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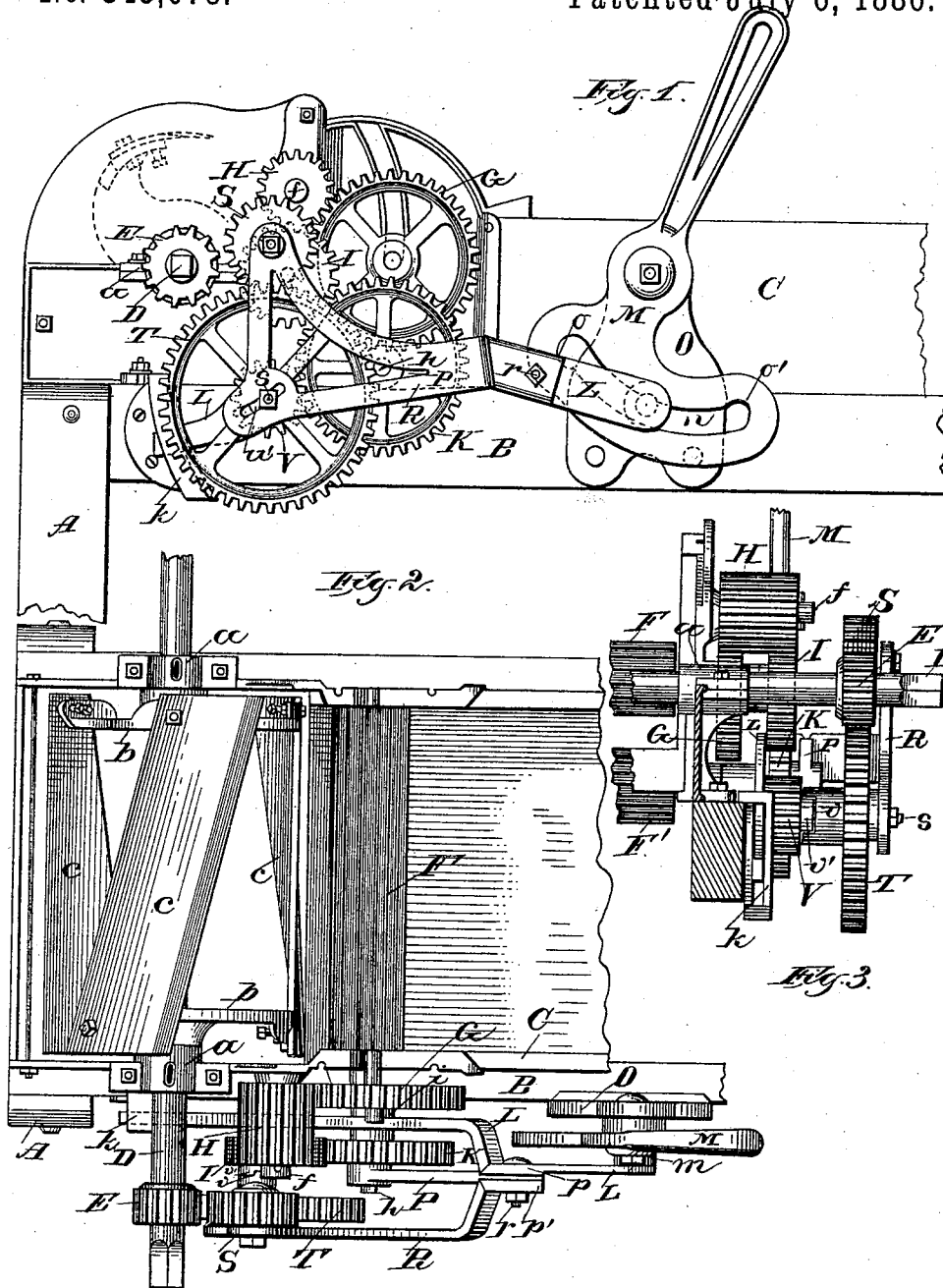
C. & C. A. SILBERZAHN.

2 Sheets—Sheet 1.

FEED CUTTER.

No. 345,078.

Patented July 6, 1886.



Witnesses:

E. G. Somner
N. S. Oliphant

Inventors

Charles Silberzahn
Charles A. Silberzahn

By Stout & Underwood
Attorneys.

