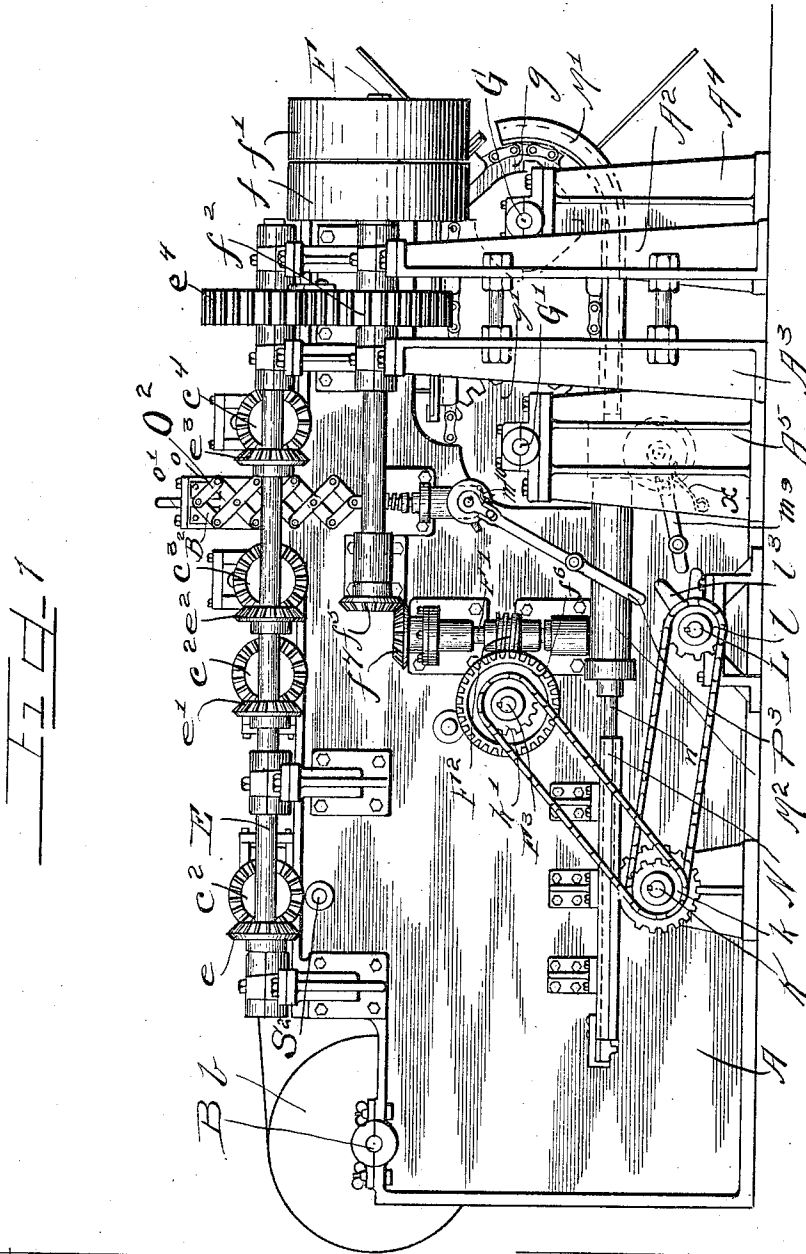


A. SHACKLETON.
 MACHINE FOR ASSEMBLING PROTECTING STRIPS ON FILES.
 APPLICATION FILED OCT. 29, 1906.

1,060,794.

Patented May 6, 1913.

8 SHEETS—SHEET 1.



WITNESSES

J. H. Angell.
 H. E. Hannah

INVENTOR

Alfred Shackleton.
 Charles E. Fier

Atty.

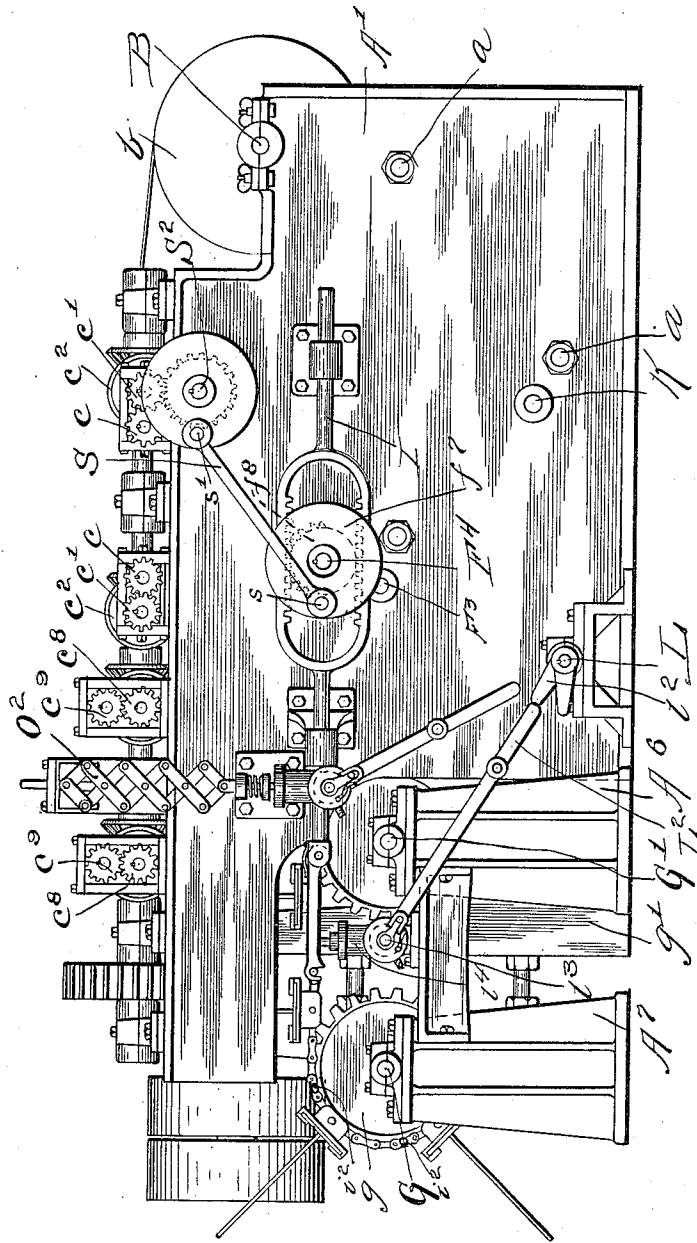
A. SHACKLETON.
MACHINE FOR ASSEMBLING PROTECTING STRIPS ON FILES.
APPLICATION FILED OCT. 29, 1906.

1,060,794.

Patented May 6, 1913.

