(No Model.)

C. KITTREDGE.

STAPLING MACHINE.

No. 282,533. Patented Aug. 7, 1883.

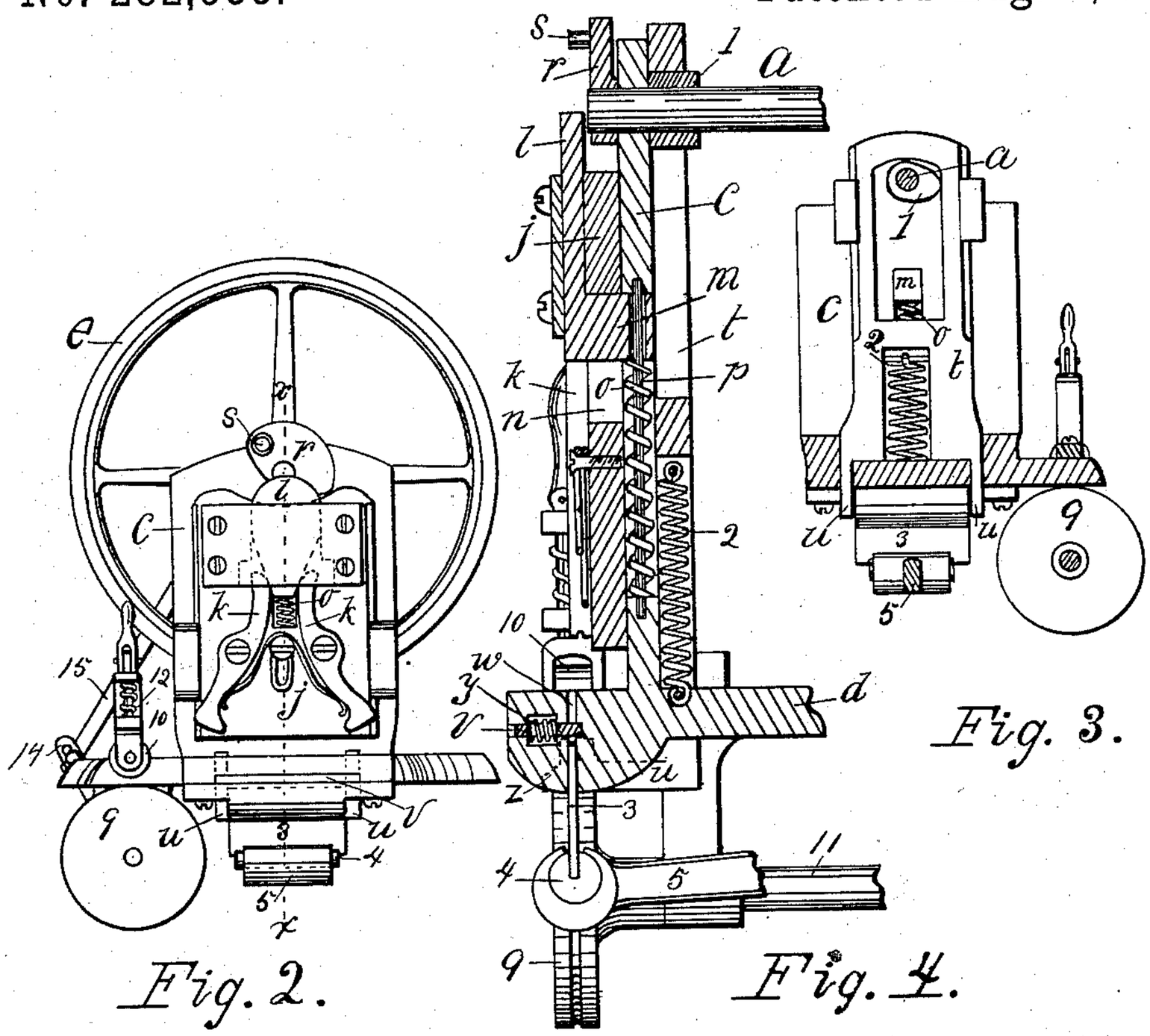

Fig. 2.

