

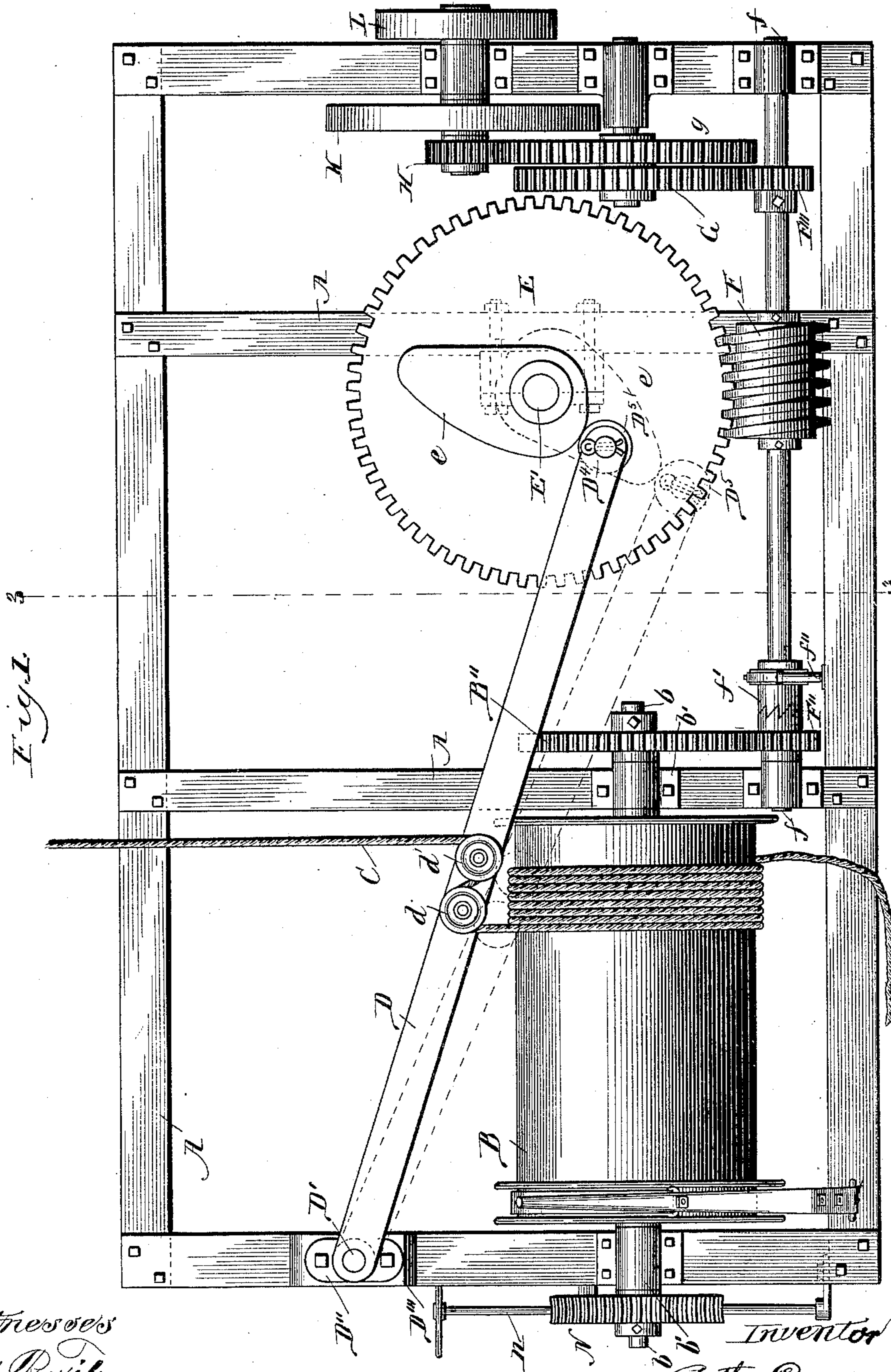
(No Model.)

2 Sheets—Sheet 1.

A. CAMERON.
WELL MAKING MACHINE.

No. 461,904.

Patented Oct. 27, 1891.