8 SHEETS—SHEET 2.

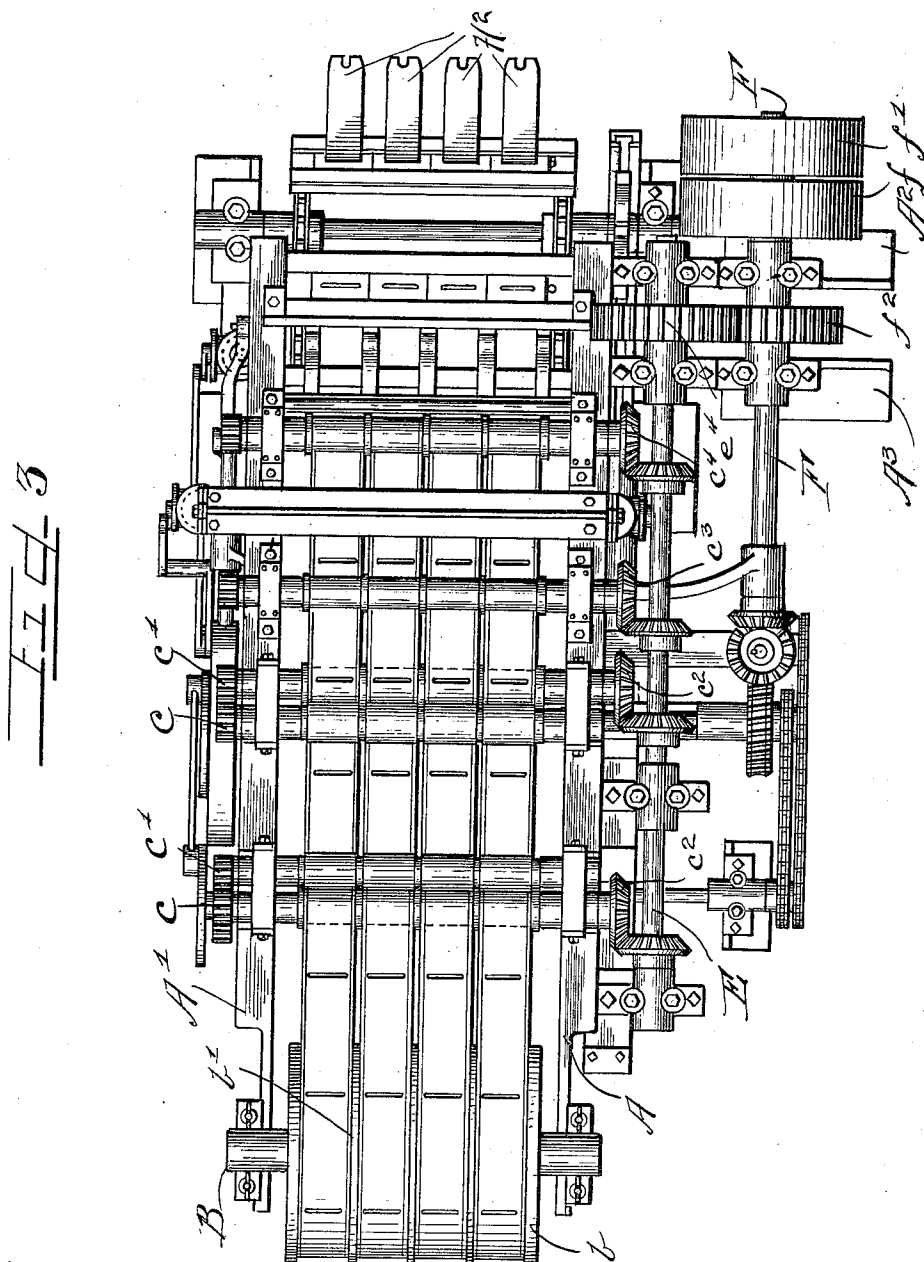
Fig. 2



WITNESSES
J. H. Angell
W. H. Hamah

INVENTOR
Alfred Shackleton
Charles Switzer
ATTY.

A. SHACKLETON.
 MACHINE FOR ASSEMBLING PROTECTING STRIPS ON FILES.
 APPLICATION FILED OCT. 29, 1906.
 1,060,794. Patented May 6, 1913.
8 SHEETS—SHEET 3.



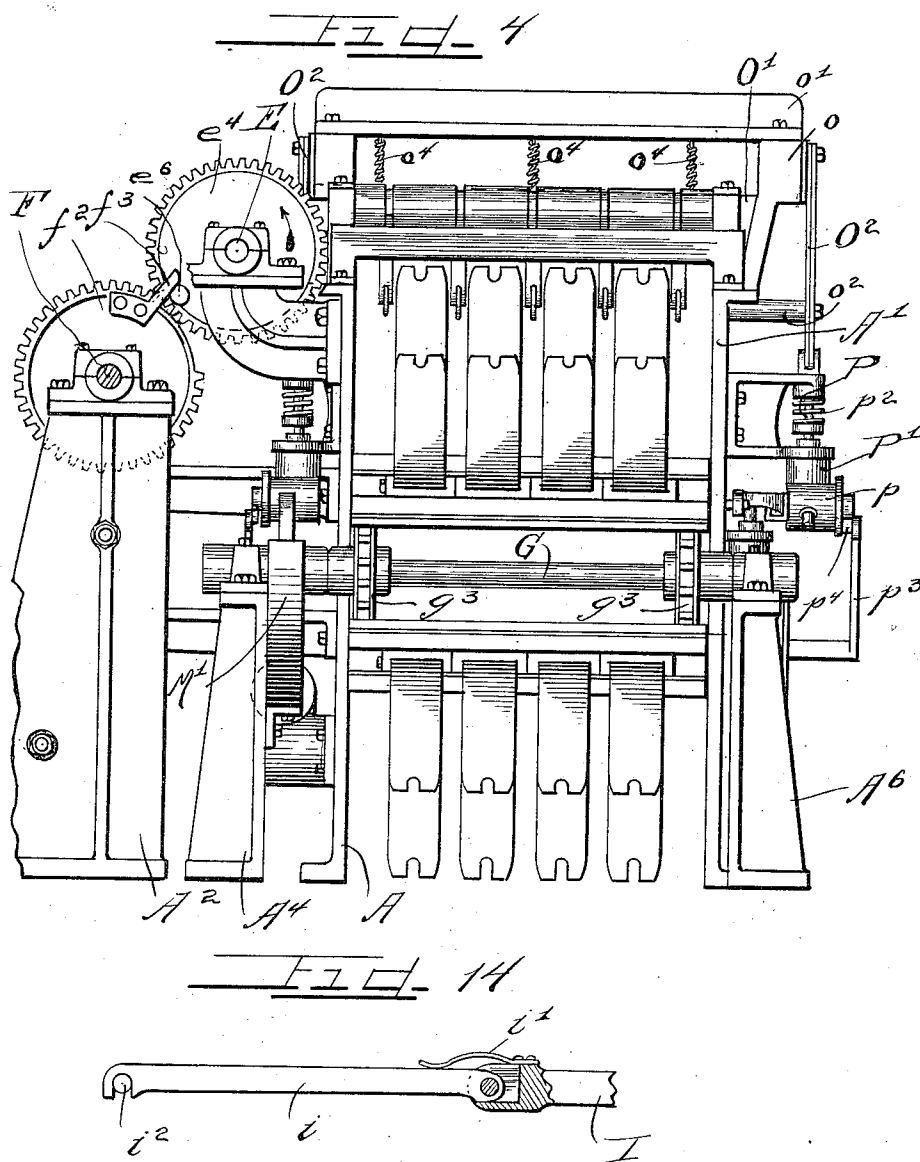
WITNESSES
 J. W. Angell.
 R. E. Hannah
 Inventor Alfred Shackleton.
 Charles W. Tiers
 Atty.

A. SHACKLETON.
MACHINE FOR ASSEMBLING PROTECTING STRIPS ON FILES.
APPLICATION FILED OCT. 29, 1906.

1,060,794.

Patented May 6, 1913.

