

H. G. KAUFMANN. Mowing and Threshing Machine.

No. 21,343.

Patented Aug. 31, 1858.

Fig. 5

Cutting Apparatus.

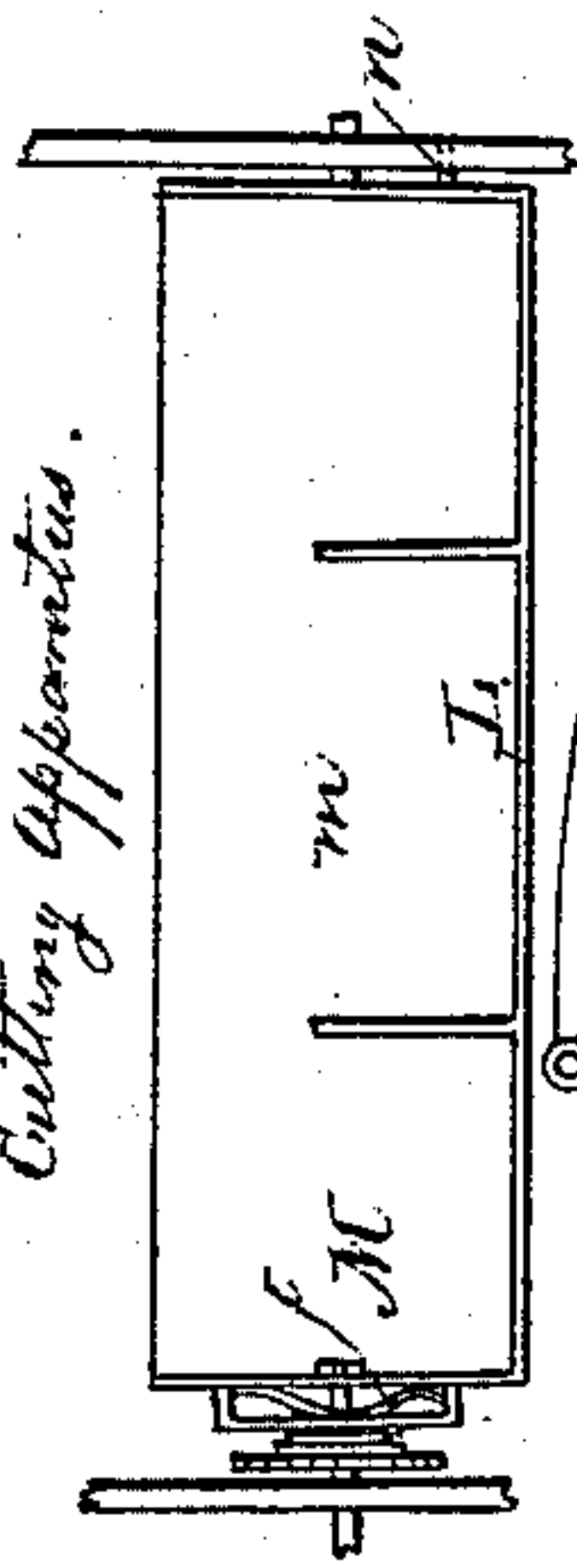


Fig. 6.

