H. LYON.

TACKING MECHANISM.

APPLICATION FILED JUNE 1, 1905.

1,028,238.

Patented June 4, 1912.

3 SHEETS—SHEET 1.

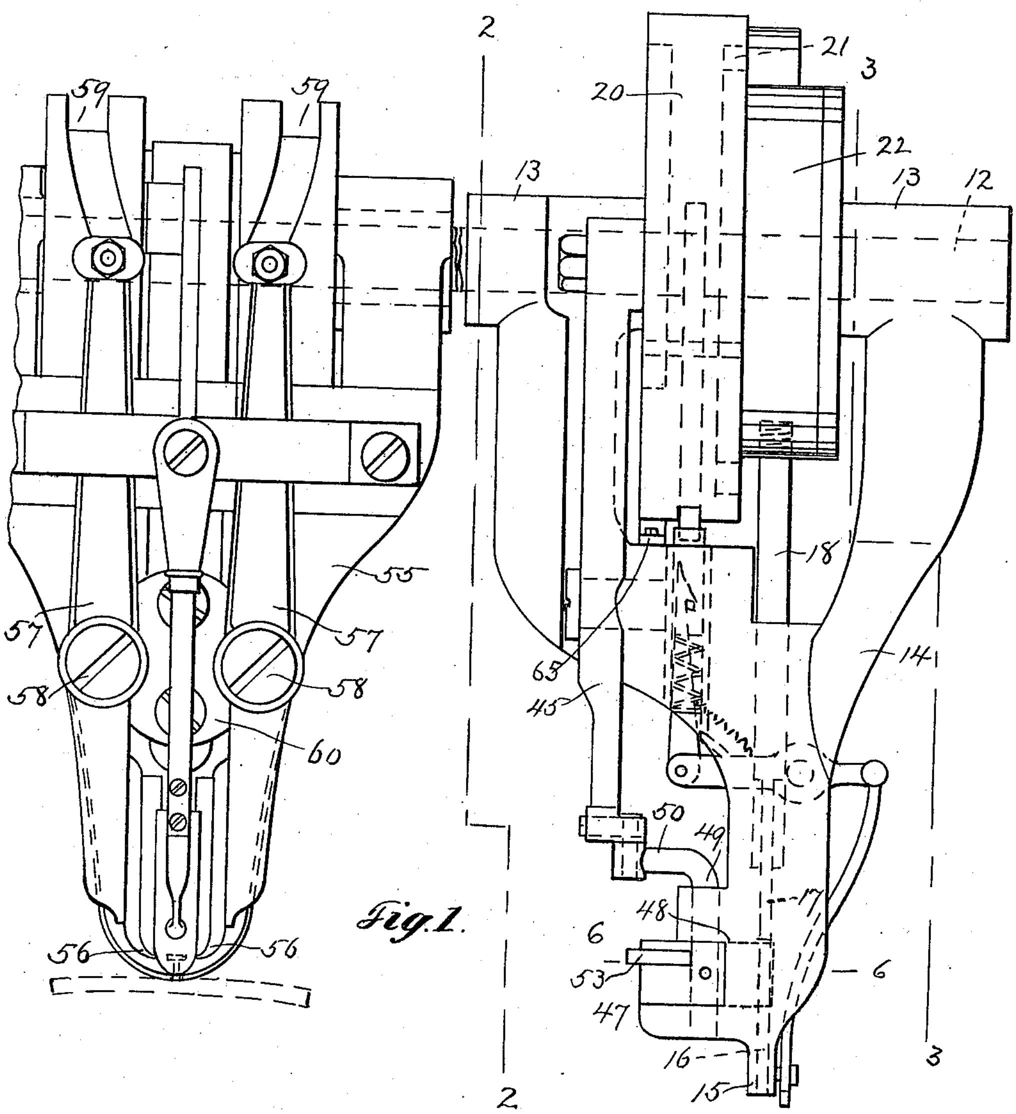

Fig. 1.

Witnesses.
P. W. Pezzetti
L. E. Kennedy.