8 SHEETS—SHEET 4.



WITNESSES
J. H. Angell.
H. C. Hannah

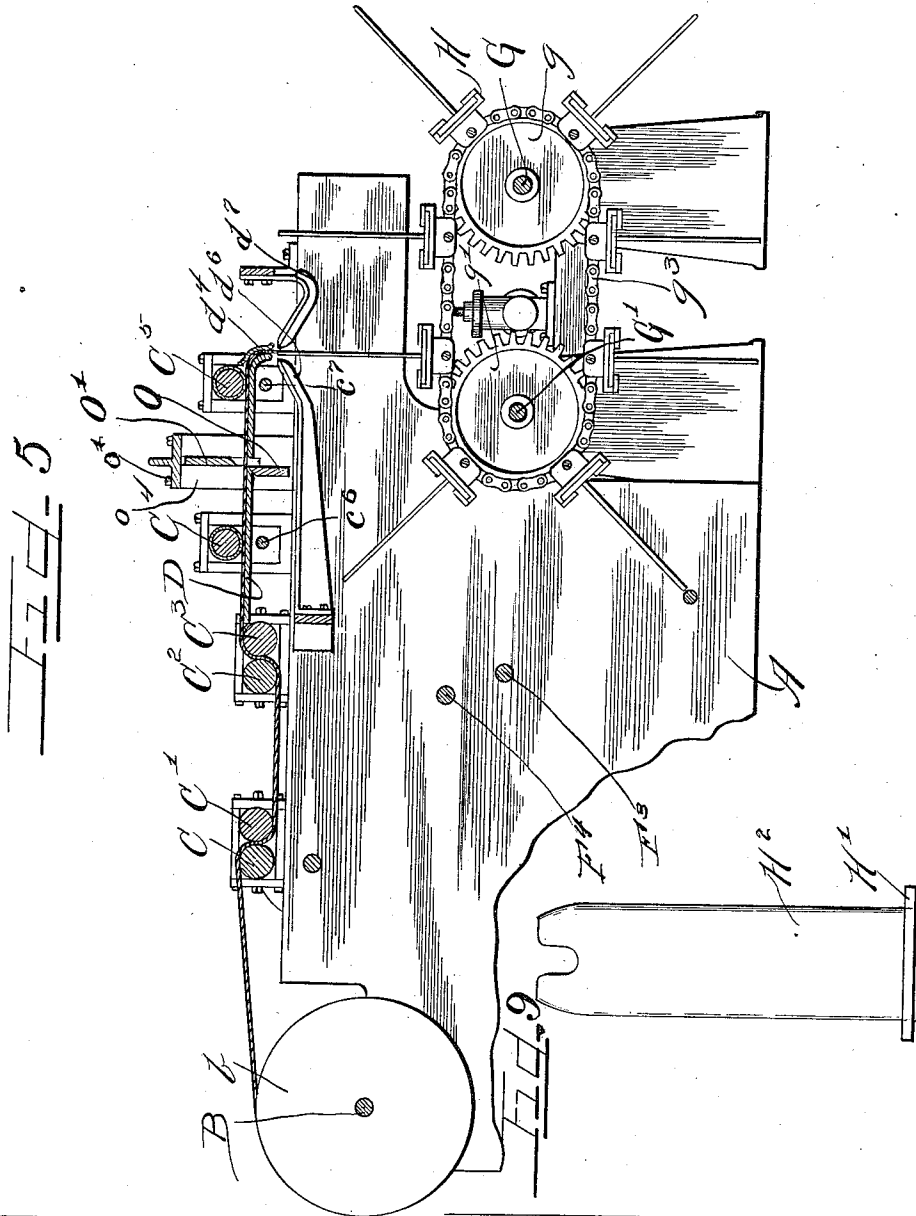
INVENTOR
Alfred Shackleton.
Charles W. Viles, Atty.

A. SHACKLETON.
MACHINE FOR ASSEMBLING PROTECTING STRIPS ON FILES.
APPLICATION FILED OCT. 29, 1906.

1,060,794.

Patented May 6, 1913.

8 SHEETS—SHEET 5.



WITNESSES

J. W. Angell.
J. E. Haman.

INVENTOR

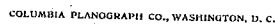
Alfred Shackleton.
Charles W. Hines.

ATTY.

MACHINE FOR ASSEMBLING PROTECTING STRIPS ON FILES.

Patented May 6, 1913.

1,060,794.

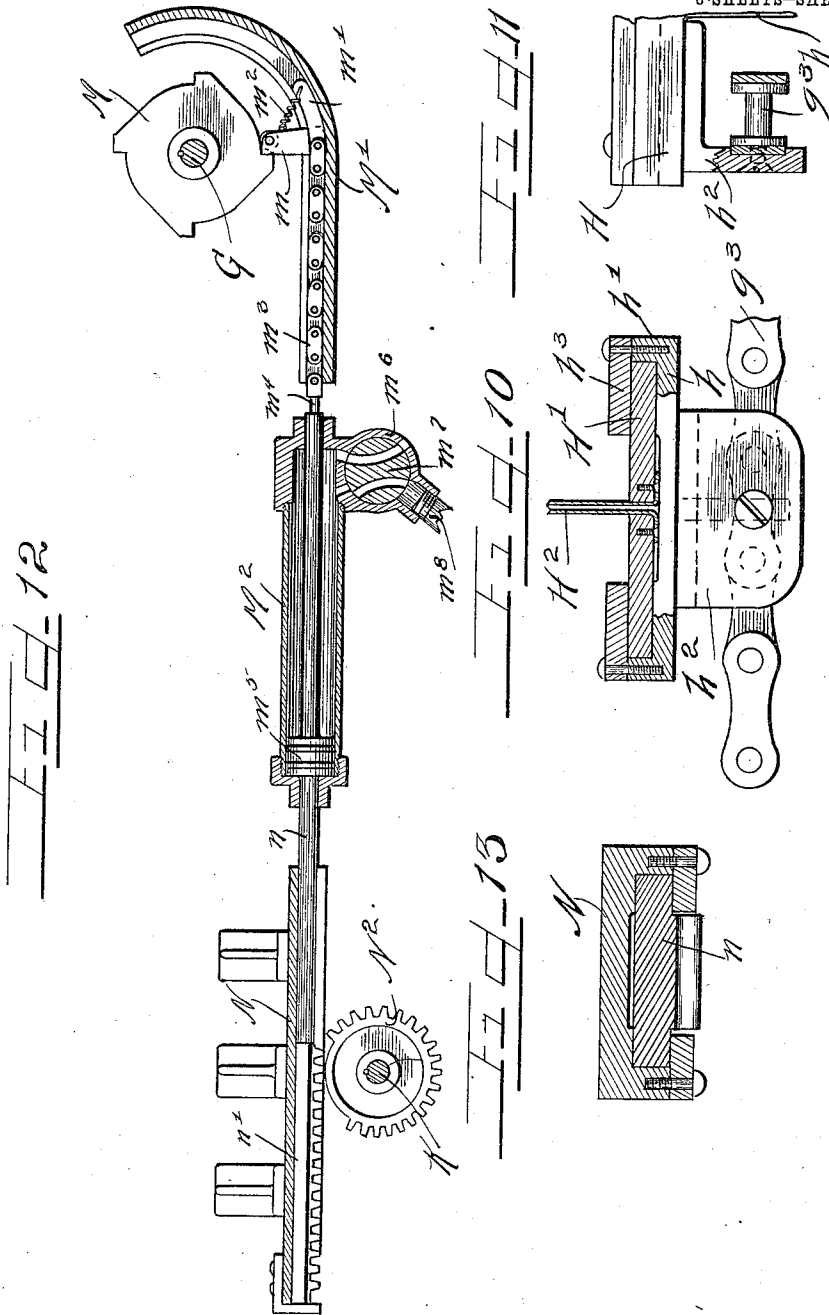


A. SHACKLETON.
 MACHINE FOR ASSEMBLING PROTECTING STRIPS ON FILES.
 APPLICATION FILED OCT. 29, 1906.

1,060,794.

Patented May 6, 1913.

8 SHEETS-SHEET 7.



WITNESSES
 J. H. Angell.
 W. E. Hannah

INVENTOR
 Alfred Shackleton.
 Charles W. Rice.
 ATTORNEY

A. SHACKLETON.
 MACHINE FOR ASSEMBLING PROTECTING STRIPS ON FILES.
 APPLICATION FILED OCT. 29, 1906.

1,060,794.

Patented May 6, 1913.

8 SHEETS-SHEET 8.

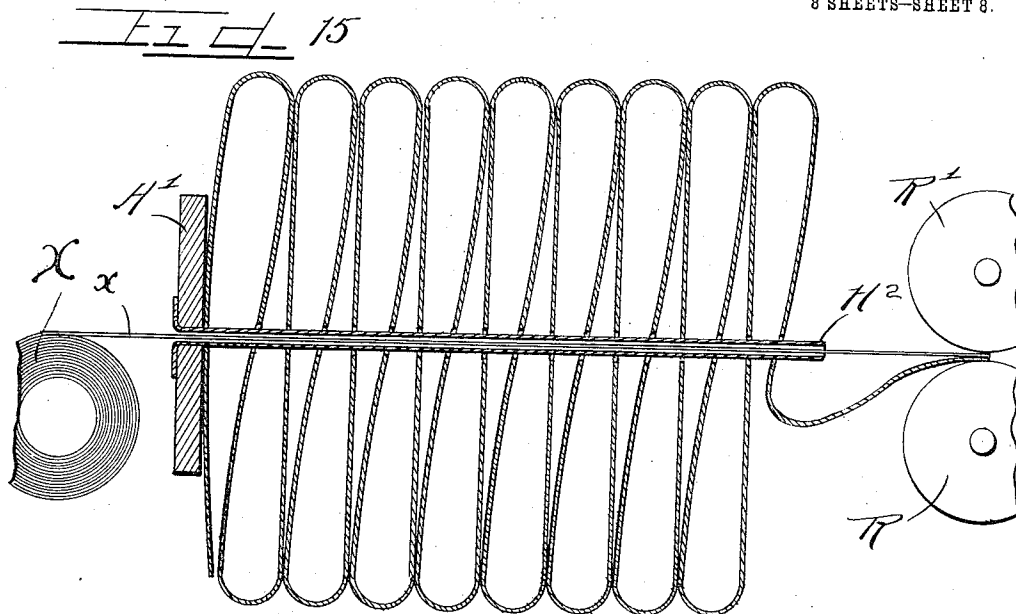
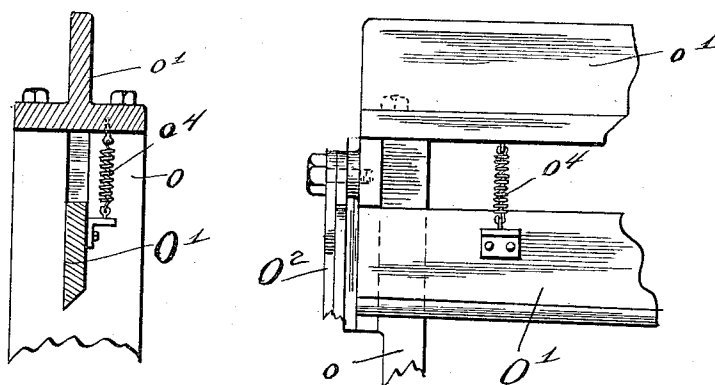


