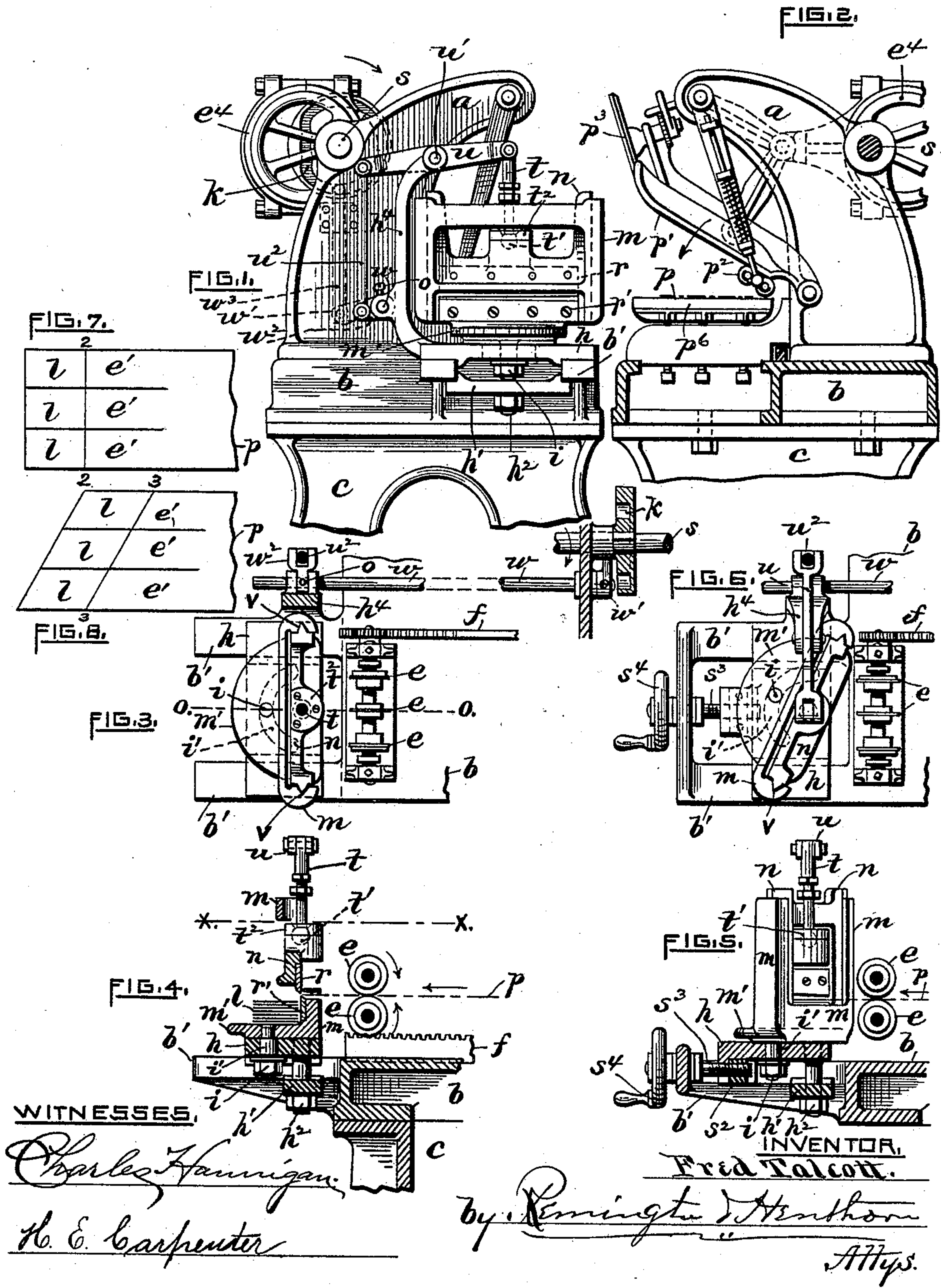


(No Model.)