Inventor:
Harry Lyon
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COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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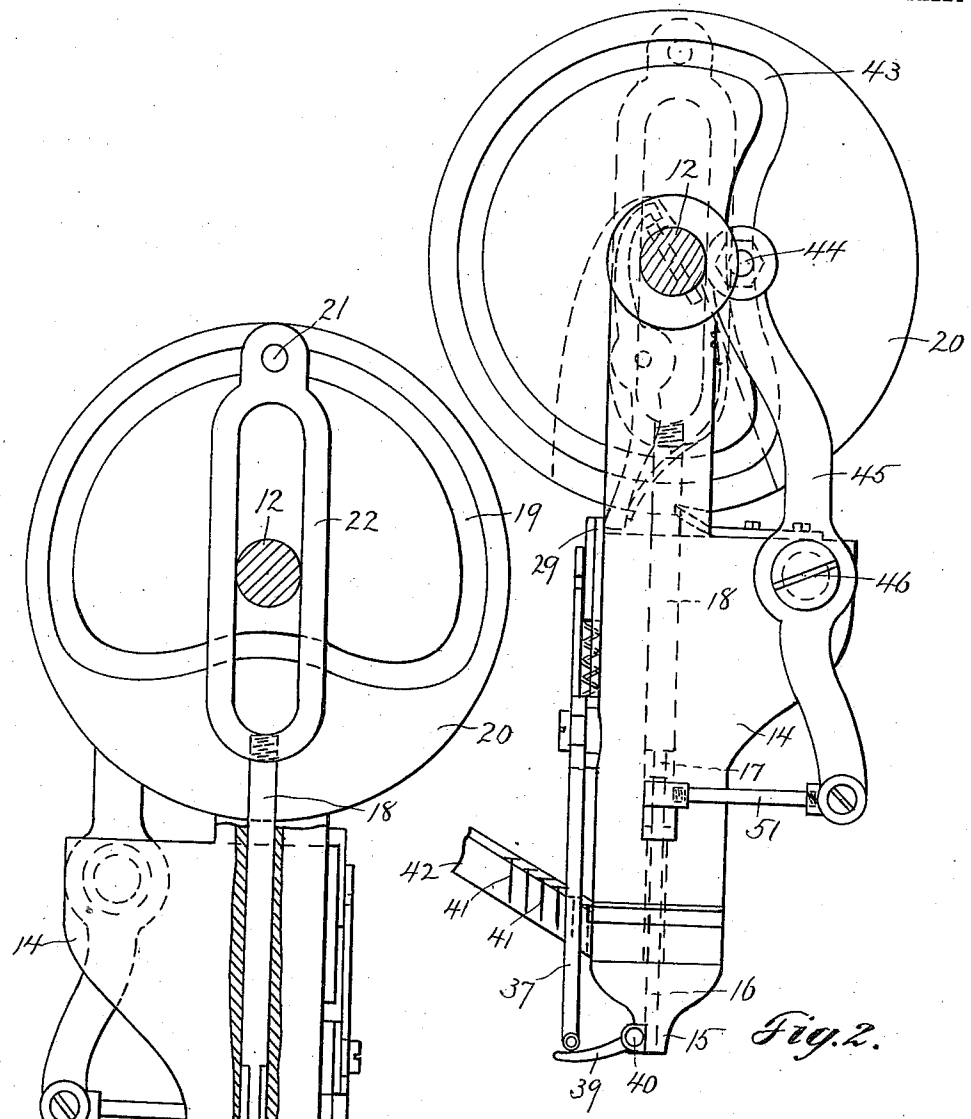

Fig. 2.

Fig. 3.

Witnesses.
P. W. Pezzetti
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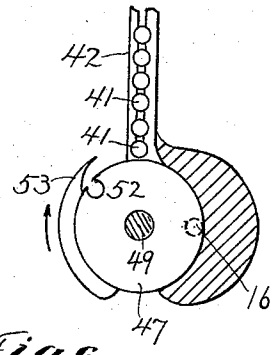

Fig. 6.