Fig. 16 Fig. 17



WITNESSES INVENTOR
J. St. Angell. *Alfred Shackleton*
H. E. Hannah by *Charles W. Tice*
 _____ ATT'Y.

UNITED STATES PATENT OFFICE.

ALFRED SHACKLETON, OF CHICAGO, ILLINOIS.

MACHINE FOR ASSEMBLING PROTECTING-STRIPS ON FILES.

1,060,794.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed October 29, 1906. Serial No. 341,172.

To all whom it may concern:

Be it known that I, ALFRED SHACKLETON, a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Machines for Assembling Protecting-Strips on Files; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to machines for assembling upon suitable files protective and display strips and more particularly to a machine adapted to assemble or file the protecting and display strips preparatory to passing the fabric therethrough, as shown in the patent issued to A. E. Standen, on the 11th day of July, 1905, No. 794,689, for Protecting and display strips for ribbon.

The object of this invention is to provide mechanical means for arranging the protective and display strip in a form to permit the ribbon or other fabrics to be threaded therethrough.

It is a further object of the invention to afford in connection with means for feeding a transversely slotted and graduated strip of paper or other suitable material, mechanical means for arranging the same upon a hollow file to permit the ribbon to be threaded therethrough, as shown in my application for patent for "Mechanisms for assembling fabrics with a protective strip," Serial Number 589,157, filed October 26, 1910, which constitutes a continuation of this application.

It is a further object of the invention to afford automatic mechanism for the purpose described whereby the display strip is fed uniformly through the machine and automatically filed upon the filing means one of which is movable relatively the other and also to provide means for cutting off the strip in predetermined lengths.

It is a further object of the invention to provide in connection with a strip of the class described and means for actuating the same of cutting mechanism acting to sever the strip when a predetermined length has been filed.

It is also an object of the invention to provide mechanism to which the files are quickly attachable and which is adapted to

automatically position the files successively to receive the display strips and engage the same thereon and from which the files are quickly removable after having been filled.

It is also an object of the invention to afford in connection with the filing mechanism automatic means for shifting the same to enable a filled file to be discharged and an empty file to be positioned to receive the strip.

The invention embraces many novel features and consists in matters hereinafter described and more fully pointed out and defined in the appended claims.

In the drawings: Figure 1 is a view in elevation of the driving side of the machine. Fig. 2 is a similar view on the opposite side of the machine. Fig. 3 is a top plan view of the same. Fig. 4 is an enlarged end elevation thereof. Fig. 5 is a fragmentary central longitudinal section of the machine. Figs. 6, 7, and 8, are enlarged details illustrating the operation of filing. Fig. 9 is an enlarged base view of the file showing the same removed from the file carrier. Figs. 10 and 11 are enlarged fragmentary details partly in section, of the file carriers and carrying means therefor. Fig. 12, is an enlarged longitudinal section of the mechanism for shifting the carriers. Fig. 13 is an enlarged transverse section of the same. Fig. 14 is an enlarged view of the arm for oscillating the carrier. Fig. 15 is an enlarged sectional view showing the strip filed and the ribbon or fabric passed therethrough. Figs. 16 and 17 are enlarged fragmentary details of the cutting mechanism.

As shown in the drawings: A and A' indicate side frame members which may be constructed in any suitable manner to afford sufficient strength, and are rigidly connected in parallel relation, by means of transverse bolts *a* and any suitable arrangement of rigid or bracing transverse members. Journaled transversely of the frame thus formed at one end of the same, is the drum shaft B provided with a drum *b* thereon, upon which the strips to be filed are rolled. As shown, though it is not essential, the machine is adapted to feed four strips simultaneously and the drum is provided with peripheral ribs *b'*, separating the strips. Also journaled transversely of the machine at the top thereof are two pairs of parallel feed and tension rolls indicated respectively by C, C', C², and C³. The rolls of each pair

are at one end provided with intermeshing gears $c-c'$, as shown in Fig. 3, and at the opposite end one of the rolls of each pair C and C³, is provided with a beveled gear c^2 .

Extending forwardly from the roll C³ to near the front of the machine and at a level with the top of said roll is a table D. Said table is bent downwardly at its front end, as shown in Fig. 5, and, journaled on the frame and extending transversely of the table are rollers C⁴ and C⁵ which are covered with rubber or other suitable frictional material. Said rollers as shown are each driven from a bevel gear c^3-c^4 , secured on lower shafts c^6-c^7 which extend transversely of the frame beneath said table and at the opposite end of each of which is provided a gear c^8 , which intermeshes with a corresponding gear c^9 , on said rolls.

Journaled longitudinally on the frame member A, is a shaft E having beveled gears e, e', e^2 , and e^3 thereon which mesh with the beveled gears c^2, c^3 and c^4 , driving the rolls. Rigidly secured thereon at its forward end is a driving gear e^4 . Journaled on supporting standards A² and A³ below said shaft E, is a driving shaft F provided with a loose and a tight driving pulley $f-f'$ and provided also with a mutilated gear f^2 , which meshes with the gear e^4 on the shaft E. As shown, said gear e^4 has 42 teeth, the gear f^2 of equal size has six consecutive teeth removed thus permitting the shaft F to rotate continuously while the shaft E rotates intermittently owing to the coaction of said gears, as shown also, a stop e^6 is provided on the gear e^4 , and an arm f^3 is provided on the gear f^2 at the point where the teeth of the latter engage with the former to insure bringing said gears into exact mesh when the shaft E is again to be driven.

Journaled transversely of the machine at the driving end thereof on the standards A⁴, A⁵, A⁶, and A⁷ are shafts G and G' on each of which are secured sprocket wheels $g-g'$, one adjacent each side frame member and around which are trained sprocket chains g^2 and g^3 . Extending between said frame members and rigidly secured on said sprocket chains equal distance apart are file carriers, as shown, eight in number, each consisting of a bar H of sufficient length and width having a lower longitudinal central rib h provided laterally with upwardly directed lateral flanges h' and provided at each end with a transverse downwardly directed flange h^2 , adapted to fit along the outer side of the chain and to be engaged thereto by means of a suitable bolt which engages through the middle of one of the outer links of said chain. Longitudinal plates h^3 are secured on each upwardly directed flange h' , with their edges projecting inwardly and affording an opening therebe-

