

H. DE SMITH.
MACHINE FOR APPLYING BOX CORNER STAYS.
APPLICATION FILED MAR. 30, 1909.

1,044,633.

Patented Nov. 19, 1912.

2 SHEETS-SHEET 1.

Fig. 1

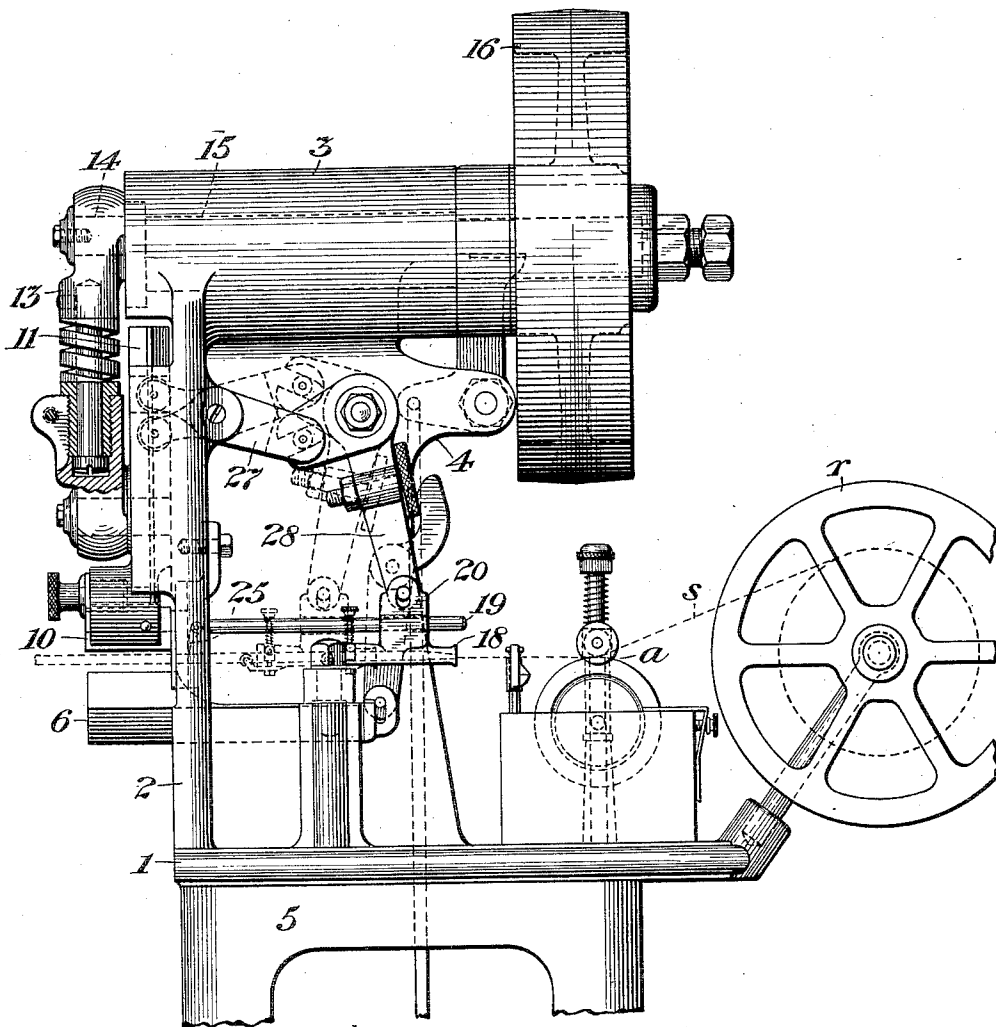
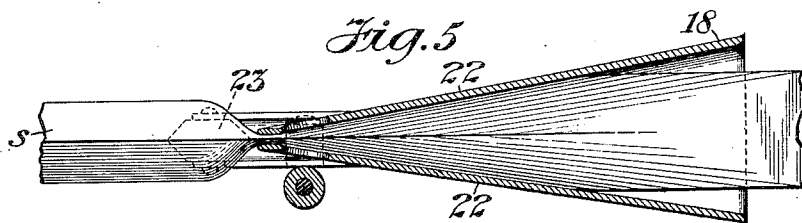