Fig. 3.

Fig. 4.

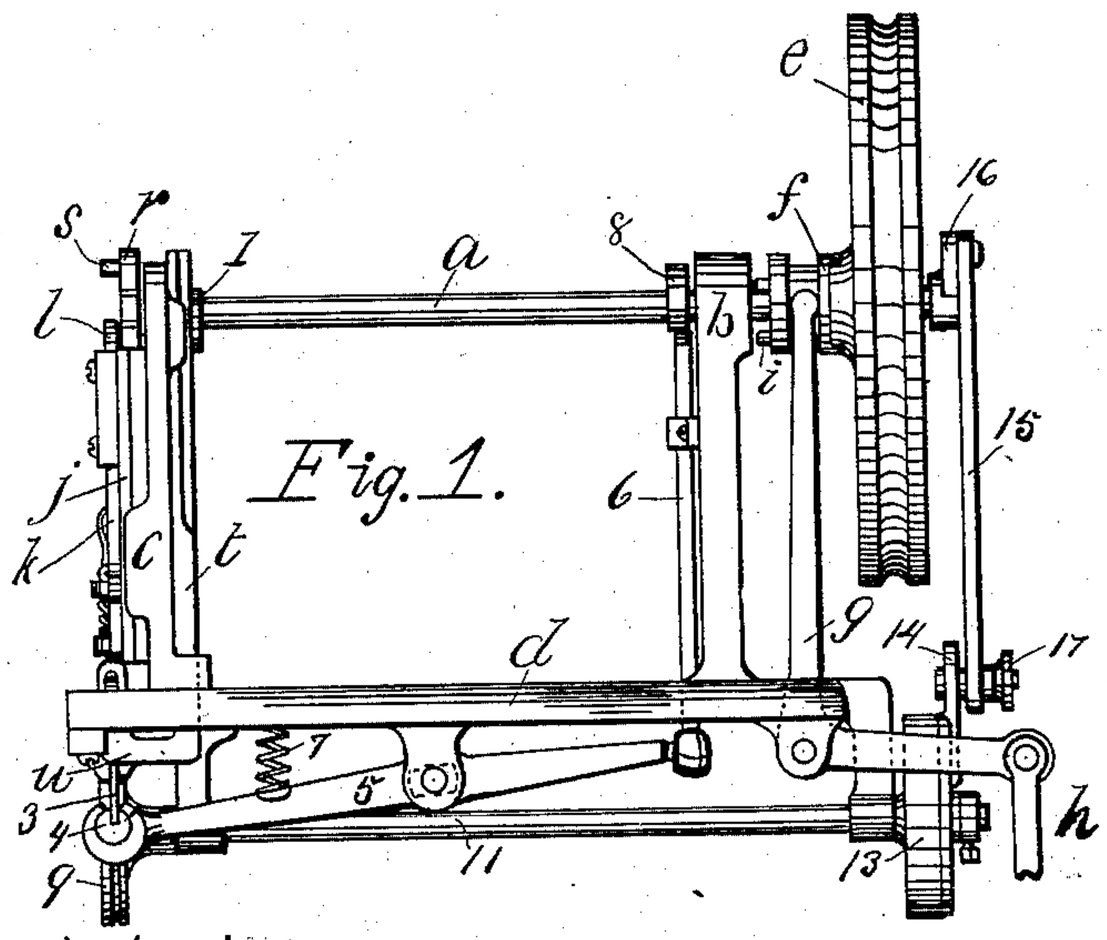

Fig. 1.

