

G. V. SHEFFIELD.
Making Wood Screws.

No. 80,022.

Patented July 14, 1868.

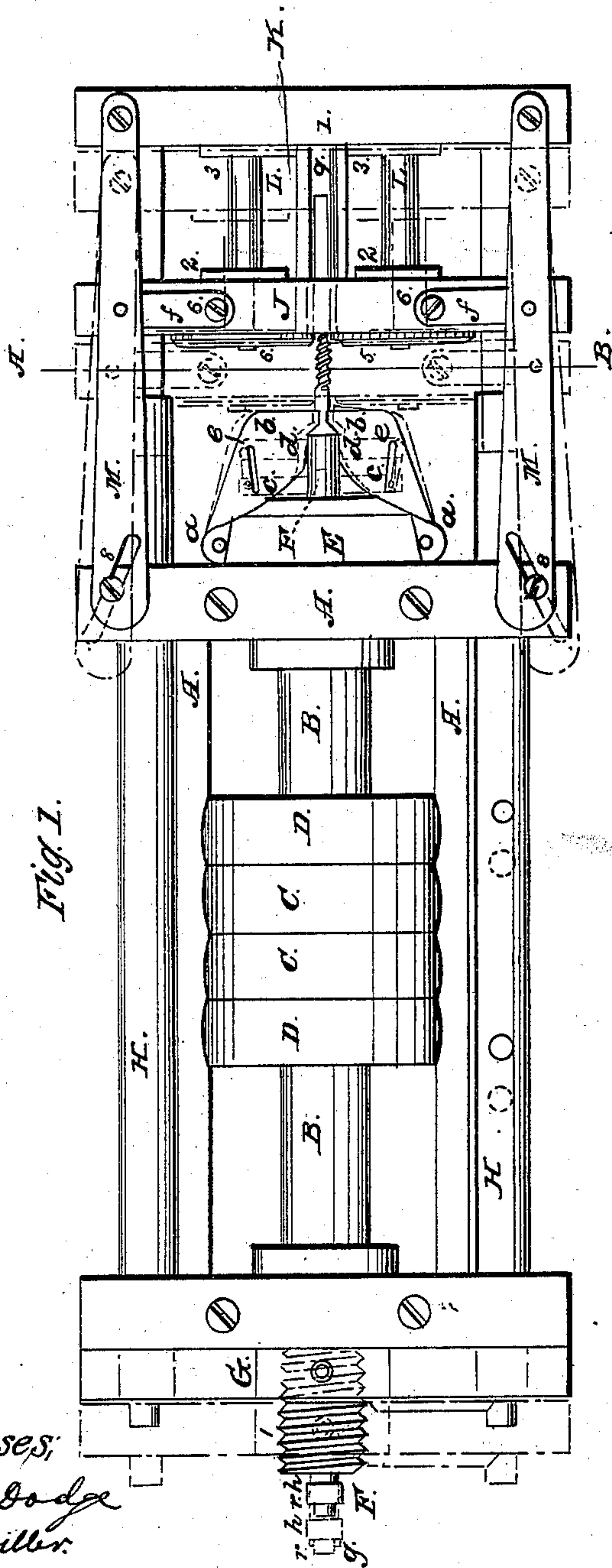


Fig. 1.

