

No. 628,098.

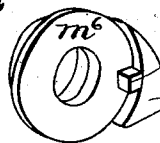
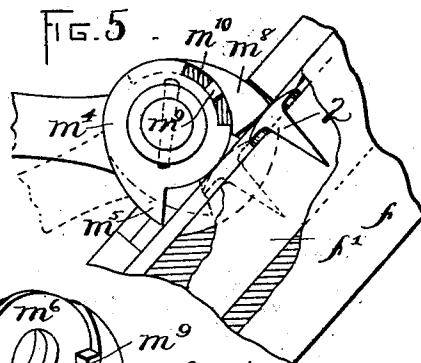
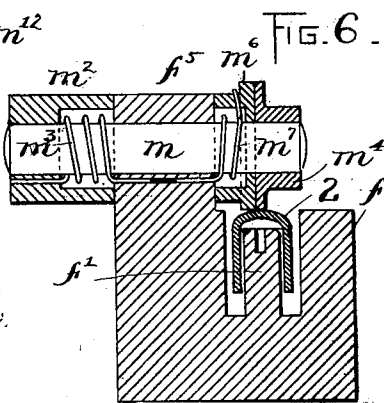
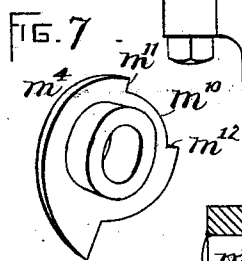
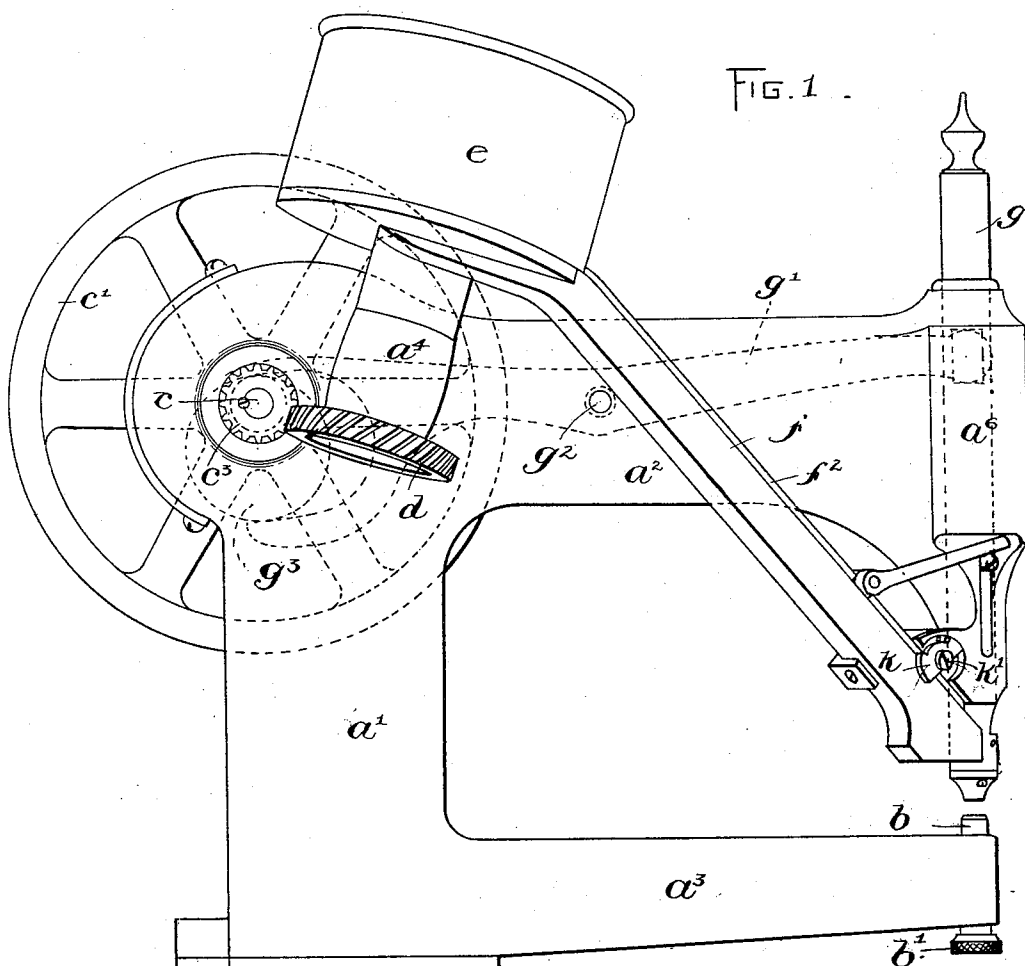
Patented July 4, 1899.