Fig. 5



Witnesses:
Chas. Clagett
R. Citron

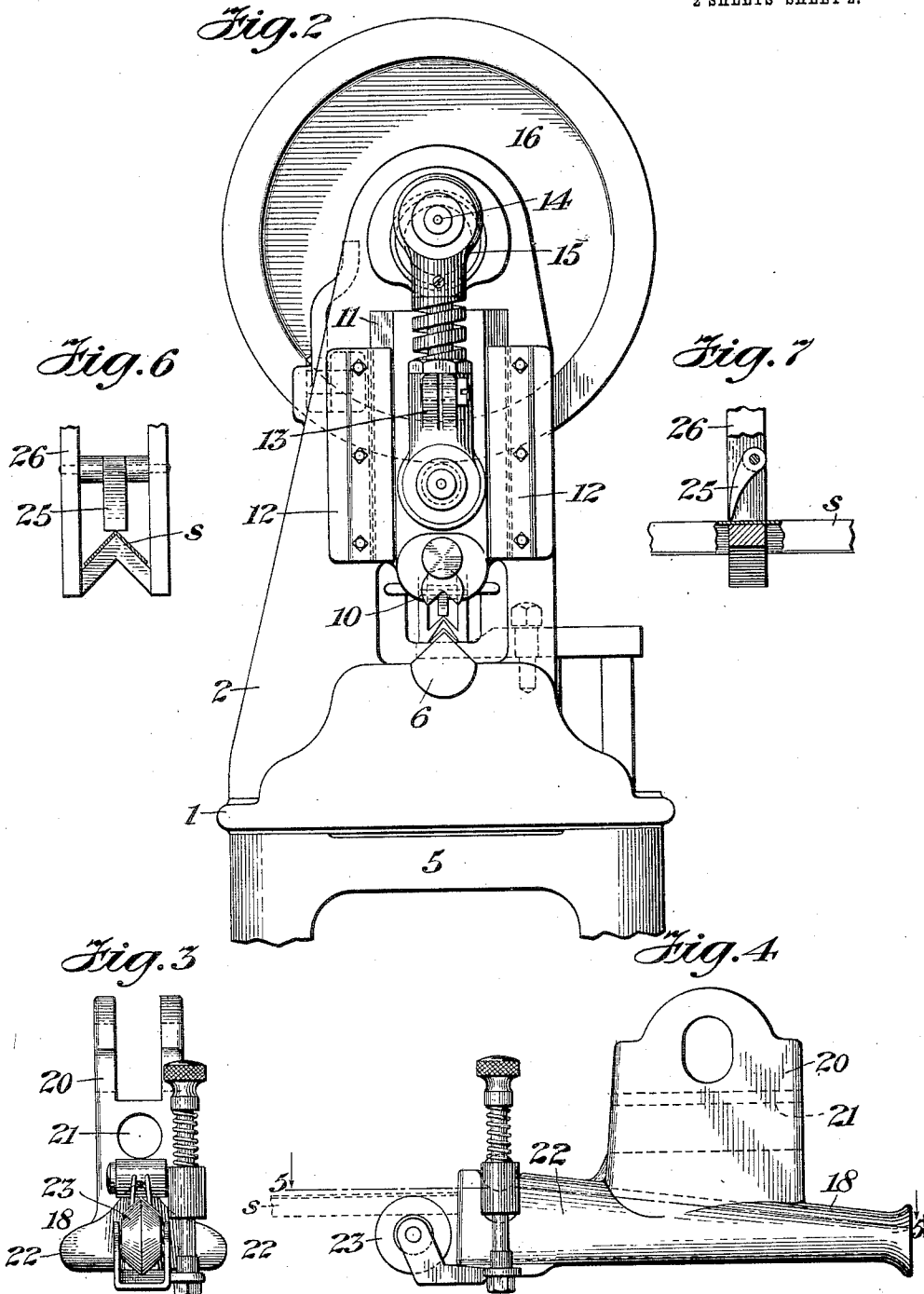
Inventor
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By his Attorney
Chas. F. Damm

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HENRY DE SMITH, OF ROCHESTER, NEW YORK, ASSIGNOR TO M. D. KNOWLTON COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

MACHINE FOR APPLYING BOX-CORNER STAYS.

