

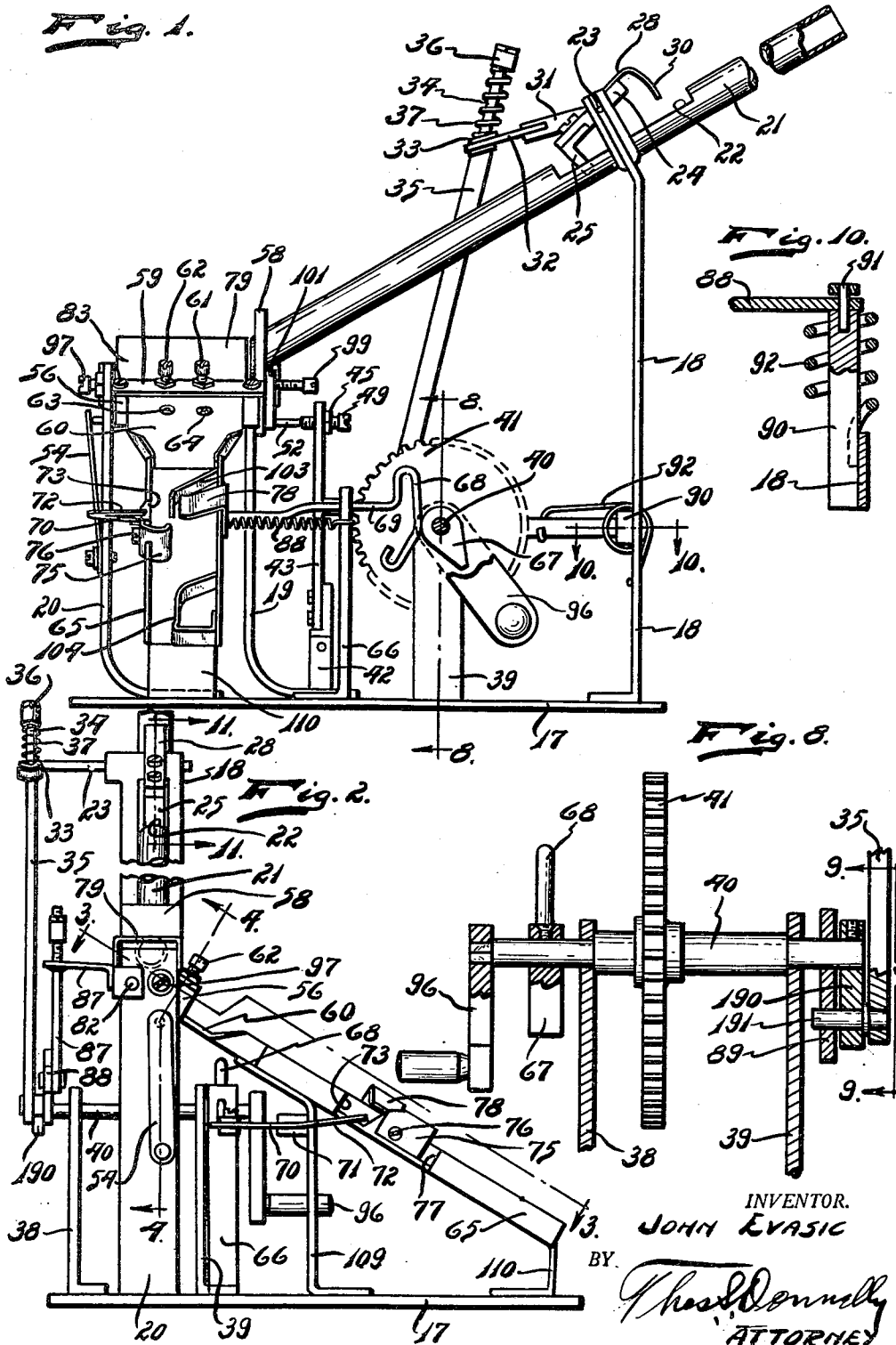
April 29, 1952

J. EVASIC
STUD FEEDING MACHINE

2,595,065

Filed Aug. 28, 1947

3 Sheets-Sheet 1



