(No Model.) 2 Sheets—Sheet 1.

L. GOUMAND.

MACHINE FOR AFFIXING ELASTIC TO BOXES.

No. 490,386. Patented Jan. 24, 1893.

FIG. 1.

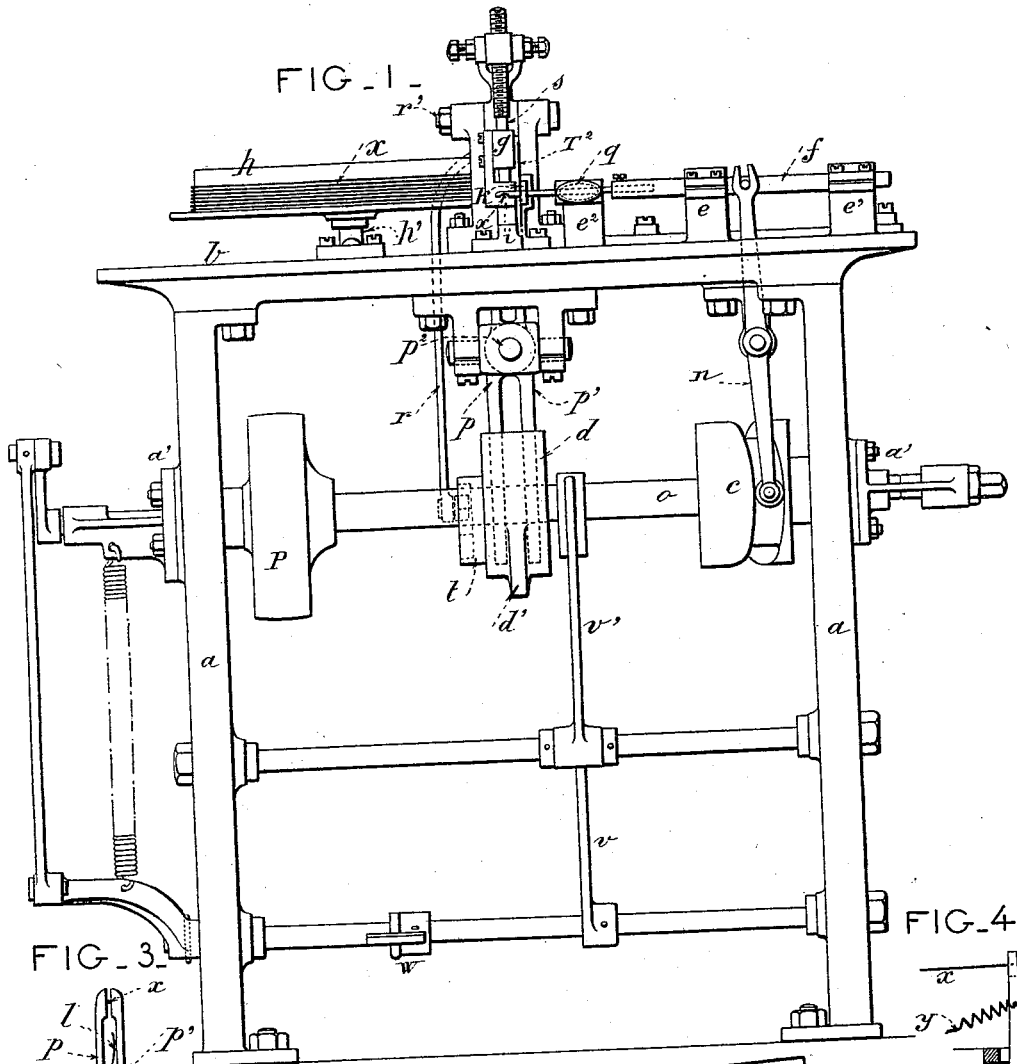


FIG. 3.

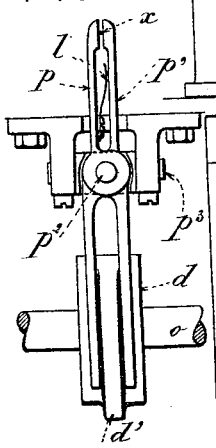


FIG. 4.