F. TALCOTT.
KNIFE FOR SHEARING PAPER, &c.

No. 467,316.

Patented Jan. 19, 1892.



UNITED STATES PATENT OFFICE.

FRED TALCOTT, OF PROVIDENCE, RHODE ISLAND.

KNIFE FOR SHEARING PAPER, &c.

SPECIFICATION forming part of Letters Patent No. 467,316, dated January 19, 1892.

Application filed March 30, 1891. Serial No. 387,008. (No model.)

To all whom it may concern:

Be it known that I, FRED TALCOTT, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Mounting Knives for Shearing Paper, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to an improved manner of mounting and operating knives—such, for example, as are employed in cutting off pieces from the end of an intermittingly-fed web of paper.

The particular class of machines to which my improvement is especially adapted is printing-presses in which a web of paper is cut transversely into pieces to form labels, &c., simultaneously with the feeding and printing operations.

In the manufacture of labels from webs of paper it is occasionally necessary to cut them to a rhomboidal or diamond shape, although the usual form is square or rectangular. There are certain presses especially adapted to the production of labels, or "label-machines" as they are sometimes called. An example of a machine of this type is shown and described in United States Patent No. 262,556, granted to Thomas A. Briggs, assignor, August 15, 1882. In this machine the free end portion of the web of paper is, as fast as printed upon, intermittingly fed along between revolving shears or cutters, which act to simultaneously trim the two longitudinal edges of the web and at the same time cut it into two or more strips, the latter being immediately thereafter cut transversely into suitable lengths, as determined by the feeding device.

The object I have in view is to provide machines of the class above referred to with means whereby the cutting-off knives may be used not only to sever the paper at right angles to form square or rectangular-shaped labels, but the same knives may be also readily ad-

justed or set so as to simultaneously sever the strips of paper at any desired angle within the limits of adjustment, thereby forming diamond-shaped labels.

To that end my invention consists, essentially, in the combination, with a self feeding and printing machine, of two knives mounted and arranged to sever the web of paper at any desired angle to the line of feed.

It further consists in the novel manner of connecting the upper knife-carrying frame, thereby adapting it to be moved axially, independently of the mechanism employed for actuating the knife, all as will be more fully hereinafter set forth and claimed.

In the appended sheet of drawings, Figure 1 is a partial side view of a printing-machine embodying my improvements. Fig. 2 is a similar view, in partial section, as viewed from the opposite side, showing the construction and arrangement of the printing mechanism or press. Fig. 3 is a plan view, in partial horizontal section, showing the knife-carrying frames, &c., taken on line *xx* of Fig. 4. Fig. 4 is a vertical sectional view taken on line *o o* of Fig. 3. Fig. 5 is a similar sectional view taken through the lower knife-frame, showing a manner of adjusting the latter longitudinally of the machine and also showing the knives arranged at an angle to the plane of the paper. Fig. 6 is a plan view of the parts shown by Fig. 5. Fig. 7 shows a piece of the web of paper having the end cut off square, corresponding to the position of the cutting-off knives represented in Figs. 3 and 4; and Fig. 8 is a similar view of the paper, the end being cut at an angle. (See Figs. 5 and 6 for a corresponding position of the knives.)

In the drawings I have represented a portion of a label-machine, substantially as shown and described in the Briggs patent, No. 262,556, before referred to. The bed or base *b* of the machine is supported, say, by legs *c*. To the top of the bed is secured one or more heads or frames *a* of the printing-machine. A main shaft *s* passes transversely through the head *a*, on which is mounted an eccentric *e*, arranged to vibrate the chase-carrying bed *p'* to produce an impression upon the traveling web of paper *p*, resting upon the movable

bed p^6 , suitably operating ink-rollers p^2 first being passed over the face of the ink-distributing table p^3 .