1,044,633.

Specification of Letters Patent.

Patented Nov. 19, 1912.

Application filed March 30, 1909. Serial No. 486,745.

To all whom it may concern:

Be it known that I, HENRY DE SMITH, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Machines for Applying Box-Corner Stays, of which the following is a specification.

This invention relates to that class of machines adapted for applying stays or reinforcing strips to the corner joints of boxes or other receptacles made of paper board or like material. Machines of this class, a type of which is disclosed in Letters Patent No. 447,955, dated March 10, 1891, usually embody as their essential elements the following: means for applying the stay-strip to the corner joints of the boxes or other receptacles by pressing the same thereon, means for feeding the stay-strip from a supply-reel to said applying means, means for rendering the stay-strip adhesive, and means for folding the stay-strip during its passage from the supply-reel to the applying means to double or crease the same longitudinally thereof so that it will take and maintain a V-shape in order to substantially conform to the box corner when brought to a position thereover by the feeding means. These several elements are independent of each other and arranged to act upon the stay-strip at separate points to perform their several functions.

In accordance with my present invention I simplify and improve this type of machine by combining the stay-strip feeding and folding elements into one. This I accomplish in one form of my invention by the means hereinafter described in detail and illustrated in the accompanying drawings.

In said drawings—Figure 1 is a side elevation, partly in section, of a machine embodying my invention. Fig. 2 is a front elevation of the machine. Figs. 3 and 4 are end and side views respectively, of a combined stay-strip feeding and folding device forming part of said machine. Fig. 5 is a sectional plan of said combined feeding and folding device, the section being taken on line 5—5 of Fig. 4. Figs. 6 and 7 are detail views of a stay-strip holder.

Similar reference characters designate like parts in the several figures of the drawings.

As shown in said drawings, the main frame of the machine is formed by an integral casting embodying a horizontal bed-plate 1, a vertical standard 2 at one end of said bed-plate, a horizontal arm 3 at the upper end of said standard overlying the bed-plate 1, and a vertical web 4 connecting at its margin with the said bed-plate, the standard and overlying arm. This frame, upon which the several operative parts of the machine are mounted, is supported at the proper height upon a suitable sub-frame or support 5, a portion only of which is shown in the drawings.

The stay-applying means, which may be of any suitable or desired construction, is shown in the present case as being substantially the same as that of other machines of the same class and includes two cooperating presser dies, one of which is normally stationary and the other reciprocatory.

The stationary die, which is also termed an anvil, is indicated at 6. This die is in the form of an elongated bar arranged horizontally and supported in the standard 2 somewhat above the bed-plate, with its front end extending beyond the face side of the standard to support the boxes or other work thereon. The other or reciprocatory die, indicated at 10, is located at the front side of the standard 2 for cooperation with the upper face of the projecting front end of the lower die or anvil 6, and is suitably attached to a vertically acting slide or plunger 11 which is operative in guides 12, 12, at the face side of the standard 2 and connected through the medium of a suitably constructed pitman 13 with an actuating part, here shown as a crank-pin 14 carried at the front end of a driving shaft 15 mounted in the upper horizontal arm 3 of the supporting frame; said shaft being adapted to be connected with or disconnected from a driving pulley 16 through the medium of a suitable clutch (not shown) for the purpose of controlling the action of the die 10 and associated working parts.

In the operation of the machine, as hereinbefore referred to, the stay-strip, indicated by dotted lines at *s*, is fed by a suitable feeding mechanism from the supporting reel to a position between the dies 6—10 and over the corner of a box supported on the lower die; following which, a downward

movement of the plunger 11 first causes a suitable cutter carried thereby to sever the stay to be applied to the box from the continuous strip, and thereafter causes the die 10 also carried thereby to apply the severed stay to the box corner by cooperation with the lower die, in usual and well-known manner.