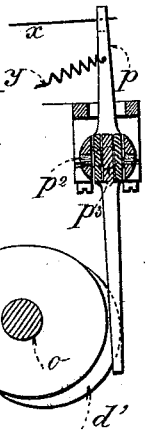
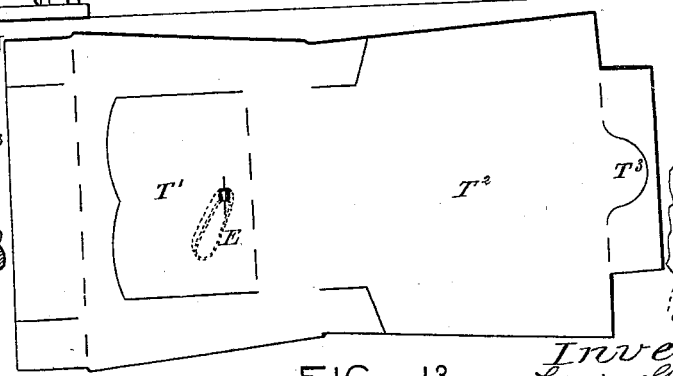


FIG. 13.



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By Richardson & Co
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(No Model.) 2 Sheets—Sheet 2.

L. GOUMAND.

MACHINE FOR AFFIXING ELASTIC TO BOXES.

No. 490,386. Patented Jan. 24, 1893.

FIG. 2.

