(No Model.) 2 Sheets—Sheet 1.

J. S. DRONSFIELD.

FILLET CARD MOUNTING MACHINE.

No. 492,716. Patented Feb. 28, 1893.

FIG. 2.

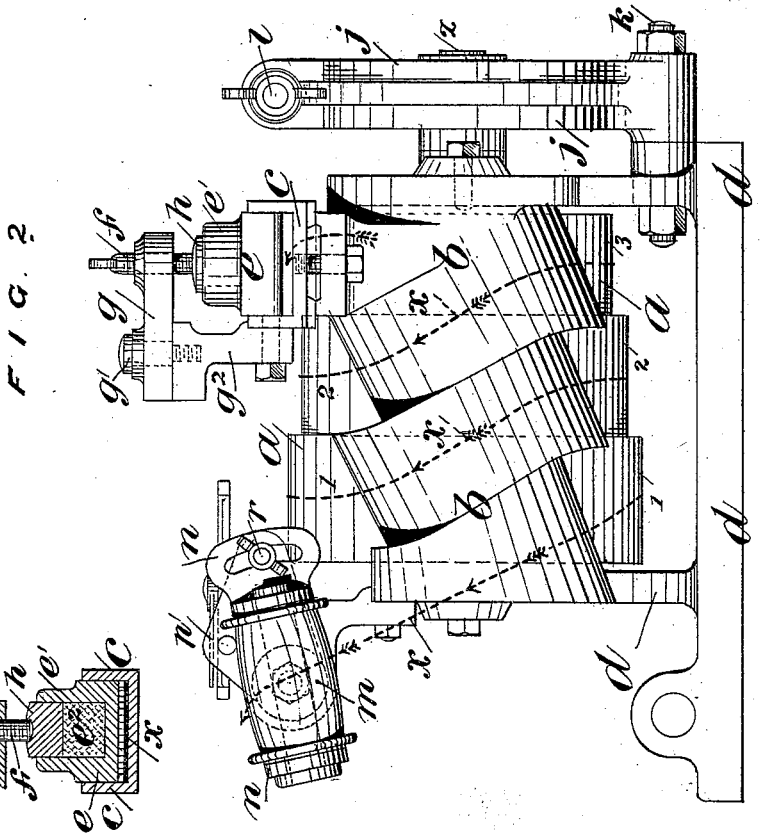


FIG. 3.

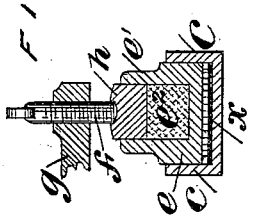
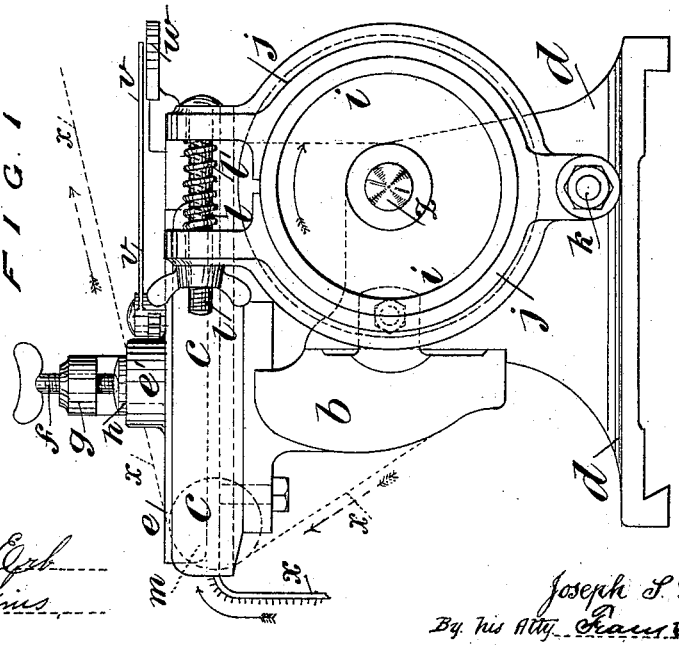


FIG. 1.



Witnesses.
Arthur Ste. Cyr
Paul F. Perkins

INVENTOR.
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By his Atty. Frank E. L. Dyer

(No Model.) 2 Sheets—Sheet 2.