**E. KEMPSHALL.
RIVETING MACHINE.**

(Application filed June 18, 1897.)

(No Model.)

3 Sheets—Sheet 1.



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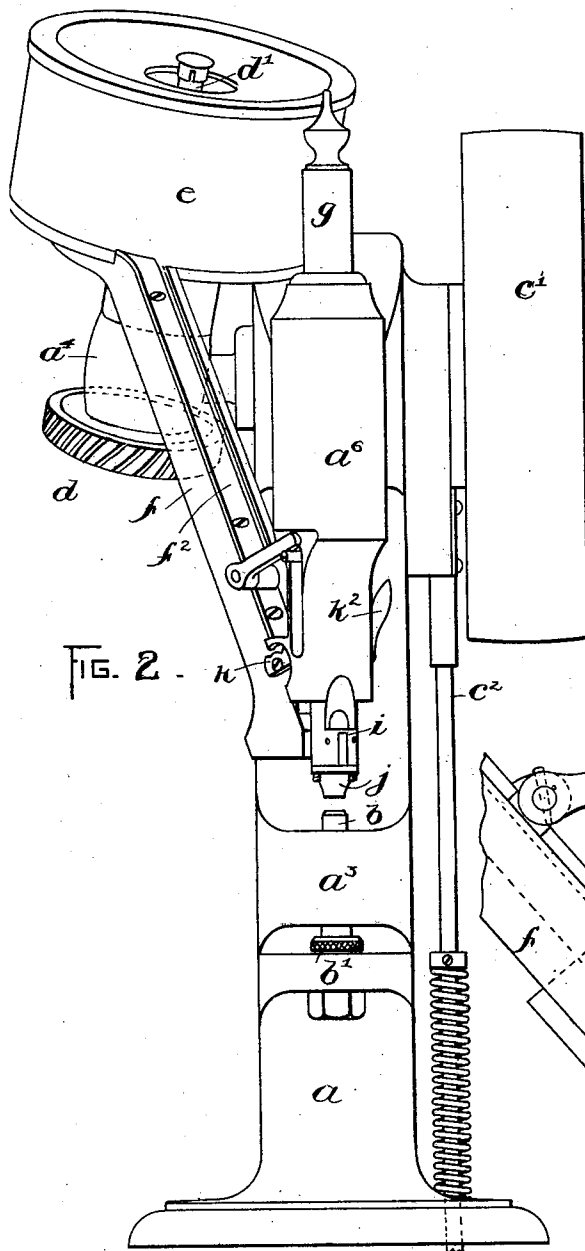


FIG. 4.

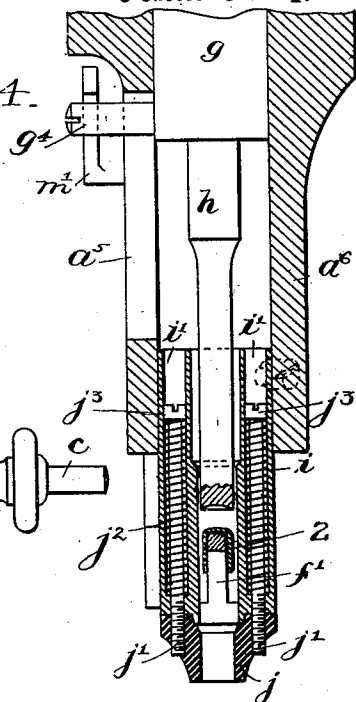
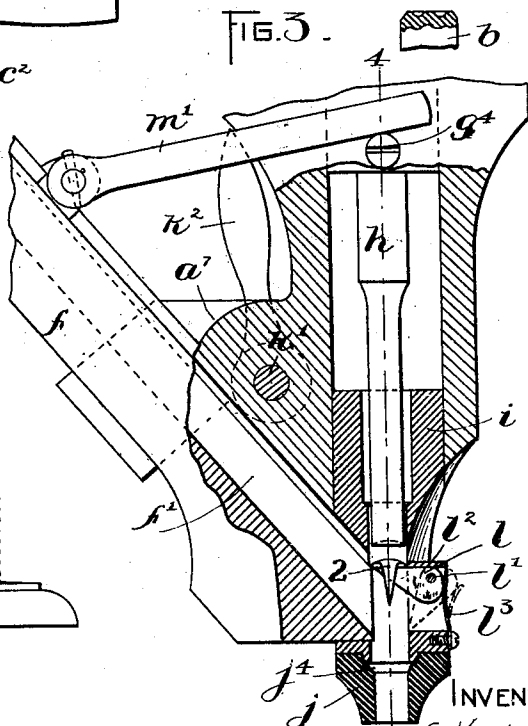


FIG. 3.



