Dec. 17, 1929. F. R. WHITE 1,739,996

HOPPER AND DRIVING MECHANISM

Filed June 11, 1928 2 Sheets-Sheet 1

Fig. 4

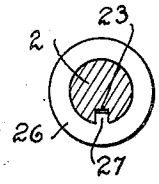


Fig. 1

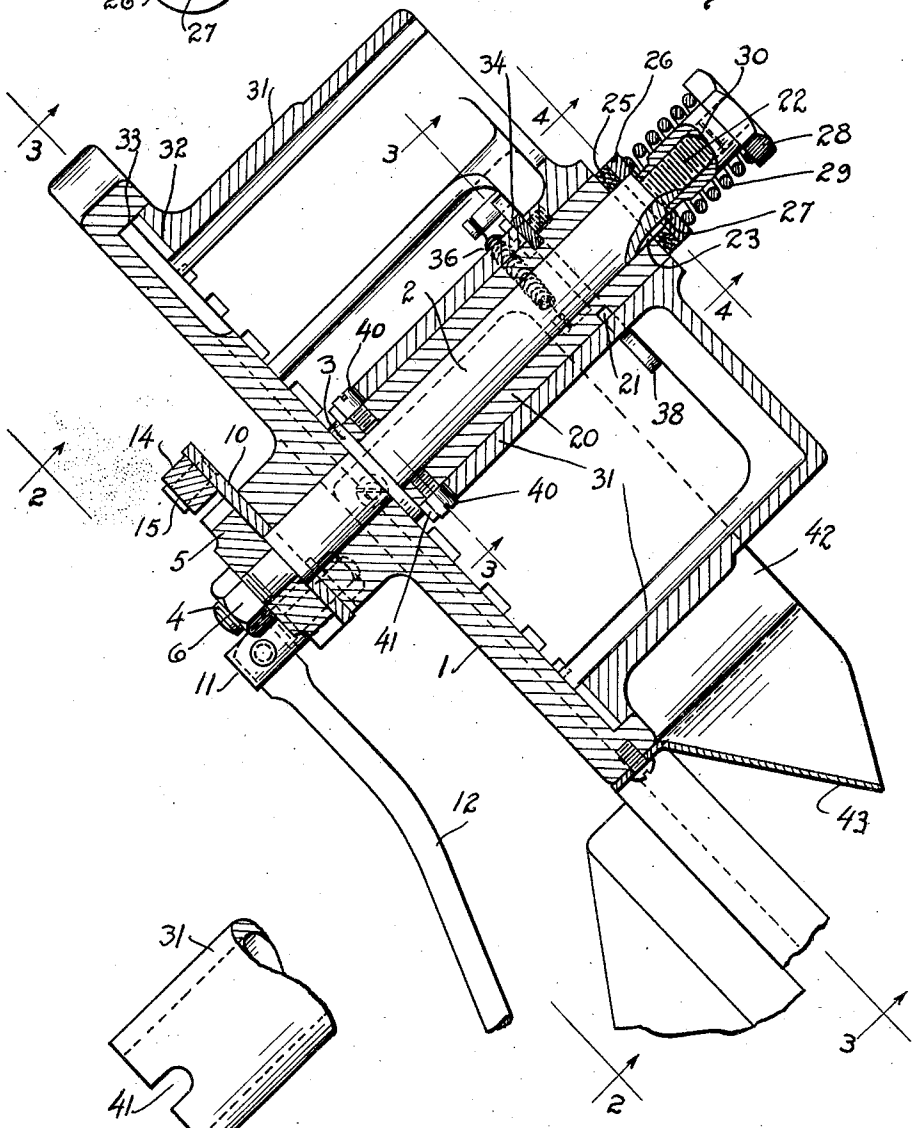


Fig. 5

INVENTOR.
Franklin R. White
BY
Stuart C. Barnes
ATTORNEY.