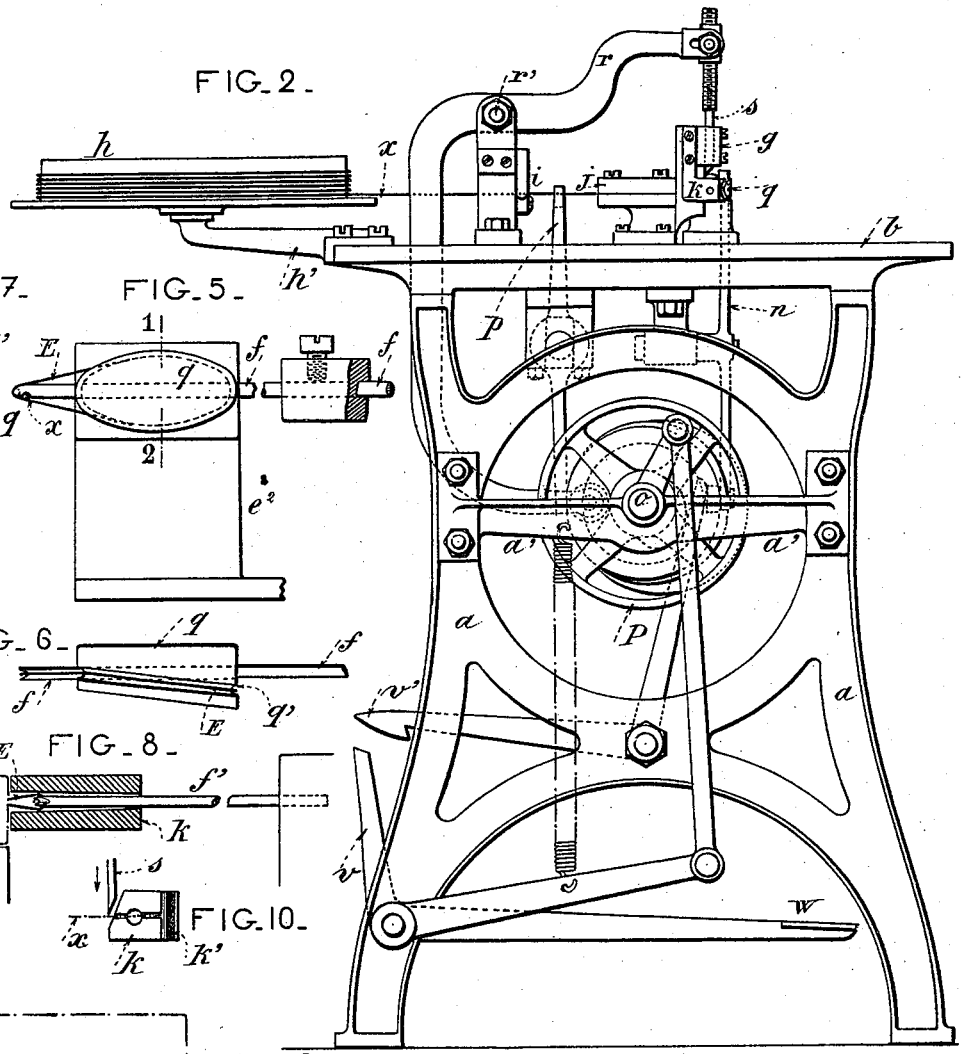


FIG. 7.

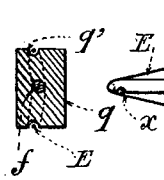


FIG. 5.

FIG. 6.

FIG. 8.

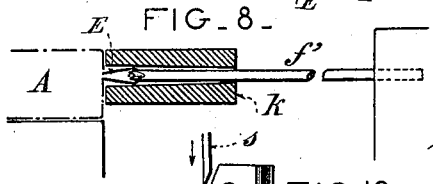


FIG. 10.

FIG. 9.

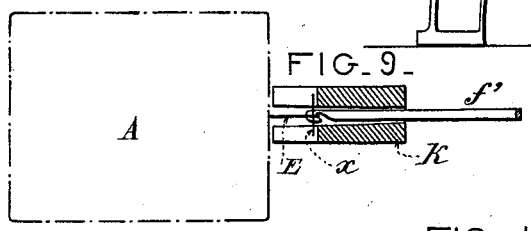


FIG. 11.

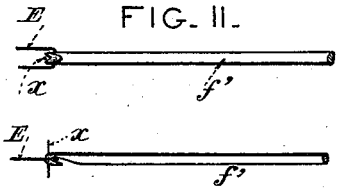
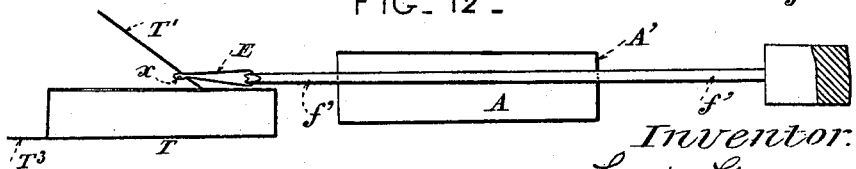


FIG. 12.



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his Attorneys

UNITED STATES PATENT OFFICE.

LOUIS GOUMAND, OF BUENOS AYRES, ARGENTINE REPUBLIC.

MACHINE FOR AFFIXING ELASTIC TO BOXES.

SPECIFICATION forming part of Letters Patent No. 490,386, dated January 24, 1893.

Application filed October 17, 1890. Serial No. 368,462. (No model.) Patented in France January 10, 1887, No. 180,795; in Germany February 12, 1887, No. 40,409; in Spain May 25, 1887, No. 7,807; in Italy July 8, 1887, No. 327; in Belgium July 9, 1887, No. 78,146, and in England February 1, 1889, No. 1,777.

To all whom it may concern:

Be it known that I, LOUIS GOUMAND, a citizen of France, residing at Buenos Ayres, Argentine Republic, have invented certain new and useful Improvements in Machines for Affixing the Elastic on Match and other Boxes, (which has been patented in France January 10, 1887, No. 180,795; in Germany February 12, 1887, No. 40,409; in Spain May 25, 1887, No. 7,807; in Italy July 8, 1887, No. 327; in Belgium July 9, 1887, No. 78,146, and in England February 1, 1889, No. 1,777;) and I declare the following to be a full, clear, and exact description of the same.

The new machine which I describe hereinafter and set forth in the accompanying drawings, has for its particular object affixing the elastic of match-boxes, called drawer-boxes. It can however affix the elastics of any other style of match-box, mercery-box, &c., and it will suffice to adapt its action and combination of elements to the desired result.