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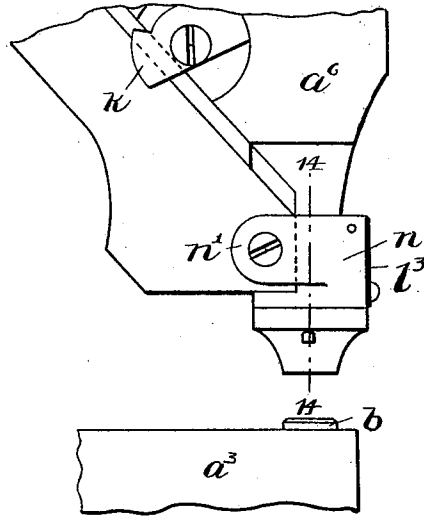


FIG. 9.

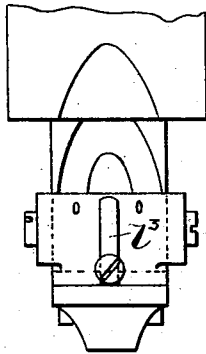


FIG. 11.

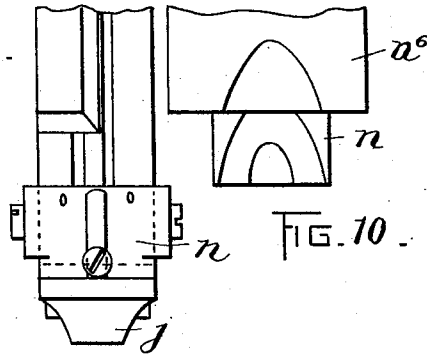


FIG. 10.

FIG. 12.

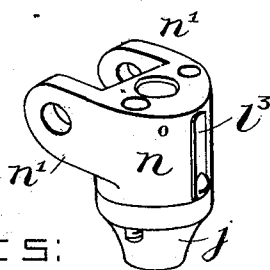
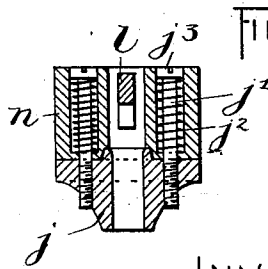


FIG. 13.



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UNITED STATES PATENT OFFICE.

ELEAZER KEMPSHALL, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO
THEOPHILUS KING, TRUSTEE, OF BOSTON, MASSACHUSETTS.

RIVETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 628,098, dated July 4, 1899.

Application filed June 18, 1897. Serial No. 641,256. (No model.)

To all whom it may concern:

Be it known that I, ELEAZER KEMPSHALL, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Riveting-Machines, of which the following is a specification.

Of the drawings, Figure 1 shows in side elevation a riveting-machine embodying my invention. Fig. 2 represents a front elevation of the same. Fig. 3 represents in vertical longitudinal section the lower end of the raceway, the movable set, and the movable detent which receives the rivet and holds it in position for the said set or driver. Fig. 4 represents a vertical cross-section taken on the line 4 4 of Fig. 3. Figs. 5, 6, 7, and 8 show in detail the automatically-operating separator for the rivets. Figs. 9 to 13, inclusive, illustrate a form of the invention in which the yielding thimble and the yielding detent are supported by the raceway.

Referring to the drawings, upon which I have shown one form of machine embodying my invention, but to which it will be understood my invention is not limited, *a* represents a standard having placed thereon the head, consisting of an upright *a'*, an overhanging arm *a²*, and an outwardly-projecting arm *a³*, the latter being equipped at its outer end with a stationary set *b*, capable of vertical adjustment by means of a screw *b'*.

Mounted in bearings in the upright *a'* is a driving-shaft *c*, provided with a belt or band wheel *c'*, arranged loosely with respect thereto and adapted to be clutched to it by any desirable clutch mechanism operated through the medium of the spring-held rod *c²*. On its other projecting end the shaft is provided with an angle-pinion *c³*, intermeshing with an angle-gear *d*, supported on the end of an inclined shaft *d'*, mounted in a bracket *a⁴*, projecting outward from an upright *a'*. A hopper *e* is mounted loosely on the said shaft *d'* and is supported by the bracket *a⁴*, there being suitable brushes in said hopper, operated by the shaft *d'*, for forcing the rivets into the raceway *f*, which projects downwardly from the said hopper and communicates therewith.

