T. A. Dugdale,

Splitting Wood.

No. 43,576. Patented July 19, 1864.

Fig. 1.

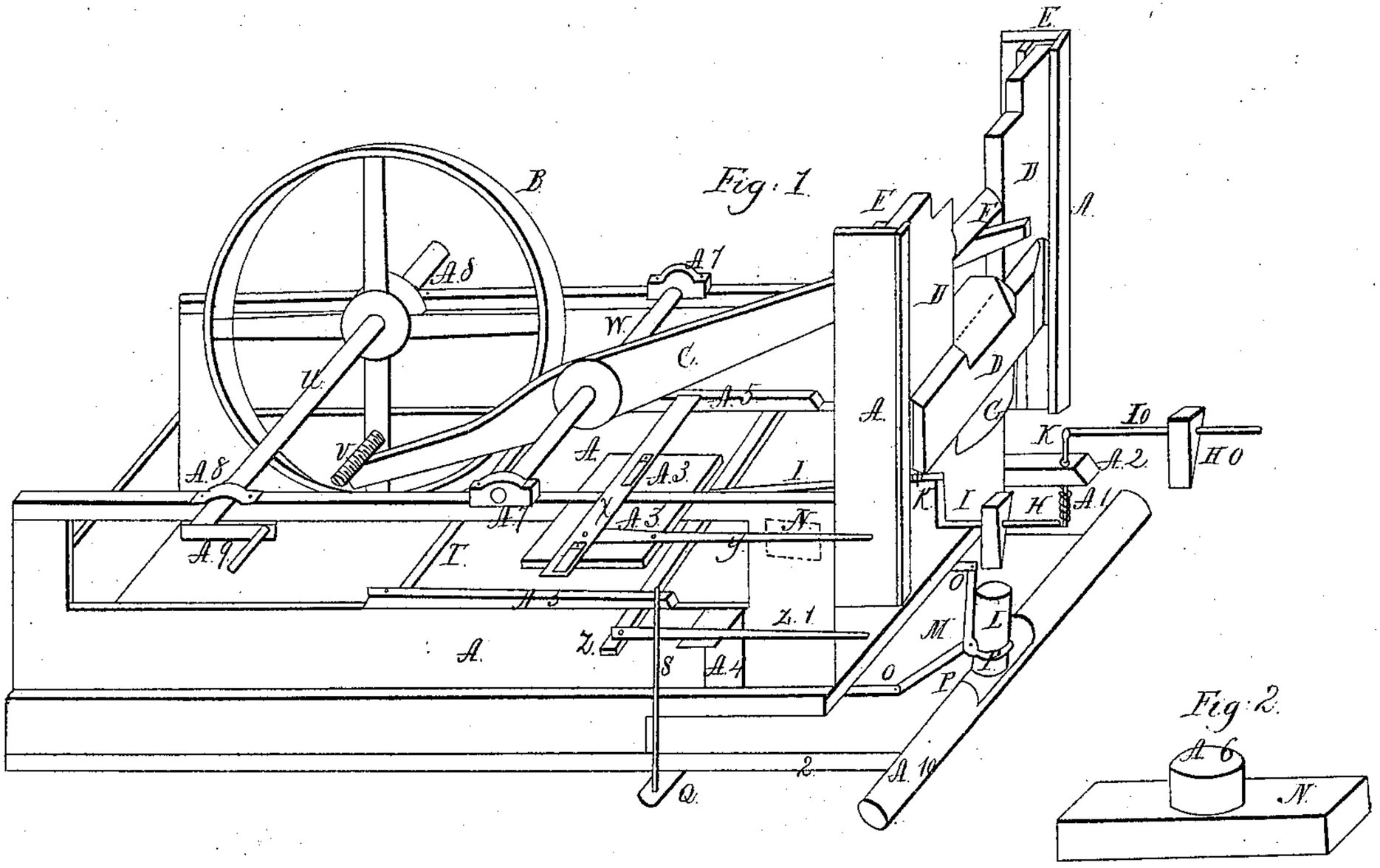


Fig. 2.