Figure 1 is a front view of the machine in elevation, showing the affixing of the elastic to the cut card-board, the elastic being intended to close the drawer. Fig. 2 is the corresponding end view. Figs. 3 and 4 represent in front elevation and cross section the arrangement of pinchers conducting the metallic wire. Figs. 5 and 6 are details, showing on a large scale the work of the needle at the moment it takes hold of the elastic before crossing the card-board. Fig. 7 is a transverse section taken on the line 1—2 of Fig. 5. Figs. 8, 9, 11 and 12 are details of the system applied to the affixing of the elastic of the drawer T to the bottom of its case or box A. Fig. 13 shows a card cut out to form the drawer after it has been provided with the elastic E.

The match-boxes in question, perfected by the operation of my apparatus,—or any other kind of box, are composed of two parts, the one T (Fig. 12) which holds the matches, and the other A, which incloses the first, forming the case for it. The part or drawer T is closed by a lid T′ under the control of an elastic E attached from the other end to the bottom A′ of the case. It is this elastic which automatically effects the opening of the lid T′ when the drawer of the case is pulled out by drawing out the small drawer T^3 and the closing of the box, that is to say the entrance of the drawer into the case A is effected, as soon as the hand leaves the small drawer or as soon as it pushes the said drawer slightly in order to bring about the closing of the lid raised and supported on the edge of the case. I moreover add that the drawer is completed by means of a sheet of card-board T^2 Fig. 13, cut in any size and shape desirable, then manufactured by hand and preferably by the aid of my machines for manufacturing match-boxes. Before submitting this sheet of card-board to the operation of the said machines, it is best to affix the elastic E, the free end of which is fastened finally to the bottom of the case, but after the completion of the drawer and its case. These are the two operations which I effect by means of the new machine,— the essential aim of the present application for a patent,—and which are clearly set forth in Figs. 1 to 7.

The frame is made up of iron legs *a a* suitably connected by cross bars, and a table *b* resting on these legs. These are fitted up with the bearings *a′ a′* of the motor shaft *o*, which carries the driving pulley P and the other two motive cams *c* and *d*.

On the table are fixed the guides *e e′* of the needle *f* and the supports *g* of the knife; also the support *h* on which is placed the coil of metallic wire required to attach the elastic. This wire *x* which passes into a guide *i* is drawn into a recess *j* conducting it to the guide piece *k* which the needle traverses with the elastic. Between the guides *i* and *j*, the metallic thread is taken hold of by the feeding pincher whose jaws *p p′* normally held apart by means of the spring *l* are closed by a rib *d′*, which enters at a desired moment between the two branches *p p′* (Figs. 3 and 4). This pincher has a pivot p^2 movable on an axis p^3 in such a manner that it acquires by the influence of the eccentric *d′* and the swinging spring *y* Fig. 4 a movement of oscil-

lation backward and forward to produce the feeding forward of the wire, and reversely forward and backward after it is opened to return and take hold of the wire afresh, and so on continuously. The needle *f* is controlled in its alternating, rectilinear and intermittent movements by the cam *c* which is connected with it by means of the oscillating lever *n*. The guide e^2 of the needle presents an elliptical boss *q* having a groove *q'*, the obliquity of which is determined, in order that the ring of india-rubber E, intended to form the elastic, may lie right across the eye of the guide through which the needle *f* slides (Figs. 5, 6 and 7). The needle *f* is forked at the end so that it may take hold of the ring of india-rubber with ease and draw it with it and consequently stretch it on the boss *q* taken as a point of anchorage. The end of the needle *f* is deeply notched underneath for the passage of the metallic wire between the needle and the elastic E. This metallic wire conducted by the pincher, when the needle and its elastic have passed through the card-board T^2 which should form the drawer, is divided into sections by the descent of the knife *s*. This knife is screwed into a socket supported by a lever *r* pivoting in *r'*, whose lower arm, provided with a roller, is in contact with the curved surface of a cam *t*. The card-board T^2, cut to a suitable shape and size (Fig. 13) is placed by hand against the piece *k*, the elastic is stretched in the groove *q'* of the boss *q*, and the needle *f* occupies a position far at the back. The movement of the shaft *o* is transformed by the cam *c* into a rectilinear movement for the needle *f*, which seizes the elastic E, stretches it, and compels it to pass through the card-board along with it (Fig. 1). Simultaneously the pinchers *p p'* close to catch hold of the metallic wire *x*, causing it to advance between the needle and the stretched india-rubber until it abuts against a spring *k'* (Fig. 10). This reciprocating movement is also effected by the cam *d* and its rib *d'*, which cause this movement of the pinchers. The cam *t* then acts on the lever *r* of the knife *s* compelling the latter to descend and cut the metallic wire. The cut portion of this wire returns with the elastic upon the retreat of the needle, but resting across the hole pierced in the card-board. It fastens the elastic to this card-board, which is then taken from the machine. The wire is fastened by a wafer which imprisons the elastic band. The needle having thus returned to its starting place, I put a new card in and the same successive operations are effected.