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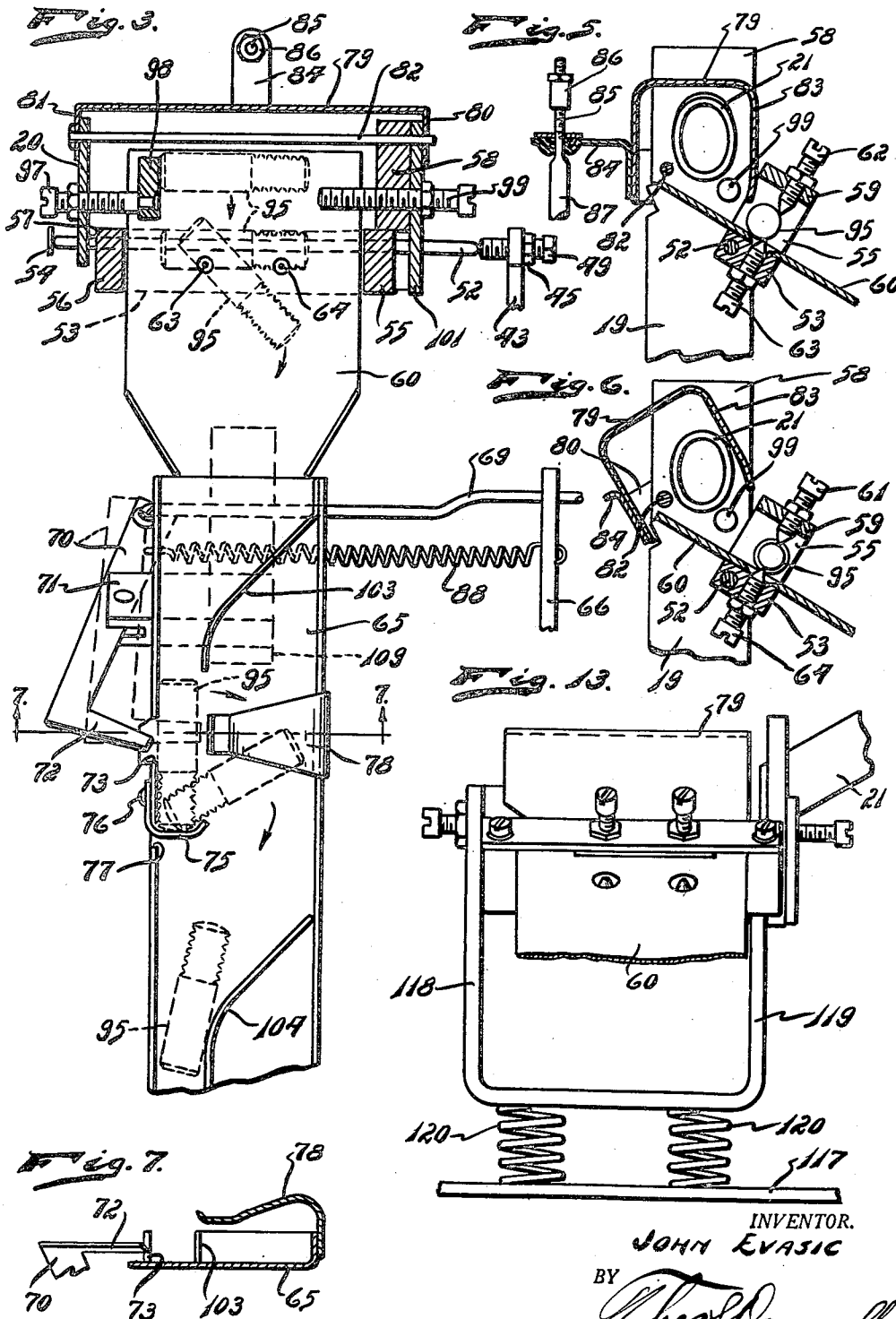
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3 Sheets-Sheet 2



