No. 785,937. PATENTED MAR. 28, 1905.

H. DUBES.

POWER HAMMER.

APPLICATION FILED APR. 27, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

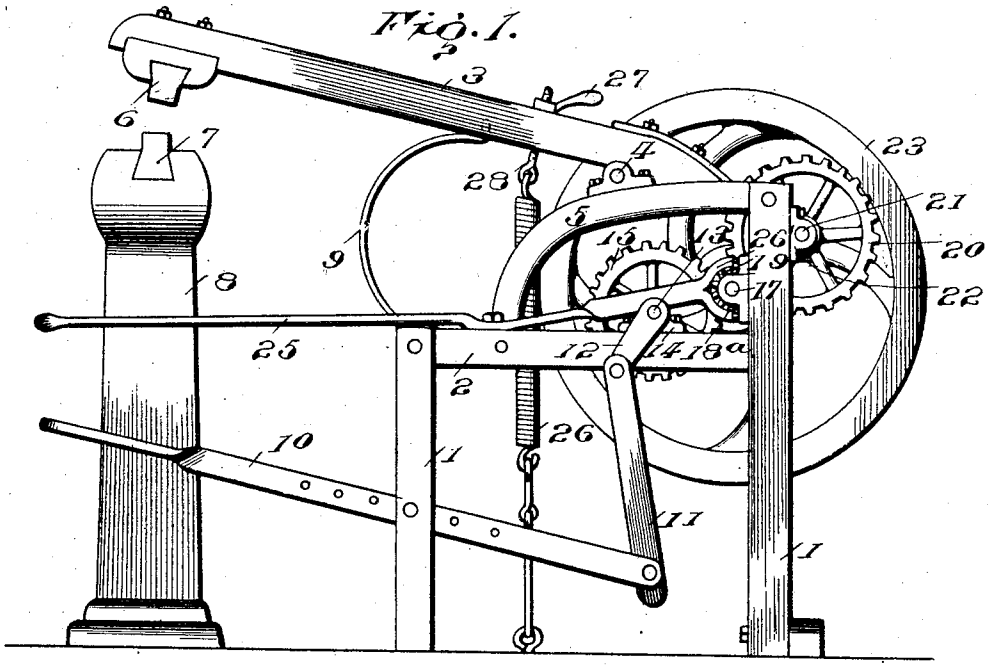
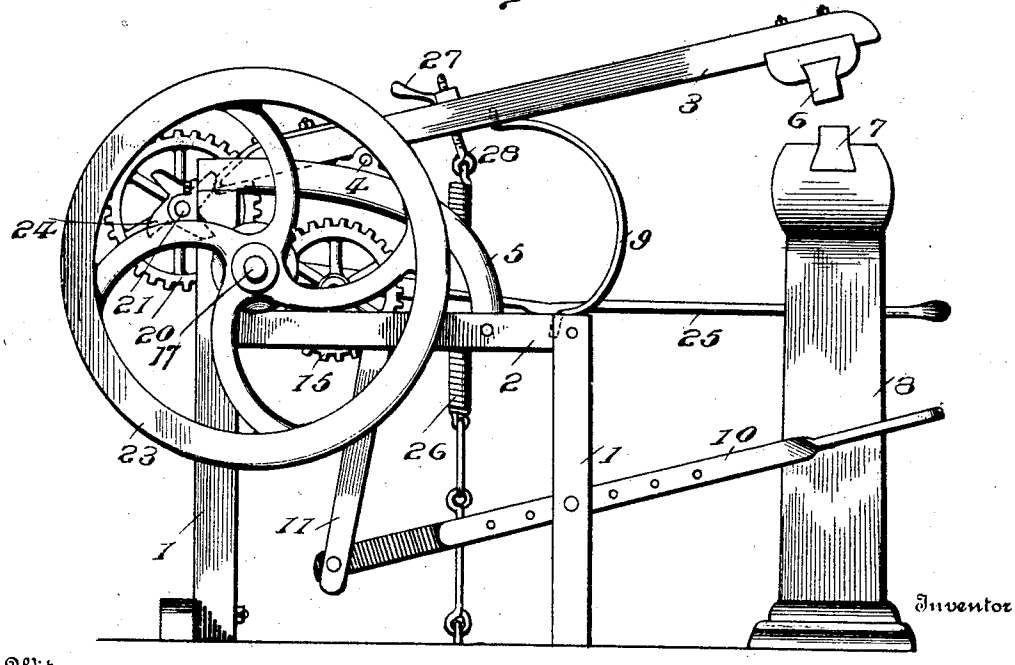