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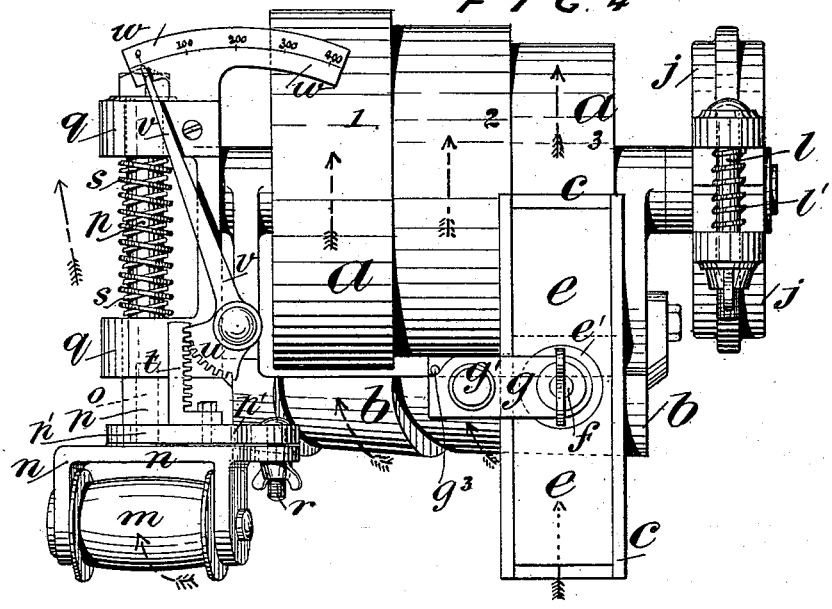
FIG. 4



Witnesses.
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INVENTOR.
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By his Atty. Francis L. Dyer

UNITED STATES PATENT OFFICE.

JOSEPH STANDRING DRONSFIELD, OF OLDHAM, ENGLAND.

FILLET-CARD MOUNTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 492,716, dated February 28, 1893.

Application filed December 10, 1891. Serial No. 414,615. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH STANDRING DRONSFIELD, a subject of the Queen of Great Britain and Ireland, residing at the Atlas Works, Oldham, in the county of Lancaster, England, have invented certain new and useful Improvements in Fillet-Card Mounting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements upon a previous invention for which I at present hold a patent in the United States of America, No. 244,568, dated July 19, 1881. The specification and drawings of the said prior patent clearly show the general arrangement and method of mounting and actuating my fillet card mounting machine, and as machines of this type are now largely used and well known in the United States, I do not in the present specification consider it nesessary to show more than those parts to which my improvements directly refer.

The nature of these improvements will be fully understood from a description of the annexed two sheets of drawings.

On Sheet 1:—Figure 1 is an end view of a fillet card mounting head. Fig. 2 is a front elevation of the same. Fig. 3 is a sectional detail view of part of the presser through which the fillet passes to the tension cone. On Sheet 2:—Fig. 4 is a plan of the fillet card mounting head.

In the improved head as herein described and illustrated, there are certain parts which have been already described and illustrated in my said former specification, and certain parts which are new and form *inter alia* the subject matter of my present application. For example the revolving cone *a* the shunting plate *b* and the presser trough *c* are all set forth in my former specification. With this proviso I will now describe the apparatus.

The revolving cone *a* is supported in bearings in the sides of the head *d* so as to revolve loosely therein. The step 1 of the largest diameter is covered with leather so that there shall be non-slipping contact with the card fillet as it passes around with the said step. The other two steps 2 and 3 are turned and smoothed so that the fillet may slip as it is taken around by the cone. The object of this will be explained hereinafter. To the sides of the head and extending across in front of the cone *a* I bolt the shunting plate *b* the function of which is to divert the fillet from one step of the cone to the other as is well understood. The shunting plate is formed at the end which is nearest to the step 3 with a sole to support the guide trough *c* through which the fillet passes to the cone. Under my former patent I put pressure upon the cover *e* of the trough by a weighted lever, but under my present improvements I use an adjusting screw *f* which passes through an arm *g* pivoted at *g'* to a bracket g^2 which is secured to the side of the trough. As seen by the plan view Fig. 4 a stop g^3 limits the movement of the arm *g*. The foot of the screw *f* presses upon a plug *h* which occupies a hollow boss *e'* or the back of the cover. A buffer e^2 of vulcanized rubber is put beneath the plug *h* and thus makes the pressure upon the fillet of an elastic nature. The cover can easily be removed by retracting the screw *f* and then swinging the arm to one side. The shaft *z* carrying the cone *a* projects through one of the bearings and carries a brake pulley *i* which is embraced by a split brake strap *j* which is connected by the stud *k* to the side of the head. An adjusting bolt *l* passes through the lugs of the split brake strap *j* for adjusting the strap to any required frictional drag. A coiled spring *l'* between the lugs keeps the split strap apart against the pinch of the bolt *l*. Thus I can effect any required resistance to the rotation of the cone *a*.