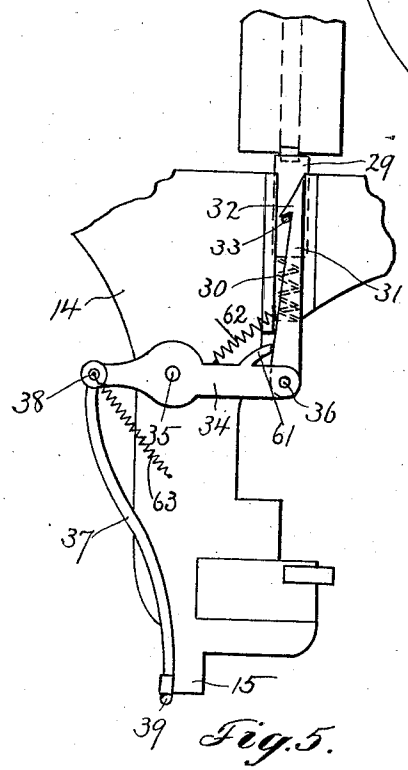

Fig. 5.

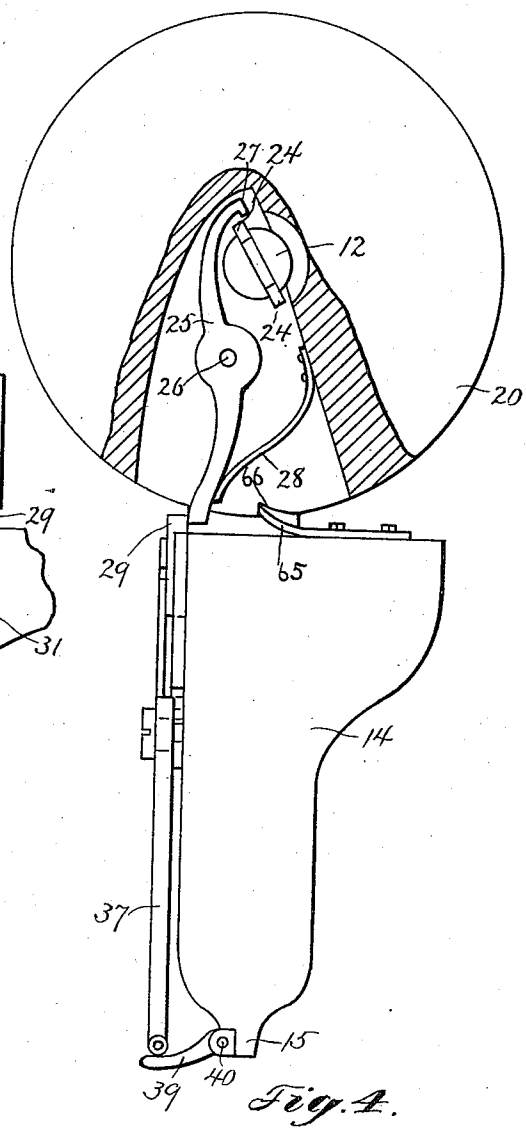

Fig. 4.

Witnesses.
P. W. Peppetti
L. E. Kennedy.

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UNITED STATES PATENT OFFICE.

HARRY LYON, OF BROCKTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TACKING MECHANISM.

1,028,238. Specification of Letters Patent. Patented June 4, 1912.

Application filed June 1, 1905. Serial No. 263,233.

To all whom it may concern:

Be it known that I, HARRY LYON, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Tacking Mechanisms, of which the following is a specification.

This invention has for its object to provide a tack driving mechanism adapted to drive tacks at considerable intervals apart, in lasting uppers of boots and shoes.