I will now describe the construction and operation of my improved stay-strip feeding and folding means. This means preferably includes a single device constructed, arranged and operated in a manner to engage with the stay-strip at a point between the supply-reel and the strip-applying means and give the same a desired intermittent feeding movement in a direction toward said applying means and also fold and crease the same longitudinally. This device, indicated generally by 18, is shown in the present case as being slidably supported on a horizontally arranged rod 19 projecting from the standard 2, in a manner to be capable of reciprocating movement in the direction of travel of the stay-strip from the supply-reel to the strip-applying means; such connection of the device 18 with the rod 19 being effected by providing a supporting shank 20 of said device with an opening 21 to receive therethrough the rod 19, as shown. Said device 18, in the present instance, is shown as comprising a horizontally arranged tubular part carried at the lower end of the shank 20 and being constructed to act upon the stay-strip to fold and crease the same in substantially the same manner as the usual type of folder used in this art, that is, the oppositely located side walls 22, 22, of said tubular part being arranged some distance apart at their rear ends and gradually converging toward their front ends, whereby the longitudinal edges of the stay-strip passed therebetween will be gradually brought together and the stay-strip caused to assume a substantially inverted U-shape form until it reaches a point at or adjacent to the front ends of said walls, which latter at such point are sufficiently close together to sharply crease the stay-strip at its longitudinal center. Directly in front of such forward creasing end of the folder is supported a spreader, in the form of a roll 23, which is operative to engage the stay-strip as it leaves the folder and spread apart its folded edges in order that it may assume the desired inverted V-shape form for assuring its proper location on the box corner when brought to a position thereover.

In the use of a machine embodying my invention and preparatory to operating same, the stay-strip will first be drawn from the supply-reel to a position in operative relation with a device, indicated generally by *a*, for rendering the stay-strip adhesive, and from thence to my improved device for

folding the stay-strip and feeding the same to the strip-applying means. Thereafter, the machine being set in motion and the device 18 having a reciprocating movement imparted thereto by suitable operating means, said device 18 on its forward stroke will feed the engaged stay-strip forward a desired predetermined distance, and on its backward or reverse stroke will operate to fold and crease the stay-strip. The engagement of the device 18 with the stay-strip for effecting said forward feeding movement of the strip is the frictional engagement between the same at the forward creasing end of the folder, and this engagement is rendered more positive by the lateral spreading of the stay-strip immediately in advance of said forward end of the folder as most clearly shown in Fig. 5. In view of such engagement between the folder and the stay-strip, it is necessary to provide some means for holding the stay-strip against backward movement under the action of the folder on its backward or reverse stroke, and this is accomplished in the present case by means of a pivoted dog 25 supported in a stationary part 26 of the machine in position for engaging with the upper side of the stay-strip at a point in advance of the device 18, as shown.

The device 18 may be operated to have its reciprocating movement by any suitable means; the same in the present case being operated from the vertically acting slide 11 of the strip-applying means through the medium of two operatively connecting levers 27—28.

Having now illustrated and described one practical embodiment of my invention, I wish it to be understood that I do not limit myself to the particular embodiment of the invention so illustrated and described, as the same may be more or less materially modified without departure from the spirit of my invention as called for in the following claims.

What I claim is:

1. In a machine of the character described, the combination with stay-strip applying means, of reciprocatory combined stay-strip feeding and folding means.
2. In a machine of the character described, the combination with stay-strip applying means, of reciprocatory combined stay-strip feeding and folding means, and means for holding the stay-strip against backward or reverse movement.
3. In a machine of the character described, the combination of a reciprocatory combined stay-strip feeding and folding means, and means for holding the stay-strip against backward or reverse movement.
4. In a machine of the character described, a reciprocatory combined stay-strip feeding and folding means, said means being oper-

ative on its forward stroke to feed the strip and being operative on its backward or reverse stroke to fold the strip.

5 In a machine of the character described, the combination of a reciprocatory combined stay-strip feeding and folding means, said means being operative on its forward stroke to feed the strip and being operative on its backward or reverse stroke to fold the strip, and means for holding the stay-strip against backward or reverse movement under the action of said feeding and folding means.

10 6. In a machine of the character described, the combination with strip applying means, of reciprocatory combined strip feeding and folding means, and retaining means holding

the strip against backward or reverse movement.

7. In a machine of the character described, the combination with stay-strip applying 20 means, of a reciprocatory stay-strip feeding and folding device, and retaining means holding the strip against backward or reverse movement.

Signed at Rochester in the county of Monroe and State of New York this 25th day of March A. D. 1909.

HENRY DE SMITH.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."