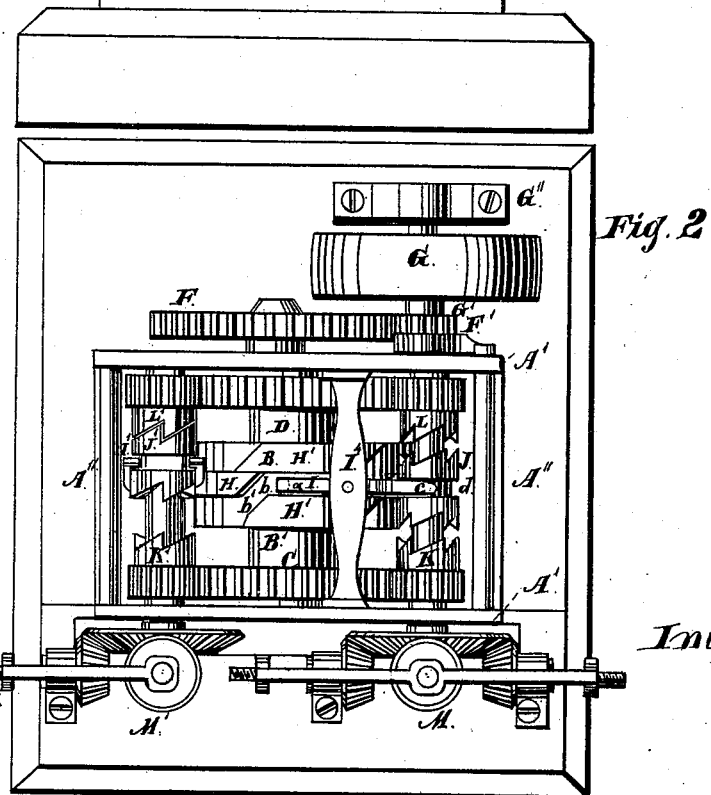
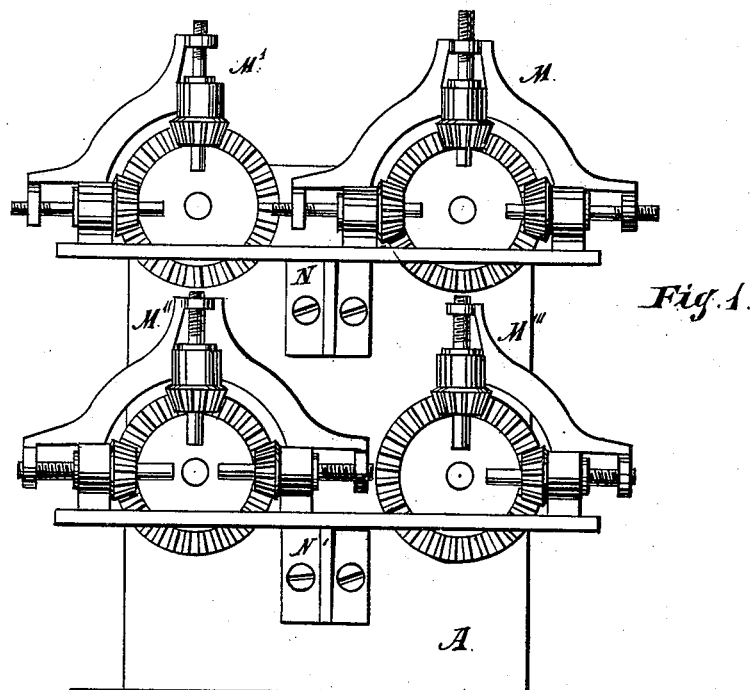


D. ACKERMAN.
Machine for Tapping Pipe-Fittings.
No. 215,710. Patented May 27, 1879.



Witnesses:
H. L. Brumby
O. J. Bond.

Inventor:

David Ackerman

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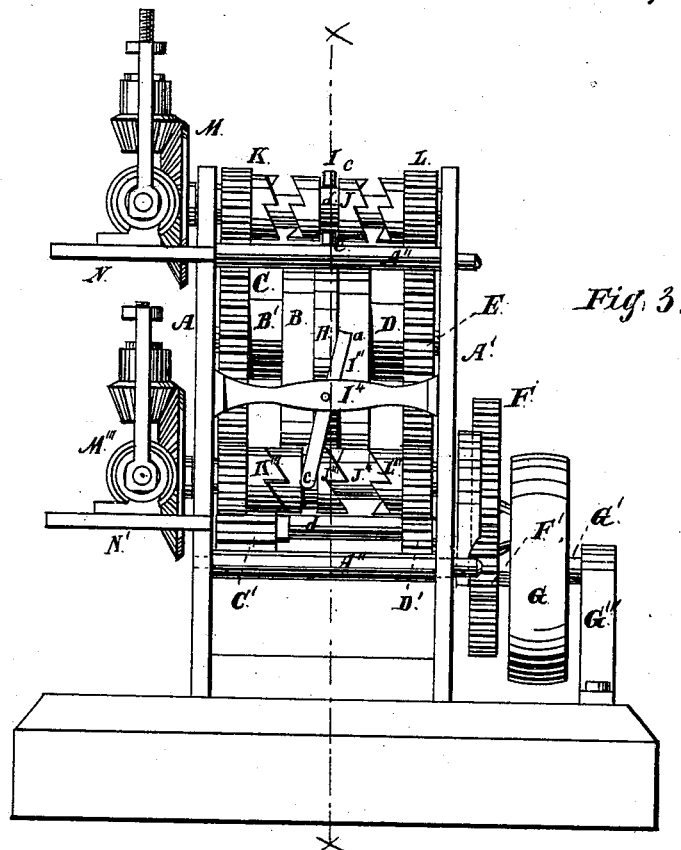


Fig. 3.

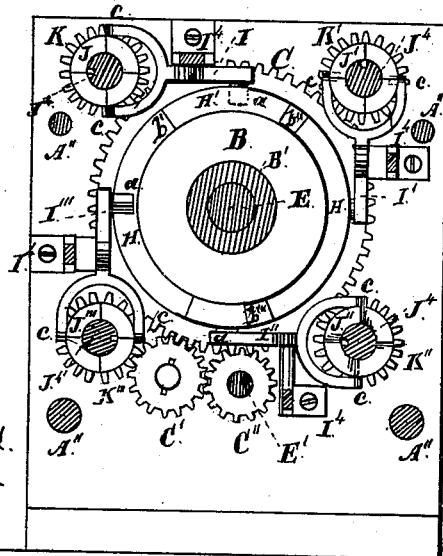


Fig. 4.

Witnesses:
Heinrich F. Bruns.
O. W. Bond.

Inventor:

David Ackerman

UNITED STATES PATENT OFFICE

DAVID ACKERMAN, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN MACHINES FOR TAPPING PIPE-FITTINGS.

Specification forming part of Letters Patent No. **215,710**, dated May 27, 1879; application filed August 24, 1878.

To all whom it may concern:

Be it known that I, DAVID ACKERMAN, of the city of Chicago, Cook county, State of Illinois, have invented new and useful Improvements in Tapping Devices, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation. Fig. 2 is a top or plan view. Fig. 3 is a side elevation. Fig. 4 is a vertical section on the line *xx* of Fig. 3.

The object of this invention is to construct a machine to secure the full capacity of the power by which it is operated, and having the operating devices so arranged that while one is in operation others will be out of operation, either withdrawing the tool or forcing it into the article which is being operated upon; and its nature consists in providing a central operating-drum, around the periphery of which are arranged a series of levers operated by the drum, and engaging with sliding clutches, to change the engagement of the clutches with the mechanism operating the cutting instrument; in providing the operating-drum with a flange or groove having a portion thereof so constructed as to operate each lever as it comes in contact therewith, to retain its sliding clutch midway between the clutch-gears, which operate the device used therewith, and stop the movements to allow the article being operated upon to be withdrawn when finished and another inserted, the stoppage of each of the movements following each other in succession, and only one movement being stopped at a time, the others remaining in operation, and in the arrangement of the several parts for operating the drum clutch-gears and the mechanisms which operate the tapping or other devices.

The mechanism shown is designed for tapping pipe-fittings.

In the drawings, A A' represent the supporting-frame; B, the central drum; B', the head or collar connecting the drum B and wheel C; C D, the gear-wheels for driving the devices which operate the tapping-instruments; C' C'' D', the gear-wheels or pinions for driving the wheels C D; E, the supporting-shaft for the drum B and wheels C D; F, the

driving-wheel; F', the driving-pinion; G, the driving-pulley; G', the shaft; G'', the standard or support; H H', the flanges or guides in the periphery of the drum B; I I' I'' I''', the levers; J J' J'' J''', the sliding clutches; I⁴, the supporting-bars for the levers; J⁴, the shafts supporting the sliding clutches; K K' K'' K''', the clutch-gears for revolving the devices to operate the tools; L L' L'' L''', the clutch-gears for revolving the devices to withdraw the tools; M M' M'' M''', the tapping mechanism; N N', the tables supporting the article to be operated upon; *a*, the anti-friction rollers on the ends of the levers engaging the flange H H'; *b*, the groove or passage between the flanges H'; *b'* *b''*, the inclines; *c*, the anti-friction rollers on the clutch ends of the levers; *d*, the grooves in the sliding collar-clutches; *b'''*, the opening dividing the flange H into two sections.