It is the purpose of my invention to provide a tack driving mechanism adapted to be used in connection with the tack pulling mechanism shown in Letters Patent of the United States, No. 777,795, dated December 20, 1904. Said patent shows a tack pulling mechanism comprising jaws which are adapted to close upon the lasting tack in a boot or shoe upper, withdraw the same from the upper, release the tack and then return to position to close upon another tack. The said machine is adapted to pull all the lasting tacks and leave the upper entirely free from the inner sole and last, so far as the lasting tacks are concerned. It is desirable, however, to retain a connection between the upper and the inner sole at a few points to prevent the separation of the upper from the inner sole and last, and hold the upper in place on the inner sole until the permanent union between the upper and sole is effected. I have, therefore, devised a tack driving mechanism adapted to be associated with the tack pulling machine and occupying such position relatively to the latter that the operator while standing in position to present the lasting tacks to the tack pulling mechanism can also from time to time present the upper to the tack driving mechanism in order that the tacks may be applied at a few points for the purpose of preventing the detachment of the upper from the inner sole.

My invention consists in the improved mechanism which I will now proceed to describe and claim.

Of the accompanying drawings forming a part of this specification—Figure 1 represents a front elevation of a tack driving machine embodying my invention, the same being shown in operative proximity to a tack pulling machine like that set forth in the before mentioned Letters Patent. Fig. 2 represents a section on line 2—2 of Fig. 1, and an elevation of the mechanism at the right of said line. Fig. 3 represents a section on line 3—3 of Fig. 1 and an elevation of the mechanism at the left of said line. Fig. 4 represents a view similar to Fig. 2, the parts being shown in section. Fig. 5 represents an elevation of the mechanism shown in Fig. 4, taken from a different point. Fig. 6 represents a section on line 6—6 of Fig. 1.

The same reference characters indicate the same parts in all of the figures.

In the drawings—12 represents a driving shaft which is or may be continuously rotated and is supported in fixed bearings 13, on the frame or head 14. The lower portion of the head 14 is reduced in size and terminates in a slender throat 15 having a channel 16 in which a driver 17 reciprocates. The driver is affixed to a driver bar 18 which is reciprocated by a cam groove 19 in a disk 20 mounted on the driving shaft, and a stud 21 on a slotted extension 22 of the driver bar. The stud 21 enters the cam groove 19 which causes a vertical reciprocation of the driver bar. The driving shaft passes through the slotted extension 22, as shown in Fig. 3.

The disk 20 is loosely mounted on the shaft 12 and is normally stationary thereon, the shaft rotating in the disk. A clutch is provided which is adapted to be made operative to connect the disk with the shaft and cause the rotation of the disk, by pressure of the work against a member of a clutch operating mechanism with which the machine is provided. The clutch in this embodiment of my invention comprises a member composed of wings or lugs 24 affixed to the shaft 12, and projecting from opposite sides thereof, and a member composed of a lever 25 pivoted at 26 to the disk 20 and within a recess formed in said disk. One arm of the lever 25 is provided with a tooth 27 adapted to engage either one of the lugs 24. The other arm of the lever 25 projects

from the periphery of the disk 20 and is normally held in the position shown in Fig. 4, by spring 28 which tends to throw the tooth 27 into engagement with the lug 24.

29 represents a sliding stop movable in guides in the head 14 and normally raised or projected by a spring 30 which causes the stop 29 to stand normally in the path in which the projecting end of the lever 25 is caused to travel by the rotation of the disk 20. The detent 29 may be depressed out of the path of the lever 25 by means of a dog 31 having a hook 32 adapted to engage a pin or stud 33 on the detent 29, a lever 34 pivoted at 35 to the head 14 and having one of its arms pivoted at 36 to the dog 31, a rod 37 pivoted at 38 to the other arm of the lever 34 and extending downwardly beside the throat 15, and a lever 39 pivoted at 40 to said throat and projecting under the lower end of the rod 37. When the detent 29 is in its raised position and arrests the lever 25 the tooth 27 of said lever is held by the detent out of engagement with the lug 24 on the driving shaft as shown in Fig. 4. Hence the disk 20 is held at rest. When the operator desires to drive a tack into the edge portion of a boot or shoe upper, said portion being turned inwardly over the insole, he presents the portion of the upper which is to receive the tack to the throat 15 and thus causes the adjacent portion of the sole to bear against the lever 39 and raise the latter, thus causing the depression of the detent 29. The spring 28 thereupon swings the lever 25 and brings its tooth 27 into engagement with one of the lugs 24. The disk is thus engaged with the driving shaft and is rotated thereby. The rotation of the disk 20 causes the reciprocation of the driver bar and driver as above described. The dog 31 is forced backwardly during its downward movement and thus disengaged from the stud 33 of the detent, by a projection 61 on the lever 34, so that the detent is released and returned to its operative position before the shaft and disk have made a complete rotation. The detent is therefore in position to arrest the lever 25 and throw the tooth 27 out of engagement with the shaft clutch member at the end of a complete rotation of the shaft, so that the driver is projected only once, as the result of each upward movement of the lever 39, the driver being first projected and then retracted and left at rest in a raised position by each rotation of the shaft and disk. A spring 62 causes the engagement of the dog with the stud 33 when the dog rises and a spring 63 causes the lever 34 to raise the dog when pressure is removed from the lever 39.