The raceway *f* is formed with a central longitudinal rib *f'*, as shown in Figs. 3 and 4,

which extends from the aperture leading from the hopper to the raceway, to the lower end of the latter, and which is of proper width to receive the rivets 2, straddled thereon. A guard or strip *f²* partially covers the raceway, so as to hold the rivets on the rib *f'* and at the same time to permit the operator to see the line of rivets.

In a guide *a⁶* in the end of the overhanging arm *a²* is placed the bar *g*, carrying the set or driver *h*, as shown in Figs. 3 and 4. It is operated through the medium of a lever *g'*, pivoted at *g²* in the overhanging arm and having its forked end embracing a cam *g³*, mounted upon a driving-shaft *c*. There is a slot *a⁵* in the guide *a⁶*, through which a pin *g⁴*, secured to the driver-bar *g*, extends for a purpose to be described. Rigidly secured in the lower end of the said guide *a⁶* (see Figs. 1 to 8, inclusive) is a cylindrical guide *i*, through which the set or driver bar *h* is adapted to reciprocate, and arranged below this guide is a spring-held thimble *j*. This thimble is supported by two screws *j'²*, lying in apertures *i'²* in the cylindrical guide *i*, with springs *j³* interposed between the heads *j³* of the screws and the end walls of the sockets, whereby it is held yieldingly in place. The aperture through the thimble is slightly less in diameter than the cross diameter of the head of the rivet, though adequate to receive the lower end of the set or driver bar *h*.

By reason of the hopper *e* and the raceway *f* being loosely pivoted upon the shaft *d'* the lower end of the raceway may be swung toward and from the guide *a⁶*, though it is normally held in position by a suitable cam-catch *k*, secured upon the end of a pin *k'*, which may be rotated by a handle *k²*, secured to the other end thereof, said pin being journaled in a triangular projection *a⁷*, extending outward from the lower end of the said guide *a⁶*.

A movable triangular detent *l* is pivoted in the guide *i* by means of a pin *l'* and normally projects across the path of the set or driver *h* and forms a continuation of the rib *f'* of the raceway *f*. Its upper edge is held normally against the flat surface of a stop *l²* by means of a spring *l³*, as clearly shown in Fig. 3. When a rivet is allowed to slide down the rib *f'*, it passes by force of gravity onto the

detent l , and is thereby held in the path of the movable set or driver h , as portrayed in the last-mentioned figure.

The set or driver in descending engages the rivet and forces it downward, the detent yielding to permit this, until the head of the rivet engages the bevel j^4 of the thimble j . The continued movement of the driver or set h carries the rivet and the thimble downward until the thimble engages the work which is placed upon the stationary set b , whereupon the driver or movable set continues to descend and forces the rivet through the reduced aperture in the thimble and into the work.

The opposing faces of the movable set and the stationary set may be shaped as desired to accomplish the bending of the tines or prongs of the rivet against the under face of the work, this being a matter of mere mechanical detail.

It is not necessary that the depressible thimble and the yielding detent should be mounted on the overhanging arm, as they may as well be mounted on the end of the raceway, if desired, as illustrated in Figs. 9 to 13, inclusive. In these last-mentioned figures the lower half n of the cylindrical guide is formed with ears or lugs n' , through which screws are passed to attach it to the end of the raceway, the upper half being attached to the guide a^5 , as before described. The thimble j is in all respects similar to that shown in Figs. 3 and 4 and is supported by the cylindrical guide in the same way, and the yielding detent l is pivoted in the lower half of the cylindrical guide and is held in its operative position by the spring l^3 .

When the raceway is swung on its pivot, it carries with it the parts just described, the movable set being raised far enough to permit this.

In both constructions the upper half of the cylindrical guide is cut away, so as to expose the lower end of the raceway and the rivets thereon to view and to permit the operator to remove or reject a defective or badly-formed rivet.

Interposed between the lower end of the raceway and the hopper is a separator which automatically operates to allow the rivets to descend one by one to the detent l .

A shaft m is mounted in a lug f^3 , projecting upward from the raceway f and is secured to the outer end of a lever m' , whose hub m^2 is socketed to receive a coiled spring m^3 , having one end secured to the said lever m' and the other end secured to the raceway, whereby it exerts a pressure to hold the lever m downward. The outer end of the said lever m' rests against the pin g^4 , which projects outwardly from the movable driver-bar g , so that the lever is normally held raised, but is depressed by the spring when the movable set is lowered.