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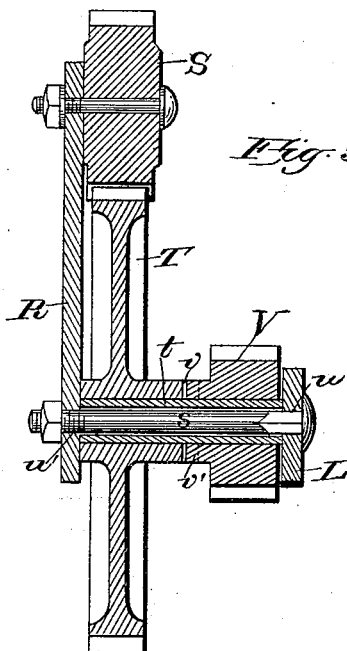
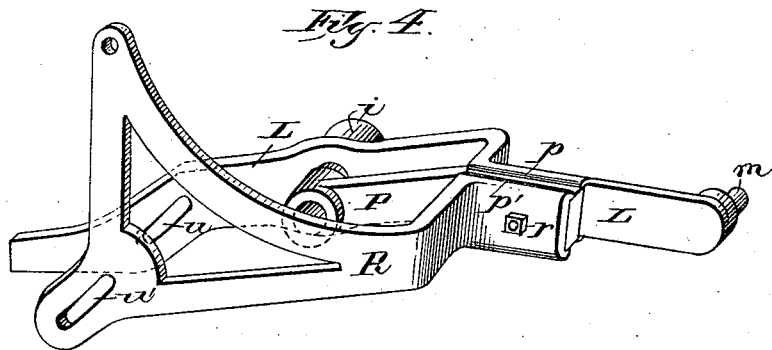
C. & C. A. SILBERZAHN.

2 Sheets—Sheet 2.

FEED CUTTER.

No. 345,078.

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N. E. Oliphant

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UNITED STATES PATENT OFFICE.

CHARLES SILBERZAHN AND CHARLES A. SILBERZAHN, OF WEST BEND,
WISCONSIN.

FEED-CUTTER.

SPECIFICATION forming part of Letters Patent No. 345,078, dated July 6, 1886.

Application filed January 18, 1886. Serial No. 188,845. (No model.)

To all whom it may concern:

Be it known that we, CHARLES SILBERZAHN and CHARLES A. SILBERZAHN, of West Bend, in the county of Washington, and in the State of Wisconsin, have invented certain new and useful Improvements in Feed-Cutters; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention relates to feed-cutters; and it consists of certain peculiarities of construction, as will be fully described hereinafter with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a portion of a feed-cutter embodying our invention; Fig. 2, a top plan view; Fig. 3, a detail showing the gear and a portion of the feed-rolls in front elevation; Fig. 4, a detail view of the shifting-frame, and Fig. 5 a detail view illustrating the construction of the shaft for the clutch-pinion and gear-wheel.

A represents the front standard, and B one of the side pieces of a supporting-frame for the feed-box C and operating mechanism of the machine. Journaled in suitable bearings, *a*, is a shaft, D, having secured thereto heads *b*, for the knives *c*, the end of this shaft on one side of the machine being provided with a pinion, E, and adapted to receive a crank, and to the other end of said shaft is intended to be keyed a fly-wheel provided with a band-pulley, for connecting the operative mechanism with a suitable driving-power.

F F' are the feeding-rollers, of the usual construction and adjustment with relation to the feed-box and knives. The journal of the upper roller, F, has keyed thereto a gear-wheel, G, which meshes with a loose pinion, H, journaled upon a short shaft, *f*, extending out from the cutter-box on the crank side of the machine. Journaled to the cutter-box immediately below the pinion H and meshing therewith is another loose pinion, I, which also meshes with a gear-wheel, K, keyed to the journal *h* of the lower feeding-roll, F'. This journal *h* is also designed to receive the sleeve *i* of an angle-arm, L, said arm having its forward or free end operating in a guide-bracket, *k*, secured to the side piece, B, of the supporting-frame. The rear end of the arm

L is provided with an inwardly-projecting stud, *m*, designed to engage an arch-shaped slot, *n*, in the lower or segment portion of a lever, M. This lever is pivotally connected to a vertical bracket, O, the latter being secured to the side piece, B, of the supporting-frame, and the slot in said lever is provided with sockets *o o'* at its extremities, adapted to receive the stud *m* and limit the movement of the arm L in either a forward or backward direction. To the lower feed-roll journal, *h*, is also fitted the front end of a straight arm, P, having its other end socketed in flanges *p p'* on the respective rear portions of the arm L, and a triangular arm or plate, R, said parts L, P, and R being united by a bolt, *r*, to form a frame, though, if found more desirable, these parts may constitute a single casting. The triangular plate or arm R carries a pinion, S, which meshes with a gear-wheel, T, having its shaft composed of a bolt, *s*, carrying a sleeve, *t*, said bolt being adjustable in curved slots *u u'*, respectively formed in the parts L R, and the sleeve adapted to fit the bore of the gear-wheel's hub. This gear-wheel T has the inner end of its hub formed with recesses *v*, adapted to engage projections *v'* upon the outer face of a removable pinion, V, adapted to fit upon the sleeve *t* of shaft of said gear-wheel.

In order to permit of the machine being geared to vary speed, two or more sizes of the pinion V are designed to accompany each cutter, the slots *u u'* in the parts L R permitting the shaft designed to carry one of these pinions and the gear-wheel T to be adjusted so said pinion may be brought into mesh with the gear-wheel K, keyed to the journal of the lower feeding-roll, F'.

The above-described series of pinions and wheels form the entire gearing for our cutter, and are operatively arranged with relation to each other upon a single side of the machine, this being considered of material advantage in the matter of compactness and convenience.