Dec. 17, 1929. F. R. WHITE 1,739,996

HOPPER AND DRIVING MECHANISM

Filed June 11, 1928 2 Sheets-Sheet 2

Fig. 3

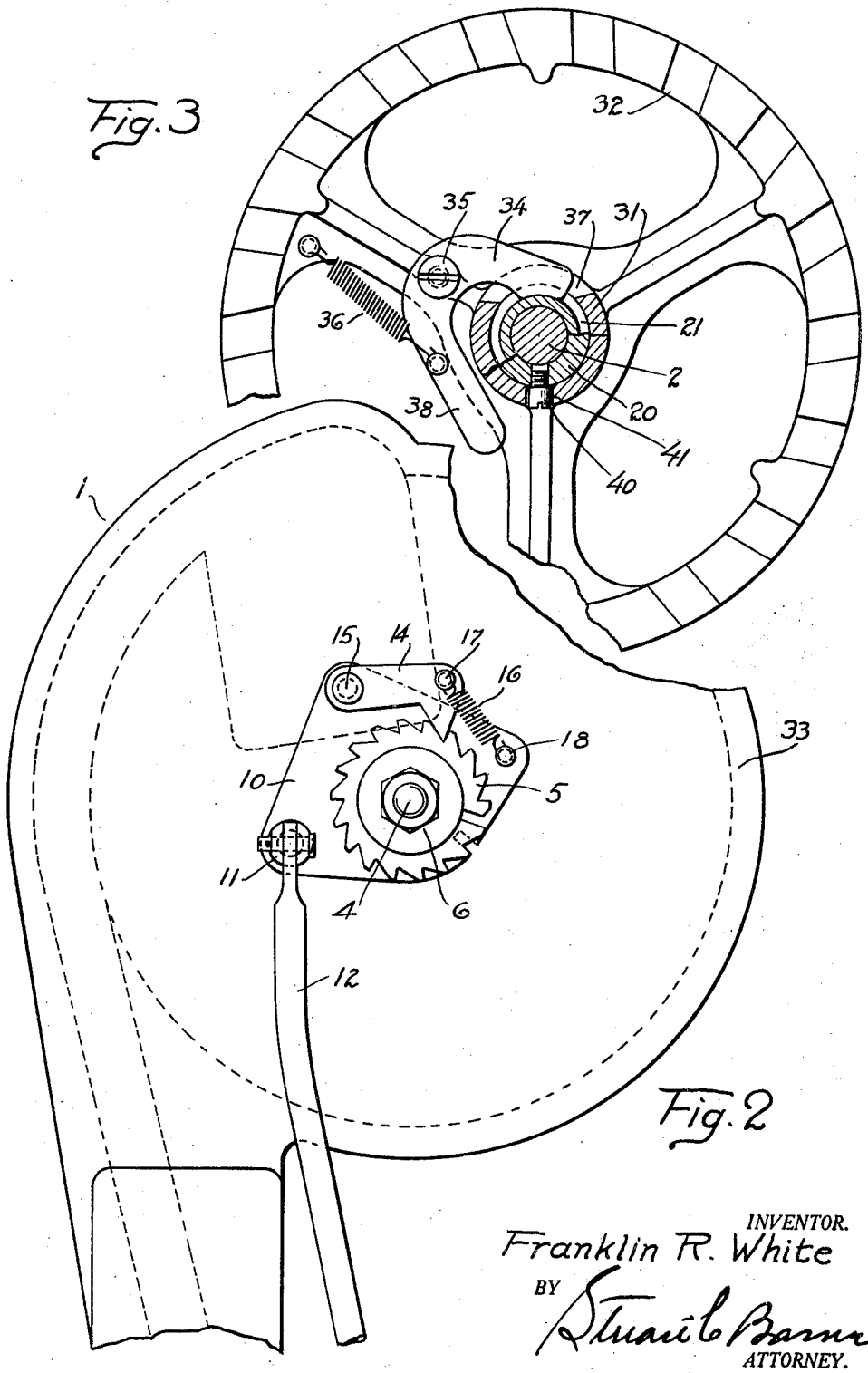


Fig. 2

INVENTOR.
Franklin R. White
BY Stuart B. Barnes
ATTORNEY.