tween to receive the files. Each of said files comprises a plate or bar of metal H' having one or more longitudinal slots there-through, through which sheet metal flat and thin tubular files H² project, and are secured at their lower end, to the bar. The files in the present instance are four in number, in each carrier, and may be all secured on the same bar or on short bars or plates as shown in Fig. 3, which are of a length to bring the files into exact register, when in place with the slots in the strips to be fed thereto. The files are also tapered inwardly at the top and provided with a central end notch sufficient to permit the operator engaging the ribbon with thumb and finger when inserting the same through the file. Mechanism is provided to reciprocate the files backward and forward beneath the downturned end of the table D. For this purpose a shaft F⁴ is journaled transversely of the frame and is provided at its end on the opposite side of the machine from the driving shaft with a face plate f^7 and wrist pin s which is connected with a similar wrist pin s' on a corresponding face plate secured on a shaft S² by means of a connecting rod S. A gear shown in dotted lines in Fig. 2 is secured on said shaft S² and meshes with the gear c' and thereby drives a mutilated gear f^8 , secured on the shaft F⁴ and shown in dotted lines in Fig. 2. A yoke I slidable horizontally on the frame and the arms of which afford parallel inwardly directed racks is engaged on each side of said mutilated gear f^8 and is reciprocated thereby longitudinally of the machine. The forward end of said yoke is provided with a hinged arm i a detail of which is shown in Fig. 14. A downwardly opening notch is provided in the outer end of said arm adapted to engage a pin i^2 adjacent each file carrier and on the outer side of the chain g^3 , as shown in Fig. 2, and is held firmly in engagement therewith by means of a spring i' , secured on the yoke, and bearing said arm downwardly. The throw of said racks by said mutilated gear is equal to the distance between the slots in the strip to be filed, or in other words half the distance between said slot on each side of the downturned end of the table. After some of the files are filled it is necessary to release said arm and to move the filled files away from the table and bring empty files into position to receive the strips. For this purpose a shaft K is journaled transversely of the frame near the bottom thereof, and provided with a sprocket wheel k and is driven from a sprocket wheel k' on a shaft F³. Said shaft F³ extends transversely of the machine and is driven by means of a worm gear f^6 on said shaft which meshes with a worm F² on a vertical shaft F', having a beveled gear f^4 at its upper end which meshes with a like

gear f^5 on the driving shaft F. A shaft L, is journaled in advance of the shaft K, and driven therefrom by means of a chain and sprocket wheel l , thereon and a corresponding sprocket wheel on the shaft K. A tappet arm l^2 is provided on the end of said shaft L on the opposite side of the frame, in position to engage the shorter end of a lever L^2 , the other end of which engages the actuating lever of a controlling valve l^3 of a pneumatic cylinder l^4 , to admit air thereinto to actuate the piston thereby lifting said arm l , out of engagement with said pin i^2 on the sprocket chain g^3 .

For the purpose of shifting the files, a four toothed ratchet wheel M is rigidly secured on the outer end of the shaft G, and rigidly secured to the frame, adjacent thereto and concentric therewith is a curved guide M' having an interior channel in which slides a pawl m pivoted on a curved bar m' adapted to slide in said guide. Said pawl is normally held in elevated position by means of a pulling spring m^2 as shown in Fig. 12. Pivotally connected on the end of said bar m' , is a link chain or other flexible medium serving the purpose of the flexible rod or bar m^3 which at its end is engaged on a piston rod m^4 , the piston m^5 of which slides in a pneumatic or steam cylinder M^2 . A rod or stem n extends rearwardly from the piston m^5 through the other end of the cylinder and through a guide N, rigidly secured on the side of the frame. Said rod n is provided on its under side at its rear end with teeth forming a rack n' adapted to be driven by a mutilated gear N^2 secured on the shaft K, and which acts to force the pawl upwardly in the guide to engage one of the teeth of the ratchet M. As shown a two way valve is provided at the end of the cylinder M^2 to admit the air, steam or other fluid pressure into the end of said cylinder, at its front end to actuate the shaft G. For this purpose a valve casing m^6 , is provided integral with the head of the cylinder, and is provided with an inlet and an exhaust port. A rotary valve closure m^7 , in said casing is provided with passages there-through adapted to be brought into communication with the inlet passage and with the inlet ports, when that for the exhaust port, is out of register and the other with the exhaust ports when the inlet port is closed. Suitable connection m^8 , is provided to enable the requisite fluid pressure to be directed into said cylinder through the inlet ports. Said valve is actuated by means of a lever m^9 , pivoted on the side of the frame and engaging at one end a crank on the valve stem, shown in dotted lines in Fig. 1, and at the other end extending into position to be shifted by an arm l^2 , on the shaft L. Said lever, is provided with a strong spring x which acts to shift the closure

to close the inlet and open the exhaust port after the valve has been opened by the lever l^2 . Said rack n' moves said pawl m slowly forward up its guide, into position to engage one of the teeth of the ratchet wheel M and at the moment the file is filled, and the paper severed, pressure is admitted into the cylinder M^2 and the cylinder l^4 releasing the chain g^3 from the yoke l and rotating the file carriers to bring a new set of files into position to be filled.

Any suitable mechanism may of course be employed for cutting the strips, desirably however, and to insure a very quick action, a special cutting mechanism is provided comprising as shown a fixed lower knife O, the edge of which projects upwardly through a transverse slot in the table D, between the rolls C^4 and C^5 . An upper movable knife O' , slidable at its ends in suitable ways provided in upright o on each side of the frame coacts with the fixed knife and is normally supported by means of strong springs o^4 , on a rigid bar or beam o' which extends across and connects the upper ends of said guide or standards. Said upper knife is actuated as shown by lazy tongs or levers o^2 secured intermediate their ends on brackets o^2 on each side of the frame and the upper ends of which are secured on said movable knife and the lower ends of which are secured upon a piston rod P, connected with a suitable piston in a pneumatic cylinder P' on each side of the frame and for which is provided a controlling valve p similar to that shown in Fig. 12. This construction insures quick downward movement of the upper end of the lazy tongs, carrying the knife and against the tension of the springs, when the lower end, thereof is forced upwardly by said piston. As shown springs p^2 are provided on each piston rod for said lazy tongs and act to absorb the recoil as the knives are elevated. The valve for said cylinder is actuated by means of a lever P^3 which extends from the crank on the actuating stem of the valve downward into position to be engaged by a tappet arm on the shaft L as shown in Fig. 1, and a spring m^{10} acts on said lever to shift the valve to exhaust position immediately after the paper is severed.

The operation is as follows: The strips for the tapes which may be either slotted transversely on a separate machine or by suitable mechanism attached to this machine are fed over the rollers b between successive feed rolls and over the table to the files which are reciprocated backward and forward continuously beneath the downturned edge of the table. The strips are directed downwardly and to the tops of the files by means of a concave guide d^4 , which coacts with the downturned end of the table as shown in Figs. 5 to 8 inclusive.

As the first transverse slot in the paper passes between said guides the file is directly beneath the same and receives the paper thereon protruding through the slot and continues its journey in the opposite direction of its limit and returns in time to engage in the next transverse slot thus reciprocating backwardly and forwardly under the action of the yoke at the end of the table and automatically filing the paper thereon as indicated in Figs. 8 and 15. As the paper is fed upon the files it is pushed downwardly to the bottom by stationary guides d^6 and d^7 , which engage above the folds of paper between the files as the files move back and push the material downwardly on the files until the file is filled. The length of the strip placed upon each file depends on the use to which the strips are to be put. If for ribbon usually, of course, ten yards are placed on each, but the length filed may be varied. Each rotation of the shaft E feeds the strip forward a fractional part of a yard and the shaft is stopped at each rotation to enable a punching or slitting machine (not shown) to act on the strips. The shaft L is adapted to rotate at a definite ratio with the shaft E for example 1 to 40: Hence the tappet arm l^3 actuates the knife to sever the strips through one of the transverse slots after 39 slots have been formed, intermediate the same and the forward ends of the strips. Immediately after the paper is severed the arm l^3 engages the pin e^6 , to bring the gears into mesh again feeding the paper forwardly to clear the rollers C^5 . At this moment the arm i is lifted to release the chain g^3 , and nearly simultaneously the valve or the cylinder M^2 is shifted to admit pressure into said cylinder thereby rotating the shaft G by means of a pawl m . At this time the mutilated gear N^2 is opposite the rack and affords no resistance to the retraction of the rack n' , the arm i then immediately falls into engagement with the pin i^2 , on the chain g^3 and the operation continues as before. It is now possible to remove the filled files if desired from the carriers and the ribbon is then threaded there-through. This is accomplished conveniently as shown in Fig. 15, in which, as shown, the file H' is supported in any convenient manner opposite the feeding rolls R and R' and the ribbon x , from a roll X is passed through the hollow file and together with the end of the tape is delivered to feed roll R—R'. In this way the strip and ribbon are simultaneously drawn from and through the files, and are wound together upon a spool of any suitable kind. Of course, one or many files may be handled simultaneously in rolling the ribbon as desired.

