

(No Model.)

B. K. REED.  
EXCAVATOR.

No. 378,720.

Patented Feb. 28, 1888.

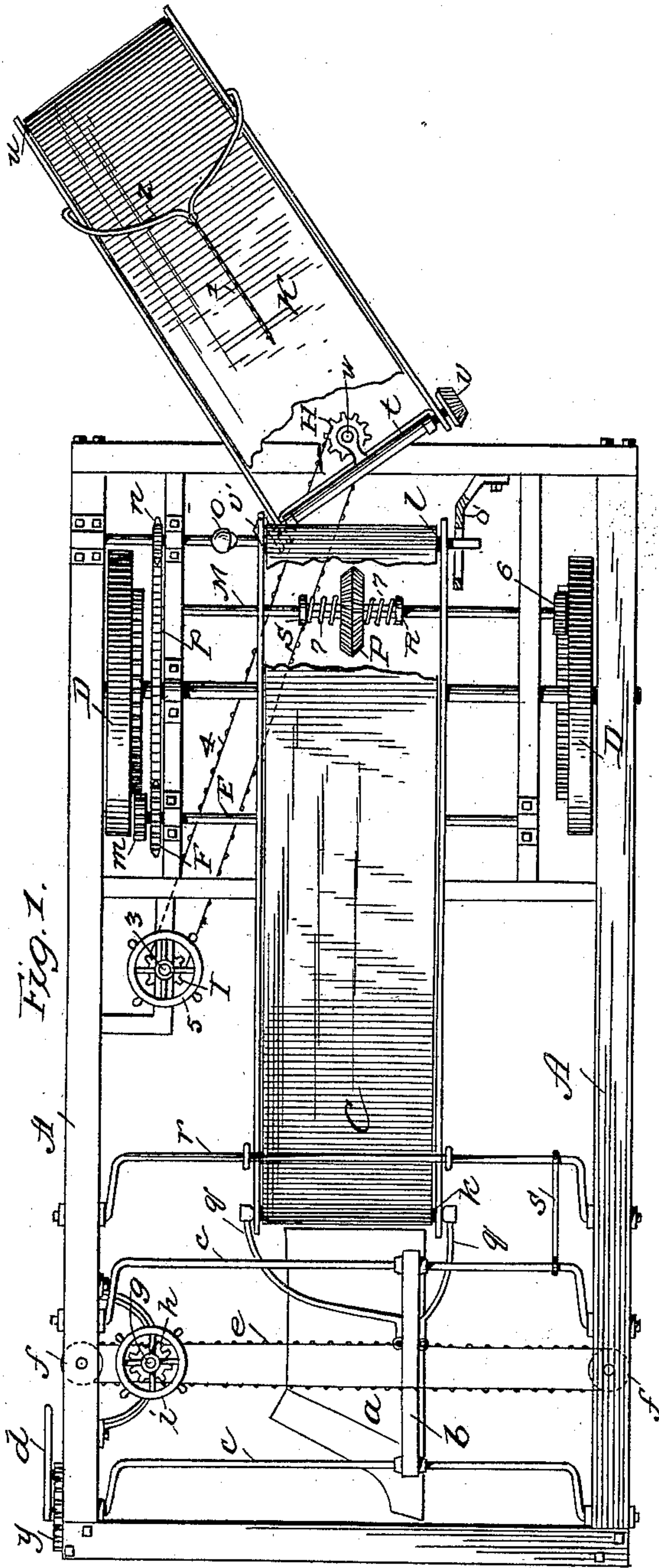


Fig. 1.