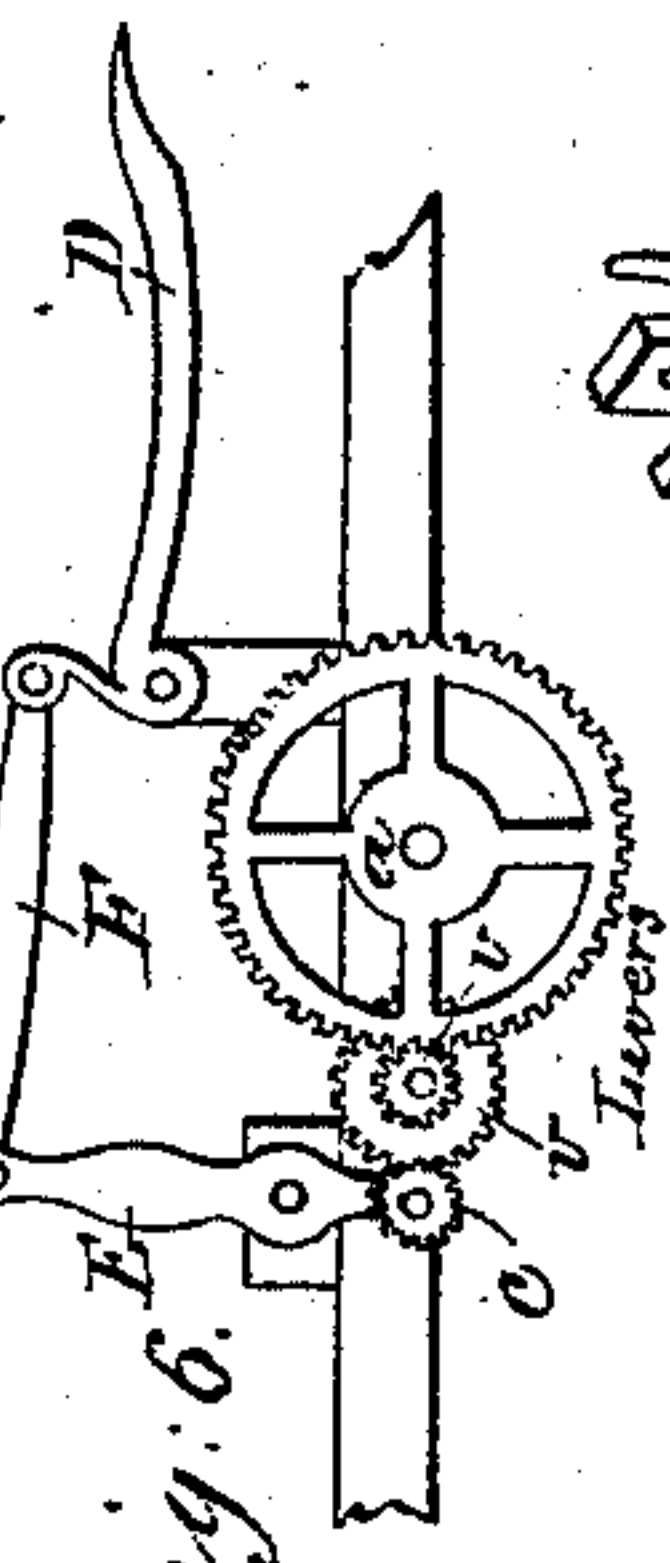


Fig. 1.