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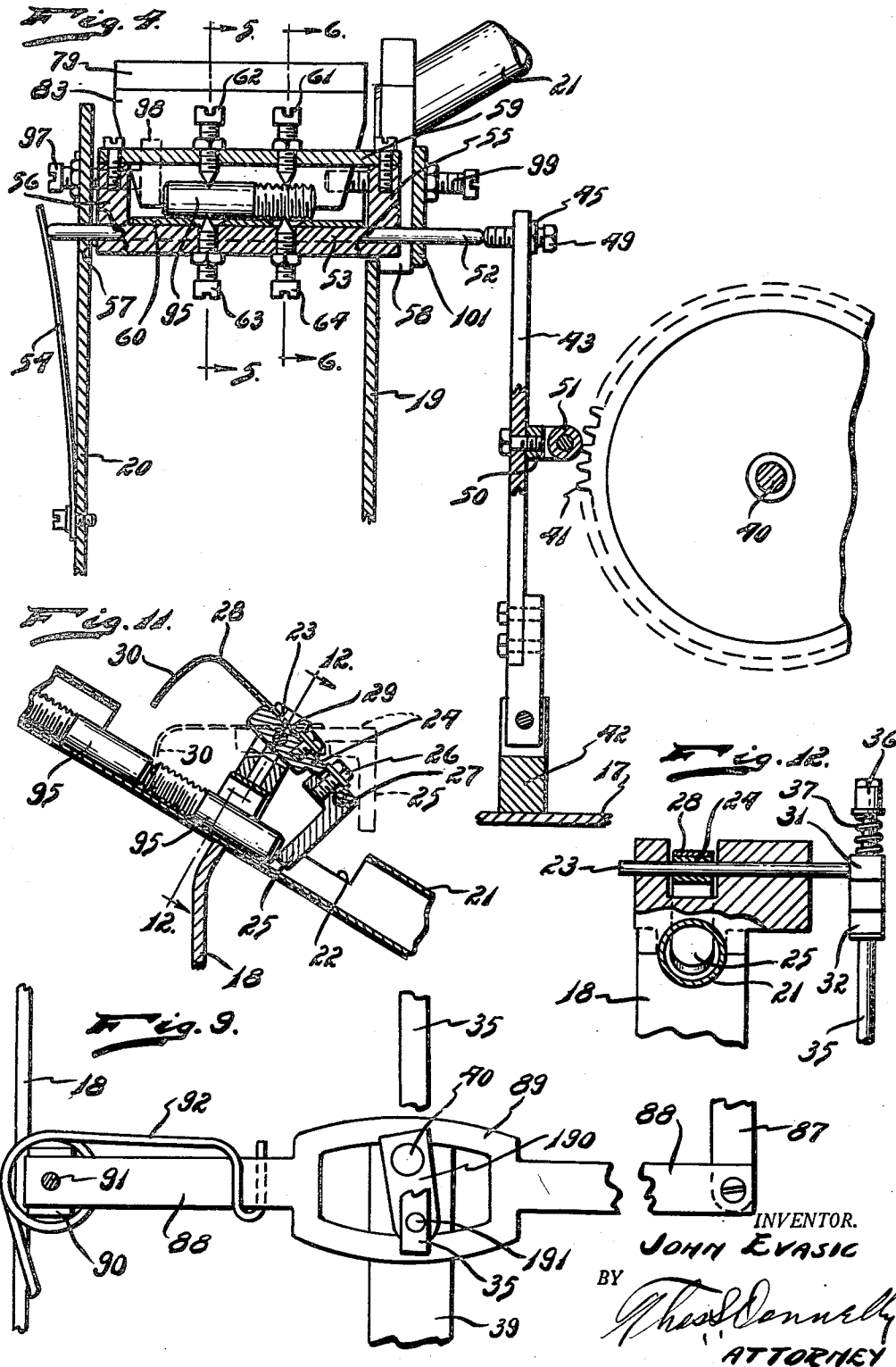
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STUD FEEDING MACHINE

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3 Sheets-Sheet 3



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2,595,065

STUD FEEDING MACHINE

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7 Claims. (Cl. 10—162)

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My invention relates to a new and useful improvement in a stud feeding machine adapted for feeding studs down a chute in such a manner that a pre-determined end of the stud will face downwardly when moving down the chute. The invention lends itself particularly in feeding to a threading machine studs which have been threaded on one end and which it is intended shall be threaded on the opposite end. With the present machine the studs threaded on one end may be deposited in a hopper or a suitable slide and allowed to be discharged from the slide individually whereupon the stud will be slid down a chute and when arriving at the lower end of the chute will have the threaded end at the rear so that it may proceed into a suitable feeding mechanism for being fed into the threading machine without the intervention of an operator or any hand work.

It is an object of the present invention to provide a machine of this class which will be simple in structure, economical of manufacture, durable, compact, highly efficient in use and easily operated.

Another object of the invention is the provision of means for individually feeding the studs downwardly on a slide onto which the studs are deposited.

Another object of the invention is the provision of releasing the studs for slidable movement down a chute with the threaded end forward.

Another object of the invention is the provision of means for reversing the stud end for end on the chute so that it proceeds to the lower end of the chute with the threaded end rearwardly.

Another object of the invention is the provision in a machine of this class of means for agitating the stud so that it may be released steadily for movement down the chute.