While I have shown but one construction embodying my invention it is obvious that

very many details may be varied whereby slitted strips may be filed automatically upon tubular files, and whereby the mechanism may be timed to automatically deliver the filled files from the machine and shift files to be filled into position to receive the strips, I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art as obviously many details of construction may be varied without departing from the principles of my invention.

I claim as my invention:

1. In a machine of the class described a file, means for intermittently feeding a transversely slitted strip, means for directing said strip against the file and impaling the same on the file through said slots, and means for severing the paper after a predetermined length is filed.
2. In a device of the class described a file, means for feeding a transversely slitted strip of paper onto the file at the slits and stationary means for forcing the paper upon the file.
3. In a device of the class described the combination with a table of a file, mechanism to reciprocate the same beneath and equal distances on each side the edge of the table and mechanism feeding a transversely slotted strip over the table so that the slots successively pass upon the file.
4. In a machine of the class described the combination with a feed table of a file, adapted to reciprocate each side of the table edge, mechanism for reciprocating the file, rolls for feeding a transversely slotted strip over the table to the file and timing the same so that the file successively engages in the slots in said strip and guides acting to press the strip down upon the file.
5. In a machine of the class described the combination with a feed table having a downturned front edge of a guide complementary with said edge, a file, means reciprocating said file beneath said downturned edge of the table, rolls for feeding a transversely slotted strip of paper downwardly between said edge and guide and timed to deliver the slots in said strip onto the file and a guide acting to press the strip down upon the file.
6. In a machine of the class described the combination with a feed table having a downturned front edge of a curved guide complementary with said front edge, a file, means reciprocating said file longitudinally of the table beneath the downturned edge, guide feed rolls for delivering a transversely slotted strip over the table and downwardly between said end and guide onto the file and timed for the end of the file to enter one of said slots in the strip, each time it passes beneath the edge of the table, means acting to press the folded strip down upon the file

and mechanism for severing the strip in predetermined lengths after filing.

7. In a machine of the class described the combination with a feed table having a downturned edge of a guide adjacent the edge, a file, means reciprocating said file longitudinally of the table and equal distances on each side of the downturned edge thereof, rolls for delivering a flexible transversely slotted strip over the table and downwardly between said downturned edge and guide, and for timing the same so that said file successively engages in the slots in said strip thereby folding the strip thereon, a guide acting to press the folded strip down upon the file and mechanism shifting the filled file from and delivering an empty file into position to be filled.

8. In a machine of the class described the combination with a table of means for feeding a transversely slotted strip therefrom, a file, means for moving the same back and forth equal distances on each side of and beneath the point of the delivery of the strip, means for timing the movement of the file and strips for the same to enter each slot in said strip folding the strip thereon, means for forcing the slotted strip downwardly on the file, and pneumatically operated means for shifting the files when filled and substituting empty files.

9. In a machine of the class described the combination with a table of means for feeding a transversely slotted strip therefrom, a file, means for reciprocating the file back and forth beneath the point of delivery of the strip from the table, means for timing the feed of the paper and movements of the file so that the file enters each slot in said strip folding the strip thereon, means for forcing the strip downwardly on the file, and a knife acting to sever the strip after a predetermined length has been filed.

10. In a machine of the class described the combination with a table of means for feeding a transversely slotted strip therefrom, a file, means supported vertically for reciprocating the same back and forth beneath the point of delivery of the strip, means for timing the delivery of said strip and movements of the file, so that said slots in said strip successively receive the file at each movement thereof, thereby folding the strip on the file, means for forcing the strip downwardly on the file and a carrier actuated when the file is filled to shift the loaded file therefrom and an empty file into position to receive the strip.

11. In a device of the class described the combination with a table and a downwardly inclined guide at its front edge of rolls feeding a transversely slotted strip across the table and downwardly at the guide, a vertical flattened file adapted to reciprocate back and forth beneath the point of deliv-

ery of the strip and timed to engage at its end in successive slots in said strip during opposite movements, a carrier for said files, means reciprocating the carrier, and mechanism for shifting the carrier ahead one station when the file is filled.

12. In a device of the class described the combination with a table and a downwardly inclined guide at its front edge, rolls feeding one or more transversely slotted strips across the table and downwardly at the guide, a flattened file for each strip to reciprocate back and forth beneath the point of delivery of the strip and timed to engage at its end in successive slots in said strip during opposite movements, a carrier for said files, a racked yoke and mutilated gear for reciprocating the carrier, and mechanism for shifting the carrier ahead one station when the files are filled.

13. In a device of the class described the combination with a table and a downwardly inclined guide at its front edge, rolls feeding one or more transversely slotted strips across the table and downwardly at the guide, a flattened file for each strip to reciprocate back and forth beneath the point of delivery of the strip and timed to engage at its end in successive slots in said strip during opposite movements, a carrier for said files, a racked yoke and mutilated gear for reciprocating the carrier, mechanism for shifting the carrier ahead one station when the files are filled, and a knife for severing the strips.

14. In a device of the class described a file carrier embracing parallel shafts, sprocket wheels on each, sprocket chains about said wheels, transverse lags connecting said chains, arranged equal distances apart, means for oscillating said carrier back and forth a predetermined distance, and mechanism adapted to rotate said sprocket wheels one station ahead when the filing is completed.

15. In a device of the class described a file carrier embracing parallel shafts, sprocket wheels on each, sprocket chains about said wheels, transverse lags connecting said chains, and arranged equal distances apart, means for oscillating said carrier back and forth, a predetermined distance and pneumatically operated mechanism adapted to rotate said sprocket wheels one station ahead when the file or files are filled.

16. In a device of the class described a file carrier embracing parallel shafts, sprocket wheels on each shaft, chains about said wheels, transverse lags connecting said chains, and arranged equal distances apart, a rotative mutilated gear and yoke having rack arms engaging said gear and connected with the carriers for oscillating said carrier back and forth a predetermined number of times, pneumatic means for re-

leasing the yoke from the carrier automatically and means rotating said sprocket wheels one station after the yoke is released.

17. The combination in a machine of the class described of an oscillating file carrier, a flattened vertical file thereon, adapted to receive the material to be filed thereon automatically, and reciprocating means acting to shift said file carrier one space ahead after the same is filled.

18. The combination in a machine of the class described of an oscillating file carrier, a flattened vertical tubular file carried therein, adapted to receive the material to be filed thereon automatically, and reciprocating means acting to shift said file carrier one space ahead when filled.

19. The combination in a machine of the class described of oscillating file carriers, of vertical tubular flattened files thereon, adapted to receive the material to be filed thereon automatically and reciprocating means acting to shift said file carrier one space ahead when filled and cutting means acting to sever the material after filling.

20. In a device of the class described the combination with means for intermittently feeding a transversely slotted strip such as paper, of a flat tubular open ended file tapered at its receiving end, and mechanism for automatically engaging the paper upon said file to afford successive folds therein.

21. In a device of the class described the combination with means for feeding a transversely slotted strip, such as paper, of a vertically supported flat tubular file tapered at its receiving end, and mechanism for reciprocating the file to automatically deliver the paper upon said files to afford successive folds therein.

22. In a device of the class described the combination with means for feeding a transversely slotted strip such as paper, of a vertically supported flat tubular open ended file tapered and notched at its receiving end, and mechanism for automatically delivering the paper upon said file, to afford successive folds therein.

23. In a device of the class described the combination with mechanism for feeding transversely slotted strips, of cutting mechanism for severing the same, tapered vertical files adapted to receive the strips thereon by impaling the same in the slots, mechanism stopping the filing of the strip and pneumatic means for actuating the cutting mechanism.

24. In a device of the class described the combination with means for feeding a slotted strip, files adapted to automatically engage in the slots in said strip, means severing the strip when the file is filled and means automatically moving said file to a point for removal and substituting an unfilled file.

25. In a device of the class described the combination with files, mechanisms automatically filing slotted strips of paper thereon and mechanism moving said file when filled to a place for removal.

26. In a device of the class described the combination with files, mechanism for intermittently feeding slotted strips forward and mechanism for reciprocating the files to file the strips thereon.

27. In a device of the class described the combination with files, mechanism for intermittently feeding slotted strips forward, mechanism for reciprocating the files to file the strips thereon and means severing all of the strips when the files are filled.

