

(No Model.)

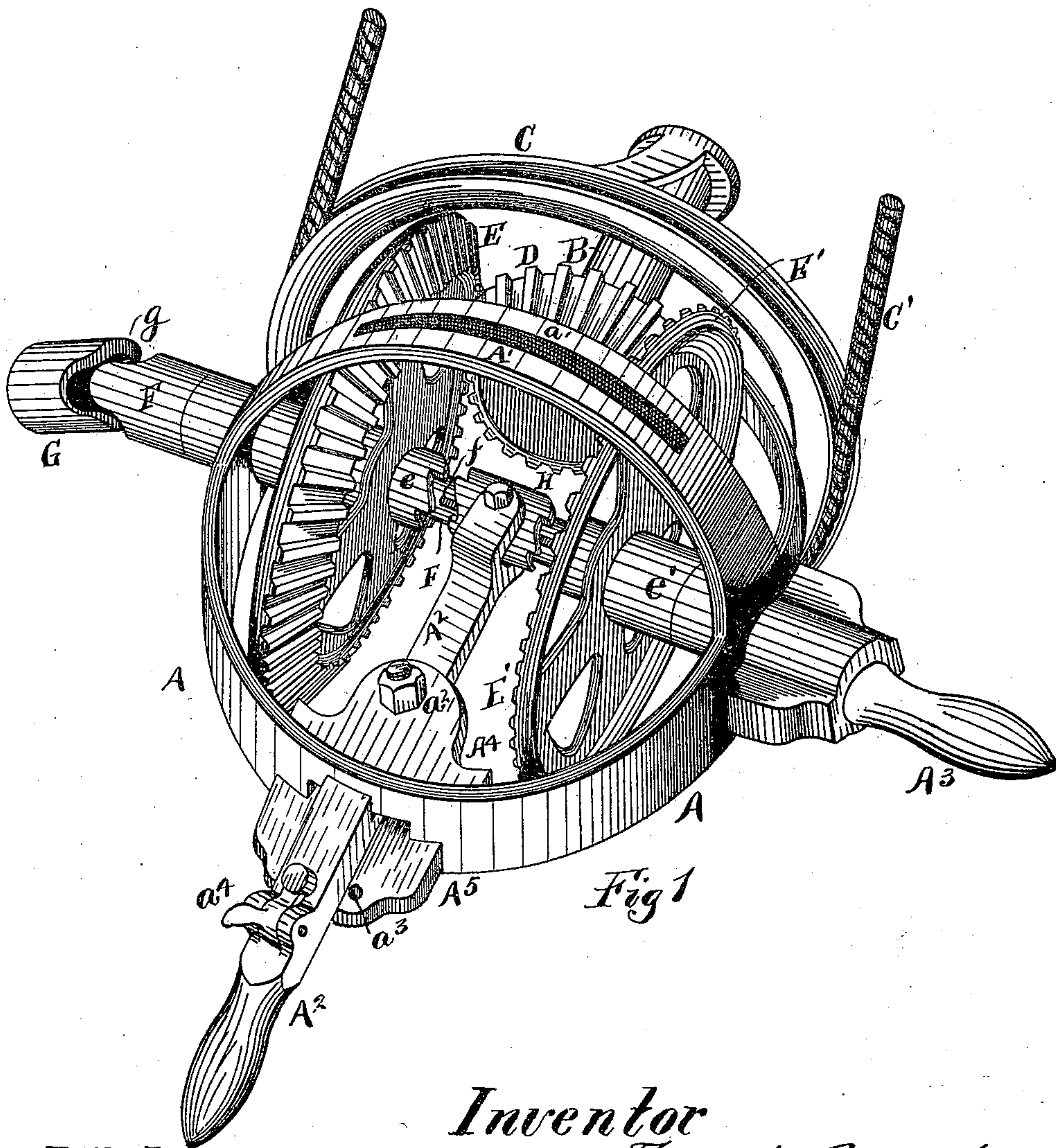
2 Sheets—Sheet 1.

F. BARNHART.

TAPPING MACHINE FOR STAY BOLT HOLES.

No. 441,737.

Patented Dec. 2, 1890.



Inventor

Frank Barnhart

Witnesses

Fred T. Chapman.

Cyrus F. Dean.