Another object of the invention is the provision of means for preventing more than one stud reaching the stud releasing mechanism at the same time.

Other objects will appear hereinafter.

It is recognized that various modifications and changes may be made in the detail of structure illustrated and it is intended that such variations and modification shall be encompassed within the scope of the claims which form a part hereof.

Forming a part of this specification are drawings in which,

Fig. 1 is a side elevational view of the invention,

Fig. 2 is an end elevational view of the invention, with parts broken away,

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Fig. 3 is a fragmentary front elevational view of the invention with parts broken away and parts shown in section slightly enlarged over that shown in Fig. 1,

Fig. 4 is an enlarged sectional view taken on line 4—4 of Fig. 2,

Fig. 5 is a fragmentary sectional view taken on line 5—5 of Fig. 4,

Fig. 6 is a fragmentary sectional view taken on line 6—6 of Fig. 4,

Fig. 7 is a sectional view taken on line 7—7 of Fig. 3,

Fig. 8 is a sectional view taken on line 8—8 of Fig. 1, with parts shown in fragment,

Fig. 9 is a fragmentary view taken on line 9—9 of Fig. 8, with parts broken away,

Fig. 10 is a sectional view taken on line 10—10 of Fig. 1,

Fig. 11 is a fragmentary sectional view taken on line 11—11 of Fig. 2,

Fig. 12 is a fragmentary sectional view taken on line 12—12 of Fig. 11,

Fig. 13 is a fragmentary front elevational view with parts broken away showing a slight modification.

In the drawings I have illustrated the invention embodying a base 17 projecting upwardly from which is a supporting standard 18. Spaced apart supporting standards 19 and 20 are also secured to the base 17 and project upwardly therefrom. A feeding slide or tube 21 is provided which may be attached to a suitable hopper so that studs placed in the hopper will flow into the tube or onto the slide 21. This tube or slide 21 is cut away as at 22. Pivotaly mounted on the upper end of the standard 18 by means of the pin 23 is a bar 24 to which is secured one leg of the L-shaped bar 25 by means of the screw 26 which projects through a slot 27 formed in the bar 24. The longer leg of the member 25 is adapted to project through the cut-away portion 22 into the tube 21 so as to engage one end of the stud 95 and prevent its sliding downwardly on the slide 21. Secured to and projecting rearwardly from the plate 24 is a spring plate having the angularly turned end 30 which is adapted to project into the cut-away portion 22 of the slide 21. This plate 28 is secured to the plate 24 by means of a screw projected through a slot 29 formed in the plate 28. This arrangement is such that the distance between the member 25 and the portion 30 and the plate 28 may be adjusted to various lengths. The construction is such that when the mechanism is moved toward the dotted line position shown in Fig. 11 the stud

95 will be released by the member 25 and permitted to slide downwardly on the slide 21. At the same time the portion 30 of the plate 28 will engage the succeeding stud and prevent its sliding downwardly on the slide 21. As the parts move back to full line position as shown in Fig. 11 the stud will take the position shown in Fig. 11. Secured to in fixed relation to the pin 23 is an outwardly projecting arm 31 which carries an extension 32 through which is projected the reduced portion 34 on the rod 35. This arm 32 engages a washer 33 which bears against one end of a spring 37 the opposite end of which engages against the nut 36 threaded on the reduced portion 34. From Fig. 1 it is believed obvious that an upward and downward movement of the rod 35 will effect a rocking of the plate 24 so that the members 25 and 30 are alternately rocked downwardly toward the slide 21 to engage studs passing beneath the rocking mechanism.

Projecting upwardly from the base 17 are standards 38 and 39 through which is projected and in which is journaled a shaft 40. Fixedly mounted on this shaft 40 is a pinion 41. In the drawings I have illustrated a crank 96 whereby the shaft 40 may be rotated by hand but when used for production purposes the shaft would be rotated by a suitable source of power such as an electric motor.

