

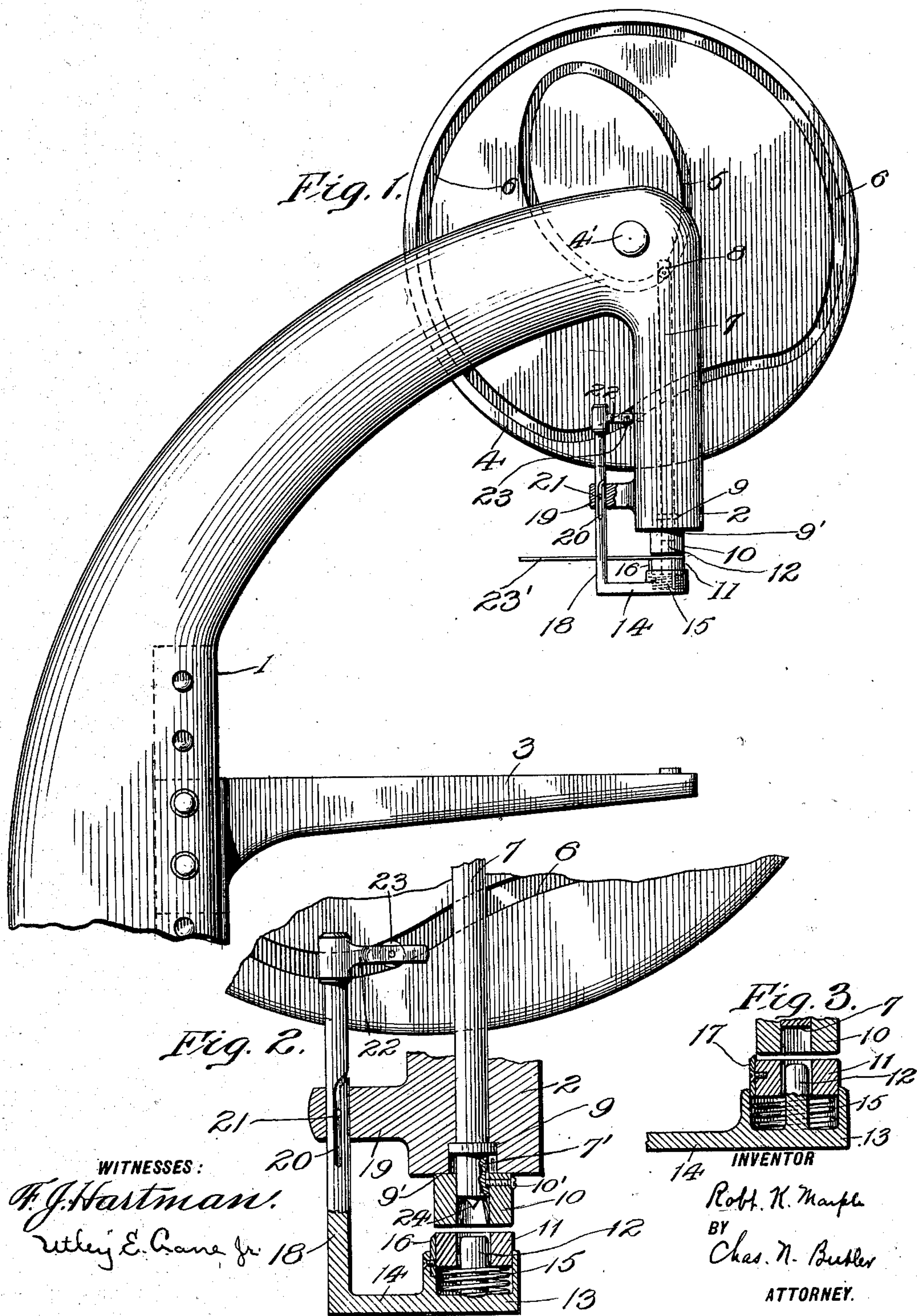
No. 731,587.

PATENTED JUNE 23, 1903.