Witnesses
W. Davis
O. M. Thomas

Inventor
Arthur Cameron

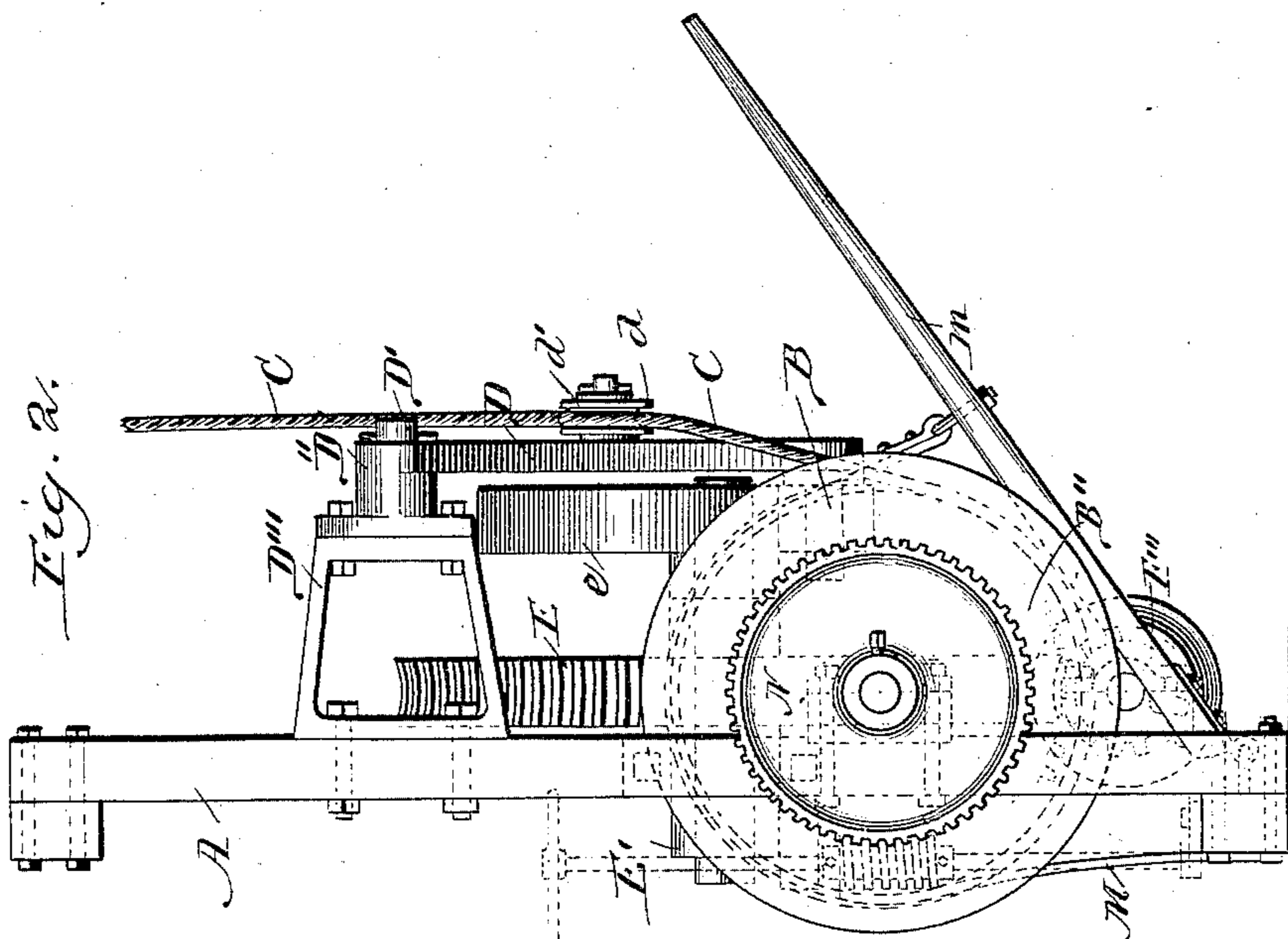
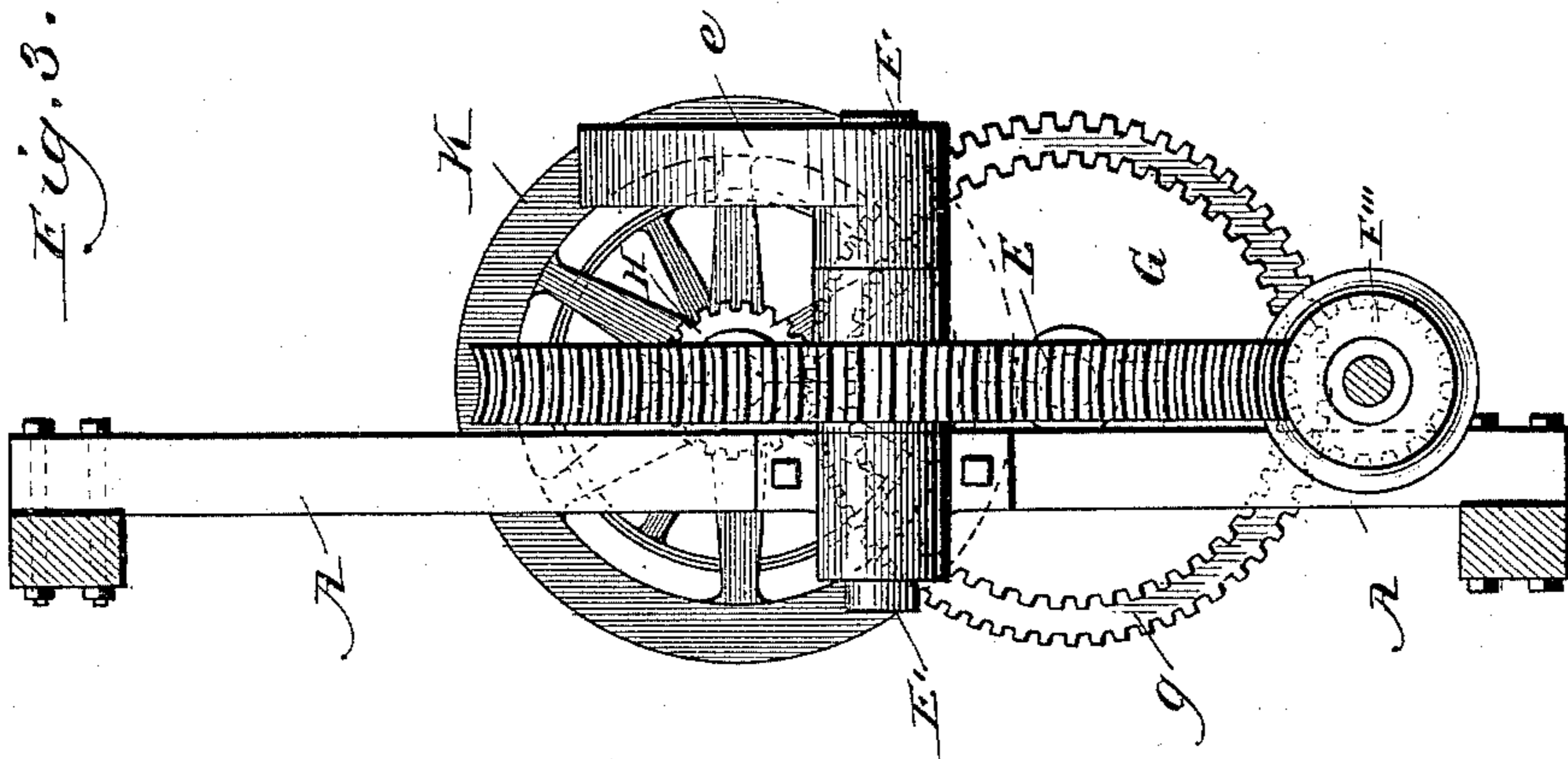
(No Model.)