Patented Dec. 17, 1929 1,739,996

UNITED STATES PATENT OFFICE

FRANKLIN R. WHITE, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE PATENT BUTTON COMPANY, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT

HOPPER AND DRIVING MECHANISM

Application filed June 11, 1928. Serial No. 284,439.

This invention relates to a hopper for a button attaching machine, and has to do especially with a hopper construction for feeding buttons, button rivets, or button staples to the attaching mechanism, and to a drive mechanism therefor.

The invention has as one of its objects the provision of a hopper construction, its mounting, and its driving mechanism, which is such as to permit of a slippage in the driving connection in case the buttons or other articles in the hopper become jammed, and at the same time, the construction is such as to permit of readily detaching the hopper, and for this purpose the drive mechanism, involving the slip connection, is arranged to in no way encumber or interfere with the removal or replacement of the hopper. It is to be understood that hoppers need to be removed occasionally so that the contents may be discharged when necessary; so that the hopper may be cleaned inside; and/or in order to effect a change in the sorter ring of the hopper when a button or button part of different proportions are to be fed by the hopper.

In the accompanying drawings:

Fig. 1 is a sectional view taken through the hopper construction showing the several parts of the driving mechanism.

Fig. 2 is a plan of the lower side of the support showing the ratchet drive.

Fig. 3 is a view of the hopper taken substantially on line 3—3 of Fig. 1.

Fig. 4 is a section on line 4—4 of Fig. 1.

Fig. 5 is a detail of the sleeve in the driving mechanism.

In these drawings the hopper base or support is shown at 1, and journaled in this support is a stud 2 having a collar 3 which bears against the support. On the opposite side of the support from the collar 3, the stud has a reduced end 4 which is threaded and upon which is secured a ratchet driving wheel 5, as by means of nut 6. Interposed between the ratchet wheel and the base 1, is a driving plate 10 which carries a pawl for cooperation with the ratchet wheel.

This driving plate is rotatably mounted upon the stud and in order that it may be freely moved upon the stud the ratchet wheel may abut against the shoulder next adjacent the reduced end of the stud, with the plate rotatably mounted upon the adjacent large portion of the stud. Thus, when the ratchet wheel is tightly in place, the plate 10 is not bound between the ratchet wheel and base.

This plate is provided with a connection for effecting a rocking movement on the stud, and for this purpose a bifurcated stud 11 is swiveled to the plate, to which a rod 12 is attached. The opposite end of this rod 12 is connected to a suitable crank or other device (not shown) for rocking the pawl-carrying plate 10 upon the stud.

This plate carries a pawl 14 pivoted at 15, and the pawl is caused to engage the ratchet by means of a spring 16 having its ends connected, respectively, to the pawl, as at 17, and to a fixed stud 18 on the pawl plate. It will be understood that in the operation of this mechanism the rod 12 rocks the plate, and the pawl and ratchet wheel construction rotates the stud 2 with a step by step movement.

On the opposite side of the support there is a sleeve 20 rotatably fitting over the stud and provided with a circumferential groove 21. The adjacent end of the stud is of reduced size and is screw threaded, as at 22, and the stud is provided with a key-way 23. A friction or slip drive between the stud and the sleeve is had by means of a washer 25 of leather or other suitable friction material or fabric, which is placed over the stud and in contact with the end of the sleeve. Next adjacent to this friction washer is a metal washer 26 having a key 27 which fits into the key-way 23. The parts are held in assembled relation by means of a nut 28 screwed onto the end 22 of the stud, with a spring 29 interposed between the head of the nut and the metal washer. This nut 28 preferably has a tubular-like extension 30 for centering the spring.

It will be seen by this construction that as the stud is rotated in its step by step movement, the metal washer 26 is likewise rotated, and the sleeve 20 is rotated by reason of the friction washer and the metal washer

being packed against the end of the sleeve by the action of the spring.