Per Hallock & Hullsick

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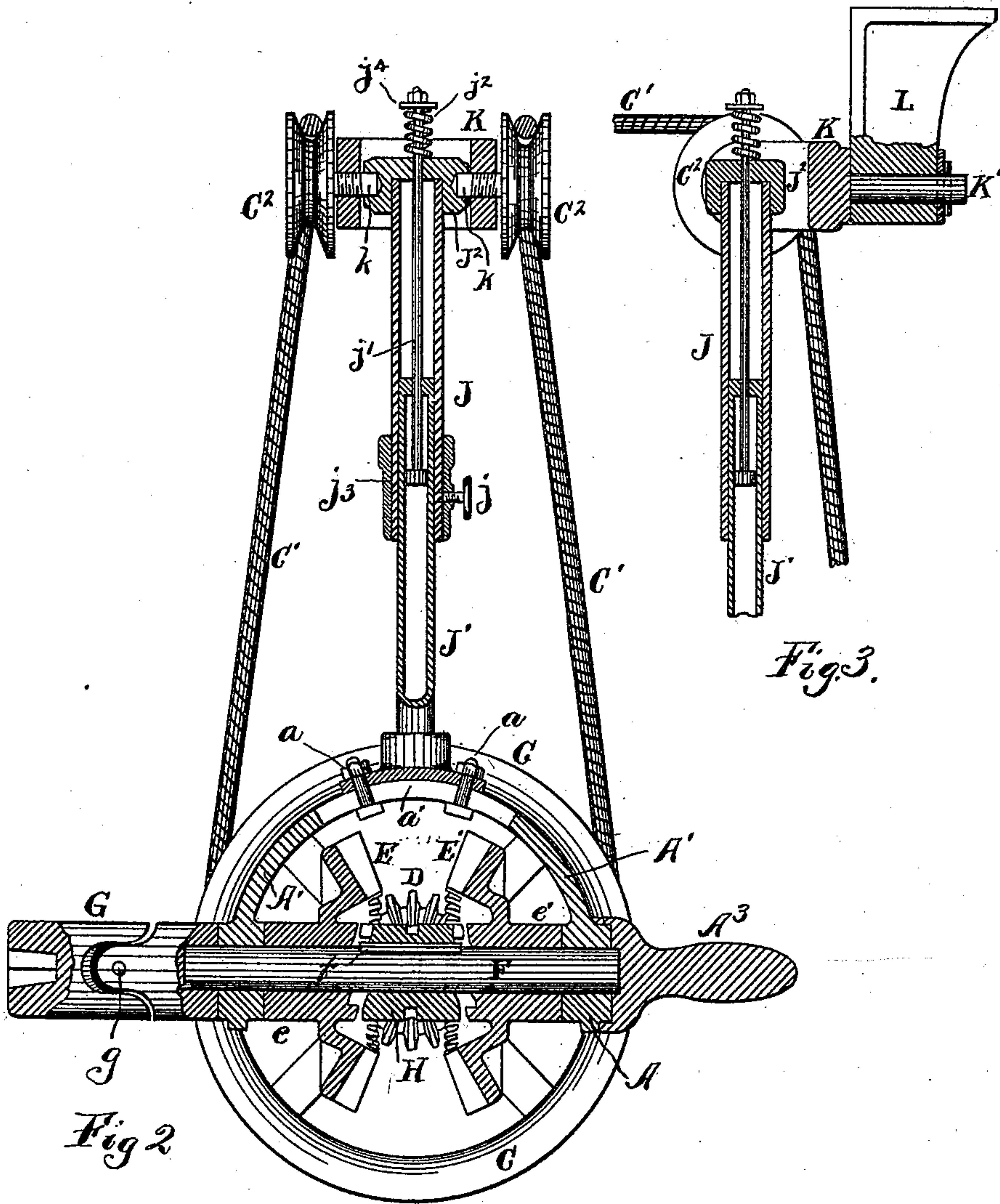
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UNITED STATES PATENT OFFICE.

FRANK BARNHART, OF WARREN, PENNSYLVANIA.

TAPPING-MACHINE FOR STAY-BOLT HOLES.

SPECIFICATION forming part of Letters Patent No. 441,737, dated December 2, 1890.

Application filed September 4, 1890. Serial No. 363,949. (No model.)

To all whom it may concern:

Be it known that I, FRANK BARNHART, a citizen of the United States, residing at Warren, in the county of Warren and State of Pennsylvania, have invented certain new and useful Improvements in Stay-Bolt-Tapping Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to universal tapping-machines, and particularly to that form of such machines as is adapted to be used in tapping stay-bolt holes in steam-boilers and like uses.

The invention consists in certain new and useful improvements in the construction of the type of machines above named, as will be hereinafter fully set forth, and pointed out in the claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a universal tapping-machine containing my improvements. Fig. 2 is a vertical sectional view of the machine, the line of section being in the plane of the axis of the stock-shaft F. Fig. 3 is a vertical section view of the devices by which the machine is supported, the line of section being at right angles to the line of section in Fig. 2.

The construction is as follows:

A A' is the frame of the machine.

B is a sleeve connected with the frame-piece A, which contains the driving-shaft.