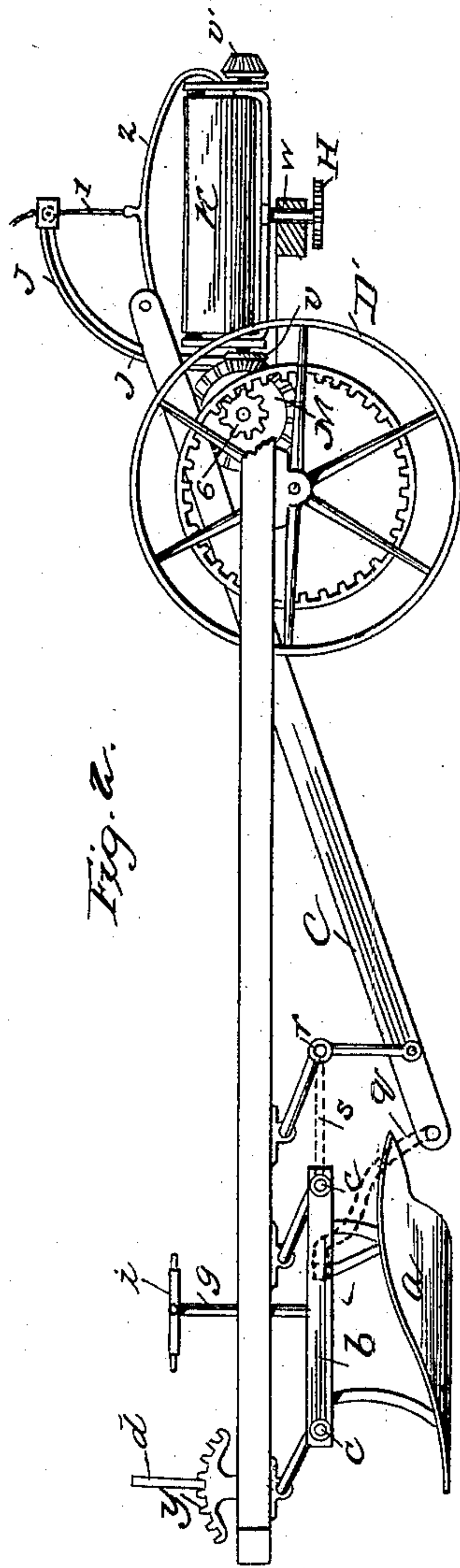


Fig. 2.

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# UNITED STATES PATENT OFFICE.

BENJAMIN K. REED, OF BUENA VISTA, COLORADO.

## EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 378,720, dated February 28, 1888.

Application filed May 18, 1887. Serial No. 238,671. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN K. REED, of Buena Vista, in the county of Chaffee and State of Colorado, have invented a new and useful Improvement in Excavators; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an improvement in excavating-machines, and relates to that class known as "carrier-excavators."

The object of my invention is to provide in the same apparatus a digging device and also a carrying device for conveying the earth from the said digging device to the rear of the machine and there depositing it upon either side of the pit, said carrying device being operated by the forward movement of the machine. The invention therefore includes a plow or other digging device, a carrier operated by the wheels of the machine, connected to said plow in such a manner as to be elevated or depressed according as the plow is raised or lowered, said carrying device being adapted to convey the matter excavated to the rear of the machine.

The invention also includes, in combination with this carrier, a supplemental carrier adapted to receive the earth from the first-mentioned carrier and to deposit it upon either side of the pit, said supplemental carrier being adapted to be shifted from one side to the other for this purpose.

Further, the invention includes details of construction whereby the objects of my invention can be easily and efficiently carried out, all as hereinafter fully described, and particularly claimed.

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

Figure 1 represents a plan view of the invention. Fig. 2 represents a side elevation.

In the drawings, A represents the frame of the machine, such as is shown in Letters Patent No. 322,319, granted to myself and B. L. Burris on the 14th day of July, 1885, and this frame is supported upon the wheels D D', hereinafter to be described.

The plow-beam *b*, carrying the plow *a*, is suspended from the bars *c c*, the ends of which bear upon the sides of the frame. These bars are made in the eccentric form shown in the drawings, and the one nearer the front has a

handle, *d*, upon one end, by means of which it may be operated so as to raise or depress the plow. A rack-bar, *y*, is adapted to be engaged by the handle, and thus hold the plow at any suitable position. The plow is shifted from one side of the machine to the other, to increase or diminish the width of the cut, by means of the sprocket-chain *e*, attached to the plow-beam *b* and passing over pulleys *f* upon either side of the machine, and this chain is operated to shift the plow by means of the sprocket-wheel *h*, engaging with said chain and adapted to be manipulated by a hand-wheel, *i*, connected to it by means of the shaft *g*. As the plow moves forward, the earth which it digs up is thrown by its mold-board upon an endless conveyer, C, and by it carried to the rear of the machine. This carrier is similar to those used in the art, and differs from them only in arrangement and operation. It passes over two rollers, *k* and *l*, one upon each end, and motion is imparted to it by the movement of the machine, as is now to be described. A shaft, E, having suitable bearings in the frame of the machine, carries upon one end a pinion, *m*, meshing into teeth upon the inner periphery of the main supporting-wheel D, so that when the wheel D revolves motion is imparted to the shaft E by the traction. This shaft E has also fixed to it a sprocket-wheel, F, connected to a sprocket-wheel, *n*, by means of a sprocket-chain, *p*. Said wheel *n* is carried upon the roller-shaft *l* of the conveyer, so that when the wheel D revolves, through the mechanism just described, the conveyer C will also revolve. A universal joint, *o*, is formed on the roller-shaft, and the opposite end of the roller-shaft is supported in a slotted bracket, as *o'*. At the other end of the conveyer curved bars *q q*, fastened to the plow-beam, are attached at each end of the roller-shaft *k*; and it will thus be seen that when the plow is shifted from side to side, through the mechanism above spoken of, the lower end of the conveyer will also be shifted to correspond therewith, this movement laterally being permitted by the universal joint at the upper end. A bar, *r*, of the same form as the bars *c c* parallel thereto, and adapted to have the same movement through the connections *s*, is in connection with the forward end of the conveyer, and by this arrangement when the plow is ele-



vated or depressed the forward end of the conveyer will be raised correspondingly.