The rotation of the disk 20 is utilized to feed a tack 41 from an inclined chute 42 into the throat 15, the arrangement being such that a tack is fed into the throat during the first part of the rotation of the disk and before the descent of the driver the tack being arrested by the position of the upper under the throat in readiness to be driven by the descent of the driver. To this end the disk 20 is provided with a cam groove 43 which receives a stud 44 on one arm of a lever 45 which is pivoted at 46 to the head 14.

47 represents a tack-feeding wheel or disk which is located in a recess 48 (Fig. 1) formed for its reception in the head a short distance above the throat 15. The disk 47 is affixed to a vertical stud or rock-shaft 49 which is journaled in bearings in the head 14 above and below the recess 48, the upper end of the rock-shaft 49 being provided with an arm or crank 50 which is connected by a link 51 with the lower arm of the lever 45. The disk 47 is provided in its periphery with a recess 52 forming one side of a pocket, the outer side of which is formed by a horn or picker 53 affixed to the periphery of the disk. The rotation of the disk 20 causes the cam groove 43 to oscillate the lever 45 which in turn through the link 51 and crank 50 causes the oscillation of the rock-shaft 49 and the feeding disk 47. The feeding disk normally stands in the position shown in Fig. 6, its periphery constituting a stop for the lowest tack 41 in the chute 42. The first part of the rotation of the disk 20 causes the feeding disk to move in the direction of the arrow in Fig. 6, the picker being thus caused to engage the lowest tack and force it into the recess 52, the rotation of the feeding disk continuing in the same direction until the tack reaches the channel 16 in the throat, the tack dropping into said channel from the recess 52. The movements of the feeding disk and driver are timed so that the disk remains in position with its recess 52 in line with the throat while the driver descends, the feeding disk returning to the position shown in Fig. 6 after the ascent of the driver. While the feeding disk is returning to its starting position and after the picker 53 has passed backwardly across the chute the column of tacks in the chute slides downwardly, the lowest tack being thus brought into contact with the periphery of the feeding disk.

From the foregoing it will be seen provision is made for driving a tack into any part of the upper and innersole that may be selected by the operator, and that only one tack is driven as the result of each pressure of the work against the lever 39. In practice only a very few tacks are required, usually four, two at one edge of the sole and two at the opposite edge, although of course the tacks may be placed wherever the operator may desire.

In Fig. 1, I show the tack-driving mechanism located beside the tack-pulling mechanism shown in the above mentioned Letters Patent, the driving shaft 12 being extended through the frame or head 55 of the tack-pulling machine. 56 56 represent the tack pulling jaws connected with the levers 57 57 fulcrumed at 58 58 to a sliding support 60 and operated by cams 59 59 affixed to the driving shaft, said cams engaging trundle rolls on the levers 57. The sliding support 60 is moved to give the levers their longitudinal tack-pulling and return movements, the levers being given opening and closing movements, all as fully set forth in the above-mentioned Letters Patent.