The frame A A' A'' may be made of iron or other suitable material, and of any form of construction suitable to receive and support the operating mechanism. The drum B, as shown, is located in the upper portion of the frame-work, and is mounted loosely on the shaft E, secured at its ends to the frame-work. On each side of the drum B, on the shaft E, is loosely mounted a gear-wheel, C and D, the wheel C, as shown, being connected to the drum B by the collar B', so that the two will revolve together, while the wheel D moves independently of the drum. These wheels C D are driven by the pinions C'' D', located on the shaft E', D' gearing with and driving the wheel D, and C'' gearing with and driving a pinion, C', which gears with the wheel C, so that the revolution of the wheel D will be in a reverse direction from that of the wheel C and drum B. The end of the shaft E projects beyond the frame A', and to it is secured the wheel F, which gears with the pinion F' on the shaft G', having its bearings in the frame A' and the standard G'', and driven by the pulley G, which may be driven in any suitable manner.

Other devices than those described may be used for driving the wheels C D and drum B.

On the periphery of the drum B are projecting flanges H H', H being located at the center of the cam, and H' on the outer edges, so

as to leave a space, *b*, between them, the ends of the flanges or guides having inclined faces *b'* *b''* *b'''*. Around this central drum B is located a series of levers, I I' I'' I''', each lever being suitably pivoted to a supporting-bar, I⁴, the ends of which are secured to the frame-work. These levers are so located that their inner ends, which are provided with anti-friction rollers *a*, will be in close proximity to drum, and bring the rollers *a* so as to be operated upon by the flanges H H', and their outer ends are forked and provided with anti-friction rollers *c*, which enter or engage with a slot or groove, *d*, in the face of the sliding clutches J J' J'' J''', which clutches are mounted on shafts J⁴ in such manner as to slide back and forth thereon, the connection being made by means of a spline, or a key and slot, or in some other suitable manner that will enable the clutches to slide in and yet revolve with the shaft. These shafts J J' J'' J''' have their bearings in the frame-work A A', and are arranged around the drum, and on them are loosely mounted a series of clutch-gears, K K' K'' K''' L L' L'' L''', the gears K K' K'' K''' being so arranged as to gear with the wheel C, and the gears L L' L'' L''' being so arranged as to gear with the wheel D, and the clutch portion of each set of gears being so arranged as that the sliding clutches can be made to engage therewith, so as to complete the connection between the shafts J⁴ and the clutch-gear.

One end of each shaft J⁴ projects beyond the frame, and is arranged to operate an ordinary tapping mechanism, which mechanisms are represented by M M' M'' M''', and may be of any of the ordinary and well-known forms of construction.

As shown, M M'' are the ordinary mechanism for tapping a three-way fitting, and M' M''' similar mechanisms for tapping two-way fittings. These mechanisms are supported upon tables N N', secured to the frame, which tables are to be provided with the ordinary devices for holding the fitting while being tapped, which devices, being of any of the well-known forms of construction, are neither shown nor described.

The drum B is located centrally in relation to the other devices, the levers, sliding clutches, and clutch-gears being arranged around its periphery, so that a single drum can serve to operate each device in succession, which brings the machine into a very compact space, and dispenses with the use of extra gearing, and also insures the operation of each set of devices in their proper order.

The operation is as follows, starting with the lever I and its sliding clutch J and the end of the lever *a* in the groove *b* between the flanges or guides H': In this position the clutch J will remain stationary midway between the clutch-gears K L, and no connection will consequently be had between the shaft J⁴ and either of the clutch-gears, and the wheels C D will revolve the clutch-gears K L without imparting motion to the shaft, which remains stationary,