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

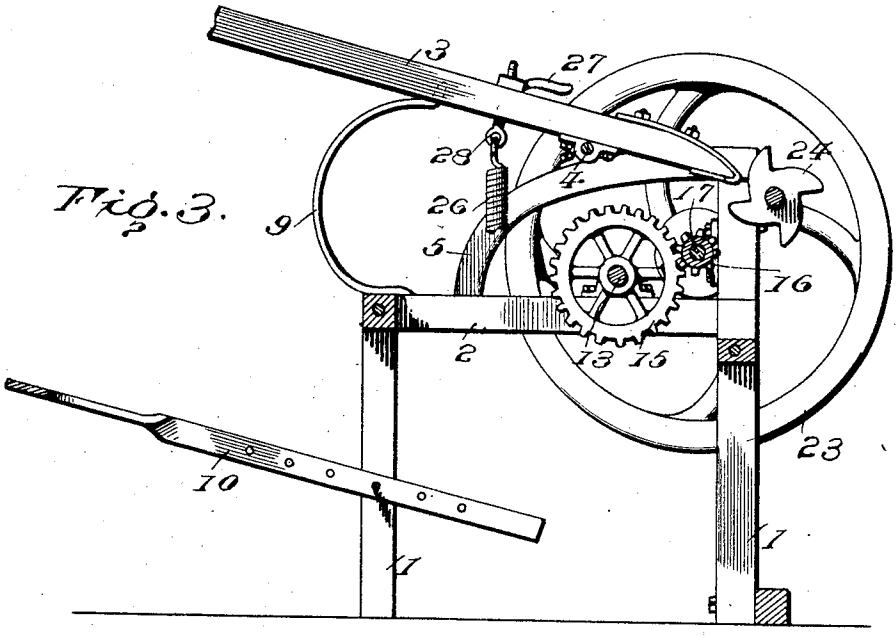


Fig. 5.

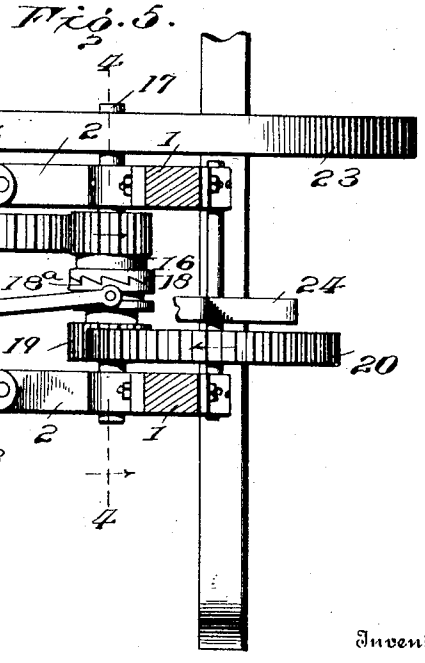
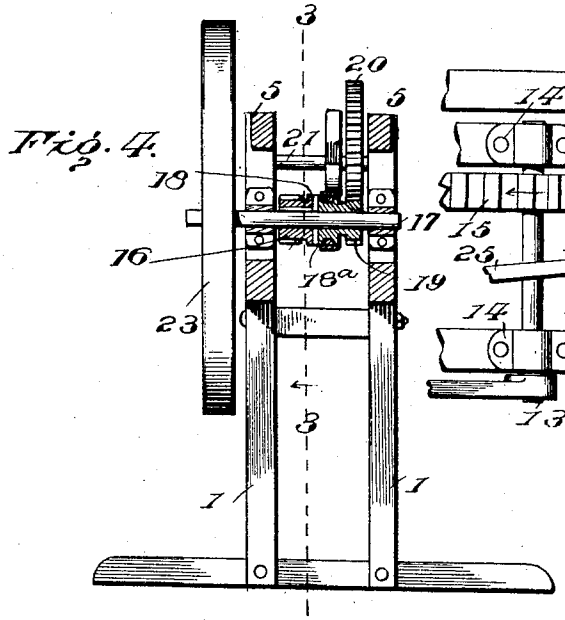