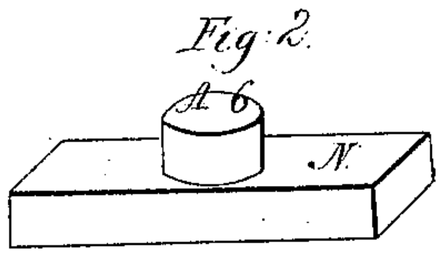


Fig. 3.

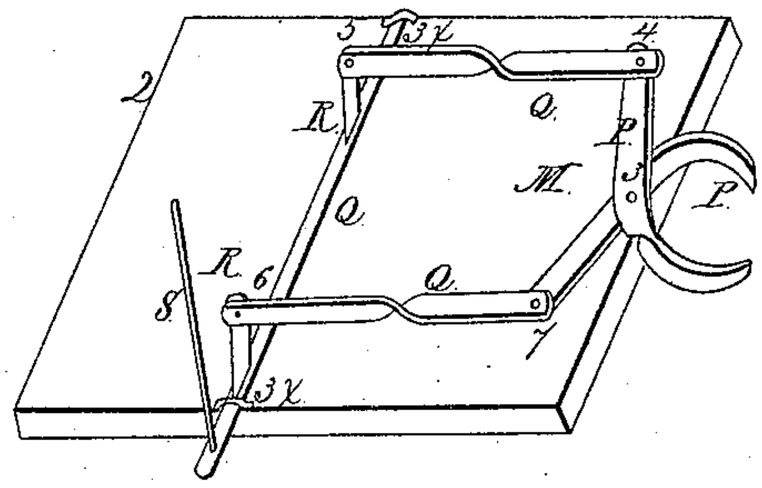


Fig. 4.

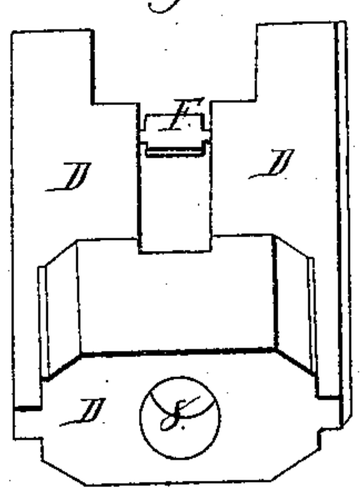
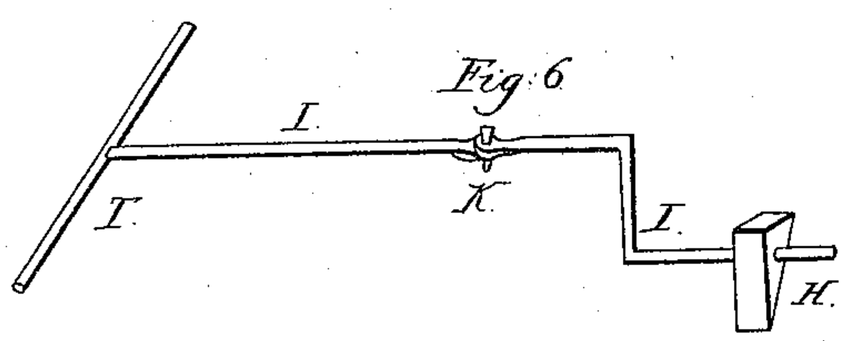


Fig. 5.

Fig. 6.



Witnesses:
John Finley
James H. Dugdale

Inventor:
Thos. A. Dugdale

UNITED STATES PATENT OFFICE.

THOMAS A. DUGDALE, OF WEST RICHMOND, INDIANA.

IMPROVEMENT IN MACHINES FOR SPLITTING WOOD.

Specification forming part of Letters Patent No. **43,576**, dated July 19, 1864.

To all whom it may concern:

Be it known that I, THOMAS A. DUGDALE, of the town of West Richmond, county of Wayne, and State of Indiana, have invented a new and useful Machine for Splitting Wood in the Forest, intended to be operated by steam or horse power, or by hand, and is intended to accompany what is commonly known as a "drag-saw."

The nature of my invention consists in constructing a machine for splitting fire-wood after it has been sawed by the drag-saw, and by the same power used to saw the wood, thereby saving great labor.