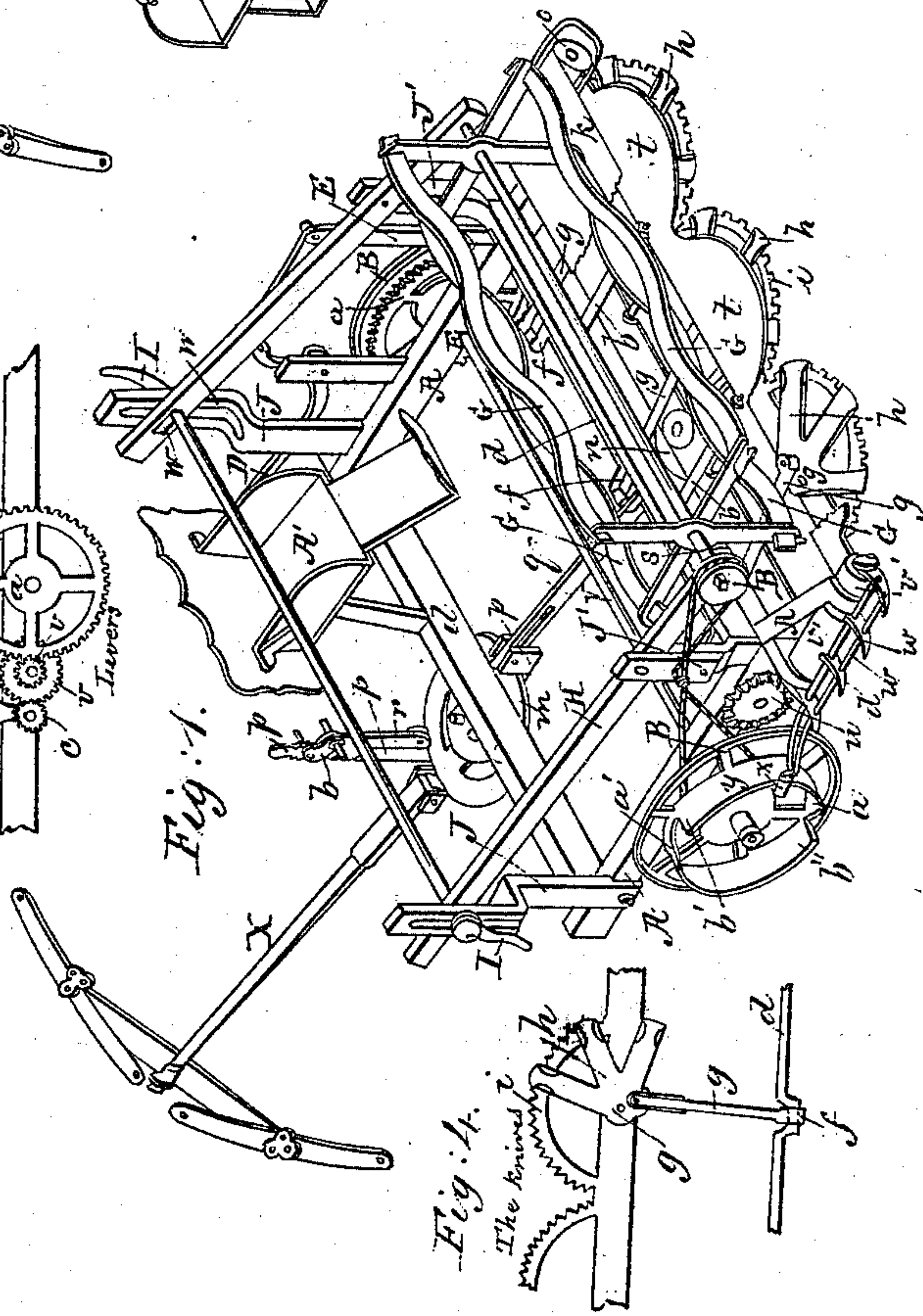


Fig. 4.