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY DUBES, OF DECATUR, ILLINOIS.

POWER-HAMMER.

SPECIFICATION forming part of Letters Patent No. 785,937, dated March 28, 1905.

Application filed April 27, 1904. Serial No. 205,192.

To all whom it may concern:

Be it known that I, HENRY DUBES, a citizen of the United States, residing at Decatur, in the county of Macon and State of Illinois, have invented certain new and useful Improvements in Power-Hammers, of which the following is a specification.

This invention relates to improvements in power-hammers, and particularly to those of the foot-power type in which the hammer is actuated by a tappet-wheel, power being transmitted to the said tappet-wheel through intermediate gearing from a primary drive-shaft operated by a treadle or similar power device.

The invention relates, further, to that type of hammers in which the power-shaft is constantly driven; and a special object of the invention is to provide means whereby the constant revolution of the power-shaft may be had and at the same time such means admit of independent operation of the hammer. It is desirable in hammers of the class above mentioned that the power-shaft be positively driven at an ascertained speed and that the actuating means by which the hammer is operated be thrown into and out of motion while said power-shaft is being constantly driven.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a machine constructed in accordance with my invention. Fig. 2 is a view similar to Fig. 1 looking from the opposite side of the machine. Fig. 3 is a vertical longitudinal sectional view. Fig. 4 is a transverse vertical sectional view. Fig. 5 is a horizontal sectional view, parts broken away, bringing out more clearly the arrangement of the clutch device.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Describing generally, my invention comprises a support which may consist, as shown, of a stand composed of vertical uprights 1, suitably connected by means of horizontal supporting-bars 2. The stand or support, as above described, carries the helve 3, which is pivoted between its ends, as shown at 4, to curved standards 5, mounted upon the stand and suitably supported thereby. The helve 3 is provided at its outer end with the hammer 6, which latter coöperates with an anvil 7, the latter being mounted in a suitable support 8. A spring 9 normally holds the hammer 6 above the anvil 7, said spring being interposed between the body and the helve 3 at a point between the ends of said helve and the stand upon which the operated mechanism is disposed.

My invention being a foot-power machine the usual form of treadle 10 is utilized, said treadle being pivoted to adjacent uprights 1 of the stand, above described, at a point between the ends of said treadle. A pitman 11 connects the treadle at one end with a crank-arm 12, mounted upon the end of a drive-shaft 13. The drive-shaft 13 is supported in suitable bearings 14, disposed upon two of the horizontal supporting-bars 2, and upon the drive-shaft 3 is keyed a drive-gear 15. The drive-gear 15 meshes with a pinion 16, the latter being mounted upon a transversely-disposed shaft 17, mounted in bearings carried by adjacent uprights 1. The pinion 16 is keyed to the shaft 17 for revolution therewith and is provided with a toothed clutch element 18 integral therewith. A second pinion 19 is loosely mounted on the shaft 17, and this pinion is also provided with a clutch element 18^a, which coöperates with the clutch element 18 of the pinion 17 in the operation of the hammer. The pinion 19, which is loosely mounted as before premised, meshes with a power-gear 20, mounted upon a power-shaft 21, the latter being mounted in bearings 22, which bearings are also carried by adjacent uprights

