A. A. HULL.

Straw Cutter.

No. 3,363. Patented Dec. 4, 1843.

Fig. 1,

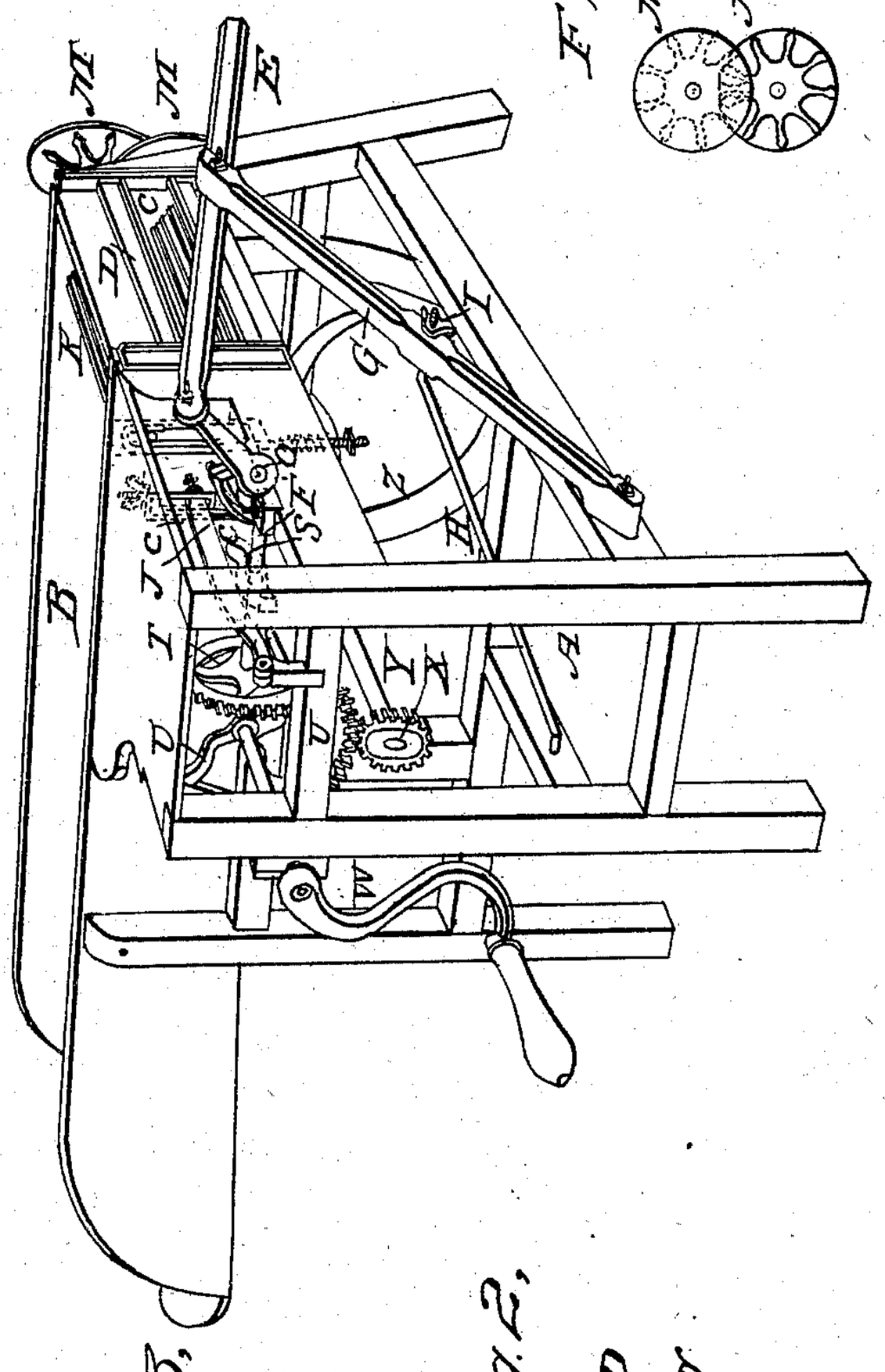


Fig. 4,

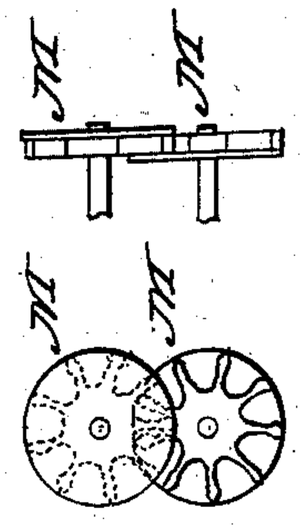


Fig. 5,

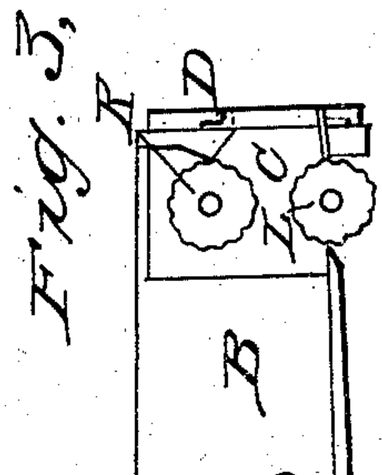
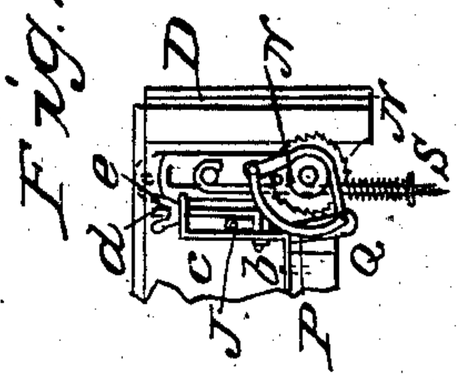


Fig. 6,



UNITED STATES PATENT OFFICE.