Projecting upwardly from the base 17 is a suitable support 42 extending upwardly from which is an arm 43 preferably formed from resilient material. Threaded through this extension 43 is a bolt 49 on which is mounted a lock nut 45. Projecting outwardly from the extension 43 is a bracket 50 on which rotatably mounted a roller 51 which is adapted to bear against the periphery of the pinion 41. The end of the bolt 49 engages a rod 52 which projects through and is secured to the plate 53 and engages at its opposite end the leaf spring 54 which is mounted at one of its ends on the standard 20. The rod 52 serves as a support for the plate 53 and as the gear 41 is rotated and the teeth of the pinion ride over the roller 51 the extension 43 will cause the plate 53 to move in one direction and when the roller engages at the spaces between the teeth of the gear 41 movement of the plate 53 in the other direction will be effected through the pressure of the spring 54 on the rod 52. In this way, I have provided a means for agitating or vibrating the member 53. It will be noted that there is a space 57 between the standard 20 and the plate 53 and that this plate overlies the standard 19 so that the lateral or vibratory movement may be effected.

Formed preferably integral with the plate 53 and projecting upwardly therefrom are the legs 55 and 56 on which is secured a plate 59. Secured to and projecting upwardly from the standard 19 is a plate 58 having an opening therethrough, through which the lower end of slide tube 21 projects. Secured to the plate 53 is one end of a chute 60. Threaded through the plate 59, and provided with lock nuts, are screws 62 and 61 each of which is provided with a sharp point. Similar screws 63 and 64, each provided with a lock nut, are threaded through the plate 53 and each of these screws is provided with a sharp point. As clearly shown in Fig. 4 the unthreaded portion of the stud 95 cannot pass between the opposed ends of the studs or screws 62 and 63 or the opposed ends of the screws or studs 61 and 64 engage in the threads of the stud 95,

the threaded end can slide between the opposed ends of the screws 61 and 64. As a stud is fed downwardly of the slide 21 so as to be deposited upon the chute 60, the stud may be in such a position that the space between the threads is not in alignment with the points of the opposed ends of the screws 61 and 64. The vibration, however, effected through the pinion 41 and the members 43 and 54, will effect the necessary jiggling or shaking of the stud 95 so that the threads are brought into proper registration with the screws 61 and 64 or 62 and 63. If the studs pass downwardly so that the threaded portion engages between the screws 61 and 64 as shown in Fig. 4, the threaded end will pass downwardly and the unthreaded end of stud 95 will pivot on the screws 62 and 63 as shown in Fig. 3. Should the stud 95 come down, reversed as to direction, so that the threaded end would engage between the screws 62 and 63 this threaded end would pass between these screws and the stud 95 would then pivot on the screws 61 and 64. A screw 97, threaded through the standard 20 and provided with a lock nut, carries on its end an abutment block 98 which cooperates with the screw 99 provided with a lock nut and threaded through the plate 58 and the plate 101 which is attached to the plate 58. By threading these screws inwardly and outwardly an adjustment is made for studs of various lengths, and the proper positioning of the studs relative to the screws 61, 62, 63 and 64 effected.

A chute 65 forms an extension of the chute 60. Fixedly mounted on the shaft 40 is a cam 67 which, when the shaft 40 is rotated, is adapted to engage the cam head 68 on the rod 69 and effect a reciprocation of the rod 69 in one direction. The end of this rod is pivotally connected to one end of the beam 70 which is pivotally mounted intermediate its ends on a bracket 71 which projects outwardly from the chute 65. This beam 70 is provided at one end with an angularly turned engagement portion 72 adapted to project through the cut-away notch 73 formed in the side flange 74 of the chute 65. The construction is such that as the shaft 40 is rotated and the cam 67 engages the cam head 68 the rod 69 is moved longitudinally to the left of the drawing of Fig. 1 or Fig. 3. This will effect a rocking of the beam 70 so that the angularly turned engagement portion 72 will project inwardly into the dotted line position shown in Fig. 3 and engage the stud 95 and force the upper end thereof inwardly so that the stud will topple over as shown in Fig. 3. Mounted on the upper end of the chute 65 is a guide strip 103 and an abutment member 75 is pivotally mounted at 76 to the flange 74 of the chute 65. This abutment member 75 projects inwardly through a notch 77 formed in the flange 74 of the chute 65. As the stud 95 passes downwardly from the upper portion 60 of the chute onto the lower portion 65, the guide strip 103 will guide the stud so that it will move downwardly in lengthwise position until it engages the engagement member or retainer 75. It will be noted that the stud always moves downwardly with the threaded end foremost and it is turned through the engagement of the engagement member 72 therewith. Overlying the chute is a guide strip 78 which is preferably formed of resilient material. A guide strip 104 is mounted on the lower end of the chute 65. After the beam 70 has been rocked to effect the turning of the stud, the spring 88 will serve to restore the beam 70 to its normal or full line

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position shown in Fig. 3. This spring 88 is connected at one end to the beam 70 and at its opposite end to the post 66 in which projects upwardly from the base 17.