I now come to the tension indicating part of the apparatus. This is mounted at the letting off end of the head and consists of a pulley *m* having a curved periphery as shown so as to equalize the strain over the breadth of the fillet. The pulley *m* is mounted in a jaw bracket *n* which is pivoted by a stump *o* to a carrier *p* which slides to and fro in bearings *q q* in a bracket supported from the side of the head as clearly shown in Fig. 4. The front of the carrier *p* constitutes a face plate *p'* against which the jaw *n* is pivoted and held by the bolt *r* which projects from the

plate p' and enters a radial slot in the tail of jaw n thereby permitting the jaw with its pulley m to be adjusted to any required angle so as to lead off the fillet properly. The tail of the carrier p is surrounded between the bearings q q by double coiled springs s s or it might be by a single coiled spring. To the face plate p' of the carrier I attach a rack t which meshes with a sector u which is formed at the butt end of a pivoted index finger v which plays over an index w, supported from the carrier bracket. The face of the index w is marked with figures representing degrees of tension from zero up to the highest tension required. In Fig. 4 the finger is shown at zero. The springs s s tend always to press out the pulley m to the position shown at Fig. 4 and these springs are so made and adjusted as to offer graduated resistance to the pushing inward of the pulley m and carrier. This resistance represents certain degrees of tension upon the fillet passing over the pulley m and this tension is indicated on the index by the finger v since the pushing in of the pulley m and carrier correspondingly moves the rack t which turns the quadrant and index finger. By adjusting the pressure on the cover of the trough or of the friction strap and pulley or of both I can adjust the tension on the card fillet to any required degree. The progress of the card fillet through the apparatus is clearly indicated by the arrows in and the skewed dotted lines in Figs. 1, 2 and 4. The fillet passes, dents upward, into the trough c and beneath the presser cover e. On leaving the back end of the trough the fillet passes partly around the step 3 of the cone a. At the front of the cone it leaves the step 3 and passes to the first shunting surface of the shunting plate b by which it is diverted to the next step 2 of the cone. The succeeding shunting surface transfers it to the last step 1 of the cone a which as has been said is covered with leather. From this last step the fillet is diverted by the last shunting surface to the pulley m over which it passes to be coiled upon the cylinder being clothed.

In Fig. 1 the fillet x is seen entering the trough the dotted line x showing its final exit to the cylinder. In Fig. 2 the strongly marked skewed dotted lines x mark the progress of the fillet through the apparatus. As it passes around the back part of the cone a the cone revolves with it. Steps 2 and 3 of the cone being smooth there is less frictional grip between the fillet and these steps than is the case with step 1 which being covered with leather has a greater frictional grip upon the fillet. The surface speed of step 1 being greater than the surface speeds of steps 2 and 3 the consequence is that the fillet is drawn round and over the steps 2 and 3 at a speed slightly greater than their surface speeds so that the fillet keeps slipping round faster than the steps 2 and 3 rotate. The result is that the cone becomes a stretching or extending agent progressive in its action upon the fillet from the least step 1 to the greatest step 3. On leaving the step 1 of the cone a the fillet is diverted by the last shunting surface of the shunting plate b to the pulley m from whence it passes to be coiled upon the cylinder being clothed. As the fillet passes over the pulley m it is subjected to tension by the united influences of the trough c, brake pulley and strap i j, pulley a and shunt plate b. Such tension acting as a resisting force to the coiling on pull of the cylinder being clothed, causes the carrier of the pulley m to yield inward against the resistance of the graduated springs s s and thereby moves the index finger v so as to indicate the degree of tension on the index w. To attain any required degree of tension it is only necessary to regulate the pressure of the cover in the trough c upon the fillet or the braking effect of the pulley and split strap i j by means of the respective screws.

A noticeable feature of my apparatus is that I obtain the requisite tension upon the fillet gradually throughout the length of the portion in the apparatus by the united effects of the trough, the brake strap the shunting plate and the stepped cone. The curved periphery of the roller m puts the greatest strain upon that part of the fillet most capable of resisting it, viz the center, and a lesser strain upon the edges which are not so strong.

The doffer or carding cylinder upon which the fillet is guided and wound by the mounting machine just described does not appear in the drawings as I do not consider it requisite to show it. Its position relatively to the mounting head is moreover shown clearly in the drawings attached to the specification of my aforesaid prior United States Patent.

What I claim is—

1. In a fillet-card mounting machine, the combination of the cone a, composed of surfaces of varying diameters, the shunting plate b, arranged at one side of said cone; the pressure trough c, above the smallest portion of said cone; and the adjustable pulley adjacent to the largest portion of said cone, substantially as described.

2. In a fillet-card mounting machine, the combination of the cone a, composed of two or more surfaces of varying diameters; a shunting plate b, at one side of said cone a; a pressure trough c, adjacent to the smallest section of said cone; the adjustable pulley m, adjacent to the largest section of said cone, and means in connection with said pulley for indicating the amount of pressure thereon.

3. In a fillet-card mounting machine, the combination of the cone a, composed of surfaces of varying diameters; the shunting plate b, at one side thereof; the pressure trough c, adjacent to the smallest section of said cone; the pulley m, adjacent to the largest section of said cone, and adjustably mounted on a plate p'; the stock p, of said plate p', mounted

in bearings q, q; a spiral spring s, surrounding said stock between said bearings q, q; a rack t, secured to said plate p', and engaging with a sector u, mounted on the main frame of the machine, and carrying an indicating arm g, moving over an index w, substantially as set forth.

This specification signed and witnessed the 27th day of October, 1991.

JOSEPH STANDRING DRONSFIELD.

Witnesses:
J. ENTWISLE,
R. W. IBBERSON.