2 Sheets—Sheet 2.

A. CAMERON.
WELL MAKING MACHINE.

No. 461,904.

Patented Oct. 27, 1891.



Witnesses
W. Rossiter
Otto H. Thyer

Inventor,
Arthur Cameron

UNITED STATES PATENT OFFICE.

ARTHUR CAMERON, OF CHICAGO, ILLINOIS, ASSIGNOR TO FREDERICK C. AUSTIN, OF SAME PLACE.

WELL-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 461,904, dated October 27, 1891.

Application filed April 9, 1891. Serial No. 388,207. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR CAMERON, a citizen of the United States, residing at Chicago, in the State of Illinois, have invented 5 new and useful Improvements in Well-Making Machines, of which the following is a specification.

My invention relates to that class of well-making machines in which the up-and-down 10 motion is given to the drill by means of a swinging lever or beam carrying a sheave over which the drill-rope passes; and it consists in the features of construction and arrangement substantially as hereinafter more 15 particularly pointed out, reference being made to the accompanying drawings, in which—

Figure 1 is a front elevation of the machine embodying my invention. Fig. 2 is a side 20 elevation of the machine. Fig. 3 is a section through the line 3 3 on Fig. 1.

A is a suitable frame on which the various parts of the machine are mounted.

B is the drum on which the drill-rope is wound, the drum B being securely fastened 25 to the shaft b , which works in suitable bearings b' , mounted on the frame A.

C is the drill-rope, wound on the drum B and passing over and under the sheaves d and d' , which sheaves are carried on the 30 swinging lever or beam D by means of shafts, on which they revolve freely. The free end of the rope C, after passing over a suitably-arranged pulley in the derrick, is attached to the upper end of the drill-stem (not shown in the drawings) in the usual way. The sheaves 35 d and d' are arranged in such close proximity to each other as to make a sharp bend in the rope C when passed over and under them. The swinging lever or beam is provided with 40 a hub D'' , by means of which it is hinged so that it can swing freely on a suitable stud D' . The stud D' is mounted on a bracket D^3 on the frame A. On the free end of the swinging lever or beam D is the friction-wheel D^4 . 45 The swinging lever or beam D is of such a length that the friction-wheel D^4 will contact with the solid eccentric e , which revolves with the gear E, being on the same shaft E' , so that when the eccentric assumes a position 50 as indicated by the dotted lines the swinging lever D will be depressed, and such depression

of the swinging lever D will draw down the rope C.