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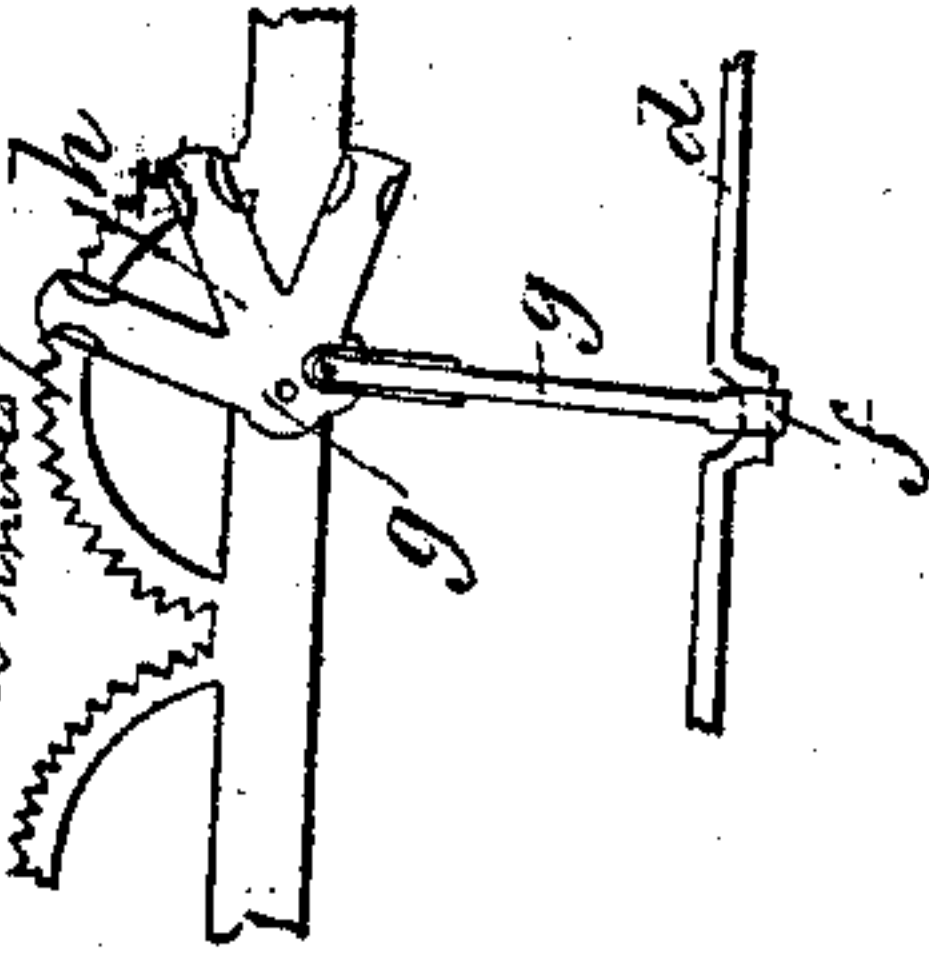