ABEL A. HULL, OF CROTON, NEW YORK.

STRAW-CUTTER.

Specification of Letters Patent No. 3,363, dated December 4, 1843.

To all whom it may concern:

Be it known that I, A. A. HULL, of Croton, in the county of Westchester and State of New York, have invented a new and useful Improvement in Machines for Cutting Straw, which is described as follows, reference being had to the annexed drawings of the same making part of this specification.

Figure 1 is a perspective view of the machine, Fig. 2 is a view of the feeding apparatus, Fig. 3 is a section of the feeding rollers, Fig. 4 cog wheels on the axles of the feeding rollers.

The frame A of this machine resembles the frame of other straw cutting machines. It is made of wood or other suitable material of the requisite size and strength. B is the cutting box in which the substance to be cut is placed. A metallic lining C is in the front end of the cutting box. D is a metallic plate or casting fastened to the front of the cutting box perforated in the middle with an oblong opening through which the straw or substance to be cut is carried forward to the cutting knife by the feeding rollers hereafter described. Around this opening ribs are formed on the plate over which the knife slides or rubs on its upward and downward oblique movement for sharpening it, which ribs are extended vertically from the four angles of the opening.

The cutting knife E is concave on the side moving over said ribs and convex or beveled on the outside forming two cutting edges. It is made to receive an oblique movement or stroke over the aforesaid ribs and opening for cutting the straw both in its upward and downward sweep for performing the double operation of cutting the straw as it descends and ascends in the following manner. To the wrist of a revolving crank shaft F turned in the manner hereafter described one end of the aforesaid knife is attached and secured by a nut so as to work loosely on the wrist. The middle of the knife is connected by a pin projecting from the back of the same to the upper end of a vibrating arm G moving on a bolt inserted into one of the cross girts of the frame and pressed inward against the knife by an oblique spring rod or crane H and thumb screw I, the spring rod or crane also turning in another of the cross girts of the frame. When the screw is loosened, it allows the knife to spring outward from the cutting box and when screwed up it draws it again toward the cutting box. As the crank revolves it carries the end of the knife attached to the wrist around with it while the other end of the knife is carried upward and downward in an oblique direction causing the upper cutting edge of the knife to sweep from the lower outward angle of the mouth of the cutting box upward to the inner upper corner and in descending to sweep from the upper outward angle of the box to the lower inner angle cutting the substance in the box which is brought forward by fluted rollers at each upward and downward stroke in the manner of a draw knife stroke.

The feeding is performed by the following arrangement of machinery. Near the cutting end of the cutting box is arranged a pair of horizontal parallel fluted feeding rollers K, L, one placed above the other with their axles extending through and beyond the sides of the cutting box having a cog wheel M on the end of each, outside the cutting box, the teeth of the one engaging with the teeth of the other which are made long for the purpose of allowing the upper feeding roller to rise or fall as more or less straw is introduced and the cog wheels still to remain in gear. On the opposite end of the axle of the lower roller there is fixed a ratchet wheel N, see Fig. 2, which is caused to turn with the roller at intervals of time for bringing forward the straw to the knife by a reating arm O which is made to engage with the teeth of the ratchet wheel just before the knife begins to ascend and descend over the mouth of the box and to slip over the teeth as the knife is passing through the substance to be cut leaving the feeding rollers at rest. For this purpose the reaching arm is attached to a segment arm P turning loosely on the outer end of the axle of the lower feeding roller on which the ratchet wheel is placed. This segment arm is connected to the end of a vibrating lever J by a connecting rod Q the fulcrum of the lever being in a box on one of the cross pieces of the frame. This lever is vibrated vertically by two cams S on the crank shaft F which strike against the under side of the said lever J causing its outward end to rise and fall with the connecting rod which raises the segment arm, which draws forward the reaching arm O and thus turns the ratchet wheel N and feeding rollers M. The cam having passed from under the lever J

as the shaft revolves the lever by its own gravity descends, returning the segment arm to its former position and carrying back the reaching arm for a new hold on the ratchet wheel. The other cam then comes in contact with the lever and the operation before described is repeated and in this manner the feeding goes on until all the substance in the box is cut up. The upper feeding roller is pressed toward the lower one by spiral springs S which also suffer it to rise when required.

The crank shaft is turned by having a bevel wheel T on its end into which another bevel wheel U on a horizontal axle V engages, which axle is turned by a crank W or in any convenient way. The last mentioned bevel wheel works into a small cog wheel X on the shaft Y of the fly wheel Z for equalizing the motion. The sweep of the lever J (which regulates the length of the cut straw) is gaged by a screw rod *a* turn at right angles at its lower end forming an arm *b* against which the lever J strikes in its descent, which arm moves in a slot in a standard *c* screwed to the frame, and is raised or lowered by having the vertical part of said screw rod pass through a cap *d* of the standard, upon which a thumb nut *e* turns screwed upon the upper end of said rod, see Fig. 2.

I do not claim giving to the knife an oblique draw-knife-stroke, but

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

1. The way or manner of giving the knife an oblique draw knife stroke as it ascends and descends for the purpose described of cutting at the upward as well as at the downward stroke by attaching one end of the knife to a crank and the middle to an adjustable vibrating rod as described.

2. Also the arrangement of the apparatus for turning the feeding rollers for feeding or bringing forward the substance to be cut to the knife, as described.

3. Also the mode of regulating the cut of the straw by the combination of the lever J and screw rod *a*.

A. A. HULL.

Witnesses:
BARRY DAVIDS,
J. LE VAIRS.