To enable others skilled in the art to make and use my newly-invented machine, I will proceed to describe its construction and operation, reference being had to the annexed drawings, making a part of this specification.

Figure 1 is a perspective view of my machine. Fig. 2 represents a cross-piece, which will hereinafter be more fully described. Fig. 3 represents a pair of clamps and attachments. Fig. 4 represents a hammer. Fig. 5 represents a block of wood. Fig. 6 represents one of the wedges on its supporting-rod.

A A A A in Fig. 1 represent a strong frame-work.

B is a fly-wheel.

C is a lever.

D D D is a hammer, also shown in Fig. 4, represented by an end view lying on one side.

E E are slides in which the hammer plays up and down.

F is a roller in hammer, under which the lever C works to throw it (the hammer) up preparatory to falling. Said roller is more plainly shown at F in Fig. 4.

G is a block of hard wood inserted in the bottom of the hammer D D D for the purpose of striking on the wedges H and H O to prevent their battering.

H and H O are the wedges for splitting the wood, one of which is also represented in Fig. 6 at H.

I I are rods on which the wedge H is secured, which may be seen at Fig. 6.

I O in Fig. 1 is another rod, on which is attached the wedge H O.

K is a joint connecting the rods I I, also shown in Fig. 6 at K.

K also represents a joint in the rod I O in Fig. 1.

L represents a log in position for being split, held firmly by the clamps M.

M are clamps to hold the log. (More fully represented at Fig. 3.)

N is a cross-piece of timber extending from one side of the frame to the other, one end of which is represented by the dotted lines. At N in Fig. 1 said piece of timber has a strong spring on its top side to prevent the hammer falling lower than the top of the stick to be split. Said cross-piece may be seen at Fig. 2 with a gum-elastic spring represented thereon by A^6.

O O are connecting-rods which connect the clamps and their levers with the uprights R R, as shown in Fig. 3.

P P are the jaws and levers of the clamps, also shown at Fig. 3.

Q is a vibrating bar to which the uprights R R are attached, as shown in Fig. 3.

R R are not seen in Fig. 1, but may be seen representing upright pieces in Fig. 3, which are not visible in Fig. 1.

S in Fig. 1 is a lever attached to the shaft Q, as also shown in Fig. 3 at S.

T in Fig. 1 is a vibrating bar to which the jointed rods I I are attached, as also more fully shown at T in Fig. 6.

U is a shaft on which a fly-wheel, B, is attached, and also the crank A^9.

V is a stud-pin or wrist in the fly-wheel.

W is a vibrating shaft on which lever C is attached.

X is a sliding bar to hold up the hammer.

Y is a lever to operate bar X.

Z is a sliding bar to hold up the rods I I, to which a wedge, H, is attached.

Z′ is a lever to work the sliding bar Z.

A′ is a spiral spring designed to relieve the bar or rod I O of the concussion during the blow of the hammer on the wedge H O. I will here remark that the rods I I, being much longer than the rod I O, have sufficient spring of and within themselves to relieve them when the wedge H is struck by the hammer.

A^2 is a piece of timber through which the rod I O passes, said piece of timber being secured to the frame-work in the most convenient position.

A^3 A^3 are pieces secured to the frame to support the sliding bar X and the lever Y.

A^4 is a support secured to the side of the frame on which the lever Z′ works.

A^5 A^5 are pieces under which the bar Z slides and the shaft T vibrates.

A^6 in Fig. 2 represents a piece of gum-elastic or other strong spring.

A^7 A^7 are boxes in which the shaft W vibrates.

A^8 A^8 are boxes in which the shaft U revolves.

A^9 is a crank on the fly-wheel shaft.

A^{10} is a bed-piece on which the stick L rests while being split.

1 is a heavy plank or other suitable material, so constructed as to leave a space under the front end of the machine sufficient to admit the clamps M.

2 is a plank upon which the clamps M are constructed, as also seen in Fig. 3, the same being secured to the plank 1.

$3^\times$ $3^\times$ in Fig. 3 are journals in which the bar Q vibrates.

3, 4, 5, 6, and 7, as shown in Fig. 3, are joints by which the pieces Q Q, P P, and R R are joined together by means of strong bolts or rivets.