65 represents a stop to prevent backward rotation or rebound of the disk 20 when it is arrested by the detent 29, said stop being preferably a spring finger adapted to bear yieldingly against the periphery of the disk 20 and to spring into a notch 66 in said disk, one side of said notch engaging the end of the stop, as shown in Fig. 4.

As has been stated, the shaft is continuously rotated, while the disk which controls the actuation of the driver and also controls the feed, is normally stationary and consequently the driver and the feed mechanism remain normally stationary. This reduces the number of parts whose inertia must be overcome in order to drive a tack, to the minimum, and renders it practicable to effect the stoppage of everything but the shaft, with certainty at the proper point. The single disk 20, constitutes a part of three different mechanisms, viz: first, by means of its cam groove 19 it forms a part of the means for operating the driver; second, by means of its recess and the pivot for supporting the lever 25 within said recess, it forms a part of the means for clutching the disk to the shaft so that it will be rotated by the latter; and third, the said disk forms a part of the means for controlling the feed, this being due to the cam groove 43 in said disk. Therefore, there can be no possible disarrangement of the relative timing of the three operations, since one element (the disk 20) forms a part of each of the said three mechanisms.

Owing to the fact that the parts required to be actuated when it is desired to drive a tack, have comparatively little inertia, the machine can be run at the same high speed which is usually required for a tack-pulling mechanism. Therefore, as has been described, the same driving shaft, 12, by means of which power is communicated to the mechanism claimed herein, may be the shaft which actuates the levers 57 of the tack-pulling machine. Consequently, these two machines which are most conveniently operated when in juxtaposition, can be run from the one shaft without necessitating any gearing down to obtain a slower speed for the driving mechanism.

I claim:

1. A tack-driving machine comprising a continuously rotated shaft, a normally stationary driver, a normally stationary driver-operating cam loosely mounted upon the shaft, and means for effecting an operative connection between said cam and the shaft.

2. A tack-driving machine comprising a continuously rotated shaft, a normally stationary driver, a normally stationary driver-operating cam loosely mounted upon the shaft, means for effecting an operative connection between said cam and the shaft, and means for limiting the connection to restrict the cam to a single rotation.

3. A tack-driving machine having in combination a continuously rotated shaft, a normally stationary driver, a normally stationary driver-operating cam loosely mounted upon the shaft, and means for effecting an operative connection between said cam and shaft, said means including a non-repeating clutch device.

4. A tack-driving machine comprising a continuously rotated shaft, a normally inoperative driver, normally inoperative tack-delivering mechanism, a cam for operating said driver and said tack-delivery mechanism, said cam being normally loose upon said shaft, and means for effecting an operative connection between said cam and shaft for a single rotation only.

5. A tack-driving machine comprising a continuously rotated shaft, a normally stationary driver, a disk on said shaft, means for operating the driver, and means for clutching the disk to the shaft to be rotated thereby, said disk forming a part of both the driver-operating means and the shaft clutching means.

6. A tack-driving machine comprising a continuously rotated shaft, a normally stationary driver, tack-feeding mechanism, a disk on said shaft, means for operating the driver, and means for clutching the disk to the shaft to be rotated thereby, said disk forming a part of the driver-operating means, the shaft-clutching means, and the tack-feeding mechanism.

7. A tack-driving machine having, in combination, a throat with a tack-guiding channel, a tack chute, a tack-feeding disk oscillating about an axis eccentric to the axis of the channel in the throat and having a periphery which normally closes the lower end of the tack chute, having a tack-receiving recess or pocket within its periphery and also having a tack-picker extending outwardly from said periphery and constructed and arranged to engage the lowest tack in the chute when the disk is oscillated, and

cause said tack to enter said recess, said disk by further oscillation bringing said recess to a position of alinement with said channel to allow said tack to drop thereinto, a stationary guide located adjacent to the periphery of the disk and extending substantially from tack-receiving position to tack-delivering position, whereby a tack is retained in said recess, and means for oscillating the disk.

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

HARRY LYON.

Witnesses:
C. F. BROWN,
E. BATCHELDER.