1. The balance or fly wheel 23 is carried by the shaft 17, and the shaft 13 above mentioned is the positively-driven shaft which is directly operated by the treadle 10. Upon the power-shaft 21 is disposed the tappet-wheel 24, which latter is adapted to engage the inner end of the helve 3, so as to impart an oscillatory movement to the hammer when the latter is being operated. The loosely-mounted pinion 19 is laterally shiftable, so that the clutch element 18^a carried thereby may be thrown into and out of engagement with the clutch element 18 of the pinion 16. The pinion 19, however, normally remains in meshing engagement as regards the power-gearing 20, being operable by means of an ordinary type of shifting-lever 25, which latter is pivoted to the upper portion of the stand upon which the operating mechanism which actuates the helve 3 is mounted. The inner end of the operating-lever 25 is bifurcated, as shown at 26′, and the bifurcated portions are received in an annular groove provided upon the pinion 19.

In the practical operation of my invention while the iron, steel, or other metal which is to be operated upon is being heated the operator may actuate the treadle 10, so as to transmit motion to the balance-wheel 23 and the shaft 17, which carries said balance-wheel. The pinion 19 in the foregoing operation is so disposed that the clutch element 18^a thereof is out of engagement as regards the clutch element 18 of the pinion 16. The shaft 17 is thus being operated while the helve remains immovable or out of action. When the metal has reached the proper heat, the same may be quickly placed upon the anvil 7, and operation of the lever 25 will shift the pinion 19, so as to cause engagement of the clutch element 18 thereof with the coöperating clutch element 18^a, which is being rapidly revolved upon the shaft 17. When the parts 18^a and 18 are thus clutched, the power-gear which meshes with the pinion 19 is actuated, and motion is thus transmitted to the shaft 21. Rotation of the shaft 21 imparts a like movement to the tappet-wheel 24, which latter oscillates the helve 3 in a manner clearly apparent. The hammer having been used upon the metal which is disposed upon the anvil 7, when it is desired to throw the hammer out of action it is only necessary to actuate the lever 25, so as to disengage the clutch element 18^a from the positively-driven clutch element 18.

The operation of the device may be quickly and easily formed and the hammer thrown into and out of action at the will of the operator.

The quick operation of the hammer above mentioned is advantageous and necessary when it is known that metal cools very readily, so that it is impracticable to operate upon the same if the hammer cannot be thrown into action as soon as the metal is carried to the anvil 7.

A coil-spring 26 is connected at its lower end with the base of the stand or of any suitable support upon which the stand is disposed, and the upper end of this spring 26 is connected with the helve 3, so as to pull the hammer down upon the anvil when the same is raised by engagement of the tappet-wheel 24. The spring 26 may be quickly adjusted by means of a tail-nut 27, which latter secures an eyebolt 28, with which the upper end of the spring is connected, to the helve 3. The spring 9 serves, as regards the spring 26, as a counterbalance to hold the helve normally above the anvil.

Having thus described the invention, what is claimed as new is—

In a power-hammer, the combination of a suitable support, a treadle, a drive-shaft mounted upon said support, a drive-gear carried by said shaft, a second shaft adjacent the drive-shaft aforesaid, a positively-driven pinion keyed to the shaft and meshing with the drive-gear for actuation thereby, a clutch element carried by the positively-driven pinion, a loosely-mounted pinion disposed upon the second shaft aforesaid and provided with a clutch element coöperating with the clutch element of the positively-driven pinion, means for shifting the loosely-mounted pinion, a power-shaft, a power-gear carried by the power-shaft and meshing with the loosely-mounted pinion above mentioned, and means for shifting the loosely-mounted pinion so as to engage and disengage the clutch element of same with the clutch element of the positively-driven shaft.

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

HENRY DUBES. [L. S.]

Witnesses:

FRANK H. PAHMEYER,

GEO. W. ALLEN.