Rigidly secured upon the end of the shaft m is a disk m^4 , having a projecting finger m^5 , extending normally into the raceway into the

path of the rivets on the rib f' , and arranged between this disk m^4 and the lug f^5 is another disk m^6 , having its hub recessed to receive a coiled spring m^7 , with one end secured to said disk and the other end secured to the raceway. The disk m^6 has a projection or finger m^8 , which is adapted to engage a rivet on the rib f' . The disk m^4 is cut away at m^{10} to form two stops m^{11} and m^{12} , with which a lug m^9 on the disk m^6 is adapted to engage. Thus while the two disks m^4 and m^6 are independent of each other they may be caused to operate in unison to a limited extent. When the lever m' is raised, the finger m^5 is raised to permit the rivets to slide down the rib f' and the finger m^8 is held by the spring m^7 against the lowest rivet of the line. Upon the lever m' being depressed the finger m^5 is rocked down into the path of the rivets and the lug m^9 being engaged by the stop m^{12} is raised against the tension of its spring to allow the rivets to slide down the raceway until stopped by the said finger m^5 . Thus it will be seen that each time the lever m' is reciprocated the two fingers are oppositely moved to allow a single rivet to slide down to the detent l .

From the foregoing it is apparent that I have provided a very simple device by means of which the rivets may be fed one by one to the action of the driver or movable set and be guided to the work so as to have the prongs or tines presented at right angles to the same.

By reason of the lever m' being operated by a spring rather than positively actuated there is no danger of any of the parts being broken or bent by a defective or badly-shaped rivet being engaged by the separator. Upon the rivets becoming clogged in the guide at the lower end of the raceway the said raceway may be swung to one side to allow the rivets to be easily removed.

The oppositely-projecting and oppositely-acting fingers m^5 m^8 provide for the rivets being fed with certainty one by one, and by reason of their being spring-actuated, as I have before stated, there is no danger of their being bent or broken by reason of defective rivets being passed down the raceway. It will be understood, as I have before stated, that I do not limit my invention to this particular embodiment thereof, as it may be expressed in various other machines for fastening rivets, eyelets, and the like.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A riveting-machine comprising a stationary set, a movable set, a guide for the movable set, a raceway, a spring-held detent to receive a rivet from the raceway, and means supported by said guide below said detent for guiding the rivet to the work said means being movable toward and from the detent.

2. A riveting-machine comprising a station-

ary set, a movable set, a raceway, a detent arranged in the path of the movable set to receive a rivet from the raceway, and a yieldingly-supported thimble movable toward and from the detent and to receive the rivet therefrom and guide it to the work.

3. A riveting-machine comprising riveting mechanism, a raceway, and a separator consisting of two oppositely-projecting spring-tensioned pivoted fingers, movable longitudinally of the raceway whereby a rivet is allowed to pass under one finger and is engaged by the other finger alternately.

4. A riveting-machine comprising riveting mechanism, a raceway, and a separator, consisting of two oppositely-projecting spring-tensioned pivoted fingers, a shaft for said fingers arranged transversely of the raceway, whereby the fingers are movable in lines longitudinal of said raceway, and means for operating said fingers to permit the rivets to pass one by one down the raceway.

5. A riveting-machine, comprising riveting mechanism, a raceway and a separator placed in said raceway, and consisting of two alternately-acting fingers, and a shaft actuated from the riveting mechanism, one of said fingers being connected rigidly to the shaft, and the other being connected yieldingly thereto.

6. A riveting-machine comprising a stationary set, a movable set, a raceway, a stud connected to the movable set, a spring-held lever

resting upon said stud, and a separator operated by said lever, said separator comprising two oppositely-acting fingers arranged to alternately engage and release the line of rivets whereby the rivets are fed one by one to the action of the movable set and a single pivot for said fingers.

7. A riveting-machine comprising coacting sets, a raceway, and a separator on said raceway and operated synchronously with the movable set, said separator consisting of a shaft, oppositely-acting fingers on said shaft, a lever for rocking said shaft, and a spring inserted between one of said fingers and the shaft.

8. A riveting-machine comprising coacting sets, a raceway, and a separator on said raceway and operated synchronously with the movable set, said separator consisting of a shaft, oppositely-acting fingers on said shaft, one being secured rigidly thereto, and the other connected thereto by a spring, coacting stops carried by said fingers, and means for rocking said shaft.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 11th day of May, A. D. 1897.

ELEAZER KEMPSHALL.

Witnesses:

C. F. BROWN,

A. D. HARRISON.