R. K. MARPLE.
STAPLE MACHINE.

APPLICATION FILED DEC. 11, 1902.

NO MODEL.



UNITED STATES PATENT OFFICE.

ROBERT K. MARPLE, OF PHILADELPHIA, PENNSYLVANIA.

STAPLE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 731,587, dated June 23, 1903.

Application filed December 11, 1902. Serial No. 134,824. (No model.)

To all whom it may concern:

Be it known that I, ROBERT K. MARPLE, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Staple-Machines, of which the following is a specification.

This invention relates to mechanism adapted for cutting blanks, forming them into staples, and driving and riveting such staples. It has as its primary object to produce a simplified machine for effecting these operations and to render the parts readily changeable in order to adapt the mechanism to the character of the work.

The nature and characteristic features of the improvements will more fully appear by reference to the following description and the accompanying drawings, of which—

Figure 1 represents a side elevation of a machine embodying the invention. Fig. 2 represents a sectional view of part of the mechanism shown in Fig. 1, and Fig. 3 represents a sectional view of a modified form of cutting and forming mechanism.

Referring to the drawings, the frame 1 supports the stem 2 and the work-holder or anvil 3, the latter being preferably movable to vary its height with reference to the stem. A cam wheel or disk 4 is journaled on the arbor 4', supported by the frame, and has the cam-grooves 5 and 6 formed in the face thereof. The groove 5 operates the plunger 7 by means of its engagement with the roller 8 on the plunger. This plunger is adapted to reciprocate in the stem 2 and has fixed thereon a stop 9, which moves in the recess 9', formed in the stem, and limits the upward movement of the plunger with relation to the stem as well as its downward movement with relation to the die thereon. The die 10 is sleeved on the lower end of the plunger 7 and is movably engaged therewith by a screw 10', which passes through the die and projects into a blind channel 7', formed in the plunger. A die 11, coacting with the die 10, is sleeved on the pin 12 and lies within the socket 13 of the arm 14, the die 11 being cushioned upon the spring 15, located in the socket. A knife 16 is attached to the socket and is adapted to coact with the edge of the die 10 in shearing blanks from a metallic

ribbon 23' fed between the dies. The cutting mechanism may be modified, however, by omitting the knife 16 and attaching a knife 17 to the lower die, so as to project above the same and coact with the edge of the upper die in cutting the blanks, the spring 15 being provided with sufficient resistance to effect the cutting operations. A rod 18, fixed to the arm 14, is adapted to reciprocate in a bearing 19 on the stem, the rod having therein a worm or cam-groove 20, which receives a pin or boss 21, fixed in the bearing. An arm or bearing 22, to which the rod 18 is revolvably connected and longitudinally fixed, carries a roller 23, which engages the cam-groove 6, the arm being engaged by the stem 2 to prevent the roller leaving the groove.

It will be understood that when the revolving cams 5 and 6 elevate the parts 7 and 18 a metallic ribbon 23', fed by any suitable mechanism between the dies 10 and 11, will be pressed by the die 11 against the die 10 and cut by the knife 16 or 17. The blank thus shorn and held between the dies is by the further revolution of the cam-disk 4 and the consequent further upward movement of the rod 18 forced into the hollow die 10 against the end of the plunger 7 by the forming-pin 12, the thrust of the stem 2 and the die 10, supported thereby, against the die 11 compressing the spring 15 and permitting the forming-pin to enter the upper die and form the rivet 24. The further revolution of the cam-disk moves the rod 18 downward, and by the engagement of the worm 20 with the pin 21 the arm 14 swings the mechanism carried thereby out of the path of reciprocation of the plunger mechanism comprising the plunger 7 and the die 10, upon which this plunger mechanism is carried down until the die 10 strikes the work supported upon the anvil 3 and the plunger 7 drives the staple 24.

As the parts are of simple construction and readily changed, the mechanism may be varied readily as required for different kinds of work. By changing the cam-disk and providing cam-grooves of various forms the strokes of the reciprocating parts may be varied at will, the anvil being adjustable to accommodate its height to the stroke. There is thus provided simple and flexible mech-

anism permitting operation in angles and corners of boxes or receptacles of various forms and depths.