The hopper per se is referenced 31, and the same is provided with a sorter ring construction 32, which cooperates with a suitably shaped edge portion 33 of the base for feeding buttons or other contents from the hopper in the well known manner. The hopper is provided with a latch 34, pivoted as at 35, and acted upon by a suitable spring 36. The hub of the hopper is cut out, as at 37, through which one part of the latch projects, the other part of the latch, as at 38, affording a thumb piece or finger piece for moving the latch on its pivot.

The hub of the hopper has an opening of a size to nicely fit over the sleeve 20, and in this respect it will be noted that the friction washers, the spring, and nut upon the adjacent end of the stud are not larger than the hollow hub. Accordingly, the hub can be slipped over the end of the stud with the spring, the washers, and the nut, assembled on the stud. In placing the hopper over the sleeve the thumb piece of the latch 34 is depressed, and when the hopper is in place the same is released, whereupon the spring 36 swings the latch so that the latch fits into the groove 21 in the sleeve. This holds the hopper on the sleeve and stud against longitudinal movement in either direction. The hopper can be easily removed by depressing the thumb piece of the latch and withdrawing the same.

A connection is established between the hopper and the stud so that the hopper rotates with the stud, and in order to take advantage of the friction or slip drive the hopper is indirectly connected to the stud through the means of the sleeve. For this purpose the sleeve is provided with a driving boss or abutment 40 which may be in the form of a small screw threaded to the sleeve, preferably near the supporting base. The hub of the hopper is notched, as at 41, in either of which the driving abutment 40 is received when the hopper is placed over the sleeve. Preferably, two oppositely disposed notches are provided so that when attaching the hopper it will not be necessary to rotate the same more than 180° with respect to the sleeve in order to align a notch with the driving boss. However, only one driving boss is necessary, and it may be engaged with either notch.

It will thus be seen that as the stud is positively rotated, the sleeve is rotated by the slip connection, and the hopper is locked to the sleeve by means of boss 40 and a notch 41. In case anything jams, as for instance the jamming of the contents of the hopper, the slippage occurs at the fiber washer so that the hopper is not rotated, as otherwise there may be breakage of the parts. At the same time the hopper can be quickly removed for any purpose. It will be noted that the removing of the hopper does not interfere with the slip driving connection, and that the slip driving construction interferes in no way with the removal or replacement of the hopper. The slip drive construction and the means for detachably connecting the hopper to the drive are entirely independent of each other.

As shown in Fig. 1, a button outlet device 42 is fixed to the support. This outlet device is in the shape of a relatively deep flange partially surrounding the support and terminating in an outlet proper or chute 43. This flange is held stationary on the support and interferes in no way with operation of the hopper, but it is extremely advantageous when the hopper is removed while there is a quantity of buttons or the like in the hopper. For example, when the hopper is removed the buttons would not remain on the support, which is relatively flat, but would fall off the support, which is conventionally angularly disposed. However, with this button outlet device the buttons are guided downwardly by the flange portion and discharged out through the chute or outlet 43. A suitable receptacle (not shown) can be held below the outlet at this time to catch the buttons so that they are not discharged over the machine and surrounding table or room.

Claims:

1. A hopper and drive construction for a button attaching machine or the like, comprising a support, a stud journaled in the support, means for rotating the stud, a hopper, hopper driving means associated with the stud, a friction driving connection between the stud and this means, and means for detachably securing the hopper to the said driving means which is arranged to permit attaching and detaching of the hopper independently of the friction driving connection.

2. A hopper and driving construction for a button attaching machine or the like, comprising a support, a stud journaled in the support, means for rotating the stud, an element rotatably mounted on the stud, a friction driving connection between the stud and this element, a hopper, and means for detachably mounting the hopper upon the stud by connection with the said element, the arrangement being such as to permit attachment and detachment of the hopper independently of the friction driving connection.

