiling-spindle *e* and the sliding screw *E*, in combination with the chuck *b*, all constructed, arranged, and operating substantially as and for the purpose herein described.
2. The guide-rest *H* and the sliding block *I*, in combination with the coiling-spindle *e*, constructed and operating substantially as and for the purpose herein described.
3. The combination of the pulleys *C*, the chuck *b*, the coiling-spindle *e*, the sliding screw *E*, the guide-rest *H*, and the sliding block *I*, constructed, arranged, and operating substantially as and for the purposes set forth and described.

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Witnesses:

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