Fig. 2.

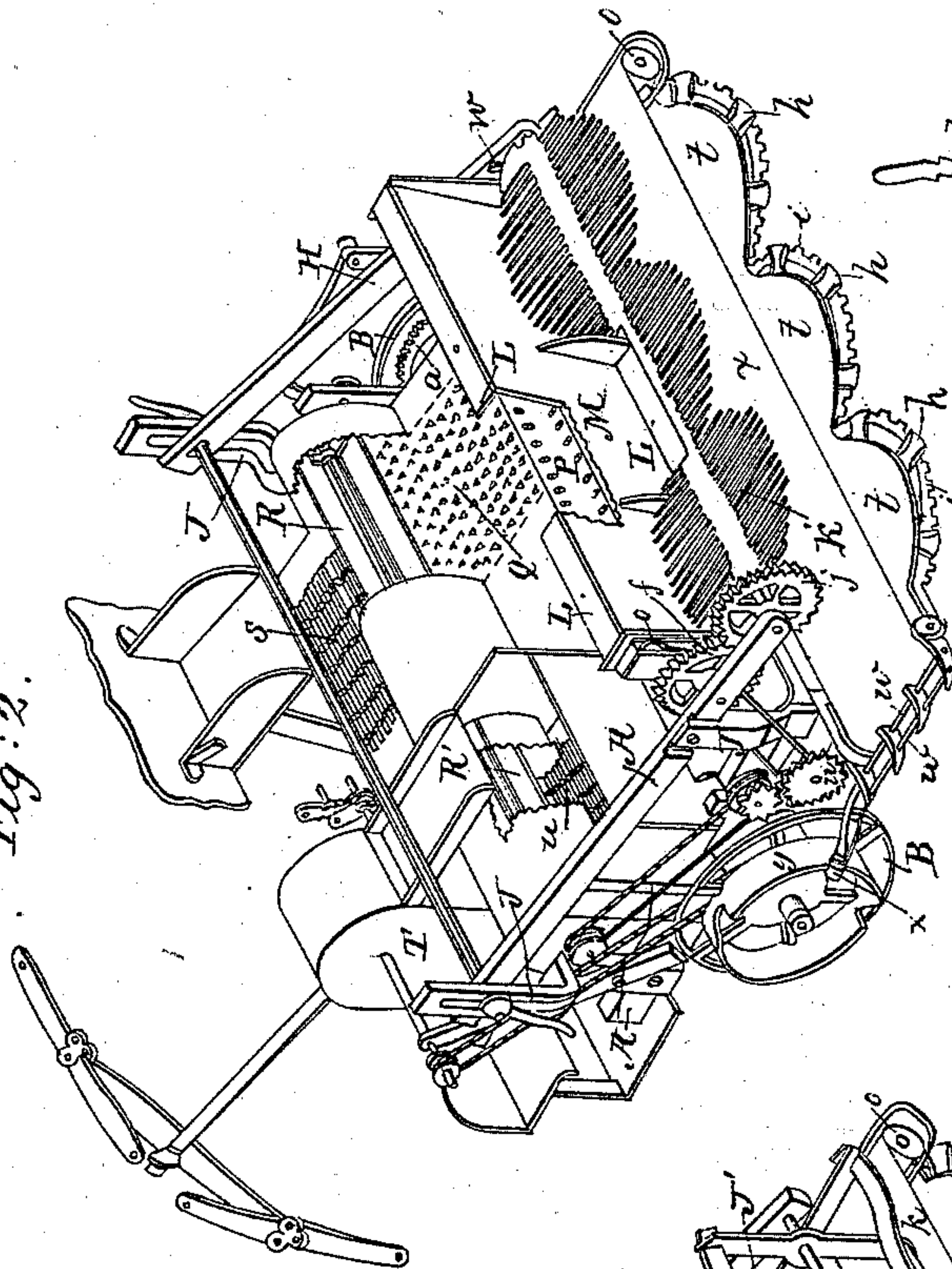
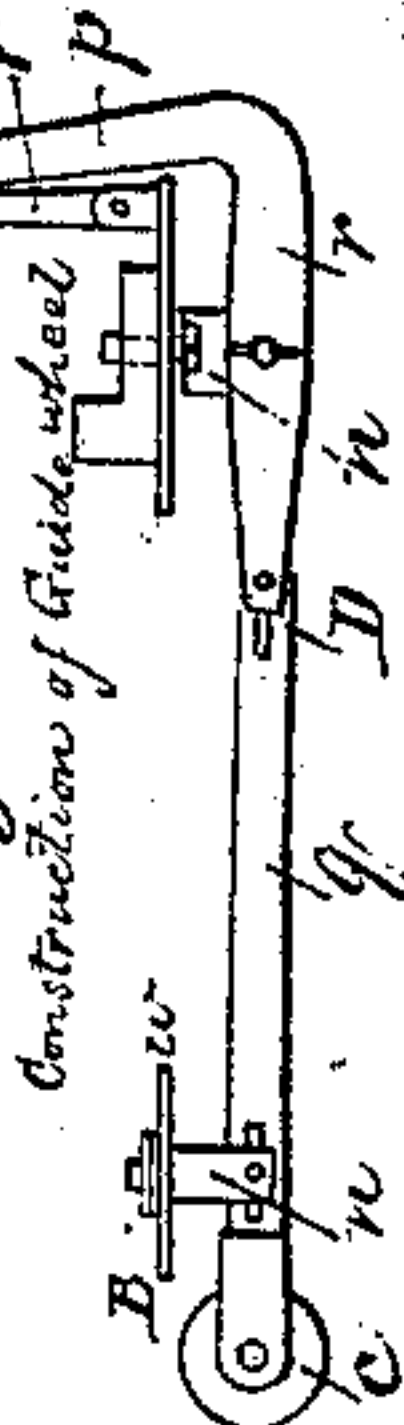