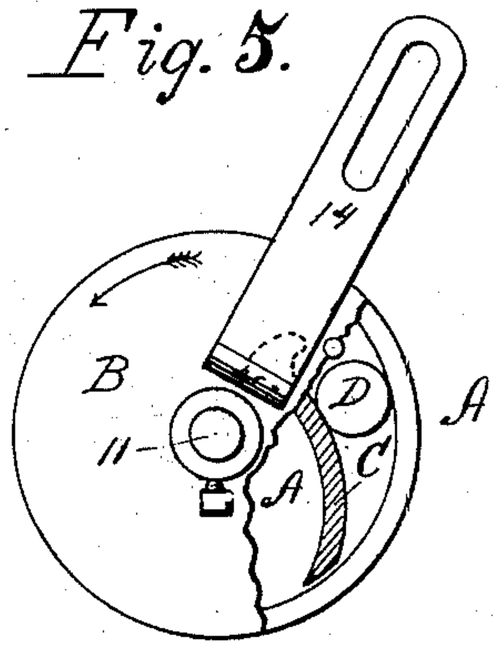

Fig. 5.

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CHARLES KITTREDGE, OF INDIANAPOLIS, INDIANA.

STAPLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 282,533, dated August 7, 1883.

Application filed June 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES KITTREDGE, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improved Stapling-Machine, of which the following is a specification.

My invention relates to that class of stapling-machines in which light wire is drawn from the coil, formed into staples, driven through the sides of and clinched in position in veneer or paper boxes or dishes for the purpose of uniting their parts.

The objects of my improvements are, first, simplicity and accessibility of the working parts; second, smoothness of movement and avoidance of sudden jars; third, a mechanism for feeding the wire to the staple-forming mechanism which shall be easily and minutely adjustable.

The accompanying drawings illustrate my invention.

Figure 1 is a side elevation. Fig. 2 is a front elevation of the front end of the machine. Fig. 3 is a rear elevation of the same. Fig. 4 is an enlarged vertical section of the same, from front to rear, in the line *x x*. Fig. 5 is an enlarged side elevation of the feed-clutch, with a portion of the outside broken away.

Like letters indicate the same parts in all the views.

The main shaft *a* is journaled in suitable bearings in standards *b c*, erected on the bed-plate *d*.

e is a driving-pulley turning loosely on shaft *a*, except when connected therewith by means of a clutch, *f*. Said clutch is thrown in contact with pulley *e* by means of a bell-crank lever, *g*, connected by means of a rod, *h*, with a treadle convenient to the foot of the operator. The clutch is retained in contact with the driving-pulley by means of a pin or projection, *i*, on the back of the clutch, resting against the side of the standard *b*, and is thrown out of contact with the driving-pulley by means of a coiled spring on the shaft, between the clutch and pulley, the projection *i* moving at the same time into a recess in the standard.

j is a sliding plate moving vertically in suitable ways on the side of standard *c*.

k k are clinching-jaws pivoted to plate *j*. Said clinching-jaws are operated by a sliding wedge, *l*, which has a projection, *m*, on the back extending through slot *n* in plate *j*. Plate *j* and wedge *l* are sustained by a spring, *o*, coiled about a guide-rod, *p*, Fig. 4, the top of the slot in *j* resting on projection *m* of the wedge, which slides on rod *p*. A cam, *r*, fastened on shaft *a*, and having a pin, *s*, on its side, operates plate *j* and wedge *l*, as hereinafter explained.

The staple-forming mechanism consists of the vertically-sliding plate *t*, moving in suitable ways on the back of standard *c*. Said plate has arms *u u* extending downward through the bed-plate and forward and turned up on each side of the former *v*, which slides in a horizontal mortise in the bed-plate, and is projected above the wire into the slot *w* in the bed-plate by a spiral spring, *y*, and is forced outward as the arms *u u* are raised by an inclined projection, *z*, on each of said arms. Plate *t* is raised by a cam, 1, on shaft *a*, and is drawn downward by a spring, 2, which is secured at one end to the bed-plate and at the other end to plate *t*.