3. A hopper and drive construction for a button attaching machine or the like comprising a rotating hopper stud, a sleeve mounted over the stud, means effecting a friction driving connection between the stud and sleeve, a hopper having a hub adapted to fit over the sleeve, said hopper being placeable over the sleeve and removable therefrom independent of the interference with the friction driving connection, and means for detachably se-

curing the hopper in driving relation with the sleeve.

4. A hopper and drive construction for a button attaching machine or the like, comprising a rotating hopper stud, a sleeve rotatably mounted over the stud, said sleeve being of less length than the stud, a friction washer placed over the stud and lying against one end of the sleeve, a second washer on the stud lying against the friction washer, means connecting this second washer in driving relation with the stud, a spring for packing the washers against the end of the sleeve and effecting a friction drive between the stud and sleeve, and a hopper detachably secured to the sleeve in driving relation therewith.

5. A hopper and drive construction for a button attaching machine or the like, comprising a rotating hopper stud, a sleeve rotatably mounted over the stud, said sleeve being of less length than the stud, a friction washer placed over the stud and lying against one end of the sleeve, a second washer on the stud lying against the friction washer, means connecting this second washer in driving relation with the stud, a spring for packing the washer against the end of the sleeve and effecting a friction drive between the stud and sleeve, and a hopper detachably secured to the sleeve in driving relation therewith, said hopper having a hub which fits over the sleeve, and said washers and spring being of such a size as regards the hub as to permit the hopper to be attached or detached independently of interference with the said washers and spring.

6. A hopper and driving construction for a button attaching machine or the like comprising a rotating stud, a sleeve rotatably mounted upon the stud and being of less length than the stud, a friction washer abutting against the end of the sleeve, a second washer abutting against the friction washer, said second washer being keyed to the stud, a spring mounted over the end of the stud, one end of which engages the second named washer, a nut screw threaded on the end of the stud to pack the spring, the washers, and sleeve together, for establishing a friction drive connection between the stud and the sleeve, a hopper having a hub which fits over the sleeve, said hub being of such a size with regard to the washers, spring and nut as to readily pass over the same when being attached and detached therefrom, and means detachably securing the hopper to the sleeve in positive driving relation.

7. In a button attaching machine or the like, a hopper construction comprising in combination, a hopper base disposed at an angle to the vertical having a peripherally disposed raised edge, a hopper member rotatable with respect to the base adapted to hold a quantity of buttons or the like, said hopper member fitting within said raised edge and being removable, and means secured to the base for catching the buttons or the like which may fall from the angularly disposed base when said hopper is removed.

8. In a button attaching machine or the like, a hopper construction comprising in combination, a hopper base having a raised edge, a hopper member rotatable with respect to the base adapted to hold a quantity of buttons or the like, said hopper member fitting within said raised edge and being removable, and a flange-like device rising above said raised edge of the hopper base adapted to hold the buttons or the like on the base when the hopper is removed.

9. In a button attaching machine or the like, a hopper construction comprising in combination, a hopper base having a raised edge, a hopper member rotatable with respect to the base adapted to hold a quantity of buttons or the like, said hopper member fitting within said raised edge and being removable, and a flange-like device rising above said raised edge of the hopper base adapted to hold the buttons or the like on the base when the hopper is removed, said flange-like device having an outlet opening through which the buttons are discharged.

10. In a button attaching machine or the like, a hopper construction comprising in combination a base disposed at an angle to the vertical, a hopper member associated with the base adapted to hold buttons or the like which rest upon the base, said hopper being movable with respect to the base for feeding the buttons, means for detachably holding the hopper member in place, a flange-like device secured to the edge of the base and rising from the edge so that it extends from the base alongside the hopper, and a spout construction in the flange disposed substantially at the lowermost portion of the base, said flange-like device being adapted to catch the contents of the hopper when the same is removed, and discharge the contents through the spout construction.

In testimony whereof I affix my signature.

FRANKLIN R. WHITE.