Fig. 3.



UNITED STATES PATENT OFFICE.

HENRY G. KAUFMANN, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN HARVESTING-MACHINES.

Specification forming part of Letters Patent No. 21,343, dated August 31, 1858.

To all whom it may concern:

Be it known that I, HENRY G. KAUFMANN, of the city and county of St. Louis, and State of Missouri, have invented a new and Improved Harvesting-Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figures 1 and 2 are perspective views, both of which show the machine in the same position, but differently arranged to perform different functions. The other figures shown on the drawings will also be referred to as occasion may require in the course of the following description.

The object of my invention is to so construct a harvesting-machine as to cause it to gather the straw whole, with the head on it, in the ordinary method, or to gather the grain by first cutting the head off of the straw and immediately thereafter cut the straw from the ground, both operations to be performed by the same combination of devices and at the same time, or as nearly at the same time as possible, the first operation preceding the second not more than an instant; and also in providing a more efficient means for guiding the machine and for raising and lowering the knives, so as to cut the stubble any required height.

The arrangement of devices whereby I effect the foregoing objects will be understood from the following description.

Similar letters represent corresponding parts on the different figures.

A A is the frame of the machine.

B B are the truck-wheels, and V the axle upon which the said wheels are fixed.

On the inside of the left truck-wheel, and on the same axle with it, a cog-wheel is fixed, (marked *a*.) which meshes into a small pinion-wheel, *c*, Fig. 6. Owing to the position of the machine in which the drawings show it this wheel *c* could not be shown in either Fig. 1 or 2. The intermedial wheel and pinion, *v v*, are not designed to be used unless occasion requires a higher velocity than can be obtained by a direct application of the pinion *c* to the driving-wheel *a*, the fulcrum of the lever E being fixed in a block, so that the pinion *c*, being fixed in the lower end of the said lever, can be made to mesh into the main wheel *a* or not, as circumstances may require.

It will be seen that the lever E is connected to and governed by the lever D through the medium of the rod F, and that the lever D is placed under the control of the driver, who sits in the seat at A'.

The pinion *c* is fixed upon the shaft *d*, which has its journal in the lower end of the lever E, and which is made so as to contain three cranks, two of which are shown at *ff*, the other being hid under the frame. On the opposite end of this crank-shaft a bevel-wheel is fixed, which meshes into a corresponding bevel-wheel fixed on the roller *v' v'*. Over this roller *v'* and from it to the roller *o* a canvas band or apron, K, is stretched, which is supported between the two outside rollers by small rollers, two against the upper side and two against the lower side. The upper ones are shown at *b b*.

The cranks *ff* are connected to the knives *h* by means of the connecting-rods *g g*. The knives are of the sickle-edge, and cut both ways. They are made in the form of a sector—that is, the knife-frame—as shown at *h*. They vibrate around the center *g* and on the semi-circular guides *i i i*, which have notches in their peripheries, against which the knives cut the straw.

It will be seen that the connecting-rods are connected to the knife by means of a pin which is placed sufficiently far from the center to cause the crank to turn the knife but one-fourth of a revolution each way. The knives are covered by a plate, *t t*, to prevent the straw from being entangled in them. The knives and their connections are shown at Fig. 4.

On the shaft of the roller *v* a cradle, *l*, is attached, the fingers of which are secured, the one to the other, by means of the rods *u u*. This cradle is designed to catch the straw as fast as it is carried sidewise by the apron K, it being arranged to remain in a given position long enough to gather a sheaf, and then drop and deposit it on the ground. It is operated by means of a cam, (shown at *y*.) which it is fixed on the outside of the right truck-wheel. This cam operates against a roller, *x*, which is fixed on the ends of the cradle-bars. This cam lets the cradle fall at *b'* and raises it at *a'*, and then lets it fall at *b'* again, and so on.

G is a reel, which has its axis in the frame

H H, as shown at *s s*. This frame is made adjustable by means of the standards J' J', which are fixed on pivots which are located at J', and the slots cut in the uprights J J and in the back end of the bars H H, (shown at W.) If the grain is short, it is only necessary to raise the back end of the bars H H and push them forward a little to make the reel take hold of the grain and draw it over the machine. The reel receives its motion from a chain-belt, which leads from a pulley on the right-hand truck-wheel to the drum B' on the axis of the reel. The bars H H are secured into the desired position by means of the thumb-screws I I.

The machine is guided by means of the wheel C. (Shown at Fig. 3.) This wheel is fixed in the end of the lever *q*, which is secured to the under side of the frame by means of the turn-table B. The wheel C could not be shown in Fig. 1, as it would be hid by the upper works of the machine. The lever is so attached to the turn-table as to vibrate freely on a vertical plane, and the turn-table is so arranged as to vibrate freely on a horizontal plane, whereby the lever *q* may be moved in either direction. The object in giving it a horizontal movement is to enable the attendant to guide the machine, and the object in giving it a vertical movement is to enable him to lift the knives from the ground, so as to cut the stubble any required length, the main axle of the machine serving as a center for the machine to vibrate around. This lever *q* is connected to a second lever, *p*, which is secured on the lower end of the center of a second turn-table, (shown at *m*,) the center being shown at *n*. This lever is also attached so as to have a universal movement.