A hood 79 is provided having the side walls 89 and 81 which are swingably mounted on the rod 82 as clearly seen in Fig. 3. A forward or engaging wall 83 forms a part of the hood as shown in Fig. 5 and Fig. 6. When the hood is in the position shown in Fig. 5 a stud discharged from the tube or slide 21 is engaged by the forward wall 83 and prevented from rolling down the chute 60. When the member 25 is rocked to release a stud for slidable movement down the slide or tube 21 the hood 79 will also be rocked to release the stud which is engaged by the wall 83 so that this stud may move downwardly to the position where the same may engage the screws 62 and 63. The hood is shown rocked to its releasing position in Fig. 6 and by the time the newly released stud on the slide 21 is discharged onto the chute 60 the hood will be restored to the position shown in Fig. 5. Secured to and projecting outwardly from this hood 79 is a bracket 84 through which is slidably projected the reduced portion 85 of a rod 87. A nut 86 is threaded on to the reduced portion 85. As shown in Fig. 9 the lower end of the rod 87 is pivotally connected to the end of a beam 88 in which is formed the loop or eccentric strap 89. The opposite end of the beam 88 is pivotally connected on the pin 91 to a block 90 which is mounted on the standard 13. A spring 92 serves to normally tend to retain the bar 88 elevated at the end to which the rod 87 is connected. Fixedly mounted on the shaft 40 is a crank 190 projecting outwardly from which is a pin 191 (clearly shown in Fig. 8) which projects into the eccentric strap 89 and which is adapted to engage opposite sides thereof when the shaft 40 is rotated. The pin 191 serves also to pivotally connect the lower end of the bar or rod 35 to the end of the crank 190. The construction is such that as the shaft 40 is rotated the rod 35 will be reciprocated so as to effect a rocking of the stud releasing mechanism embodying the parts 25 and 30. In timed relation to the reciprocation of the bar or rod 35 the rod 87 is also reciprocated so as to swing the hood 79 to the position shown in Fig. 5 and Fig. 6. The rocking of the stud releasing mechanism embodying the parts 25 and 30 is in timed relation to the rocking of the hood 79 so that the hood 79 is normally in position shown in Fig. 5 when a stud is discharged from the slide tube 21. This hood 79 is normally in the position shown in Fig. 6 when a stud is disengaged by the member 25 so to be permitted to slide downwardly on the slide 21. The hood prevents a jamming of the studs at the screws 62 and 63. This is important because some jiggling or movement of the screws is often necessary in order that the threads may properly align with the screws 61 and 64.

As shown in Fig. 2 the chute 65 is supported by suitable legs 109 and 110.

It is believed that the operation of the machine is apparent from the description thus far given. When the studs are deposited so as to move onto the slide 21 and the shaft 40 rotated the studs will move down individually to the position where they will be engaged by the wall 83 of the hood and then individually released for slidable movement down the chute 65 and 60. As previously noted the studs move downwardly with the threaded end forward. They

are reversed end for end by the member 72 but if it is desired that the threaded end shall continue as the leading end of the stud as it leaves the chute 65 the member 75 may be swung upwardly on its pivot 76 so that it will not engage the stud. Consequently, the member 72 when moving inwardly will not engage a stud as there will be no stud in its path.

Experience has shown that a stud feeding mechanism of this class constructed and operated as described is highly efficient in use, considerably speeds up the threading operation of studs and eliminates to a large extent the manual labor ordinarily connected with the threading of the un-threaded end of a stud the opposite end of which has already been threaded.

In Fig. 13 I have shown a slight modification of the supporting mechanism used in the invention. In this structure the standards 19 and 20 shown in Fig. 1 have been eliminated and a U-shaped supporting member embodying the legs 118 and 119 have been substituted. This U-shaped member is supported by the springs 120 which are secured thereto and to the base 117. The remaining structure is as already described excepting that the pinion 41 is eliminated as are likewise the parts 42, 43, 45, 49, 50, 51, 52 and 54. By use of the springs 120 to support the U-shaped supporting legs 118 and 119 a floating mounting is provided and one which is sufficiently flexible and vibratory to jiggle or jar the stud 95 into proper position without the necessity of a positive vibrating mechanism.