The staple-driver 3 is a thin plate of steel moving vertically in a mortise through the bed-plate, and having formed on or secured to its lower edge a cylindrical piece, 4, which nicely fits a corresponding socket in the lever 5. Lever 5 is slotted at its fulcrum, and is connected at its opposite end to a vertical bar, 6, adapted to slide vertically in suitable bearings on standard *b*. The staple-driver is drawn downward by a spring, 7, acting on lever 5, and is forced upward by a cam, 8, on shaft *a*, working against the top of bar 6.

The device for feeding the wire to the staple-former consists of a pair of friction-rollers, 9 10—9 is fastened on shaft 11, which is journaled in bearings depending from the bed-plate, and 10 has a slight vertical movement, and is held against 9 by a spring, 12—a friction-clutch, 13, also fastened to shaft 11, a slotted radial arm, 14, a connecting-rod, 15, and a crank, 16, fastened on shaft *a*.

Clutch 13 is constructed as follows: A disk, A, Fig. 5, having a raised annular rim on one side, is fastened on the shaft. A second disk, B, having a central hole and on one side an eccentric rib, C, is placed loosely on the shaft, with the said eccentric within the annular rim

on A. A small disk, D, is placed at the same time between the periphery of the eccentric and the inside of the annular rim. When disk B is turned in the direction of the arrow, disk D wedges between the eccentric on B and the interior of the annular rim on A and A is carried forward; but when B is turned in the opposite direction disk D is released and A remains stationary.

The operation of my machine is as follows: The wire for the staples is drawn between the friction-wheels 9 and 10 and passed through a hole in the bed-plate, across and underneath the former *v* and above arms *u u*, the end of the wire resting against the inside of the mortise in the bed-plate in which arms *u u* move. The ends of the dish or box to be fastened are now placed in the bed-plate, under the end of plate *j*. Clutch *f* is now thrown in contact with pulley *e*, and as shaft *a* revolves cam *r* forces plate *j* and the clinching-jaws *k k* downward till the dish is clamped firmly between the lower end of *j* and the bed-plate. At the same time cam 1 draws plate *t* and its arms *u u* upward, cutting off the wire and bending the ends upward around the edges of former *v*. When arms *u u* have about half completed their upward movement the incline *z* on said arms comes in contact with the inner edge of the former *v* and forces it outward out of the path of the staple and the staple-driver 3, which is then forced upward, and the staple driven through the dish by means of cam 8 depressing bar 6. When the staple-driver has completed its upward movement, the prongs of the staple project upward above the surface of the pieces united and between the clinching-jaws *k k*. Said jaws are then forced quickly toward each other by pin *s* or cam *r* coming in contact with wedge *l* and forcing it downward between the upper ends of the jaws, and thus bending down and clinching the prongs of the staple. While these movements have been taking place the disk B of the clutch 13 has been turned forward by crank 16 and connecting-rod 15, the extent of its movement being adjustable by moving wrist-pin 17 along the slot in arm 14. When the staple-driver 3 has returned to its normal position, disk B commences to move in the direction indicated by the arrow in Fig. 5, and engages disk A by means of disk D, as before explained. Shaft 11 and friction-wheel 9 are by this means partially revolved, and the wire is fed forward to form a new staple.

I claim as my invention—

1. In a stapling-machine, the standard *c*, sliding plate *j*, clinching-jaws *k k*, wedge *l*, spring *o*, cam *r*, and pin *s*, all combined in the manner and for the purpose specified.

2. In a stapling-machine, the standard *c*, bed-plate *d*, sliding plate *t*, having arms *u u*, each provided with inclines *z*, means for imparting a reciprocating motion to plate *t*, former *v*, and spring *y*, all combined in the manner and for the purpose specified.

3. In a stapling-machine, the staple-driver 3, provided with cylindrical piece 4, lever 5, provided with a cylindrical groove adapted to receive said piece 4, and means for vibrating said lever, all combined substantially as shown and described.

4. In a stapling-machine, the disk A, provided with an annular rim, as shown and described, disk B, having eccentric C and arm 14 thereon, disk D, a shaft passing centrally through disks A and B, and means for vibrating arm 14, all combined substantially as and for the purpose specified.

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