28. In a device of the class described the combination with files, mechanism for intermittently feeding slotted strips forward, mechanism for reciprocating the files to file the strips thereon, means severing all of the strips when the files are filled, means automatically releasing the file reciprocating mechanism after the cut and means moving the filled files to a point of removal.

29. In a device of the class described the combination with rotary mechanism adapted to feed slotted strips forwardly, files adapted to engage the strips at the slots as the same are fed forward, stationary means automatically forcing the strips on the files, and knives acting to sever the strips.

30. In a device of the class described the combination with files of mechanism for reciprocating the files during the filing operation, mechanism automatically filing slotted strips of material upon the files and stopping the filing after a predetermined length, and mechanism severing the strips after the desired length has been filed.

31. In a device of the class described the combination with files of mechanism for reciprocating the files during the filing operation, mechanism automatically filing slotted strips of material upon the files and stopping the filing after a predetermined length, mechanism severing the strips after the desired length has been filed and mechanisms shifting the filled files and moving unfilled files to take their places.

32. In a device of the class described the combination with mechanism for feeding slotted strips forwardly, a carrier below the strip, files thereon each adapted to receive one strip at the slots, mechanism actuating the carriers to move said files to engage the successive slots in the respective strip and means for automatically forcing the strips downwardly on the files.

33. In a device of the class described the combination with mechanism for feeding slotted strips forwardly, a carrier below the strip, files thereon each adapted to receive one strip at the slots, mechanism actuating the carrier to move said files to engage the

successive slots in the respective strip, means for automatically forcing the strips downwardly on the files, mechanism adapted to sever the strip after filing a predetermined length and mechanism instantly moving the filled files and replacing empty files before the strip is again fed forward.

34. In a device of the class described the combination with a file of means feeding a slotted strip forwardly, a file carrier mechanism for actuating said carrier to present the file to the slots in the strip as the strip is fed forward, a reciprocating knife adapted to automatically sever the strips after a desired length has been filed and mechanism replacing a new file for the filled file after the strip is severed and before the strip is again fed forward.

35. In a device of the class described the combination with a table of pairs of rolls between which a slotted strip of material passes, rolls adapted to frictionally bear upon the table and between which the strip passes, mechanism adapted to simultaneously actuate all of said rolls to feed the strip over the table, guides between which the strip passes as it leaves the table, a continuously reciprocating carrier, files thereon upon which the strip is filed as it passes between the guides, means automatically reciprocating the carrier and means removing a filled file and substituting an unfilled file without stopping the machine.

36. In a device of the class described the combination with a table, rolls adapted to feed slotted strips of material thereon, means intermittently and simultaneously actuating the rolls, files, a carrier for said files, mechanism for continuously actuating said carrier to present the files to the slots in the respective strips, a knife, timed mechanism for actuating the knife to sever the strips, timed mechanism adapted to move the filled files to a point of discharge and to replace new files to receive the strips thereon.

37. In a device of the class described the combination with an endless conveyor of file carrying means rigidly engaged thereto, series of files removably secured therein, mechanisms for simultaneously filling each series of files with slotted strips of paper or the like and mechanism for advancing each series of files a station when filled.

38. In a device of the class described the combination with a frame of a roll journaled thereon having slotted strips wound therearound, mechanism for unwinding the strips from said roll, files appropriated to the various strips adapted to extend through each slot in its strip as the same is fed forward, means for reciprocating said files, and stationary means continuously forcing the strips on the respective files as they are reciprocated.

39. In a device of the class described the

combination with a frame of a roll journaled thereon having slotted strips wound therearound, mechanism for unwinding the strips from said roll, files appropriated to the various strips adapted to extend through each slot in its strip as the same is fed forward, means continuously forcing the strips on the respective files and mechanism timed to cut the strips the required length.

40. In a device of the class described the combination with a frame of a roll journaled thereon having slotted strips wound therearound, mechanism for unwinding the strips from said roll, files appropriated to the various strips adapted to extend through each slot in its strip as the same is fed forward, means forcing the strips on the respective file, mechanism timed to cut the strips the required length, and mechanism for moving the next series of files into filling position after each severance of the strip.

41. In a device of the class described the combination with series of removable files, rollers feeding slotted strips thereto, means positively reciprocating the files whereby the strips are filed thereon, and means advancing each series of files when filled and a series of unfilled files to be filled.

42. In a device of the class described the combination with series of removable files, a carrier for said files, rollers for feeding slotted strips to said files, means for positively actuating said carrier to present the files to the slots in the respective strips, means advancing each series of files when filled and a series of unfilled files to be filled, means automatically severing the strips prior to advancing each series of files, and means automatically returning the severing means to normal after each cut.

43. In a device of the class described a main driving shaft, rolls operated therefrom to advance a slotted strip of material, files upon which said strips are secured, a knife for severing said strips, means for moving said files when filled and mechanisms operated from the main driving shaft to actuate said knife and file moving mechanisms at a given ratio to the rate of movement of the strips.

44. In a device of the class described a frame, a main driving shaft journaled thereon, a roll having slotted strips wound thereon journaled on the frame, means for unwinding the strips from the rolls, operative connection between the same and driving shaft to operate the same at driving shaft speed, means for filing the strips as unwound from the roll, means for severing the same and mechanisms positively operated from the driving shaft to actuate the severing means then to move the filing means.

45. In a device of the class described a frame, a main driving shaft journaled thereon, a roll journaled on the frame having

slotted strips wound thereon, means for unwinding the strips from the rolls, operative connection between the same and driving shaft to operate the same at driving shaft speed, means for filing the strips as unwound from the roll, means for severing the same, mechanisms positively operated from the driving shaft to actuate the severing means then to move the filing means, means automatically returning the severing means to normal and means automatically returning the file moving means to normal.

46. In a device of the class described the combination with a main driving shaft, of a supporting table, rolls operated at driving shaft rate to advance slotted strips over the table, files upon which the strips are filed as they leave the table and mechanisms operated at a desired ratio to the travel of the strip for severing the strip and for moving filled files to a point of removal and advance unfilled files into operative position.

47. In a device of the class described the combination with a frame of a table supported thereby, a drive shaft journaled on the frame, gear connections between the rolls and drive shaft to operate the rolls at drive shaft rate and to intermittently feed slotted strips of material forwardly, files adapted to receive the strips thereon and guards guiding the strips to the files and also forcing the same thereupon.

48. In a device of the class described the combination with a frame of a table supported thereby, a drive shaft journaled on the frame, gear connections between the rolls and drive shaft to operate the rolls at drive shaft rate, to intermittently feed slotted strips of material forwardly, files adapted to receive the strips thereon, guards guiding the strips to the files and also forcing the same thereupon, a knife for severing the strips, means for moving the files after each cutting operation of the knife and mechanisms operating the knife and moving means at a desired ratio to the movement of the strip.

49. In a device of the class described the combination with a frame of a table secured thereto, a main drive shaft journaled on said frame, rolls adapted to pass a slotted strip over the table, a carrier, a file rigidly but removably secured thereto, mechanism actuated by operation of the main drive shaft for actuating the carrier to engage the file in each slot in said strip and means automatically removing each file as filled and substituting an unfilled file.

50. In a device of the class described the combination with a frame of a main drive shaft journaled thereon, a slotted strip carrying roll journaled on the frame, rolls operated from the drive shaft for unwinding the strip therefrom, a file, a carrier therefor, means actuating the carrier to engage the

slots in the strip, means forcing the strip upon the file, a knife for cutting the strip and mechanism removing filled files and replacing unfilled files to receive the strip.

51. In a device of the class described the combination with a plurality of files of rolls for automatically moving slotted strips thereto and mechanisms for simultaneously actuating the rolls and the files to receive the strips thereon.

52. In a device of the class described the combination with a plurality of files of rolls for automatically moving slotted strips thereto, a carrier for said files, mechanisms for simultaneously actuating the rolls and the carrier to present the files to receive the strips thereon, and a knife severing the strips after the desired length has been filed.

53. In a device of the class described the combination with a plurality of files of rolls for automatically moving slotted strips thereto, a carrier for said files, mechanisms for simultaneously actuating the rolls and the carrier to present the files to receive the strips thereon, a knife severing the strips after the desired length has been filed, mechanism releasing the file actuating mechanism after each cutting operation and mechanism adapted to immediately move the filled file and replace an unfilled file.