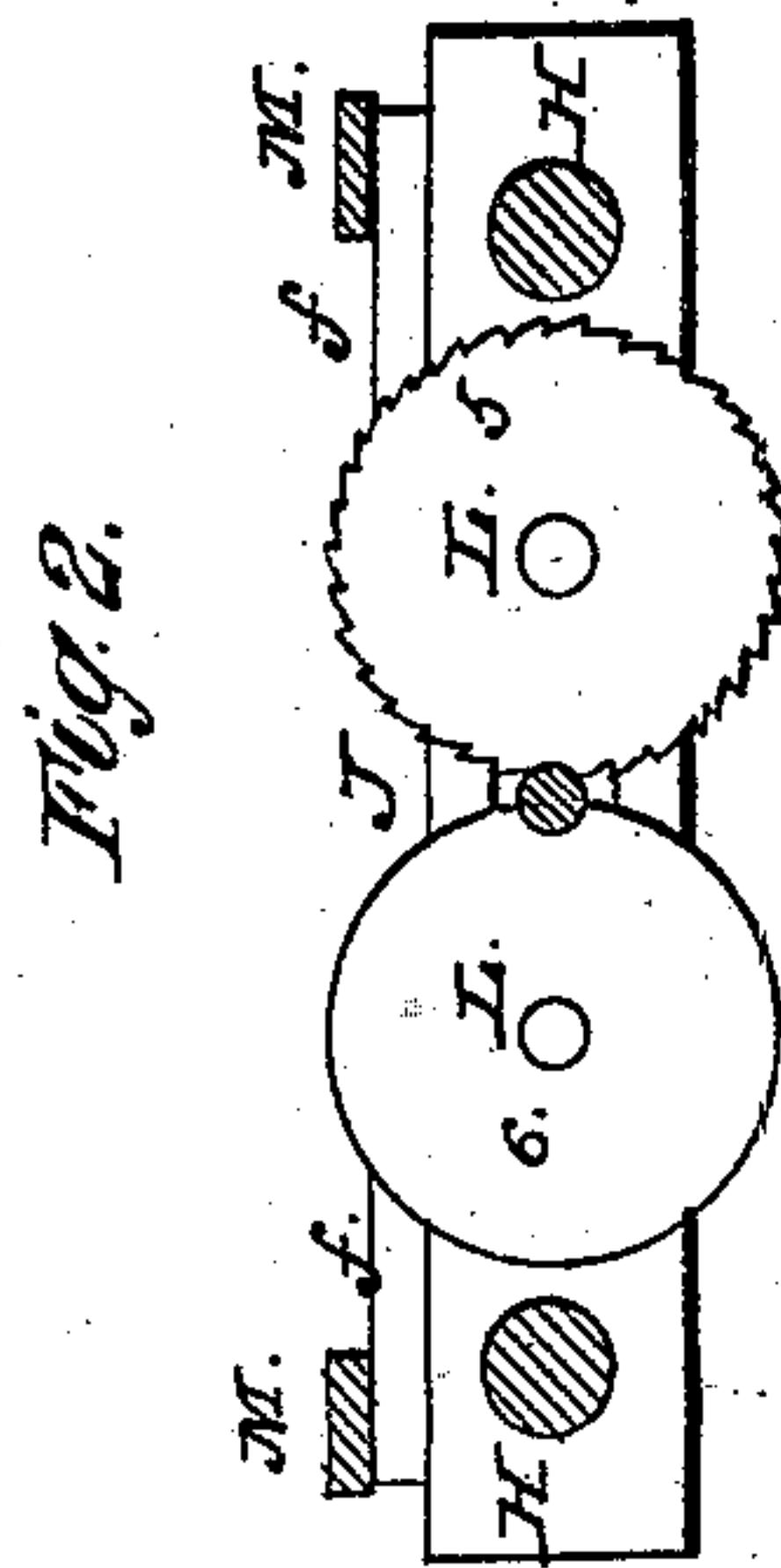


Fig. 2.

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GEORGE V. SHEFFIELD, OF WORCESTER, MASSACHUSETTS.

Letters Patent No. 80,022, dated July 14, 1868.

IMPROVEMENT IN MANUFACTURING SCREWS.

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

KNOW ALL MEN BY THESE PRESENTS:

That I, GEORGE V. SHEFFIELD, of the city and county of Worcester, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Machines for Drawing Screws; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a plan view of so much of the machine as is necessary to illustrate my invention.

Figure 2 represents a section on line A B, fig. 1.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings, the parts marked A A A A constitute the main frame, in which the hollow shaft B is supported in suitable bearings in the front and rear of the frame.

Upon the centre of the shaft B are placed two tight pulleys, D D, and loose pulleys C C.

To the front of the shaft B is fastened the head E, and from this head project two sets of ears, *a a*, one set on each side, as indicated in the drawings. Between each set of ears *a a* is hinged a jaw, *b*, having an inclined slot, *c*.

A spindle, F, extends through the shaft B, and has fastened to its front end a cross-piece, *d*, the projecting ends of which cross-piece *d* work in slots in the jaws *b b*, as indicated in dotted lines, fig. 1, while pins *e e* project up from the cross-piece *d*, and work in the inclined slots *c c* in the jaws *b b*.

The rear end, *g*, of the spindle F passes through a hinged lever, *h*, and a pin, *i*, holds the two together.

The hinged lever *h* may be constructed and arranged in any desirable manner, provided it is so arranged that it can be operated to force or move rod or spindle F forward or back, to open or close the jaws *b b*, as noted in dark and red lines, fig. 1. The jaws are shown open in red lines, and closed in dark lines, fig. 1.

When spindle F is forced forward, it closes the jaws, and when drawn back, as shown in red lines, it opens the jaws, the pins *e e* acting against the inclined sides of the slots *c c*.