I will now describe the mechanism by which the material is received from the conveyer above referred to and deposited upon either side of the pit, as desired. This mechanism consists of a supplemental carrier arranged in the rear of the machine, and adapted, when in its proper position, to receive the material from the other conveyer and to carry it and dump it at right angles to the path of the machine. This carrier passes over two rollers, *t u*, the roller *t* having upon each end a bevel-gear, *v v'*. This conveyer is supported by an upright shaft, *w*, on which a short elbow is secured, and from this elbow arms extend to the under sides of the conveyer directly under the roller-shaft *t*, and thus the conveyer can be elevated or depressed without causing the roller-shaft to leave its horizontal position. Upon the end of the vertical shaft *w* is a sprocket-wheel, *H*, which is connected to a similar wheel, *I*, by means of the chain 4, and this chain is operated to move the conveyer either to the right or left by manipulation of the hand-wheel 5, connected with the wheel *I* by the shaft 3. This supplemental carrier *K* is raised or lowered by means of the rope 1, passing through a pulley on the top of the crane *j j*, attached to the frame of the machine, and secured at one end to the frame of the machine in a position to be operated by the driver, and secured at the other end to the bow-shaped piece *z*, upon the ends of which the sides of the conveyer bear.

Motion is imparted to the supplemental conveyer as follows: A shaft, *M*, having bearings in the frame of the machine, carries upon one end a pinion, 6, adapted to mesh with the internal cogs of the main supporting-wheel *D'*. This shaft has shoulders *R* and *S* formed upon it, and between these two points the shaft is square, and carries a double-beveled gear-wheel, *P*, adapted normally to be held in a position between the points *S* and *R* by springs 7.

When it is desired to impart motion to the carrier *K*, it is adjusted to the extreme right or left by the hand-wheel 5, and when it is moved the gear-wheel *v* or *v'*, as the case may be, will come into contact with the double-beveled gear-wheel *P* and force it to its position against either shoulder, and thus motion being given to the shaft *M* through the means described, the carrier will be operated.

I claim as my invention—

1. The combination, in an excavator, of the plow, the carrier for conveying the material to the rear, and a parallel-bar mechanism for simultaneously raising or lowering the plow and carrier, substantially as described. 60

2. The combination, in an excavator, of the plow, the carrier for conveying the material to the rear, means for simultaneously raising or lowering the plow and carrier, and means for shifting the carrier from side to side in unison with the movement of the plow from right to left, substantially as described. 65

3. In an excavator, the plow, the eccentric-bars *c c*, supporting the plow and adapted to elevate or depress the same, and the chain for shifting the plow to right or left, in combination with the carrier and intermediate means connected to the plow-beam and carrier, whereby the carrier is adapted to move correspondingly with the movement of the plow, substantially as described. 75

4. In combination with the carrier *C*, the supplemental carrier *K*, pivotally supported at the rear end thereof, whereby it is adapted to be shifted from side to side, and mechanism at either end of the roller-shaft of said carrier adapted to engage with suitable driving-gear, whereby the material is conveyed to the side of the machine, substantially as described. 80

5. In combination with the plow and the carrier *C*, the supplemental carrier *K*, and means operated by the hand-wheel 5 for shifting the said supplemental carrier to the right or left, and the rope 1, fastened to the bow-shaped piece *z* and passing over a pulley on the crane *j j*, said rope being adapted to raise or lower the carrier *K*, substantially as described. 85

6. In combination with the main supporting-wheel *D'*, having the internal gear-teeth, the shaft *M*, meshing with said internal gears, said shaft carrying the double-beveled wheel *P*, so that when the carrier *K* is shifted to either side of the machine the small bevel-wheels *v v'* on the roller-shaft will mesh with the wheel *P*, and thus movement be imparted to the carrier *K* to convey the material to the side of the machine. 95

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 105

BENJAMIN K. REED.

Witnesses:

W. D. WRIGHT,  
M. L. SWAYZE.