F is a screw-gear arranged on suitable shaft f and made to engage with the gear E, so that 55 when the screw-gear F is revolved the motion is imparted to the gear E.

f' is a clutch arranged so that it will always revolve with the shaft f and so that it can be moved endwise by the lever f'' to engage 60 with the hub of the gear F'' , so that when so engaged the revolving motion of the shaft f will be imparted to the gear F'' . The gear F'' is loosely mounted on the shaft f , so that when the clutch f' is disengaged from the 65 hub of the gear F'' the revolving motion of the shaft is not imparted to the gear F'' .

B'' is a gear securely fastened to the shaft b and engaging with the gear F'' , so that when the gear F'' is put in motion a corresponding 70 motion is given to the gear B'' and with it to the drum B, so that the rope C is wound or unwound.

F^3 is a gear on the shaft f , which engages with a gear G on the same shaft as the gear 75 which engages with the gear H, on whose shaft is mounted the balance-wheel K and driving-pulley L.

M is a brake arranged around the rim of the drum B, and m the brake-lever. 80

N is a gear securely attached to the shaft b , which engages with a screw-gear mounted on the shaft n , so that when the shaft n is revolved the motion is imparted to the gear N, 85 so as to revolve the drum B, so as to wind or unwind the rope C.

In operation power is applied in the usual way to the pulley L, and through the series of gears H g G F^3 motion is imparted to the screw F, which causes the gear E to revolve 90 and with it the eccentric e , and when the eccentric e assumes the position indicated by the dotted lines the friction-wheel on the free end of the swinging lever D has assumed the position D^5 , and the swinging lever D will 95 have been depressed below its normal line when at rest. At rest it occupies the position shown in full lines. When the swinging lever D is depressed, it will pull down the drill-rope C, and will consequently raise the 100 drill-tools, which are attached to the free end of the rope. As the eccentric e continues its

revolution the drill-tools will drop by gravity and the swinging lever D assume its normal position. The frequent revolution of the eccentric *e* will cause the swinging lever D to swing up and down, which will give the drilling motion or drop to the tools, and the friction-wheel *D*⁴ of the swinging lever D will always contact with the periphery of the eccentric *e*. Heretofore it has been customary to arrange one sheave for the drill-rope to pass over in the swinging lever of a well-making machine, and, from the fact that in such an arrangement the sheave slides along the drill-rope and does not pull it down until the sheave on the swinging lever reaches a point below the horizontal line of the drum on which the drill-rope is wound, thereby the length of the drop given to the tools is not equal to the distances traveled by the sheave in the swinging beam. It has also been proposed to provide the swinging lever with a series of sheaves over which the drill-rope passes after passing over an arc-shaped bar on the end of the lever, the drill-rope also passing over a sheave at the pivotal point of the lever and thence to the drum. In my invention, however, I overcome this difficulty by providing the swinging beam D with two sheaves *d* and *d'*, situated in close proximity to each other, around which the drill rope passes under and over, so as to make a sharp bend in the drill-rope, so that when the swinging lever D begins to descend, and with it the sheaves *d* and *d'*, the drill-rope C is at once pulled down, and is pulled down a length equal to the distances traveled by the sheaves *d* and *d'*, and in its ascent the rope between the sheaves *d* and *d'* and the drum B is left loose. By this means a drop is given to the drill-tools equal to the

distance traveled by the sheaves *d* and *d'*. When it is required to let out the drill-rope C as the hole is deepened, it will be accomplished by operating the lever *n* so that its screw will turn the gear N and with it the drum. When it is required to raise the tools, by winding the drill-rope on the drum the clutch *f'* will be made to engage with the hub of the gear *F''* by operating the lever *f''*. The gear *F''*, engaging with the gear *B''*, will revolve the drum B and wind the rope as required. When it is required to lower the tools, by unwinding the drill-rope C from the drum B the clutch *f'* will be disengaged from the hub of the gear *F''* and the screw on the lever *n* disengaged from the gear N. The tools will fall by gravity and in their descent unwind the rope *c* from the drum B, the speed of the dropping of the tools and the accompanying unwinding of the drum being regulated by the brake M through the operation of the lever *m*.

What I claim as new, and desire to secure Letters Patent on, is as follows:

In a well-making machine, the combination of the drum over which the drill-rope is wound, a shaft carrying a worm, clutch mechanism connecting said shaft to drive the drum, a worm-gear engaging the worm, an eccentric carried by the worm-gear, and a lever provided with two sheaves in close proximity with each other, around which the drill-rope is wound, the said lever being operated by the eccentric, substantially as described.

ARTHUR CAMERON.

Witnesses:

JOSEPH F. KELLEY,
THOS. G. CHAPMAN.