To the rear end portion of the machine are arranged a pair of intermittingly-revolving cutter-carrying feed-rolls adapted to simultaneously trim the edges of the web of paper and divide it longitudinally into two or more strips e' , Figs. 7 and 8, the number of such strips corresponding to the series of cutters e employed. In dividing the web into three parts or strips e' four pairs of cutters are required, the outer ones being used as trimmers, the others at the same time slitting the web longitudinally. These combined feed-rolls and cutters are geared together to revolve in opposite directions, and may be actuated by a suitably-operated rack f , intergearing with the gear of the lower cutter-shaft.

The rear end of the machine is extended beyond the feeding and slitting device just referred to to form brackets b' , on which a plate or base h is mounted, the same being provided with a bolt h^2 and movable cross-tie h' for clamping the parts together in any desired position or relation to the feed-rolls. The holding-down bolt h^2 is secured centrally to the under side of the base m' of the normally-stationary cutter-carrying frame m and extends through the plate h . The latter is further provided with a curved slot i' , through which a pin or bolt i , secured to the said base m' , is passed and secured. From this it will be seen that upon loosening the nut of the bolt i the frame m may be swung around axially to any desired position, limited only by the length of the slotted arc i' .

The frame m is provided with a fixed or lower knife r' , extending transversely of the machine, the construction and arrangement of the knife being substantially as common. The two sides or ends of the frame contiguous to the ends of this knife are extended vertically and are grooved to form guides v , Figs. 1 and 3, into which the upper knife holder or frame n is fitted to reciprocate in a vertical direction. This upper knife r is adjustably secured to the lower portion of the holder by screws or in any other well-known manner. I prefer to set or adjust the two knives so as to produce a shearing effect, as common to knives of this class and as indicated in Fig. 1. The center portion of the holder n is enlarged and provided, say, with a removable cap t^2 . The adjacent faces of the parts just referred to are recessed to receive the ball-shaped end t' of the adjustable connection t , thereby forming a universal or ball-and-socket joint. I would state that I preferably place the axes of the said parts t and h^2 in line with each other, thereby forming a common center.

A manner of reciprocating the upper cutter is as follows: Contiguous to the printing-head a is secured upon the shaft s a suitable cam k , Figs. 1 and 3, arranged in revolving to reciprocate a rod or connection w^3 , jointed at its lower end to an arm or lever w' , secured

to the front end of a horizontal shaft w , mounted at the rear side of the machine. The shaft extends through ears formed on the back of an upright arm h^4 , secured to the base h , carrying the cutter-frames m and n . A shorter lever w^2 , located between said ears, is adjustably secured by a screw o to the shaft w . To the free end of the lever w^2 is jointed a vertical connection u^2 , the latter in turn being jointed to the rear end of a beam u , fulcrumed at u' to the upper portion of the upright h^4 , the opposite end of the beam being jointed to the connection t before described. From the foregoing it is evident that a revolution of the crank k causes the knife r to make a double reciprocation, as in shearing off or severing the paper lying between it and the stationary knife. Now in order to cut the web of paper p into pieces or labels, square or rectangular in shape—say as shown in Fig. 7—the set-screw o of the knife-operating arm w^2 is first loosened and the base-plate h (also loosened) next moved along nearer to or farther from the cutters e and press a , according to the predetermined length of labels to be produced, after which the screws h^2 and o are retightened, the knife-frames m and n then being at right angles to the shaft w or transversely of the paper, substantially as shown in Figs. 1, 3, and 4. At the same time the bolt i is made to firmly clasp the frame m to the base plate.

In Figs. 5 and 6 I have represented a screw and hand-wheel s^4 for more accurately effecting an adjustment of the base-plate h in a longitudinal direction, the same being in engagement with a nut s^2 , mounted in said plate, as clearly shown.