What I claim as new is:

1. In a stud feeding mechanism of the class described, a stud-receiving chute inclined to the vertical for receiving studs in end-to-end relation, a plate at the lower end of said chute inclined to the vertical and at right angles to said stud-receiving chute adapted for receiving studs in side-by-side relation passing from the lower end of said chute, an upper plate overlying said first named chute in spaced parallel relation, a pair of aligned stud engagement members having pointed ends projecting outwardly from opposed faces of each of said plates in spaced relation, the engagement members of each pair being in a line incident to the path of travel of the studs through said chute and the studs being delivered onto the first named plate with their longitudinal axes parallel to a plane passing through the aligned engagement members on said plate, the opposed engagement members being spaced apart a distance sufficient for permitting the threaded portion of a stud to pass therebetween and preventing the non-threaded portion of the stud passing therebetween, a chute projecting downwardly from said first named plate adapted for reception of a stud passing from said plate, and an agitator for agitating said plate for causing a stud thereon to pass into said chute.

2. In a stud feeding mechanism of the class described, a stud-receiving chute inclined to the vertical for receiving studs in end-to-end relation, a plate at the lower end of said chute inclined to the vertical and at right angles to said stud-receiving chute adapted for receiving studs in side-by-side relation passing from the lower end of said chute, an upper plate overlying said first named chute in spaced parallel relation, a pair of aligned stud engagement members having pointed ends projecting outwardly from opposed faces of each of said plates with said pairs of engagement members in opposed relation, the en-

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gagement members of each pair being in a line incident to the path of travel of the studs through said chute and the studs being delivered to the first named plate with their longitudinal axes parallel to a plane passing through the aligned engagement members on said plate, the opposed engagement members being spaced apart a distance sufficient for permitting the threaded portion of a stud to pass therebetween and preventing the non-threaded portion of a stud passing therebetween, a chute projecting downwardly from said first named plate adapted for reception of a stud passing from said plate, an agitator for agitating said plate for causing a stud thereon to pass into said second named chute and a guide member in said second named chute for guiding said studs downwardly thereof in longitudinal relation.

3. In a stud feeding mechanism of the class described, a stud-receiving chute inclined to the vertical for receiving studs in end-to-end relation, a plate at the lower end of said chute inclined to the vertical and at right angles to said stud-receiving chute adapted for receiving studs in side-by-side relation passing from the lower end of said chute, an upper plate overlying said first named chute in spaced parallel relation, a pair of aligned stud engagement members having pointed ends projecting outwardly from opposed faces of each of said plates in opposed relation, the engagement members of each pair being in a line incident to the path of travel of the studs through said chute, the opposed engagement members being spaced apart a distance sufficient for permitting the threaded portion of a stud to pass therebetween and preventing the non-threaded portion of the stud passing therebetween, a chute projecting downwardly from said first named plate adapted for reception of a stud passing from said plate, an agitator for agitating said plate for causing a stud thereon to pass into said second named chute, a guide member in said second named chute for guiding said studs downwardly thereon in longitudinal relation, a stud-engagement member in said second named chute for engaging the end of a stud passing downwardly thereof, said second named chute being of greater width than the length of said studs for permitting the toppling of said studs from said engagement member and passing downwardly thereof with the opposite end spaced downwardly.

4. In a stud feeding mechanism of the class described, a stud-receiving chute inclined to the vertical for receiving studs in end-to-end relation, a plate at the lower end of said chute inclined to the vertical and at right angles to said stud-receiving chute adapted for receiving studs in side-by-side relation passing from the lower end of said chute, an upper plate overlying said first named chute in spaced parallel relation, a pair of aligned stud-engagement members having pointed ends projecting outwardly from opposed faces of each of said plates in opposed relation, the engagement members of each pair being in a line incident to the path of travel of the studs through said chute, the opposed engagement members being spaced apart a distance sufficient for permitting the threaded portion of a stud to pass therebetween and preventing the non-threaded portion of the stud passing therebetween, a chute projecting downwardly from said first named plate adapted for reception of a stud passing from said plate, an agitator for agitating said plate for causing a stud thereon to pass into the second named

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chute, a guide member in said second named chute for guiding said stud downwardly thereof in longitudinal relation, a stud-engagement member in said second named chute for engaging the end of a stud passing downwardly thereof, said second named chute being of greater width than the length of said stud for permitting the toppling of said stud from said engagement member and passing downwardly thereof with the opposite end spaced downwardly, and a rockable stud-engaging member at the end of said first named chute for engaging said studs individually and permitting the passage of the studs singly into alignment with the stud-engaging members.