The cards provided with their elastic as herein described are completed by drawers (Fig. 12). The elastic E remains lying loose outside. To affix it to the bottom A' of the box A (Fig. 12) I substitute for the needle *f*, the needle *f'* (Figs. 8, 9, 11 and 12) of greater length and which can be moved farther in a rectilinear direction by a cam *c* grooved for the purpose. The box A is then placed on a support in front of the piece *k*. The needle passes through the back A' and outside the box to catch the elastic E. This needle retreats drawing into the box the drawer T which closes by this movement. It repasses through the back A' and at this moment the metallic wire *x* rests on the back A' and is cut to the proper length by the knife *s*. The needle returns toward the box which it pushes slightly, and as its end is split it attaches the wire to the back and prevents it from falling when the elastic is detached from the hook of the needle. In these two distinct operations, it is well to stop the machine for a certain time after each, so as to have the working portions always in the same position, and in this regard I reserve to myself all rights to use all equivalent arrangements which produce similar results.

Figs. 1 and 2 show a coupling produced by each turn of the levers *v v'*. The machinery is set in motion by a pressure exerted on the pedal *w*.

What I claim is:

1. A machine for affixing the elastic on match and other boxes consisting of a frame having a driving shaft, a wire reel mounted on the frame, a wire feeding device consisting of oscillatory pinchers also mounted on said frame and adapted to grasp said wire, a wire cutting device consisting of an adjustable reciprocating knife vertically mounted in a guide and an apertured wire-guide fixed below said knife and adapted to co-operate therewith, an elastic carrying boss in line with said guide having a longitudinal aperture and a circumferential groove intersecting one extremity of the aperture, a reciprocating needle working in said boss and the wire-guide and having a hooked end adapted to engage the cut wire and the elastic and attach the same to a card-board box, and power connections from the main shaft to said operating parts, substantially as set forth.

2. In a machine for affixing elastic on match and other boxes, the combination with the main driving shaft, of a wheel mounted thereon having a circumferential cam groove, a lever one end of which works in said groove, and an elastic-inserting needle adapted to be reciprocated by the other end of said lever and a holder for the elastic in line with the needle, substantially as set forth.

3. In a machine for affixing elastic on match and other boxes, a wire supplying device, consisting of a reel carrying the wire, oscillatory pinchers mounted on the frame of the machine and having spring-distended jaws, and a cam mounted on the driving shaft and adapted to oscillate said pinchers, and distend the handles thereof, whereby the closure of the jaws of the pinchers and the feeding of the wire is effected, combined with a holder

for the elastic and an inserting needle substantially as set forth.

4. In a machine for affixing the elastic on match and other boxes, the boss q having the needle aperture and the groove q' for the elastic, substantially as set forth.

5. In a machine for affixing the elastic on match and other boxes, the guide k, combined with the elastic inserting needle substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

LOUIS GOUMAND.

Witnesses:
R. J. PRESTON,
ALPHONSE BLÉTRY.