When the machine is in operation, the paper will be intermittingly fed ahead between the separated knives during each revolution of the main shaft a distance corresponding to the length of the label to be produced, the rolls and cutters e at the same time trimming the paper and dividing it into strips e' . As the forward movement of the paper ceases the upper knife r is quickly forced downwardly by means of the revolving cam k and the several connections, resulting in severing the paper transversely, as indicated by the line 2, Fig. 7.

Now assuming that it is desired to produce diamond-shaped labels, Fig. 8, and further assuming that the several adjustments before described are to remain substantially unchanged, the knives may be quickly swung around axially to the desired angle (see Figs. 5 and 6) by simply loosening the bolt i , the latter being subsequently retightened. Upon starting the machine the thus-adjusted knives then operate and cut the paper angularly (see line 3, Fig. 8) with the same facility and accuracy as in the former case, or in cutting square-shaped labels. It will be seen that the axes of the bolt h^2 and central connection t are substantially in line vertically. Therefore the beam u and its connections remain un-

changed and work equally well irrespective of the axial position or relation of the two knives thereto.

By means of my invention only one set of knives is required to cut the labels transversely, the angle of such cut being ninety degrees or less, as desired. Moreover, the corresponding angular adjustment may be made quickly and accurately.

It is obvious that, without departing from the spirit of my invention, I may employ the device in machines unprovided with printing mechanism—that is to say, my improvement can be used to transversely sever unprinted webs of paper or other flexible material intermittently fed to the knives.

I claim as my invention—

1. In a self-feeding and printing machine employing a web of paper and having cutters for first simultaneously trimming and slitting the web longitudinally, the combination therewith of intermittently-operating cutting or shearing knives mounted in frames susceptible of axial adjustment, whereby said knives and frames may be set so as to sever the paper at right angles and also at any other desired angle transversely to the plane of the traveling paper, substantially as hereinbefore described.

2. In a machine for intermittently feeding and transversely cutting a roll of paper, an adjustably-mounted centrally-pivoted head portion carrying the lower knife, an upper knife mounted in a frame arranged to reciprocate in said head, and an intermittently-operating lever or connection jointed to the center of the upper knife-frame, constructed and arranged whereby said knife frames or holders may be adjusted at any desired angle, substantially as described, and for the purpose set forth.

3. In a machine for intermittently feeding and cutting rolls or webs of paper, an adjustably-secured and centrally-pivoted head *m*, provided with the lower knife *r'* and vertical guides, a frame *n*, fitted to reciprocate in said guides, carrying the upper knife, and an in-

termittently-operating lever or connection jointed centrally to the frame *n* and in line with the center or pivot of the head *m*, the knife holders or frames being adapted and arranged to be swung on said pivots to any desired angle, thereby adapting the knives to cut the paper transversely at a corresponding angle, substantially as described.

4. In a machine for intermittently feeding and cutting webs of paper, the combination of an adjustably-secured lower frame pivoted at its center, a cutter secured thereto, an upper frame or holder mounted to move vertically in said lower frame, a cutter secured to the holder, a connection jointed centrally to the holder, and means for reciprocating the latter up and down, substantially as hereinbefore described, and for the purpose set forth.

5. The combination of a lower knife-carrying frame pivotally mounted and secured in any desired axial position, an upper knife-carrying frame, and an operating connection jointed to and arranged to reciprocate said upper knife-frame, the axes of the lower frame-pivot and the said connection being substantially in line with each other.

6. In a printing-machine employing a web or roll of paper, the combination, with intermittently-operating feeding and printing mechanisms and rotary shears or cutters for trimming and slitting the paper longitudinally, of a pivotally-mounted adjustable lower frame or holder carrying a knife, an upper frame or holder carrying a knife guided by and adapted to move vertically in said lower frame, and an intermittently-operating lever or connection jointed to the upper holder, the vertical axes of the connection and the lower frame-pivot being in line with each other, for the purpose hereinbefore set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRED TALCOTT.

Witnesses:

CHARLES HANNIGAN,
GEO. H. REMINGTON.