8 in Fig. 4 is a hole cast or bored in the lower end of the hammer D D D, into which is inserted the round piece of wood, as seen in Fig. 5.

The frame A A A A should be made of solid timber, such as good white oak or ash. The sides should be about six feet high. The front end pieces, upon which the slides E E are fixed, should be about twelve feet high, leaving room below for the block L (or log) and wedges H and H O. The bed of the frame, when it lies on the ground, should be about sixteen feet long and about two feet wide. The lever C should be made of good, sound, strong timber. The pieces forming the slides E E should be secured to the frame by means of strong bolts. The hammer may be made of cast-iron, and should have a piece of very hard wood inserted in the hole 8, and should weigh from one hundred and fifty to three hundred pounds, according to the number of horse-power designed to be used in operating the machine. The spring A^6 may be made similar to a car-spring, of gum-elastic. When that cannot be obtained any kind of strong spring may be used. The rod I O, on which the wedge H O is secured, should be made of a bar of round or flat iron, equal in strength to a bar of iron one and a half inches diameter, with the joint K at a proper distance from the end and passed through the piece of timber A^2 far enough to receive the spiral spring A'. The wedges should be made of iron or steel, and should be twelve inches long and from four to six inches thick at the top. The rods I I may be made of equal strength with the rod I O and be joined at K, as seen in Fig. 6. The clamps M should be made of flat bars of iron one inch thick and three inches wide, and should be flattened at the joint 3, and from that to the joints 4 and 7. The connecting-bars O O may be made of iron half an inch thick and one and a half inch wide, and should be twisted so that the ends will stand at right angles with each other. The pieces R R may be inserted in a bar of round iron one and three-quarter inch diameter, and have two journals, and should also receive the lever S. Thus prepared the joints 3, 4, 5, 6, and 7 may be secured by strong bolts or rivets at the joint 3. A bolt should pass through the plank 2. The bed-piece A^{10} may be prepared in the woods, and should be a heavy log with a flat place cut out of one side sufficiently large to admit of any-sized stick (desired to be split) to stand on it. Said bed-piece should extend beyond the machine at each side and may be fastened in its place by means of stakes driven through clevises, if necessary. I think proper to state that the hammer may be attached to the lever by means of links or pieces of flat iron, attached to the hammer and lever so as to form two or more joints, in order to allow the lever to describe its circle and raise the hammer without binding, all of which I hold to be equivalent devices. But I prefer the roller F.

Operation: The machine being ready for operation, it will be seen that by turning the crank A^9 the shaft U and fly-wheel B revolve. The wrist V, coming down on the back end of the lever C, raises the hammer D D D, which is held up by passing the sliding bar X under the lever C by means of the lever Y, the log L then being put in position and clamped firmly by means of the clamps M, which is done by pushing back the lever S and securing it or holding it by or with the hand. The wedge H is then brought on a line with the machine and placed on the top of the stick or log L. The slide X is then removed from under the lever C. The wrist V having left the lever C, the hammer falls on the wedge H, driving it into the log L. Having split the stick or log lengthwise of the machine, the wedge H is then removed and turned aside by taking hold of the rod I I and turning it at the joint K. The rod I O and wedge H O are then brought into position to split the stick at right angles with the former wedge. The same operation of the hammer produces a like effect upon the wedge H O, and the stick is split at right angles or in four quarters. I will here state that if it should be desired to place the shaft U and wheel B nearer the ground a lever may be hung below the lever C upon which the wrist *v* may operate and motion may be communicated from said lever to the lever C by means of a rod connecting them together.

The machine may be fastened to the ground by means of clevises and stakes, which may be attached to cross-pieces secured to the bottom of the machine. I think it best in a heavy machine to use two or more of the rods I O and wedges H O, placing them in such position that the wedges will split at right angles with each other. In a light machine the rod I I and wedge H may be used.

I do not claim any of the parts taken sep-

arately and independent of their attachments and connections, as they of themselves are all well-known devices.

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

A machine for splitting fire-wood, composed of the hammer D, lever C, wedges H or H O, rods I I or I O, and clamp M, when constructed and operating substantially as set forth.

THOMAS A. DUGDALE.

Witnesses:

JOHN FINLEY,

JAMES K. DUGDALE.