C is the driving-pulley, C' the driving-belt, and C² C² the sheaves over which the driving belt or rope passes.

D is the driving-gear.

E E' are the driven gears.

F is the stock-shaft.

G is the tap-stock.

H is a sliding clutch.

J J' is a telescoping hanger. J² is the trunnioned head of said hanger. K is a swiveled yoke supporting said trunnioned head and hanger. L is a hanger, which is attached to the ceiling and supports said swiveled yoke.

A² and A³ are the handles by which the op-

erator holds and directs the action of the machine.

The frame-work consists of the hoop or band A, the arch A', the handle A³, the sleeve B, the bearings for the shaft F, the lugs or brackets A⁴ and A⁵, and may be formed of one piece of casting. The part J' of the telescoping hanger is secured to the arch A' by bolts, which pass through the slot a' in said arch. The part J of the telescoping hanger is attached to the head J², and it is pivoted to swing on the points or trunnions k k, which are screwed into the forks of the yoke K. The yoke K is swiveled by its stem K' in the hanger L, which is secured to the ceiling or overhead timbers. In the telescoping hanger there is a rod j', which has a head j³ at its lower end and a cap j⁴ at its upper end, which seats on a spring j². A binding-screw j is provided, by which the telescoping parts can be held at any point against slipping when desired.

When the machine is in operation, it is supported largely by the driving-rope C', the operator being able to raise and lower it at will; but if the rope should break or run off any of the sheaves the machine would drop and the telescoping parts pull apart, except for the headed rod j', the spring j² serving to cushion the weight of the machine when it is thrown off upon the rod j'. The binding-screw j can be used to prevent telescopic movement of the parts J and J' when desired and hold the machine against vertical movement. The part J' of the hanger is attached to the arch A' of the frame-work by bolts a, which pass through the slot a' in the arch. The machine will ordinarily be hung so that the stock-shaft F will be at right angles to the telescoping hanger; but sometimes it will be desirable to have the stock-shaft F set at an angle to the said hanger, and when this is the case the adjustment can be effected by loosening up on the bolts a a and resetting them when the frame is turned to the position desired. It will be seen that the hanging devices will permit the machine to be turned horizontally to any direction desired, the telescoping parts J and J' serving as a swivel, and it can be swung in one direction on the trunnions K K and in the other

direction on the pivot K', thus giving the machine universal action or adjustment.

The working parts of the machine consist of the driving-shaft, which is in the sleeve B, 5 the driving-pulleys C, the driving-pinions D, which are on said driving-shaft, the stock-shaft F, which stands at right angles to the driving-shaft, the pinions E E', which are loose upon the shaft F, the sliding clutch H, which 10 engages with the shaft F by a feather *f* and is moved by the lever A², which is pivoted on the bracket A¹, and the tap-stock G, which connects with the stock-shaft F by a universal joint *g*. By means of the two gears E E', both 15 of which engage with the driving-gear D and the sliding clutch H, the stock-shaft can be made to run either way, thus enabling an operator to run a tap in and back it out at will by properly moving the lever A². In the 20 bracket A³ there is a series of pin-holes *a*³, and on the lever A² there is a catch-pin operated by a hand grip-lever *a*¹, which will engage with said holes, whereby the lever A² can be set so as to hold the clutch H midway between 25 and out of engagement with both of the gears E E' or in engagement with either of them, as desired.

What I claim as new is—

1. In a universal tapping-machine, the com- 30 bination, substantially as set forth, of a frame-work having proper shaft-bearings thereon, a driving-shaft and stock-shaft set at right angles to each other, a bevel driving-gear and

two beveled driven gears moved from said driving-gear, which run loose upon the said 35 stock-shaft, a clutch device whereby either of said driven gears may be engaged with said stock-shaft, a driving-pulley on the driving-shaft, and a universally-acting hanger for supporting the above-named parts. 40

2. In a universal tapping-machine, the combination, with the tap-operating gearing and its supporting-frame and the universally-jointed hanger L, K, and J², of the interme- 45 diate or connecting telescoping parts J J'.

3. In a universal tapping-machine, the combination, with the tap-operating gearing and its supporting-frame and the universally-jointed hanger L, K, and J², of the interme- 50 diate or connecting telescoping parts J J' and the contained retaining-rod *j*'.

4. In a universal tapping-machine, the combination of the fixed hanger L, the yoke K, swiveled in said hanger and carrying the 55 sheaves C², the block J², trunnioned in said yoke, and telescoping hanger J J', supported by said block, the frame A A', supported by the said telescoping parts, and the tap-operating gearing supported in said frame.

In testimony whereof I affix my signature in 60 presence of two witnesses.

FRANK BARNHART.

Witnesses:

JNO. K. HALLOCK,

WM. P. HAYES.