When the lever M is in the position illustrated by Fig. 1, the machine is out of gear, though the knives may be revolved while the feeding-rolls remain stationary.

It will be noticed that the frame, composed

of the parts L P R, is entirely supported at but two points, said points being the journal *h* of the lower feed-roll, F', and the arc-shaped slot *n* in the segment end of the lever M. The frame 5 being thus virtually on a pivot can be readily shifted at the will of the operator. The frame being pivoted on the journal *h*, by moving the upper end of the lever forward the frame is tilted on its pivot, (the journal *h*,) and the 10 pinion S is caused to mesh with pinion E, and pinion V with gear-wheel K. The pinion S being always in mesh with the gear-wheel T, motion is imparted to the lower feeding-roll, F', through the medium of the pinion V, hav- 15 ing a clutch connection with said gear-wheel T, and meshing with a similar wheel, K, on the journal of the said lower roll. This gear-wheel K meshes with the pinion I, journaled to the cutter-box, and said pinion with another one, H, also journaled to the cutter-box, 20 which in its turn comes into mesh with the gear-wheel G on the upper feed-roll, F. The machine is now in gear for cutting feed, which latter is carried from the box C to the knives *c* by the movement of the rolls F F', and to re- 25 tain the several parts in relation to each other when the lever is operated to bring them in operative contact, as above described, the stud *m* on the angle-arm L enters the socket *o* at the 30 forward extremity of the slot *n* of said lever, and by this engagement the stud is not liable to become disengaged from its corresponding socket unless the lever is forcibly operated upon. To reverse the action of the feed-rolls 35 F F', the operator throws back the lever M, thereby causing an upward movement of the pivotal frame to throw the pinion S out of gear with the one E on the knife-shaft D, and bring- 40 ing the gear-wheel T into mesh with said pinion E. As this movement is accomplished the stud *m* of the angle-arm L locks in the socket *o* of the arc-shaped slot in the lever. The pinion S, though meshing with the gear- 45 wheel T, runs idle when the lever is reversed, while the other pinions and gears remain in the same position as when the machine is feeding to the knives, their position being un- changed, no matter what may be the move- 50 ment of the shifting-lever and pivotal frame. By the construction and arrangement of the gearing and the shifting mechanism, as above described, the feeding-rollers can be instantly reversed or stopped by a single jerk of the lever while the knives are in full motion, 55 there being no springs or locking devices to raise before said lever can be moved.

The above feature is deemed of particular advantage in case anything of a damaging character should get into the machine. An- 60 other advantage lies in the fact that the rollers can be stopped while getting up motion of the knives, and the faster said knives run the easier the several parts will gear when the shifting-lever is operated.

Having thus fully described our invention, 65 what we claim as new, and desire to secure by Letters Patent, is—

1. In a feed-cutter, a frame composed of an angle-arm pivotally connected to the lower feed-roll journal and provided with a curved 70 slot and a stud, the latter engaging a suitably-slotted lever, a straight arm connected to said journal, and a triangular arm or plate carry- ing a pinion and gear-wheel and provided with a curved slot to register with the one 75 in the angle-arm, substantially as and for the purpose set forth.

2. In a feed-cutter, a pivotally-connected shifting-lever having its lower portion in the form of a segment and provided with an arc- 80 shaped slot, in combination with a pivoted frame connected with said lever and provided with a pinion and gear-wheel to be thrown in and out of gear with a pinion on the knife- 85 shaft of said feed-cutter, substantially as and for the purpose set forth.

3. In a feed-cutter, the combination of suitable gear-wheels respectively keyed to the journals of the upper and lower feed-rolls, loose pinions journaled on short shafts pro- 90 jecting from one side of the cutter-box, and a pinion keyed to the knife-shaft with a frame pivotally connected to the lower feed-roll journal carrying a pinion, and an adjustable gear- 95 wheel having a recessed hub, a pinion removably journaled upon the adjustable shaft and provided with projections to engage the recesses on said gear-wheel, and a pivoted lever having its lower portion in the form of a seg- 100 ment and provided with an arc-shaped slot designed to engage a stud upon an arm of the pivoted frame, all constructed and arranged to operate substantially as and for the purpose set forth.

4. In a feed-cutter, the driving-gear located 105 entirely upon one side of the machine, in combination with a shifting-gear for reversing or stopping the action of said machine, composed of a frame pivotally connected to the lower feed-roll journal and carrying a pinion and 110 gear-wheel, the shaft of the latter consisting of a bolt and sleeve adjustable in said frame, a removable clutch-pinion journaled on said adjustable shaft, and a segment lever pivotally 115 connected to the gear side of said machine to engage the pivoted frame, substantially as and for the purpose set forth.

In testimony that we claim the foregoing we have hereunto set our hands, at West Bend, in the county of Washington and State 120 of Wisconsin, in the presence of two witnesses.

CHARLES SILBERZAHN.
CHAS. A. SILBERZAHN.

Witnesses:

JOHN THIELGER,
ADAM THEIR.