and the mechanism operated thereby will be stopped, and such stoppage will continue from the time the roller *a* enters the passage or groove *b* until it passes therefrom, during which time the article which has been operated upon can be removed and a new one inserted. As the roller *a* on the lever I enters the passage *b* the corresponding roller *a* on the end of the lever I' is engaged or in contact with the front face of the flange H, and the sliding clutch J' is engaged with the clutch-gear L', connecting the gear L' with its shaft J⁴, so that the wheel D will revolve the shaft J⁴ in the proper direction to reverse the movement of the tapping mechanism M' and withdraw the tapping device, which movement at this time has been sufficient to withdraw the tapping device nearly half-way. At the same time the lever I'' has its roller *a* engaged with the rear face of the flange or guide H, and the sliding clutch J'' operated thereby is engaged with the clutch-gear K'', connecting this gear with its shaft J⁴, so that the wheel C will revolve the shaft J⁴ in the proper direction to operate the tapping mechanism to cause the tapping device to do its work, which work at this time is nearly finished, the roller *a* having reached a position where it is about to enter the inclined opening *b'''* between the two sections of the flange or guide H. At the same time the roller *a* on the lever I''' is engaged or in contact with the rear face of the flange or guide H, having just passed the incline *b''* at the end of the opening *b*, and the clutch J''' operated thereby is engaged with the clutch-gear K''', connecting this gear with its shaft J⁴, so that the wheel C will operate the gear K''' and its shaft in the proper direction to operate the tapping mechanism and cause the tapping devices to do their work, which work at this time has just commenced. At this time it will be seen that the tapping mechanism M is inoperative, the tapping mechanism M' is operating to withdraw its tapping device, the tapping mechanism M'' has nearly finished its tapping, and the tapping mechanism M''' has just commenced its operation. As the drum B revolves the roller *a* on the end of the lever I leaves the passage or opening *b* and passes down the incline *b''* to the rear face of the flange or guide H, and the clutch J operated thereby will be engaged with the clutch-gear K, connecting this gear with its shaft J⁴, so that the wheel C will revolve the shaft and operate the tapping mechanism M. The roller *a* on the shaft I' enters the passage or opening *b*, passing down the incline *b'*, and holds the sliding clutch J' midway between the clutch-gears K' L', stopping the operation of the tapping mechanism M' in the same manner as described for the tapping mechanism M. The roller *a* on the lever I'' passes through the inclined opening *b'''*, between the two sections of the flange H, and engages with the front face of the flange, and its clutch J'' will be engaged with the clutch-gear L'', so that the wheel D will operate the tapping mechanism M'' to withdraw its tap, the same as described

for M', and the roller *a* on the lever I''' will remain engaged with the rear face of the flange or guide H, operating its tapping mechanism M''', the same as before described, the roller *a* of this lever being just ready to enter the passage *b'''* between the two sections of the flange H.

The levers I I' I'' I''' being stationary, they will each, in succession, be operated by the revolving of the drum to carry their respective clutches J J' J'' J''' to the proper positions to stop the tapping mechanisms, put them in operation, and give them a reverse movement, each mechanism being stopped as the roller *a* of its lever enters the passage *b*, thrown into operation as the roller *a* passes to the rear face of the flange H, and reversed as the roller *a* passes through the inclined opening *b'''*. The incline *b'* has the proper direction to guide the roller *a* from the front face of the flange H into the opening *b*. The incline *b''* has the proper direction to guide the roller *a* from the passage *b* to the rear face of the flange or guide H, and the opening *b'''* has the proper inclination to guide the roller *a* from the rear face of the flange H to the front face thereof.

The wheel C is driven in the proper direction to operate the tapping mechanisms for cutting, and the wheel D is driven in a reverse direction, so as to reverse the movement of the tapping mechanisms and withdraw the taps, which movements will take place accordingly as the sliding clutches J J' J'' J''' are engaged with the clutch-gears K K' K'' K''' or L L' L'' L''', which engagement makes the necessary connection with shafts J⁴ for the desired movement to the tapping mechanism.

The drum B and wheel C might be disconnected and each driven independently by suitable gearing operated by a shaft parallel with

the shaft E, and with this construction the drum, if desired, can be given a slower movement. The drum B might be provided with a groove in its periphery having the desired form to operate the levers in the manner described.

Four tapping mechanisms are shown, but a less number can be operated if desired; but by using four the operation will be almost continuous.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a series of tapping devices operated by a series of devices arranged and operating around the periphery of a central drum, and consisting of levers, sliding clutches, and clutch-gears, with an operating mechanism for the clutch-gears, arranged and operating to allow each of the series of tapping devices to be stationary in succession for a time while the others are operating, substantially as and for the purposes specified.

2. The combination of the central drum B, having the groove *b*, with the levers I I' I'' I''' and clutches J J' J'' J''', with the pinions K K' K'' K''', arranged around the drum, and the wheels C, for bringing the tapping devices successively into operation, substantially as and for the purpose set forth.

3. The combination of the central drum B, having the groove *b*, levers I I' I'' I''', clutches J J' J'' J''', with the pinions L L' L'' L''' and K K' K'' K''', and wheels D C, for bringing the tapping devices successively into and out of operation, with a rest between, substantially as and for the purpose set forth.

DAVID ACKERMAN.

Witnesses:

O. W. BOND,

E. T. BOND.