Having described my invention, I claim—

5 1. In a machine of the class described, the combination with a support of reciprocating mechanism comprising a plunger and a die movably sleeved thereon, a second reciprocating mechanism comprising a pin and a die
10 movably sleeved thereon, and means for operating said mechanisms, substantially as specified.

2. In a machine of the class described, the combination with a support of a reciprocating plunger, mechanism for operating said
15 plunger, a die sleeved on the end of said plunger and having a limited movement in relation thereto, a reciprocating pin adapted to enter said die, a die movably sleeved on
20 said pin, and mechanism for reciprocating said second die on said pin, substantially as specified.

3. In a machine of the class described, the combination with a support of reciprocating
25 mechanism comprising a plunger and a die movably sleeved thereon, a second reciprocating mechanism comprising a knife, a pin and a die movably sleeved on said pin, and means for operating said mechanisms, sub-
30 stantially as specified.

4. In a machine of the class described, the combination with a support of a reciprocating mechanism comprising a plunger and a die, means for operating said reciprocating mech-
35 anism, a second reciprocating mechanism comprising a knife, a pin and a die, and means for swinging said second reciprocating mechanism out of the path of said first reciprocating mechanism, substantially as specified.

40 5. In a machine of the class described, a cam, a reciprocating plunger operated by said cam, a die sleeved on said plunger and having a limited movement thereon, in combination with a forming-pin, shearing mechanism,
45 and means for supporting said parts, substantially as specified.

6. In a machine of the class described, a cam, a forming-pin connected therewith and reciprocated thereby, in combination with a
50 die adapted to receive said pin, a plunger movable in relation to said die, and a cam for operating said plunger, said cams being rigidly connected, substantially as specified.

7. In a machine of the class described, a
55 cam, a forming-pin connected therewith and reciprocated thereby, a die sleeved on said pin and adapted to reciprocate with relation thereto, in combination with a reciprocating plunger, a die sleeved on said plunger and
60 adapted to reciprocate with relation thereto,

and means for supporting said parts, substantially as specified.

8. In a machine of the class described, a cam, a forming-pin connected with and reciprocated by said cam, a die sleeved on said pin
65 and adapted to move with relation thereto, a reciprocating plunger, a cam connected with said plunger to reciprocate the same, a reciprocating die connected with said plunger and having a limited movement with relation
70 thereto, and means for supporting said parts, substantially as specified.

9. In a machine of the class described, a forming-die in combination with a forming-pin, mechanism for reciprocating and turning
75 said forming-pin, means for operating said parts, and a support for the same, substantially as specified.

10. In a machine of the class described, a forming-die, in combination with a reciprocating forming-pin, cam mechanism connected with and adapted to reciprocate said pin,
80 cam mechanism connected with and adapted to turn said pin, means for operating said parts, and a support for the same, substantially as specified.

11. In a machine of the class described, a revolving cam, a rod connected therewith and reciprocated thereby, a second cam and a device engaging the same for turning said rod
90 simultaneously with its reciprocation in combination with means for operating said parts, and a support for the same, substantially as specified.

12. In a machine of the class described, a
95 reciprocating die, a reciprocating pin, a knife reciprocating with said pin and coacting in shearing relation with said die, means for operating said parts, and a support for the same, substantially as specified.

13. In a machine of the class described, a die, a plunger movable therethrough, a pin movable in said die, a second die sleeved on
100 said pin, a spring supporting said second die, a knife acting in shearing relation with said first die, means for operating said parts, and a support for the same, substantially as specified.

14. In a machine of the class described, a forming-die, a forming-pin adapted to enter
110 said die, and a cutter fixed in relation to said pin and adapted to act in shearing relation with said die, substantially as specified.

In testimony whereof I have hereunto set my hand, this 10th day of December, 1902, in
115 the presence of the subscribing witnesses.

ROBERT K. MARPLE.

Witnesses:

A. FLORENCE YERGER,
THOS. MARPLE.