The two levers *p* and *q* may be attached as shown at D, Fig. 3, or at *p*, Fig. 1, or by an other known joint admitting of an universal movement. The lever *p* is made in the form of a bell-crank, the upper end of which terminates in a handle, into which ratchet-teeth are cut for the purpose of receiving the ratchet C, by which the said handle is secured to the required position, which also regulates the distance of the knives from the ground. The ratchet C is secured to the standard *r*, which is fixed on the turn-table *m*. It will be seen that by depressing the lever *p* the machine—that is, the knives—will be raised from the ground, and vice versa, and that by turning the said lever in a lateral direction the machine will be guided into a corresponding direction.

The tongue to which the power is applied is shown at X, and is secured by means of a pin, which is driven into a swivel fixed over the turn-table, (shown at Y.)

The horses are attached with their heads toward the machine, which moves ahead of the horses. Power being applied to the machine, the cog-wheel *a* conveys motion to the crank-shaft *d* through the medium of the pinion-wheel *c*, which puts the knives in operation,

by which the straw is cut, and the reel G, being also in motion at the same time, draws the straw down on the traveling apron K, by which it is deposited into the cradle *l*, from which it is deposited upon the ground by the action of the cam *y* on the end of the cradle-bar H.

Thus ends the description of my machine when arranged to gather the straw with the heads on; but when arranged to cut the heads off of the straw as fast as it gathers it the machine is arranged as follows: The reel G is first removed and the finger-plate K' and cutter-plate M are made to occupy its place. The finger-plate is made plane on both sides, and its edges are made in three half-circles, so as to conform to the circles cut by the knives *h h*. The cutter-plate M is geared to the finger-plate by means of cog-wheels *j j*, fixed on their respective shafts, and these wheels receive their motion through the medium of a chain-belt, *e*, passing around a drum on the shaft *d*, upon which the wheel *u* is fixed. The finger-plate and cutter-plate are so geared with respect to each other that when the one stands horizontal the other stands vertical, and vice versa. The finger-plate revolves toward the right and the knife-plate toward the left, so that the plate K' strikes over and catches the heads of the grain and carries them under to the knife, which, in revolving in the opposite direction, cuts them off by means of the knives L, which are fixed on the plate, as shown. These knives, while they receive a revolving motion, also receive a reciprocating motion by means of the cam N, which is fixed on the side of the frame, and the spring O, fixed on the opposite end of the plate shaft or center. As fast as the heads are cut off of the straw by the knives L the straw is cut off of the ground by the knives *h h*, after which the straw falls on the traveling apron K, and is carried by it to the cradle *l* and deposited, as before stated.

There may also be a thrashing and winnowing machine attached to this harvester, the application of which is shown at Fig. 2, and the operation of which is as follows: The heads of the grain, being first cut off by the knives L, slide from the knife-plate upon the thrashing-cylinder P, and from the cylinder P the grain passes over the sieve-platform Q, during which time it is under the blast produced by the fan R, which blows the chaff out of the grain. The largest refuse is carried by the blast over the sieve, and is prevented from striking against the horses' heads by an apron arranged for that purpose. The grain, having been once winnowed, falls through the sieve upon the net S, through the meshes of which the smaller refuse falls upon the ground, the motion of the machine over the ground being sufficient to shake the machine for this purpose. The net S is inclined toward the elevator T, by which the grain is raised again and deposited upon a second sieve, U, where it is winnowed again by the fan R', which is fixed upon the same shaft with the other fan. The grain

is then carried down the incline *w*, and toward an opening at the end of the machine, (not shown on the drawings, owing to the position in which the machine is drawn,) from whence it is deposited into sacks.

Having thus described the construction and operation of my machine, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The described arrangement and combination of the wheel *C* with the devices before described—viz., the levers *p* and *q*, turn-table *B* and *M*, and the ratchet *C* and standard *r*—

for the purpose of operating the said wheel so as to guide the machine and raise the knives *h h h* from the ground, substantially as herein set forth, for the purpose specified.

2. The combination of the finger-plate *K'* with the knife-plate *M* and the knives *h h h*, when these several parts are constructed, relatively arranged, and operated in the manner and for the purpose specified.

HENRY G. KAUFMANN.

Witnesses:

JAMES J. FINNEY,
AMOS BROADUX.