The rear end of the shaft B is provided with a screw, 1, which fits in a screw cut in the cross-head G, which is fastened to the rear ends of the rods H H, which pass through holes in the rear of frame A.

The front of rods H H pass through holes in the front of frame A, and extend some distance beyond, and are united by a cross-piece, I, which latter is connected to the central cross-piece J, also connected to the rods H H by means of the longitudinal piece K.

The pieces I and J are slotted out, to receive the journal-boxes 2 2 3 3 of the short shafts L L, the rear ends of which project back of the piece J, and have circular wheels 5 and 6 fastened thereto.

The rear journals 2 2, of shafts L L are fastened to the connections *f f* by means of the screws 6 6, which pass through slots in the top of the piece J.

The outer ends of the connections *f f* are attached to the levers M M, the front ends of which are hinged to the cross-piece I, while their rear slotted ends are held by the screws or pins 8 8 to the top of the front of frame A, as clearly indicated in the drawings, fig. 1.

It will be noticed that when the rods H H, cross-piece G, and frame composed of the pieces I, J, and K are run forward, as shown in dark lines, fig. 1, the levers M M are drawn in, by means of the screws or pins 8 8, acting upon the inner inclined edges of their slots, while, when the same parts are moved back into the positions shown in red lines, the levers are thrown out, by reason of the screws 8 8 acting upon the outer inclined sides of the slots.

When the levers M M are thrown out, as shown in red lines, they cause the wheels 5 and 6 to be moved away or from each other, while, when they are drawn in, they cause the wheels to approach or move towards each other.

The journal-boxes of the shafts L L are so made and arranged in the pieces I and J that they move when the shafts L L move.

The forward-and-back motion of the rods H H, and the frames to which they are attached, is effected by

means of the screw 1, on the rear end of shaft B. When shaft B is moved in one direction, the screw 1 acts to run the cross-piece G forward, and when the shaft is turned in the opposite direction, the cross-head is run back.

Two belts are to run upon the pulleys C C, and arranged so as to move shaft B in opposite directions when the belts are shipped on to their tight pulleys D.

The cross-piece J is slotted out or cut through in front of screw-blank frame 9, to admit of the passage of the blank-head of the screw.

The operation is as follows: The operator places a blank screw in the screw-blank frame 9, which is fitted to the top of the piece k, so that it can be run back and forth. Frame 9, with the screw-blank, is then run in towards the jaws b b until the head of the blank passes in between the wheels 5 and 6 and the jaws b b, when one of the belts is shipped, so as to cause shaft B to revolve in a direction to run the frame, composed of the pieces G, H H, I, J, and K, back into the position shown in red lines, the operator in the mean time drawing back the spindle F, so as to open the jaws b b sufficiently to let the head of the blank screw pass between them when they are closed tightly upon the blank part below the head, as shown in the drawings, and there held, while the motion of shaft B is reversed, causing the arms M M to gradually force the wheels 5 and 6 against and into the screw-blank, while at the same time they are forced forward or away from the jaws b b, until they have reached or cleared the point of the screw, as shown in dark lines, fig. 1. By this operation the screw-thread is gradually formed by a drawing process, in contradistinction to cutting the metal out to form the thread, which is the common mode.

During this operation, I prefer to give the wheels 5 and 6 a fast motion in a direction opposite to that in which the blank screw is turned by the revolving jaws b b. The motion of wheels 5 and 6 may be imparted by belts running upon the shafts L L, or otherwise.

The wheels 5 and 6 may be made with smooth faces, or they may be made with notched or serrated faces, similar to the face of wheel 5, and when so made the wheels may be so arranged as to revolve to bring the inclined parts of the teeth or projections first in contact with the blank screw.

The operation might be performed with only one wheel, the blank being properly supported by a smooth finger arranged for that purpose.

Having described my machine for "drawing" screws, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the reciprocating rods H H, the frame marked I, J, and K, of the shafts L L, and wheels 5 and 6, pins 8 8, and arms M, for operating the same, as and for the purposes stated.
2. The combination, with the reciprocating frame I J K, and shafts L, of the sliding boxes of the wheels 5 and 6, hinged connections f, arms M, and pins 8, substantially as and for the purposes set forth.
3. The combination, with the stationary frame A, tubular shaft B, spindle F, and jaws b, of the reciprocating frame, the rods H, cross-piece G, wheels 5 6, connections f, arms M, and pins 8, the said parts being arranged for joint operation as and for the purposes set forth.

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Witnesses:

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