54. In a device of the class described the combination with means for automatically advancing slotted strips, means adapted to automatically receive the strips as advanced, mechanism for intermittently actuating the advancing means and automatically acting mechanism adapted to reciprocate the strip receiving mechanism.

55. In a device of the class described the combination with a frame of a driving shaft journaled thereon, means actuated thereby for advancing slotted strips, files upon which the strips are filed, reciprocating mechanism acting to actuate the files to receive the strips thereon, a cutting knife, a cylinder, fluid operatable mechanism therein connected to operate the knife, timed mechanism actuated from the drive shaft to admit fluid under pressure into the cylinder and means automatically releasing pressure from the cylinder.

56. In a device of the class described the combination with a frame of a driving shaft journaled thereon, means actuated thereby for advancing slotted strips, files upon which the strips are filed, reciprocating mechanism acting to actuate the files to receive the strips thereon, a cutting knife, a cylinder, fluid operatable mechanism therein connected to operate the knife, timed mechanism actuated from the drive shaft to admit fluid under pressure into the cylinder, means automatically releasing pressure from the cylinder, a cylinder, mechanism therein adapted to force the reciprocating mecha-

nism out of operative relation and mechanism timed to admit fluid under pressure into the cylinder to operate said mechanism.

57. In a device of the class described the combination with a frame of a driving shaft journaled thereon, means actuated thereby for advancing slotted strips, files upon which the strips are filed, reciprocating mechanism acting to actuate the files to receive the strips thereon, a cutting knife, a cylinder, fluid operatable mechanism therein connected to operate the knife, timed mechanism actuated from the drive shaft to admit fluid under pressure into the cylinder, means automatically releasing pressure from the cylinder, a cylinder, mechanism therein adapted to force the reciprocating mechanism out of operative relation, mechanism timed to admit fluid under pressure into the cylinder to operate said mechanism, and timed fluid operated means moving a filled file and substituting an unfilled file.

58. In a device of the class described strip moving mechanism, a carrier, files thereon, means actuating the files to engage the strips, means severing the strips when the files are filled, a cylinder, a piston therein, flexible connections between the piston and carrier and automatically operated valves admitting fluid under pressure into said cylinder to move the files one station after each cutting operation.

59. In a device of the class described strip moving mechanism, a carrier, files thereon, means actuating the files to engage the strips, means severing the strips when the files are filled, a cylinder, a piston therein, flexible connections between the piston and carrier, automatically operated valves admitting fluid under pressure into said cylinder to move the files one station after each cutting operation and a rack bar and gear mechanism for adjusting the flexible connection into position to again actuate the carrier.

60. In a device of the class described the combination with strip supporting means, of rolls adapted to advance the strips, rotatable shafts, a carrier thereon, files secured on said carrier, means for reciprocating the carrier during the filing operation, fluid operated means moving the reciprocating means out of operative relation, fluid operated means for advancing the carrier and means automatically returning the reciprocating means to normal.

61. In a device of the class described the combination with strip supporting means, of rolls adapted to advance the strips, rotatable shafts, a carrier thereon, files secured on said carrier, means for reciprocating the carrier during the filing operation, fluid operated means moving the reciprocating means out of operative relation, fluid operated means for advancing the carrier, means

automatically returning the reciprocating means to normal, a knife, and fluid operated means timed to actuate the same to sever the strip after a predetermined length has been filed.

62. In a device of the class described the combination with strip supporting means, of rolls adapted to advance the strips, rotatable shafts, a carrier thereon, files secured on said carrier, means for reciprocating the carrier during the filing operation, fluid operated means moving the reciprocating means out of operative relation, fluid operated means for advancing the carrier, means automatically returning the reciprocating means to normal, a knife, fluid operated means timed to actuate the same to sever the strip after a predetermined length has been filed and mechanisms adapted to automatically return the knife and carrier advancing means to normal.

63. In a device of the class described the combination with a main drive shaft, of mechanism for advancing strips, files upon which the strips are secured, a knife, a cylinder, a piston therein and mechanism operatively connected with the knife, a valve for the cylinder, a lever connected thereto and a tappet arm timed to actuate the lever to admit pressure fluid into the cylinder thereby actuating the knife to sever the strips.

64. In a device of the class described the combination with a main drive shaft, of mechanism for advancing strips, files upon which the strips are secured, a knife, a cylinder, a piston therein and mechanism operatively connected with the knife, a valve for the cylinder, a lever connected thereto, a tappet arm timed to actuate the lever to admit pressure fluid into the cylinder thereby actuating the knife to sever the strips, a cylinder, a piston therein, flexible connections between the files and said piston and timed mechanism admitting pressure fluid into the cylinder to remove the filled files.

65. In a machine of the class described a file, a carrier therefor, rotatable means adapted to intermittently move a slotted strip in position to be secured on said file and mechanism for actuating the carrier to present the file in position to receive the strip.

66. In a device of the class described the combination with a plurality of files of mechanism for feeding slotted strips into position to be engaged thereon, means for releasing said actuating means and means adjusting the files to removal position to permit said files to be replaced by unfilled files when the actuating means is released.

67. In a machine of the class described mechanism for moving a slotted strip, a file, means directing the strip to the end of the file, mechanism reciprocating the file

and means filing the strip upon the file as it reciprocates.

68. In a machine of the class described coating friction rolls for feeding a slotted strip longitudinally, a file positioned to receive the strip and coating stationary and reciprocating mechanisms for securing the strips upon the file.

69. In a machine of the class described coating friction rolls for feeding a slotted strip longitudinally, a file positioned to receive the strip, coating stationary and movable mechanism for securing the strip upon the file, a cutting knife and means operating the same to sever the strip after the desired length has been filed.

70. In a machine of the class described coating rotatable friction means and coating rotatable and stationary friction means for moving a slotted strip of material, means adapted to have the strip placed thereon, stationary and movable mechanisms cooperating to automatically secure the strip on said means, and means for shifting a filled file to a point for removal and an empty file to filling position.

71. A machine embracing mechanism for moving a slotted strip longitudinally thereof, means for directing the strip downwardly, files adapted to engage the strip as it moves downwardly, means for oscillating the files as the strip moves and means timed to sever the strips at regular intervals.

72. In a device of the class described a file, means delivering a slotted strip thereto, means for forming equal folds on opposite sides of the file and means for replacing a filled file by an unfilled file.

73. In a device of the class described a file, means for delivering a slotted strip thereto, means for forming equal folds on opposite sides of the file, means for cutting the strip when the file is filled and means replacing a filled file by an unfilled file.

74. A machine for the purposes set forth embracing a plurality of files, mechanisms for moving and directing slotted strips thereto and means for forming equal folds on opposite sides of the file.

75. A machine for filing slotted strips embracing files to receive the strips, means

for intermittently feeding the strips to the files, stationary means for forcing the strips upon the files with equal portions of the strip on opposite sides of the files, mechanism timed to sever the strips after the desired length has passed thereby, and means replacing filled files by unfilled files after the strips have been severed.

76. A machine for the purposes set forth comprising means for receiving slotted strips, means for pressing the strips thereupon, mechanism for positively reciprocating the receiving means, means for cutting the strips, and means for shifting said strip receiving means.

77. In a machine of the class described coating rotatable friction means and coating rotatable and stationary friction means for moving a slotted strip of material, a file adapted to have the strip placed thereon, stationary and movable mechanisms cooperating to automatically secure the strip on the file, means for shifting a filled file to a point for removal and an empty file to filling position, and means for adjusting said means to normal after shifting the files.

78. In a device of the class described the combination with means for moving slotted strips of files adapted to receive the strips, means for filing the strips thereon, mechanism adapted to shift the filled files and unfilled files to take their place and mechanism timed to operate the aforesaid mechanism.

79. In a device of the class described the combination with means for moving slotted strips of files adapted to receive the strips, means for filing the strips thereon, mechanism adapted to shift the filled files and unfilled files to take their place, mechanism timed to operate the aforesaid mechanism, mechanism for severing the strips into suitable lengths and means timed to operate said mechanism.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

ALFRED SHACKLETON

Witnesses:

C. W. HILLS,
K. E. HANNAH.