5. In a stud feeding mechanism of the class described, a stud-receiving chute inclined to the vertical for receiving studs in end-to-end relation, a plate at the lower end of said chute inclined to the vertical and at right angles to said stud-receiving chute adapted for receiving studs in side-by-side relation passing from the lower end of said chute, an upper plate overlying said first named chute in spaced parallel relation, a pair of aligned stud-engagement members having pointed ends projecting outwardly from opposed faces of each of said plates in opposed relation, the engagement members of each pair being in a line incident to the path of travel of the studs through said chute and the studs being delivered to the first named plate with their longitudinal axes parallel to a plane passing through the aligned engagement members on said plate, the opposed engagement members being spaced apart a distance sufficient for permitting the threaded portion of the stud to pass therebetween and preventing the non-threaded portion of the stud passing therebetween, a chute projecting downwardly from the first named plate adapted for reception of a stud passing from said plate, an agitator for agitating said plate for causing a stud thereon to pass into said second named chute, a guide member in said second named chute for guiding said stud downwardly thereon in longitudinal relation, a stud-engagement member in said second named chute for engaging the end of a stud passing downwardly thereof, said second named chute being of greater width than the length of said studs for permitting the toppling of said studs from said engagement member and passing downwardly thereof with the opposite end spaced downwardly, a rockable stud-engaging member at the end of said first named chute for engaging said studs individually and permitting the passage of the same singly into alignment with the stud-engaging members, and means on said stud-receiving chute for engaging the studs individually thereon and permitting the same to slide downwardly singly in spaced-apart relation onto the first named plate.

6. In a stud feeding mechanism of the class described adapted for feeding studs having one end portion threaded and the remaining portion free from threads, a stud-receiving chute inclined to the vertical and adapted for receiving studs in end-to-end relation for sliding downwardly thereof, a plate at the lower end of said chute inclined to the vertical and at right angles to said stud-receiving chute for receiving studs in side-by-side relation passing from said chute, an upper plate overlying said first named plate in spaced parallel relation, a pair of aligned stud-engagement members having pointed ends projecting outwardly from opposed faces of each of said plates in opposed relation, the engage-

ment members of each pair being in a line incident to the path of travel of the studs through said chute and the studs being delivered to the first named plate with their longitudinal axes parallel to a plane passing through the aligned engagement members on said plate, the opposed engagement members being sufficiently pointed for engaging between the threads of a stud passing between said plates, the opposed engagement members being spaced apart a distance sufficient for permitting the threaded portion of a stud to pass therebetween and preventing the non-threaded portion of the stud from passing therebetween, and the aligned engagement members of each pair being spaced apart sufficiently so that upon registration of the threaded end of a stud with one pair of opposed engagement members, the non-threaded end of the stud will register with the other pair of opposed engagement members, a chute projecting downwardly from said first named plate for reception of a stud passing from said plate and a guide member in said second named chute for guiding the stud downwardly thereof in longitudinal relation at one side of said second named chute.

7. In a stud feeding machine of the class described adapted for feeding studs having one end portion threaded and the remaining portion free from threads, a stud-receiving chute inclined to the vertical and adapted for receiving studs in end-to-end relation for sliding downwardly thereof, a plate at the lower end of said chute inclined to the vertical and at right angles to said stud-receiving chute for receiving studs in side-by-side relation passing from said chute, an upper plate overlying said first named plate in spaced parallel relation, a pair of aligned stud-engagement members having pointed ends projecting outwardly from opposed faces of each of said plates in opposed relation, the engagement members of each pair being in a line incident to the path of travel of the studs through said chute and being sufficiently pointed for engaging between the threads of a stud passing between said

plates, the opposed engagement members being spaced apart a distance sufficient for permitting the threaded portion of a stud to pass therebetween and preventing the non-threaded portion of a stud from passing therebetween, and the aligned engagement members of each pair being spaced apart sufficiently so that upon registration of the threaded end of a stud with one pair of opposed engagement members, the non-threaded end of the studs will register with the other pair of opposed engagement members, a chute projecting downwardly from said first named plate for reception of a stud passing from said plate, a guide member in said second named chute for guiding the stud downwardly thereof in longitudinal relation at one side of said second named chute, an engagement member at the said side of said second named chute for engaging a stud sliding down the chute, and a rockable member having a portion projecting into said second named chute for rocking movement and for engaging a stud which is in engagement with said engagement member in said second named chute and toppling said stud from said engagement member in reversed end-to-end relation.

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